Object Storage Migration Service

User Guide

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Contents

1 Permissions Management	1
1.1 Creating a User and Assigning OMS Permissions	1
2 Migration Tasks	4
2.1 Creating a Migration Task	4
2.2 Viewing a Migration Task	
2.3 Managing a Migration Task	21
3 Migration Task Groups	23
3.1 Creating a Migration Task Group	23
3.2 Viewing a Migration Task Group	
3.3 Managing a Migration Task Group	
4 Synchronization Tasks	
4.1 Creating a Synchronization Task	41
4.2 Configuring the Source Storage Service to Send Synchronization Requests	49
4.3 Monitoring a Synchronization Task	56
5 Viewing CTS Traces	60
6 Change History	63

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 OMS.

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

Figure 1-1 shows the procedure for granting permissions.

Prerequisites

Learn about the permissions (see **Permission Management**) supported by OMS and choose policies or roles according to your requirements. For the system policies of other services, see **System 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 supported by SMS, including 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 an IAM user.

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

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

3. Log in and verify permissions.

Log in to the OMS console as the created user, and verify the user's permissions.

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 other service 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.

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.

- By default, if a task stays in waiting state for more than 30 days, OMS automatically puts the task into **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.

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 all 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 archive 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.

Procedure

Step 1 Log in to the management console.

- **Step 2** Click ^(V) 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** For step **Select Source/Destination**, perform the following operations:
 - 1. Select the source platform. For details about the parameters, see **Table 2-1**.

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.
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.

 Table 2-1
 Source platform parameters

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 objects. Then specify the bucket or path to be migrated. For details, see Table 2-2 .

If You	Then
Enable Specify Source Bucket	 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. If the source platform is connected and your account has the permissions needed to list buckets, all buckets under your account will be listed in the Bucket drop-down list.
	 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 .

Table 2-2 Description of Specify Source Bucket

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

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, tlick List buckets .
Bucket	Select a destination OBS bucket for storing the migrated data.

Table 2-3 Destination platform parameters

Step 6 Click Next.

Step 7 Set 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 $\stackrel{\pmb{\times}}{\rightarrow}$ 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 to migrate incremental objects. 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
	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 Content-Type 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.
	 The length of each line in the object list file cannot exceed 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.
	 Archive data can only be accessed and obtained by OMS after it is restored. If the object list file is archive, manually restore it before migration.
	 Select the bucket where the object list file is stored.
	NOTE The listed buckets are obtained using the destination AK and SK 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 files.
	2. Click Select next to Object List File , select the target 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 $ imes$ 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 <i>Bucket name</i> <i>Folder</i> <i>Prefix</i>.
	 If no object names or name 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 source 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.
	 Select the bucket where the list file is located.
	 NOTE The listed buckets are obtained using the destination AK and SK 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 during 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 end use data may be eavesdroped or the security attacks.
	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 target 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.
		 The length of each line in the URL list file cannot exceed 65,535 characters, or the migration will fail.
		The Content-Encoding 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]. Only the Chinese and special characters in the source and destination object names must be URL encoded. Please note that:
		The URL encoding starts 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.com/doc/ thefile2.txt doc/thefile2.txt http:// xxx.xxx.xxx.com/the%20file.txt the %20file.txt http:// xxx.xxx.xxx.com/the%20file2.txt the+file2.txt http:// xxx.xxx.xxx.com/doc/thefile.txt doc/thefile.txt
lssue 15 (2024-02-22)	Copyright © Huawei Technologie	s Co., Ltd.In the preceding examples, after 12 the files represented by the URLs are copied to the destination bucket, the objects are named doc/the file2.txt, the file.txt, the file2.txt, and doc/thefile.txt.

- 2. Determine whether to migrate metadata.
 - If you select **Do not migrate**, OMS will only migrate the metadata Content-Type.
 - If you select Migrate, OMS will migrate supported metadata.

NOTICE

Only English characters, numbers, and hyphens (-) in metadata can be migrated. Chinese characters and symbols cannot be migrated, regardless of whether they are encoded.

3. Set Incremental 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 bucket is a parallel file system (PFS), KMS encryption is not supported.
 - If KMS is not selected, all migrated objects will not be encrypted before they are stored into the destination bucket.
 - If KMS is selected, all migrated objects will be encrypted before they are stored into the destination bucket.

NOTE

- Using KMS to encrypt migrated data may decrease the migration speed by about 10%.
- Data encryption is only available if KMS encryption 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, and the configured prefix will be added to the names of objects migrated to the destination bucket.

Figure 2-1 Specifying a prefix

Destination Configuration	on
Data Encryption	Enable
	\clubsuit Encryption is recommended to keep data secure, but it will \times slow down migration speed.
Specify Prefix	• Yes 🔿 No
	Prefix cannot start with /
Object Storage Class	Default Standard Infrequent Access Archive Deep Archive Same as source

D 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 **Introduction to 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**.

Parameter	Configuration	
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, 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.	

Table 2-4 Advanced Settings parameters

Parameter	Configuration
Archive Data Restoration	Archive data must be restored before being migrated. You can select this option if the source cloud service provider supports automatic restoration of archive data.
	• If you select this option, the system automatically restores and migrates archive objects in the migration task. If an archive 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.
	CAUTION
	 Currently, the following cloud platforms can automatically restore archive objects: Huawei Cloud, Alibaba Cloud, Kingsoft Cloud, and Tencent Cloud.
	 The system will restore archive data before migrating it, and you will pay to the source cloud service provider for the API requests and storage space generated accordingly.
	 The copies generated for restoring archive 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 archive data again, no matter it has been restored or not.
	 After data is migrated from the source platform to Huawei Cloud, the storage class of the migrated data is the same as that of the destination bucket.
	• If you do not select 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	Configuration
SMN Notification	Decide whether to use SMN to get notifications about migration results.
	 Set to No No SMN message is sent after the migration.
	 Set to Yes You will receive an SMN message informing you of the migration results.
	Perform the following steps to set SMN parameters:
	 Click Add next to SMN Topic. The Select SMN Topic dialog box is displayed.
	 Select a topic for receiving 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 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 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 What Can I Do If SMN Is Not Working Properly?

Parameter	Configuration	
Traffic Limiting	Set the maximum bandwidth for the migration task during a specified period.	
	• If you do not need to limit migration traffic, select No .	
	• If you need to limit migration traffic, select Yes . Perform the following steps to set traffic limits:	
	 Click Add Rule. A traffic limiting rule is displayed. 	
	 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 selected.	
	 Repeat Step 9.a and Step 9.b 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	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 destination one.
	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.
Priority	If there are a large number of tasks, you can set task priorities to determine the migration sequence.
Description	In the Description area, enter a maximum of 255 characters to briefly describe the migration task.

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

Step 11 Confirm the migration settings and start the migration.

- Check whether the settings of migration parameters 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.

D 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 Group page.

• Task status: See Table 2-5 to learn more about the statuses.

Status	Description
Waiting	A migration task has been created and is being initialized or waiting for other migration tasks to complete.
Migrating	The migration task is ongoing and objects are being migrated from the source platform to Huawei Cloud.
Paused	The migration task is paused and can be resumed manually.
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.

Table 2-5 Migration task statuses

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 Limit.

- 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 $\overline{\mathbf{U}}$ in the **Operation** column.

D 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, 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 details page, click the path link next to Migrated Object Storage Path to download the list of migrated objects in the .txt format.
	NOTE The path for storing a migrated object list is in the 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 path link next to Ignored Object Storage Path to download the list of ignored objects in the .txt format.
	NOTE The path for storing an ignored object list is in the 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 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/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

After creating a migration task, you can pause, resume, restart, or delete the task.

Procedure

- **Step 1** Log in to the management console and go to the **Object Storage Migration Service** page.
- **Step 2** Manage the target migration task.

ltem	Scenario	Operation
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. You need to add new objects to be migrated. You can pause the ongoing migration task, and resume the task after these objects are added to the migration task. 	 Click . Read the content in the dialog box and click OK. The task status changes to Paused.

Table 2-6 M	Managing	migration	tasks
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ltem	Scenario	Operation
Resuming a migration task	You can resume a paused migration task.	 Click . 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.	 Click C. 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 to migrate all the objects in the failed migration task or select Objects failed to be migrated to migrate only the failed objects. 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 the migration or clear historical migration tasks, you can delete the tasks that are not in the Migrating status. NOTE If the task you want to delete is in the Migrating state, pause and delete it.	 Click 1. The deleted migration tasks will not be displayed in 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.

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.

- By default, if a task stays in waiting state for more than 30 days, OMS automatically puts the task into **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.

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 all 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 ^(V) 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** 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** For step **Select Source/Destination**, perform the following operations:
 - 1. Set the 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.
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 objects. Then specify the bucket or path to be migrated. For details, see Table 3-2 .

If You	Then
Enable Specify Source Bucket	 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.

Table 3-2 Description of Specify Source Bucket

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 <i>Bucket name</i> <i>Folder</i> <i>Prefix</i>.
	 If you do not add any object names or prefixes, 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 to migrate incremental objects. 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.
	 Select the bucket where the object lists are stored. NOTE The listed buckets are obtained using the destination AK and SK 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.
	 The total number of files in the object list folder cannot exceed 2,000.
	 An object list file must be a .txt file, and the Content-Type metadata of the file must be text/plain.
	 An 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 an object list file. Spaces may cause migration failures because they may be mistakenly identified as object names.
	 The length of each line in an object list file cannot exceed 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.
	 Archive data can only be accessed and obtained by OMS after it is restored. If the object list files are archive, 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 objects names into one or more .txt files, and store the files in an OBS bucket on Huawei Cloud. You can store up to 2,000 list files in a fixed folder in the OBS bucket. Each list file cannot exceed 1 GB. OMS migrates all objects specified in the URL list files.
	 Select the bucket where the list files are stored.
	NOTE
	 The listed buckets are obtained using the destination AK and SK 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 during 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.
	 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.
		 The total number of files in the URL list folder cannot exceed 2,000.
		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.
		 The length of each line in a URL list file cannot exceed 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]. Only the Chinese and special characters in the source and destination object names must be URL encoded. Please note that:
		The URL encoding starts 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.
Issue 15 (2024 02 22)	Convight @ Luguri Tashasia	For example: http://xxx.xxx.xxx.com/doc/ thefile2.txt doc/thefile2.txt http:// xxx.xxx.xxx.com/the%20file.txt the %20file.txt http:// xxx.xxx.xxx.com/the%20file2.txt the+file2.txt http://
ISSUE IS (2024-02-22)	Copyright © nuawer rechnologie	doc/thefile.txt In the preceding examples, after the files represented by the URLs are copied to the destination bucket, the objects are named

- 2. Determine whether to migrate metadata.
 - If you select **Do not migrate**, OMS will only migrate the metadata Content-Type.
 - If you select Migrate, OMS will migrate supported metadata.

NOTICE

Only English characters, numbers, and hyphens (-) in metadata can be migrated. Chinese characters and symbols cannot be migrated, regardless of whether they are encoded.

3. Set Incremental 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 bucket is a parallel file system (PFS), KMS encryption is not supported.
 - If KMS is not selected, all migrated objects will not be encrypted before they are stored into the destination bucket.
 - If **KMS** is selected, all migrated objects will be encrypted before they are stored into the destination bucket.

NOTE

- Using KMS to encrypt migrated data may decrease the migration speed by about 10%.
- Data encryption is only available if KMS encryption 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, and the configured prefix will be added to the names of objects migrated to the destination bucket.

Figure 3-1 Specifying a prefix

Destination Configurati	on
Data Encryption	Enable
	Encryption is recommended to keep data secure, but it will × slow down migration speed.
Specify Prefix	Yes No
	Prefix cannot start with /
Object Storage Class	Default Standard Infrequent Access Archive Deep Archive Same as source

D 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 **Introduction to 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**.

Parameter	Configuration
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, 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.

Table 3-4 Advanced Settings parameters

Parameter	Configuration
Archive Data Restoration	Archive data must be restored before being migrated. You can select this option if the source cloud service provider supports automatic restoration of archive data.
	• If you select this option, the system automatically restores and migrates archive objects in the migration task. If an archive 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.
	CAUTION
	 Currently, the following cloud platforms can automatically restore archive objects: Huawei Cloud, Alibaba Cloud, Kingsoft Cloud, and Tencent Cloud.
	 The system will restore archive data before migrating it, and you will pay to the source cloud service provider for the API requests and storage space generated accordingly.
	 The copies generated for restoring archive 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 archive data again, no matter it has been restored or not.
	 After data is migrated from the source platform to Huawei Cloud, the storage class of the migrated data is the same as that of the destination bucket.
	• If you do not select 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	Configuration
SMN Notification	Decide whether to use SMN to get notifications about migration results.
	 Set to No No SMN message is sent after the migration.
	 Set to Yes You will receive an SMN message informing you of the migration results.
	Perform the following steps to set SMN parameters:
	 Click Add next to SMN Topic. The Select SMN Topic dialog box is displayed.
	 Select a topic for receiving 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 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 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 What Can I Do If SMN Is Not Working Properly?

Parameter	Configuration
Traffic Limiting	Set the maximum bandwidth for the migration task during a specified period.
	 If you do not need to limit migration traffic, select No.
	• If you need to limit migration traffic, select Yes . Perform the following steps to set traffic limits:
	 Click Add Rule. A 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 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 selected.
	3. Repeat Step 10.a and Step 10.b to add another traffic limiting rule.
	You can click ${\ensuremath{\overline{10}}}$ 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 destination one. 	
	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 of the system checks object consistency with CRC64 checksums. If a source of the system checks object consistency with CRC64 checksums. If a source of the system checks object consistency with CRC64 checksums. If a source of the system checks object consistency with CRC64 checksums. 	
	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 determine the migration sequence.	
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.
 - Check whether the settings of migration parameters 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.

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.
Migration completed	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.

Table 3-5 Migration task group statuses

Step 4 Click ✓ on the left of the task group ID, and view the numbers of in-progress, failed, waiting, paused, and successful tasks. You can also view the numbers of ignored, failed, and migrated objects, the paths that store 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 \checkmark on the left of the task group ID.
- **Step 3** Click *I* next to **Traffic Limit**.
 - 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 $\overline{\mathbf{U}}$ 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.

lf	Then
The number of migrated objects is greater than 0	On the task group details page, click the path link next to Migrated Object Storage Path to download the list of migrated objects in the .txt format. NOTE The path for storing a migrated object list is in the oms/ task_group/ <i>Task group ID</i> /success_object_lists <i>/Task</i>
	name Timestamp.success_list.txt format.
The number of ignored objects is greater than 0	On the task group details page, click the path link next to Ignored Object Storage Path to download the list of ignored objects in the .txt format.
	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.

If	Then
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

After creating a migration task group, you can pause, resume, or restart the 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.

ltem	Scenario	Operation
Pausing a migration task group	A task group in the Creating status can be paused.	 Click Pause. Read the content in the dialog box and click OK. The task status changes to Paused.
Resuming a migration task group	You can resume paused migration tasks in a group.	 Click Resume. 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

Fable	3-6	Managing	a migratio	n task group
abic	50	managing	a migratio	n tusk group

ltem	Scenario	Operation
Restarting a migration task group	If migration tasks fail, you can restart the tasks to retry the migration.	 Click Restart. 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 to migrate all the objects in the failed migration task or select Objects failed to be migrated to migrate only the failed objects. If CDN authentication is enabled, you need to enter the verification key.
		The task status changes to Executing .

----End

4Synchronization 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 configure an event trigger for 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 a function workflow, and the API will synchronize the object to the destination OBS bucket on Huawei Cloud.

Synchronization tasks depend on source event triggers, function workflows, and public network transmission, which may be unstable and cannot ensure 100% synchronization success. Therefore, 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

The synchronization task feature is available only 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 archive 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** 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 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 For step Select Source/Destination, you need to:
 - 1. Set the source parameters by referring to Table 4-1.

Table 4-1 Sou	rce parameters
---------------	----------------

Parameter	Description	
Data Source	Specifies the source cloud service provider. The following options are available: • Huawei Cloud • AWS • Alibaba Cloud • Microsoft Azure • Tencent Cloud • Google Cloud • Qiniu Cloud • QingCloud • Baidu Cloud • Kingsoft Cloud	
	UCloud	
appID	Specifies the identifier of the account for logging in to the Tencent Cloud console. If the selected cloud service provider is Tencent Cloud , appID must be specified.	
Access Key ID	Specifies the AK for accessing the source platform. It can contain a maximum of 100 characters.	
Secret Access Key	Specifies the SK of the source platform account. 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 4-2 .	

If You Need to	Then
Enable Specify Source Bucket.	1. Select the region where the source bucket resides 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 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 where the data to be migrated is stored.

 Table 4-2 Description of Specify Source Bucket

2. Set 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.
	After entering the AK and SK, click Connect to Destination Bucket .
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 metadata ContentType. 	
	 If you select Migrate, OMS will migrate supported metadata. 	
Data Encryption	If you select KMS , migrated data is encrypted before being transferred to the destination OBS buckets.	
	NOTE 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.	

Parameter	Description		
Archive Data Restoration	Archive data must be restored before being migrated. You can select this option if your source cloud service provider supports automatic restoration of archive data.		
	• If you select this option, the system automatically restores and migrates archive objects in the migration task. If an archive 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.		
	CAUTION		
	 Currently, the following cloud platforms can automatically restore archive objects: Huawei Cloud, Alibaba Cloud, Kingsoft Cloud, and Tencent Cloud. 		
	 The system will restore archive data before migrating it, and you will pay to the source cloud service provider for the API requests and storage space generated accordingly. 		
	 The copies generated for restoring archive 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 archive data again, no matter it has been restored or not. 		
	 After data is migrated from the source platform to Huawei Cloud, the storage class of the migrated data is the same as that of the destination bucket. 		
	If you do not select 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		
	NOTE		
	 Currently, the following cloud service providers can automatically restore archive objects: Huawei Cloud, Alibaba Cloud, Kingsoft Cloud, and Tencent Cloud. 		
	 It takes at least a minute to restore an archive object. The larger the archive object is, the longer it takes to restore it, but if an archive 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 the specific cloud service provider. 		
	 Two types of fees are generated during archive data restoration: fees for API calls and fees for archive object restoration. These fees are billed by the source cloud service provider. 		
	 After the restoration is complete, archive 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, archive 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. 		
	 After objects are migrated from the source platform to Huawei Cloud, they are in the same storage class as the destination bucket. 		
Consistency Check	By default, object consistency is checked by size and last modification time.		

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

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

1. Check whether the settings of synchronization parameters 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.

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 , which indicates means that the synchronization request from the source bucket can be received and the source objects can be synchronized. You need to configure a synchronization request 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 . After the configuration, 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.	

Table 4-5 Synchronization task statuses

Step 8 Start, pause, or delete 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 event triggers 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

Following operations use Huawei Cloud as the source platform to describe how to use FunctionGraph to configure synchronization requests:

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

- **Step 1** Log in to the management 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 in the upper right corner of the displayed page, enter **OMS** and locate the **Data synchronization** template, as shown in **Figure 4-1**.

FunctionGraph	Templates 💿
Dashboard	oms × Q
Templates Functions •	Scenario 📶 Basic function usage Data processing Data synchronization File processing Message processing Picture processing Text recognition Voice analysis
Tools	Service AI APIG CTS DIS DMS ECS EVS FRS FunctionGraph IMAGE LTS Moderation OBS OCR OMS SIS
Tutonais	Runtime Al Nodejs 6.10 Nodejs 6.10 PHP 7.3 Python 2.7
	Data synchronization Configure sync-oms-data
	 Runtime [®] Python3.6 Service OMS,OB5
	User a function to obtain new and modified OBS objects, and _ Vew details

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**. The **Select template** tab page is displayed.

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

Figure 4-2 Setting basic parameters

Basic Information	
Function Template	
sync-oms-data-python Reselect	
* Region	
• CN East-Shanghai1 •]
Regions are geographic areas isolated from each other. Resource access, select the nearest region.	es are region-specific and cannot be used across regions through internal netw
* Function Name	
This field cannot be left blank.	
Enter 1 to 60 characters, starting with a letter and ending with a le	- tter or digit. Only letters, digits, hyphens (-), and underscores (_) are allowed.
Agency ?	
Use no agency 💌	C Create Agency
* Enterprise Project (?)	
default 💌	C View Enterprise Project
Runtime	

Table 4-6 Basic parameters for creating a function

Python 3.6

Parameter	Description	
Function Template	Retain the default value sync-oms- data-python.	
Region	Select the region where the source bucket is located.	
Function Name	 Specify a function name. The name must: Consists of 1 character to 60 characters, allowing letters, digits, 	
	hyphens (-), and underscores (_).	
	• Starts with a letter and ends with a letter or digit.	
Agency	Select Use no agency .	
Enterprise Project	Set this parameter as needed. The default value is default .	

Parameter	Description
Runtime	The default value is Python 3.6 and cannot be modified.

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

Figure 4-3 Setting environment variables

Environment Variables	Environment variables are dis	played in plain text. Ex	ercise caution to pre-	vent information leakage.
* sync_url				
* sync_task_id				
* log_bucket				
L cha andraint				
* hw_ak				
* hw_sk				

Table 4-7 Environment variables

Parameter	Description	
sync_url	Enter the address for receiving synchronization requests, which 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 page.	
log_bucket	Enter the name of the bucket used for storing the function invoking logs. The lists of requested or unrequested objects will also be stored into this bucket.	
	CAUTION The log bucket must be in the account used to create the synchronization task.	

Parameter	Description
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 Click Create Function.

The function details page is displayed.

Step 9 Click Configuration tab, on the Basic Settings tab page, set Execution Timeout (s) to 60 and click Save.

Code Monitoring Version	n Aliases Configu	uration	
Basic Settings	Basic Settings		
Trigger	Function Name	oms-test	
Permissions	Function Version	v2	
Disk Mounting	Арр	default	
Environment Variables	Runtime	Python3.6	
Concurrency Configure Async Notification	* Handler	index.handler]
Advanced Settings		Set a handler with a maximum of 128 characters in the form	at of [file name].[execution function name].
	* Enterprise Project 🕥	default	C View Enterprise Project
	* Execution Timeout (s)	60 \$]
	Memory (MB)	128 💌	
	Description	Enter a maximum of 512 characters.	
			0/512
	Save		

Figure 4-4 Setting the execution timeout interval

Step 10 Choose **Trigger** and click **Create Trigger**. The **Create Trigger** dialog box is displayed, as shown in **Figure 4-5**. Set trigger parameters. For details about the parameters, see **Table 4-8**.

Figure 4-5 Creating a trigger

Create Trigger		×
Trigger Type	Object Storage Service (OBS)	•
* Bucket Name	baisheng-cn-east-3	✓ C Create Bucket
	Cannot be the same as that of the current user's exi any other user's existing buckets. Cannot be edited	sting buckets. Cannot be the same as that of after creation.
★ Events ⑦	ObjectCreated 💿	•
Event Notification Name	obs-event-v20e	
Prefix 🕐	Enter a prefix, such as images/.	
Suffix 🕐	Enter a suffix, such as JPG.	

 Table 4-8 Parameters required for creating a trigger

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





Table 4-9	Parameters	required	for	configuring	а	test event
				·· J· J		

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 Test result

Code Monitoring	Version Aliases Configuration	
Code Source		Feedback Upload •
😪 File Edit Settings		
Project obs-e	vent-dp88dk Test Deploy	
Project	index.py ×	Execution Result ×
README.md index.py	1 # -*- coding: utf-8 -*-	Execution successful Function Output
🖺 signer.py	5 Use the ORS SOKs to obtain the files that record the required to obtain the files that record the unrelevance of the ORS SOKs to obtain the files that record the unrelevance object to ORS by calling the symplex of the source object to ORS by calling the symplex objects and unrequested objects in files and the source object of ORS by calling the symplex objects and unrequested objects in files and the source object of ORS by calling the symplex objects and unrequested objects in files and the source object of ORS by calling the symplex objects and unrequested objects in files and the source object of ORS by calling the symplex objects and unrequested objects in files and the source object of ORS by calling the symplex objects and unrequested objects in files and the source object of ORS by calling the symplex objects and unrequested objects in files and the source object objects and the source object object objects and the source object object object objects and the source object o	Image True Log Output 2023 11-11708 10.3822 Blart Involar request 12:08e/7-6405-4396-6655-0112:08b7/ml, version: Value 2023-01-11708 10.3822 Blart Involar request 12:08e/7-6405-4396-6655-0112:08b7/ml, version: Value 2023-01-11708 10.3822 Blart Involar request 12:08e/7-6405-4396-6655-0112:08b7/ml, version: Value 2023-01-11708 10.3822 Blart Involar request 12:08e/7-6405-4396-6655-0112:08b7/ml, version: Value Primit Involar request 12:08e/7-6406-4396-6655-0112:08b7/ml, version: Value Primit Involare Primit 12:08e/7-6406-4396-6655-0112:08b7/ml, version: Value Primit Involare Primit 12:08e/7-6406-4396-6655-0112:08b7/ml, version: Value Primit Involare Primit 12:08e/7-6406-4396-6655-0112:08b7/ml, version: Value
	<pre>13</pre>	Summary B2c0aac7-4406-4308-0895-01123c8ba7re Research 128 MB Execution Doursion 60.957 ms Memory Load 30.121 MB Billet Outside 69.87 ms

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** 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 Synchronization Tasks.
- **Step 3** Click ✓ on the left of the task ID and view the task progress. For details about the parameters, see **Table 4-10**.

Figure 4-8 Monitoring a synchronization task

Regulated Objects (This Month)@ Objects (This Month)@ Synchronized Objects (Erc (Mis Month)@) <	Statistics The monitoring data is not real-time data			
Recorded Recorded Report Rel Description KMS Encrysten Deabled Sector Se	Requested Objects (This I	Month)	Objects (This Month)	Synchronized Object Size (This Month)
Description KME Excryption Deschiption Sprichrosszation Request Receiving Address Achier Data Restrantion Deabled Object Lats Source Information Destination			Successful Failed Ignored	кв
Archine Data Restoration Request Receiving Address Archine Data Restoration Request Receiving Address Object Lots Source Information Destination Information	Description		KMS Encryption Disabled	
Archine Data Restoration Disabled COject Libts Source Information Destination Information			Synchronization Request Receiving Addr	855
Object Lists Source Information Destination Information	Archive Data Restoration Disabled			C.
Source Information Destination Information	Object Lists			
	Source Information		Destination Information	
Source Region Bucket Destination Region Bucket	Source Region	Bucket	Destination	Region Bucket

Table 4-10 Monitoring data of a synchronization task

Parameter	Description
Requested Objects (Last 30 days)	Number of objects covered by the synchronization requests received from the source platform this month.

Parameter	Description
Objects (Last 30 days)	 Synchronized Number of objects that have been synchronized this month. You can view the synchronized objects in the synchronized object list stored in the destination bucket. Failed Number of objects that failed to be synchronized this month. You can view the failed objects in the failed object list stored in the destination bucket. Ignored Number of objects that have been ignored this month. You can view the ignored objects in the ignored object list stored in the destination bucket. NOTE If an object with the same name and size exists in the destination bucket, and its last modification time is later than that in the source bucket, the source object will be ignored during synchronization.
Synchronized Object Size (Last 30 days)	Total size of objects that have been synchronized in the past 30 days.
Object Lists	OMS records the successfully synchronized objects, objects that failed to be synchronized, and ignored objects 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
Synchronized objects	oms/sync_task/ <i>Synchronization task ID</i> / success_object_lists	Occurrence time (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. 	Failure causes, occurrence time (in local UTC), URL-encoded and non-URL-encoded names of failed objects, and error codes returned by source SDKs
	 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. If the account is in arrears, frozen, or does not have the required permissions, the task creation will fail. 	
Ignored objects	oms/sync_task/ <i>Synchronization task ID</i> / skip_object_lists	Occurrence time (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/ <i>Synchronization task ID</i> / object_lists	Named 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.

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

----End

5 Viewing CTS Traces

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

On the **Trace List** page on the CTS console, click **Filter**. In the displayed pane, select **OMS** for **Trace Source**, specify other parameters as needed, and click **Query** to query operations related to OMS.

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 5-1 O	MS resources	supported	by CTS
-------------	--------------	-----------	--------

Table 5-2 Operations on migration tasks and CTS traces

Operation	Resource Type	Trace
Creating a migration task	Task	CreateTask
Pausing a migration task	Task	StopTask

Operation	Resource Type	Trace
Starting a migration task	Task	StartTask
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 of a migration task	Task	UpdateTaskAccessKey

Table 5-3 Operations on migration task groups and CTS traces

Operation	Resource Type	Trace
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

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

Operation	Resource Type	Trace
Deleting a synchronization task	SyncTask	DeleteSyncTask

Table 5-5 Operations on 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	on all	resources	and	CTS	traces
-----------	------------	--------	-----------	-----	-----	--------

Operation	Resource Type	Trace
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 CTS Traces .
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.