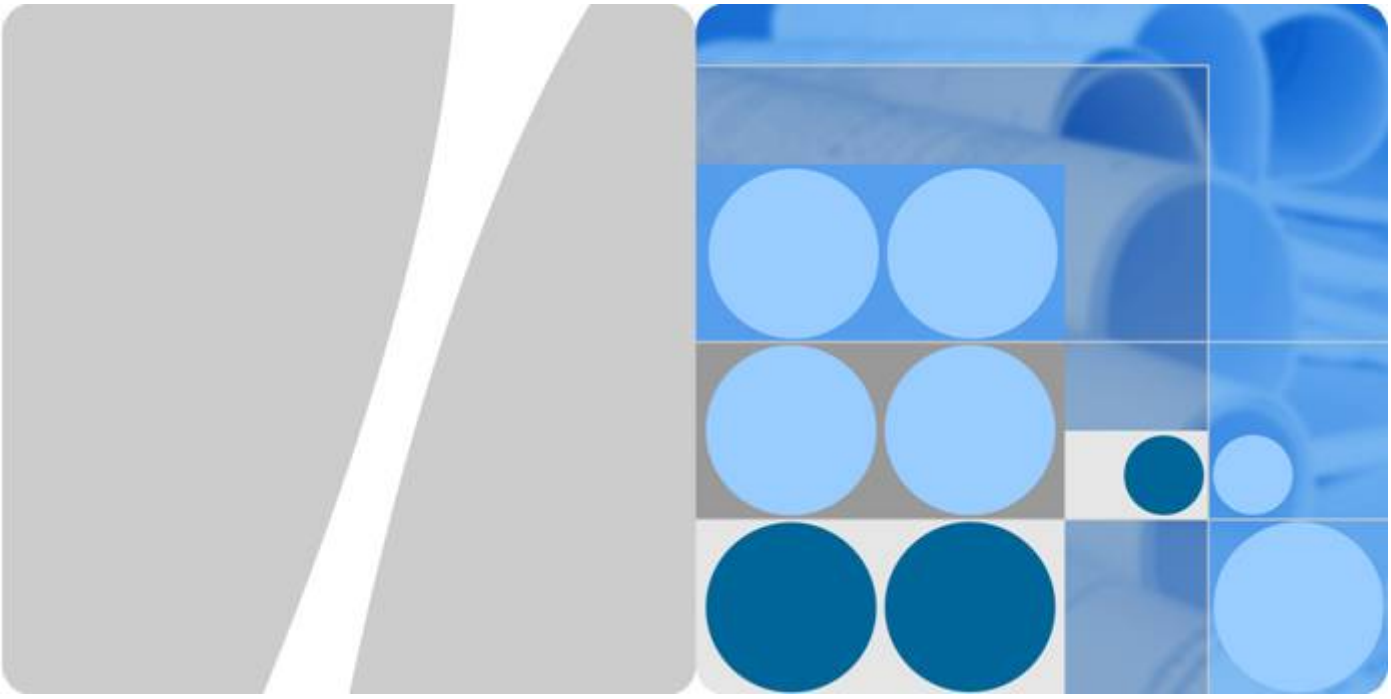


Cloud Backup and Recovery

User Guide

Date **2025-04-30**

Contents

1 Service Overview

1.1 What Is CBR?

Overview

Cloud Backup and Recovery (CBR) enables you to easily back up Elastic Cloud Servers (ECSs), Elastic Volume Service (EVS) disks, and SFS Turbo file systems. In case of a virus attack, accidental deletion, or software or hardware fault, you can use the backup to restore data to any point when the data was backed up.

CBR Architecture

CBR involves backups, vaults, and policies.

Backup

A backup is a copy of a particular chunk of data and is usually stored elsewhere so that it may be used to restore the original data in the event of data loss.

There are the following types of backups:

- Cloud disk backup: provides snapshot-based backups for EVS disks.
- Cloud server backup: uses the consistency snapshot technology to protect data for ECSs and BMSs. Backups of non-database servers are non-database server backups, and those of database servers are application-consistent backups.

- SFS Turbo backup: backs up data of SFS Turbo file systems.

Vault

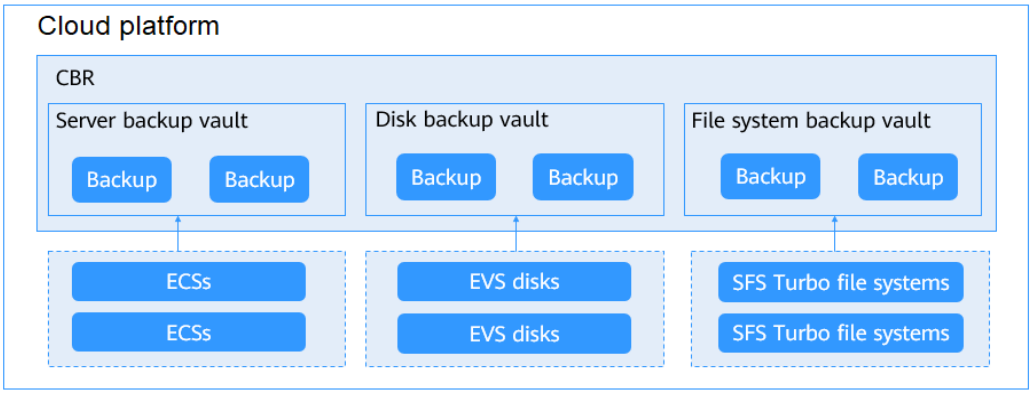
CBR stores backups in vaults. Before creating a backup, you need to create at least one vault and associate the resources you want to back up with the vaults. Then the resources can be backed up to the associated vaults.

Different types of resources must be backed up to different types of vaults. For example, cloud servers must be backed up to server backup vaults, not disk backup vaults or any other types of vaults.

Policy

- A backup policy defines when you want to take a backup and for how long you would retain each backup.

Figure 1-1 CBR architecture



Differences Among the Backup Types

Table 1-1 Differences among the backup types

Item	Cloud Server Backup	Cloud Disk Backup	SFS Turbo Backup
What to back up	All disks (system and data disks) on a server or part of disks and cloud servers (with applications)	One or more specific disks (system or data disks)	SFS Turbo file systems
When to use	You want to back up entire cloud servers.	You want to back up only data disks.	You want to back up entire SFS Turbo file systems.

Item	Cloud Server Backup	Cloud Disk Backup	SFS Turbo Backup
Advantages	All disks on a server are backed up at the same time to ensure data consistency.	Only data of specific disks is backed up, which costs less than backing up an entire server.	File system data and their backups are stored separately, and the backups can be used to create new file systems.

Backup Mechanism

CBR in-cloud backup offers block-level backup. The first backup is a full backup and backs up all used data blocks. For example, if a disk size is 100 GB and 40 GB has been used, only the 40 GB of data is backed up. An incremental backup backs up only the data changed since the last backup to save the storage space and backup time.

When a backup is deleted, data blocks that are referenced by other backups will not be deleted, ensuring that other backups can still be used for restoration. Both a full backup and an incremental backup can be used to restore data to a given backup point in time.

When creating a backup of a disk, CBR also creates a snapshot for it. CBR keeps only the latest snapshot. Every time it creates a new snapshot during backup, it deletes the old snapshot.

CBR stores backups in OBS to ensure data security.

Backup Options

CBR supports one-off backup and periodic backup. A one-off backup task is manually created and is executed only once. Periodic backup tasks are automatically executed based on a user-defined backup policy.

Table 1-2 compares the two backup options.

Table 1-2 One-off backup and periodic backup

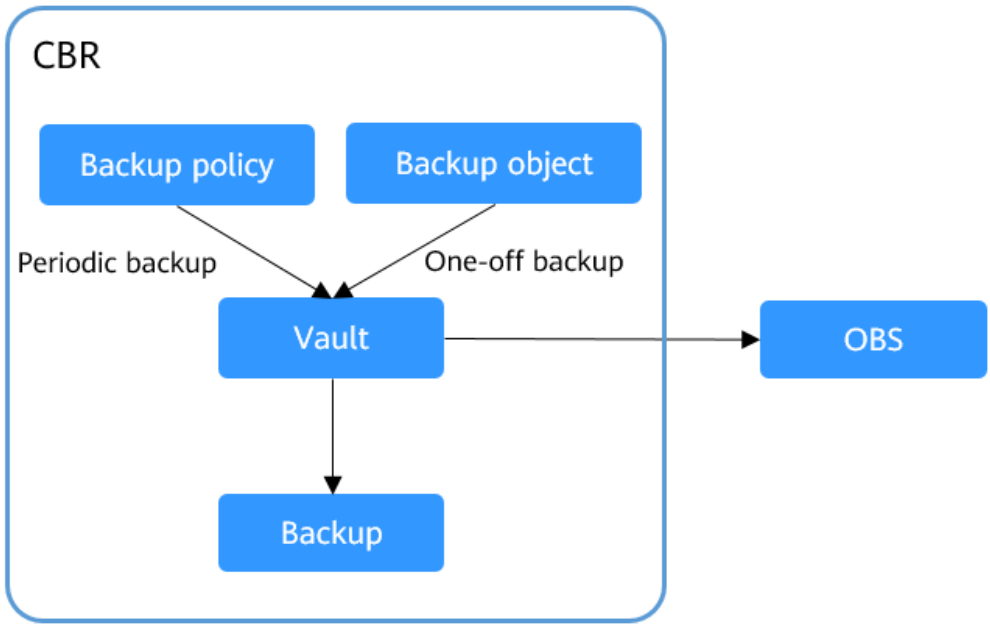
Item	One-Off Backup	Periodic Backup
Backup policy	Not required	Required
Number of backup tasks	One manual backup task	Periodic tasks triggered by a preset backup policy
Backup name	User-defined backup name, which is **manualbk**_*xxxx* by default	System-assigned backup name, which is **autobk**_*xxxx* by default
Backup mode	The first backup is a full backup and the subsequent backups are incremental.	The first backup is a full backup and the subsequent backups are incremental.

Item	One-Off Backup	Periodic Backup
Application scenario	Executed before patching or upgrading the OS or upgrading an application. A one-off backup can be used for restoration if the patching or upgrading fails.	Executed for routine maintenance. The latest backup can be used for restoration if an unexpected failure or data loss occurs.

You can also use the two backup options together if needed. For example, you can associate resources with a vault and apply a backup policy to the vault to execute periodic backup for all the resources in the vault. Additionally, you can perform a one-off backup for the most important resources to enhance data security. **Figure 1-2** shows the use of the two backup options.

Theoretically, you can create as many backups for a resource as needed. This number is not limited.

Figure 1-2 Use of the two backup options



Access to CBR

You can access the CBR service through the console or by calling HTTPS-based APIs.

- Console

  Use the console if you prefer a web-based UI. Log in to the console and choose **Cloud Backup and Recovery**.

- APIs

  Use APIs if you need to integrate CBR into a third-party system for secondary development. For details, see the *Cloud Backup and Recovery API Reference*.

1.2 Application Scenarios

CBR is ideal for data backup and restoration. The backups can maximize your data security and consistency.

Data Backup and Restoration

You can use CBR to quickly restore data to the latest backup point if any of the following incidents occur:

- Hacker or virus attacks
- Accidental deletion
- Application update errors
- System breakdown

1.3 Functions

Table 1-3 lists the functions of CBR.

Before using CBR functions, it is recommended that you learn about **basic CBR concepts**.

Table 1-3 CBR functions

Category	Function	Description
Cloud disk backup	Manual disk backup	Cloud disk backup provides snapshot-based backup for EVS disks on servers. You can back up specific disks to protect data on them.
Cloud disk backup	Policy-based backup	You can create, modify, or delete a backup policy. A backup policy defines the schedule and retention for automatic backups.
Cloud disk backup	Backup management	You can set search criteria to quickly find the backups you want to manage. Then you can view their details, share, restore, or delete them if needed.
Cloud disk backup	Disk restoration using backups	When a disk is faulty, or their data is lost, you can use a backup to quickly restore the data.
Cloud disk backup	Disk creation using backups	You can use a disk backup to create a disk that contains the same data as the backup.

Category	Function	Description
Cloud disk backup	Sharing a Backup	You can share a disk backup with other accounts to allow them to use the backup to create disks.
Cloud server backup	Manual server backup	Cloud server backup uses the consistency snapshot technology to protect data for ECSs and BMSs without the need to install the Agent. You can use CBR to back up an entire server to protect their data.
Cloud server backup	Policy-based backup	You can create, modify, or delete a backup policy. A backup policy defines the schedule and retention for automatic backups.
Cloud server backup	Backup management	You can set search criteria to quickly find the backups you want to manage. Then you can view their details, share, restore, replicate, or delete them if needed.
Cloud server backup	Server restoration using backups	When a server is faulty, or their data is lost, you can use a backup to quickly restore the data.
Cloud server backup	Sharing a Backup	You can share a server backup with other accounts to allow them to use the backup to create servers.
Cloud server backup	Image creation using server backups	You can create images from ECS backups and then use the images to quickly provision ECSs to restore service.
Cloud server backup	Database server backup	Cloud server backup supports application-consistent backup in addition to crash-consistent backup. You can use cloud server backup to back up ECSs running MySQL or SAP HANA databases, because application-consistent backup ensures that the backed-up data is transactionally consistent.
SFS Turbo backup	Manual SFS Turbo backup	You can back up SFS Turbo file systems and use the backups create new SFS Turbo file system.

Category	Function	Description
SFS Turbo backup	Policy-based backup	You can create, modify, or delete a backup policy. A backup policy defines the schedule and retention for automatic backups.
SFS Turbo backup	Backup management	You can set search criteria to quickly find the backups you want to manage. Then you can view their details, share, restore, replicate, or delete them if needed.
SFS Turbo backup	File system creation using backups	You can use an SFS Turbo file system backup to create a file system that contains the same data as the backup.

1.4 Permissions Management

If you need to assign different permissions to personnel in your enterprise to access your CBR resources, Identity and Access Management (IAM) is a good choice for fine-grained permissions management. IAM provides identity authentication, permissions management, and access control, helping you to securely access your cloud resources.

With IAM, you can create IAM users and assign permissions to control their access to specific resources. For example, if you want some software developers in your enterprise to use CBR resources but do not want them to delete CBR resource or perform any other high-risk operations, you can create IAM users and grant permission to use CBR resources but not permission to delete them.

If your cloud account does not require individual IAM users for permissions management, you can skip this section.

IAM is a free service. You only pay for the resources in your account. For more information about IAM, see the *Identity and Access Management Service Overview*.

CBR Permissions

New IAM users do not have any permissions assigned by default. You need to first add them to one or more groups and attach policies or roles to these groups. The users then inherit permissions from the groups and can perform specified operations on cloud services based on the permissions they have been assigned.

CBR is a project-level service deployed for specific regions. When you set **Scope** to **Region-specific projects** and select the specified projects in the specified regions, the users only have permissions for CBR resources in the selected projects. If you set **Scope** to **All resources**, the users have permissions for CBR resources in all region-specific projects. When accessing CBR resources, the users need to switch to the authorized region.

You can grant permissions by using roles and policies.

- Roles: A coarse-grained authorization strategy provided by IAM to assign permissions based on users' job responsibilities. Only a limited number of service-level roles are available for authorization. Cloud services depend on each other. When you grant permissions using roles, you also need to attach any existing role dependencies. Roles are not ideal for fine-grained authorization and least privilege access.
- Policies: A fine-grained authorization strategy that defines permissions required to perform operations on specific cloud resources under certain conditions. This type of authorization is more flexible and is ideal for least privilege access. For example, you can grant users only permission to manage ECSs of a certain type. A majority of fine-grained policies contain permissions for specific APIs, and permissions are defined using API actions. For the API actions supported by CBR, see "Permissions Policies and Supported Actions".

Table 1-4 lists all the system-defined permissions for CBR.

Table 1-4 System-defined permissions for CBR

Policy Name	Description	Type
CBR FullAccess	Administrator permissions for CBR. Users with these permissions can operate and use all vaults, backups, and policies.	System-defined policy
CBR BackupsAndVaults-FullAccess	Common user permissions for CBR. Users with these permissions can create, view, and delete vaults and backups, but cannot create, update, or delete policies.	System-defined policy
CBR ReadOnlyAccess	Read-only permissions for CBR. Users with these permissions can only view CBR data.	System-defined policy

Table 1-5 lists the common operations supported by system-defined permissions of CBR.

Table 1-5 Common operations supported by system-defined permissions of CBR

Operation	CBR FullAccess	CBR BackupsAndVaultsFullAccess	CBR ReadOnlyAccess
Querying vaults	Supported	Supported	Supported
Creating vaults	Supported	Supported	Not supported
Listing vaults	Supported	Supported	Supported
Updating vaults	Supported	Supported	Not supported
Deleting vaults	Supported	Supported	Not supported

Operation	CBR FullAccess	CBR BackupsAndVaultsFullAccess	CBR ReadOnlyAccess
Associating resources	Supported	Supported	Not supported
Dissociating resources	Supported	Supported	Not supported
Creating policies	Supported	Not supported	Not supported
Updating policies	Supported	Not supported	Not supported
Applying policies to vaults	Supported	Supported	Not supported
Removing policies from vaults	Supported	Supported	Not supported
Deleting policies	Supported	Not supported	Not supported
Performing backups	Supported	Supported	Not supported
Updating subscriptions	Supported	Supported	Not supported
Querying the Agent status	Supported	Supported	Not supported
Deleting backups	Supported	Supported	Not supported
Restoring data from backups	Supported	Supported	Not supported
Associating vaults	Supported	Supported	Not supported
Batch adding or deleting vault tags	Supported	Supported	Not supported
Adding vault tags	Supported	Supported	Not supported
Editing tags	Supported	Supported	Not supported

1.5 Constraints

General

- A vault can be associated with only one backup policy.
- A vault can be associated with a maximum of 256 resources.
- A maximum of 32 backup policies can be created.
- Only backups in the **Available** or **Locked** vaults can be used to restore data.

- Backups in a **Deleting** vault cannot be deleted.
- When Storage Disaster Recovery Service (SDRS) is used to set up disaster recovery for cloud servers, restorations can be performed at the disaster recovery site only after protection is disabled.
- Backups cannot be downloaded to a local PC or uploaded to OBS.
- A vault and its associated servers or disks must be in the same region.

Cloud Disk Backup

- Only disks in the **Available** or **In-use** state can be backed up.
- A new disk must be at least as large as the backup's source disk.

Cloud Server Backup

- A maximum of 10 shared disks can be backed up with a cloud server.
- Only backups in the **Available** or **Locked** vaults can be used to create images.
- Cloud servers support crash-consistent backup, whereas database servers support application-consistent backup in addition to crash-consistent backup.
- Images cannot be created from backups if the amount of resources associated with a server backup vault exceeds the quota.
- Only ECS backups can be used to create images.
- You are advised not to back up a server whose disk size exceeds 4 TB.

SFS Turbo Backup

- Only file systems in the **Available** state can be backed up.

Application-Consistent Backup

Table 1-6 OSs that support installation of the Agent

Database	OS	Version
SQL Server 2008/2012/2019	Windows	Windows Server 2008, 2008 R2, 2012, 2012 R2, and 2019 for x86_64
SQL Server 2014/2016/ Enterprise Edition	Windows	Windows Server 2014, 2014 R2, and 2016 Datacenter for x86_64
MySQL 5.5/5.6/5.7	Red Hat	Red Hat Enterprise Linux 6 and 7 for x86_64
	SUSE	SUSE Linux Enterprise Server 11 and 12 for x86_64
	CentOS	CentOS 6 and 7 for x86_64
	EulerOS	EulerOS 2.2 and 2.3 for x86_64
HANA 1.0/2.0	SUSE	SUSE Linux Enterprise Server 12 for x86_64

1.6 CBR and Other Services

CBR-related Services

Table 1-7 CBR-related services

Function	Related Service	Reference
CBR backs up data of an ECS and uses the backup to restore data for the ECS. You can also create images from ECS backups and use the images to quickly provision ECSs to restore services.	ECS	Creating a Cloud Server Backup Creating a Cloud Disk Backup
CBR backs up data of a BMS and uses the backup to restore data for the BMS. The backup and management processes for BMSs and ECSs are the same.	BMS	**What Is CBR?** Creating a Cloud Server Backup
CBR backs up data of SFS Turbo file systems and uses the backup to create new file systems to restore lost or corrupted data.	Scalable File Service Turbo (SFS Turbo)	Creating a File System Backup
CBR stores backups securely in OBS.	OBS	**What Is CBR?**
CBR backs up data of EVS disks and uses the backup to create new disks.	EVS	Creating a Cloud Disk Backup
Cloud Trace Service (CTS) records operations on CBR resources, facilitating future queries, audits, and backtracking.	CTS	Auditing
IAM is a self-service system for enterprise administrators to manage cloud resources. It provides user identity management and access control functions.	IAM	**Permissions Management**
Tag Management Service (TMS) enables you to add preset tags to CBR vaults to facilitate vault management.	TMS	Managing Vault Tags

1.7 Basic Concepts

1.7.1 CBR Concepts

Vault

CBR stores backups of a variety of resources in vaults, which are classified into the following types:

- **Server backup vaults**: store backups of non-database servers or database servers. You can associate servers with a server backup vault and apply a policy to schedule automatic backups or replications.
- **Disk backup vaults**: store only disk backups. You can associate disks with a disk backup vault and apply a backup policy to schedule automatic backups.
- **SFS Turbo backup vaults**: store only backups of SFS Turbo file systems. You can associate file systems with an SFS Turbo backup vault and apply a backup policy to schedule automatic backups.

Backup

A backup is a copy of a particular chunk of data and is usually stored elsewhere so that it may be used to restore the original data in the event of data loss. It can be generated either manually by a one-off backup task or automatically by a periodic backup task.

A one-off backup task is manually created and is executed only once. Periodic backup tasks are automatically executed based on a user-defined backup policy.

- A one-off backup is named **manualbk**_*xxxx* and can be user- or system-defined.
- A periodic backup is named **autobk**_*xxxx* by CBR.

Backup Policy

A backup policy is a set of rules that define the schedule and retention of backups. After you apply a backup policy to a vault, CBR automatically backs up data and retains backups based on that backup policy.

Instant Restore

Instant Restore restores data and creates images from backups, much faster than a normal restore.

Instant Restore is an enhanced function of CBR and requires no additional configuration. After Instant Restore is provided, you take less time to restore server data or create images.

Enhanced Backup

Enhanced backups are backups generated after Instant Restore is provided. Enhanced backups make it faster to restore server data or create images.

Before providing Instant Restore, CBR generates common backups. After providing Instant Restore, CBR first performs a full backup for each associated resource and then generates enhanced backups. CBR only generates enhanced backups for new resources currently.

For the same resource, an enhanced backup and a common backup have the same backup content and size. They only differ in the restoration speed.

Application-Consistent Backup

There are three types of backups in terms of backup consistency:

- Inconsistent backup: An inconsistent backup contains data taken from different points in time. This typically occurs if changes are made to your files or disks during the backup.
- Crash-consistent backup: A crash-consistent backup captures all data on disks at the time of the backup and does not capture data in memory or any pending I/O operations. Although it cannot ensure application consistency, disks are checked by **chkdsk** upon operating system restart to restore damaged data and undo logs are used by databases to keep data consistent.
- Application-consistent backup: An application-consistent backup captures data in memory or any pending I/O operations and allows applications to achieve a quiescent and consistent state.

CBR cloud server backup supports both crash-consistent backup and application-consistent backup (also called database server backup). Install the Agent before enabling application-consistent backup to prevent the database server backup from failing.

1.7.2 Region and AZ

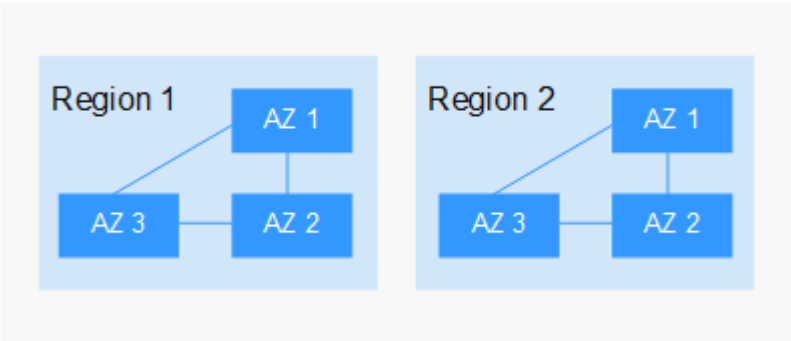
Concept

A region and availability zone (AZ) identify the location of a data center. You can create resources in a specific region and AZ.

- A region is a physical data center, which is completely isolated to improve fault tolerance and stability. The region that is selected during resource creation cannot be changed after the resource is created.
- An AZ is a physical location where resources use independent power supplies and networks. A region contains one or more AZs that are physically isolated but interconnected through internal networks. Because AZs are isolated from each other, any fault that occurs in one AZ will not affect others.

Figure 1-3 shows the relationship between regions and AZs.

Figure 1-3 Regions and AZs



Selecting a Region

Select a region closest to your target users for lower network latency and quick access.

Selecting an AZ

When deploying resources, consider your applications' requirements on disaster recovery (DR) and network latency.

- For high DR capability, deploy resources in different AZs within the same region.
- For lower network latency, deploy resources in the same AZ.

Regions and Endpoints

Before you use an API to call resources, specify its region and endpoint. Obtain the regions and endpoints from the operations administrator.

2 Getting Started

2.1 Step 1: Create a Vault

2.1.1 Creating a Server Backup Vault

This section describes how to create a server backup vault.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 In the upper right corner of the page, click **Create Server Backup Vault**.

Step 3 Select a protection type.

- **Backup**: A server backup vault stores server backups.

Step 4 (Optional) In the server list, select the servers or disks you want to back up. After the servers or disks are selected, they are added to the list of selected servers. You can also select specific disks on a server and associate them with the vault.

NOTE

- The selected servers must have not been associated with any vault and must be in the **Running** or **Stopped** state.
- You can also associate servers with the vault you are creating later if you skip this step.

Step 5 Specify a vault capacity ranging from 10 GB to 10,485,760 GB. Properly plan the vault capacity, which must be at least the same as the size of the servers you want to back up. Also, if automatic association is enabled and a backup policy is applied to the vault, more capacity is required.

As the vault's used space grows, you can expand the vault capacity if it becomes insufficient.

Step 6 Configure auto backup.

- If you select **Configure**, you must then select an existing backup policy or create a new policy. After the vault is created, CBR will apply the policy to this vault, and all servers associated with this vault will be automatically backed up based on this policy.
- If you select **Skip**, servers associated with this vault will not be automatically backed up until you apply a backup policy to the vault.

Step 7 (Optional) Add tags to the vault.

Tags are key-value pairs, which are used to identify, classify, and search for vaults. You can add a maximum of 10 tags for a vault, and vault tags are only used for vault search and management.

If your organization has enabled the tag policy type for CBR and has a tag policy attached, you must comply with the tag policy rules when creating vaults, otherwise vaults may fail to be created. Contact the organization administrator to learn more about tag policies.

Table 2-1 describes the parameters of a tag.

Table 2-1 Tag parameter description

Parameter	Description	Example Value
Key	Each tag has a unique key. You can customize a key or select the key of an existing tag created in TMS. A tag key: • Can contain 1 to 36 Unicode characters. • Can contain only letters, digits, hyphens (-), and underscores (_).	Key_0001

Parameter	Description	Example Value
Value	A tag value can be repetitive or left blank. A tag value: • Can contain 0 to 43 Unicode characters. • Can contain only letters, digits, hyphens (-), and underscores (_).	Value_0001

Step 8 Specify a name for the vault.

The name must contain 1 to 64 characters including digits, letters, underscores (_), or hyphens (-), for example, **vault-f61e**.

NOTE

You can also use the default name **vault**_*xxxx*.

Step 9 Complete the creation as prompted.

Step 10 Go back to the **Cloud Server Backups** page. You can see the created vault in the vault list.

You can associate servers with the vault and perform backup for the servers. For details, see **Viewing a Vault**.

----End

2.1.2 Creating a Disk Backup Vault

This section describes how to create a disk backup vault.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click in the upper left corner and select a region.
3. Click and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 In the upper right corner of the page, click **Create Disk Backup Vault**.

Step 3 (Optional) In the disk list, select the disks you want to back up. After disks are selected, they are added to the list of selected disks.

NOTE

- The selected disks must have not been associated with any vault and must be in the **Available** or **In-use** state.
- You can also associate disks with the vault you are creating later if you skip this step.

Step 4 Specify a vault capacity ranging from 10 GB to 10,485,760 GB. Properly plan the vault capacity, which must be at least the same as the size of the disks you want to back up.

Step 5 Configure auto backup.

- If you select **Configure**, you must then select an existing backup policy or create a new policy. After the vault is created, CBR will apply the policy to this vault, and all disks associated with this vault will be automatically backed up based on this policy.
- If you select **Skip**, disks associated with this vault will not be automatically backed up until you apply a backup policy to the vault.

Step 6 (Optional) Add tags to the vault.

Tags are key-value pairs, which are used to identify, classify, and search for vaults. Vault tags are used to filter and manage vaults only. A vault can have a maximum of 10 tags.

If your organization has configured tag policies for CBR, add vault tags based on these policies. If you add a tag that does not comply with the tag policy rules, vaults may fail to be created. Contact the organization administrator to learn more about tag policies.

Table 2-2 describes the parameters of a tag.

Table 2-2 Tag parameter description

Parameter	Description	Example Value
Key	Each tag has a unique key. You can customize a key or select the key of an existing tag created in TMS. A tag key: ● Can contain 1 to 36 Unicode characters. ● Can contain only letters, digits, hyphens (-), and underscores (_).	Key_0001
Value	A tag value can be repetitive or left blank. A tag value: ● Can contain 0 to 43 Unicode characters. ● Can contain only letters, digits, hyphens (-), and underscores (_).	Value_0001

Step 7 Specify a name for the vault.

The name must contain 1 to 64 characters including digits, letters, underscores (_), or hyphens (-), for example, **vault-612c**.

NOTE

You can also use the default name **vault**_*xxxx*.

Step 8 Complete the creation as prompted.

Step 9 Go back to the **Cloud Disk Backups** page. You can see the created vault in the vault list.

You can associate disks to the new vault or perform backup for the disks. For details, see **Vault Management**.

----End

2.1.3 Creating an SFS Turbo Backup Vault

This section describes how to create an SFS Turbo backup vault.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery** > **SFS Turbo Backups**.

Step 2 In the upper right corner of the page, click **Create SFS Turbo Backup Vault**.

Step 3 Select a protection type.

- **Backup**: An SFS Turbo backup vault stores SFS Turbo backups.

Step 4 (Optional) In the file system list, select the file systems to be backed up. After file systems are selected, they are added to the list of selected file systems.

NOTE

- The selected file systems must have not been associated with any vault and must be in the **Available** state.
- You can also associate file systems with the vault you are creating later if you skip this step.

Step 5 Specify a vault capacity ranging from 10 GB to 10,485,760 GB. Properly plan the vault capacity, which must be at least the same as the size of the file systems you want to back up.

Step 6 Configure auto backup.

- If you select **Configure**, you must then select an existing backup policy or create a new policy. After the vault is created, CBR will apply the policy to this vault, and all file systems associated with this vault will be automatically backed up based on this policy.
- If you select **Skip**, file systems associated with this vault will not be automatically backed up until you apply a backup policy to the vault.

Step 7 (Optional) Add tags to the vault.

Tags are key-value pairs, which are used to identify, classify, and search for vaults. You can add a maximum of 10 tags for a vault, and vault tags are only used for vault search and management.

If your organization has enabled the tag policy type for CBR and has a tag policy attached, you must comply with the tag policy rules when creating vaults, otherwise vaults may fail to be created. Contact the organization administrator to learn more about tag policies.

Table 2-3 describes the parameters of a tag.

Table 2-3 Tag parameter description

Parameter	Description	Example Value
Key	Each tag has a unique key. You can customize a key or select the key of an existing tag created in TMS. A tag key: • Can contain 1 to 36 Unicode characters. • Can contain only letters, digits, hyphens (-), and underscores (_).	Key_0001
Value	A tag value can be repetitive or left blank. A tag value: • Can contain 0 to 43 Unicode characters. • Can contain only letters, digits, hyphens (-), and underscores (_).	Value_0001

Step 8 Specify a name for the vault.

The name must contain 1 to 64 characters including digits, letters, underscores (_), or hyphens (-), for example, **vault-612c**.

NOTE

You can also use the default name **vault**_*xxxx*.

Step 9 Complete the creation as prompted.

Step 10 Go back to the **SFS Turbo Backups** page. You can see the created vault in the vault list.

You can associate file systems to the new vault or perform backup for the file systems. For details, see **Vault Management**.

----End

2.2 Step 2: Associate a Resource with the Vault

If you have already associated servers or disks when creating a vault, skip this step.

After a server backup vault or disk backup vault is created, you can associate servers or disks with the vault to back up these resources.

Prerequisites

- A vault can be associated with a maximum of 256 resources.
- The servers you plan to associate with a vault must have at least one disk attached.
- The vault and the resources you plan to associate with it must be in the same region.
- The total size of the resources to be associated cannot be greater than the vault capacity.
- Resources can be associated only when they are in the statuses in the table below.

Table 2-4 Resource statuses available for association

Resource Type	Status
Cloud server	Running or Stopped
Cloud disk	Available or In-use

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click in the upper left corner and select a region.
3. Click and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 On a backup page, locate the target vault and click **Associate Server** or **Associate Disk**.

Step 3 In the resource list, select the resources you want to associate with the vault. After resources are selected, they are added to the list of selected resources.

Step 4 Click **OK**. Then on the **Associated Servers** tab page, you can view the number of resources that have been associated.

NOTE

If a new disk is attached to an associated server, CBR automatically identifies the new disk and includes the new disk in subsequent backup tasks.

----End

Automatic Association

If you enable automatic association for a backup vault, the vault will automatically associate the unprotected resources and back them up according to the backup policy applied to the vault.

- The vault's remaining capacity should be greater than both 40 GB and the associated capacity. The vault will automatically scan and associate unprotected servers in the next backup cycle and perform backup. Remaining capacity of a vault = Total capacity of the vault - Capacity of resources associated with the vault. You can obtain the vault's total capacity and associated capacity in the **Basic Information** area on the details page of the vault. For example, if you have an 800-GB server backup vault and it has been associated with two 100-GB servers, its remaining capacity is 600 GB (800 GB – 200 GB). In this case, the vault will automatically associate unprotected servers in the next backup cycle and perform backup.
- If multiple vaults are enabled with automatic association, CBR scans their backup policies and associates resources with the vault whose next scheduled backup time is the earliest.
- If the capacity of the first selected vault is used up, resources will be associated with the vault whose next scheduled backup time is the second earliest.
- If a backup policy with the earliest scheduled backup time is applied to more than one vault, CBR randomly associates the resources with one of these vaults.
- If a vault has automatic association enabled but has no backup policy applied, no resources will be automatically associated with this vault. You can manually associate unprotected resources.
- After automatic association is disabled for a vault, the vault stops automatically scanning for unprotected resources. Associated resources are not affected.

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Choose **Storage** > **Cloud Backup and Recovery**.

Step 2 On any backup page, locate the target vault.

Step 3 Choose **More** > **Enable Automatic Association** in the **Operation** column of the vault.

Step 4 Check that **Automatic association** is displayed in the **Associated Servers** column of the vault list.

Step 5 (Optional) If automatic association is not required, choose **More** > **Disable Automatic Association** in the **Operation** column of the vault.

----End

2.3 Step 3: Create a Backup

2.3.1 Creating a Cloud Server Backup

This section describes how to quickly create a cloud server backup.

The backup process for BMSs is the same as that for ECSs.

If you do not need an ECS for the moment, you can back up the ECS and then delete it. When you want an ECS later, you can create an image from the ECS backup and use the image to create ECSs.

Backing up a server does not impact the server performance.

Peak hours of the backup service are from 22:00 to 08:00, during which there may be delays. So you are advised to evaluate your service types and schedule backups in discrete time periods.

Prerequisites

- Only servers in the **Running** or **Stopped** state can be backed up.
- At least one server backup vault is available.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 On the **Cloud Server Backups** page, click the **Vaults** tab and find the vault to which the server is associated.

Step 3 Perform backup in either of the following ways:

- Choose **More** > **Perform Backup** in the **Operation** column. In the server list, select the server you want to back up. After a server is selected, it is added to the list of selected servers.

- Click the vault name to go to the vault details page. On the **Associated Servers** tab page, locate the target server and click **Perform Backup** in the **Operation** column.

Step 4 Set **Name** and **Description** for the backup. **Table 2-5** describes the parameters.

Table 2-5 Parameter description

Parameter	Description	Remarks
Name	Name of the backup you are creating. A name must contain 1 to 64 characters including digits, letters, underscores (_), or hyphens (-). **NOTE** You can also use the default name **manualbk**_*xxxx*. If multiple servers are to be backed up, the system automatically adds suffixes to their backup names, for example, **backup-0001** and **backup-0002**.	manualbk_d819
Description	Description of the backup. It cannot exceed 255 characters.	--

Step 5 Choose whether to enable full backup. If full backup is enabled, CBR performs a full backup on every associated server, which requires a larger capacity compared to an incremental backup.

Step 6 Click **OK**. CBR automatically creates a backup for the server.

On the **Backups** tab page, if the status of the backup is **Available**, the backup task is successful.

NOTE

- A server can be restarted if the backup progress exceeds 10%. However, to ensure data integrity, restart it after the backup is complete.
- To ensure data security, when you perform manual backups, a full backup is performed after 365 incremental backups by default.

After the backup is complete, you can use the backup to restore server data or create an image. For details, see **Restoring from a Cloud Server Backup** and **Creating an Image from a Cloud Server Backup**.

----End

2.3.2 Creating a Cloud Disk Backup

This section describes how to quickly create a cloud disk backup.

Backing up a server does not impact the disk performance.

Peak hours of the backup service are from 22:00 to 08:00, during which there may be delays. So you are advised to evaluate your service types and schedule backups in discrete time periods.

Prerequisites

A disk can be backed up only when its status is **Available** or **In-use**. If you have performed operations such as expanding, attaching, detaching, or deleting a disk, refresh the page first to ensure that the operation is complete and then determine whether to back up the disk.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 On the **Cloud Disk Backups** page, click the **Vaults** tab and find the vault to which the disk is associated.

Step 3 Perform backup in either of the following ways:

- Click **Perform Backup** in the **Operation** column. In the disk list, select the disk you want to back up. After a disk is selected, it is added to the list of selected disks.
- Click the vault name to go to the vault details page. On the **Associated Disks** tab page, locate the target disk and click **Perform Backup** in the **Operation** column.

NOTE

CBR will identify whether the selected disk is encrypted. If it is encrypted, the backups will be automatically encrypted.

Step 4 Set **Name** and **Description** for the backup. **Table 2-6** describes the parameters.

Table 2-6 Parameter description

Parameter	Description	Remarks
Name	Name of the backup you are creating. A name must contain 1 to 64 characters including digits, letters, underscores (_), or hyphens (-). **NOTE** You can also use the default name **manualbk**_*xxxx*. If multiple disks are to be backed up, the system automatically adds suffixes to their backup names, for example, **backup-0001** and **backup-0002**.	manualbk_d819

Parameter	Description	Remarks
Description	Description of the backup. It cannot exceed 255 characters.	--

Step 5 Choose whether to enable full backup. If full backup is enabled, CBR performs a full backup on every associated disk, which requires a larger capacity compared to an incremental backup.

Step 6 Click **OK**. CBR automatically creates a backup for the disk.

On the **Backups** tab page, if the status of the backup is **Available**, the backup task is successful.

NOTE

- If you delete data from the disk during the backup, the deleted data may fail to be backed up. Therefore, to ensure data integrity, delete the target data after the backup is complete, and then perform the backup.
- To ensure data security, when you perform manual backups, a full backup is performed after 365 incremental backups by default.

After the backup is complete, you can use the backup to restore disk data. For details, see **Restoring from a Cloud Disk Backup**.

----End

2.3.3 Creating an SFS Turbo Backup

This section describes how to quickly create an SFS Turbo file system backup.

To ensure data integrity, you are advised to back up the file system during off-peak hours when no data is written to the file system.

Peak hours of the backup service are from 22:00 to 08:00, during which there may be delays. So you are advised to evaluate your service types and schedule backups in discrete time periods.

Prerequisites

A file system can be backed up only when its status is **Available** or **In-use**. If you have performed operations such as expanding, mounting, unmounting, or deleting a file system, refresh the page first to ensure that the operation is complete and then determine whether to back up the file system.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery** > **SFS Turbo Backups**.

Step 2 On the **SFS Turbo Backups** page, click the **Vaults** tab and find the vault to which the file system is associated.

Step 3 Perform backup in either of the following ways:

- Choose **More** > **Perform Backup** in the **Operation** column. In the file system list, select the file system to be backed up. After a file system is selected, it is added to the list of selected file systems.

- Click the vault name to go to the vault details page. On the **Associated File Systems** tab page, locate the target file system and click **Perform Backup** in the **Operation** column.

Step 4 Set **Name** and **Description** for the backup. **Table 2-7** describes the parameters.

Table 2-7 Parameter description

Parameter	Description	Remarks
Name	Name of the backup you are creating. A name must contain 1 to 64 characters including digits, letters, underscores (_), or hyphens (-). **NOTE** You can also use the default name **manualbk**_*xxxx*. If multiple file systems are to be backed up, the system automatically adds suffixes to their backup names, for example, **backup-0001** and **backup-0002**.	manualbk_d819
Description	Description of the backup. It cannot exceed 255 characters.	--

Step 5 Click **OK**. CBR automatically creates a backup for the file system.

On the **Backups** tab page, if the status of the backup is **Available**, the backup task is successful.

NOTE

- If you delete data from the file system during the backup, the deleted data may fail to be backed up. Therefore, to ensure data integrity, delete the target data after the backup is complete, and then perform the backup.
- To ensure data security, when you perform manual backups, a full backup is performed after 365 incremental backups by default.

After the backup is complete, you can create a new SFS Turbo file system using the backup. For details, see **Creating a File System from an SFS Turbo Backup**.

----End

3 Management permissions

3.1 Creating a User and Granting CBR Permissions

This section describes how to use IAM to implement fine-grained permissions control for your CBR resources. With IAM, you can:

- Create IAM users for personnel based on your enterprise's organizational structure. Each IAM user has their own identity credentials for accessing CBR resources.
- Grant users only the permissions required to perform a given task based on their job responsibilities.
- Entrust a cloud account or cloud service to perform efficient O&M on your CBR resources.

If your cloud account does not require individual IAM users, skip this section.

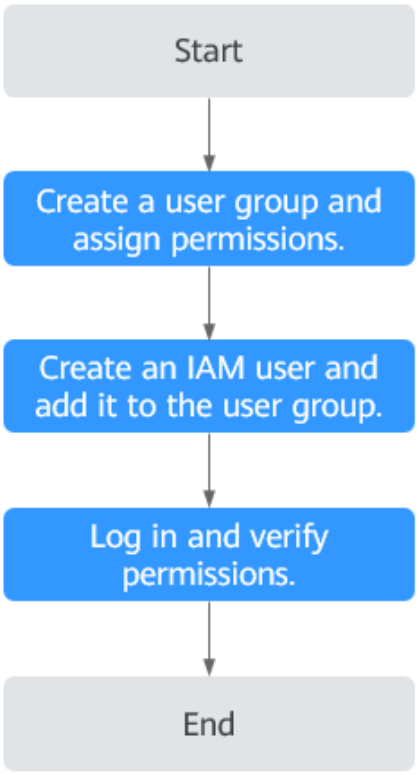
Figure **Figure 3-1** illustrates the procedure for granting permissions.

Prerequisites

Learn about the permissions (see **Permissions Management**) supported by CBR and choose policies or roles according to your requirements. For the system policies of other services, see section "Permissions".

Process Flow

Figure 3-1 Process for granting CBR permissions



1. Create a user group and assign permissions.

   Create a user group on the IAM console and click **Authorize** in the **Operation** column to assign the **CBR ReadOnlyAccess** permissions to the group.

2. Create an IAM user and add it to the user group.

   Create a user on the IAM console and add it to the user group created in **1** by choosing **Authorize** in the **Operation** column.

3. Log in and verify permissions.

   Log in to the CBR console as the created user and verify that the user has read-only permissions for CBR.

   - Choose **Service List** > **Cloud Backup and Recovery**. Then click **Create Server Backup Vault** on the CBR console. If a message appears indicating that you do not have the permissions to perform the operation, the **CBR ReadOnlyAccess** policy has already taken effect.
   - Choose any other service in **Service List**. If a message appears indicating that you do not have the permissions to access the service, the **CBR ReadOnlyAccess** policy has already taken effect.

3.2 Creating a Custom Policy

You can create custom policies to supplement the system-defined policies of CBR. For the actions supported for custom policies, see section "Permissions Policies and Supported Actions" in *Cloud Backup and Recovery API Reference*.

You can create custom policies in either of the following ways:

- Visual editor: Select cloud services, actions, resources, and request conditions. This does not require knowledge of policy syntax.
- JSON: Edit JSON policies from scratch or based on an existing policy.

For details about how to create custom policies, see .

This section provides examples of common CBR custom policies.

Example Custom Policies

- Example 1: Allowing users to create, modify, and delete vaults

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "cbr:*:get*",
                "cbr:*:list*",
                "cbr:vaults:update",
                "cbr:vaults:delete",
                "cbr:vaults:create"
            ]
        }
    ]
}
```

- Example 2: Denying users to delete vaults and backups

  A policy with only "Deny" permissions must be used in conjunction with other policies to take effect. If the permissions assigned to a user contain both "Allow" and "Deny", the "Deny" permissions take precedence over the "Allow" permissions.

  If you need to assign permissions of the **CBR FullAccess** policy to a user but want to prevent the user from deleting vaults and backups, create a custom policy for denying vault and backup deletion, and attach both policies to the group to which the user belongs. In this way, the user can perform all operations on CBR except deleting vaults or backups. The following is an example deny policy:

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Effect": "Deny",
            "Action": [
                "cbr:backups:delete",
                "cbr:vaults:delete"
            ]
        }
    ]
}
```

- Example 3: Defining permissions for multiple services in a policy

  A custom policy can contain the actions of multiple services that are of the global or project-level type. The following is an example policy containing actions of multiple services:

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "cbr:vaults:create",
                "cbr:vaults:update",
                "cbr:vaults:delete"
            ]
        },
        {
            "Effect": "Allow",
            "Action": [
                "sfs:shares:createShare"
            ]
        }
    ]
}
```

3.3 Configuring Forcible Backup Policies

Forcible backup policies allow IAM users to forcibly back up data to ensure user data accuracy and security and service security.

You can configure forcible backup policies to grant permissions to IAM users to force backup, specifically:

1. **Grant permission to always enable a backup policy when it is created.**
2. **Grant permission to prohibit disabling of backup policies when they are modified.**
3. **Grant permission to force backup policy application during vault creation.**

NOTICE

To ensure forcible backup, you are advised to configure all the three preceding policies.

NOTE

You can create custom policies in either of the following ways:

- Visual editor: Select cloud services, actions, resources, and request conditions. This does not require knowledge of policy syntax.
- JSON: Create a JSON policy or edit an existing one.

For details about how to create custom policies, see .

1. Grant permission to always enable a backup policy when it is created.

```
{
 "Version": "5.0",
 "Statement": [
  {
   "Effect": "Deny",
```

```
    "Action": ["cbr:policies:create"],
    "Condition": {
        "Bool": {
            "cbr:EnabledPolicy": "false"
        }
    }
  }
 ]
}
```

2. Grant permission to prohibit disabling of backup policies when they are modified.

```
{
"Version": "5.0",
 "Statement": [
  {
    "Effect": "Deny",
    "Action": ["cbr:policies:update"],
    "Condition": {
        "Bool": {
            "cbr:EnabledPolicy": "false"
        }
    }
  }
 ]
}
```

3. Grant permission to force backup policy application during vault creation.

```
{
 "Version": "5.0",
   "Statement": [
      {
         "Effect": "Deny",
         "Action": [
            "cbr:vaults:create"
         ],
         "Condition": {
            "Null": {
               "cbr:PolicyId": [
                  "true"
               ]
            }
         }
      }
   ]
}
```

4 Vault Management

4.1 Viewing a Vault

You can set search criteria for querying desired vaults in the vault list.

Prerequisites

A vault has been created.

Viewing Vault Details

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 On the **Vaults** tab, view basic information about all vaults. Related parameters are described in the following table.

Table 4-1 Basic information parameters

Parameter	Description
Name/ID	Name and ID of the vault. Click the vault name to view details about the vault.
Type	Vault type
Status	Vault status. **Table 4-2** describes the vault statuses.
Specifications	Vault specifications, which can be server backup or application-consistent backup • A server backup vault stores backups of non-database servers. • An application-consistent backup vault stores backups of database servers.
Vault Capacity (GB)	Capacity used by the backups in the vault. It shows the space used by backups and the total vault capacity. For example: If **20/100** is displayed, 20 GB has been used out of the 100 GB vault capacity.
Associated Servers/ File Systems/Disks	Number of servers, file systems, and disks associated with the vault. You can click the number to view details of associated resources. The associated capacity shown on the details page is the total capacity of all the resources that have been associated with this vault.

Step 3 On the **Vaults** tab page, set filter criteria to view specific vaults.

- Select a value from the status drop-down list to query vaults by status. **Table 4-2** describes the vault statuses.

  Table 4-2 Vault statuses

Status	Attribute	Description
All statuses	--	All vaults are displayed if this value is selected.
Available	A stable state	A stable state after a vault task is complete. This state allows most of the operations.

Status	Attribute	Description
Locked	An intermediate state	An intermediate state displayed when a capacity expansion is in progress. If a vault is in this state, you can perform operations, such as applying a policy and associating servers or disks. However, the following operations are not allowed on such a vault: expanding the vault capacity and changing the vault specifications. Once those operations are complete, the vault status will become **Available**.
Deleting	An intermediate state	An intermediate state displayed when a vault is being deleted. In this state, a progress bar is displayed indicating the deletion progress. If the progress bar remains unchanged for an extended time, an exception has occurred. Contact technical support.
Error	A stable state	A vault enters the **Error** state when an exception occurs during task execution. You can click **Tasks** in the navigation pane on the left to view the error cause. If the error persists, contact technical support.

- Search a vault by its name or ID.
- Click **Search by Tag** in the upper right corner to search for vaults by tag.
  - On the displayed **Search by Tag** page, enter an existing tag key and value and click + . The added tag search criteria are displayed under the text boxes. Click **Search** in the lower right corner.
  - You can add a maximum of 10 tags by clicking + . They will be applied together for a combination search.
  - You can click **Reset** in the lower right corner to reset the search criteria.

Step 4 Click the name of a specific vault to view vault details.

NOTE

- The values of used capacity and backup space are rounded off to integers. CBR will display 0 GB for any backup space less than 1 GB. For example, there may be 200 MB backup space used, but it will be displayed as 0 GB on the console.

----End

4.2 Deleting a Vault

You can delete unwanted vaults to reduce storage space usage and costs.

Once you delete a vault, all backups stored in the vault will be deleted.

Prerequisites

- There is at least one vault.
- The vault is in the **Available** or **Error** state.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Find the target vault and choose **More** > **Delete** in the **Operation** column. All backups stored in the vault will be deleted once you delete a vault.

Step 3 Click **Yes**.

----End

4.3 Dissociating Resources from a Vault

If you no longer need to back up an associated resource, dissociate it from your vault.

After a resource is dissociated, the vault's backup policy no longer applies to the resource. In addition, all manual and automatic backups of this resource will be deleted. Deleted backups cannot be used to restore data.

Dissociating a resource from a vault does not affect the performance of services on the resource.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Find the target vault and click its name.

Step 3 In this example, we will be using the **Cloud Server Backups** page to illustrate the process. Click the **Associated Servers** tab. Find the target server and click **Dissociate** in the **Operation** column.

Step 4 Confirm the information and click **Yes**.

----End

4.4 Migrating Resources from a Vault

Migrating a resource means that you dissociate a resource from a vault and then associate it to another vault. All backups of the resource will be migrated to the destination vault.

Notes and Constraints

- Resources can be migrated only when the source and destination vaults are in the **Available** or **Locked** state.
- Resources can be migrated only when no task is being executed in the source and destination vaults.
- The remaining capacity of the destination vault must be greater than the size of resource backups to be migrated.
- Cross-account resource migration is currently not supported.
- Backups cannot be migrated between a single-AZ backup vault and a multi-AZ backup vault.
- The source and destination vaults must be in the same region.
- The source and destination vaults for resource migration must be of the same types. For example, resources in a server backup vault can be migrated to another server backup vault, but cannot be migrated to another disk backup vault.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Find the target vault and click its name. In this example, we will be using the **Cloud Server Backups** page to illustrate the process.

Step 3 Click the **Associated Servers** tab. Find the target server and click **Migrate** in the **Operation** column.

Step 4 Select the destination vault and click **OK**.

Step 5 View the migration progress on the **Tasks** page. If **Status** changes to **Successful**, the resource has been migrated.

Step 6 Go to the destination vault to confirm that the resource has been associated and all its backups have been migrated.

----End

4.5 Expanding Vault Capacity

You can expand the size of a vault if its total capacity is insufficient.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Find the target vault and choose **More** > **Expand Capacity** in the **Operation** column.

Step 3 Enter the capacity to be added. The minimum value is **1**.

Step 4 Click **Next**. Confirm the settings and click **Submit**.

Step 5 Return to the vault list and check that the capacity of the vault has been expanded.

----End

4.6 Changing Vault Specifications

Server backup vaults and server replication vaults both have two specifications: those for server backups and those for application-consistent backups.

- Server backups are backups of non-database servers.
- Application-consistent backups are backups of database servers.

If you need to back up database servers, change the specifications of the target vault from server backup to application-consistent backup.

You can only change the specifications of a vault from server backup to application-consistent backup, but not the other way around.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click in the upper left corner and select a region.
3. Click and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 On the **Cloud Server Backups** page, find the target vault. Choose **More** > **Change Specifications** in the **Operation** column of the vault.

Step 3 **Application-Consistent Backup** is preset for **Backup Type**. Click **Next**.

Step 4 Click **Submit** and complete the payment. The system automatically changes the vault specifications.

----End

4.7 Managing Vault Tags

You can add, edit, or delete tags of a vault. Vault tags are used to filter and manage vaults only.

Constraints

If your organization has enabled the tag policy type for CBR and has a tag policy attached, you must comply with the tag policy rules when creating vaults, otherwise vaults may fail to be created. Contact the organization administrator to learn more about tag policies.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click in the upper left corner and select a region.
3. Click and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 On the **Vaults** tab, click the name of the target vault and then select the **Tags** tab.

- Adding a tag
  a. Click **Add Tag** in the upper left corner.
  b. In the displayed dialog box, enter the key and value of the new tag.

     Tags are key-value pairs, which are used to identify, classify, and search for vaults. You can add a maximum of 10 tags for a vault, and vault tags are only used for vault search and management.

     Table 4-3 describes the parameters of a tag.

     Table 4-3 Tag parameter description

Parameter	Description	Example Value
Key	Tag key. Each tag of a vault has a unique key. You can customize a key or select the key of an existing tag created in TMS. A tag key: ▪ Can contain 1 to 36 Unicode characters. ▪ Can contain only letters, digits, hyphens (-), and underscores (_).	Key_0001
Value	A tag value can be repetitive or left blank. A tag value: ▪ Can contain 0 to 43 Unicode characters. ▪ Can contain only letters, digits, hyphens (-), and underscores (_).	Value_0001

  c. Click **OK**.
- Editing a tag
  a. In the **Operation** column of the tag that you want to edit, click **Edit**.
  b. In the displayed **Edit Tag** dialog box, enter a new tag value. Table 4-3 describes the parameters.
  c. Click **OK**.
- Deleting a tag
  a. In the **Operation** column of the tag that you want to delete, click **Delete**.
  b. In the displayed dialog box, confirm the deletion information.
  c. Click **Yes**.

----End

5 Backup Management

5.1 Viewing a Backup

Scenario

In the backup list, you can set search criteria to filter backups and view their details. The results contain backup tasks that are running or have completed.

Prerequisites

At least one backup task has been created.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Backups** tab and set filter criteria to view the backups.

- You can search for backups by selecting a status from the **All statuses** drop-down list above the backup list. **Table 5-1** describes the backup statuses.

Table 5-1 Backup statuses

Status	Status Attribute	Description
All statuses	--	All backups are displayed if this value is selected.
Available	A stable state	A stable state of a backup after the backup is created, indicating that the backup is currently not being used. This state allows most of the operations.
Creating	An intermediate state	An intermediate state of a backup from the start of a backup job to the completion of this job. In the **Tasks** list, a progress bar is displayed for a backup task in this state. If the progress bar remains unchanged for an extended time, an exception has occurred. Contact technical support.
Restoring	An intermediate state	An intermediate state when using the backup to restore data. In the **Tasks** list, a progress bar is displayed for a restoration task in this state. If the progress bar remains unchanged for an extended time, an exception has occurred. Contact technical support.
Deleting	An intermediate state	An intermediate state from the start of deleting the backup to the completion of deleting the backup. In the **Tasks** list, a progress bar is displayed for a deletion task in this state. If the progress bar remains unchanged for an extended time, an exception has occurred. Contact technical support.
Error	A stable state	A backup enters the **Error** state when an exception occurs. A backup in this state cannot be used for restoration, and must be deleted manually. If manual deletion fails, contact technical support.

- You can search for backups by clicking **Advanced Search** above the backup list.

  You can search by specifying a backup name, backup ID, backup status, server name, server ID, server type, protection type, or the creation date.

Step 3 Click the backup name to view details about the backup.

----End

5.2 Sharing a Backup

Scenarios

You can share server or disk backups with projects of other accounts. Shared backups can be used to create servers or disks.

Context

Sharer

- Backups can only be shared among projects of accounts in the same region. They cannot be shared across regions.
- Encrypted backups cannot be shared. Backups cannot be shared across regions. Account to which a backup is shared must be in the same region as the backup.
- When a sharer deletes a shared backup, the backup will also be deleted from the recipient's account, but the disks or servers previously created using the backup will be retained.

Recipient

- A recipient must have at least one backup vault to store the accepted shared backup, and the vault's remaining space must be greater than the size of the backup to be accepted.
- A recipient can choose to accept or reject a backup. After accepting a backup, the recipient can use the backup to create new servers or disks.
- When a sharer deletes a shared backup, the backup will also be deleted from the recipient's account, but the disks or servers previously created using the backup will be retained.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Backups** tab and set filter criteria to view the backups.

Step 3 Locate the target backup and choose **More** > **Share Backup** in the **Operation** column.

The backup name, server or disk name, backup ID, and backup type are displayed.

- Sharing a backup

1. Click the **Share Backup** tab.
2. Enter the account name of the recipient.
3. Click **Add**.

   The account and project to be added will be displayed in the list. You can add multiple account names. A backup can be shared to a maximum of 10 projects.
4. Click **OK**.

- Canceling sharing

1. Click the **Cancel Sharing** tab, select the projects you want to cancel sharing, and click **OK**.

----End

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Backups** tab and then click **Backups Shared with Me**.

Step 3 Ensure that the recipient has at least one backup vault before accepting the shared backup. For how to purchase a backup vault, see **Step 1: Create a Vault**.

Step 4 Click **Accept**. On the displayed page, select the vault used to store the shared backup. Ensure that the vault's remaining capacity is greater than the backup size.

Automatic Association: Determine whether to enable automatic association for the vault. If you select **Configure**, the vault automatically scans and associates in the next backup period servers that have not been backed up and performs backup.

Step 5 View the shared backup you accepted in the backup list.

----End

5.3 Deleting a Backup

You can delete unwanted backups to reduce space usage and costs.

CBR supports manual deletion of backups and automatic deletion of expired backups. The latter is executed based on the backup retention rule in the backup policy. For details, see **Creating a Backup Policy**.

NOTE

- Backups are not stored on a server. Deleting backups has no impact on the server performance.
- If a backup has been created and the next backup task is in progress, CBR will not allow you to delete the most recent backup created. You can delete the backup only after the backup task is complete.
- CBR automatically creates snapshots during backup and retains the latest snapshot for each disk.

Prerequisites

- There is at least one backup.
- The backup to be deleted is in the **Available** or **Error** state.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Backups** tab and locate the desired backup. For details, see **Viewing a Backup**.

Step 3 Choose **More** > **Delete** from the **Operation** column. Alternatively, select the backups you want to delete in a batch and click **Delete** in the upper left corner to delete them.

Step 4 Click **Yes**.

----End

6 Policy Management

6.1 Viewing the Policy of a Vault

After a policy is created, you can view the policy in the policy list or on the vault details page.

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery** > **Policies**.

Step 2 View the created policy in the policy list. In the search box above the list, you can select an attribute or enter a keyword to search for policies.

Step 3 After creating a policy and applying it to a vault, you can view the policy on the vault details page. Select a backup type on the left navigation pane. On the page displayed, locate the desired vault, click the vault name.

Step 4 View the policy applied to the vault.

----End

6.2 Creating a Backup Policy

A backup policy allows CBR to automatically back up vaults at specified times or intervals. Periodic backups can be used to restore data quickly against data corruption or loss.

To implement periodic backups, you need a backup policy first. You can use the default backup policy or create one as needed.

Peak hours for the backup service are from 22:00 to 08:00, during which there may be delays. So you are advised to evaluate your service types and schedule backups during off-peak hours.

Constraints

- Backup policies can be applied to server backup vaults, disk backup vaults, SFS Turbo backup vaults.
- A backup policy must be enabled before it can be used for periodic backups.
- A maximum of 32 backup policies can be created in each account.
- When expired backups are deleted, automatic backups will be deleted, but manual backups will not.
- Only servers in the **Running** or **Stopped** state and disks in the **Available** or **In-use** state can be backed up.
- CBR by default performs a full backup for a resource in the initial backup and incremental backups in subsequent backups.
- The minimum interval between two full backups is one day.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**.

Step 2 Choose **Policies** in the left navigation pane and click the **Backup Policies** tab. In the upper right corner, click **Create Policy**.

Step 3 Set the backup policy parameters. **Table 6-1** describes the parameters.

Table 6-1 Backup policy parameters

Parameter	Description	Example Value
Type	Select a policy type. In this example, select the backup policy.	Backup policy
Policy Name	Backup policy name A name must contain 1 to 64 characters including digits, letters, underscores (_), or hyphens (-).	backup_policy
Status	Whether to enable the backup policy.	Only after a backup policy is enabled and applied will CBR automatically backs up the vault resources and deletes expired backups.
Execution Time	Time when the backup is executed. Backups can be scheduled at the beginning of each hour, and you can select multiple hours. **NOTICE** ● There may be a time difference between the scheduled backup time and the actual backup time. ● If a large amount of data needs to be backed up, you are advised to make backup less frequent to prevent the system from skipping any execution time. For example, a disk is scheduled to be backed up at 00:00, 01:00, and 02:00. A backup task starts at 00:00. Because a large amount of incremental data needs to be backed up or a heap of backup tasks are executed at the same time, this backup task takes 90 minutes and completes at 01:30. CBR performs the next backup at 02:00. In this case, only two backups are generated in total, one at 00:00, and the other at 02:00. ● The execution times refer to the local times of clients, not the time zone and times of the region.	00:00, 02:00 ● It is recommended that backups be performed during off-peak hours or when no services are running. ● Peak hours for the backup service are from 00:00 to 06:00, during which there may be scheduling delays. So you are advised to evaluate your service types and schedule backups outside of the backup peak hours.

Parameter	Description	Example Value
Backup Cycle	Select a backup cycle. • **Week-based cycle** Specifies on which days of each week the backup task will be executed. You can select multiple days. • **Custom cycle** Specifies the interval (every 1 to 30 days) for executing the backup task.	Every day If you select day-based backup, the first backup is supposed to be executed on the day when the backup policy is created. If the execution time on the day you create the backup policy has passed, the first backup will be executed in the next backup cycle. It is recommended that backups be performed during off-peak hours or when no services are running.

Parameter	Description	Example Value
Retention Rule	Rule that specifies how backups will be retained • **Time period** You can choose to retain backups for one month, three months, six months, one year, or for any desired number (2 to 99999) of days. • **Backup quantity** You can set the maximum number of backups to retain for each resource. The value ranges from 2 to 99999. • **Permanent**	6 months

Parameter	Description	Example Value
	NOTE – The system automatically deletes the earliest and expired backups every other day to avoid exceeding the maximum number of backups to retain or retaining any backup longer than the maximum retention period. – Expired backups are not deleted right after they are expired. They will be **deleted during 08:00 to 20:00 in batches**. For example, if a backup expired at 20:00 on November 23, 2024, it will be deleted during 08:00 to 20:00 on November 24, 2024. In this way, backup data can be deleted during off-peak hours. – The retention rules apply only to auto-generated backups, but not manual backups. Manual backups need to be deleted manually. – If a backup is used to create an image, the backup will not be deleted by the retention rule. Instead, it will be forcibly retained. If you delete the image created from the backup, the backup will be retained based on the original retention rule applied. (If the backup expires or is not within the most recent backups specified in the retention rule, CBR will automatically delete the backup.) – A maximum of 10 failed periodic backups are retained. They are retained for one month and can be deleted manually. – If a backup has been generated and the next backup task is in progress, CBR will not allow you to delete the most recent backup generated. You can delete the backup only after the ongoing backup task is complete.	

NOTE

More frequent backups create more backups or retain backups for a longer time, protecting data to a greater extent but occupying more storage space. Set an appropriate backup frequency as needed.

Step 4 Click **Create Now**.

NOTE

You can locate the desired vault and choose **More** > **Apply Backup Policy** in the **Operation** column to apply the policy to the vault. Then you can view the applied policy on the vault details page. After the policy is applied, data will be periodically backed up to the vault based on the policy.

----End

Example

At 10:00 a.m. on Monday, a user sets a backup policy for their vault to instruct CBR to execute a backup task at 02:00 a.m. every day and retain a maximum of three backups. As of 11:00 a.m. on Saturday, three backups will be retained, which are generated on Thursday, Friday, and Saturday. The backups generated at 02:00 a.m. on Tuesday and Wednesday have been automatically deleted.

6.3 Modifying a Policy

You can modify backup policies if needed.

Prerequisites

At least one policy has been created.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Find the target vault and click the vault name to view its details.

Step 3 In the **Policies** area, click **Edit** in the row of the policy to be edited.

Related parameters are described in **Table 6-1**.

Step 4 Click **OK**.

If the retention rule is modified, the new rule does not necessarily apply to existing backups. For details, see **Why the New Retention Rule I Changed Is Not Applied?**

Step 5 Alternatively, select **Policies** from the navigation pane on the left and edit the desired policy.

----End

6.4 Deleting a Policy

You can delete policies if they are no longer needed.

Prerequisites

At least one policy has been created.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click in the upper left corner and select a region.
3. Click and choose **Storage** > **Cloud Backup and Recovery**.

Step 2 Click the **Backup Policies** tab, locate the row that contains the policy you want to delete, and click **Delete**.

NOTE

Deleting a policy will not delete the backups generated based on the policy. You can manually delete unwanted backups.

Step 3 Confirm the information and click **Yes**.

----End

6.5 Applying a Policy to a Vault

You can apply a backup policy to a vault to execute backup tasks at specified times or intervals.

Constraints

You can create multiple policies, but a can apply only one backup policy to a vault.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click in the upper left corner and select a region.
3. Click and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Find the target vault and choose **More** > **Apply Backup Policy**.

Step 3 Select an existing backup policy from the drop-down list or create a new one. For how to create a policy, see **Creating a Backup Policy**.

Step 4 After the policy is successfully applied, view details in the **Policies** area of the vault details page.

----End

6.6 Removing a Policy from a Vault

Scenarios

If you need to cancel auto backup of a vault, remove the policy from the vault, or disable the policy. This section describes how to remove a policy from a vault.

Prerequisites

A policy has been applied to the vault.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Find the target vault and click the vault name to view its details.

Step 3 In the **Policies** area, click **Remove Policy**.

NOTE

- You can remove a policy from a vault when the vault resources are being backed up. In this case, backup tasks will continue, and backups will be generated.
- After a policy is removed, backups retained by **Time period** will expire based on the retention rule, but backups retained by **Backup quantity** will not. You need manually delete unwanted backups.

Step 4 Click **Yes**.

Tasks will no longer be executed based on this policy for the vault.

----End

7 Organizational Policy Management

7.1 Creating an Organizational Backup Policy

An enterprise can use an organization's management account to configure organizational backup policies for all the member accounts in the organization. All member accounts in the organization can use the created organizational backup policies.

This section describes how to create an organizational backup policy.

Constraints

- Backup policies can be applied to server backup vaults, disk backup vaults, SFS Turbo backup vaults.
- A backup policy must be enabled before it can be used for periodic backups.
- A maximum of 32 backup policies can be created in each account.
- When expired backups are deleted, automatic backups will be deleted, but manual backups will not.
- Only servers in the **Running** or **Stopped** state and disks in the **Available** or **In-use** state can be backed up.
- CBR by default performs a full backup for a resource in the initial backup and incremental backups in subsequent backups.
- The minimum interval between two full backups is one day.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click in the upper left corner and select a region.

3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Choose **Organizational Policies** in the left navigation pane and click the **Organizational Backup Policies** tab. In the upper right corner, click **Create Organizational Policy**.

Step 3 Set the backup policy parameters. **Table 7-1** describes the parameters.

Table 7-1 Backup policy parameters

Parameter	Description	Example Value
Organizational Policy Name	Organizational policy name A name must contain 1 to 64 characters including digits, letters, underscores (_), or hyphens (-).	org_policy
Organizational Policy Description	Description that can help the organization members to understand the usage of the policy.	/
Organizational Policy Type	Select a policy type. In this section, we select the backup policy.	Backup policy
Policy Name	Backup policy name A name must contain 1 to 64 characters including digits, letters, underscores (_), or hyphens (-).	backup_policy
Status	Whether to enable the backup policy.	Only after a backup policy is enabled and applied will CBR automatically backs up the vault resources and deletes expired backups.

Parameter	Description	Example Value
Execution Time	Execution times of the backup policy in a day Backups can be scheduled at the beginning of each hour, and you can select multiple hours. **NOTICE** • There may be a time difference between the scheduled backup time and the actual backup time. • If a large amount of data needs to be backed up, you are advised to make backup less frequent to prevent the system from skipping any execution time. For example, a disk is scheduled to be backed up at 00:00, 01:00, and 02:00. A backup task starts at 00:00. Because a large amount of incremental data needs to be backed up or a heap of backup tasks are executed at the same time, this backup task takes 90 minutes and completes at 01:30. CBR performs the next backup at 02:00. In this case, only two backups are generated in total, one at 00:00, and the other at 02:00. • The execution times refer to the local times of clients, not the time zone and times of the region.	00:00, 02:00 • It is recommended that backups be performed during service off-peak hours or when no services are running. • Peak hours of the backup service are from 00:00 to 06:00, during which there may be scheduling delays. So you are advised to evaluate your service types and schedule backups outside of the backup peak hours.
Backup Cycle	Select a backup cycle. • **Week-based cycle** Specifies on which days of each week the backup task will be executed. You can select multiple days. • **Custom cycle** Specifies the interval (every 1 to 30 days) for executing the backup task.	Every day If you select day-based backup, the first backup is supposed to be executed on the day when the backup policy is created. If the execution time on the day you create the backup policy has passed, the first backup will be executed in the next backup cycle. It is recommended that backups be performed during service off-peak hours or when no services are running.

Parameter	Description	Example Value
Retention Rule	Rule that specifies how backups will be retained • **Time period** You can choose to retain backups for one month, three months, six months, one year, or for any desired number (2 to 99999) of days. • **Backup quantity** You can set the maximum number of backups to retain for each resource. The value ranges from 2 to 99999. • **Permanent** **NOTE** – The system automatically deletes the earliest and expired backups every other day to avoid exceeding the maximum number of backups to retain or retaining any backup longer than the maximum retention period. – Expired backups are not deleted right after they are expired. They will be deleted from 12:00 to 00:00 in batches. – The retention rules apply only to auto-generated backups, but not manual backups. Manual backups need to be deleted manually. – If a backup is used to create an image, the backup will not be deleted by the retention rule. – A maximum of 10 backups are retained for failed periodic backup tasks. They are retained for one month and can be deleted manually.	6 months

NOTE

More frequent backups create more backups or retain backups for a longer time, protecting data to a greater extent but occupying more storage space. Set an appropriate backup frequency as needed.

Step 4 Click **Create Now**.

NOTE

After the backup policy is created, it will automatically appear in each member account's policy list.

----End

Follow-Up Operations

- **Modifying a Policy**
- **Deleting a Policy**

7.2 Creating an Organizational Replication Policy

An enterprise can use an organization's management account to configure organizational replication policies for all the member accounts in the organization. All member accounts in the organization can use the created organizational replication policies.

This section describes how to create an organizational replication policy.

Constraints

- You can only apply replication policies to server backup vaults.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click in the upper left corner and select a region.
3. Click and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Choose **Organizational Policies** in the left navigation pane and click the **Organizational Replication Policies** tab. In the upper right corner, click **Create Organizational Policy**. Select **Replication** for **Organizational Policy Type**. See #cbr_07_0051/cbr_03_0026_fig1610315463012.

Step 3 Set the replication policy parameters. **Table 7-2** describes the parameters.

Table 7-2 Replication policy parameters

Parameter	Description	Example Value
Organizational Policy Name	Organizational policy name A name must contain 1 to 64 characters including digits, letters, underscores (_), or hyphens (-).	org_policy

Parameter	Description	Example Value
Organizational Policy Description	Description that can help the organization members to understand the usage of the policy.	/
Organizational Policy Type	Select a policy type. In this section, we select the replication policy.	Replication policy
Policy Name	Replication policy name A name must contain 1 to 64 characters including digits, letters, underscores (_), or hyphens (-).	replication_policy
Status	Whether to enable the replication policy	Only after a replication policy is enabled and applied will CBR automatically replicates the backups in the vaults and deletes expired backup replicas.
Execution Time	Execution times of the replication policy in a day Replication tasks can be scheduled at the beginning of each hour, and you can select multiple hours.	00:00, 02:00 It is recommended that replication be performed during off-peak hours or when no services are running.
Replication Frequency	Select a replication frequency. • **Weekly** Specifies on which days of each week the replication task will be executed. You can select multiple days. • **Day based** Specifies the interval (every 1 to 30 days) for executing the replication task.	Every day If you select day-based replication, the first replication is supposed to be executed on the day when the replication policy is created. If the execution time on the day you create the replication policy has passed, the first replication will be performed in the next replication cycle.

Parameter	Description	Example Value
Retention Rule	Rule that specifies how backup replicas will be retained in the destination region • **Backup quantity** You can set the maximum number of backup replicas to retain for each resource. The value ranges from 2 to 99999. • **Time period** You can choose to retain backup replicas for one month, three months, six months, one year, or for any desired number (2 to 99999) of days. • **Permanent** **NOTE** – The system automatically deletes the earliest and expired backup replicas every other day to avoid exceeding the maximum number of backup replicas to retain or retaining any backup replica longer than the maximum retention period. – There will be delays for CBR to delete expired backup replicas, but normally these delays will not be over 24 hours. – The retention rules apply only to auto-generated backup replicas, but not manual ones. Manual backup replicas need to be deleted manually. – After a backup replica is used to create an image, the replica will not be deleted by the retention rule.	6 months
Destination Region	Region to which backups are replicated Only the regions that support replication will be displayed. • If the selected region contains only one project, you can directly select the region name. • If the selected region has multiple projects, the default project of the region is preselected. You can select another project if needed.	-

Step 4 Click **Create Now**.

NOTE

After the replication policy is created, it will automatically appear in each member account's policy list.

----End

Follow-Up Operations

- **Modifying a Policy**
- **Deleting a Policy**

8 Application-Consistent Backup

8.1 Application-Consistent Backup

Overview

There are three types of backups in terms of backup consistency:

- Inconsistent backup: An inconsistent backup contains data taken from different points in time. This typically occurs if changes are made to your files or disks during the backup. CBR cloud server backup uses the consistency snapshot technology for disks to protect data of ECSs. If you back up multiple EVS disks separately, the backup time points of the EVS disks are different. As a result, the backup data of the EVS disks is inconsistent.
- Crash-consistent backup: A crash-consistent backup captures all data on disks at the time of the backup and does not capture data in memory or any pending I/O operations. Although it cannot ensure application consistency, disks are checked by **chkdsk** upon operating system restart to restore damaged data and undo logs are used by databases to keep data consistent.
- Application-consistent backup: An application-consistent backup captures data in memory or any pending I/O operations and allows applications to achieve a quiescent and consistent state.

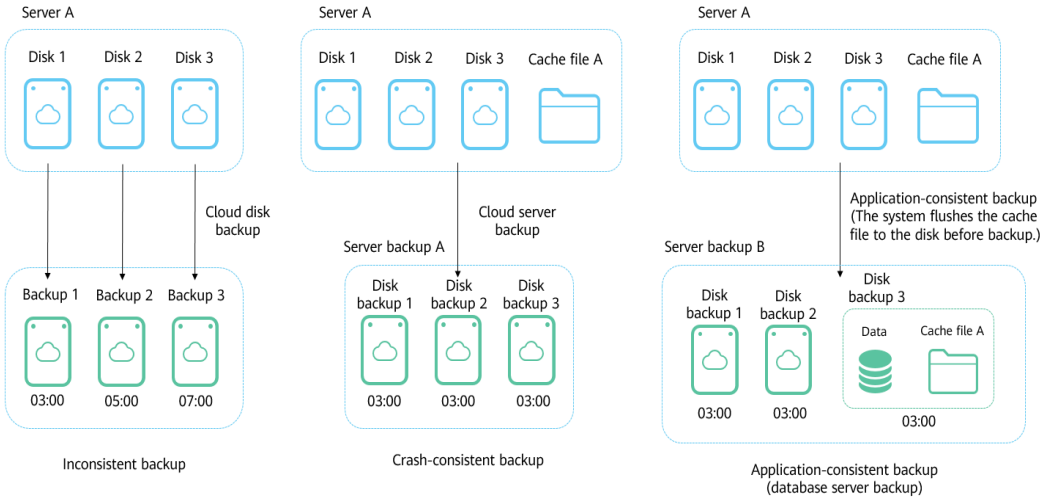
Figure 8-1 compares these backup types in detail.

CBR supports both crash-consistent backup (also called cloud server backup) and application-consistent backup.

Crash-consistent backup does not back up data in memory or pending I/O operations and cannot be used to restore applications. If your server is running a

MySQL or SAP HANA database, you can use application-consistent backup. An application-consistent backup capture application information both in memory and in pending I/O operations and can be used to quickly restore applications.

Figure 8-1 Backup consistency



Differences Between Application-Consistent Backup and Cloud Server Backup

Item	Application-Consistent Backup	Cloud Server Backup
Object	Cloud servers with MySQL or SAP HANA database deployed	Cloud servers without databases
Granularity	Cloud server	Cloud server
Vault	Server backup vault	Server backup vault
Recommended scenario	Data of cloud servers and their databases such as MySQL or SAP HANA database needs to be backed up. All data and application configurations need to be restored in case of an error.	Only data of cloud servers needs to be backed up. Such data needs to be restored in case of an error. If cloud server backup is used to back up database servers, some database configurations may fail to be restored from the backups and issues may occur when the database is restarted.

NOTICE

There are two types of vaults to store server backups. Those store backups of non-database servers are server backup vaults, and those store backups of database servers are database server backup vaults.

Application Scope

Table 8-1 lists the OSs that support the installation of Agent.

Table 8-1 OSs that support installation of the Agent

Database	OS	Version
SQL Server 2008/2012/2019	Windows	Windows Server 2008, 2008 R2, 2012, 2012 R2, and 2019 for x86_64
SQL Server 2014/2016/ Enterprise Edition	Windows	Windows Server 2014, 2014 R2, and 2016 Datacenter for x86_64
MySQL 5.5/5.6/5.7	Red Hat	Red Hat Enterprise Linux 6 and 7 for x86_64
	SUSE	SUSE Linux Enterprise Server 11 and 12 for x86_64
	CentOS	CentOS 6 and 7 for x86_64
	EulerOS	EulerOS 2.2 and 2.3 for x86_64
HANA 1.0/2.0	SUSE	SUSE Linux Enterprise Server 12 for x86_64

NOTE

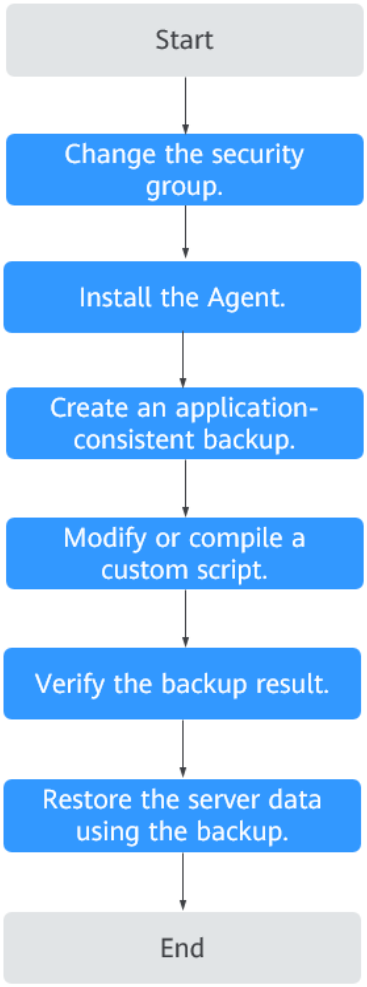
For Windows servers, ensure that Volume Shadow Copy is installed and can run properly.

For databases that are not in the compatibility list, you can create a custom script to back up the database server by referring to Using a Custom Script to Implement Application-Consistent Backup in the *Cloud Backup and Recovery Best Practices*.

Process

Figure 8-2 shows the application-consistent backup process.

Figure 8-2 Application-consistent backup process



Step 1 Change the security group: Before performing an application-consistent backup task, change the security group of the server you want to back up.

Step 2 Install the agent: Change the security group and install the agent in any sequence. Ensure that the two operations are completed before backing up the desired server.

Step 3 Create an application-consistent backup: After creating a server backup vault for storing application-consistent backups, associate it with the desired database server and then create an application-consistent backup.

Step 4 Modify or compile a custom script: After backing up a database server on the CBR console, modify or compile a custom script on the database of the server. For details, see the *Cloud Backup and Recovery Best Practices*.

Step 5 Verify the backup result: After the backup is performed, verify that the backup succeeds. For details, see the *Cloud Backup and Recovery Best Practices*.

Step 6 Use the backup to restore server data: Use the application-consistent backup to restore server data. The restored database applications and data are the same as

those at the backup point in time. For details, see **Restoring from a Cloud Server Backup**.

----End

8.2 Changing a Security Group

Context

A security group is a collection of access control rules for ECSs that have the same security protection requirements and are mutually trusted in a VPC. After a security group is created, you can create different access rules for the security group to protect the ECSs that are added to this security group. The default security group rule allows all outgoing data packets. ECSs in a security group can access each other without the need to add rules. The system creates a security group for each cloud account by default. You can also create custom security groups by yourself.

When creating a security group, you must add the inbound and outbound access rules and enable the ports required for application-consistent backup to prevent application-consistent backup failures.

Operation Instructions

Before using the application-consistent backup function, you need to change the security group. To ensure network security, CBR has not set the inbound direction of a security group, so you need to manually configure it.

In the outbound direction of the security group, ports 1 to 65535 on the 100.125.0.0/16 network segment must be configured. In the inbound direction, ports 59526 to 59528 on the 100.125.0.0/16 network segment must be configured. The default outbound rule is 0.0.0.0/0, that is, all data packets are permitted. If the default rule in the outbound direction is not modified, you do not need to configure the outbound direction.

Procedure

Step 1 Log in to the ECS console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Under **Computing**, click **Elastic Cloud Server**.

Step 2 In the navigation pane on the left, choose **Elastic Cloud Server** or **Bare Metal Server**. On the page displayed, select the target server. Go to the server details page.

Step 3 Click the **Security Groups** tab and select the target security group. On the right of the ECS page, click **Modify Security Group Rule** for an ECS. Click **Change Security Group** for a BMS. In the displayed dialog box, click **Manage Security Group**.

Step 4 On the **Security Groups** page, click the **Inbound Rules** tab, and then click **Add Rule**. The **Add Inbound Rule** dialog box is displayed. Select **TCP** for **Protocol/**

Application, enter **59526-59528** in **Port & Source**, select **IP address** for **Source** and enter **100.125.0.0/16**. After supplementing the description, click **OK** to complete the setting of the inbound rule.

Step 5 Click the **Outbound Rules** tab, and then click **Add Rule**. The **Add Outbound Rule** dialog box is displayed. Select **TCP** for **Protocol/Application**, enter **1-65535** in **Port & Source**, select **IP address** for **Destination** and enter **100.125.0.0/16**. After supplementing the description, click **OK** to complete the setting of the outbound rule.

----End

8.3 Installing the Agent

Before enabling application-consistent backup, change the security group and successfully install the Agent on your ECSs.

If application-consistent backup is enabled but Agent is not installed on servers, application-consistent backup will fail, and a common server backup will be performed instead. To ensure that application-consistent backup is properly executed, download and install the Agent first.

Operation Instructions

- During the Agent installation, the system requires the **rdadmin** user's permissions to run the installation program. To improve O&M security, change the user **rdadmin**'s password of the Agent OS regularly and disable this user's remote login permission. For details, see **Changing the Password of User rdadmin**.
- **Table 8-2** lists OSs that support installation of the Agent.

Table 8-2 OSs that support installation of the Agent

Database	OS	Version
SQL Server 2008/2012/2019	Windows	Windows Server 2008, 2008 R2, 2012, 2012 R2, and 2019 for x86_64
SQL Server 2014/2016/Enterprise Edition	Windows	Windows Server 2014, 2014 R2, and 2016 Datacenter for x86_64
MySQL 5.5/5.6/5.7	Red Hat	Red Hat Enterprise Linux 6 and 7 for x86_64
	SUSE	SUSE Linux Enterprise Server 11 and 12 for x86_64
	CentOS	CentOS 6 and 7 for x86_64
	EulerOS	EulerOS 2.2 and 2.3 for x86_64

Database	OS	Version
HANA 1.0/2.0	SUSE	SUSE Linux Enterprise Server 12 for x86_64

NOTE

For Windows servers, ensure that Volume Shadow Copy is installed and can run properly.

- Table 8-3 lists the supported SHA256 values.

Table 8-3 SHA256 values

Package Name	SHA256 Value
Cloud Server Backup Agent-CentOS6-x86_64.tar.gz	f0c59ccb4443bcb6e874bf6e3c574914f9f8b27f3f7379e2d81956a9972802f3
Cloud Server Backup Agent-CentOS7-x86_64.tar.gz	2d3028cb794e1699bae9f65746a60ae99be17d5c4c5e7ebe6b45ff261db9c3c7
Cloud Server Backup Agent-EulerOS2-x86_64.tar.gz	4fb4cf9cb6f5b0e6c13d8ad8bf928754cb95332ee645a97fd0bb3fcbeb53d003
Cloud Server Backup Agent-RedHat6-x86_64.tar.gz	6ae3838fb5644f0f47282c211fe20c6b57a7c5c1d683cd5a1f55860d259b2054
Cloud Server Backup Agent-RedHat7-x86_64.tar.gz	40fa68a808d9da04672678b2773e3345ea6c9dee3c17d598acb66a023cc5cacc
Cloud Server Backup Agent-SuSE11-x86_64.tar.gz	346cc9f1fc0a41a817abb2db61e657a4d615449e13bc46f1c1cfbadc0b281f47
Cloud Server Backup Agent-SuSE12-x86_64.tar.gz	625279b9c9d17ddcc4210b78242efebacdad73f808b86754659d243ece85a400
Cloud Server Backup Agent-WIN64.zip	b7b2067ac89f1fec635d82e3fe2ea794ce6482f9880838f34924b383be44ac4e

NOTICE

To install the Agent, the system will open the firewall of a port from 59526 to 59528 of the ECS. When port 59526 is occupied, the firewall of port 59527 is enabled, and so on.

Prerequisites

- The username and password for logging in to the console have been obtained.
- The security group has been configured.
- The **Agent Status** of the ECS is **Not installed**.
- If you use Internet Explorer, you need to add the websites you will use to trusted sites.

Installing the Agent for a Linux OS (Method 1)

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Agent Installation** tab.

Step 3 In method 1, select the corresponding Agent version as required, and copy the installation command in step 2.

Step 4 On the ECS page, select the target server and click **Remote Login** in the **Operation** column to log in to the ECS.

NOTE

Ensure that the package's SHA256 value is the same as that listed in **Table 8-3**.

For how to obtain the software package, go to method 2. Specifically, click **Download**, and then on the displayed page, select a version based on the target ECS OS and click **OK**.

Step 5 Paste the installation command in step 2 to the ECS and run the command as user **root**.

If the execution fails, run the **yum install -y bind-utils** command to install the dig module. If the installation still fails, use method 2 to install the Agent for a Linux OS.

Step 6 After the installation is complete, Agent is running properly. To implement application-consistent backup for MySQL, SAP HANA, or other types of databases,

modify or compile a custom script by referring to the *Cloud Backup and Recovery Best Practices*.

----End

Installing the Agent for a Linux OS (Method 2)

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Agent Installation** tab.

Step 3 In method 2, click **Download**. On the displayed download page, select the version to be downloaded based on the OS of the target ECS, and click **OK**.

Step 4 After downloading the Agent to a local directory, check that the package's SHA256 value is the same as that listed in **Table 8-3**.

Step 5 Use a file transfer tool, such as Xftp, SecureFX, or WinSCP, to upload the Agent installation package to your ECS.

Step 6 After the upload, go to the ECS page. Select the target server and click **Remote Login** in the **Operation** column to log in to the ECS.

Step 7 Run the **tar -zxvf** command to decompress the Agent installation package to any directory and run the following command to go to the **bin** directory:

cd bin

Step 8 Run the following command to run the installation script:

sh agent_install_ebk.sh

Step 9 The system displays a message indicating that the client is installed successfully.

Step 10 If the MySQL or SAP HANA database has been installed on the ECS, run the following command to encrypt the password for logging in to the MySQL or SAP HANA database:

/home/rdadmin/Agent/bin/agentcli encpwd

Step 11 Use the encrypted password in **previous step** to replace the database login password in the script in **/home/rdadmin/Agent/bin/thirdparty/ebk_user/**.

Step 12 After the installation is complete, Agent is running properly. To implement application-consistent backup for MySQL, SAP HANA, or other types of databases,

modify or compile a custom script by referring to the *Cloud Backup and Recovery Best Practices*.

----End

Installing the Agent for a Windows OS (Method 1)

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Agent Installation** tab.

Step 3 In method 1, click **Download**. Save the downloaded installation package to a local directory.

Step 4 After downloading the Agent to a local directory, check that the package's SHA256 value is the same as that listed in **Table 8-3**.

Step 5 Use a file transfer tool, such as Xftp, SecureFX, or WinSCP, to upload the Agent installation package to your ECS.

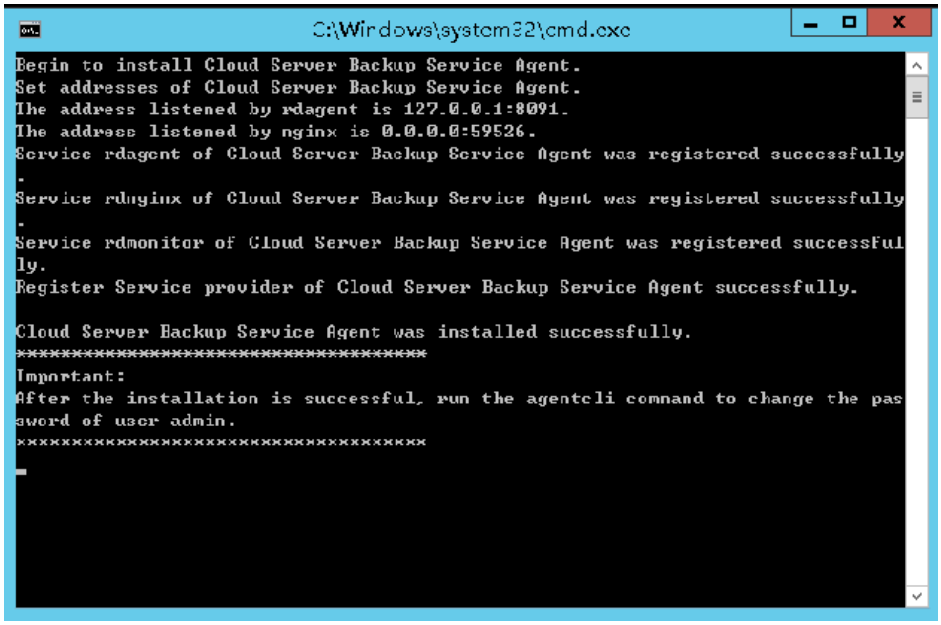
Step 6 Log in to the console and then log in to the ECS as the administrator.

Step 7 Decompress the installation package to any directory and go to the *Installation path***bin** directory.

Step 8 Double-click the **agent_install_ebk.bat** script to start the installation.

Step 9 The system displays a message indicating that the client is installed successfully. See **Figure 8-3**.

Figure 8-3 Successful client installation for Windows



----End

Installing the Agent for a Windows OS (Method 2)

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click in the upper left corner and select a region.
3. Click and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Agent Installation** tab.

Step 3 On the ECS page, select the target server and click **Remote Login** in the **Operation** column to log in to the ECS as the administrator.

Step 4 Copy the installation commands in step 2 of method 2 to the server and run the command in the Command Prompt.

Step 5 Copy the installation command in step 3 of method 2 to the browser. The following uses ***region1*** as the example region. Then press **Enter** to download the installation package.

https://csbs-agent-*region1*.obs.*region1*.xxxxx/Cloud Server Backup Agent-WIN64.zip

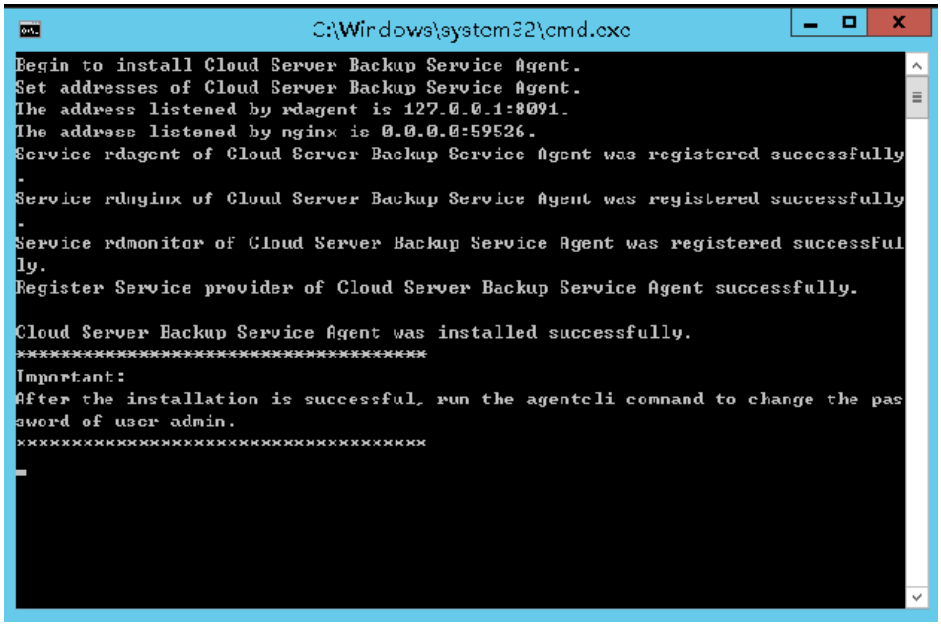
Step 6 After downloading the Agent to a local directory, check that the package's SHA256 value is the same as that listed in **Table 8-3**.

Step 7 Decompress the file to obtain the installation file. Decompress the installation package to any directory and go to the *Installation path***bin** directory.

Step 8 Double-click the **agent_install_ebk.bat** script to start the installation.

Step 9 The system displays a message indicating that the client is installed successfully. See **Figure 8-4**.

Figure 8-4 Successful client installation for Windows



----End

8.4 Creating an Application-Consistent Backup

Cloud server backup supports application-consistent backup in addition to crash-consistent backup. You can use cloud server backup to back up ECSs running MySQL or SAP HANA databases, because application-consistent backup ensures that the backed-up data is transactionally consistent.

Constraints

- Application-consistent backup is currently not supported for cluster applications, such as, MySQL Cluster. It is supported only for applications on standalone servers.
- You are advised to perform application-consistent backup in off-peak hours.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click in the upper left corner and select a region.
3. Click and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Create a vault for application-consistent backups by referring to **Creating a Server Backup Vault**. Select **Enable** for **Application-Consistent Backup**.

Step 3 Associate the cloud servers with the created vault. Ensure that the Agent has been installed on the servers.

Step 4 Create a cloud server backup by referring to **Creating a Cloud Server Backup**.

- If an application-consistent backup is created successfully, a blue letter "A" is displayed next to the backup name in the backup list.
- If an application-consistent backup fails to be created, the system automatically creates a cloud server backup instead and stores the backup in the vault, and a gray letter "A" is displayed next to the backup name in the backup list. You can view the failure cause in the **Management Information** area on the backup details page.

Step 5 Return to the cloud server backup page as prompted. If the backup execution fails, rectify the fault based on the failure details shown on the page.

----End

Follow-up Procedure

If data is lost due to virus attacks or database faults, you can restore the data by following instructions in **Restoring from a Cloud Server Backup** and **Creating an Image from a Cloud Server Backup**.

8.5 Uninstalling the Agent

Scenarios

This section describes how to uninstall the Agent when application-consistent backup is no longer needed.

Prerequisites

The username and password for logging in to an ECS have been obtained.

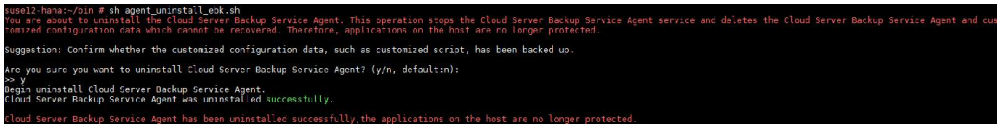
Uninstalling the Agent for Linux

Step 1 Log in to the ECS and run the **su -root** command to switch to user **root**.

Step 2 In the **home/rdadmin/Agent/bin** directory, run the following command to uninstall the Agent. **Figure 8-5** displays an example. If the word **successfully** in green is displayed, the Agent is uninstalled successfully.

sh agent_uninstall_ebk.sh

Figure 8-5 Agent uninstalled successfully from Linux



----End

Uninstalling the Agent for Windows

Step 1 Log in to the ECS.

Step 2 In the *Installation path***bin** directory, double-click **agent_uninstall_ebk.bat**. The window for uninstalling the Agent is displayed.

After the uninstallation is complete and successful, the window will be automatically closed. See **Figure 8-6**.

Figure 8-6 Agent uninstalled successfully from Windows

----End

9 Restoring Data

9.1 Restoring from a Cloud Server Backup

When disks on a server are faulty or their data is lost, you can use a backup to restore the server to its state when the backup was created.

NOTE

The system shuts down the server before restoring server data, and automatically starts up the server after the restoration is complete. If you deselect **Start the server immediately after restoration**, you need to manually start the server after the restoration is complete.

Constraints

- When restoring from a cloud server backup, backup of a data disk cannot be restored to the system disk.
- Data cannot be restored to servers in the **Faulty** state.

Prerequisites

- Disks are running properly on the server whose data needs to be restored.
- The server has at least one **Available** backup.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.

2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Backups** tab. Locate the desired backup. For details, see **Viewing a Backup**.

Step 3 Click **Restore Server** in the **Operation** column.

NOTICE

The current server data will be overwritten by the data captured at the time of backup. The restoration cannot be undone.

Step 4 (Optional) Deselect **Start the server immediately after restoration**.

If you do so, manually start the server after the restoration is complete.

NOTICE

Servers will be shut down during restoration, so you are advised to perform a restoration during off-peak hours.

Step 5 In the **Destination Disk** drop-down list, select the target disk to which the backup will be restored.

NOTE

- If the server has only one disk, the backup is restored to that disk by default.
- If the server has multiple disks, the backup is restored to the original disks by default. You can also restore the backup to a different disk of at least the same size as the original disk.
- When restoring from a cloud server backup, backup of a data disk cannot be restored to the system disk.

NOTICE

If the number of disks to be restored is greater than the number of disks that were backed up, restoration may cause data inconsistency.

For example, if the Oracle data is scattered across multiple disks and only some of them are restored, data may become inconsistent and the application may fail to start.

Step 6 Click **Yes** and confirm that the restoration is successful.

You can view the restoration status in the backup list. When the backup enters the **Available** state and no new restoration tasks failed, the restoration is successful. The data is restored to the state when that backup was created.

For details about how to view failed restoration tasks, see **Managing Tasks**.

NOTICE

If you use a cloud server backup to restore a logical volume group, you need to attach the logical volume group again.

Due to Window limitations, data disks may fail to be displayed after a Windows server is restored. If this happens, manually bring these data disks online. For details, see **Data Disks Are Not Displayed After a Windows Server Is Restored**.

----End

9.2 Creating an Image from a Cloud Server Backup

CBR allows you to create images using ECS backups. You can use the images to provision ECSs to rapidly restore service running environments.

You can also use server backups to create images and then provision servers to restore data if your servers were accidentally deleted.

Prerequisites

- The ECS has been optimized before being backed up, and the Cloud-Init (for Linux) or Cloudbase-Init (for Windows) tool has been installed.
- The backup is in the **Available** state, or the backup is in the **Creating** state that is marked with "Image can be created."

  NOTE

  Once a backup creation starts, the backup enters the **Creating** state. After a period of time, a message stating "Image can be created" is displayed under **Creating**. In this case, the backup can be used for creating an image, even though it is still being created and cannot be used for restoration.
- The backup contains the system disk data.
- Only ECS backups can be used to create images.

Notes

- Images created using a backup are the same, so CBR allows you to use a backup to create only one full-ECS image that contains the whole data of the system disk and data disks of an ECS, in order to save the image quota. After an image is created, you can use the image to provision multiple ECSs in a batch.
- A backup with an image created cannot be deleted directly. To delete such a backup, delete its image first. If a backup is automatically generated based on a backup policy and the backup has been used to create an image, the backup will not be counted as a retained backup and will not be deleted automatically.

- A backup is compressed when it is used to create an image, so the size of the generated image may be smaller than the backup size.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Backups** tab. Locate the desired backup. For details, see **Viewing a Backup**.

Step 3 In the row of the backup, choose **More** > **Create Image**.

Step 4 Create an image by referring to section "Creating a Full-ECS Image from a CBR Backup" in the *Image Management Service User Guide*.

Step 5 Use the image to provision ECSs when needed. For details, see section "Creating an ECS from an Image" in the *Image Management Service User Guide*.

----End

9.3 Restoring from a Cloud Disk Backup

You can use a disk backup to restore the disk to its state when the backup was created.

Before restoring the disk data, stop the server to which the disk is attached and detach the disk from the server. After the disk data is restored, attach the disk to the server and start the server.

Prerequisites

- The disk to be restored is **Available**.
- Before restoring the disk data, stop the server to which the disk is attached and detach the disk from the server. After the disk data is restored, attach the disk to the server and start the server.

Constraints

- Backups can only be restored to original disks. If you want to restore a backup to a different disk, use the backup to create a new disk.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.

2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Backups** tab. Locate the desired backup. For details, see **Viewing a Backup**.

Step 3 In the row of the backup, click **Restore Disk**.

NOTICE

- The backup data will overwrite the current disk data, and the restoration cannot be undone.
- If the restore button is grayed out, stop the server, detach the disk, and then try again. After the disk data is restored, attach the disk to the server and start the server.

Step 4 Click **Yes**. You can check whether data is successfully restored on the **Backups** tab page of **Cloud Disk Backups** or on the EVS console.

When the status of the backup changes to **Available**, the restoration is successful. The resource is restored to the state when that backup was created.

Step 5 After the restoration is complete, re-attach the disk to the server. For details, see section "Attaching a Non-Shared Disk" in the *Elastic Volume Service User Guide*.

----End

9.4 Creating a Disk from a Cloud Disk Backup

You can use a disk backup to create a disk that contains the same data as the backup.

Disks created using system disk backups can only be used as data disks on servers. They cannot be used as system disks.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Backups** tab. Locate the desired backup. For details, see **Viewing a Backup**.

Step 3 Click **Create Disk** in the **Operation** column of the backup. The button is available only when the backup status is **Available**.

Step 4 Configure the disk parameters.

NOTE

See the parameter description table in section "Create an EVS Disk" of the *Elastic Volume Service User Guide* for more information.

Pay attention to the following:

- You can choose the AZ to which the backup source disk belongs, or a different AZ.
- The new disk must be at least as large as the backup's source disk.

  If the capacity of the new disk is greater than that of the backup's source disk, format the additional space by following the steps provided in section "Extending Disk Partitions and File Systems" of the *Elastic Volume Service User Guide*.
- You can create a disk of any type regardless of the backup's source disk type.

Step 5 Click **Next**.

Step 6 Go back to the disk list. Check whether the disk is successfully created.

You will see the disk status change as follows: **Creating**, **Available**, **Restoring**, **Available**. You may not notice the **Restoring** status because Instant Restore is supported and the restoration speed is very fast. After the disk status has changed from **Creating** to **Available**, the disk is successfully created. After the status has changed from **Restoring** to **Available**, backup data has been successfully restored to the created disk.

----End

9.5 Creating a File System from an SFS Turbo Backup

In case of a virus attack, accidental deletion, or software or hardware fault, you can use an SFS Turbo file system backup to create a new file system. Once created, data on the new file system is the same as that in the backup.

Procedure

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Click  and choose **Storage** > **Cloud Backup and Recovery**. Select a backup type from the left navigation pane.

Step 2 Click the **Backups** tab and locate the desired backup. For details, see **Viewing a Backup**.

Step 3 Click **Create File System** in the **Operation** column of the backup. The button is available only when the backup status is **Available**.

Step 4 Configure the file system parameters.

NOTE

- You can learn about the parameter descriptions in table "Parameter description" under "Creating an SFS Turbo File System" in "Create a File System" of the *Scalable File Service Turbo User Guide*.

Step 5 Click **Create Now**.

Step 6 Go back to the file system list and check whether the file system is successfully created.

You will see the file system status change as follows: **Creating**, **Available**, **Restoring**, **Available**. You may not notice the **Restoring** status because Instant Restore is supported and the restoration speed is very fast. After the file system status has changed from **Creating** to **Available**, the file system is successfully created. After the status has changed from **Restoring** to **Available**, backup data has been successfully restored to the created file system.

----End

10 Managing Tasks

You can view tasks in the task list, which shows policy-driven tasks that have been executed over the past 30 days.

Prerequisites

At least one task exists.

Procedure for Viewing the Task Execution Status

Step 1 Log in to the CBR console.

1. Log in to the management console.
2. Click  in the upper left corner and select a region.
3. Choose **Storage** > **Cloud Backup and Recovery** > **Tasks**.

Step 2 Filter tasks by task type, task status, task ID, resource ID, resource name, vault ID, vault name, and time.

Step 3 Click  in front of the task to view the task details.

If a task fails, you can view the failure cause in the task details.

----End

11 Cloud Eye Monitoring

11.1 Viewing Basic CBR Monitoring Data

Scenarios

This section describes metrics reported by CBR as well as their namespaces and dimensions. You can use the console or APIs provided by Cloud Eye to query the metrics generated for CBR.

Namespace

SYS.CBR

Metrics

Table 11-1 CBR metrics

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
used_vault_size	Used Vault Size	Used capacity of the vault Unit: GB	≥ 0	Vault	15 min
vault_util	Vault Usage	Capacity usage of the vault	0~100 %	Vault	15 min

Dimensions

Key	Value
instance_id	Vault name/ID

Viewing Monitoring Statistics

Step 1 Log in to the management console.

Step 2 View the monitoring graphs using either of the following methods.

- Method 1: Choose **Storage** > **Cloud Backup and Recovery**. In the vault list, locate the vault whose monitoring data you want to view and choose **More** > **View Monitoring Data** in the **Operation** column.
- Method 2: Choose **Management & Deployment** > **Cloud Eye** > **Cloud Service Monitoring** > **Cloud Backup and Recovery**. In the vault list, click **View Metric** in the **Operation** column of the vault whose monitoring data you want to view.

Step 3 View the vault monitoring data by metric or monitored duration.

For more information, see the *Cloud Eye User Guide*.

----End

11.2 Creating an Alarm Rule

Cloud Eye allows you to use alarm templates to create alarm rules, making it easy and convenient to add or modify alarm rules for resources or cloud services, especially for a large number of resources and cloud services.

You can create alarm rules for CBR.

Creating an Alarm Rule Using Cloud Eye

1. Log in to the management console.
2. Under **Management & Deployment**, select **Cloud Eye**. In the navigation pane on the left, choose **Alarm Management** > **Alarm Rules**.
3. On the displayed page, click **Create Alarm Rule** in the upper right corner.
4. On the displayed **Create alarm rule** page, configure the parameters.
   a. Set **Name** and **Description**.

      Parameters for configuring the rule name and description

Parameter	Description	Example Value
Name	Name of the alarm rule. The system generates a random name, which you can modify.	alarm-cgnw

Parameter	Description	Example Value
Description	Alarm rule description. This parameter is optional.	-

b. Configure alarm content parameters.

- If you select **Cloud Backup and Recovery** for **Resource Type**, vaults are monitored with two metrics. **Table 11-2** describes the parameters.

Table 11-2 Parameters

Parameter	Description	Example Value
Resource Type	**Cloud Backup and Recovery** is selected in this example.	Cloud Backup and Recovery
Dimension	Monitoring dimension. By default, monitoring is performed by vault.	Vault
Monitoring Scope	Choose the vaults you want to monitor from the list.	vault-56f8
Method	You can create an alarm rule by using the template or manually creating it. **NOTE** If you set **Monitoring Scope** to **Specific resources**, you can set **Method** to **Use template**.	Use template
Template	Template to be used.	-
Alarm Policy	Policy for triggering an alarm. If you set **Resource Type** to a specific cloud service, the alarm policy takes effect periodically. If you set **Resource Type** to **Event Monitoring**, the alarm policy takes effect based on specific events. Currently, the following CBR monitoring metrics are supported: • Vault Usage • Used Vault Size	-
Alarm Severity	Alarm severity, which can be **Critical**, **Major**, **Minor**, or **Informational**.	Major

- If you set **Resource Type** to **Event Monitoring**, CBR resources are monitored based on specific events. **Table 11-2** describes the parameters.

Table 11-3 Parameters

Parameter	Description	Example Value
Resource Type	**Event Monitoring** is selected in this example.	Event Monitoring
Dimension	Metric dimension of the selected resource type.	System event
Monitoring Scope	Monitoring scope for event monitoring. Default value: **All resources**	-
Method	Select Configure manually.	Configure manually
Alarm Policy	Policy for triggering an alarm. **Table 11-4** lists the supported CBR events that trigger alarms.	-

Table 11-4 CBR events that trigger alarms

Event Source	Event Name	Alarm Severity	Description	Solution	Impact
CBR	Failed to create the backup.	Critical	Backup creation failed.	Manually create a backup or contact the administrator.	Data may be lost.

Event Source	Event Name	Alarm Severity	Description	Solution	Impact
	Failed to restore the resource using a backup.	Critical	Resource restoration using a backup failed.	Restore the resource using another backup or contact the administrator.	Data may be lost.
	Failed to delete the backup.	Critical	Backup deletion failed.	Try again later or contact the administrator.	Charging may be abnormal.
	Failed to delete the vault.	Critical	Vault deletion failed.	Try again later or contact the administrator.	Charging may be abnormal.
	Replication failure	Critical	Backup replication failed.	Try again later or contact the administrator.	Data may be lost.
	The backup is created successfully.	Major	Backup created.	None	None
	Resource restoration using a backup succeeded.	Major	Resource restoration using a backup succeeded.	Check that data is successfully restored.	None
	The backup is deleted successfully.	Major	Backup deleted.	None	None

Event Source	Event Name	Alarm Severity	Description	Solution	Impact
	The vault is deleted successfully.	Major	Vault deleted.	None	None
	Replication success	Major	Backup replicated.	None	None

NOTE

You can change the alarm severity as needed.

c. Configure alarm notifications.

Table 11-5 Parameters for configuring alarm notifications

Parameter	Description	Example Value
Alarm Notification	Whether to notify users when alarms are triggered. Notifications can be sent by email or text message, or through HTTP/HTTPS request to servers. You can enable (recommended) or disable **Alarm Notification**.	-
Notification Window	Cloud Eye sends notifications only within the notification window specified in the alarm rule. If **Notification Window** is set to **00:00-8:00**, Cloud Eye sends alarm notifications only within 00:00-8:00.	-
Notification Object	The name of the topic the alarm notification is to be sent to. If you enable alarm notification, you need to select a topic. If no desirable topics are available, create one and subscribe to it first. For details about how to create a topic, see the *Simple Message Notification User Guide*.	-
Trigger Condition	The condition for triggering the alarm notification. You can select **Generated alarm**, **Cleared alarm**, or both.	-

d. Click **Create**.

After the alarm rule is created, if the metric data reaches the specified threshold or a CBR event happens, Cloud Eye immediately informs you that an exception has occurred. For details, see the *Cloud Eye User Guide*.

12 Recording CBR Operations Using CTS

You can use Cloud Trace Service (CTS) to trace operations in CBR.

Prerequisites

CTS has been enabled.

Key Operations Recorded by CTS

Table 12-1 CBR operations that can be recorded by CTS

Operation	Resource Type	Trace Name
Creating a policy	policy	createPolicy
Updating a policy	policy	updatePolicy
Deleting a policy	policy	deletePolicy
Setting a vault policy	vault	associatePolicy
Removing a policy from a vault	vault	dissociatePolicy
Creating a vault	vault	createVault
Modifying a vault	vault	updateVault
Deleting a vault	vault	deleteVault
Removing resources	vault	removeResources
Adding resources	vault	addResources
Performing a backup	vault	createVaultBackup
Creating a backup	backup	createBackup
Deleting a backup	backup	deleteBackup
Restoring a backup	backup	restoreBackup

Viewing Audit Logs

For how to view audit logs, see section "Querying Real-Time Traces" in the *Cloud Trace Service User Guide*.

Disabling or Enabling a Tracker

The following procedure illustrates how to disable an existing tracker on the CTS console. After the tracker is disabled, the system will stop recording operations, but you can still view existing operation records.

Step 1 Log in to the management console.

Step 2 Click **Service List** and choose **Management & Deployment** > **Cloud Trace Service**.

Step 3 Choose **Tracker List** in the left navigation pane.

Step 4 In the tracker list, click **Disable** in the **Operation** column.

Step 5 Click **Yes**.

Step 6 After the tracker is disabled, the available operation changes from **Disable** to **Enable**. To enable the tracker again, click **Enable** and then click **Yes**. The system will start recording operations again.

----End

13 Quotas

What Is Quota?

Quotas can limit the number or amount of resources available to users, such as the maximum number of ECS or EVS disks that can be created.

If the existing resource quota cannot meet your service requirements, you can apply for a higher quota.

How Do I View My Quotas?

1. Log in to the management console.
2. In the upper right corner of the page, click  .

   The **Quotas** page is displayed.
3. View the used and total quota of each type of resources on the displayed page.

   If a quota cannot meet service requirements, apply for a higher quota.

How Do I Apply for a Higher Quota?

The system does not support online quota adjustment. If you need to adjust a quota, contact the operations administrator.

Before contacting the operations administrator, make sure that the following information has been obtained:

- Account name, which can be obtained by performing the following operations:

  Log in to the management console using the cloud account, click the username in the upper right corner, select **My Credentials** from the drop-down list, and obtain the account name on the **My Credentials** page.
- Quota information, which includes service name, quota type, and required quota

14 FAQs

14.1 Concepts

14.1.1 What Are Full Backup and Incremental Backup?

Definitions

A full backup backs up all data at a certain time point.

An incremental backup backs up the changed data since the last full or incremental backup.

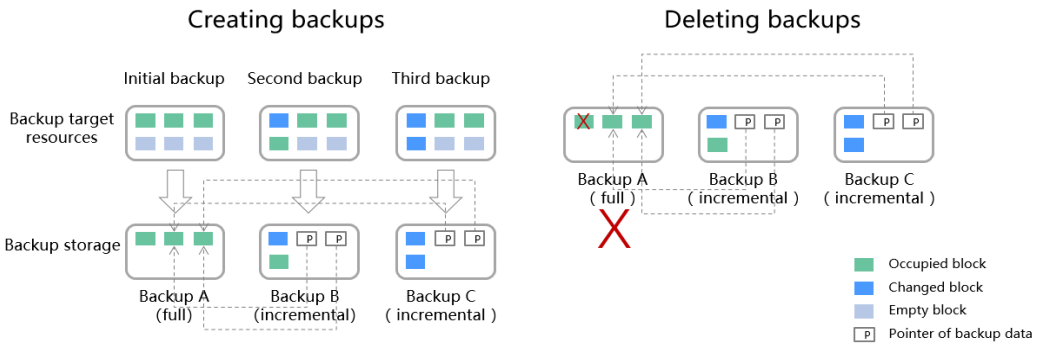
CBR uses the permanent incremental backup technology. A full backup is performed for a resource in the initial backup and incremental backups in subsequent backups. If a full backup expires and is deleted, its next incremental backup will be regarded as the resource's full backup.

Suppose that server **X** has backups **A**, **B**, and **C** in time sequence. Backup A is a full backup, and backups B and C are incremental backups. Only changed data blocks are backed up in incremental backups and unchanged data blocks are indexed using pointers, so each incremental backup can be regarded as a virtual full backup.

If backup A is deleted, only data blocks that are exclusive to backup A are deleted, and data blocks in backup A referenced by subsequent backups will not be deleted. Similarly, if backups A and B are deleted, backup C can also be used to

restore data independently. There is no obvious difference between their restoration speeds.

Figure 14-1 Backup mechanism



Differences

- Backup duration: A full backup backs up the entire resource data which is usually larger than an incremental backup, so full backup take a longer time.
- Restoration duration: Both full backups and incremental backups can be restored. There is no obvious difference between their restoration speeds.
- Reliability: The latest incremental backup depends on the last full backup and intermediate incremental backups. If any backup data block is damaged, subsequent backups may be affected, which will reduce the backup reliability. All full backup data is independent and does not depend on previous backups. So full backups are more reliable.

  You are advised to configure periodic full backup (for example, once every 30 days) and daily incremental backup. This approach shortens the backup interval that incremental backups rely on, enhancing backup reliability.

NOTE

- In extreme cases, the size of a backup is the same as the disk size. The used capacity in a full backup and the changed capacity in an incremental backup are calculated based on the data block change in a disk rather than the file change in the operating system. The size of a full backup cannot be evaluated based on the file capacity in the operating system, and the size of an incremental backup cannot be evaluated based on the file size change.
- To ensure data security, a full backup is performed after 365 incremental backups by default.

14.1.2 What Are the Differences Between Backup and Disaster Recovery?

The following table lists the main differences between backup and disaster recovery (DR).

Table 14-1 Differences between backup and DR

Item	Backup	DR
Purpose	To prevent data loss. It adopts the snapshot or backup techniques to generate data backups that can be used to restore data when data loss or corruption occurs.	To ensure service continuity. It takes the replication techniques (such as application-layer replication, host-based replication at the I/O layer, and storage-layer replication) to construct standby service hosts and data in a remote center, so that the remote center can take over services whenever the primary center is faulty.
Scenario	It offers protection against virus attacks, accidental deletions, software and hardware faults.	It enables failover upon software and hardware faults, as well as natural disasters, such as tsunami, fires, and earthquakes, to fast recover services. When the source AZ recovers, you can easily fail back to the source AZ.
Cost	The cost is 1 to 2% of the production system's cost.	The cost is 20 to 100% of the production system's, varying with the RPO/RTO requirements. For active-active DR, the service system deployed in the standby center is required to be the same as that in the active system. In this case, the cost on infrastructure doubles.

NOTE

Recovery Point Objective (RPO) specifies the maximum acceptable period in which data can be lost.

Recovery Time Objective (RTO) specifies the maximum acceptable amount of time for restoring the entire system after a disaster occurs.

14.1.3 What Are the Differences Between Backups and Snapshots?

Both backups and snapshots provide data redundancy for disks to improve data reliability. **Table 14-2** lists the differences between them.

Table 14-2 Differences between backups and snapshots

Item	Storage Solution	Data Synchronization	Service Recovery
Backup	Backup data is stored in OBS, instead of disks. This ensures data restoration upon disk data loss or corruption.	A backup is the data copy of a disk at a given point in time. CBR supports automatic backup by configuring backup policies. Deleting a disk will not clear its backups.	You can restore backups to their original disks or create new disks from the backups.
Snapshot	Snapshot data is stored with disk data. **NOTE** Creating a backup requires a certain amount of time because data needs to be transferred. Therefore, creating or rolling back a snapshot consumes less time than creating a backup.	A snapshot is the state of a disk at a specific point in time. If a disk is deleted, all the snapshots created for this disk will also be deleted. If you have reinstalled or changed the server OS, snapshots of the system disk are automatically deleted. Snapshots of the data disks can be used as usual.	You can use a snapshot to roll back its original disk or create a disk for data restoration and service recovery.

14.1.4 What Are the Differences Between Cloud Server Backup and Cloud Disk Backup?

Table 14-3 describes the differences between cloud server backup and cloud disk backup.

Table 14-3 Differences between cloud server backup and cloud disk backup

Item	Cloud Server Backup	Cloud Disk Backup
Resources to be backed up or restored	All disks (system disks and data disks) or some disks on a server	One or more specified disks (system or data disks)

Item	Cloud Server Backup	Cloud Disk Backup
Recommended scenario	An entire cloud server needs to be protected.	Only data disks need to be backed up, because the system disk does not contain users' application data.
Advantages	All disks on a server are backed up at the same time, ensuring data consistency.	Backup cost is reduced without compromising data security.

14.2 Backup

14.2.1 Do I Need to Stop the Server Before Performing a Backup?

No. You can back up servers that are in use.

When a server is running, data is written into disks on the server, and some newly generated data is cached in the server memory. During a backup task, data in the memory will not be automatically written into disks, so the disk data and their backups may be inconsistent.

To ensure data integrity, you are advised to perform the backup during off-peak hours when no data is written to the disks.

For applications that require strict consistency, such as databases and email systems, you are advised to enable application-consistent backup.

14.2.2 Can I Back Up a Server Deployed with Databases?

Yes. CBR provides application-consistent backup. For details about the function compatibility, see **Table 14-4**. For applications or databases with which the application-consistent function is incompatible, you are advised to suspend all data write operations before performing backup. If write operations cannot be suspended, you can stop the application systems or the server for offline backup. If you do not perform the preceding operations before backup, status of the server after restoration will be similar to restart upon an unexpected power failure. In this case, log rollback will be performed on databases to keep data consistent.

Table 14-4 OSs that support installation of the Agent

Database	OS	Version
SQL Server 2008/2012/2019	Windows	Windows Server 2008, 2008 R2, 2012, 2012 R2, and 2019 for x86_64

Database	OS	Version
SQL Server 2014/2016/ Enterprise Edition	Windows	Windows Server 2014, 2014 R2, and 2016 Datacenter for x86_64
MySQL 5.5/5.6/5.7	Red Hat	Red Hat Enterprise Linux 6 and 7 for x86_64
	SUSE	SUSE Linux Enterprise Server 11 and 12 for x86_64
	CentOS	CentOS 6 and 7 for x86_64
	EulerOS	EulerOS 2.2 and 2.3 for x86_64
HANA 1.0/2.0	SUSE	SUSE Linux Enterprise Server 12 for x86_64

14.2.3 How Can I Distinguish Automatic Backups From Manual Backups?

They can be distinguished by name prefix:

- Automatic backups: **autobk**_*xxxx*
- Manual backups: **manualbk**_*xxxx* or custom names

14.2.4 Can I Choose to Back Up Only Some Partitions of a Disk?

No.

The minimum backup granularity that CBR supports is disk.

CBR backs up the status, configuration, and data of a disk at a certain time point for restoration in case of a fault.

14.2.5 Can I Use Its Backup for Restoration After a Resource Is Deleted?

Yes.

Resources and backups are not stored together. If resources are deleted, backups will not be deleted at the same time.

So, you can still use the backups to restore resources to a backup point in time.

14.2.6 How Many Backups Can I Create for a Resource?

This number is not limited.

Theoretically, you can create as many backups for a resource as needed.

By default, full backup at the first time and incremental backup subsequently.

14.2.7 Can I Stop an Ongoing Backup Task?

No.

An ongoing backup task cannot be stopped.

You need to wait until the backup is complete and then perform operations on the backup.

14.3 Capacity

14.3.1 Why Is My Backup Size Larger Than My Disk Size?

Symptoms

- There were files on a server, and the server was backed up. After deleting some files, the server was backed up again. By viewing the used vault capacity, we came to a conclusion that the backup size was not changed or even became bigger.

  For example, a user backed up a server that contains 100 files. The used vault capacity was A. Then the user deleted 10 files and backed up the server again. The used vault capacity changed to B. B may be the same as A or even larger.
- The ECS backup size is larger than the used disk space obtained from the file system.

Possible Causes

Possible causes are as follows:

- The backup mechanism itself causes this problem. The cloud server backups, SFS Turbo backups, and cloud disk backups created using CBR are all **block-level backups**. Different from file-level backups, block-level backups are performed by sector (512 bytes) each time.
- The metadata of the file systems on the disk occupies disk space.
- To reduce performance overhead, the file system adds a delete marker for the deleted file, but does not erase the data that has been written to the sector, and the metadata on the sector still exists. Block-level backups cannot detect whether data on a sector is deleted or not, but only determine whether a backup needs to be performed by checking whether all data blocks are zero blocks.
- CBR determines whether data in each sector changes by comparing two snapshots. Data changes include data addition, modification, and deletion. Backup is not performed if there are no data changes. If there are data changes, CBR further checks whether data blocks in the sector are all zero blocks. If so, backup is also not performed. Backups are performed only when there are non-zero blocks. If the data is deleted but metadata in the sector is not, the data block is also recognized as a non-zero block, and backups will be performed.

14.4 Restoration

14.4.1 Do I Need to Stop the Server Before Restoring Data Using Backups?

The system shuts down the server before restoring server data, and automatically starts up the server after the restoration is complete.

If you deselect **Start the server immediately after restoration**, you need to manually start the server after the restoration is complete.

Before restoring the disk data, stop the server to which the disk is attached and detach the disk from the server. After the disk data is restored, attach the disk to the server and start the server.

14.4.2 Can I Use a System Disk Backup to Recover an ECS?

Yes. Before the recovery, you need to detach the system disk to be recovered from the ECS.

You can also use a system disk backup to create an EVS disk.

Disks created using system disk backups can only be used as data disks on servers. They cannot be used as system disks.

14.4.3 Do I Need to Stop the Server Before Restoring Data Using Disk Backups?

Yes. Before restoring the disk data using a disk backup, you must stop the server to which the disk is attached, and detach the disk from the server.

After the disk data is restored, attach the disk to the server and start the server.

14.4.4 Can a Server Be Restored Using Its Backups After It Is Changed?

Yes. If a server has been backed up and then changed (adding, deleting, or expanding disks), its backups can still be used to restore data. You are advised to back up data again after the change.

If you have added a disk after a backup and then use the backup to restore data, data on the new disk will not change.

If you have deleted a disk after a backup and then use the backup to restore data, data on the deleted disk cannot be restored.

14.4.5 Can a Disk Be Restored Using Its Backups After Its Capacity Is Expanded?

Yes. After restoration, the capacity of the expanded disk goes back to the original capacity before expansion.

If you want to use the capacity added to the disk, you need to attach the restored disk to a server, log in to the server, and then manually modify the file system configuration.

For details, see section "Disk Capacity Expansion" in the *Elastic Volume Service User Guide*.

14.4.6 What Can I Do if the Password Becomes a Random One After I Use a Backup to Restore a Server or Use an Image to Create a Server?

For details about how to reset the password, see section "Passwords" in the *Elastic Cloud Server User Guide*.

If you have installed the password reset plug-in, you can reset the password on the management console.

You can reset the password online or offline.

14.4.7 What Changes Will Be Made to the Original Backup When I Use the Backup to Restore a Server?

- For Linux:
  - Check whether drivers related to the PV driver exist. If yes, delete them.
  - Modify the **grub** and **syslinux** configuration files to add the OS kernel boot parameters and change the disk partition name to **UUID=***UUID of the disk partition*.
  - Change the names of the disk partitions in the **/etc/fstab** file to **UUID=***UUID of the disk partition*.
  - Delete services of VMware tools.
  - Linux OSs automatically copy the built-in VirtIO driver to initrd or initramfs.
- For Windows:
  - Inject the VirtIO driver offline to solve the problem that the system cannot start when UVP VMTools is not installed.

14.4.8 Can I Stop an Ongoing Restoration Task?

No. An ongoing restoration task cannot be stopped.

The backup data will overwrite the current data, and the restoration cannot be undone.

For more information, see section "Restoring Data" in the *Cloud Backup and Recovery User Guide*.

14.5 Policies

14.5.1 How Do I Configure Automatic Backup for a Server or Disk?

1. Go to the Cloud Backup and Recovery console and create a backup vault. You are advised to set the vault capacity to at least twice the total capacity of the resources you want to back up.
2. Associate resources with the vault during or after the creation.
3. Go to the **Policies** page to configure a backup policy. You are advised to set the backup execution time at off-peak hours, for example, early in the morning. Set the backup retention rule as needed. If your vault capacity is small, set a small value for the number of backups to be kept or the days that backups will be retained. Retention rule does not apply to manual backups.
4. Apply the policy you defined to the vault. The system then will back up the resources that are associated with the vault at the specified time and retains the backups based on the retention rule.

14.5.2 Why the New Retention Rule I Changed Is Not Applied?

The scenarios of a retention rule change are as follows:

Rule Type Unchanged, with Only a New Backup Quantity Configured

The new rule will be applied to the backups generated based on the old policy. After a backup is generated, regardless of an automatic or a manual one, the system verifies and uses the latest retention rule.

Example: A user has a vault associated with a disk. At 10:00 a.m. on Monday, the user applies a backup policy to the vault, based on which a backup task will be executed at 02:00 a.m. every day and three most recent backups will be kept. At 10:00 a.m. on Thursday, three backups are kept. Then the user changes the number of backups kept from three to one, and the new policy will be applied immediately. If the user then perform manual backups or wait until the system automatically create a backup at 02:00 a.m. on Friday, the system will verify and use the latest retention rule after the backup task is complete. In this case, only one most recent backup will be kept. Manual backups are not affected by policies, so they will not be deleted.

Rule Type Changed from Backup Quantity to Time Period/Permanent

The new rule will be applied only to the new backups. Backups generated based on the old policy will not be automatically deleted.

Example: A user has a vault associated with a disk. At 10:00 a.m. on Monday, the user applies a backup policy to the vault, based on which a backup task will be executed at 02:00 a.m. every day and three most recent backups will be kept. At 10:00 a.m. on Thursday, three backups are kept. Then the user changes the retention rule type from backup quantity to time period and sets to retain the backups from the last one month. The new policy will be applied immediately. If the user then perform manual backups or wait until the system automatically create a backup at 02:00 a.m. on Friday, the system will verify and use the latest retention rule after the backup task is complete. The three backups generated based on the old policy will still be kept (the number of backups does not exceed

the quantity set in the old retention rule). They will not be automatically deleted and you need manually delete them if needed. Backups generated based on the new policy will be kept based on the new retention rule.

Rule Type Changed from Time Period to Time Period/Permanent

The new policy will only be applied to the new backups. Backups generated based on the old policy will be kept based on the old policy.

Example: A user has a vault associated with a disk. At 10:00 a.m. on August 5, the user applies a backup policy to the vault, based on which a backup task will be executed at 02:00 a.m. every day and the backups generated from the last one month will be kept. At 10:00 a.m. on August 8, three backups are kept. Then the user changes the backup retention time from the last one month to the last three months. At 02:00 a.m. on September 6, the backup generated on August 6 based on the old policy will be deleted. The backup generated on August 9 will be deleted two months later based on the new policy.

Rule Type Changed from Time Period to Backup Quantity

Both the old and new policies will be applied to the backups generated based on the old policy. The union set of the old and new rules will be applied.

New policy applied to old backups

Example: A user has a vault associated with a disk. At 10:00 a.m. on August 5, the user applies a backup policy to the vault, based on which a backup task will be executed at 02:00 a.m. every day and the backups generated from the last one month will be kept. At 10:00 a.m. on August 8, three backups are kept. Then the user changes the retention rule type from time period to backup quantity and sets to retain the most recent seven backups. At 10:00 a.m. on August 15, the backups generated on August 9, 10, 11, 12, 13, 14, and 15 will be kept. The backups generated on August 6, 7, and 8 have been deleted based on the new policy.

Old policy applied to old backups

Example: A user has a vault associated with a disk. At 10:00 a.m. on August 5, the user applies a backup policy to the vault, based on which a backup task will be executed at 02:00 a.m. every day and the backups generated from the last three days will be kept. At 10:00 a.m. on August 8, three backups are kept. Then the user changes the retention rule type from time period to backup quantity and sets to retain the most recent seven backups. At 10:00 a.m. on August 10, the backups generated on August 8, 9, and 10 will be kept. The backups generated on August 6 and 7 have been deleted based on the old policy.

14.5.3 How Do I Back Up Multiple Resources at a Time?

1. Log in to the CBR console and click **Cloud Server Backups** or **Cloud Disk Backups** on the left navigation pane. On the displayed page, create a backup vault. It is recommended that the capacity of the vault be at least twice the total size of resources to be backed up.
2. Associate resources with the vault during or after the creation.
3. After the resources are associated, choose **More** > **Perform Backup** in the **Operation** column of the target vault. You can manually back up two or more resources at a time.

Alternatively, you can set a backup policy for the vault. In this way, the system will automatically back up the associated resources at the scheduled time.

14.6 Others

14.6.1 Is There a Quota for CBR Vaults?

There are no quota limits.

You can create as many vaults as needed.

There is no limit on the number of backups that can be created for a single resource. You can create multiple backups for a resource.

14.6.2 Can I Merge My Vaults?

No. Vaults cannot be merged.

You can expand the capacity of one vault and migrate the resources from another vault to it.

For details, see **Expanding Vault Capacity** and **Migrating Resources from a Vault** in the *Cloud Backup and Recovery User Guide*.

15 Troubleshooting Cases

15.1 Failed to Attach Disks

Symptom

Failed to attach disks despite following the procedure: Create EVS disks using the same disk backup (XFS file system backup) and attach them to the same server (to which multiple EVS disks with XFS file system backup have been attached). Running the **mount** command to attach disks fails.

Possible Cause

The superblock of an EVS disk (with XFS file systems) stores a universally unique identifier (UUID) about the file system. If a server has multiple disks (with XFS file systems), multiple UUIDs will exist on the server. Multiple disks may have the same UUID, which can cause the file system mounting to fail.

Troubleshooting Methods

When attaching an EVS disk, use parameters without UUID control or reallocate a new UUID to ensure that each UUID is unique.

Solution

Step 1 Log in to the server to which EVS disks failed to be attached.

Step 2 Resolve the problem in either of the following ways:

- Use a parameter without UUID when attaching an EVS disk: Run **mount -o nouuid /dev/*Device name* /*Mount path***, for example:

  mount -o nouuid /dev/sda6 /mnt/aa
- Reallocate a new UUID: Run **xfs_admin -U generate /dev/***Device name*.

NOTE

Because setting a parameter without UUID requires you to execute the command every time, you are advised to reallocate a new UUID.

----End

15.2 Data Disks Are Not Displayed After a Windows Server Is Restored

Symptom

When a Windows server is restored, the data disks are not displayed.

Possible Cause

Due to the limitations of Windows operating systems, data disks are in offline mode after a server is restored.

Solution

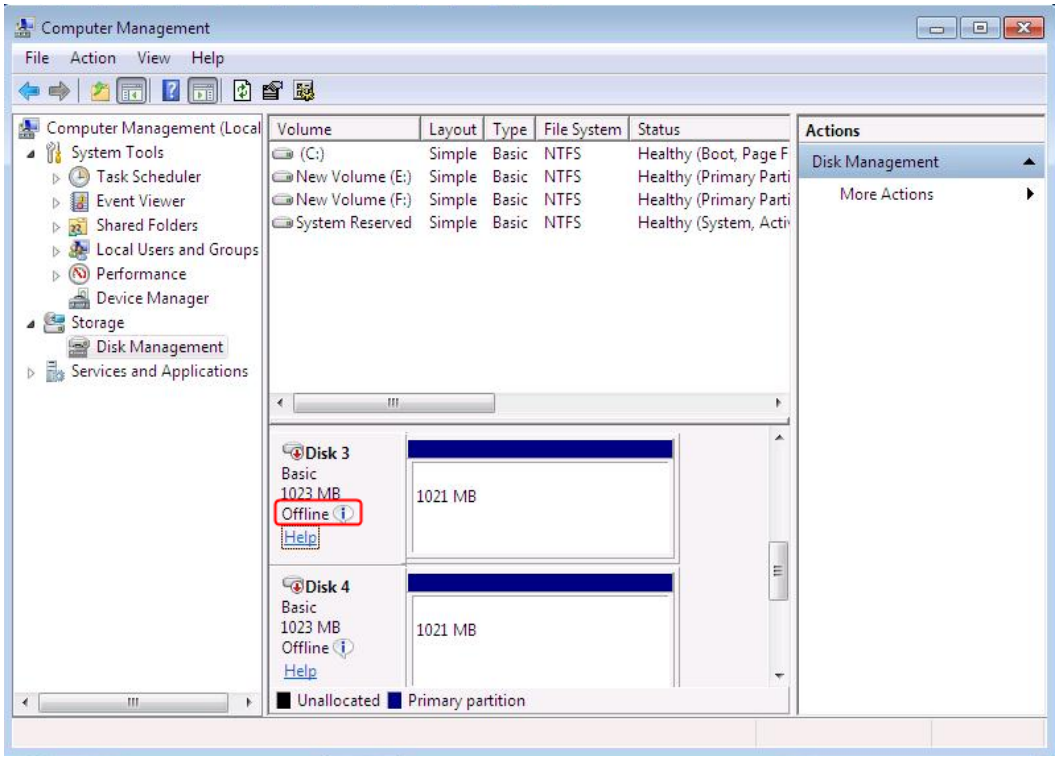
Step 1 On the Windows desktop, right-click the **My Computer** icon.

Step 2 Choose **Manage** from the shortcut menu. The **Computer Management** page is displayed.

Step 3 In the navigation tree, choose **Storage** > **Disk Management**.

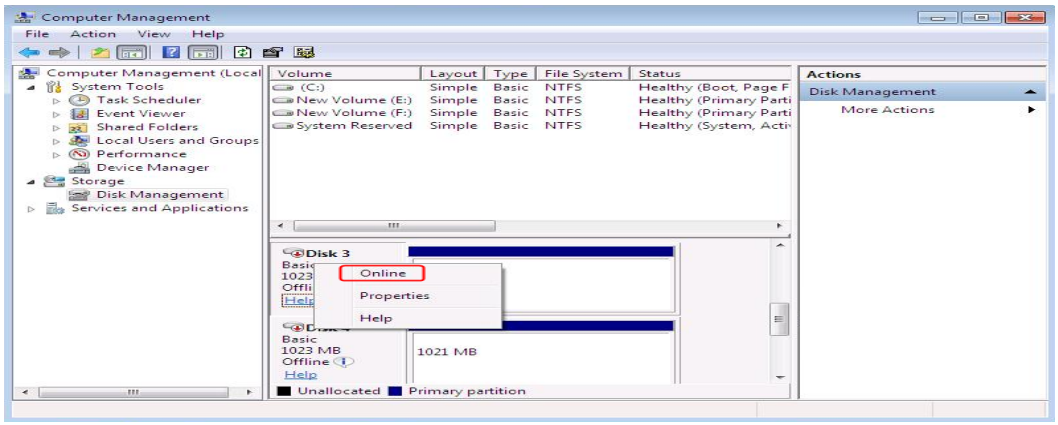
Data disks are in the offline state, as shown in **Figure 15-1**.

Figure 15-1 Data disks in the offline state



Step 4 Right-click a data disk in the offline state and choose **Online**, as shown in **Figure 15-2**.

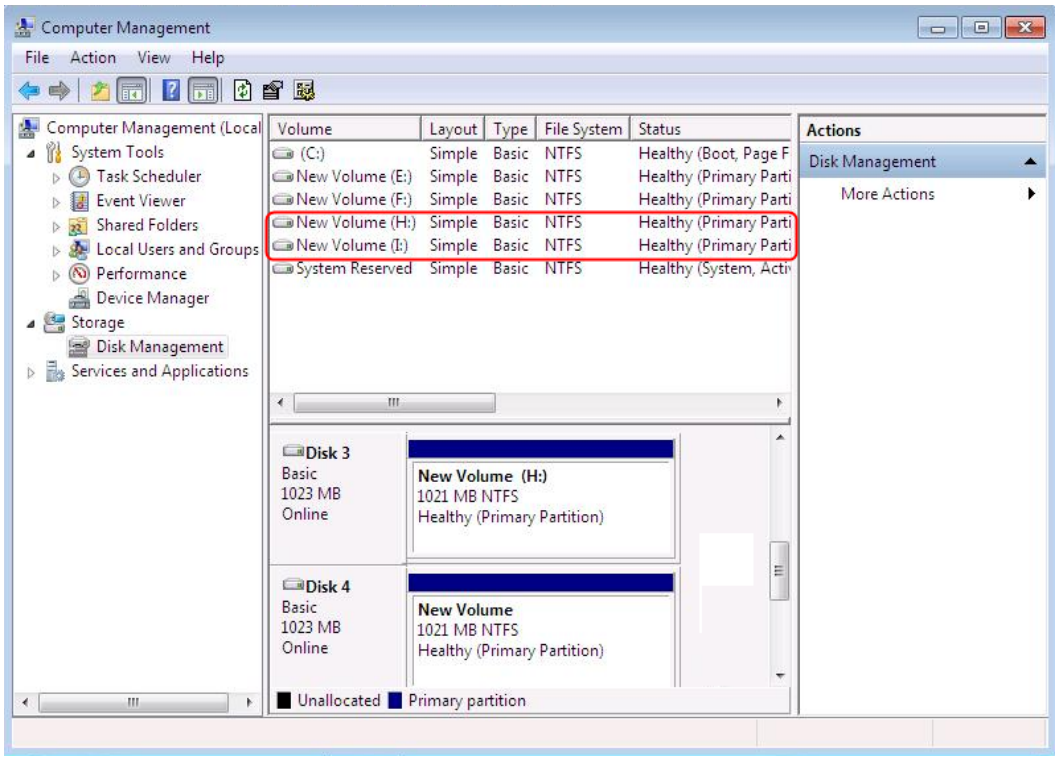
Figure 15-2 Setting a data disk to be online



After the data disk status changes to **Online**, the data disk will be displayed in the disk list, as shown in **Figure 15-3**.

In addition, the data disk will be properly displayed on the server.

Figure 15-3 Viewing online data disks



----End

15.3 Failed to Cancel Backup Sharing

Symptom

When you cancel the backup sharing, the system prompts a message indicating that the canceling failed.

Troubleshooting

Possible causes are listed here in order of their probability.

If the fault persists after you have ruled out one cause, move on to the next one.

Figure 15-4 Troubleshooting

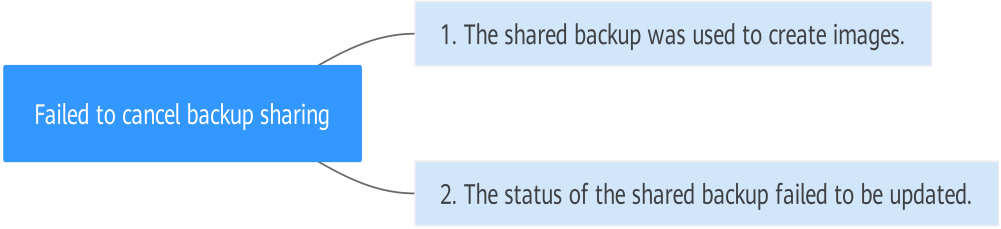


Table 15-1 Troubleshooting

Possible Cause	Solution
The shared backup was used to create images.	Delete the images and then delete the shared backup. For details, see section "Deleting Images" in the *Image Management Service User Guide*.
The status of the shared backup failed to be updated.	Try again or contact technical support.

15.4 Failed to Download or Install the Agent Required by Application-Consistent

Symptom

The system displays a message indicating that the script cannot be downloaded or the Agent fails to be installed in Linux mode 2.

Possible Causes

- Cause 1: The DNS cannot resolve the OBS domain name.
- Cause 2: The OpenSSL version of the target server is too early.

Solution for Cause 1

Cause 1: The DNS cannot resolve the domain name.

You need to manually change the DNS server address. Obtain the IP address from technical support. If the problem persists, try later or use the Linux mode 1 to install it.

Procedure (Linux)

Step 1 Log in to the server as the **root** user.

Step 2 Run the **vi /etc/resolv.conf** command to edit the **/etc/resolv.conf** file. Add the DNS server IP address above the existing name server information, as shown in **Figure 15-5**.

Figure 15-5 Configuring DNS

The format is as follows:

```
nameserver DNS server IP address
```

Step 3 Press **Esc**, input **:wq**, and press **Enter** to save the changes and exit the vi editor.

Step 4 Run the following command to check whether the IP address is added. If yes, the operation is complete.

cat /etc/resolv.conf

----End

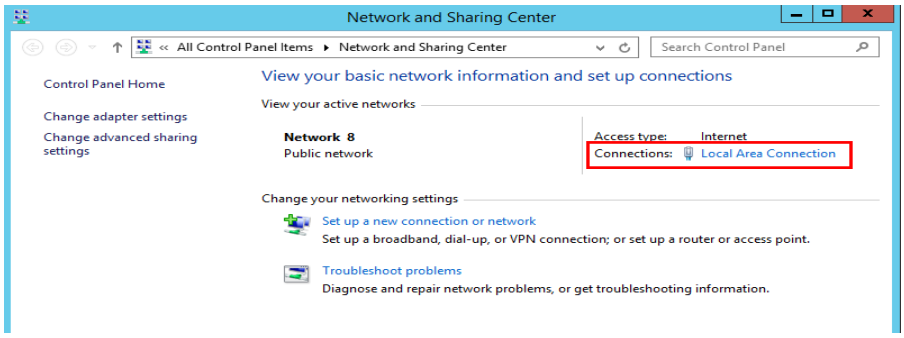
Procedure (Windows)

Step 1 Go to the ECS console and log in to the ECS running Windows Server 2012.

Step 2 Click **This PC** in the lower left corner.

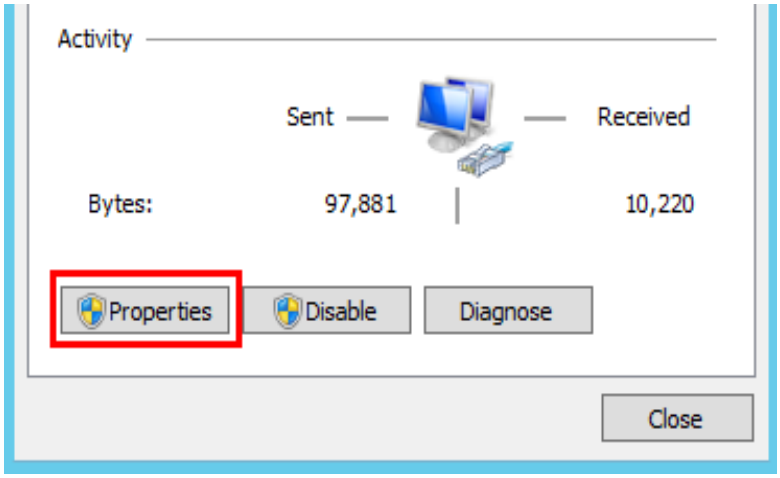
Step 3 On the page that is displayed, right-click **Network** and choose **Properties** from the drop-down list. The **Network and Sharing Center** page is displayed, as shown in **Figure 15-6**. Click **Local Area Connection**.

Figure 15-6 Page for network and sharing center



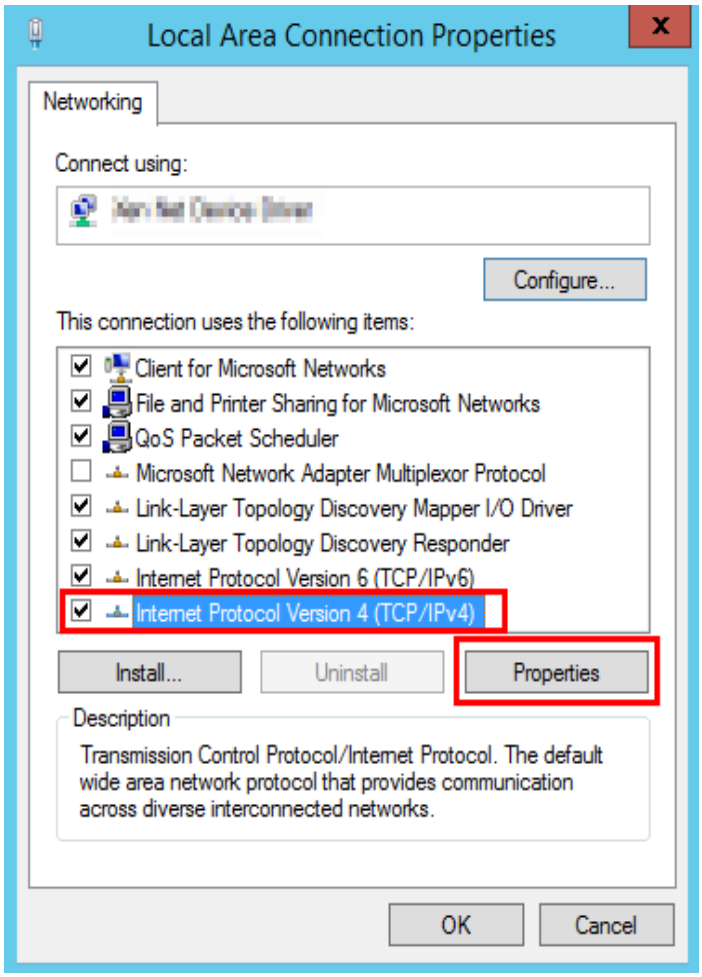
Step 4 In the **Activity** area, select **Properties**. See **Figure 15-7**.

Figure 15-7 Local area connection



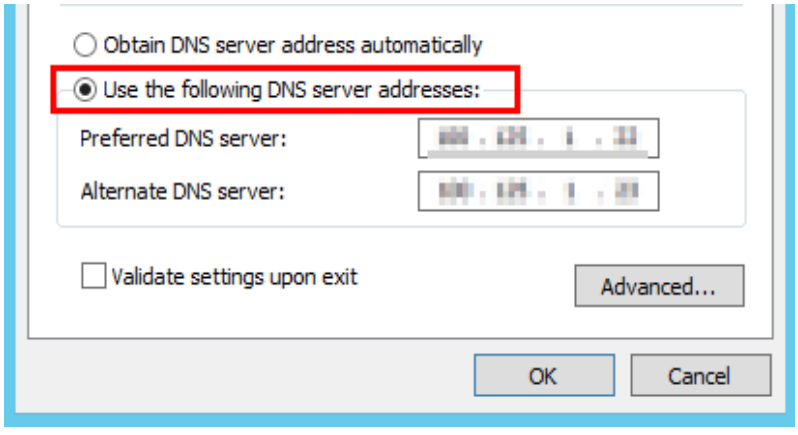
Step 5 In the **Local Area Connection Properties** dialog box that is displayed, select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**. See **Figure 15-8**.

Figure 15-8 Local area connection properties



Step 6 In the dialog box that is displayed, select **Use the following DNS server addresses:** and configure DNS, as shown in **Figure 15-9**. You need to manually change the DNS server address. Obtain the IP address from technical support. Then click **OK**.

Figure 15-9 Configuring DNS



----End

Solution for Cause 2

Cause 2: The OpenSSL version of the target server is too early.

Step 1 Use a remote management tool (such as PuTTY or Xshell) to connect to your ECS through the elastic IP address.

Step 2 Select the Agent version based on your needs, copy the command of installation mode 2 to the server, and change **https** to **http** in wget. Run the command as the root user.

----End

15.5 A Server Created Using an Image Enters Maintenance Mode After Login

Symptom

A server is created using the image of a cloud server backup. However, upon login to the server, the server enters maintenance mode and cannot be used.

Possible Cause

After the server creation, the configuration parameters contained in the **/etc/fstab** file in the system disk of the new server are that of the backup source server, causing the UUID information to be inconsistent with the new data disks. As a result, the ECS encounters an error when uploading **/etc/fstab** during the bootup and enters maintenance mode.

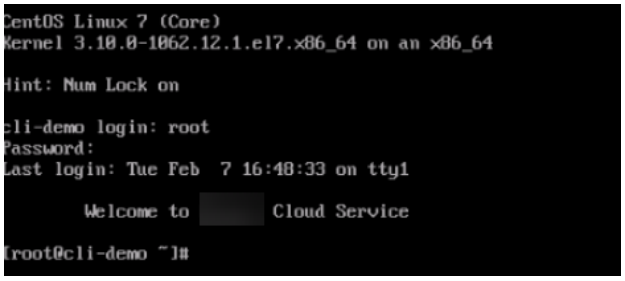
Solution

The following uses CentOS as an example.

Step 1 After creating an ECS using an image, log in to the ECS console, click **Remote Login** in the row of the ECS.

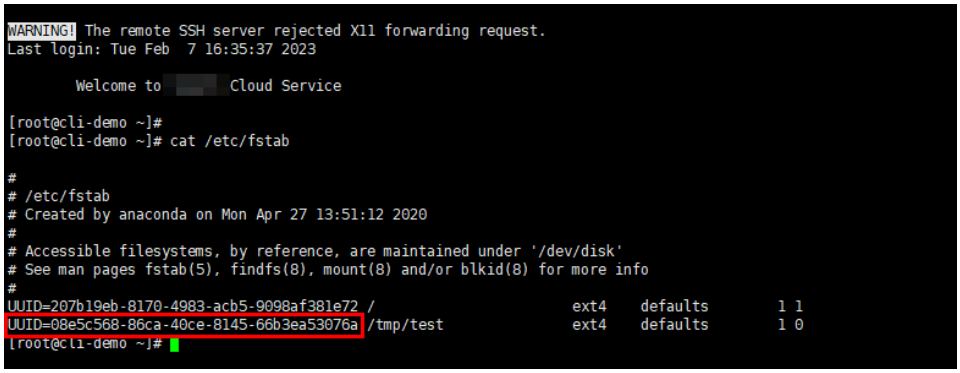
Step 2 On the maintenance mode page that is displayed, access the system as prompted.

Figure 15-10 Maintenance mode of the system



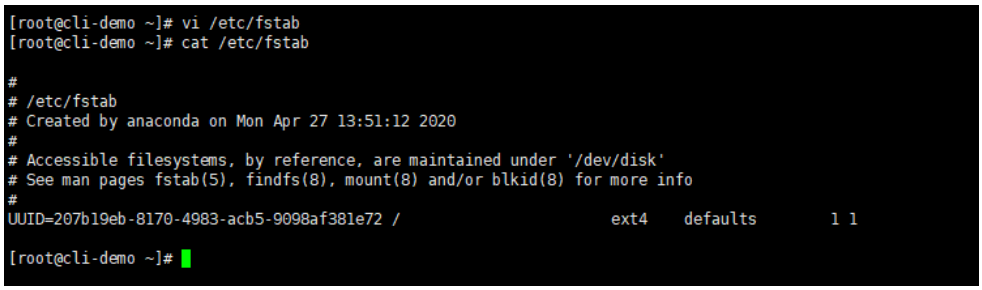
Step 3 Run the **cat /etc/fstab** command to check the disk attachment information.

Figure 15-11 Data disk UUIDs



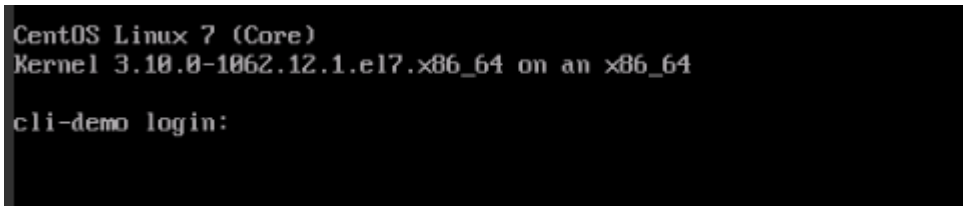
Step 4 Run the **vi /etc/fstab** command to open the file, press **i** to enter the editing mode, and delete the attachment information of all data disks. Then, press **Esc** to exit the editing mode and run **:wq!** to save the change and exit.

Figure 15-12 /etc/fstab after being updated



Step 5 Run the **reboot** command to restart the system.

Figure 15-13 Normal bootup page

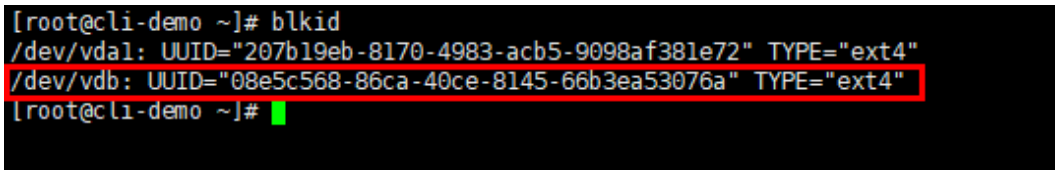


Step 6 After entering the system, attach the data disks manually.

Figure 15-14 Attaching the data disks manually

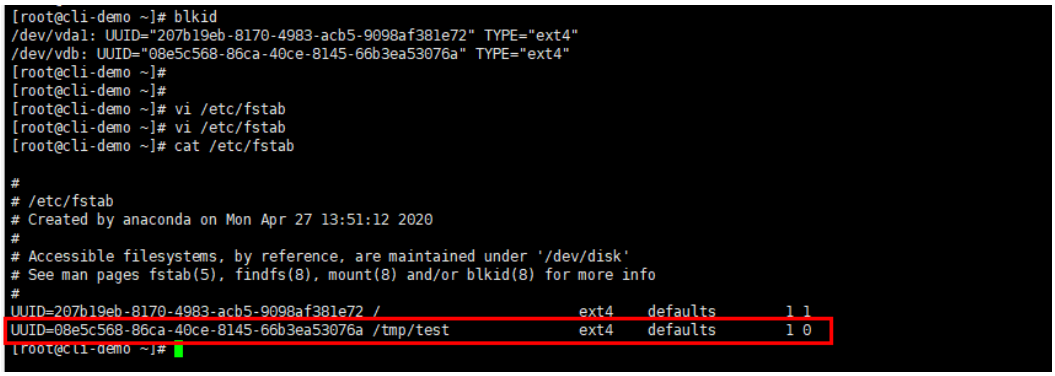
Step 7 Run the **blkid** command to obtain the UUID information of the data disks.

Figure 15-15 Obtaining UUIDs of data disks



Step 8 Run the **vi /etc/fstab** command to open the file, press **i** to enter the editing mode, and add the attachment information of all data disks. Then, press **Esc** to exit the editing mode and run **:wq!** to save the change and exit.

Figure 15-16 Adding attachment information of data disks



After the information is added, the system will automatically attach the data disks on restart.

----End

A Appendix

A.1 Agent Security Maintenance

A.1.1 Changing the Password of User rdadmin

Scenarios

- To improve O&M security, you are advised to change the user **rdadmin**'s password of the client OS regularly and disable this user's remote login permission.
- In Linux, user **rdadmin** does not have a password.
- This section describes how to change the password of user **rdadmin** in Windows Server 2012. Change the password according to actual situation in other versions.

Prerequisites

- The username and password for logging in to the console have been obtained.
- The username and password for logging in to a Windows ECS have been obtained.

Procedure

Step 1 Go to the ECS console and log in to the Windows ECS.

Step 2 Choose **Start** > **Control Panel**. In the **Control Panel** window, click **User Accounts**.

Step 3 On the displayed **User Account Control** dialog box, select **rdadmin** and click **Reset Password**.

Step 4 Enter the new password and click **OK**.

Step 5 In **Task Manager**, click the **Services** tab and then click **Open Service**.

Step 6 Select RdMonitor and RdNginx respectively. In the displayed dialog box, select **Login**, change the password to the one entered in **Step 4**, and click **OK**.

----End

A.1.2 Changing the Password of the Account for Reporting Alarms (SNMP v3)

To enhance the system O&M security, you are advised to change the password of the account for reporting alarms.

Prerequisites

- The username and password for logging in to the console have been obtained.
- The username and password for logging in to a server have been obtained.

Context

This section introduces the procedures in Windows and Linux.

NOTICE

There may be security risks if you use the same password for SNMP v3 authentication and data encryption. To ensure system security, you are advised to set different passwords for SNMP v3 authentication and data encryption.

Obtain the initial authentication password from technical support.

NOTE

The password must meet the following complexity requirements:

- Contains 8 to 16 characters.
- Contains at least one of the following special characters: `~!@#$%^&*()-_=+\|[{}];:'",<.>/?
- Contains at least two of the following types of characters:
  - Uppercase letters
  - Lowercase letters
  - Numeric characters
- Cannot be the same as the username or the username in reverse order.
- Cannot be the same as the old passwords.
- Cannot contain spaces.

Changing the Password of the Account for Reporting Alarms (SNMP v3) in Windows

Step 1 Log in to the server where the Agent is installed.

Step 2 Open the CLI and go to the *Installation path***bin** directory.

Step 3 Run the **agentcli.exe chgsnmp** command, enter the server login password, and press **Enter**.

```
Please choose operation:
1: Change authentication password
2: Change private password
3: Change authentication protocol
4: Change private protocol
5: Change security name
6: Change security Level
7: Change security model
8: Change context engine ID
9: Change context name
Other: Quit
Please choose:
```

NOTE

admin is the username configured during the Agent installation.

Step 4 Select the SN of the authentication password or data encryption password that you want to change and press **Enter**.

Step 5 Type the old password and press **Enter**.

Step 6 Type a new password and press **Enter**.

Step 7 Type the new password again and press **Enter**.

The password is changed.

----End

Changing the Password of the Account for Reporting Alarms (SNMP v3) in Linux

Step 1 Log in to the Linux server using the server password.

Step 2 Run the **TMOUT=0** command to prevent PuTTY from exiting due to session timeout.

NOTE

After you run the preceding command, the system continues to run even when no operation is performed, which brings security risks. To ensure system security, run the **exit** command to exit the system after you finish the operations.

Step 3 Run the **su - rdadmin** command to switch to user **rdadmin**.

Step 4 Run the **/home/rdadmin/Agent/bin/agentcli chgsnmp** command, enter the server login password, and press **Enter**.

NOTE

The installation path of the Agent is **/home/rdadmin/Agent**.

```
Please choose operation:
1: Change authentication password
2: Change private password
3: Change authentication protocol
4: Change private protocol
5: Change security name
6: Change security Level
7: Change security model
8: Change context engine ID
```

```
9: Change context name
Other: Quit
Please choose:
```

Step 5 Select the SN of the authentication password or data encryption password that you want to change and press **Enter**.

Step 6 Type the old password and press **Enter**.

Step 7 Type a new password and press **Enter**.

Step 8 Type the new password again and press **Enter**.

The password is changed.

----End

A.1.3 Replacing the Server Certificate

For security purposes, you may want to use a Secure Socket Layer (SSL) certificate issued by a third-party certification authority. The Agent allows you to replace authentication certificates and private key files as long as you provide the authentication certificates and private-public key pairs. The update to the certificate can take effect only after the Agent is restarted, hence you are advised to update the certificate during off-peak hours.

Prerequisites

- The username and password for logging in to the console have been obtained.
- The username and password for logging in to a server have been obtained.
- New certificates in the X.509v3 format have been obtained.

Context

- The Agent is pre-deployed with the Agent CA certificate **bcmagentca**, private key file of the CA certificate **server.key** (), and authentication certificate **server.crt**. All these files are saved in **/home/rdadmin/Agent/bin/nginx/conf** (if you use Linux) or **\bin\nginx\conf** (if you use Windows).
- You need to restart the Agent after replacing a certificate to make the certificate effective.

Replacing the Server Certificate in Linux

Step 1 Log in the Linux server with the Agent installed.

Step 2 Run the **TMOUT=0** command to prevent PuTTY from exiting due to session timeout.

NOTE

After you run the preceding command, the system continues to run even when no operation is performed, which brings security risks. To ensure system security, run the **exit** command to exit the system after you finish the operations.

Step 3 Run the **su - rdadmin** command to switch to user **rdadmin**.

Step 4 Run the **cd /home/rdadmin/Agent/bin** command to go to the script path.

NOTE

The installation path of the Agent is **/home/rdadmin/Agent**.

Step 5 Run the **sh agent_stop.sh** command to stop the Agent running.

Step 6 Place the new certificates and private key files in the specified directory.

NOTE

Place new certificates in the **/home/rdadmin/Agent/bin/nginx/conf** directory.

Step 7 Run the **/home/rdadmin/Agent/bin/agentcli chgkey** command.

The following information is displayed:

```
Enter password of admin:
```

NOTE

admin is the username configured during the Agent installation.

Step 8 Type the login password of the Agent and press **Enter**.

The following information is displayed:

```
Change certificate file name:
```

Step 9 Enter a name for the new certificate and press **Enter**.

NOTE

If the private key and the certificate are the same file, names of the private key and the certificate are identical.

The following information is displayed:

```
Change certificate key file name:
```

Step 10 Enter a name for the new private key file and press **Enter**.

The following information is displayed:

```
Enter new password:
Enter the new password again:
```

Step 11 Enter the protection password of the private key file twice. The certificate is then successfully replaced.

Step 12 Run the **sh agent_start.sh** command to start the Agent.

----End

Replacing the Server Certificate in Windows

Step 1 Log in to the Windows server with the Agent installed.

Step 2 Open the CLI and go to the *Installation path***bin** directory.

Step 3 Run the **agent_stop.bat** command to stop the Agent running.

Step 4 Place the new certificates and private key files in the specified directory.

NOTE

Place new certificates in the *installation path***bin\nginx\conf** directory.

Step 5 Run the **agentcli.exe chgkey** command.

The following information is displayed:

```
Enter password of admin:
```

NOTE

admin is the username configured during the Agent installation.

Step 6 Enter a name for the new certificate and press **Enter**.

NOTE

If the private key and the certificate are the same file, names of the private key and the certificate are identical.

The following information is displayed:

```
Change certificate key file name:
```

Step 7 Enter a name for the new private key file and press **Enter**.

The following information is displayed:

```
Enter new password:
Enter the new password again:
```

Step 8 Enter the protection password of the private key file twice. The certificate is then successfully replaced.

Step 9 Run the **agent_start.bat** command to start the Agent.

----End

A.1.4 Replacing CA Certificates

Scenarios

A CA certificate is a digital file signed and issued by an authentication authority. It contains the public key, information about the owner of the public key, information about the issuer, validity period, and certain extension information. It is used to set up a secure information transfer channel between the Agent and the server.

If the CA certificate does not comply with the security requirements or has expired, replace it for security purposes.

Prerequisites

- The username and password for logging in to an ECS have been obtained.
- A new CA certificate is ready.

Replacing CA Certificates in Linux

Step 1 Log in the Linux server with the Agent installed.

Step 2 Run the following command to prevent logout due to system timeout:

TMOUT=0

Step 3 Run the following command to switch to user **rdadmin**:

su - rdadmin

Step 4 Run the following command to go to the path to the Agent start/stop script:

cd /home/rdadmin/Agent/bin

Step 5 Run the following command to stop the Agent running:

sh agent_stop.sh

Step 6 Run the following command to go to the path to the CA certificate:

cd /home/rdadmin/Agent/bin/nginx/conf

Step 7 Run the following command to delete the existing CA certificate:

rm bcmagentca.crt

Step 8 Copy the new CA certificate file into the **/home/rdadmin/Agent/bin/nginx/conf** directory and rename the file **bcmagentca.crt**.

Step 9 Run the following command to change the owner of the CA certificate:

chown rdadmin:rdadmin bcmagentca.crt

Step 10 Run the following command to modify the permissions on the CA certificate:

chmod 400 bcmagentca.crt

Step 11 Run the following command to go to the path to the Agent start/stop script:

cd /home/rdadmin/Agent/bin

Step 12 Run the following command to start the Agent:

sh agent_start.sh

----End

Replacing CA Certificates in Windows

Step 1 Log in to the ECS with the Agent installed.

Step 2 Go to the *Installation path***bin** directory.

Step 3 Run the **agent_stop.bat** script to stop the Agent.

Step 4 Go to the *Installation path***nginx\conf** directory.

Step 5 Delete the **bcmagentca.crt** certificate file.

Step 6 Copy the new CA certificate file into the *Installation path***nginx\conf** directory and rename the file **bcmagentca.crt**.

Step 7 Go to the *Installation path***bin** directory.

Step 8 Run the **agent_start.bat** script to start the Agent.

----End

A.2 Change History

Released On	Description
2025-04-30	This issue is the ninth official release. Updated the following content: Updated some constraints.
2024-10-30	This issue is the eighth official release. Updated the following content: Added the description that a full backup will be performed after incremental backups have been performed for certain times.
2023-03-20	This issue is the seventh official release. Updated the following content: Optimized the descriptions.
2023-08-30	This issue is the sixth official release. Updated the following content: Added section "Migrating Resources."
2022-06-20	This issue is the fifth official release. Updated the following content: Added section "Hybrid Cloud Backup."
2021-04-30	This issue is the fourth official release. Updated the following content: Added descriptions of SFS Turbo backup.
2021-04-19	This issue is the third official release. Updated the following content: Added a troubleshooting case for handling backup canceling failures.
2020-10-12	This issue is the second official release. Updated the following content: Added descriptions of application-consistent backup and file system backup.
2020-03-09	This issue is the first official release.