

Alibaba Cloud Elastic Compute Service

Snapshots

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Generic conventions

Table -1: Style conventions

Style	Description	Example
	This warning information indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	 Danger: Resetting will result in the loss of user configuration data.
	This warning information indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	 Warning: Restarting will cause business interruption. About 10 minutes are required to restore business.
	This indicates warning information, supplementary instructions, and other content that the user must understand.	 Notice: Take the necessary precautions to save exported data containing sensitive information.
	This indicates supplemental instructions, best practices, tips, and other content that is good to know for the user.	 Note: You can use Ctrl + A to select all files.
>	Multi-level menu cascade.	Settings > Network > Set network type
Bold	It is used for buttons, menus, page names, and other UI elements.	Click OK.
Courier font	It is used for commands.	Run the <code>cd / d C :/ windows</code> command to enter the Windows system folder.
<i>Italics</i>	It is used for parameters and variables.	<code>bae log list --instanceid Instance_ID</code>
[] or [a b]	It indicates that it is an optional value, and only one item can be selected.	<code>ipconfig [-all -t]</code>

Style	Description	Example
<code>{}</code> or <code>{a b}</code>	It indicates that it is a required value, and only one item can be selected.	<code>swich {stand slave}</code>

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1 Snapshot overview

A snapshot is a copy of the data stored on a cloud disk or on Shared Block Storage (hereinafter referred to as disks) at a specified point in time. A snapshot is commonly used to back up data, recover data, and create custom images.



Note:

When you create a snapshot, the I/O performance of block storage will be degraded by less than 10%, resulting in an instantaneous I/O speed decrease. Therefore, we recommend that you create snapshots during off-peak hours.

Scenarios

You can create snapshots in the following scenarios:

- Disaster backup: [Create a snapshot for a disk](#) and use the snapshot as base data of another disk.
- Version rollback: [#unique_5](#) if a system error occurs after an upgrade.
- Environment duplication: If you want to purchase an instance that has the same environment as an existing instance, [create a custom image by using the system disk snapshot](#) of the existing instance, and then [create an instance by using the custom image](#).
- Data development: By creating a snapshot of production data, you can provide near-real-time data for data mining, report query, and development, and testing applications.
- Data recovery and restoration:
 - Use a snapshot to recover and restore the data on your disk even if incorrect data is mistakenly stored in the disk, your ECS instance is mistakenly released, an application error results in a data error, or your disk data is hacked.
 - Use a snapshot to regularly back up your critical service data on your disk to eliminate the risk of data loss resulting from incorrect operations, attacks, or virus.
 - Create one or more snapshots when you replace your OS, update your applications, or migrate your service data. This way you can use the snapshots to recover your system data if any failure occurs.

Snapshot types

Snapshots can be categorized into the following types depending on the method to create them:

- **Manual snapshot:** a snapshot that you manually create for a disk.
- **Automatic snapshot:** a snapshot that is created automatically according to an automatic snapshot policy. You can create an automatic snapshot policy and apply it to a disk. For more information, see [#unique_8](#). Then, ECS will create snapshots automatically for the disk at specified points in time.

Snapshots can also be categorized into the following types depending on the portion of data contained within them:

- **Full snapshot:** the first snapshot of a disk that contains the complete data.
- **Incremental snapshot:** a subsequent snapshot after the first snapshot of a disk. An incremental snapshot contains the copied portion of changed data relative to the preceding snapshot. For more information, see [#unique_9](#).

Billing details

The snapshot fee is calculated based on the size of the storage space used by a snapshot. After you create a snapshot for a disk, you can view the snapshot size of the disk by using the Snapshot Chains function in the ECS console. For more information, see [#unique_10](#). You can also view the total snapshot size of a region by using the Snapshot Size function in the ECS console.

For more information about the billing methods and unit price of snapshot storage space, see [#unique_11](#).

Service advantages

The Alibaba Cloud snapshot service provides higher snapshot quotas and more flexible snapshot policies. The following table describes the user benefits and typical scenarios of the service.

Item	Description	User benefit	Typical scenario
Snapshot quota	Each disk has a quota of 64 snapshots.	Longer protection cycle with a finer granularity.	<ul style="list-style-type: none">· A non-critical service data disk creates a snapshot at 0:00 every day . The snapshot can store backup data of more than two months.· A critical service data disk creates a snapshot every four hours. The snapshot can store backup data of more than 10 days.
Automatic snapshot policy	You can customize when a snapshot is created, how often a snapshot is created in a week , and how long a snapshot is stored . You can also query the number and other details relating to the disks associated with automatic snapshot policies.	More flexible protection policies	<ul style="list-style-type: none">· You can select up to 24 specific hour intervals (from 00:00 to 23:00) at which an automatic snapshot is created in each day.· Snapshots can be created automatically on multiple days during a week.· Snapshots can be stored for a specified period of time or stored permanently. When the snapshot quota is reached, the system deletes the oldest snapshot automatically.

Technical advantages

The following table describes the advantages of the Alibaba Cloud ECS snapshot service over traditional snapshot services.

Metric	ECS snapshot service	Traditional snapshot service
Capacity	Unlimited capacity, allowing you to protect all of your service data.	Limited capacity. Only the initially purchased storage capacity is available and only critical service data can be protected.

Metric	ECS snapshot service	Traditional snapshot service
Scalability	Support for Auto Scaling. You can quickly scale in or scale out the number of storage devices in one click.	Lower scalability. Storage scaling is limited by the storage performance, available capacity , and vendor support.
Total Cost of Ownership (TCO)	Charged based on the size of the storage space used by a snapshot .	Incurs charges. You need to spend a large upfront investment and pay for software licenses, reserved storage space , upgrade, and maintenance.
Security	Encryption available. You can set ECS disk encryption whenever necessary to encrypt all of your disk snapshots. However, a non-encrypted snapshot cannot be converted to an encrypted snapshot. Similarly, an encrypted snapshot cannot be converted to a non-encrypted snapshot. For more information, see ECS disk encryption .	Encryption attributes and policies are dependent on the underlying storage logic . Therefore, if the storage architecture has a security design defect, any created snapshots may not be secure as a result.
Impact on performance	Redirect-On-Write (ROW) <ul style="list-style-type: none">· The impact of snapshot tasks on storage I/O performance is reduced.· Snapshots are invisible to users and can be created at any time without affecting user experience.	Copy-On-Write (COW), or other techniques such as ROW. COW has impact on the data write capability of the target system.

2 Snapshot concepts

Alibaba Cloud ECS offers the snapshot service, which allows for the ability to create snapshots for cloud disks and Shared Block Storage (hereinafter referred to as disks) as scheduled operations. Such operations allow you to retain disk data at one or more specific points in time. Snapshots can effectively guarantee service security while also improving your overall application deployment efficiency.

Incremental snapshots

After you format a disk, data blocks are divided based on Logical Blocking Addressing (LBA). All service data that is written in data blocks is measured by using snapshots. The first snapshot of a disk is a full snapshot that does not contain empty data blocks. Subsequent snapshots after the first snapshot are incremental snapshots, which are copies of service data and dirty data generated since the last snapshot. Therefore, each data block is copied multiple times and is stored across multiple snapshots. The following figure illustrates the preceding concepts. In the figure, snapshots 1, 2, and 3 represent the first, second, and third snapshots of a disk.

When a snapshot is created, the file system checks all data blocks, and only the data blocks with data changes are copied to the snapshot.

- Snapshot 1 copies all data on the disk from a specific point in time.
- Snapshot 2 copies only the changed data blocks B1 and C1. Data blocks A and D are taken from snapshot 1.
- Snapshot 3 copies the changed data block B2. Data blocks A and D are taken from snapshot 1, and data block C1 from snapshot 2.
- If you roll back the disk to snapshot 3, the Roll Back Disk feature simultaneously copies data blocks A, B2, C1, and D to the disk to replicate snapshot 3.
- If you delete snapshot 2, data block B1 will be deleted, but data block C1 will be retained because data blocks that are taken by or from other snapshots will not be deleted. Therefore, if you roll back a disk to snapshot 3, data block C1 will be recovered.

Snapshot chain

A snapshot chain contains all the snapshots of a disk. Each disk has a snapshot chain, whose ID is identical to the disk ID. A snapshot chain records the reference relationships among data blocks and contains the following information:

- **Snapshot capacity:** the storage space occupied by all snapshots in the snapshot chain.



Note:

The snapshot service is billed by snapshot capacity. You can use the snapshot chain to check the snapshot capacity of each disk.

- **Snapshot quota:** Each disk can have up to 64 snapshots. For more information, see [Limits](#).



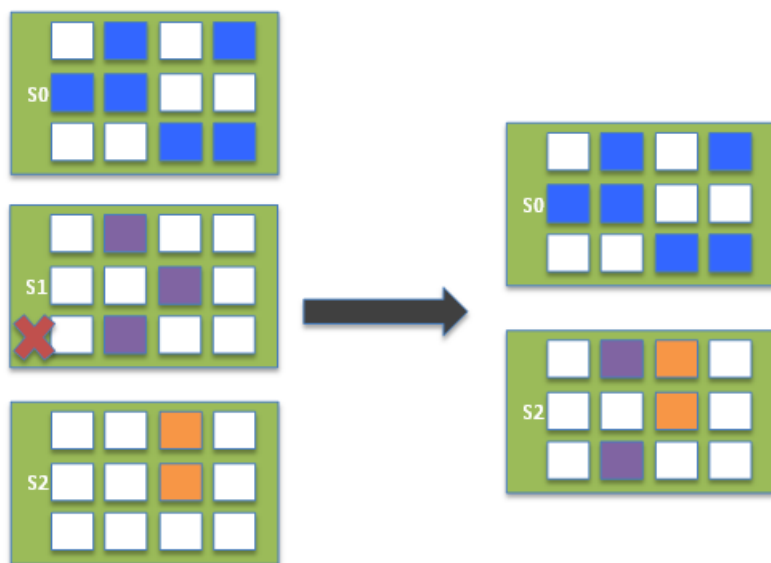
Note:

If the snapshot quota is reached, but you need to create more automatic snapshots, the system will automatically delete automatic snapshots, starting with the oldest one first. If you want to create snapshots manually, then you must first delete unnecessary snapshots manually. For more information, see [Apply automatic snapshot policies to disks](#) and [Delete snapshots or automatic snapshot policies](#) in the *User Guide*.

- **Snapshot node:** Each node in the snapshot chain represents a snapshot of a disk. Each snapshot chain can have up to 64 snapshot nodes, including both manual snapshots and automatic snapshots.

Snapshot deletion

If you no longer need a snapshot, you can delete it. Note that if the number of snapshots exceeds the snapshot quota, you must delete some snapshots to release storage space. The following figure shows the workflow and logic for when you delete a snapshot from a snapshot chain. In this example, snapshot S1 is deleted.



1. Alibaba Cloud ECS conducts an offline analysis on all the data blocks in snapshot S1 to be deleted, and then deletes the data blocks that are not taken by other snapshots in the snapshot chain.
2. Alibaba Cloud ECS adds the dirty data blocks of snapshot S1 to snapshot S2. Other snapshots record the information of 10 data blocks altogether:
 - Six of the data blocks of snapshot S0
 - Two of the dirty data blocks of snapshot S1
 - Two of the data blocks of snapshot S2

3 Use snapshots

3.1 Activate ECS Snapshot

You must activate the Alibaba Cloud ECS Snapshot service before you can create snapshots.

Procedure

1. Log on to the [ECS console](#).
2. In the left-side navigation pane, choose Storage & Snapshots > Snapshots.
3. View the statement on the Notifications page that appears, and click OK to activate the ECS Snapshot service.



Note:

After you activate ECS Snapshot, you are billed based on the size and storage duration of the created snapshot. Snapshot fees will be deducted from your account balance. Make sure you have compared the snapshot size and the expected fees. For more information about snapshot billing, see [Pricing](#).

What's next

[Create a snapshot](#)

3.2 Create a snapshot

This topic describes how to create a snapshot. A snapshot is a copy of data on a disk at a specific point in time. Snapshots are commonly used to back up data and create custom images.

Scenarios

You can create a snapshot in data backup scenarios to eliminate the risk of data loss. Specifically, you can create a snapshot if you need to:

- Modify critical system files.
- Back up service data.
- Recover mistakenly released instances.
- Mitigate network attacks.

- Change the operating system.
- Provide data support for a production environment.

Additionally, you can use a snapshot to [create a custom image](#) to quickly deploy an application environment for a large number of ECS instances.

Limits

- Snapshots are charged based on the storage resources you actually use. For more information, see [#unique_11](#).
- Creating a snapshot may have a slight impact on disk performance and I/O speeds. We recommend that you create snapshots during off-peak hours.
- A snapshot only records data at a specific point in time. Therefore, incremental data generated when the snapshot is created will not be synchronized to the snapshot.
- To ensure that a snapshot is successfully created, we recommend that you do not modify the ECS instance status (that is, stop or restart the instance) when the snapshot is being created.
- If you want to create a snapshot of an instance, the instance must be in the Running or Stopped state.
- If you want to create a snapshot of a cloud disk, the disk must be in the In Use or Expired state.



Note:

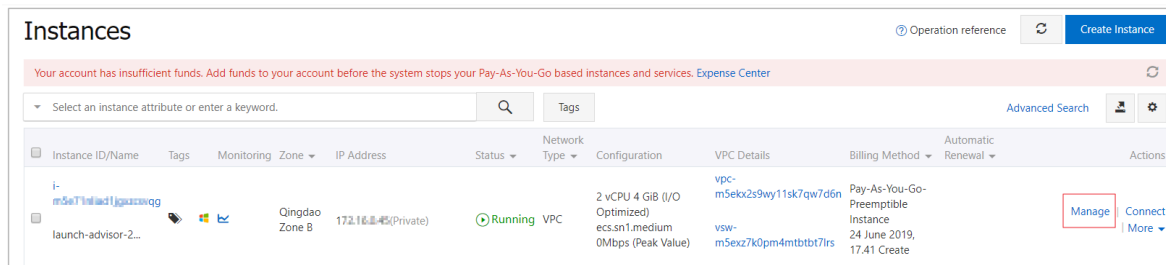
A snapshot being created for a cloud disk in an Expired state will be released at the same time the cloud disk is released.

- Manually created snapshots can only be manually deleted. Therefore, you need to delete unnecessary snapshots regularly to prevent these snapshots from incurring fees. For more information, see [#unique_21](#).
- If you create an extended volume by using a multi-partition single disk, the snapshot that you created can be used to [roll back the disk](#).
- If you create a dynamic extended volume by using multiple disks and no I/O operation is performed on data in the volume, the snapshot that you created can be used to roll back the disk. If I/O operations are continuously performed in the extended volume, data consistency of the rolled-back disk is uncertain.

Create a snapshot in the ECS console

To create a snapshot in the ECS console, follow these steps:

1. Find the instance for which you want to create a snapshot, and then click **Manage** in the **Actions** column.

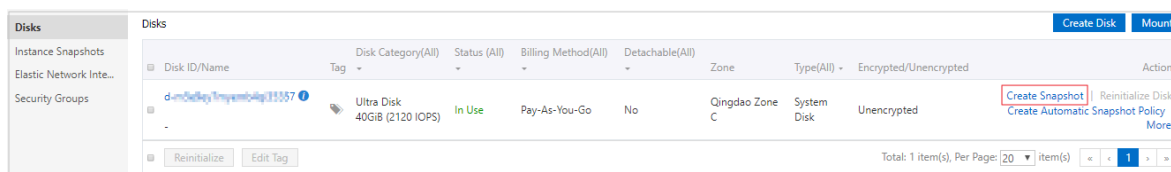


2. In the left-side navigation pane, click **Disks**, find the target disk, and then click **Create Snapshot**.



Note:

You can select only one disk at a time. The Type can be a system disk or a data disk.



3. Enter a name for the snapshot and click **OK**.



4. In the left-side navigation pane, click **Instance Snapshots**. The snapshot creation progress, estimated time remaining, and snapshot status are displayed.



You can also create a snapshot as indicated on the **Storage & Snapshots > Disks** page.

Create a snapshot by using an API

The following procedure describes how to use Alibaba Cloud CLI to call API actions to create a snapshot. For more information, see [Quick start for ECS APIs](#).

1. Obtain the instance ID.

- If you have remotely connected to an ECS instance, you can obtain the instance ID by using [metadata](#). For example, to query the ID of a Linux instance, run the following command:

```
curl http://100.100.100.200/2016-01-01/meta-data/instance-id
```

- In your local computer, you can obtain the instance ID by calling [DescribeInstances](#):

```
aliyun ecs DescribeInstances -- output cols = InstanceId, InstanceName
```

2. Obtain the disk ID by calling the API [#unique_26](#):

```
aliyun ecs DescribeDisks -- RegionId cn-hangzhou -- InstanceId 'i-0xi1ioe*****166cq' -- output cols = DiskId
```

3. Call [CreateSnapshot](#) to create a snapshot based on the disk ID:

```
aliyun ecs CreateSnapshot -- DiskId d-bp19pjyf12hebpXXXXXX
```

The snapshot-creating task is initiated if the following information is returned:

```
{"RequestId":"16B856F6-EFFB-4397-8A8A-CB73FAXXXX XX","SnapshotId":"s-bp1afnc98r-8kjhXXXXXX"}
```

- Call [DescribeSnapshots](#) to query the progress. When "SnapshotId"="s-bp1afnc98r-8kjhXXXXXX" and "Status":"accomplished" are displayed, it means that the snapshot has been created.

```
aliyun ecs DescribeSnapshots -- RegionId cn-hangzhou -- InstanceId i-bp1afnc98r-8k69XXXXXX -- output cols = SnapshotId, Status
```

Time required

The time required for creating a snapshot is dependent on the capacity of the disk.

Following the content covered in [Snapshot concepts](#), the first disk snapshot is a full snapshot, and therefore its creation requires a relatively long period of time. In contrast, subsequent snapshots require shorter periods of time. The amount of time needed to create subsequent snapshots is dependent on the amount of data generated since the last snapshot. Generally, the greater the amount of data, the longer time it will take to create the snapshot.

What to do next

After you create a snapshot, you can:

- [Roll back a cloud disk.](#)
- [Create a cloud disk by using the snapshot.](#)
- [Create a custom image by using the snapshot.](#)

3.3 Roll back a disk by using a snapshot

This topic describes how to roll back a disk by using a snapshot. You can perform a disk rollback when your OS is unresponsive, when an incorrect operation was performed, or when rolling back an application version is required. After you roll back the system disk, the current key pair or password of the corresponding instance is attached automatically.



Warning:

Before you roll back a disk, [create a snapshot](#) of the disk to ensure that you can perform data recovery if needed. Disk rollback is irreversible. Exercise caution when performing this action.

Prerequisites

- A snapshot of the disk to be rolled back is created, and no new snapshot is being created for the disk. For more information, see [created a snapshot](#).
- The disk has not been released.
- The disk to be rolled back is attached to an ECS instance, and the corresponding instance is stopped. For more information, see [Attach to an ECS instance](#) and [Stop an instance](#).

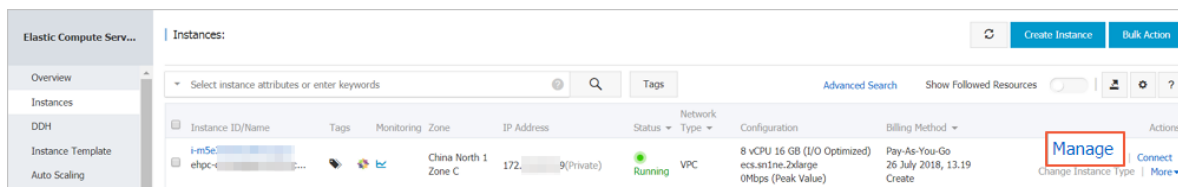


Note:

- After you [replace the system disk](#), old system disk snapshots cannot be used to roll back the new system disk.
- Pay-As-You-Go VPC instances may not be restarted in [No fees for stopped VPC instances](#) mode after you roll back the disk. We recommend that you disable No fees for stopped VPC instances before you stop the instance.

Procedure

1. Log on to the [ECS console](#).
2. In the left-side navigation pane, click Instances.
3. Select the target region.
4. Locate the instance whose disk you want to roll back, and then click Manage.



5. In the left-side navigation pane, click Instance snapshots.
6. Select the target snapshot, and then click Roll Back Disk in the Actions column.



Note:

Only one disk can be rolled back at a time. When you roll back a disk, other disks attached to the instance are not affected. After the rollback, the entire disk (rather than a partition or a directory) recovers to its status at a specified point in time.

7. In the displayed dialog box, click OK.



Note:

If you select Start Instance After Disk Rollback, the instance is restarted after you roll back the disk.

Related APIs

[#unique_37](#)

What to do next

If you create a snapshot of a disk and then you scale out the disk, you need to log on to the instance to expand the capacity of the file system after disk rollback. For more information, see:

- [Linux - Resize a data disk.](#)
- [Windows - Resize a data disk.](#)

3.4 Reduce snapshot fees

This topic describes how to manage your snapshots and reduce snapshot fees.

Maintain an appropriate number of snapshots

The snapshot fee is based on the amount of storage space used by the snapshots. More snapshots require more disk storage space and result in higher snapshot fees. We recommend that you maintain an appropriate number of snapshots for your specific service requirements. The following table lists recommended retention periods for different scenarios.

Scenario	Snapshot creation frequency	Retention period	Description
Core application	Once every day or every other day	Several months or longer	We recommend that you create and store snapshots based on data importance.
Non-core application	Once every week or every other week	Several days or weeks	We recommend that you create and store snapshots based on data importance.
System disk	Whenever needed	One or two snapshots	We recommend that you do not store critical application data in the system disk.
Software upgrade		Delete snapshots immediately after they are used.	We recommend that you delete snapshots immediately after they are used to reduce fees.
Modification of critical files			
Migration of application data			
Test environment			

Delete snapshots

You can delete snapshots that are no longer needed to free up space or when the maximum number of snapshots has been reached. For more information, see [#unique_41](#).

Disable unnecessary snapshot policies

You can disable unnecessary snapshot policies to avoid redundancy and reduce the amount of storage space used by snapshots. For more information, see [#unique_8](#).



Note:

To improve the operation error tolerance of your services, we recommend that you retain at least one snapshot policy for core services.

3.5 View the snapshot size

This topic describes how to view the size of all snapshots on a single disk or under a single Alibaba Cloud region.

Prerequisite

At least one snapshot of a disk is created. For more information, see [Create a snapshot](#).

View the snapshot size of a single disk

A snapshot chain records the reference relationships among all the snapshots in a cloud disk or in a shared block storage device (hereinafter referred to as disk). Each disk contains a snapshot chain, whose ID is identical to the disk ID. Additionally, each snapshot chain contains a number of relationships among data blocks. To view the size of all snapshots in a disk, follow these steps:

1. Log on to the [ECS console](#).
2. Select the target region.
3. In the left-side navigation pane, choose Snapshots and Images > Snapshots.
4. Locate the disk ID of the target snapshot.

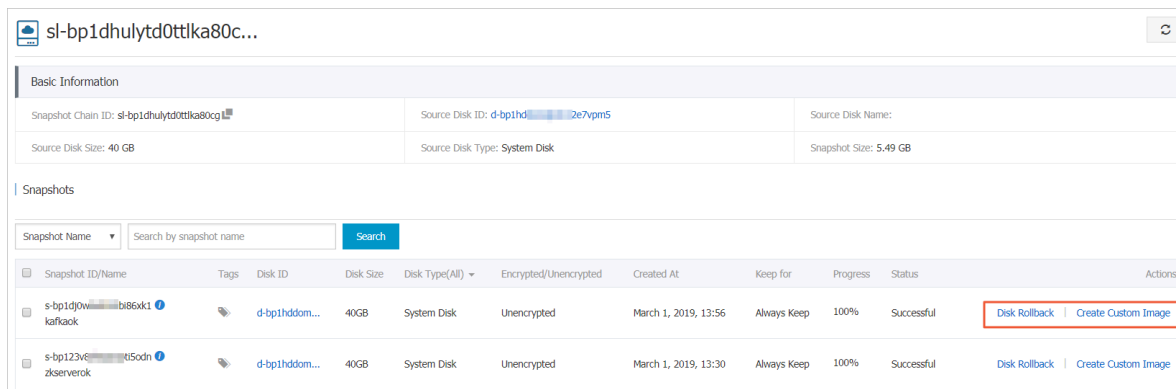


Note:

At least one snapshot must be created for the disk.

5. In the left-side navigation pane, click Snapshot Chains.

6. View the number and size of all snapshots in the disk according to the disk ID obtained in step 4.
7. (Optional) In the Actions column of the snapshot chain, click Details to open the Snapshot Chain Details dialog box. You can check the snapshot details of the disk and [roll back a cloud disk](#) or [create a custom image by using a snapshot](#).



Related API: [DescribeSnapshotLinks](#).

View the snapshot size of a region

To view the size of all the snapshots in a region, follow these steps:

1. Log on to the [ECS console](#).
2. Select the target region.
3. In the left-side navigation pane, choose Snapshots and Images > Snapshots.
4. Set the time duration.



Note:

You can at most query what changes occurred to the snapshot size in the past 15 days.

You can view the size of all snapshots created in the specified time duration in the selected region.

Related API: [DescribeSnapshotsUsage](#).

3.6 Delete a snapshot

You can delete snapshots that are no longer needed to free up space or when the maximum number of snapshots has been reached. This topic describes the procedure

to delete a snapshot in the ECS console. This procedure applies to both manual snapshots and automatic snapshots.

Prerequisites

- You have created a snapshot. For more information, see [#unique_32](#).
- If a snapshot has been used to create custom images, you must delete those custom images before the snapshot can be deleted. For more information, see [#unique_46](#).

Procedure

1. Log on to the [ECS console](#).
2. In the left-side navigation pane, choose Storage & Snapshots > Snapshots.
3. In the top navigation bar, select a region.
4. Select one or more snapshots to be deleted and click Delete at the bottom of the page.
5. In the Delete dialog box that appears, select Delete or Force Delete.



Note:

To delete snapshots that have been used to create cloud disks, you must select Force Delete and then Proceed to Forcibly Delete. After a snapshot is deleted, you cannot perform operations that depend on the status of the original snapshot data, such as the operation to [reinitialize a cloud disk](#).

6. Click OK.

More information

[#unique_48](#)

4 Automatic snapshot policies

4.1 Automatic snapshot policy overview

Automatic snapshot policies allow snapshots to be created regularly. These policies can be applied to both system disks and data disks. Automatic snapshot policies improve data security and operation error tolerance.

Scenarios

Automatic snapshot policies allow snapshots to be created regularly at the scheduled time. These policies can protect disk data and improve system security and operation error tolerance. When your applications such as personal website or databases deployed on an ECS instance encounter security attacks or system vulnerabilities, you may not be able to manually create snapshots. In these cases, you can then use the most recent automatic snapshot to roll back affected cloud disks and reduce losses.

You can also specify an automatic snapshot policy to create snapshots before regular system maintenance tasks. This eliminates the need to manually create snapshots and ensure that snapshots are not forgotten to be created.

Limits

Note the following points when you use automatic snapshot policies:

- An account can have up to 100 automatic snapshot policies in a single region.
- When the maximum number of snapshots is reached, the earliest automatic snapshot will be deleted automatically. This does not apply to manual snapshots.
- Modifying the snapshot retention period of an automatic snapshot policy will only affect new snapshots created after the modification. The retention period of existing snapshots will not be modified.
- You cannot create manual snapshots while an automatic snapshot is being created. You must wait until after the automatic snapshot has been created.
- You can only apply automatic snapshot policies to cloud disks that are in the In Use state.
- Automatic snapshot policies cannot be applied to local disks.

Related operations

- [#unique_51](#)
- [#unique_8](#)
- [#unique_52](#)
- [Modify an automatic snapshot policy](#)
- [#unique_54](#)

Related APIs

- [#unique_55](#)
- [#unique_56](#)
- [#unique_57](#)
- [#unique_58](#)
- [#unique_59](#)
- [#unique_60](#)

4.2 Create an automatic snapshot policy

This topic describes how to create an automatic snapshot policy in the ECS console.

Prerequisites

The snapshot feature has been enabled. For more information, see [#unique_62](#).

Procedure

1. Log on to the [ECS console](#).
2. In the left-side navigation pane, choose Storage & Snapshots > Snapshots.
3. In the top navigation bar, select a region.
4. On the Snapshots page, click the Automatic Snapshot Policies tab.
5. In the upper-right corner of the Automatic Snapshot Policies page, click Create Policy.
6. In the Create Policy dialog box that appears, configure the following parameters as prompted.
 - Name: specifies the policy name.
 - Executed At: Select one or more points in time from 00:00 to 23:00.



Note:

Creating a snapshot may temporarily reduce the I/O performance of a block storage device by about 10%. We recommend that you create snapshots during off-peak hours.

- **Execution Frequency:** Select one or more days of the week.
- **Keep Snapshots:** specifies the number of days to retain the snapshot. Valid values: 1 to 65,536. Default value: 30. If you select Always Keep and the

maximum number of snapshots is reached, the system will delete the earliest automatic snapshot.

Create Policy

- ECS Snapshot 2.0 allows you to create up to 64 snapshots for each disk. When the number of snapshots for a disk has reached the maximum limit, the system automatically overwrites the oldest snapshot with the newly created one.
- The system automatically creates snapshots at the specified time. However, the system cannot start a new snapshot creation task until it finishes the previous task. For example, an automatic snapshot policy is configured to create snapshots at 9:00, 10:00, and 11:00. If the system does not finish the first snapshot creation task until 10:10, the system skips the second task that has been scheduled to execute at 10:00, and waits until 11:00 to execute the third task.
- By default, the automatic snapshot policies use UTC+8. You can change the time zone as needed.

*Name:

SnapshotPolicyUserGuide

The name must be 2 to 128 characters in length and can contain periods (.), underscores (_), hyphens (-), and colons (:). It cannot start with a special character or digit.

*Executed At:

☐ 00:00☐ 01:00☐ 02:00☐ 03:00☐ 04:00☐ 05:00☐ 06:00

☐ 07:00☐ 08:00☐ 09:00☐ 10:00☐ 11:00☐ 12:00☐ 13:00

☐ 14:00☐ 15:00☐ 16:00☐ 17:00☐ 18:00☐ 19:00☐ 20:00

☐ 21:00☐ 22:00☒ 23:00

*Execution Frequency:

☐ Monday☐ Tuesday☐ Wednesday☐ Thursday☒ Friday

☐ Saturday☐ Sunday

Keep Snapshots:

☒ Keep For

60

Days (1 to 65535)

☐ Always Keep

Modifying the retention time does not affect existing snapshots.
It only affects newly created snapshots.

OK

Cancel

7. Click OK.

What's next

Issue: 20190817

21

We recommend that you specify cloud disks to execute an automatic snapshot policy immediately after the policy is created. Click **Apply Policy** in the **Actions** column corresponding to the new policy to go to the **Create Automatic Snapshot Policy** page. For more information, see [#unique_8](#).

More information
[#unique_55](#)

4.3 Apply or disable an automatic snapshot policy

You can apply automatic snapshot policies to cloud disks. When the policy is applied, snapshots are created based on the settings of the automatic snapshot policy.

Prerequisites

You have created at least one automatic snapshot policy. For more information, see [#unique_51](#).

Method 1: Apply or disable an automatic snapshot policy on the Snapshots page

On the Snapshots page of the ECS console, you can apply or disable an automatic snapshot policy on the system disk or a data disk.

1. Log on to the [ECS console](#).
2. In the left-side navigation pane, choose **Storage & Snapshots > Snapshots**.
3. In the top navigation bar, select a region.
4. On the Snapshots page, click the **Automatic Snapshot Policies** tab.
5. On the Automatic Snapshot Policies page, find the automatic snapshot policy to be applied and click **Apply Policy** in the **Actions** column.
6. On the Create Automatic Snapshot Policy page, click the **Disks without Policy Applied** tab.
 - The procedure to apply an automatic snapshot policy: Click the **Disks without Policy Applied** tab. Find the disk to which you want to apply the automatic

snapshot policy and click **Apply Policy**. Alternatively, select multiple disks and click **Apply Policy** at the bottom of the page.

Create Automatic Snapshot Policy

After you have applied the policy, the system will automatically create snapshots based on your settings, including the creation time, frequency, and snapshot storage duration.

Disks without Policy Applied Disks with Policy Applied

<input type="checkbox"/>	d-bp1- np2iodx9l	i-bp- cgw0e6g1q	Ultra Disk 40GiB	System Disk	Apply Policy
<input type="checkbox"/>	d-bp1- 0d3sbpxap	i-bp- 5219qfxp	Ultra Disk 40GiB	System Disk	Apply Policy
<input type="checkbox"/>	d-bp1- nycmi4voqy	i-bp- g3pgjez	Ultra Disk 20GiB	Data Disk	Apply Policy
<input type="checkbox"/>	d-bp1- xqcut6dix	i-bp- g3pgjez	Ultra Disk 40GiB	System Disk	Apply Policy
<input type="checkbox"/>	d-bp1- 4dsebz3p6r	i-bp- k818a03k	Ultra Disk 40GiB	System Disk	Apply Policy

Cancel

- The procedure to disable an automatic snapshot policy: Click the **Disks with Policy Applied** tab. Find the disk to which the automatic snapshot policy is applied and click **Disable Policy**. Alternatively, select multiple disks and click **Disable Policy** at the bottom of the page.

Create Automatic Snapshot Policy

After you have applied the policy, the system will automatically create snapshots based on your settings, including the creation time, frequency, and snapshot storage duration.

Disks without Policy Applied **Disks with Policy Applied**

Disk Name Search by disk name. Search

<input type="checkbox"/>	ID/Name	Instance ID/Name	Disk Type(All)	Type(All)	Actions
<input type="checkbox"/>	d-bp1- w64udjx	-	SSD 20GiB	Data Disk	Disable Policy

☐ Disable Policy Total: 1 item(s), Per Page: 20 item(s) « < 1 > »

Cancel

7. In the upper-right corner of the Create Automatic Snapshot Policy page, click the



icon to finish this process.

Method 2: Apply an automatic snapshot policy when creating an instance

When creating an ECS instance, you can apply an existing automatic snapshot policy to the system disk or a data disk.

1. Log on to the [ECS console](#).
2. In the left-side navigation pane, choose Instances & Images > Instances.
3. In the upper-right corner of the Instances page, click Create Instance. For more information about how to create an ECS instance, see [#unique_64](#).

In the Storage section of the Basic Configurations page, select Apply Automatic Snapshot Policy for the system disk or a data disk and then select an automatic snapshot policy.

Method 3: Apply an automatic snapshot policy when creating a cloud disk

You can apply an automatic snapshot policy to a cloud disk when the disk is being created.

1. Log on to the [ECS console](#).
2. In the left-side navigation pane, choose Storage & Snapshots > Disks.
3. In the upper-right corner of the page, click Create Disk. For more information about how to create a cloud disk, see [#unique_65](#) or [#unique_66](#).

Select Apply Automatic Snapshot Policy and then an automatic snapshot policy.

Method 4: Apply or disable an automatic snapshot policy on the Disks page

On the Disks page of the ECS console, you can apply or disable an automatic snapshot policy on the system disk or a data disk.

1. Log on to the [ECS console](#).
2. In the left-side navigation pane, choose Storage & Snapshots > Disks.
3. In the top navigation bar, select a region.
4. Find the automatic snapshot policy to be applied or disabled and click Create Automatic Snapshot Policy in the Actions column.
5. On the Create Automatic Snapshot Policy dialog box that appears, turn on or off the Automatic Snapshot Policy switch.

6. Click OK.

Result

After you apply or disable an automatic snapshot policy on the system disk or a data disk, you can view the changed number in the Applied Disks column on the Automatic Snapshot Policies page.

At the scheduled creation time, a snapshot with the auto2.0 prefix will be added. Snapshots created with automatic snapshot policies use a uniform auto2.0_yyyyMMdd_SnapshotPolicyId naming format. For example, the auto2.0_20170731_sp-m5e2w2jutw8bv31***** name indicates that the automatic snapshot was created on July 31, 2017.

- auto2.0: indicates an automatic snapshot.
- yyyyMMdd: the date when the snapshot is created. yyyy stands for year, MM for month, and dd for day.
- SnapshotPolicyId: the ID of the automatic snapshot policy used.

More information

[#unique_67](#)

[#unique_68](#)

[#unique_69](#)

[#unique_70](#)

4.4 Delete automatic snapshots when releasing a disk

You can enable the delete automatic snapshots when releasing a disk feature to delete automatic snapshots of a disk when the disk is released and reduce the amount of disk space occupied by snapshots.

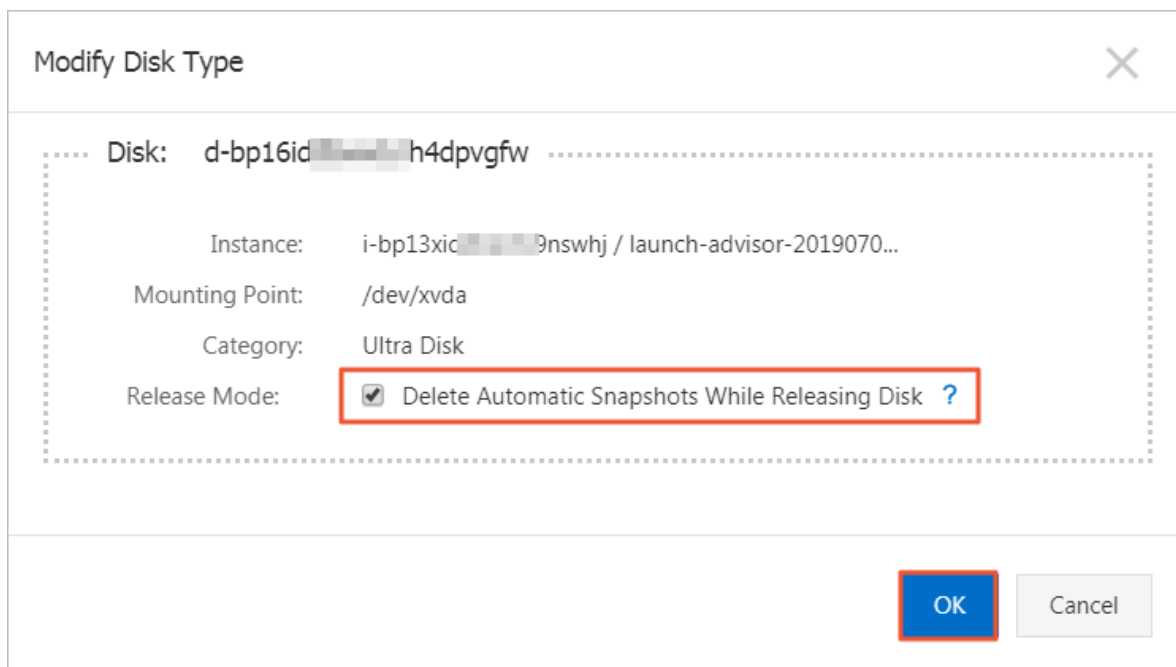
Prerequisites

- You have created at least one automatic snapshot policy. For more information, see [#unique_51](#).
- You have applied an automatic snapshot policy to a cloud disk. For more information, see [#unique_8](#).

Procedure

1. Log on to the [ECS console](#).
2. In the left-side navigation pane, choose Storage & Snapshots > Disks.
3. In the top navigation bar, select a region.

4. Find the cloud disk for which you want to enable the feature, choose More > Modify Disk Property in the Actions column.
5. In the Modify Disk Property dialog box that appears, select or clear Delete Automatic Snapshots While Releasing Disk.



Modify Disk Type

Disk: d-bp16id...h4dpvgfw

Instance: i-bp13xic...9nswhj / launch-advisor-2019070...

Mounting Point: /dev/xvda

Category: Ultra Disk

Release Mode: ☒ Delete Automatic Snapshots While Releasing Disk ?

OK Cancel

**Note:**

When you clear Delete Automatic Snapshots While Releasing Disk, the retention period of the automatic snapshot policy applies. You can also modify the retention period of the automatic snapshot policy. For more information, see [Modify an automatic snapshot policy](#).

6. Click OK.

More information

[#unique_72](#)

4.5 Modify an automatic snapshot policy

You can modify the name, creation time, execution frequency, and retention period of an automatic snapshot policy at any time after the policy is created.

Prerequisites

You have created at least one automatic snapshot policy. For more information, see [#unique_51](#).

Procedure

1. Log on to the [ECS console](#).
2. In the left-side navigation pane, choose Storage & Snapshots > Snapshots.
3. In the top navigation bar, select a region.
4. On the Snapshots page, click the Automatic Snapshot Policies tab.
5. On the Automatic Snapshot Policies page, find the automatic snapshot policy to be modified and click Modify Policy in the Actions column.
 - Name: specifies the policy name.
 - Executed At: Select one or more points in time from 00:00 to 23:00.

**Note:**

Creating a snapshot may temporarily reduce the I/O performance of a block storage device by about 10%. We recommend that you create snapshots during off-peak hours.

- Execution Frequency: Select one or more days of the week.
- Keep Snapshots: specifies the number of days to retain the snapshot. Valid values: 1 to 65,536. Default value: 30. If you select Always Keep and the maximum number of snapshots is reached, the system will delete the earliest automatic snapshot.

**Note:**

Modifying the snapshot retention period of an automatic snapshot policy will only affect new snapshots created after the modification. The retention period of existing snapshots will not be modified.

Modify Policy

×

- ECS Snapshot 2.0 allows you to create up to 64 snapshots for each disk. When the number of snapshots for a disk has reached the maximum limit, the system automatically overwrites the oldest snapshot with the newly created one.
- The system automatically creates snapshots at the specified time. However, the system cannot start a new snapshot creation task until it finishes the previous task. For example, an automatic snapshot policy is configured to create snapshots at 9:00, 10:00, and 11:00. If the system does not finish the first snapshot creation task until 10:10, the system skips the second task that has been scheduled to execute at 10:00, and waits until 11:00 to execute the third task.
- By default, the automatic snapshot policies use UTC+8. You can change the time zone as needed.

*Name:

EcsUserGuide-SnapshotPolicy

The name must be 2 to 128 characters in length and can contain periods (.), underscores (_), hyphens (-), and colons (:). It cannot start with a special character or digit.

*Executed At:

☐ 00:00 ☒ 01:00 ☐ 02:00 ☐ 03:00 ☐ 04:00 ☐ 05:00 ☐ 06:00
☐ 07:00 ☐ 08:00 ☐ 09:00 ☐ 10:00 ☐ 11:00 ☐ 12:00 ☐ 13:00
☐ 14:00 ☐ 15:00 ☐ 16:00 ☐ 17:00 ☐ 18:00 ☐ 19:00 ☐ 20:00
☐ 21:00 ☐ 22:00 ☐ 23:00

*Execution Frequency:

☒ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☒ Friday
☐ Saturday ☐ Sunday

Keep Snapshots:

☒ Keep For

60

 Days (1 to 65535)
☐ Always Keep

Modifying the retention time does not affect existing snapshots.
It only affects newly created snapshots.

6. Click OK.

More information

[#unique_74](#)

4.6 Delete an automatic snapshot policy

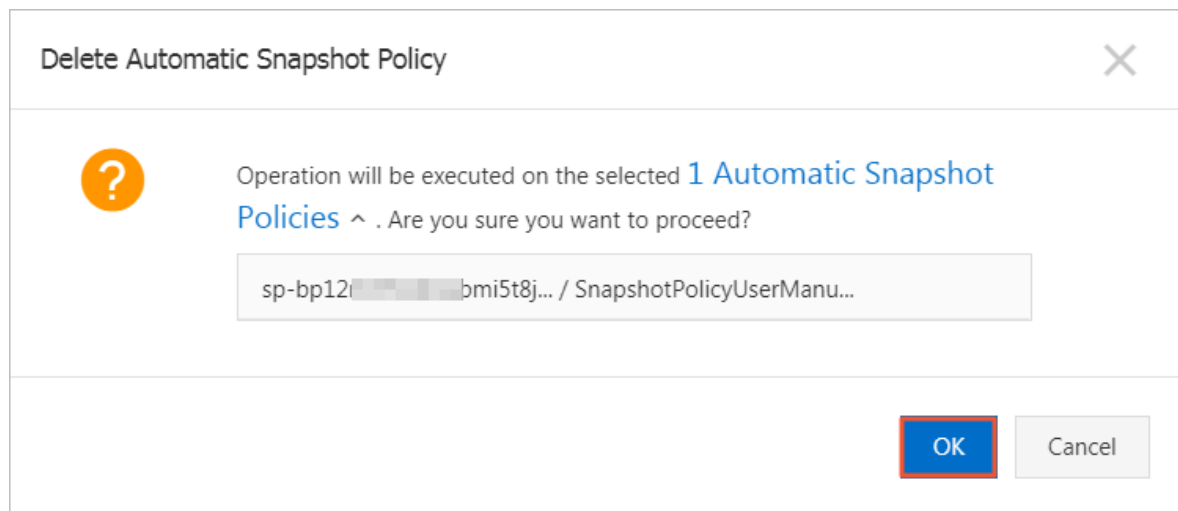
You can delete automatic snapshot policies that are no longer needed. When you delete the policy, all cloud disks to which the policy was applied are no longer affected.

Prerequisites

You have created at least one automatic snapshot policy. For more information, see [#unique_51](#).

Procedure

1. Log on to the [ECS console](#).
2. In the left-side navigation pane, choose Storage & Snapshots > Snapshots.
3. In the top navigation bar, select a region.
4. On the Snapshots page, click the Automatic Snapshot Policies tab.
5. Find the automatic snapshot policy to be deleted and click Delete Policy in the Actions column.
6. In the message that appears, click OK.



More information
[#unique_76](#)

5 Snapshot FAQ

This topic lists FAQ related to ECS snapshots.

- **OSS-related questions**
 - [#unique_78/unique_78_Connect_42_section_wnf_qh1_4gb](#)
 - [Can a custom image that was created from a snapshot be saved to an OSS bucket?](#)
- **Billing-related questions**
 - [How is the storage fee for snapshots calculated?](#)
 - [#unique_77/unique_77_Connect_42_section_27q_hxw_8v0](#)
 - [Where can I view a list of snapshot prices by Alibaba Cloud region?](#)
 - [What impact will unpaid bills have on snapshots?](#)
 - [I use snapshots frequently. How can I reduce the amount of fees incurred?](#)
- **Snapshot and block storage type-related questions**
 - [Are automatic snapshots different from or in conflict with manual snapshots?](#)
 - [Can I create snapshots for local disks?](#)
 - [I have created a snapshot for an encrypted data disk and generated an image but cannot share the image. Why?](#)
- **Snapshot capacity-related questions**
 - [Will deleting files in an ECS instance free up storage space?](#)
 - [Why is the snapshot size larger than the disk size displayed in the file system?](#)
 - [What is the relationship between a file system and a cloud disk or a snapshot?](#)
- **Snapshot deletion-related questions**
 - [How can I prevent snapshots from being deleted by Alibaba Cloud?](#)
 - [Can snapshots be deleted to reduce backup costs?](#)
 - [Will automatic snapshots be deleted after the system disk is changed, the instance expires, or the cloud disk is released?](#)
 - [How can I delete snapshots that have been used to create images and cloud disks?](#)

- Automatic snapshot policy-related questions
 - [If I have used an automatic snapshot to create a custom image or a cloud disk, will the automatic snapshot policy fail to be executed?](#)
 - [Can I create multiple snapshot policies for a cloud disk?](#)
- Disk rollback with snapshot-related questions
 - [How can I avoid losing data due to misoperations?](#)
 - [After you change the system disk, can a snapshot of a previous system disk be used to roll the new system disk back?](#)

If I have activated OSS, will snapshots automatically be saved to my OSS buckets?

No. Snapshots will not automatically be saved to existing OSS buckets. The storage location of snapshots is independent of existing OSS buckets. You do not need to create new buckets for snapshots.

Can a custom image that was created from a snapshot be saved to an OSS bucket?

Yes. You can export the image to your OSS bucket to download in the future. For more information, see [#unique_79](#). However, custom images cannot be directly stored to the OSS bucket.

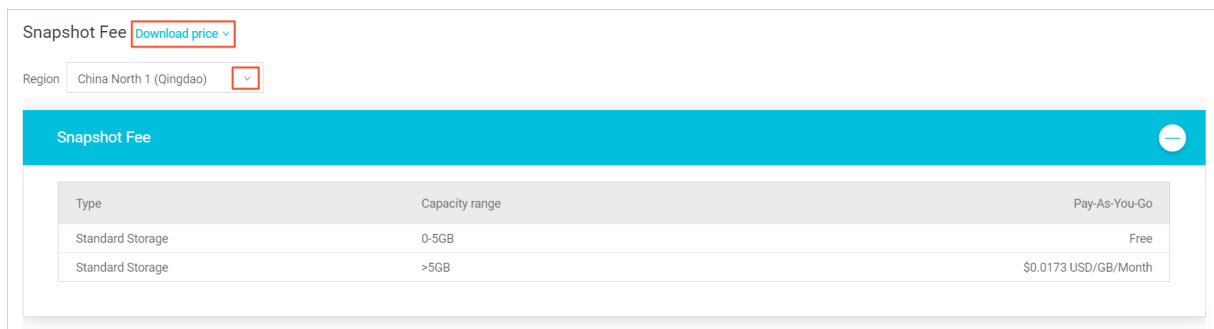
How is the storage fee for snapshots calculated?

Snapshots will soon be billed based on a pay-as-you-go basis. The price per GiB to store snapshots is the same as that of OSS standard storage and charged on a monthly basis. For a list of snapshot prices by Alibaba Cloud region, see the Pricing tab of the [Elastic Compute Service](#) page. The time that snapshots will begin billing will be posted on the Alibaba Cloud Notice List.

For examples of pay-as-you-go billing, see [Billing of snapshots](#).

Where can I view a list of snapshot prices by Alibaba Cloud region?

The price per GiB to store snapshots is the same as that of OSS standard storage and charged on a monthly basis. For a list of snapshot prices by Alibaba Cloud region, see the Pricing tab of the [Elastic Compute Service](#) page. Scroll down to the Snapshot Fee section to view the price list. You can also download the list of snapshot prices by Alibaba Cloud region in CSV or JSON format by clicking Download price.



Snapshot Fee		
Type	Capacity range	Pay-As-You-Go
Standard Storage	0-5GB	Free
Standard Storage	>5GB	\$0.0173 USD/GB/Month

What impact will unpaid bills have on snapshots?

Snapshots will be suspended 24 hours after an unpaid bill becomes overdue. After the unpaid bill becomes overdue:

- In the first 15 days, all existing snapshots will be retained, but no new snapshots will be created. Snapshots that have their retention period expire within these 15 days will be cleared normally.
- After 15 days, all snapshots will be deleted except for those which have been used to create cloud disks or custom images.

You can recharge your account to resume the snapshot service. For more information, see [Recharging](#).

I use snapshots frequently. How can I reduce the amount of fees incurred?

We recommend that you maintain an appropriate number of snapshots, and delete unnecessary snapshots. For more information, see [#unique_21](#).

Are automatic snapshots different from or in conflict with manual snapshots?

No. Both manual snapshots and automatic snapshots are data files of a cloud disk and shared block storage device at a certain point in time. However, you cannot create manual snapshots while an automatic snapshot is being created. You must wait until after the automatic snapshot has been created.

Can I create snapshots for local disks?

No. If you want to improve the high availability performance of applications, we recommend that you create data redundancy at the application layer or create deployment sets for clusters.

I have created a snapshot for an encrypted data disk and generated an image but cannot share the image. Why?

To ensure data privacy, custom images created from encrypted snapshots cannot be shared. We recommend that you use unencrypted snapshots to create custom images that can be shared with other users.

Will deleting files in an ECS instance free up storage space?

No. When you delete files in an ECS instance, tags are added to the file headers but space is not cleared in the cloud disks.

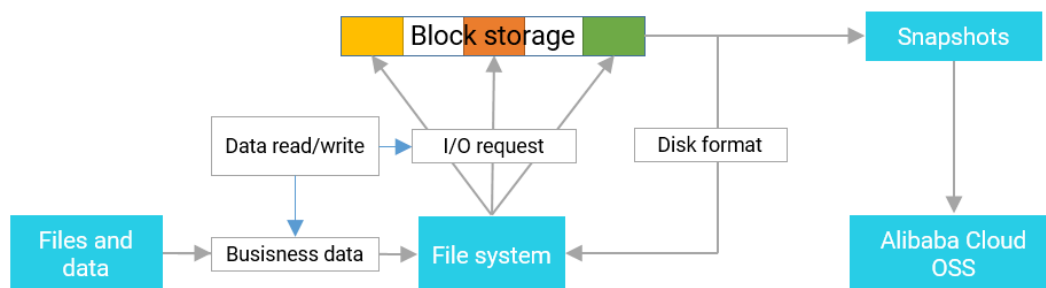
Why is the snapshot size larger than the disk size displayed in the file system?

- Issue: You have created a snapshot after deleting files in the ECS instance. However, the size of the snapshot has not been reduced, or the size of the snapshot is larger than that of the disk size displayed in the file system.
- Cause: When snapshots are created, a mechanism identifies empty blocks to reduce the size of the snapshot. However, empty blocks will be occupied when you format the file system, delete files, and write data to blocks. Because of this, the snapshot size may be larger than the disk size currently displayed in the file system. Specific causes:
 - File system metadata is occupying disk space.
 - The file system has written data to a large number of blocks divided equally from the logical block address during initialization. This operation also will occupy disk space.
 - To improve performance, the file system only adds tags to the headers of files when they are deleted. Because the disk cannot detect delete instructions, data blocks will still be allocated and copied to the snapshots.
 - The KVM virtio block and Xen block front drivers do not support the TRIM instruction, an I/O instruction used to prompt that data in the logical block address is no longer in use and can be deleted.

What is the relationship between a file system and a cloud disk or a snapshot?

You can create a file system in a disk partition. The file system manages disk space. These management tasks take the form of I/O requests in the disk. The disk records the states of data blocks and copies the data to OSS as needed. This process is how

snapshots are created. The following figure shows the relationship between a file system and a snapshot.



Note:

In the preceding figure, any data blocks with data written to them will be recorded in the snapshot, even if the related files have been deleted from the disk. In the file system, only tags are added in the headers of files to deleted but space is not cleared in the cloud disks.

How can I prevent snapshots from being deleted by Alibaba Cloud?

- Manual snapshots will never be deleted by Alibaba Cloud, regardless of whether the cloud disk or instance has been released.
- Automatic snapshots: When you [Modify an automatic snapshot policy](#), you can set the Keep Snapshots parameter to Always Keep. Snapshots will then only be deleted when the maximum number of snapshots (64) has been reached.

Can snapshots be deleted to reduce backup costs?

- Manual snapshots: You can delete manual snapshots.
- Automatic snapshots: You can delete automatic snapshots. When the maximum number of snapshots is reached, the system will delete the earliest automatic snapshot.

Will automatic snapshots be deleted after the system disk is changed, the instance expires, or the cloud disk is released?

- If Delete Automatic Snapshots While Releasing Disk is selected for the automatic snapshot policy, the automatic snapshots will be deleted when the corresponding instance or cloud disk is released.

- If Delete Automatic Snapshots While Releasing Disk is not selected for the automatic snapshot policy, the retention period of the automatic snapshot policy applies. If necessary, you can [Modify an automatic snapshot policy](#).

How can I delete snapshots that have been used to create images and cloud disks?

- You can delete snapshots that have been used to create cloud disks. After deleting snapshots, you cannot perform operations that depend on the status of the original snapshot data, such as the operation to [reinitialize a cloud disk](#).
- If a snapshot has been used to create custom images, you must delete those custom images before the snapshot can be deleted.
- You can delete images that have been used to create instances. After a snapshot is deleted, you cannot perform operations that depend on the status of the original snapshot data, such as the operation to [reinitialize a cloud disk](#).

If I have used an automatic snapshot to create a custom image or a cloud disk, will the automatic snapshot policy fail to be executed?

No.

Can I create multiple snapshot policies for a cloud disk?

No.

How can I avoid losing data due to misoperations?

You can create snapshots to back up data in advance before you perform operations that carry risks to your data. For example, you can create a snapshot if you need to modify critical system files, migrate instances from a classic network to a VPC, back up data, restore an instance that was released by accident, prevent network attacks, change operating systems, or provide data support for a production environment. If an error occurs, you can roll back the cloud disk in time to reduce risks. For more information, see [#unique_32](#) and [#unique_5](#).

After you change the system disk, can a snapshot of a previous system disk be used to roll the new system disk back?

No.