Object Storage Migration Service

User Guide

Issue   01
Date   2024-12-25

Security Declaration

Vulnerability

Huawei's regulations on product vulnerability management are subject to the *Vul. Response Process.* For details about this process, visit the following web page:
https://www.huawei.com/en/psirt/vul-response-process
For vulnerability information, enterprise customers can visit the following web page:
https://securitybulletin.huawei.com/enterprise/en/security-advisory

Contents

1 Permissions Management

1.1 Creating a User and Assigning OMS Permissions

This chapter describes how to use **IAM** for fine-grained permissions control for your OMS resources. With IAM, you can:

- Create IAM users for employees based on your enterprise's organizational structure. Each IAM user will have their own security credentials for accessing OMS resources.

- Assign only the minimum permissions required for users to perform a given task.

- Entrust a Huawei Cloud account or cloud service to perform professional and efficient O&M on your OMS resources.

If your Huawei Cloud account does not need individual IAM users, skip over this chapter.

**Figure 1-1** shows the procedure for granting permissions.

Prerequisites

Before assigning permissions to user groups, you should learn about system policies supported by OMS and select the policies based on service requirements. For more information about system policies supported by OMS, see **OMS Permissions**. For the system policies of other services, see **System-defined Permissions**.

Process Flow

Figure 1-1 Process of granting OMS permissions
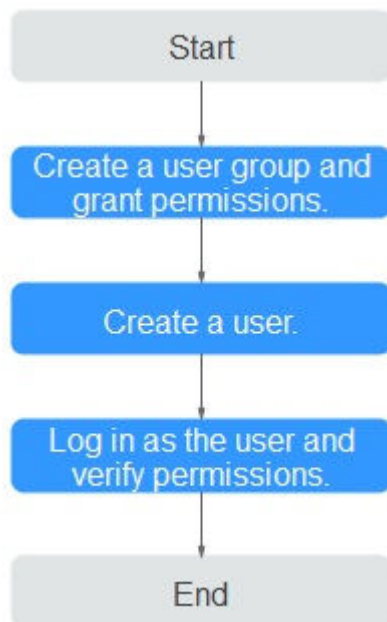
1. **Create a user group and assign permissions** to it.
   - If the IAM users who will be added to this group need all OMS permissions, attach the system-defined policies **OMS Administrator** and **OBS Administrator** to the group.
   - If the IAM users only need specific OMS permissions, create custom policies and attach these policies to the user group. For details, see **How Do I Obtain Required Permissions for the Source and Destination Platform Accounts?**

2. **Create a user and add it to a user group**.

   Create a user on the IAM console and add the user to the group created in **1**.

   ⚠ **CAUTION**

   You must select both **Programmatic access** and **Management console access** for **Access Type** when creating an IAM user.

   ---

3. **Sign in** as the created user and verify permissions.

   In the authorized region, perform the following operations:
   - Choose **Service List** > **Object Storage Migration Service**. On the OMS console, click **Create Migration Task** in the upper right corner. If a migration task can be created, the **OMS Administrator** permission has already taken effect.
   - Choose any service other than OMS in **Service List**. If a message appears indicating that you have insufficient permissions to access the service, the **OMS Administrator** permission has already taken effect.

2 Migration Tasks

If there is less than 3 TB of data or less than 5 million objects in a source bucket, you can create a migration task to quickly migrate the source data.

2.1 Creating a Migration Task

Scenario

If there is less than 3 TB of data or less than 5 million objects in a source bucket, you can create a migration task to quickly migrate the source data.

📖 **NOTE**

> If there is more than 3 TB of data or more than 5 million objects to migrate in a source bucket, you can **create a migration task group** to migrate the source data quickly.

⚠️ **CAUTION**

- By default, if a task stays in a waiting state for more than 30 days, OMS automatically puts the task into a **Failed** state and clears the AK/SK pair used by the task. To prevent task failures caused by blocking, do not create tasks too frequently.
- If an object is larger than 500 GB, migrating it takes a long time. You can **submit a service ticket** to whitelist the object for migration in segments.
- During the migration, the system automatically creates a temporary folder named **OMS** in the destination bucket. Do not perform any operations on this folder, including but not limited to modifying, deleting, or adding data in the folder. Otherwise, the migration will be interrupted or fail.

Background

OMS supports the following migration sources:

- Huawei Cloud
- AWS

- Alibaba Cloud

- Microsoft Azure

- Tencent Cloud

- Google Cloud

- Qiniu Cloud

- QingCloud

- Baidu Cloud

- Kingsoft Cloud

- UCloud

- HTTP/HTTPS data sources

NOTICE

- This section uses Huawei Cloud as the migration source. For tutorials for other cloud platforms, see **Migration from Other Clouds to Huawei Cloud**.

- OMS makes API calls to the object storage services on source platforms during the migration. These API calls may generate fees on those platforms, and you will be responsible for those fees based on those source platform billing structures.

Prerequisites

- You have **signed up for a HUAWEI ID and enabled Huawei Cloud services**.

- You have obtained the AK/SK pairs and required permissions for the source and destination platform accounts.

  - The source platform account needs the permissions for:

    - Listing buckets

    - Obtaining bucket locations

    - Listing objects

    - Obtaining object metadata

    - Obtaining object content

    For details about how to obtain these permissions, see **Source Permissions**.

  - The destination platform account needs the following permissions:

    - Listing buckets

    - Obtaining bucket locations

    - Listing objects

    - Obtaining object metadata

- Obtaining object content

- Listing uploaded parts

- Restoring archived objects

  For details about how to obtain these permissions, see **Destination Permissions**.

- You have created a bucket in OBS.

- You have created less than 1,000,000 migration tasks within the past 24 hours.

- You have less than 1,000,000 migration tasks in **Waiting** state.

Procedure

Step 1 Sign in to the console.

Step 2 Click in the upper left corner and select the desired region.

Step 3 Click **Service List**. Under **Migration**, click **Object Storage Migration Service**.

The **Object Storage Migration Service** page is displayed.

Step 4 Click **Create Migration Task** in the upper right corner.

Read the service disclaimer, select **I have read and agree to the service disclaimer**, and click **OK**.

Step 5 On the **Select Source/Destination** page, perform the following operations:

1. Configure source parameters. For details, see **Table 2-1**.

Table 2-1 Source parameters

Parameter	Description
Data Source	Select the source cloud service provider.
(Optional) APPID	Enter the identifier of your account for logging in to the Tencent Cloud console. This parameter is only available if the source cloud service provider is **Tencent Cloud**.
Access Key ID	Enter the AK for accessing the source platform. It can contain a maximum of 100 characters.
Secret Access Key	Enter the SK for accessing the source platform. The SK matches the AK, and they group into a pair. It can contain a maximum of 100 characters.

Parameter	Description
Specify Source Bucket	Enable this option if your source account does not have the permissions required to list buckets but have the permissions to list objects in buckets, obtain object metadata, and obtain object content. Then specify the bucket or path to be migrated. For details, see **Table 2-2**.

Table 2-2 Description of **Specify Source Bucket**

If You…	Then…
Enable **Specify Source Bucket**	1. Select the region where the source bucket is located from the **Region** drop-down list. 2. In the **Bucket** text box, enter the bucket or the path to be migrated. The path must have the bucket name included. 3. Click **Connect**. 　**NOTE** 　OMS will check whether the source bucket can be connected and will prompt you if the bucket is connected.
Disable **Specify Source Bucket**. (This feature is disabled by default.)	1. Click **List Buckets**. OMS will check whether the source platform can be connected using the information you entered. After the source platform is connected, all buckets in your account will be listed in the **Bucket** drop-down list on the premises that your account has the permissions needed to list buckets. 2. In the **Bucket** drop-down list, select the bucket where the objects to be migrated are stored. **NOTE** If the source platform account does not have the permissions required to list buckets, you need to enable **Specify Source Bucket**.

2. Select the destination platform. For details about the parameters, see **Table 2-3**.

Table 2-3 Destination platform parameters

Parameter	Description
Access Key ID	Enter the AK for accessing Huawei Cloud. It can contain a maximum of 100 characters.
Secret Access Key	Enter the SK for accessing Huawei Cloud. The SK matches the AK, and they group into a pair. It can contain a maximum of 100 characters. After entering the AK and SK, click **List Buckets**.
Bucket	Select a destination OBS bucket for storing the migrated data.

Step 6 Click **Next**.

Step 7 Configure parameters in the **Source Configuration** area.

1. Select a migration method.

If You Select…	Then…
File/Folder	Click **Select**, and in the displayed dialog box, select the files or folders to be migrated, and click **OK**. You can click ❌ to remove a selected file or folder from the list. **NOTE** – Migration method **File/Folder** is not available for migration from Qiniu Cloud. – If you do not select specific files or folders, all objects in the source bucket will be migrated. – For each migration task, you can select up to 500 files and folders in a given directory. – The name of any individual object on OBS cannot exceed 1,024 characters. If the name of a migrated object on OBS exceeds this limit, the migration task will fail.

If You Select...	Then...

Object list	Generally, this method is used for incremental migration. You need to write the names of source objects to be migrated into an object list file and store the file in an OBS bucket on Huawei Cloud. OMS will migrate all objects specified in the object list file.
	
	NOTE
	– An object list file cannot exceed 1,024 MB.
	– The first object in the object list must exist, or the pre-verification will fail.
	– The object list file must be a .txt file, and the **ContentType** metadata of the file must be **text/plain**.
	– The object list file must be in UTF-8 without BOM.
	– Each line in the object list file can contain only one object name, and the object name must be URL encoded if it contains special characters or spaces.
	– Spaces are not allowed in each line in the object list file. Spaces may cause migration failures because they may be mistakenly identified as object names.
	– Each line in the object list file cannot be longer than 65,535 characters, or the migration will fail.
	– The Content-Encoding metadata of each object list file must be left empty, or the migration will fail.
	– Archived data can only be accessed and obtained by OMS after it is restored. If the object list file is archived, manually restore it before migration.
	
	1. Select the bucket where the object list file is stored.
	    NOTE
	    The listed buckets are obtained using the destination AK/SK pair you entered in **Step 5.2**.
	    The bucket used for storing the list file must be located in the same region as the destination bucket, or you cannot select the file.
	
	2. Click **Select** next to **Object List**, select the object list file, and click **OK**.

Object name prefix	Enter the names or prefixes of objects to be migrated and click **Add**. OMS will automatically list the matched objects. You can click ✕ to remove a name or prefix you added from the list. **NOTE** – If the objects you want to migrate are stored in the root directory of the source bucket, add their prefixes directly. If the objects are stored in none-root directories, add their directories and prefixes in the format of *Bucket name/Folder name/Prefix*. – If no object names or prefixes are specified, all objects in the source bucket will be migrated.

If You Select...	Then...

URL list	Generally, this method is used to migrate HTTP/HTTPS data. You need to write the URLs of the files to be migrated and their destination object names into a URL list file and store the file in an OBS bucket on Huawei Cloud. OMS will migrate all files specified in the URL list file.
	
	1. Select the bucket where the list file is located.
	
	    NOTE
	
	    ■ The listed buckets are obtained using the destination AK/SK pair you entered in **Step 5.2**.
	
	    ■ The bucket used for storing the list file must be located in the same region as the destination bucket, or you cannot select the file.
	
	    ■ For security purposes, if the migration source supports both HTTP and HTTPS, you are advised to use HTTPS for the migration. If HTTP is used, data may be eavesdropped on, tampered with, or vulnerable to man-in-the-middle or replay attacks.
	
	    ■ If the data to be migrated is not public and you do not want to make the data public, you are advised to use other migration methods.
	
	    ■ URL redirection is not supported.
	
	2. Click **Select** next to **URL List**, select the URL list file, and click **OK**.

If You Select...	Then...
	NOTE ■ A URL list file cannot exceed 1,024 MB. ■ The URL list file must be a .txt file, and its metadata **Content-Type** must be **text/plain**. ■ The URL list file must be in UTF-8 without BOM. ■ Each line in the URL list file can contain only one URL and one destination object name. ■ Each line in the URL list file cannot be longer than 65,535 characters, or the migration will fail. ■ The **ContentEncoding** metadata of the URL list file must be left empty, or the migration will fail. ■ The format of the first line in the URL list file must be correct, or the pre-verification will fail. ■ In the URL list file, you must use a tab character (\t) to separate the URL and destination object name in each line. The format is [*URL*][*Tab character*][*Destination object name*]. Chinese and special characters in the source and destination object names must be URL encoded. Please note that: The URL encoding must start from the second character after the domain name in a line. Do not encode the protocol header, domain name, or slash before or after the domain name. Otherwise, the format verification will fail. In each line, use a tab character (Tab key on the keyboard) to separate the URL and the destination object name. Do not use spaces. For example: http://xxx.xxx.xxx.xxx.com/doc/thefile2.txt doc/thefile2.txt http://xxx.xxx.xxx.xxx.com/the%20file.txt the%20file.txt http://xxx.xxx.xxx.xxx.com/the%20file2.txt the+file2.txt http://xxx.xxx.xxx.xxx.com/doc/thefile.txt doc/thefile.txt In the preceding examples, after the files represented by the URLs are copied to the destination bucket, the objects are named **doc/thefile2.txt**, **the file.txt**, **the file2.txt**, and **doc/thefile.txt**. ■ Spaces are not allowed in each line in the URL list file. Spaces may cause migration failures because they may be mistakenly identified as object names. ■ URLs in the list file can be accessed using HEAD and GET methods.

2. Determine whether to migrate metadata.

   – If you select **Do not migrate**, OMS will only migrate the metadata ContentType.

   – If you select **Migrate**, OMS will migrate supported metadata.

> **NOTICE**
>
> Only Chinese characters, English letters, digits, and hyphens (-) can be migrated. Other characters cannot be migrated.

3. Set **Selective Migration**.

   - If you do not need to filter source data by time, set this option to **No**.
   - If you need to filter source data by time, set this option to **Yes**. Then only source data modified after the specified time will be migrated.

Step 8 Configure parameters in the **Destination Configuration** area.

1. **Data Encryption**: If the destination is a parallel file system (PFS), data encryption is not supported.

   - If **Enable** is not selected, objects will not be encrypted after being migrated.
   - If **Enable** is selected, all migrated objects will be encrypted before they are stored into the destination bucket.

   > **NOTE**
   >
   > - Enabling data encryption may decrease the migration speed by about 10%.
   >
   > - Data encryption is only available if the encryption service is supported in the region you are migrating to.

2. **Specify Prefix**

   - If this option is set to **No**, the names of objects remain unchanged before and after the migration.
   - If this option is set to **Yes**, you can specify a prefix to rename or redefine the paths for objects migrated to the destination bucket.

   Figure 2-1 Specifying a prefix

   > **NOTE**
   >
   > To learn how to use **Specify Prefix**, see **Adding a Name Prefix or Path Prefix to Migrated Objects**.

3. **Object Storage Class**

   Choose the storage class that your data will be migrated to. For details about storage classes, see **How Do I Choose Storage Classes?**

Step 9 (Optional) Click **Show** next to **Advanced Settings** to expand the advanced options. Configure advanced options by referring to **Table 2-4**.

Table 2-4 Advanced settings

Parameter	Description
Failed Object Record	Decide whether to record the objects that fail to be migrated. ● If this option is set to **No**, the system will not record the objects that fail to be migrated. If the migration fails and needs to be retried, all objects in the source bucket need to be migrated again. ● If this option is set to **Yes**, the system will record the objects that fail to be migrated. If the migration fails and needs to be retried, you can only migrate these failed objects again. **NOTE** ● For a migration task, no matter it is contained in a task group or not, the objects that fail to be migrated are recorded in a list named after the task name, and the list is uploaded to the **oms/failed_object_lists/** directory of the destination bucket. ● A maximum of 100,000 failed objects can be recorded in a failed object list file. If more than 100,000 objects fail to be migrated in a migration task, you are advised to rectify the fault based on the existing failed object list and perform the migration again. ● This file contains information about the failed migration task, including the failure cause and time (in local UTC), URL-encoded names of failed objects, non-URL-encoded names of failed objects, and error codes returned by source SDKs. ● This file is retained in the destination bucket even after the objects in the file are successfully re-transferred. If you do not need the file, delete it manually.

Parameter	Description
Archive Data Restoration	Archived data must be restored before it can be migrated. You can choose to enable this option if your source cloud service provider supports automatic restoration of archived data. ● If you enable this option, the system automatically restores and migrates archived objects in the migration task. If an archive object fails to be restored, the system skips it and records it in the list of objects that failed to be migrated and continues to migrate other objects in the migration task. **CAUTION** – The following cloud service providers can automatically restore archived objects: Huawei Cloud, Alibaba Cloud, Kingsoft Cloud, and Tencent Cloud. – The system will restore archived data before migrating it, and you pay the source cloud platform for the API requests and storage space generated accordingly. – The copies generated for restoring archived data will be stored for three days by default. If there is more than 3 TB of data or more than 3 million objects in a source bucket, create a migration task group to migrate data in case the migration fails because the restored data is archived again. – Pausing or restarting a migration task will result in restoration of all archived data again, no matter it has been restored or not. – After objects are migrated from the source platform to Huawei Cloud, they are in the same storage class as the destination bucket. ● If you do not enable this option, the system directly records archive objects in the list of objects that failed to be migrated, skips them, and continues to migrate other objects in the migration task.

Parameter	Description

SMN Notification	Decide whether to use SMN to get notifications about migration results.
	
	● If you do not enable this option, no SMN message will be sent after the migration is complete.
	
	● If you enable this option, you will receive an SMN message informing you of the migration results. Perform the following steps:
	
	  1. Click **Add** next to the **SMN Topic** box. The **Select SMN Topic** area is displayed.
	
	  2. Select a topic for publishing SMN messages and click **OK**.
	     If OMS is not authorized to publish messages to the selected SMN topic, a **Warning** dialog box will appear after you click **OK**. If you need to complete the authorization, click **OK** to authorize OMS. Otherwise, click **Cancel** to return to the **Select SMN Topic** page and select another SMN topic.
	
	  3. Configure **Trigger Condition**. You can select one of the following options or both:
	
	  – **Migration succeeded**: An SMN message will be sent if the migration task succeeds.
	
	  – **Migration failed**: An SMN message will be sent if the migration task fails.
	
	  NOTE
	  If you experience trouble in using SMN, see **What Do I Do If SMN Does Not Work Properly?**

Parameter	Description

Traffic Limiting	Set the maximum bandwidth for the migration task during different periods.
	
	● If you do not need to limit the migration traffic, select **No**.
	
	● If you need to limit the migration traffic, select **Yes**. Perform the following steps:
	
	   1. Click **Add Rule**.
	      An empty traffic limiting rule is displayed.
	
	   2. Specify **Start Time**, **End Time**, and **Maximum Bandwidth**.
	      The maximum bandwidth ranges from 1 MB/s to 200 MB/s.
	
	      NOTICE
	      For example, if you set **Start Time** to **08:00**, **End Time** to **12:00**, and **Maximum Bandwidth** to **20 MB/s**, the maximum migration speed is limited to 20 MB/s when the migration task runs in the period from 08:00 to 12:00. The migration speed is not limited beyond this period.
	
	      The time is the local standard time of the region you are migrating to.
	
	   3. Repeat steps **1** and **2** to add another traffic limiting rule.
	
	   You can click 🗑 in the **Operation** column to delete a rule.
	
	      NOTE
	      A maximum of five rules can be added for a migration task.
	
	      You can set traffic limiting rules in the task details even after the task is created.

Parameter	Description
Object Overwrite	● **Overwrite if source newer or different size**: If a source object is not as large as or was last modified more recently than its paired destination object, the source object will overwrite the destination object. Otherwise, the source object will be skipped. ● **Never overwrite**: The system will always skip source objects and keeps their paired destination objects. ● **Overwrite if different CRC64 checksum**: If a source object has a CRC64 checksum different from the paired destination object, the source object will overwrite the destination object. Otherwise, the source object will be skipped. If either of them does not have a CRC64 checksum, their sizes and last modification times are checked. NOTE – This option is only available for migration on Huawei Cloud or from Alibaba Cloud or Tencent Cloud. – This option is applied only when the source object has a same encryption attribute as the destination one. ● **Always overwrite**: The system will always allow source objects to overwrite their paired destination objects.
Consistency Check	● **By size and last modification time**: With this default setting, the system will check object consistency with object size and last modification time. ● **By CRC64 checksum**: The system will check object consistency with CRC64 checksums. If a source object and the paired destination object have CRC64 checksums, the checksums are checked. Otherwise, their sizes and last modification times are checked.
Priority	If there are a large number of tasks, you can set task priorities to control which tasks take precedence over other tasks.
Description	Enter a brief description about the migration task. A maximum of 255 characters can be entered.

Step 10 Click **Next** to enter the confirmation page.

Step 11 Confirm the migration settings and start the migration.

1. Check that the migration settings are correct.

   If the settings are incorrect, click **Previous** to return to the previous page for modification.

2. Click **Migrate Now**. A message is displayed, indicating that the migration task is successfully created.

The migration task is displayed in the migration task list.

For details about migration task statuses, see **Viewing a Migration Task**.

📖 NOTE

After the task is created, a task ID is generated for quick identification. It is displayed in the upper left corner of the task list. It is composed of the source bucket name, destination bucket name, and time sequence ID.

----End

2.2 Viewing a Migration Task

You can view the migration progress and details as well as perform operations on a task at any time.

Viewing Details of a Migration Task

Step 1 Log in to the management console and go to the **Object Storage Migration Service** page.

Step 2 In the upper right corner of the migration task list, set criteria to filter migration tasks.

- Task group ID: If a migration task is issued by a migration task group, you can enter the task group ID to filter all the migration tasks in that task group.

  You can obtain the task group ID from the **Migration Task Groups** page.

- Task status: Learn more information about task statues in the following table.

Table 2-5 Migration task statuses

Status	Description
Waiting	The migration task has been created and is being initialized or waiting for other migration tasks to complete.
Migrating	The migration task is in progress, and objects are being migrated from the source platform to Huawei Cloud.
Paused	The migration task is paused and can be resumed manually.
Pausing	The migration task is being paused.
Succeeded	The source objects in the migration task have been successfully migrated.
Failed	The migration task fails, and the migration is not complete. You can restart the task to retry the migration.

Step 3 Click **View Details** in the lower right corner of the migration task. You can view the total number of objects, the number of migrated objects, the paths for storing the lists of migrated, failed, and ignored objects, and other details.

----End

Configuring Traffic Limiting Rules

You can add, modify, or delete traffic limiting rules for a migration task at any time.

Step 1 Log in to the management console and go to the **Object Storage Migration Service** page.

Step 2 In the migration task list, locate the task for which you want to add or modify a traffic limiting rule. Click **View Details** in the lower right corner of the migration task.

Step 3 Click ✎ next to **Traffic Limiting**.

- To add a rule, click **Add Rule** and set **Start Time**, **End Time**, and **Maximum Bandwidth**.

- To modify a rule, modify **Start Time**, **End Time**, and **Maximum Bandwidth** as required.

- To delete a rule, click 🗑 in the **Operation** column.

  📖 **NOTE**

  – The maximum bandwidth ranges from 1 MB/s to 200 MB/s.
  – A maximum of five rules can be added for a migration task.

Step 4 Click **OK**.

----End

Viewing Migration Records

For a migration task, OMS records the objects that are migrated, fail to be migrated, or ignored in three separate lists and stores these lists in the destination bucket.

The following table described how to obtain these object lists.

If...	Then...
The number of migrated objects is greater than 0	On the task details page, click the link next to **Migrated Object List** to download the .txt file that lists migrated objects. **NOTE** The path of list is **oms/task/***<task-name>***/ success_object_lists/***<timestamp>***.success_list.txt**.

If...	Then...
The number of ignored objects is greater than 0	On the task details page, click the link next to **Ignored Object List** to download the .txt file that lists ignored objects. **NOTE** The path of the list is **oms/task/***<task-name>***/skip_object_lists/***<timestamp>***.skip_list.txt**.
The number of failed objects is greater than 0	On the task details page, click the link next to **Failed Object List** to download the .txt file that lists failed objects. **NOTE** The path of the list is **oms/task/***<task-name>***/failed_object_lists/***<timestamp>***.failed_list.txt**. For details about the error codes in a failed object list, see **Viewing the List of Failed Objects**.

2.3 Managing a Migration Task

Scenarios

You can pause, resume, restart, or delete a migration task.

Procedure

Step 1 Log in to the management console and go to the **Object Storage Migration Service** page.

Step 2 Manage a migration task.

Table 2-6 Managing a migration task

Operation	Scenario	Procedure
Pausing a migration task	You can pause a migration task if the number of concurrent migration tasks exceeds what is supported. You can pause migration tasks less important to you so that the important migration tasks can be executed preferentially.	1. Click **Stop** in the **Operation** column of the task. 2. Read the content in the dialog box and click **OK**. The task status changes to **Paused**.

Operation	Scenario	Procedure

Resuming a migration task	You can resume a paused migration task.	1. Click **Start** in the **Operation** column of the task.
		
		2. In the displayed **Resume Task** dialog box, enter the source and destination AKs and SKs and click **OK**.
		
		    NOTE
		    If CDN authentication is enabled, you need to enter the verification key.
		
		    The task status changes to **Migrating**.

Restarting a migration task	If a migration task fails, you can restart the task to perform the migration again.	1. Choose **More** > **Restart** in the **Operation** column of the task.
		
		2. In the displayed **Restart Task** dialog box, enter the source and destination AKs and SKs and click **OK**.
		
		    NOTE
		    – If **Failed Object Record** is enabled, you need to set **Migration Range**. You can select **All objects** to migrate all the objects in the migration task or selects **Failed objects** to migrate only the object that failed to be migrated.
		    – If CDN authentication is enabled, you need to enter the verification key.
		
		    The task status changes to **Migrating**.

Deleting a migration task	If you do not need to continue a migration or clear a completed migration task, you can delete the task when it is not in the **Migrating** status. **NOTE** If the task you want to delete is in the **Migrating** status, pause and delete it.	Choose **More** > **Delete** in the **Operation** column of the task. The deleted migration task will disappear from the task list.

----End

3 Migration Task Groups

If there is more than 3 TB of data or more than 5 million objects to migrate in a source bucket, you can create a migration task group to migrate the source data quickly. The system will group the source objects into multiple sub-tasks for concurrent migrations. These sub-tasks are managed in groups, including progress query, resumption, and restart.

📖 NOTE

> Compared with a migration task, a migration task group provides a faster and more reliable migration, to help you easily identify failed objects and quickly migrate them again.

3.1 Creating a Migration Task Group

Scenario

If there is more than 3 TB of data or more than 5 million objects to migrate in a source bucket, you can create a migration task group to migrate the source data quickly. The system will group the source objects into multiple sub-tasks for concurrent migrations.

⚠️ CAUTION

- By default, if a task stays in a waiting state for more than 30 days, OMS automatically puts the task into a **Failed** state and clears the AK/SK pair used by the task. To prevent task failures caused by blocking, do not create tasks too frequently.

- If an object is larger than 500 GB, migrating it takes a long time. You can **submit a service ticket** to whitelist the object for migration in segments.

- During the migration, the system automatically creates a temporary folder named **OMS** in the target bucket. Do not perform any operations on this folder, including but not limited to modifying, deleting, or adding data in the folder. Otherwise, the migration will be interrupted or fail.

Background

OMS supports the following migration sources:

- Huawei Cloud
- AWS
- Alibaba Cloud
- Microsoft Azure
- Tencent Cloud
- Google Cloud
- Qiniu Cloud
- QingCloud
- Baidu Cloud
- Kingsoft Cloud
- UCloud
- HTTP/HTTPS data sources

NOTICE

This section uses Huawei Cloud as the migration source. For tutorials for other cloud platforms, see **Migration from Other Clouds to Huawei Cloud**.

OMS makes API calls to the object storage services on source platforms during the migration. These API calls may generate fees on those platforms and you will be responsible for those fees based on those source platform billing structures.

Prerequisites

- You have **signed up for a HUAWEI ID and enabled Huawei Cloud services**.
- You have obtained the AK/SK pairs and required permissions for the source and destination platform accounts.
  - The source platform account needs the permissions for:
    - Listing buckets
    - Obtaining bucket locations
    - Listing objects
    - Obtaining object metadata
    - Obtaining object content

    To learn how to obtain these permissions, see **Source Permissions**.
  - The destination platform account needs the permissions for:
    - Listing all buckets
    - Obtaining bucket locations

- ▪ Listing objects

- ▪ Obtaining object metadata

- ▪ Obtaining object content

- ▪ Listing uploaded parts

- ▪ Restoring archive objects

  To learn how to obtain these permissions, see **Destination Permissions**.

- You have created at least one bucket on OBS.

- You have created less than 300 migration task groups within the past 24 hours.

- You have created less than 1,000,000 migration tasks within the past 24 hours.

- You have less than 1,000,000 migration tasks in **Waiting** state.

Procedure

Step 1 Log in to the management console.

Step 2 Click   in the upper left corner and select the desired region.

Step 3 Click **Service List**, and choose **Migration** > **Object Storage Migration Service**.

The **Object Storage Migration Service** page is displayed.

Step 4 In the navigation pane on the left, choose **Migration Task Groups**.

Step 5 Click **Create Migration Task Group** in the upper right corner.

Read the service disclaimer, select **I have read and agree to the service disclaimer**, and click **OK**.

The page for creating a migration task group is displayed.

Step 6 On the **Select Source/Destination** page, perform the following operations:

1. Configure source parameters by referring to **Table 3-1**.

Table 3-1 Source parameters

Parameter	Description
Data Source	Select the source cloud service provider.
(Optional) APPID	Enter the identifier of the account for logging in to the Tencent Cloud console. This parameter is only available if the source cloud service provider is **Tencent Cloud**.
Access Key ID	Enter the AK for accessing the source platform. It can contain a maximum of 100 characters.

Parameter	Description
Secret Access Key	Enter the SK for accessing the source platform. The SK matches the AK, and they group into a pair. It can contain a maximum of 100 characters.
Specify Source Bucket	Enable this option if your source account does not have the permissions required to list buckets but have the permissions to list objects in buckets, obtain object metadata, and obtain objects. Then specify the bucket or path to be migrated.

For details, see **Table 3-2**. |

Table 3-2 Description of **Specify Source Bucket**

If You...	Then...
Enable **Specify Source Bucket**	1. Select the region where the source bucket is located from the **Region** drop-down list.
2. In the **Bucket** text box, enter the bucket or the path to be migrated. The path must have the bucket name included.
3. Click **Connect**.
NOTE
OMS will check whether the source platform can be connected using the information you entered. If the source platform can be connected, the system will prompt you.
Disable **Specify Source Bucket**. (This feature is disabled by default.)	1. Click **List Buckets**.
OMS will check whether the source platform can be connected using the information you entered. After the source platform is connected, all buckets in your account will be listed in the **Bucket** drop-down list on the premises that your account has the permissions needed to list buckets.
2. In the **Bucket** drop-down list, select the bucket you want to migrate.

2. Set the destination parameters listed in **Table 3-3**.

Table 3-3 Destination parameters

Parameter	Description
Access Key ID	Enter the AK for accessing Huawei Cloud. It can contain a maximum of 100 characters.

Parameter	Description
Secret Access Key	Enter the SK for accessing Huawei Cloud. The SK matches the AK, and they group into a pair. It can contain a maximum of 100 characters. Then click **List Buckets**.
Bucket	Select a destination OBS bucket for storing the migrated data.

Step 7 Click **Next**. The **Set Task Group Parameters** page is displayed.

Step 8 Set parameters in the **Source Configuration** area.

1. Select a migration method.

Migration Method	Description
Object name prefix	Enter the names or prefixes of objects to be migrated and click **Add**. The system will automatically list the matched objects. You can click ✕ to delete a prefix, and then the system will not migrate the objects matched with the deleted prefix. **NOTE** – If the objects you want to migrate are stored in the root directory of the source bucket, add their prefixes directly. If these objects are stored in none-root directories, add their directories and prefixes in the format of *Bucket name/Folder name/Prefix*. – If no object names or prefixes are specified, all objects in the source bucket will be migrated. – The objects to be migrated are recorded in .txt files, and each migration task has a list file. The storage path of the files is **oms/taskgroup/** in the destination bucket. These list files will be retained after the migration, and you can manually delete them.

Migration Method	Description
Object list folder	Generally, this method is used for incremental migration. You need to list the names of source objects to be migrated in TXT files and store the files in an OBS bucket on Huawei Cloud. OMS will migrate all objects specified in the files. 1. Select the bucket where the object lists are stored. **NOTE** The listed buckets are obtained using the destination AK/SK pair you entered in **Step 6.2**. The bucket used for storing object lists must be in the same region as the destination bucket, or you cannot select these object lists. 2. Click **Select** next to **Object List Folder**, select the object list files, and click **OK**. **NOTE** – An object list file cannot exceed 1,024 MB. – A maximum of 2,000 object list files can be stored in the object list folder. – An object list file must be a .txt file, and the **ContentType** metadata of the file must be **text/plain**. – An object list file must be in UTF-8 without BOM. – Each line in an object list file can contain only one object name, and the object name must be URL encoded if it contains special characters or spaces. – Spaces are not allowed in each line in an object list file. Spaces may cause migration failures because they may be mistakenly identified as object names. – Each line in an object list file cannot be longer than 65,535 characters, or the migration will fail. – The **ContentEncoding** metadata of each object list file must be left empty, or the migration will fail. – Archived data can only be accessed and obtained by OMS after it is restored. If the object list files are archived, manually restore them before migration.

Migration Method	Description

URL list folder	Generally, this method is used to migrate HTTP/HTTPS data. You need to write the URLs of the files to be migrated and their destination object names into one or more .txt files, and save the files to a folder in an OBS bucket on Huawei Cloud. You can store up to 2,000 list files in that folder. Each list file cannot exceed 1 GB. OMS migrates all objects specified in the URL list files.
	
	1. Select the bucket where the list files are stored.
	   NOTE
	
	   ■ The listed buckets are obtained using the destination AK/SK pair you entered in **Step 6.2**.
	
	   ■ The bucket used for storing the list files must be located in the same region as the destination bucket, or you cannot select these files.
	
	   ■ For security purposes, if the migration source supports both HTTP and HTTPS, you are advised to use HTTPS for the migration. If HTTP is used, data may be eavesdropped on, tampered with, or vulnerable to man-in-the-middle or replay attacks.
	
	   ■ If the data to be migrated is not public and you do not want to make the data public, you are advised to use other migration methods.
	
	   ■ URL redirection is not supported.
	
	2. Click **Select** next to **URL List Folder**, select the URL list files, and click **OK**.

Migration Method	Description
	NOTE ■ A URL list file cannot exceed 1,024 MB. ■ A maximum of 2,000 URL list files can be stored in the URL list folder. ■ A URL list file must be a .txt file, and the **Content-Type** metadata of the file must be **text/plain**. ■ A URL list file must be in UTF-8 without BOM. ■ Each line in a URL list file can contain only one URL and one destination object name. ■ Each line in a URL list file cannot be longer than 65,535 characters, or the migration will fail. ■ The **Content-Encoding** metadata of each URL list file must be left empty, or the migration will fail. ■ In the URL list file, you must use a tab character (\t) to separate the URL and destination object name in each line. Do not use spaces to separate them. The format is [*URL*][*Tab character*][*Destination object name*]. Chinese and special characters in the source and destination object names must be URL encoded. Please note that: The URL encoding must start from the second character after the domain name in a line. Do not encode the protocol header, domain name, or slash before or after the domain name. Otherwise, the format verification will fail. In each line, use a tab character (Tab key on the keyboard) to separate the URL and the destination object name. Do not use spaces. For example: http://xxx.xxx.xxx.xxx.com/doc/thefile2.txt doc/thefile2.txt http://xxx.xxx.xxx.xxx.com/the%20file.txt the%20file.txt http://xxx.xxx.xxx.xxx.com/the%20file2.txt the+file2.txt http://xxx.xxx.xxx.xxx.com/doc/thefile.txt doc/thefile.txt In the preceding examples, after the files represented by the URLs are copied to the destination bucket, the objects are named **doc/thefile2.txt**, **the file.txt**, **the file2.txt**, and **doc/thefile.txt**. ■ Spaces are not allowed in each line in the URL list file. Spaces may cause migration failures because they may be mistakenly identified as object names. ■ URLs in the list file can be accessed using HEAD and GET methods.

2. Decide whether to migrate metadata.

   – If you select **Do not migrate**, OMS will only migrate the Content-Type metadata.

      – If you select **Migrate**, OMS will migrate supported metadata.

> **NOTICE**
>
> Only Chinese characters, English letters, digits, and hyphens (-) can be migrated. Other characters cannot be migrated.

---

3. Set **Selective Migration**.

      – If you do not need to filter source data by time, set this option to **No**.

      – If you need to filter source data by time, set this option to **Yes**. Then only source data modified after the specified time will be migrated.

Step 9 Configure parameters in the **Destination Configuration** area.

1. **Data Encryption**: If the destination is a parallel file system (PFS), data encryption is not supported.

      – If **Enable** is not selected, objects will not be encrypted after being migrated.

      – If **Enable** is selected, all migrated objects will be encrypted before they are stored into the destination bucket.
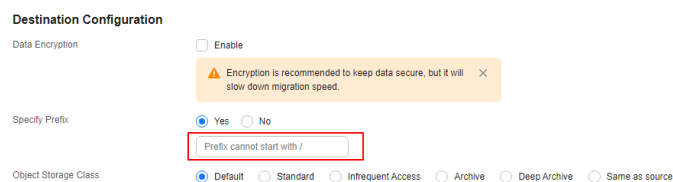
> 📖 **NOTE**
>
> ■ Enabling data encryption may decrease the migration speed by about 10%.
>
> ■ Data encryption is only available if the encryption service is supported in the region you are migrating to.

2. **Specify Prefix**

      – If this option is set to **No**, the names of objects remain unchanged before and after the migration.

      – If this option is set to **Yes**, you can specify a prefix to rename or redefine the paths for objects migrated to the destination bucket.

Figure 3-1 Specifying a prefix

> 📖 **NOTE**
>
> To learn how to use **Specify Prefix**, see **Adding a Name Prefix or Path Prefix to Migrated Objects**.

3. **Object Storage Class**

Choose the storage class that your data will be migrated to. For details about storage classes, see **How Do I Choose Storage Classes?**

Step 10 (Optional) Click **Show** next to **Advanced Settings** to expand the advanced options. Configure advanced options by referring to **Table 3-4**.

Table 3-4 Advanced settings

Parameter	Description
Failed Object Record	Decide whether to record the objects that fail to be migrated. ● If this option is set to **No**, the system will not record the objects that fail to be migrated. If the migration fails and needs to be retried, all objects in the source bucket need to be migrated again. ● If this option is set to **Yes**, the system will record the objects that fail to be migrated. If the migration fails and needs to be retried, you can only migrate these failed objects again. **NOTE** ● For a migration task, no matter it is contained in a task group or not, the objects that fail to be migrated are recorded in a list named after the task name, and the list is uploaded to the **oms/failed_object_lists/** directory of the destination bucket. ● A maximum of 100,000 failed objects can be recorded in a failed object list file. If more than 100,000 objects fail to be migrated in a migration task, you are advised to rectify the fault based on the existing failed object list and perform the migration again. ● This file contains information about the failed migration task, including the failure cause and time (in local UTC), URL-encoded names of failed objects, non-URL-encoded names of failed objects, and error codes returned by source SDKs. ● This file is retained in the destination bucket even after the objects in the file are successfully re-transferred. If you do not need the file, delete it manually.

Parameter	Description
Archive Data Restoration	Archived data must be restored before it can be migrated. You can choose to enable this option if your source cloud service provider supports automatic restoration of archived data. ● If you enable this option, the system automatically restores and migrates archived objects in the migration task. If an archived object fails to be restored, the system records it in the list of objects that fail to be migrated and continues to migrate other objects in the migration task. **CAUTION** – The following cloud service providers can automatically restore archived objects: Huawei Cloud, Alibaba Cloud, Kingsoft Cloud, and Tencent Cloud. – The system will restore archived data before migrating it, and you pay the source cloud platform for the API requests and storage space generated accordingly. – The copies generated for restoring archived data will be stored for three days by default. If there is more than 3 TB of data or more than 3 million objects in a source bucket, create a migration task group to migrate data in case the migration fails because the restored data is archived again. – Pausing or restarting a migration task will result in restoration of all archived data again, no matter it has been restored or not. – After objects are migrated from the source platform to Huawei Cloud, they are in the same storage class as the destination bucket. ● If you do not enable this option, the system directly records archive objects in the list of objects that failed to be migrated, skips them, and continues to migrate other objects in the migration task.

Parameter	Description
SMN Notification	Decide whether to use SMN to get notifications about migration results. ● If you do not enable this option, no SMN message will be sent after the migration is complete. ● If you enable this option, you will receive an SMN message informing you of the migration results. Perform the following steps: 1. Click **Add** next to the **SMN Topic** box. The **Select SMN Topic** dialog box is displayed. 2. Select a topic for publishing SMN messages and click **OK**. If OMS is not authorized to publish messages to the selected SMN topic, a **Warning** dialog box will appear after you click **OK**. If you need to complete the authorization, click **OK** to authorize OMS. Otherwise, click **Cancel** to return to the **Select SMN Topic** page and select another SMN topic. 3. Configure **Trigger Condition**. You can select one of the following options or both: – **Migration succeeded**: An SMN message will be sent if the migration task succeeds. – **Migration failed**: An SMN message will be sent if the migration task fails. **NOTE** If you experience trouble in using SMN, see **What Do I Do If SMN Does Not Work Properly?**

Parameter	Description

Traffic Limiting	Set the maximum bandwidth for the migration task during different periods.
	
	● If you do not need to limit the migration traffic, select **No**.
	
	● If you need to limit the migration traffic, select **Yes**. Perform the following steps:
	
	  1. Click **Add Rule**.
	     An empty traffic limiting rule is displayed.
	
	  2. Specify **Start Time**, **End Time**, and **Maximum Bandwidth**.
	     The maximum bandwidth ranges from 1 MB/s to 200 MB/s.
	     NOTICE
	     For example, if you set **Start Time** to **08:00**, **End Time** to **12:00**, and **Maximum Bandwidth** to **20 MB/s**, the maximum migration speed is limited to 20 MB/s when the migration task runs in the period from 08:00 to 12:00. The migration speed is not limited beyond this period.
	     The time is the local standard time of the region you are migrating to.
	
	  3. Repeat steps **1** and **2** to add another traffic limiting rule.
	
	  You can click 🗑 in the **Operation** column to delete a rule.
	     NOTE
	     A maximum of five rules can be added for a migration task group.
	     You can set traffic limiting rules in the task details even after the task is created.

Parameter	Description

Object Overwrite	• **Overwrite if source newer or different size**: If a source object is not as large as or was last modified more recently than its paired destination object, the source object will overwrite the destination object. Otherwise, the source object will be skipped.
	• **Never overwrite**: The system will always skip source objects and keeps their paired destination objects.
	• **Overwrite if different CRC64 checksum**: If a source object has a CRC64 checksum different from the paired destination object, the source object will overwrite the destination object. Otherwise, the source object will be skipped. If either of them does not have a CRC64 checksum, their sizes and last modification times are checked.
	NOTE
	  – This option is only available for migration on Huawei Cloud or from Alibaba Cloud or Tencent Cloud.
	  – This option is applied only when the source object has a same encryption attribute as the destination one.
	• **Always overwrite**: The system will always allow source objects to overwrite their paired destination objects.

Consistency Check	• **By size and last modification time**: With this default setting, the system will check object consistency with object size and last modification time. • **By CRC64 checksum**: The system will check object consistency with CRC64 checksums. If a source object and the paired destination object have CRC64 checksums, the checksums are checked. Otherwise, their sizes and last modification times are checked.
Priority	If there are a large number of tasks, you can set task priorities to control which tasks take precedence over other tasks.
Description	Enter a brief description about the migration task. A maximum of 255 characters can be entered.

Step 11 Click **Next** to enter the confirmation page.

Step 12 Confirm the migration settings and start the migration.

1. Check that the migration settings are correct.

   If the settings are incorrect, click **Previous** to return to the previous page for modification.

2. Click **Migrate Now**. A message is displayed, indicating that the migration task is created successfully.

The task group is displayed in the migration task group list.

----End

3.2 Viewing a Migration Task Group

You can view the migration progress and details as well as perform operations on a task group at any time.

Viewing the Details of a Migration Task Group

Step 1 Log in to the management console and go to the **Object Storage Migration Service** page.

Step 2 In the navigation pane on the left, choose **Migration Task Groups**.

The **Migration Task Groups** page is displayed.

Step 3 In the upper right corner of the migration task group list, choose a status to filter task groups.

Table 3-5 lists the task group statuses.

Table 3-5 Migration task group statuses

Status	Description
Waiting	The migration task group is being initialized.
Creating	Migration tasks in the task group are being created.
Executing	Migration tasks in the group are being executed.
Paused	Migration tasks in the task group are paused and can be manually resumed.
Creation failed	Creation of migration tasks in the group fails.
Failed	The migration fails. You can restart the task group to retry the migration.
Succeeded	The migration is complete.
Pausing	Migration tasks in the task group are being paused.
Waiting for deletion	Migration tasks in the task group are waiting for deletion.
Deleting	Migration tasks in the task group are being deleted.

Step 4 Click ⌄ on the left of the task group ID, and view the numbers of migrating, failed, waiting, paused, and succeeded tasks. You can also view the numbers of ignored, failed, and migrated objects, the paths of the lists of these objects, as well as the task group details.

----End

Configuring Traffic Limiting Rules

You can add, modify, or delete traffic limiting rules for a migration task group at any time.

Step 1 Log in to the management console and go to the **Object Storage Migration Service** page.

Step 2 In the migration task group list, locate the task group for which you want to add, modify, or delete a traffic limiting rule. Click ∨ on the left of the task group ID.

Step 3 Click ✎ next to **Traffic Limiting**.

- To add a rule, click **Add Rule** and set **Start Time**, **End Time**, and **Maximum Bandwidth**.

- To modify a rule, modify **Start Time**, **End Time**, and **Maximum Bandwidth**.

- To delete a rule, locate the rule and click 🗑 in the **Operation** column.

  📖 **NOTE**

    – The maximum bandwidth ranges from 1 MB/s to 200 MB/s.
    – A maximum of five rules can be added for a migration task group.

Step 4 Click **OK**.

----End

View Migration Records

OMS records the objects that are migrated, failed, or ignored in three separate lists and stores these lists in the destination bucket.

The following table described how to obtain these object lists.

If...	Then...
The number of migrated objects is greater than 0	On the task group details page, click the link next to **Migrated Object List** to download the .txt file that lists migrated objects. **NOTE** The path for storing a migrated object list is in the **oms/task_group/**_<task-group-ID>_**/success_object_lists/**_<task-name>_**/**_<timestamp>_**.success_list.txt** format.
The number of ignored objects is greater than 0	On the task group details page, click the link next to **Ignored Object List** to download the .txt file that lists ignored objects. **NOTE** The path for storing an ignored object list is in the **oms/task_group/**_<task-group-ID>_**/skip_object_lists/**_<task-name>_**/**_<timestamp>_**.skip_list.txt** format.

If...	Then...
The number of failed objects is greater than 0	On the task group details page, click the link next to **Failed Object List** to download the .txt file that lists failed objects.
	NOTE
	The path for storing a failed object list is in the **oms/ task_group/***<task-group-ID>***/failed_object_lists/***<task-name>***/***<timestamp>***.failed_list.txt** format.
	For details about the error codes in a failed object list, see **Viewing the List of Failed Objects**.

3.3 Managing a Migration Task Group

You can pause, resume, or restart tasks in a migration task group.

Procedure

Step 1 Log in to the management console and go to the **Object Storage Migration Service** page.

Step 2 In the navigation pane on the left, choose **Migration Task Groups**.

The **Migration Task Groups** page is displayed.

Step 3 Manage a migration task group.

Table 3-6 Managing a migration task group

Operation	Scenario	Procedure
Pausing a migration task group	A task group in the **Creating** status can be paused.	1. Click **Stop** in the **Operation** column of the task group.
		2. Read the content in the dialog box and click **OK**. The task status changes to **Paused**.

Operation	Scenario	Procedure
Resuming a migration task group	You can resume a paused migration task group.	1. Click **Start** in the **Operation** column of the task group. 2. In the displayed **Resume Task Group** dialog box, enter the source and destination AKs and SKs and click **OK**. **NOTE** If CDN authentication is enabled, you need to enter the verification key. The task status changes to **Executing**.
Restarting a migration task group	If any migration task in a group fails, the group enters the **Failed** status. You can restart the task group to retry the migration.	1. Choose **More** > **Restart** in the **Operation** column of the task group. 2. In the displayed **Restart Task Group** dialog box, enter the source and destination AKs and SKs and click **OK**. **NOTE** – If **Failed Object Record** is enabled, you need to set **Migration Range**. You can select **All objects** to migrate all the objects in the task group or select **Failed objects** to migrate only the objects that failed to be migrated. – If CDN authentication is enabled, you need to enter the verification key. The task status changes to **Executing**.
Deleting a migration task group	If you do not need to continue a migration or clear a completed migration task group, you can delete the task group when it is not in the **Migrating** status. **NOTE** If the task group you want to delete is in the **Migrating** status, pause and delete it.	Choose **More** > **Delete** in the **Operation** column of the task group. The deleted migration task group will disappear from the list.

----End

4 Viewing Audit Logs

With Cloud Trace Service (CTS), you can record operations associated with OMS, as listed in the following table.

You can view these operations to evaluate their impacts on services. For details, see **Querying Real-Time Traces**.

📖 **NOTE**

> In the search criteria area on the CTS console, select **OMS** for **Trace Source** to filter logs about OMS resources.

Table 4-1 OMS resources supported by CTS

Resource Name	Resource Type	Description
Migration task	Task	Migration task resource
Migration task group	TaskGroup	Migration task group resource
All	All	All OMS resources in an IAM project

Table 4-2 Operations supported by migration tasks and CTS traces

Operation	Resource Type	Trace
Creating a migration task	Task	CreateTask
Pausing a migration task	Task	StopTask
Starting a migration task	Task	StartTask
Updating a migration task	Task	UpdateTask

Operation	Resource Type	Trace
Deleting a migration task	Task	DeleteTask
Updating the traffic limiting rules of a migration task	Task	UpdateBandwidthPolicy
Updating the access keys of a migration task	Task	UpdateTaskAccessKey

Table 4-3 Operations supported by migration task groups and CTS traces

Operation	Resource Type	Trace Name
Creating a migration task group	TaskGroup	CreateTaskGroup
Pausing a migration task group	TaskGroup	StopTaskGroup
Starting a migration task group	TaskGroup	StartTaskGroup
Retry a migration task group	TaskGroup	RetryTaskGroup
Updating a migration task group	TaskGroup	UpdateTaskGroup
Deleting a migration task group	TaskGroup	DeleteTaskGroup

Table 4-4 Operations supported by all resources and CTS traces

Operation	Resource Type	Trace Name
Freezing or deleting resources	All	CbcUpdate
Deleting resources	All	RosDelete