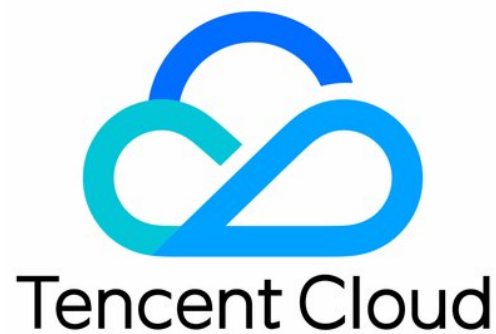


# Cloud Block Storage

## FAQs

### Product Documentation



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## Features

Last updated : 2023-12-22 10:59:42

### What is Tencent Cloud Block Storage?

Tencent Cloud Block Storage (CBS) is a highly available and highly reliable block storage device for CVM instances. It provides a wide variety of disks to meet diversified read/write requirements. For more information on CBS, see [Overview](#).

We recommend CBS when the data frequently changes and you want to persistently store them at a faster read/write speed. CBS can be attached to any running instance in the same availability zone, enabling you to use an instance's file system and database storage without following the instance lifecycle. For more information on the CBS operations, see [Operation Overview](#).

### What are the features of Tencent Cloud CBS?

Tencent Cloud CBS provides five types of cloud disks: Premium Cloud Disk, Balanced SSD, SSD, Enhanced SSD, and ulTra SSD. They have the following features:

**Elastic attaching and detaching:** Elastic cloud disks can be attached and detached. Up to 20 elastic cloud disks can be attached to a CVM as data disks.

**Elastic expansion:** A single disk supports a maximum capacity of 32 TB. You can scale up the disk at any time.

**Snapshot backup:** You can create a snapshot to back up data. This improves data reliability and allows rapid data restoration when necessary. You can also create a cloud disk from the snapshot to accelerate your business deployment.

### What is the difference between COS and CBS?

[Cloud Object Storage](#) is available via Web APIs, and is not restricted by file systems, directory structure, number of files, or storage capacity. The service offers various SDKs and tools for business integration, which can also be used independently from CVM. COS is great when you need to access massive amounts of data but is not ideal for millisecond-level response or random read/write scenarios.

[Cloud Block Storage](#) needs to be used together with CVM and can only be attached and used after the file system is partitioned or formatted. COS and CBS both have distinct performance metrics for different use cases.

### What are the limits on cloud disks?

A single elastic cloud disk can be scaled up to 32 TB, and cannot be scaled down.

Elastic cloud disks can only be attached to CVMs within the same availability zone.

Up to 20 elastic cloud disks can be attached to a single CVM as data disks. You can attach elastic cloud disks to a CVM you are purchasing or a CVM created, as instructed in [Attaching Cloud Disks](#).

You can purchase up to 50 elastic cloud disks at one time on the [CBS console](#).

If the monthly subscribed elastic cloud disk is not renewed within 7 days after expiration, the system will unbind the attaching relationship between the cloud disk and CVM, and repossess it to the recycle bin. For more information about repossession, see [Overdue Policy](#).

**Note:**

When you attach a monthly subscribed elastic cloud disk to a monthly subscribed CVM, as instructed in [Attaching Cloud Disks](#), the following renewal-related options are available:

Unified expiry time with the CVM

Enable monthly auto-renewal of the cloud disks

Attach directly without enabling auto-renewal

### **What are the advantages of cloud disks?**

Cloud disks offer high reliability, elasticity and performance. They are easy to use and support snapshot backup. For more information, see [Product Strengths](#).

### **Can cloud disks be used as system disks?**

No. System disks cannot be attached or detached.

### **Can cloud disks be used as data disks?**

Yes. All types of local disks and cloud disks can be used as data disks.

### **Can cloud disks be attached and detached?**

Cloud disks can be attached and detached when they are used as data disks.

However, they cannot be attached and detached when they are used as system disks.

# Billing

Last updated : 2025-01-22 14:50:08

## Are cloud disks billed independently?

Elastic cloud disks are billed independently. Monthly subscription and pay-as-you-go manner are supported.

## How are cloud disks priced?

CBS supports monthly subscriptions and pay-as-you-go manner. Pricing varies by cloud disk types and billing modes. For more information, see [Price Overview](#).

## How much is the monthly subscribed cloud disk?

Pricing varies by region and disk type. For more information, see [Price Overview](#).

## How much is the pay-as-you-go cloud disk?

Pricing varies by region and disk type. For more information, see [Price Overview](#).

## How are users notified about the expiration of monthly subscribed CBS data disks?

Starting 7 days before the expiration date of monthly subscribed resources, an expiration alert is sent every other day (i.e., on the 7th, 5th, 3rd, and 1st day before expiration). The account creator will be notified via email, SMS, and the Message Center. Collaborators can configure to receive this alert in the console > Message Center > [Message Subscription](#). For detailed directions, see [Balance Alert Guide](#).

## How are users notified about the overdue payment of monthly subscribed CBS data disks?

On the day your monthly subscribed resources expire (the 1st day of the expiration) and every other day thereafter (the 3rd, 5th, 7th days, etc.), we will send you an overdue payment alert. You can configure the receipt method in the console -> Message Center -> [Message Subscription](#) and add recipients.

## What is the repossession mechanism for monthly subscribed CBS data disks?

The following instructions are only applicable to elastic cloud disks. The lifecycle of non-elastic cloud disks is the same as the associated CVMs. For more information, see [Payment Overdue](#).

7 days before the resources expiration date, you will receive an expiration alert and a renewal reminder.

If your account balance is sufficient and auto-renewal is enabled, cloud disk will be auto-renewed on the expiry date.

If your cloud disk is not renewed before it expires (including on the expiration date), the system will begin to limit its performance at the point in time of its expiration. When using the cloud disk, you will notice a significant decrease in performance.

If your cloud disk is not renewed within 24 \* 7 hours after it expires, the system will suspend its service processing (the cloud disk is unavailable, and can only store data), **force release** its relationship with the CVM (if any), and the cloud

disk will be sent to the recycle bin. You can still retrieve the cloud disk from the recycle bin and renew it, but **the start time of the cloud disk that has been renewed and retrieved will be the previous period's expiration date**. If your cloud disk is not renewed within 24 \* 7 hours after it's moved to the recycle bin, resources will be released and data in the expired cloud disk will be erased and **cannot be recovered**.

Call 4009100100 if you need further information.

### **How are users notified about expiration of pay-as-you-go CBS data disks?**

The system estimates the time that your account balance is about to run out based on the current balance and your usage in the past 24 hours. If the estimated time is within 5 days, an alert is sent to the Tencent Cloud account creator and all collaborators who have subscribed to messages via email, SMS, and the Message Center.

### **How are users notified about overdue payment of pay-as-you-go CBS data disks?**

Pay-as-you-go resources are billed and deducted on each clock hour. When your account becomes negative, the system will send an alert to your Tencent Cloud account creator and all collaborators who have subscribed to messages via email, SMS, the Message Center, etc.

### **What is the repossession mechanism for pay-as-you-go CBS data disks?**

You can continue to use the pay-as-you-go cloud disk for 2 hours from the moment your account balance becomes negative. You will be billed for this period. After 2 hours, the services will be suspended and cloud disk will only store data. Until data is completely deleted, you will still be billed according to the billing standard even if the account balance is negative.

If your Tencent Cloud account is topped up to a positive balance within 15 days after the cloud disk has its services suspended, the disk can be restored.

If the account balance remains negative for more than 15 days after the cloud disk services are suspended, the pay-as-you-go disk will be repossessed. All data will be erased and **cannot be recovered**. When your cloud disk is repossessed, the Tencent Cloud account creator and all collaborators will receive a notification via email, SMS, and the console Message Center.

Call 4009100100 if you need further information.

# Performance FAQs

Last updated : 2023-12-22 11:00:05

## How to measure the performance of a cloud disk?

The following metrics are generally used to describe the performance of a storage device:

IOPS: Read/write count per second. IOPS varies by the underlying drive type of the storage device.

Throughput: Read/written data volume per second, unit in MB/s.

Latency: Time elapsed from sending an I/O operation to receiving an acknowledgement (in seconds).

## How to test the disk performance?

We recommend you use FIO to perform pressure testing and verification on the cloud disk. For more information, see [Measuring the performance of cloud disks](#).

## Does the I/O size of the application affect the IOPS performance?

Yes. For a given resource, the IOPS you get is determined by the I/O size of the read and write operations of the application. Usually, when reading and writing small blocks (for example, I/O size of 256 KB), the IOPS performance of the disk can be fully used.

## Does the I/O size of the application read-write affect the throughput performance?

Yes. For a given resource, the throughput you get is determined by the I/O size of the read and write operations of the application. Usually, when reading and writing large blocks (for example, I/O size of 1MB), the throughput performance of the disk can be fully used.

## Can multiple disks be logically combined into one disk to get better performance?

Yes. You can stripe these multiple cloud disks that are mounted to the CVM to balance I/O load to multiple disks, increasing I/O parallel capacity to implement better performance than a single disk. For more information, see [Building LVM logical volumes from multiple elastic cloud disks](#).

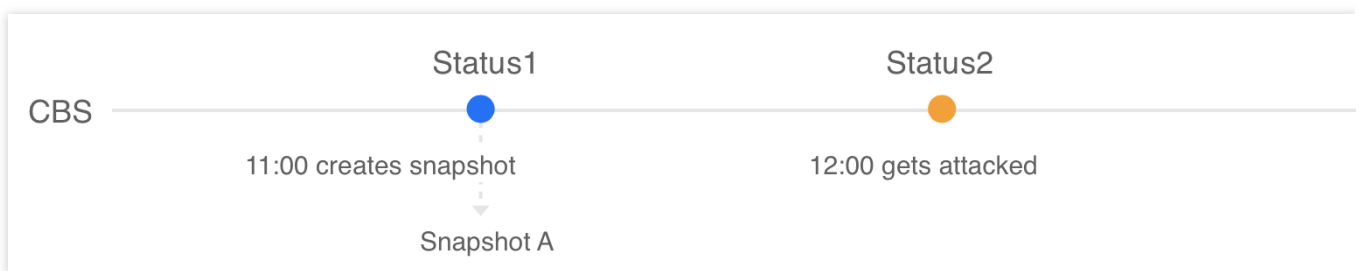


# Snapshot

Last updated : 2023-12-22 11:00:17

## A cloud disk has adopted a three-copy redundancy mechanism for data security. Why do we still need to use snapshots?

In situations where a logic-level data error occurs, for example, suppose a user deletes data by mistake, or if the data is damaged by a virus or file system exceptions, all three copies of the data stored will be affected and historical data cannot be restored. If you have created a snapshot previously, you can use the snapshot to restore data to the point in time the snapshot was created.



Suppose an administrator created snapshot A for a cloud disk at 11:00, and the cloud disk was infected with a virus at 12:00, which caused that data to be unusable. In this case, the three copies of the data would have been updated to status 2, and the data cannot be restored. To restore data to the uninfected status 1, you have to use the snapshot A created at 11:00.

## Why does the used disk storage displayed in the file system differ from the snapshot size?

A cloud disk snapshot is a block-level clone or backup. In general, the snapshot size will be larger than the data size displayed in the file system because:

The underlying data block stores the metadata of the file system.

Some data are deleted. Deleting data modifies the written-in data block, which will be backed up to snapshots.

## What are the differences between snapshots and images?

If no data disk is attached to an instance and all data are written on the system disk, the data on the system disk cannot be protected by creating an image. Images cannot be scheduled for continuous backup. Once the system disk data are damaged, you can only recover the data to the state when the image was initially created. Therefore, images are not suitable for data protection. Specific differences are as follows:

Name	Snapshots	<a href="#">Image</a>
Characteristics	Backup data of a cloud disk at a certain point in time	CVM software configuration template, which contains information about the operating system and pre-installed programs

Application Scenarios	Regularly back up important business data Back up data before major operations Produce multiple copies of data	Back up systems that will remain unchanged in the short term Deploy applications in batches Migrate the system
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## Why can't some of the snapshot be used to create images?

You can create snapshots for both system disks and data disks. However, only the snapshot of a system disk can be used to create a custom image.

## Why can't I delete the snapshot?

To delete a snapshot, make sure that the snapshot you want to delete is not associated with any image. To query associated snapshots of an image, go to the [image](#) page and click the ID/Name of the image.

## How are snapshots created from an image billed?

Images use the CBS snapshot service for data storage. The associated snapshots of a custom image will be billed by the storage size. To view the size of your snapshots, go to [Snapshot Overview](#).

## How are shared images billed?

The owner of shared images is charged the snapshot fee, while the recipient account will not be charged. For more information about the snapshot billing, see [Billing Overview](#).

## What is a scheduled snapshot?

A scheduled snapshot is automatically created for the cloud disk according to the associated scheduled snapshot policy. To use this feature, you must first create a scheduled snapshot policy and associate it with the cloud disk. For more information, see [Scheduling Snapshots](#).

## What limits do scheduled snapshots have?

A maximum of 30 scheduled snapshot policies can be created in one region. Each scheduled snapshot policy can be associated with up to 200 cloud disks. In addition, snapshots created according to the scheduled snapshot policies must comply with snapshot quota. For more information, see [Use Limits](#).

## How are snapshots created?

You can create a snapshot using the following methods:

Custom snapshot: You can manually create a snapshot to quickly save data of the cloud disk at a specified point in time. For more information, see [Creating Snapshots](#).

Scheduled snapshot: You can associate a scheduled snapshot policy with the cloud disk to periodically create and delete snapshots. For more information, see [Scheduled Snapshots](#).

### **Is snapshot available in all availability zones?**

Yes.

### **How are snapshots billed?**

Snapshots are billed according to your total snapshot storage size in each region in a **pay-as-you-go** manner; and the fee is calculated and deducted on the dot of every hour. For more information about billing, see [Billing Overview](#) and [Price Overview](#).

### **Do I need to detach a disk or interrupt all reads and writes before creating a snapshot?**

No. You can create a real-time snapshot while the disk is connected and in use, without affecting the normal operation of your business. However, the snapshot can only capture the written data but not cached data of the cloud disk. To ensure all application data is captured, we recommend that you suspend all disk I/O operations before creating a snapshot. For a cloud disk that is used as a system disk, we recommend that you shut down the CVM to create a more complete snapshot.

### **Will creating a snapshot affect the disk performance?**

Creating a snapshot will occupy a small amount of the cloud disk I/O. We recommend creating snapshots during off-peak hours of your business.

### **How long does it take to create a snapshot?**

The time it takes to create a snapshot is influenced by factors such as the number of disk writes and the underlying read-write operations. Creating a snapshot will not affect your disk use.

### **How do I create a cloud disk using a snapshot?**

For more information, see [Creating Cloud Disks Using Snapshots](#).

### **How do I roll back snapshots?**

For more information, see [Rolling Back Snapshots](#).

### **Do I need to shut down the CVM to roll back to a snapshot?**

For a cloud disk that has been attached to a CVM, you have to shut down the CVM to roll it back to a snapshot. For a cloud disk that has not been attached to a CVM, you can directly roll it back to a snapshot.

### **Can I read a previous snapshot to restore a cloud disk?**

Yes. You can use an existing snapshot created at any point in time to restore data, regardless of the snapshot's point in time.

### **Can I delete the source snapshot when it is being replicated?**

No. It can only be deleted after the replication is complete.

### **Is the new snapshot created by replication still associated with the source snapshot's source disk?**

The snapshot created via cross-region replication is no longer associated with the source disk of the source snapshot. The rollback feature is unavailable for replicated snapshot.

### **Will associated snapshots be deleted when the CVM is terminated?**

No, the associated snapshots will not be deleted automatically. You can delete them via the console or an API. For more information, see [Deleting Snapshots](#).

### **How do I delete a snapshot?**

For cloud disk snapshots, you can delete them directly via the console or an API. For more information, see [Deleting Snapshots](#).

For snapshots associated with custom images, you must first delete the custom images and then [delete the snapshots](#).

### **Can I use a snapshot created from the system disk to create a cloud disk?**

No. You can only use the snapshot of the system disk to create a custom image.

### **Does the snapshot support the cross-region replication feature?**

Yes. You can use this feature to easily migrate data and services to other regions, or construct your cross-region disaster recovery system. For more information, see [Cross-region Snapshot Replicating](#).

# Usage

Last updated : 2023-12-22 11:00:36

## What scenarios are cloud disks ideal for?

You can [create](#) and [attach](#) elastic cloud disks to use them as data disks when the disk space on your CVM is insufficient.

You can purchase and attach elastic cloud disks to use them as data disks when you purchase a CVM without additional data disks.

When you have 10 GB of important data stored in an elastic cloud disk on CVM A and need to share the data with CVM B. You can directly [detach](#) the disk from CVM A, and then [attach](#) it to CVM B.

When a single maximum-sized cloud disk cannot meet your storage requirements, you can purchase multiple cloud disks with equal capacity and configure LVM logical volumes to provide a larger disk capacity.

When I/O performance of a single disk cannot meet your business requirements, you can purchase multiple cloud disks and configure RAID 0, RIAD 10, etc., to enhance I/O performance.

For more information, see [Use Cases](#).

## How do I select a cloud disk?

Determine your use cases before selecting a disk type.

For general use cases including Web/APP applications, logical processing, and small and medium sites, we recommend that you select Premium Cloud Disk for a higher cost efficiency.

For medium-sized databases and image processing users, we recommend SSD for a better performance.

For use cases with high requirements for workloads and performance, including large databases, video business, NoSQL, and Elasticsearch, we recommend that you select Enhanced SSD for optimal performance and minimum storage latency.

## What are items I should look out for when using a cloud disk?

For an independently purchased cloud disk, use the file system's UUID or label as the file system ID when configuring the `fstab` static file system information. This will ensure kernel name consistency of the disk on CVM when any cloud disk is detached and re-attached.

If the cloud disk expires before CVM, the cloud disk will be restricted, detached, or even repossessed within a certain period. To prevent business interruption, please note the cloud disk's expiration date and renew it promptly.

Consider using the `nofail` option when configuring `fstab` if detaching a cloud disk from your CVM does not severely impact your core business. This prevents the CVM from reporting an error when it restarts after the cloud disk is detached.

We recommend that you run `san_policy=OnlineAll` in `diskpart` before using the cloud disk in Windows.

When detaching a cloud disk from Windows, we recommend that you first interrupt all read/write operations on the disk, and perform the `offline` operation.

## If a custom image and a data disk snapshot is used, how do I automatically attach the data disk when starting a new instance?

For more information, see the "Automatic Attaching" section in [Attaching Cloud Disks](#).

## How do I purchase a cloud disk?

You can purchase a cloud disk by creating one via the console or an API. For more information, see [Creating Cloud Disks](#).

## How do I view cloud disk details?

1. Log in to the [CBS console](#).
2. At the top of the **Cloud Block Storage** page, select the region where the disk you want to view resides.
3. Locate the disk in the list, and view disk information.

To view more information, click the ID/Name of the disk to enter the details page.

## How do I view the cloud disk usage on the console?

Cloud Monitor will automatically be enabled once a CVM instance is created. You can view the usage of an initialized cloud disk that is attached to CVMs by following the steps below:

1. Log in to the [CVM console](#) and access the **Instances** page.
2. Select the ID/Name of the target instance to access the details page.
3. Click on the **Monitoring** tab to view the instance disk usage.

## What are the most common cloud disk operations?

For more information, see [Operation Overview](#).

## Why can't I locate the CVM to which I want to attach a cloud disk?

Cloud disks cannot be attached across availability zones. Ensure that the CVM instance you want to use has not been released and that it is in the same region and availability zone as your cloud disk.

## Why am I unable to view the new cloud disk capacity that I attached to a CVM instance?

Some Linux CVMs may not recognize an elastic cloud disk. You must first enable the disk hot swapping function in the CVM. For more information, see [Enabling the disk hot swapping feature](#).

After manually attaching a cloud disk, you must perform subsequent operations shown below to make it usable.

Creation mode	Cloud disk capacity	Subsequent operations
Create directly	Cloud disk capacity < 2 TB	<a href="#">Initializing cloud disks (&lt; 2 TB)</a>
	Cloud disk capacity ≥ 2 TB	<a href="#">Initializing cloud disks (≥ 2 TB)</a>

Create from a snapshot	Cloud disk capacity = Snapshot capacity	Attach to a Windows CVM: Log in to the instance, click <b>Server Management &gt; Storage &gt; Disk Management</b> to attach the disk with the CVM. Attach to a Linux CVM: Log in to the instance, run the mount command, such as <pre>mount /dev/vdb /mnt .</pre>
	Snapshot capacity < cloud disk capacity ≤ 2 TB or 2 TB < snapshot capacity < cloud disk capacity	Mounting to a Windows CVM: <a href="#">Expanding partitions and file systems (Windows)</a> Mounting to a Linux CVM: <a href="#">Expanding partitions and file systems (Linux)</a>
	Snapshot capacity ≤ 2 TB < cloud disk capacity	If MBR partition format is used in the snapshot: Refer to <a href="#">Initializing cloud disks (larger than or equal to 2TB)</a> If GPT partition format is used in the snapshot: Mounting to a Windows CVM: <a href="#">Expanding partitions and file systems (Windows)</a> Mounting to a Linux CVM: <a href="#">Expanding partitions and file systems (Linux)</a>

## How do I partition and format the attached cloud disk?

For more information, see [Initializing Cloud Disks \(<2 TB\)](#) or [Initializing Cloud Disks \(≥2 TB\)](#).

## What is the relationship between data writing and partition formatting?

A new data disk or data disk partition must be formatted before use. The disk should also be recorded with the data structure. Formatting the disk establishes a file system on the data disk for data writing. The write-in data size varies by the file systems:

Windows

Linux

Quick formatting: Assign the file system only to partitions and rewrites the directory table with little use of your disk capacity.

Standard formatting: In addition to the quick formatting tasks, normal formatting scans the partitions sector by sector to identify and mark bad sectors, and fills empty blocks in the cloud disk, which means it essentially writes data to the entire disk. Hence, the capacity of the first snapshot approximates that of the cloud disk.

After the cloud disk is formatted and before the instance is written with data, the capacity of the first snapshot depends on the format of the disk file system.

## Can the data disk capacity and the system disk capacity be aggregated?

No. To increase the storage capacity, you need to [expand data disk or system disk](#).

## After expanding my cloud disk, do I need to unmount existing partitions when creating a new independent partition on Linux?

Yes. To do this, please follow the steps below:

1. Run the following command to detach the data disk.

```
umount <Mount point>
```

If the mount point is `/data`, then run the following command:

```
umount /data
```

2. Unmount the file systems from all partitions on the cloud disk, and perform the subsequent operations. You can run the command again to confirm that the unmounting operation is successful.

```
mount | grep '<Disk path>'
```

If the return is null, then all file systems have been unmounted from partitions on the cloud disk.

## Can multiple CVMs access a cloud disk?

No. You can attach up to 20 cloud disks to the same CVM, but you cannot attach one cloud disk to multiple CVMs. To share data in the disk, you can [detach the data disk](#) from the original CVM and then [attach](#) it to the new CVM.

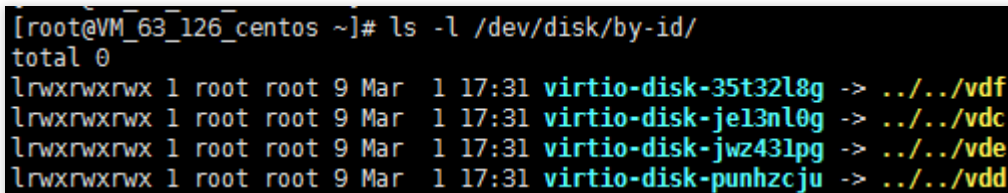
## The cloud disks attached to the CVM is of the same size and type. How can I distinguish them?

Linux

Windows

Check the relationship between the elastic cloud disks and the device name by running the following command:

```
ls -l /dev/disk/by-id
```



```
[root@VM_63_126_centos ~]# ls -l /dev/disk/by-id/  
total 0  
lrwxrwxrwx 1 root root 9 Mar  1 17:31 virtio-disk-35t32l8g -> ../../vdf  
lrwxrwxrwx 1 root root 9 Mar  1 17:31 virtio-disk-jel3nl0g -> ../../vdc  
lrwxrwxrwx 1 root root 9 Mar  1 17:31 virtio-disk-jwz43lpg -> ../../vde  
lrwxrwxrwx 1 root root 9 Mar  1 17:31 virtio-disk-punhzcju -> ../../vdd
```

Check the relationship between the elastic cloud disks and the device name by running the following command:

```
wmic diskdrive get caption,deviceid,serialnumber
```

Or



```
wmic path win32_physicalmedia get SerialNumber,Tag
```

```
C:\Users\Administrator>wmic diskdrive get caption,deviceid,serialnumber
Caption                DeviceID                SerialNumber
Red Hat VirtIO SCSI Disk Device  \\.\PHYSICALDRIVE0     disk-hmvcnqrm
Red Hat VirtIO SCSI Disk Device  \\.\PHYSICALDRIVE1     disk-hmvcnqrm
```

## Can I change a CVM system disk from a local disk to a cloud disk?

Yes. To do this, follow the steps below:

### Note:

Refer to [Creating Custom Images](#) and [Creating Snapshots](#) to back up data before performing operations to ensure data security.

1. Log in to the [CVM console](#) and access the **Instances** page.
2. Select **More > Instance Status > Shutdown** on the right side of the line where the target instance is located to shut down the instance.
3. Select **More > Resource Adjustment > Change Disk Media Type** after shutting down the instance.
4. In the pop-up window, select a target cloud disk type, check **I have read and agree to Rules for Changing Disk Media Type**, and click **Change Now**.
5. Double-check the information, make a payment if applicable, and wait for the process to complete.

### Note:

For more information, see the documentation [Changing Disk Media Type](#).

For more information on payment adjustment, see [Paying the Difference for Disk Media Type Changes](#).

## Can I detach the data disk that purchased together with the CVM?

Yes. You can detach the data disk and attach it to another CVM. In this case, the expiration time of the data disk and CVM may be different, which can bring in difficulties in lifecycle management. You can enable Unified Expiration Time or Auto-renewal to solve the problem.

## I purchased a cloud disk independently to the CVM. But when I terminate the CVM, the cloud disk is released as well.

Check whether **Release with instance** is enabled for the cloud disk. You can disable this feature in the [CBS console](#) or by using the `ModifyDiskAttributes` API.

## What should I do if I lost my data after restarting my Linux instance?

Follow the steps below if you lost all data in a directory (such as /data) after restart due to unmount data disk partitions:

1. Run the `fdisk -l` command to view the unmounted partitions.
2. Run the `mount /dev/vdb /data` command to mount partitions.
3. Run the `df -h` command to see if they are mounted successfully.
4. Complete your [automatic mounting](#) configurations. Then cloud disk will be automatically mounted when you start the Linux instance.

## When I unmount a cloud disk, will its data be lost?

Data in cloud disks will not be modified during mounting or unmounting. To ensure data consistency, we strongly recommend that you follow the steps below:

In Linux, log in to the CVM instance and run the `umount` command on the cloud disk. After the command is executed, log in to the CVM console to unmount the cloud disk.

In Windows, stop all read and write operations on all file systems of the cloud disk before unmounting. Otherwise, the data that has not finished being read or written will be lost.

## How do I detach an elastic cloud disk?

For more information, see [Detaching Cloud Disks](#).

## What happens to the system after my cloud disk expires?

The following instructions are only applicable to elastic cloud disks. The lifecycle of non-elastic cloud disks is the same as the associated CVMs. For more information, see [Payment Overdue](#).

Monthly subscription

Pay-as-you-go

7 days before the resources expiration date, you will receive an expiration alert and a renewal reminder.

If your account balance is sufficient and auto-renewal is enabled, cloud disk will be auto-renewed on the expiry date.

If your cloud disk is not renewed before it expires (including on the expiration date), the system will begin to limit its performance at the point in time of its expiration. When using the cloud disk, you will notice a significant decrease in performance.

If your cloud disk is not renewed within 24 × 7 hours after it expires, the system will suspend its service processing (the cloud disk is unavailable, and can only store data), **force release** its relationship with the CVM (if any), and the cloud disk will be sent to the recycle bin. You can still retrieve the cloud disk from the recycle bin and renew it, but **the start time of the cloud disk that has been renewed and retrieved will be the previous period's expiration date**.

If your cloud disk is not renewed within 24 × 7 hours after it's moved to the recycle bin, resources will be released and data in the expired cloud disk will be erased and **cannot be recovered**.

You can continue to use the pay-as-you-go cloud disk for 2 hours from the moment your account balance becomes negative. You will be billed for this period. After 2 hours, the services will be suspended and cloud disk will only store data. Until data is completely deleted, you will still be billed according to the billing standard even if the account balance is negative.

If your Tencent Cloud account is topped up to a positive balance within 15 days after the cloud disk has its services suspended, the disk can be restored.

If the account balance remains negative for more than 15 days after the cloud disk services are suspended, the pay-as-you-go disk will be repossessed. All data will be erased and **cannot be recovered**. When your cloud disk is repossessed, the Tencent Cloud account creator and all collaborators will receive a notification via email, SMS, and the console Message Center.

Please call 4009100100 if you need further information.

### **Can I change the cloud disk type after a successful purchase?**

No. However, you can create a snapshot for data backup and then use the snapshot to create a cloud disk of your needed type.

### **Can I adjust the cloud disk capacity after a successful purchase?**

Yes. Cloud disks support capacity adjustment. Cloud disk capacity can be [expanded](#), but not reduced.

### **Do I have to shut down the CVM instance before a cloud disk expansion?**

No. Please note that you need to assign the expanded capacity to an existing partition, or format it into an independent new partition. Directions on the operating system of the CVM: [Extending Partitions and File Systems \(Windows\)](#) or [Extending Partitions and File Systems \(Linux\)](#).

### **What are the requirements for extending the file system?**

Only cloud disks support expansion. Local disks cannot be expanded. For more information, see [Cloud Disk Expansion Scenarios](#).

#### **Note:**

We strongly recommend that you create a snapshot before expansion to ensure data security.

If the maximum capacity of the cloud disk cannot meet your business needs, please try [building up RAID groups](#) or [building LVM logical volumes with multiple elastic cloud disks](#).

MBR partition supports disk with a maximum capacity of 2 TB. When you partition disk with a capacity greater than 2 TB, we recommend that you create and mount a new data disk and use the GPT partition format to copy data.

### **How do I expand a cloud disk?**

For more information about expansion operations, see [Cloud Disk Expansion Scenarios](#).

### **Why does the capacity seem unchanged after I expanded my data disk?**

The expansion on the console only increases the storage capacity of the data disk. You also need to log in to your CVM instance and extend the partitions and file systems. For more information, see:

[Extending Partitions and File Systems \(Windows\)](#)

[Extending Partitions and File Systems \(Linux\)](#)

## Do CVMs support CPU/memory expansion?

If the system disk of the CVM is a cloud disk, you can adjust its CPU and memory.

## What should I do if the cloud disk is partitioned in MBR format and cannot be expanded?

MBR partition supports a disk with a maximum capacity of 2 TB. If you need to extend for over 2 TB, it's recommended to create and attach a new data disk and use the GPT partition format.

## What should I do if a cloud disk cannot meet my business requirements even at its maximum capacity?

We recommend you [build up RAID groups](#) or [build LVM logical volumes with multiple elastic cloud disks](#).

## How do I build up a RAID group by using multiple elastic cloud disks?

For more information, see [Building Up RAID Groups](#).

## How do I build LVM logical volumes by using multiple elastic cloud disks?

For more information, see [Building LVM Logic Volumes with Multiple Elastic Cloud Disks](#).

## How do I export the data from a cloud disk?

You can use FTP to upload and download data. For more information, see [Building the FTP Service \(Windows\)](#) and [Building the FTP Service \(Linux\)](#).

## What happens to the data when a CVM is terminated?

The lifecycle of a system disk is the same as that of the CVM. When the CVM is terminated, the data stored in the system disk will also be terminated.

The lifecycle of a data disk (that is, an elastic cloud disk) is independent from that of a CVM. You can decide if an elastic cloud disk and its data will be retained after a CVM expires.

Therefore, we recommend that you use elastic cloud disks to store data that needs to be saved for a long term.

## How can cloud disks be recovered after being formatted?

Cloud disks cannot be recovered after being formatted. We recommend that you [create a snapshot](#) before formatting.

## How do I delete a cloud disk?

The lifecycle of a system disk is the same as the CVM. It can only be deleted when the [CVM instance is terminated](#).

The lifecycle of a data disk (that is, an elastic cloud disk) is independent from that of the CVM. It can be deleted separately. For more information, see [Terminating cloud disks](#).

## Can my system disk be partitioned?

Yes, but we recommend you not partition a system disk.

If you partition the system disk with a third-party tool, system crash or data loss may occur. You can perform partitioning after expanding the system disk capacity. For detailed directions, see [Extending System Disk Partitions and File Systems Online](#).

## How do I update the mounting information at the mount point?

LinuxOS supports the `systemd mount` command which will generate a mounting configuration file on top of the existing `.mount` file. Mounting to the same directory `/run/systemd/generator/` will be affected by this command.

### Problem

Assume you have mounted the data disk vdb to the directory `/opt/apps` (run the `mount -a` command on the fstab file based on disk uuid). Now, you want to mount a new data disk vdc to the same directory and replace the old one. If you directly mount vdc to the directory, you will not be able to read the data.

### Solution

1. Delete the configuration of the corresponding mount point (for example, run the `rm /run/systemd/generator/opt-apps.mount` command).
2. Run the `reload` command (for example, use `systemctl daemon-reload`).
3. Attach the data disk (for example, run the `mount /dev/vdc /opt/apps` command).

## How do I perform 4 KiB alignment for a cloud disk in a Linux instance?

### Checking whether the cloud disk is 4 KiB-aligned.

Run the following command to check whether the cloud disk is 4 KiB-aligned.

```
fdisk -lu
```

As shown below, if the Start value in the command output is divisible by 8, then the disk is 4 KiB-aligned.

Device	Boot	Start	End	Blocks	Id	System
/dev/vdb1		2048	20971519	10484736	83	Linux

### Directions

#### Note:

The alignment operation clears the existing data of the cloud disk; therefore, [create a snapshot](#) before proceeding to avoid data loss.

fdisk tool (MBR partition supported)

parted tool (GPT partition supported)

1. Run the following command to access the fdisk tool.

```
fdisk /dev/vdb
```

2. Enter **n** and press **Enter** to start creating a partition as shown below:

```
Command (m for help): n
Partition type
  p   primary (0 primary, 0 extended, 4 free)
  e   extended (container for logical partitions)
Select (default p):
```

The displayed information indicates that the disk has two partition types:

*p*: Primary partition.

*e*: Extended partition.

3. Take creating a primary partition as an example. Enter **p** and press **Enter** to start creating a primary partition.

```
Select (default p): p
Partition number (1-4, default 1):
```

**Partition number** in the displayed information indicates the number of the primary partition as shown below. Valid range: 1-4.

4. Take selecting partition number 1 as an example. Enter the primary partition number **1** and press **Enter**.

```
Partition number (1-4, default 1): 1
First sector (2048-20971519, default 2048):
```

**First sector** in the displayed information indicates the start sector. Valid range: 2048 (default value) - 125829119.

5. Take selecting the default start sector number 2048 as an example. Press **Enter**.

```
First sector (2048-20971519, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-20971519, default 20971519):
```

**Last sector** in the displayed information indicates the end sector. Valid range: 2048 - 20971519 (default value).

6. Take selecting the default end sector number 20971519 as an example. Press **Enter**.

```
Last sector, +sectors or +size{K,M,G,T,P} (2048-20971519, default 20971519):
Created a new partition 1 of type 'Linux' and of size 10 GiB.
Command (m for help):
```

7. Enter **p** and press **Enter** to view the details of the newly created partition. If the following is displayed, 4 KiB alignment is completed.

```
Command (m for help): p
Disk /dev/vdb: 10 GiB, 10737418240 bytes, 20971520 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0xef409768

Device          Boot Start          End  Sectors  Size Id Type
/dev/vdb1                2048 20971519 20969472   10G 83 Linux

Command (m for help):
```

8. Enter **w** and press **Enter** to write the partition result into the partition table.

1. Run the following command to access the parted tool:

```
parted /dev/vdb
```

2. Run the following command to set the disk partition format to GPT.

```
mklabel gpt
```

3. Enter `unit s` and press **Enter** to set the unit of the disk to sector.

4. Take creating one partition for the entire disk as an example, enter `mkpart opt 2048s 100%` and press **Enter**.

Where, 2048s indicates the initial disk capacity and 100% indicates the final disk capacity. This is for reference only. You can choose the number of disk partitions and their capacities based on business needs.

5. Enter **p** and press **Enter** to check whether the disk partition format has been configured successfully. If the following is displayed, 4 KiB alignment is completed.

```
(parted) p
Model: Virtio Block Device (virtblk)
Disk /dev/vdb: 20971520s
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start   End       Size      File system  Name  Flags
  1      2048s  20969471s 20967424s                opt

(parted)
```

6. Enter **q** and press **Enter** to exit the parted partition tool.

