Object Storage Migration Service

User Guide

Issue 15

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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
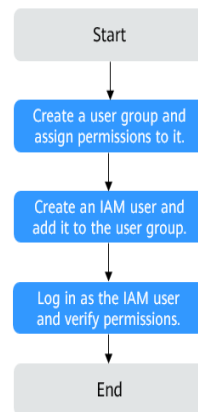
1. **Create a user group and assign permissions** to it.

   – 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 the user to the 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 to the console as the created user**.

   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.

SMS provides APIs for you to manage migration tasks. You can also customize APIs for performing desired operations, for example, creating synchronization tasks periodically.

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 **registered 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 [icon] in the upper left corner and select the desired region.

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

The **OMS** page is displayed.

Step 4   On the **Overview** page, click **Create Migration Task**.

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

Step 5   Determine whether to enable pre-migration evaluation.
- If you disable it, pre-migration evaluation will not be performed.
- If you enable it, specify the number of files, the amount of data to be migrated, and the desired migration duration. Then click **Start Evaluation**. After the evaluation is complete, the pre-migration evaluation result is displayed under **Start Evaluation**.

Step 6   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.

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 has 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. Select the bucket where the source data is stored from the **Bucket** drop-down list.
	   OMS will check whether the source platform can be connected using the information you entered. Once the source platform is connected, all buckets in your account will be listed in the **Bucket** drop-down list, provided your account has the necessary permissions to list buckets.
	   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 7 Click **Next**.

Step 8 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 **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 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 6.2**.
	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**.

If You Select...	Then...
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 6.2**.
	
	    ■ 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**.

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

1. **Specify Prefix**

   – If you choose to disable this feature, the names of objects remain unchanged before and after the migration.

   – If choose to enable this feature, you can specify a prefix to rename or redefine the paths for objects migrated to the destination bucket.

   Figure 2-1 Entering a prefix
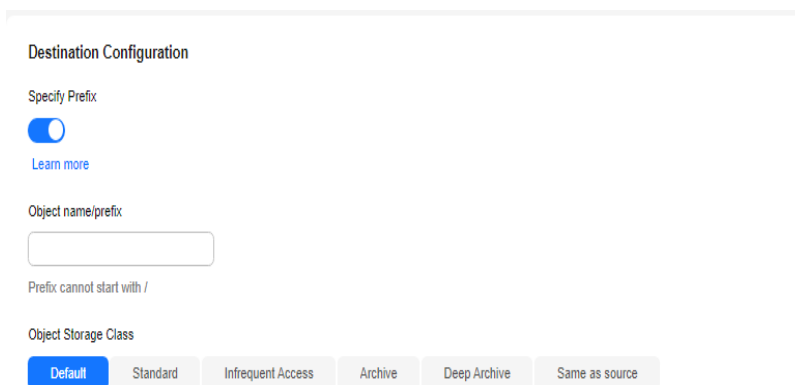
   ▢ **NOTE**

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

2. **Object Storage Class**

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

Step 10 (Optional) Click ⌄ before **Advanced Settings** to expand the advanced options. Configure advanced options by referring to **Table 2-4**.

Table 2-4 Advanced settings

Parameter	Configuration
Object Metadata	Determine whether to migrate metadata. ● If you select **Do not migrate**, OMS will only migrate the Content-Type and Content-Encoding metadata. ● If you select **Migrate**, OMS will migrate supported metadata. **NOTICE** – Only Chinese characters, English characters, digits, and hyphens (-) can be migrated. Other characters cannot be migrated. – Even if you choose not to migrate metadata, the Content-Type and Content-Encoding metadata will still be migrated to ensure that the migration runs properly.

Parameter	Configuration
Selective Migration	Determine whether to filter source data to be migrated by time. • If you do not need to filter source data by time, disable this option. • If you need to filter source data by time, enable this option and specify a date and time. Then only source data modified after the specified date and time will be migrated.
Server-Side Encryption	Determine whether to enable server-side encryption. • If you choose to disable this option, objects will not be encrypted before they are stored to the destination bucket. • If you choose to enable this option, objects will be encrypted before they are stored to the destination bucket. **NOTE** • SSE-KMS is used by default. Other encryption methods or custom encryption is not supported. • If the destination is a parallel file system (PFS), KMS encryption is not supported. • Enabling KMS-based server-side encryption may slow down the migration speed by about 10%. • KMS encryption is only available if KMS is supported in the region you are migrating to.

Parameter	Configuration
Failed Object Record	Determine whether to record the objects that fail to be migrated. ● If you choose to disable this option, 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 you choose to enable this option, the system will record the objects that fail to be migrated. If the migration fails and needs to be retried, you can choose to only migrate 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 the failed object list. If more than 100,000 objects fail to be migrated in the 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	Configuration

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.
	NOTICE
	  – The following cloud service providers can automatically restore archived objects: Huawei Cloud, Alibaba Cloud, Kingsoft Cloud, and Tencent Cloud.
	  – It takes at least a minute to restore an archived object. The larger the archived object is, the longer it takes to restore it, but if an archived object cannot be restored within three minutes, the restoration fails. The time needed depends on the cloud service provider. For details, see the documentation of your source cloud service provider.
	  – Two types of fees are generated during archived data restoration: fees for API calls and fees for archived object restoration. These fees are billed by the source cloud service provider.
	  – After the restoration is complete, archived objects will be in restored state for a certain period of time. During this period, objects can be downloaded or read. After this period expires, archived objects need to be restored again for migration. For details about how long they stay in the restored state, see the documentation of the cloud service provider.
	  – The copies generated for restoring archived objects 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 archive 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 archived objects in the list of objects that failed to be migrated, skips them, and continues to migrate other objects in the migration task.

Parameter	Configuration
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. Click **Add** next to the **SMN Template** box. The **Select SMN Template** dialog box is displayed. If this parameter is specified, SMN messages will be sent using the specified template. The template must use the default protocol. 4. Select a template for publishing SMN messages and click **OK**. 5. 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	Configuration
Traffic Limiting	Set the maximum bandwidth for the migration task during different periods. ● If you do not need to limit the migration traffic, disable this option. ● If you need to limit the migration traffic, enable this option. Perform the following steps: 1. 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. 2. Click **Add Rule**. An empty traffic limiting rule is displayed. 3. Repeat **1** and **2** to add another traffic limiting rule. You can click **Delete** 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	Configuration

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 always allows 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	In the **Description** area, enter a maximum of 255 characters to briefly describe the migration task.

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 **Next**. 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 Sign in to the console and go to the **OMS** page.

Step 2 In the navigation pane on the left, choose **Migration Tasks**. In the search box above the migration task list, set criteria to filter migration tasks.

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

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

● Task status: Learn more about task statuses in **Table 2-5**.

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 the task name to view the number of migrated objects, total number of objects, task progress, migration speed, source and destination information, and migration task settings.

----End

Configuring Traffic Limiting Rules

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

Step 1 Sign in to the management console and go to the **OMS** page.

Step 2 In the migration task list, locate the task for which you want to add or modify a traffic limiting rule. Click a task name in the **Task Name** column.

Step 3 Click 🖉 under **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**.
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**.

If...	Then...
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, start, restart, or delete a migration task.

Procedure

Step 1 Sign in to the console and go to the **OMS** 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**.
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 AK/SK pairs and click **OK**. **NOTE** If CDN authentication is enabled, you need to enter the verification key. The task status changes to **Migrating**.

Operation	Scenario	Procedure

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 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 **registered 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 buckets
        - Obtaining bucket locations

- Listing objects

- Obtaining object metadata

- Obtaining object content

- Listing uploaded parts

- Restoring archived 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 Sign in to the 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 **OMS** 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 Determine whether to enable pre-migration evaluation.

- If you disable it, pre-migration evaluation will not be performed.

- If you enable it, specify the number of files, the amount of data to be migrated, and the desired migration duration. Then click **Start Evaluation**. After the evaluation is complete, the pre-migration evaluation result is displayed under **Start Evaluation**.

Step 7 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	Configuration
Data Source	Select the cloud platform you are migrating data from.

Parameter	Configuration
(Optional) APPID	Enter the APPID of your account for logging in to the Tencent Cloud console. This parameter is only available if the source cloud platform 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.
Specify Source Bucket	Enable this option if your source account does not have the permissions required to list buckets but has 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 notify you.

If You…	Then…
Disable **Specify Source Bucket** (This feature is disabled by default.)	1. Select the bucket where the source data is stored from the **Bucket** drop-down list. OMS will check whether the source platform can be connected using the information you provided. Once the source platform is connected, all buckets in your account will be listed in the **Bucket** drop-down list, provided your account has the necessary permissions to list buckets. **NOTE** If the source account does not have the permissions required to list buckets, enable **Specify Source Bucket**.

2. Configure destination parameters by referring to **Table 3-3**.

Table 3-3 Destination parameters

Parameter	Configuration
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.
Bucket	Select an OBS bucket for storing the migrated data.

Step 8 Click **Next**. The **Set Task Group Parameters** page is displayed.

Step 9 Set parameters in the **Source Configuration** area.

1. Select a migration method.

Migration Method	Description

Object list	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. Under **Object List Bucket (Huawei Cloud)**, select the bucket where the object lists are stored.
	    NOTE
	    The listed buckets are obtained using the destination AK/SK pair you provided in 6.3.
	
	    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. Under **Object List**, click **Select**. Then select the folder where the object lists are stored and click **OK**.

Migration Method	Description
	NOTE
	– An object list file cannot exceed 1,024 MB.
	– A maximum of 2,000 object list files can be stored in the 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
Object name/prefix	You need to enter the names or prefixes of objects to be migrated and click **Add**. The system will automatically list the matched objects. You can click **X** to remove a name or prefix you added from the list. **NOTE** – If the files to be migrated are stored in the root directory of the source bucket, add their prefixes directly. If the files are stored in a non-root directory, add their directories and their prefixes in the format of *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 object list files will be retained after the migration, and you can manually delete them.

| Migration Method	Description

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 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 provided in **Table 3-3**.
	
	    ■ 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 **ContentEncoding** 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**.

Step 10 Configure parameters in the **Destination Configuration** area.

1. **Specify Prefix**

   – If you choose to disable this feature, the names of objects remain unchanged before and after the migration.

   – If choose to enable this feature, you can specify a prefix to rename or redefine the paths for objects migrated to the destination bucket.

Figure 3-1 Entering a prefix
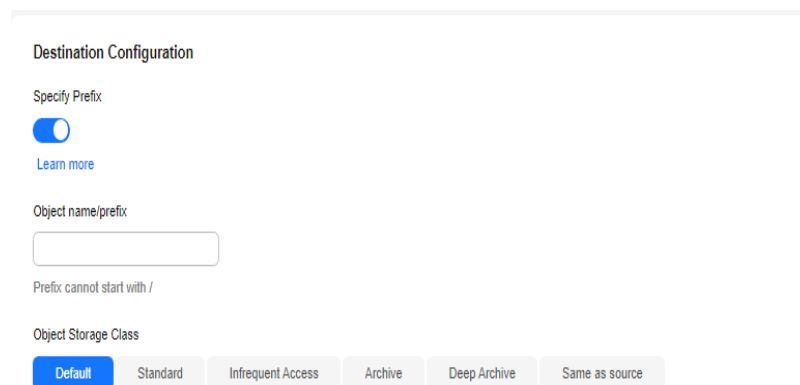
☐ **NOTE**

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

2. **Object Storage Class**

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

Step 11 (Optional) Click ⌄ before **Advanced Settings** to expand the advanced options. Configure advanced options by referring to **Table 3-4**.

Table 3-4 Advanced Settings parameters

Parameter	Configuration
Object Metadata	Determine whether to migrate metadata. • If you select **Do not migrate**, OMS will only migrate the Content-Type and Content-Encoding metadata. • If you select **Migrate**, OMS will migrate supported metadata. **NOTICE** – Only Chinese characters, English characters, digits, and hyphens (-) can be migrated. Other characters cannot be migrated. – Even if you choose not to migrate metadata, the Content-Type and Content-Encoding metadata will still be migrated to ensure that the migration runs properly.

Parameter	Configuration
Selective Migration	Determine whether to filter source data to be migrated by time. • If you do not need to filter source data by time, disable this option. • If you need to filter source data by time, enable this option and specify a date and time. Then only source data modified after the specified date and time will be migrated.
Server-Side Encryption	Determine whether to enable server-side encryption. • If you choose to disable this option, objects will not be encrypted before they are stored to the destination bucket. • If you choose to enable this option, objects will be encrypted before they are stored to the destination bucket. **NOTE** • SSE-KMS is used by default. Other encryption methods or custom encryption is not supported. • If the destination is a parallel file system (PFS), KMS encryption is not supported. • Enabling KMS-based server-side encryption may slow down the migration speed by about 10%. • KMS encryption is only available if KMS is supported in the region you are migrating to.

Parameter	Configuration
Failed Object Record	Determine whether to record the objects that fail to be migrated. ● If you choose to disable this option, 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 you choose to enable this option, the system will record the objects that fail to be migrated. If the migration fails and needs to be retried, only failed objects need to be migrated 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 the failed object list. If more than 100,000 objects fail to be migrated in the 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	Configuration
Archive Data Restoration	Archived data must be restored before being migrated. You can choose to enable this option if your source cloud service provider supports automatic restoration of archived data. ● If you choose to 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 failed to be migrated and continues to migrate other objects in the migration task. **NOTICE** – The following cloud service providers can automatically restore archived objects: Huawei Cloud, Alibaba Cloud, Kingsoft Cloud, and Tencent Cloud. – It takes at least a minute to restore an archived object. The larger the archived object is, the longer it takes to restore it, but if an archived object cannot be restored within three minutes, the restoration fails. The time needed depends on the cloud service provider. For details, see the documentation of your source cloud service provider. – Two types of fees are generated during archived data restoration: fees for API calls and fees for archived object restoration. These fees are billed by the source cloud service provider. – After the restoration is complete, archived objects will be in restored state for a certain period of time. During this period, objects can be downloaded or read. After this period expires, archived objects need to be restored again for migration. For details about how long they stay in the restored state, see the documentation of the cloud service provider. – The copies generated for restoring archived objects 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 choose to disable this option, the system directly records archived objects in the list of objects that failed to be migrated, skips them, and continues to migrate other objects in the migration task.

Parameter	Configuration
SMN Notification	Determine whether to use SMN to get notifications about migration results. ● If you choose disable this option, no SMN message will be sent after the migration is complete. ● If you choose to 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 display 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. Click **Add** next to the **SMN Template** box. The **Select SMN Template** dialog box is displayed. If this parameter is specified, SMN messages will be sent using the specified template. The template must use the default protocol. 4. Select a template for publishing SMN messages and click **OK**. 5. Configure **Trigger Condition**. You can select one of the following options or both: – **Migration succeeded**: An SMN message will be sent after the migration task succeeds. – **Migration failed**: An SMN message will be sent after the migration task fails. **NOTE** If you experience trouble in using SMN, see **What Can I Do If SMN Is Not Working Properly?**

Parameter	Configuration
Traffic Limiting	Set the maximum bandwidth for the migration task during different periods. ● If you do not need to limit migration traffic, disable this option. ● If you need to limit migration traffic, enable this option. Perform the following steps: 1. 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 rate is limited to 20 MB/s when the migration task is running 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. 2. Click **Add Rule**. An empty traffic limiting rule is displayed. 3. Repeat **1** and **2** to add another traffic limiting rule. You can click **Delete** 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	Configuration
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 always skips 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 the same encryption status as the paired destination one. ● **Always overwrite**: The system always allows source objects to overwrite their paired destination objects.
Consistency Check	● **By size and last modification time**: This is the default setting. The system checks object consistency with object size and last modification time. ● **By CRC64 checksum**: The system checks 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.
Description	In the **Description** area, enter a brief description about this migration task. Enter a maximum of 255 characters.

Step 12 Click **Next** to enter the confirmation page.

Step 13 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 **Next**. 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 Sign in to the console and go to the **OMS** 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 the task group ID to view the number of migrated objects, total number of objects, migration progress, migration speed, source and destination information, and migration settings.

----End

Configuring Traffic Limiting Rules

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

Step 1 Sign in to the management console and go to the **OMS** 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. Then click 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 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.
The number of failed objects is greater than 0	On the task group details page, click the path link next to **Failed Object Storage Path** to download the list of failed objects in the .txt format. **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**. 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 Sign in to the console and go to the **OMS** 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**.

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**.

Operation	Scenario	Procedure
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 Synchronization Tasks

4.1 Creating a Synchronization Task

Scenario

A synchronization task allows you to proactively synchronize new or modified objects from the source bucket to the destination bucket. You need to create a function on the source platform and create an event trigger for the function using the source object storage service. When a source object is added or modified, the source object storage service calls the synchronization API of OMS through the function, and the object is synchronized to the destination OBS bucket on Huawei Cloud.

> ⚠️ **CAUTION**
>
> Synchronization tasks depend on source event triggers, source function services, and public network transmission. They may fail in some cases. You are not advised to use this feature for data synchronization in DR scenarios.

Scenarios

Enter the AKs and SKs for accessing the source and destination buckets, and configure the synchronization task parameters for migrating source objects contained in the synchronization request and viewing the task details.

> 📖 **NOTE**
>
> You can only create synchronization tasks in CN North-Beijing4 and CN East-Shanghai1.

Prerequisites

- You have **registered 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 permissions for:

■   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 at least one bucket on 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.

●   You have less than 5 synchronization tasks in the **Synchronizing** state.

Procedure

Step 1   Sign in to the console and go to the **OMS** page.

Step 2   In the navigation pane on the left, choose **Synchronization Tasks**.

Step 3   In the upper right corner, click **Create Synchronization Task**.

Step 4   Read the service disclaimer, select **I have read and agree to the service disclaimer**, and click **OK**. The page for creating a synchronization task is displayed.

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

1. Configure source parameters by referring to **Table 4-1**.

Table 4-1 Source parameters

Parameter	Description
Data Source	Select the cloud platform from which you are migrating data. ● Huawei Cloud ● AWS ● Alibaba Cloud ● Microsoft Azure ● Tencent Cloud ● Google Cloud ● Qiniu Cloud ● QingCloud ● Baidu Cloud ● Kingsoft Cloud ● UCloud
appID	Enter the APPID, an 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.
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 has 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 4-2**.

Table 4-2 Description of **Specify Source Bucket**

If You Need to...	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**. 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 notify 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 where the data to be migrated is stored.

2. Configure destination parameters by referring to **Table 4-3**.

Table 4-3 Destination 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.
Bucket	Select a destination OBS bucket for storing the migrated data.

Step 6 Click **Next** to set task parameters. For details about the parameters, see **Table 4-4**.

Table 4-4 Task parameters

Parameter	Description
Object Metadata	- If you select **Do not migrate**, OMS will only migrate the Content-Type and Content-Encoding metadata. - If you select **Migrate**, OMS will migrate supported metadata. Only Chinese characters, English characters, digits, and hyphens (-) can be migrated. Other characters cannot be migrated.
Data Encryption	If you choose to enable server-side encryption, data is encrypted before being transferred to the destination OBS buckets. **NOTE** SSE-KMS is used by default. Other encryption methods or custom encryption is not supported. Using KMS to encrypt migrated data may decrease the migration speed by about 10%. This option is only available if KMS encryption is supported in the current region.
Object Storage Class	Choose the storage class that your data will be migrated to. For details about storage classes, see **Storage Classes**.

Parameter	Description

Archive Data Restoration	Archived data must be restored before being migrated. You can select this option if your source cloud service provider supports automatic restoration of archived data.
	
	● If you choose to 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 failed to be migrated and continues to migrate other objects in the migration task.
	
	NOTICE
	  – The following cloud service providers can automatically restore archived objects: Huawei Cloud, Alibaba Cloud, Kingsoft Cloud, and Tencent Cloud.
	  – It takes at least a minute to restore an archived object. The larger the archived object is, the longer it takes to restore it, but if an archived object cannot be restored within three minutes, the restoration fails. The time needed depends on the cloud service provider. For details, see the documentation of your source cloud service provider.
	  – Two types of fees are generated during archived data restoration: fees for API calls and fees for archived object restoration. These fees are billed by the source cloud service provider.
	  – After the restoration is complete, archived objects will be in restored state for a certain period of time. During this period, objects can be downloaded or read. After this period expires, archived objects need to be restored again for migration. For details about how long they stay in the restored state, see the documentation of the cloud service provider.
	  – 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 choose to disable this option, the system directly records archived 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

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 always skips 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 the same encryption status as the paired destination one. **Always overwrite**: The system always allows source objects to overwrite their paired destination objects.

Consistency Check	**By size and last modification time**: This is the default setting. The system checks object consistency with object size and last modification time. **By CRC64 checksum**: The system checks 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.

Step 7 Click **Next** to enter the confirmation page.

Confirm the settings of the synchronization task and start the synchronization.

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 **Synchronize Now**.

A message is displayed indicating that the task has been submitted. Switch back to the synchronization task list to view the task.

For details about task statuses, see **Table 4-5**.

Table 4-5 Synchronization task statuses

Status	Description
Synchronizing	Indicates that the objects in the source bucket are being synchronized. **NOTE** After you create a synchronization task, the task status is **Synchronizing**. It means that the synchronization requests from the source bucket can be received and the source objects can be synchronized. You need to configure synchronization requests on the source platform to migrate newly added or modified objects in the source bucket. For more details, see **Configuring the Source Storage Service to Send Synchronization Requests**. Then OMS will synchronize your source objects.
Paused	Indicates that the synchronization of source objects is paused. **NOTE** If you want to pause a synchronization task, you are advised to stop writing data to the source bucket and wait for 15 minutes before pausing the synchronization task. Otherwise, it may cause a migration failure for some objects covered by the received synchronization requests.

Step 8 Manage the synchronization task.

- Starting the synchronization task

  NOTE

  - Only synchronization tasks in the **Paused** state can be started.

  - For security purposes, the system does not save your personal data. When you restart the synchronization task, you need to enter the AKs and SKs for accessing the source and destination buckets again to complete identity authentication.

- Pausing the synchronization task

  NOTE

  - Only synchronization tasks in the **Synchronizing** state can be paused.

  - If you want to pause a synchronization task, you are advised to stop writing data to the source bucket and wait for 15 minutes before clicking **Pause** on the synchronization task page. Otherwise, it may cause a migration failure for some objects covered by the received synchronization requests.

- Deleting the synchronization task

  NOTE

  - Only synchronization tasks in the **Paused** state can be deleted.

----End

4.2 Configuring the Source Storage Service to Send Synchronization Requests

Scenarios

After you create a synchronization task, you need to configure the source object storage service to request OMS to migrate newly added and modified source objects. To do so, you can use a message notification or function service on the source platform.

Desired Effects

- The names of newly added and modified objects in the source bucket can be obtained in real time.
- The OMS synchronization API can be invoked to migrate the newly added and modified objects to the destination bucket.

Configuration Methods

- Using the source object storage service and the function service

  ◫ NOTE

  On the source platform, you need to create a function and configure an event trigger for synchronizing incremental source objects through OMS.

  When objects are added to or modified in the source bucket, the source object storage service will call the configured function to trigger migration of these objects to the destination bucket.

- Using a service system and a message notification service

  ◫ NOTE

  When objects are added or modified in the source bucket, the service system captures the information about these objects through the messages received from the source object storage service or by proactively analyzing database changes. Then the system invokes the synchronization API of OMS to migrate the newly added and modified objects from the source bucket to the destination bucket.

Procedure

The following takes Huawei Cloud as the source platform and describes how to use FunctionGraph to send synchronization requests.

⚠ CAUTION

The created function must be in the same region as the source bucket.

Step 1 Sign in to the console.

Step 2 Click **Service List** and choose **Compute** > **FunctionGraph**.
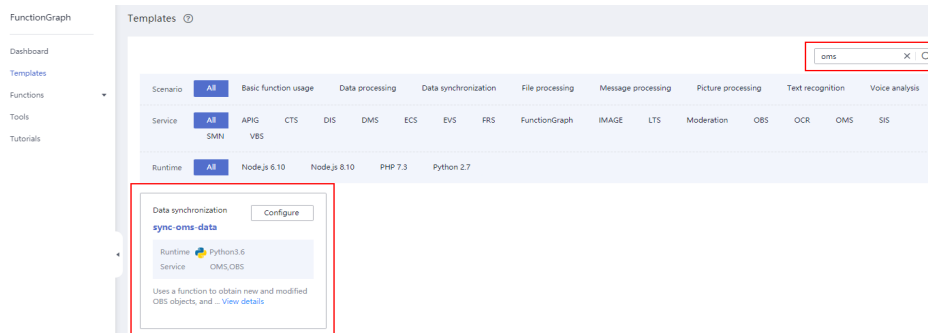
The FunctionGraph console is displayed.

Step 3 In the navigation pane on the left, choose **Templates**.

Step 4 In the search box on the displayed page, enter **OMS** and locate the **Data synchronization** template, as shown in **Figure 4-1**.

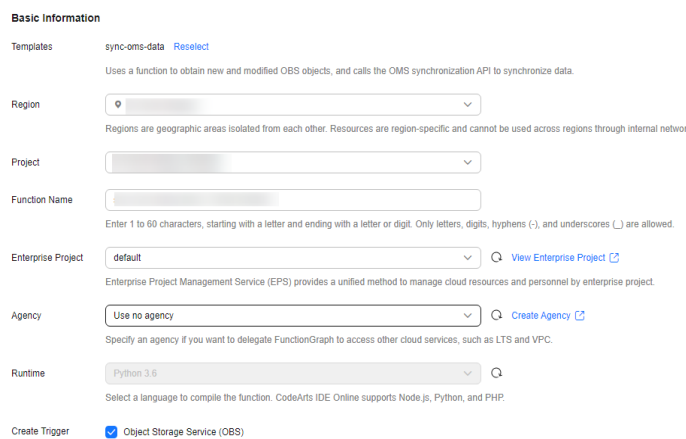**Figure 4-1** OMS data synchronization template

📖 **NOTE**

Click **View details** to view the template details, such as template type, input parameters, output parameters, and precautions.

Step 5 Click **Configure**.

Step 6 Set parameters in the **Basic Information** area by referring to **Table 4-6**.

Figure 4-2 Setting basic parameters

**Table 4-6** Basic parameters for creating a function

Parameter	Description
Template	Retain **sync-oms-data**.
Region	Select the region where the source bucket is located.
Project	Select a project in the selected region.

Parameter	Description
Function Name	Specify a function name. The name must: • Consist of 1 character to 60 characters, allowing letters, digits, hyphens (-), and underscores (_). • Start with a letter and end with a letter or digit.
Enterprise Project	Set this parameter as needed. The value defaults to **default**.
Agency	Select **Use no agency**.
Runtime	The value defaults to **Python 3.6** and cannot be modified.
Create trigger	Select **Object Storage Service (OBS)**.

Step 7 Set parameters in the **Environment Variables** area by referring to **Table 4-7**.

Figure 4-3 Setting environment variables
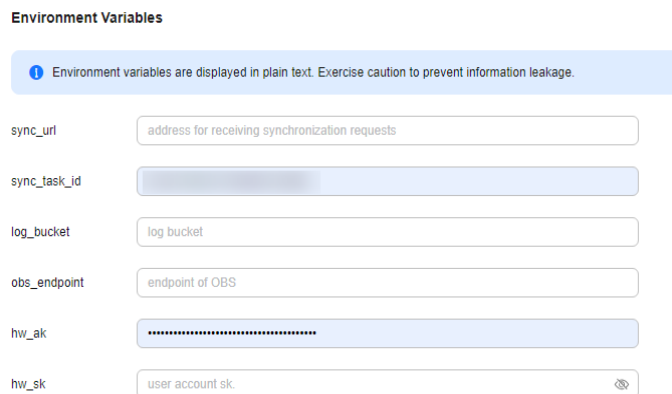
Table 4-7 Environment variables

Parameter	Description
sync_url	Enter the address for receiving synchronization requests. It can be obtained from the synchronization task details.
sync_task_id	Enter the synchronization task ID, which can be obtained from the synchronization task list.

Parameter	Description
log_bucket	Enter the name of the bucket used for storing the function execution logs. Here also stores the lists of objects for which synchronization requests are sent or fail to be sent to OMS. **CAUTION** The log bucket must be in the account used to create the synchronization task.
obs_endpoint	Enter the OBS domain name in the region where the log bucket is located. For details about regions and endpoints, see **Regions and Endpoints**.
hw_ak	Enter the AK of the account used to create the synchronization task.
hw_sk	Enter the SK of the account used to create the synchronization task.

Step 8 Set trigger parameters. For details about the parameters, see **Table 4-8**.

Figure 4-4 Creating a trigger

Table 4-8 Parameters required for creating a trigger

| Parameter	Description
Trigger Type	Object Storage Service (OBS)
Bucket Name	Select the source bucket that stores the data to be synchronized.
Events	Set this parameter based on your requirements.

Parameter	Description
(Optional) Event Notification Name	An event name is automatically generated. You can specify a name as needed.
(Optional) Prefix	Enter a prefix to limit notifications to objects whose names start with the matching characters.
(Optional) Suffix	Enter a suffix to limit notifications to objects whose names end with the matching characters.

Step 9 Click **Create Function**.

The function details page is displayed.

Step 10 Click the **Configuration** tab. On the **Basic Settings** page, set **Execution Timeout (s)** to **60** and click **Save**.

**Figure 4-5** Setting the execution timeout interval
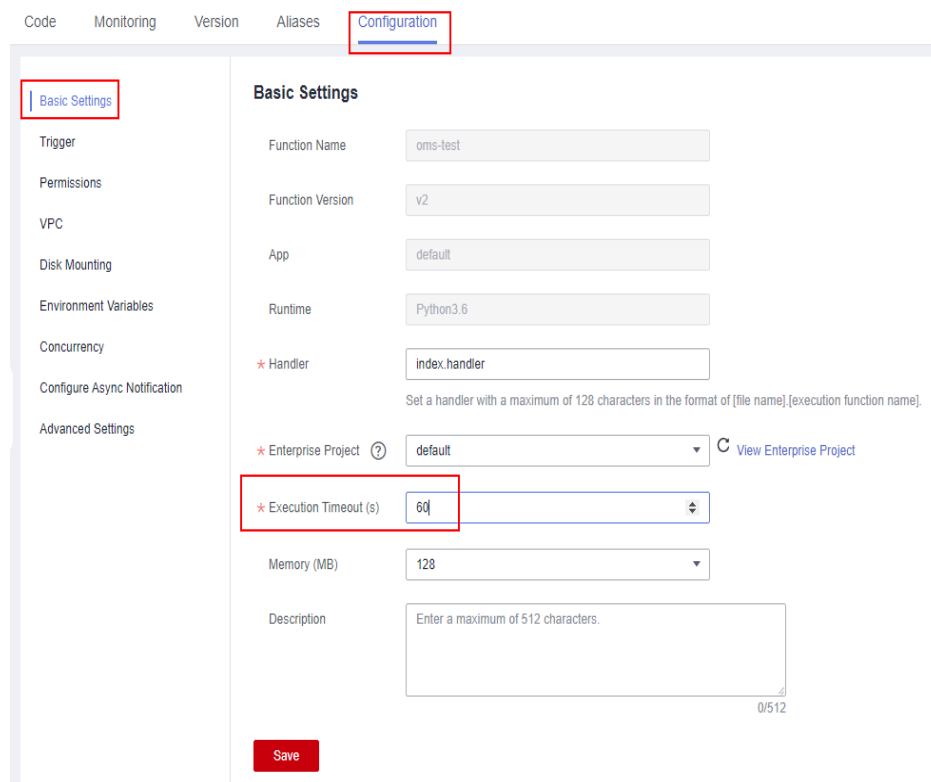
Step 11 Click **OK**.

NOTICE

You need to configure a test event to verify the function.

Step 12 Click the **Code** tab and select **Configure Test Event** from the drop-down list in the **Code Source** area. The **Configure Test Event** dialog box is displayed, as shown in **Figure 4-6**. Set the parameters listed in **Table 4-9**.

Figure 4-6 Configuring a test event
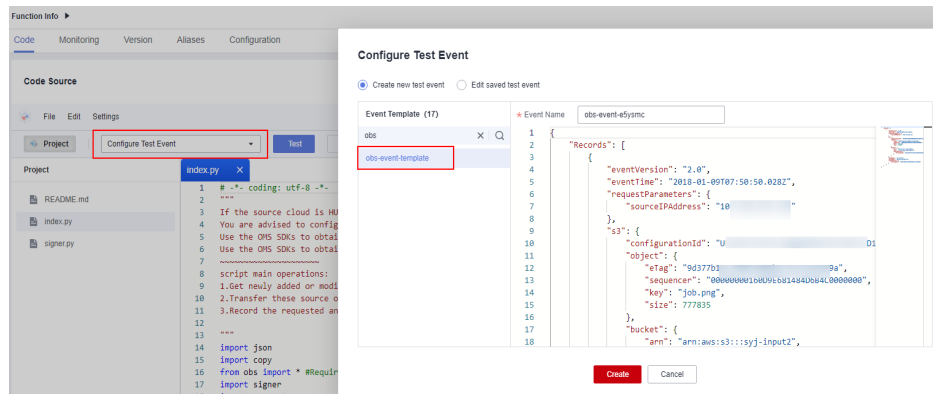
Table 4-9 Parameters required for configuring a test event

Parameter	Description
Configure Test Event	Use the default option **Create new test event**.
Event Template	Select **obs-event-template** in the event template list.
Event Name	An event name is automatically generated. You can specify a name as needed.

Step 13 Click **Create**.

Step 14 Click **Test**. The test result is displayed on the right of the page.

Figure 4-7 Viewing the test result
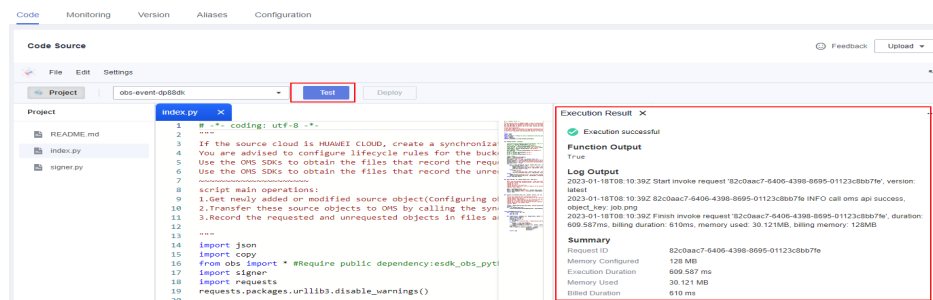
📖 **NOTE**

After the test succeeds, upload an object to the source bucket. Wait for 10 minutes. Then the object will be synchronized to the destination bucket.

----End

Obtaining Object Lists

Object List	Path
List of requested objects	**oms_source_record/success_object**
List of unrequested objects	**oms_source_record/failed_object/**

📖 **NOTE**

The objects in the lists are those to be synchronized.

4.3 Monitoring a Synchronization Task

Scenarios

After a synchronization task is started, you can view the synchronization progress and details at any time.

Procedure

Step 1 Sign in to the console and go to the **OMS** page.

Step 2 In the navigation pane on the left, choose **Synchronization Tasks**.

Step 3 Click the task ID and view the task progress. For details about the parameters, see **Table 4-10**.

Figure 4-8 View the monitoring data of a synchronization task
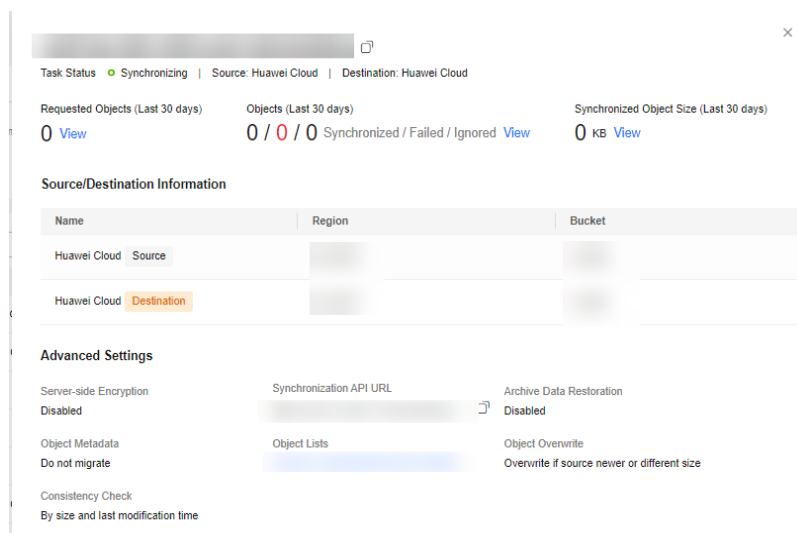
Table 4-10 Monitoring data of a synchronization task

Parameter	Description
Requested Objects (This Month)	Specifies the number of objects covered by the synchronization requests received from the source platform this month.
Synced Objects (This Month)	• Synced Specifies the number of objects that have been synchronized this month. You can view the list of synchronized object in the destination bucket. • Failed Specifies the number of objects that failed to be synchronized this month. You can view the list of failed objects in the destination bucket. • Ignored Number of objects that have been ignored this month. You can view the list of ignored objects in the destination bucket. **NOTE** If there is an object in the destination bucket with the same name and size as one in the source bucket, but the last modification time of the destination object is later than that of the source object, the source object will be ignored during synchronization.
Synced Object Size (This Month)	Specifies the total size of objects that have been synchronized in this month.
Object Lists	OMS records objects that are successfully synchronized, failed to be synchronized, and are ignored in three separate lists and stores these lists in the destination bucket. You can use these lists to verify the numbers and names of the synchronized, failed, and ignored objects. For details, see **Table 4-11**.
Synchronization API URL	Specifies the address for receiving synchronization requests from the source platform. These requests will trigger data synchronizations. For details about the OMS synchronization API, see **Creating a Synchronization Event**.

Table 4-11 Object lists

Object Type	Directory	List Content
Synced objects	oms/sync_task/ *Synchronization task ID*/ success_object_lists	Occurrence times (in local UTC), non-URL-encoded names of synchronized objects, and object sizes (in bytes)

Object Type	Directory	List Content
Failed objects	• oms/sync_task/ *Synchronization task ID*/ failed_object_lists For example, oms/ sync_task/ *Synchronization task ID*/ failed_object_lists/oms-task-sync-test-20210107111623197_596 **NOTE** This directory stores the list of objects that failed to be synchronized during the migration. • oms/sync_task/ *Synchronization task ID*/ failed_object_lists/ creation_failures For example, oms/ sync_task/ *Synchronization task ID*/ failed_object_lists/ creation_failures/ 1609833838031_5ff41d6 e85e877149d44bb55_4.f ailed_list.txt **NOTE** This directory stores the list of objects that fail to be migrated due to task creation failures. Task creation may fail if the account is in arrears, frozen, or does not have the required permissions.	Failure cause, occurrence times (in local UTC), URL-encoded and non-URL-encoded names of failed objects, and error codes returned by source SDKs
Ignored objects	oms/sync_task/ *Synchronization task ID*/ skip_object_lists	Occurrence times (in local UTC), non-URL-encoded names of ignored objects, and object sizes (in bytes)

Object Type	Directory	List Content
Objects to be synchronized	oms/sync_task/ *Synchronization task ID*/ object_lists	Names of objects to be synchronized **NOTE** OMS automatically records the names of objects to be synchronized covered by the received synchronization requests in .txt files, and stores the files in the **oms/sync_task/** *Synchronization task ID*/ **object_lists** directory of the destination bucket.

☐ **NOTE**

The statistics displayed on the synchronization task details page are for reference only since they are delayed by about 1 hour.

----End

5 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 5-1 OMS resources supported by CTS

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

Table 5-2 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

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

Table 5-3 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 5-4 Operations supported by synchronization tasks and CTS traces

Operation	Resource Type	Trace Name
Creating a synchronization task	SyncTask	CreateSyncTask
Pausing a synchronization task	SyncTask	StopSyncTask
Starting a synchronization task	SyncTask	StartSyncTask
Deleting a synchronization task	SyncTask	DeleteSyncTask

Table 5-5 Operations supported by evaluation tasks and CTS traces

Operation	Resource Type	Trace
Creating an evaluation task	ObjectAssessTask	CreateObjectAssessment-Task
Stopping an evaluation task	ObjectAssessTask	StopObjectAssessmentTask
Deleting an evaluation task	ObjectAssessTask	DeleteObjectAssessment-Task
Creating migration tasks in batches	ObjectAssessTask	BatchCreateTaskByAssess
Recreating migration tasks	ObjectAssessTask	RetryAssessCreatedFailed-Task

Table 5-6 Operations supported by all resources and CTS traces

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

6 Change History

Released On	Description
2024-01-26	This issue is the fourteenth official release. Added Google Cloud to the source cloud vendor list.
2023-12-08	This issue is the thirteen official release. Add parameter **Object Storage Class** in the destination bucket configurations.
2023-07-10	This issue is the twelfth official release. Updated **Viewing Audit Logs**.
2023-01-18	This issue is the eleventh official release. Updated **Configuring the Source Storage Service to Send Synchronization Requests**.
2022-11-08	This issue is the tenth official release. ● Updated **Viewing a Migration Task**. ● Updated **Viewing a Migration Task Group**.
2022-11-04	This issue is the ninth official release. ● Updated **Creating a Migration Task**. ● Updated **Creating a Migration Task Group**.
2022-08-27	This issue is the eighth official release. Updated the prerequisites in **Creating a Migration Task Group**.
2022-07-28	This issue is the seventh official release. Updated **Creating a User and Assigning OMS Permissions**.
2021-03-24	This issue is the sixth official release. Optimized **Configuring the Source Storage Service to Send Synchronization Requests**.

Released On	Description
2021-03-18	This issue is the fifth official release. • Added **Creating a Migration Task**. • Optimized **Creating a Migration Task Group**.
2021-03-10	This issue is the fourth official release. • Added **Synchronization Tasks**. • Added description of application scenarios in **Migration Tasks**. • Added description of application scenarios in **Migration Task Groups**.
2020-02-10	This issue is the third official release. Added **Creating a User and Assigning OMS Permissions**.
2019-08-31	This issue is the second official release. • Added the description of traffic limiting on the task details page to **Viewing a Migration Task**. • Added **Creating a Migration Task Group** to **Managing a Migration Task Group**.
2019-07-25	This issue is the first official release.