

# Alibaba Cloud Lightning Cube

## Migrate data from Google Cloud Storage to OSS

Issue: 20190509

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## Generic conventions

Table -1: Style conventions

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

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



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# 1 Background information

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This section describes how to migrate data from Google Cloud Storage to Alibaba Cloud Object Storage Service (OSS).

Alibaba Cloud Data Transport is used as a data channel between various data stores . With Data Transport, you can migrate data from third-party data stores to OSS or between OSS buckets.

With Data Transport, you only need to log on to the console, specify a source data address and a destination OSS endpoint, and then create a migration job. After starting a migration job, you can perform management tasks for the job, such as viewing the process and status of the job. Additionally, you can generate a migration report to view the list of migrated files and the list of files that failed to migrate.



## Notice:

- When you read data from the source data address during a migration job, this produces an expense incurred by outbound traffic. You are charged by the storage service provider of the source data address.
- By default, Data Transport does not support cross-country data migration. For example, you cannot migrate data from a data address that is located in China (Beijing) to a data address that is located in US (Silicon Valley). If you have similar requirements, you must [open a ticket](#) before creating a migration job. You must apply for the necessary permissions to create a cross-country migration job. You must ensure that your business is legitimate, data does not include illegal information, and data transit conforms to local rules and regulations.

This guide includes the following sections:

- [Prerequisites](#)
- [Create a migration job](#)
- [Manage migration jobs](#)

## 2 Prerequisites

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This section describes what you must do before creating a migration job.

### Google Cloud Storage

- Estimate the amount of data to be migrated.

Estimate the size and the number of files to be migrated. You can use the `gsutil` tool or storage logs to view the capacity of a bucket. For more information, see [How to obtain the details of a bucket](#).



**Note:**

You must enter the appropriate size of a bucket and number of objects (files) when [creating a migration job](#).

- Create the private key of a service account for a migration job.
  1. Log on to the [IAM & admin console](#).
  2. Select Service accounts and click the drop-down arrow next to the Google logo in the page header section to select the required project.
  3. Click CREATE SERVICE ACCOUNT to create a service account that has the read permission for a bucket to be migrated. In Step 3, click CREATE KEY, and select JSON as the key type. Click CREATE to save the JSON file to a local PC and click SAVE.



**Note:**

For an existing service account, choose MODIFY > CREATE KEY. Select JSON as the key type and choose CREATE > SAVE.

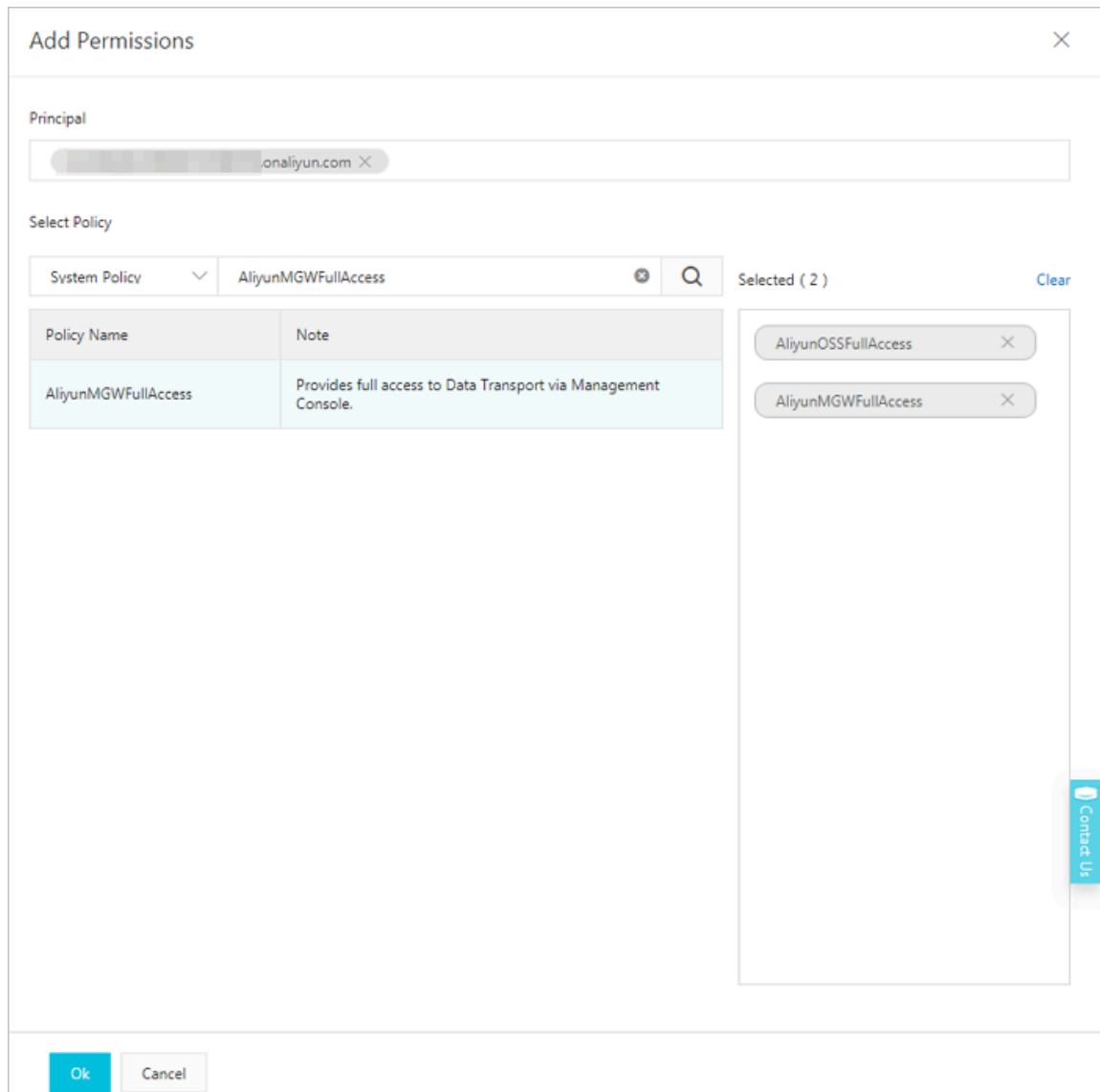
### Alibaba Cloud Object Storage Service

- Create a bucket

Create a bucket to store migrated data For more information, see [Create a bucket](#).

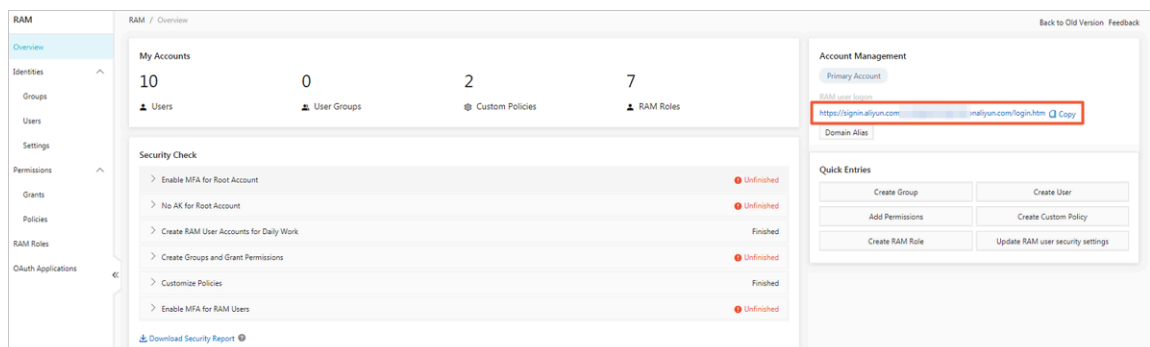
- Create and authorize a RAM user
  1. Log on to the [RAM console](#).
  2. Choose Identities > Users > Create User.
  3. Select Console Password Logon and Programmatic Access and enter the required User Account Information.
  4. Click OK to save the generated account, password, AccessKeyID, and AccessKeySecret.
  5. Select the required user account, click Add Permissions to grant the read/write permission (AliyunOSSFullAccess) and migration permission

(AliyunMGWFullAccess) for the RAM user. The Add Permissions dialog is shown in the following figure.



6. Choose OK > Finished.

7. In the left-side navigation pane, select Overview, click the link in the RAM user logon section, and enter the username and password for the new RAM user to log on to the console.



## 3 Create a migration job

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This section describes the operations and considerations for data migration.

### Precautions

When creating a migration job, you must note the following issues:

- A migration job occupies the network resources of the source data address and the destination data address. To ensure business continuity, we recommend that you specify a speed limit for a migration job or perform the migration job during an off-peak period.
- Before a migration job is performed, files at both the source data address and the destination data address are checked. The files at the destination data address are overwritten during a migration job. This occurs if the source files have the same name as the destination files, but have a later update time. If two files have the same name but different content, you must change the name of one file or back up the files.
- With Data Transport, you can only migrate data of a single bucket rather than all data in an account at a time.

### Step 1: Create a source data address

1. Log on to the [Data Transport console](#).
2. Choose Data Online Migration > Data Address, and then click Create Data Address.
3. In the Create Data Address dialog box, set the required options and click OK. The options are described as follows:

| Option    | Required | Description  |
|-----------|----------|--|
| Data Type | Yes      | Select Google Storage.   |
| Data Name | Yes      | The data name can be 3 to 63 characters in length. Special characters are not supported, except for hyphens (-) and underscores (_). |
| Bucket    | Yes      | Enter the name of a bucket to be migrated.   |

| Option   | Required | Description   |
|----------|----------|---|
| Prefix   | Yes      | <ul style="list-style-type: none"> <li>· Migrate all data: indicates that all data in a bucket are migrated.</li> </ul> <p>When you migrate all data, you do not need to enter a prefix.</p> <ul style="list-style-type: none"> <li>· Migrate partial data: indicates that files in a specified directory or prefix are migrated. A prefix cannot start with a forward slash (/) and must end with a forward slash (/). For example: <code>/ data / to / oss / or / docs /</code>.</li> </ul> |
| Key File | Yes      | Upload the JSON file that you obtained from the <a href="#">Prerequisites</a> section.  |

4. You must apply for whitelist permissions because this feature is still in the beta testing phase. Click Application.
5. Enter the required information and submit the beta testing application for migration. After the application is approved, you will receive an SMS notification.

## Step 2: Create a destination data address

1. Select Data Online Migration > Data Address, and then click Create Data Address.
2. In the Create Data Address dialog box, set the required options and click OK. The options are described as follows:

| Option                          | Required | Description  |
|---------------------------------|----------|--|
| Data Type                       | Yes      | Select OSS.  |
| Data Region                     | Yes      | Select a region where the destination data address is located.   |
| Data Name                       | Yes      | The data name can be 3 to 63 characters in length. Special characters are not supported, except for hyphens (-) and underscores (_). |
| OSS Endpoint                    | Yes      | Select an endpoint based on the region where data is located. For more information, see <a href="#">Endpoints</a> .                  |
| AccessKeyId and AccessKeySecret | Yes      | Enter an AccessKey that is used to migrate data. For more information, see <a href="#">Create an AccessKey</a> .                     |

| Option     | Required | Description  |
|------------|----------|--|
| OSS Bucket | Yes      | Select a bucket to store migration data.   |
| OSS Prefix | No       | An OSS prefix cannot start with a forward slash (/) and must end with a forward slash (/). For example: <code>data /</code> to <code>/ oss /</code> . If you want to store data to the root directory of a bucket, you can leave the OSS Prefix field blank. |

**Notice:**


When the name of a file to be migrated at the source data address starts with a forward slash (/), you must add an OSS Prefix to the file name, or the migration job fails. Assume that the name of a file to be migrated is `/ test / test . png`. You must add an OSS Prefix to the file name such as `oss /`. After a migration job is complete, an OSS file whose name is `/ test / test . png` changes to `oss // test / test . png`.

**Step 3: Create a migration job**

1. Choose Data Online Migration > Migration Jobs and click Create Job.
2. In the Create Job dialog box, read the Terms of Data Transport, select I understand the above terms and conditions, activate Data Transport, and then click Next.
3. In the Create Job dialog box, set the required options and click Next.

The options are described as follows:

| Option              | Required | Description  |
|---------------------|----------|--|
| Job Name            | Yes      | The job name can be 3 to 63 characters in length and contain lowercase letters , numbers, and hyphens (-). A job name cannot start or end with a hyphen (-). |
| Source Data Address | Yes      | Select the new source data address.  |

| Option                   | Required | Description   |
|--------------------------|----------|---|
| Destination Data Address | Yes      | <p>Select the new destination data address.</p> <div> Notice:<br/>You can <a href="#">open a ticket</a> to apply for the permission to create a cross-country migration job. This occurs if the country where the source data address is located is different from the country where the destination data address is located, You must ensure that your business is legitimate, data does not include illegal information, and data transit conforms to local rules and regulations.</div> |



| Option         | Required | Description  |
|----------------|----------|--|
| Migration Type | Yes      | <p>Before you start a migration job, Data Transport compares files of the source data address with those of the destination data address. The files at the source data address are disregarded during migration. This occurs if the source files with an earlier update time have the same name, ContentType, and size as the destination files. However, all the other files are migrated.</p> <ul style="list-style-type: none"> <li>• <b>Full:</b> You can specify the Start Time Point of File. The files whose last modification time is later than the specified start time are migrated. After all of the files are migrated, a migration job is closed. When you repeat a full migration job, only files that have been changed are migrated.</li> <li>• <b>Incremental:</b> You must specify the Migration Interval and Migration Times to perform an incremental migration job. You must specify the Start Point Time of File. The files whose last modification time is later than the specified start time are migrated for the first time. After the first migration job is complete, an incremental migration job is performed based on the Migration Interval. A migration interval involves sending files that are created or modified within a specific range from the source data address to the destination data address. The specified range is the time when the last migration job started and before the time when this migration starts. Assume that you specify N for the Migration Times. A full migration is performed once. In the future, an incremental migration will be performed (N - 1) times. For example, you set the Migration Interval to 1 and Migration Times to 5. Additionally, you set the Start Time Point of File to 2019/03/05 08:00:00. The present date and</li> </ul> |

| Option                   | Required                             | Description   |
|--------------------------|--------------------------------------|---|
| Start Time Point of File | Yes                                  | <ul style="list-style-type: none"><li>• All: All files are migrated.</li><li>• Assign: Files that are created or modified after the specified time are migrated. For example, when you set the Start Time Point of File to 2018/11/01 08:00:00, only files that are created or modified after 2018/11/01 08:00:00 are migrated. Files that are created or modified before the specified time will be disregarded.</li></ul> |
| Migration Interval       | Yes (only for Incremental migration) | The default value is 1 Hour and the maximum value is 24 Hours.  |
| Migration Times          | Yes (only for Incremental migration) | The default value is 1 time and the maximum value is 30 times.  |

4. On the Performance tab, navigate to the Data Prediction area and enter the Data Size and File Count.

**Note:**

To ensure a successful migration, you must estimate the amount of data to be migrated. For more information, see [Estimate the amount of data to be migrated](#).

5. This step is optional. On the Performance tab, navigate to the Flow Control area and set the Time Range and Max Flow, and then click Add.

**Note:**

To ensure business continuity, we recommend that you set the Time Range and Max Flow based on the fluctuation of visits.

6. Click Create. Wait until a migration job is complete.

## 4 Manage migration jobs

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This section describes several subsequent operations after you create a migration job.


### View the status of a migration job

After you create a migration job, only one migration job status is displayed. The status can be one of the following:

- **Migrating:** indicates that data is being migrated. Wait.
- **Create Failed:** indicates that you failed to create a migration job. You can view the cause of the failure and recreate a migration job.
- **Completed:** indicates that a migration job is complete. You can view a migration report.
- **Failed:** indicates that a migration job failed. You can view the migration report and migrate failed files.

### Modify flow control settings

During a migration job, you can modify flow control settings at any time based on your needs.

1. In the [Data Transport console](#), choose Data Online Migration > Migration Jobs. On the Migration Jobs page, locate a migration job and click Manage next to the job.
2. Click Stop and ensure that the job is stopped.
3. On the Flow Control Time Schedule chart, click Reset.
  - To add a flow control setting, select the appropriate Time Range and Max Flow, and click Add.
  - To delete a flow control setting, click  next to the flow control setting.
  - To modify a flow control setting, you must first delete the previous setting and add a new flow control setting.
4. Click OK and click Start to restart the job.

### View a migration report

1. On the Migration Jobs page, locate a job and click Manage next to the job.

2. Click **Generate Migration Report**. After a report is generated, click **Export** to export the report.

In a migration report, the following file names appear in the **File list** section:

- The name of a file ends with `_total_list.txt`. This file contains a list of total migration files.
  - The name of a file ends with `_completed_list.txt`. This file contains a list of successful migration files.
  - The name of a file ends with `_error_list.txt`. This file contains a list of failed migration files.
3. In the [OSS console](#), locate the automatically generated folder `aliyun_mgw_import_report/`. The three files that appear in the migration report are included in this folder. You can download and view the detailed list of files. We recommend that you use the [ossbrowser](#) tool to view these files.

The file formats are as follows:

- The file name includes the source data address, file name, file size (measured in bytes), and last modified time. This file contains a list of total migration files. The format of the data source address is: `< vendor >://< bucketName >/< prefix >/< objectName >`. For example, `oss :// bucket - test1022 / myprefix / testfile . txt`.
- The file name includes the file name, file size (measured in bytes), checksum (CRC64), and migration completion time. This file contains a list of successful migration files.
- The file name includes the file name, migration start time, migration end time, and error description. This file contains a list of failed migration files.

### Retry after a migration failure

If a migration job failed, you can view the generated file whose name ends with `_error_list` to find the causes of failure and troubleshoot the issue. On the **Migration Jobs** page, locate the failed job, click **Manage** next to the job, and click **Retry** to migrate failed files.

### More information

For more information, see the following sections:

- *Migrate data between Alibaba Cloud Object Storage Service (OSS) buckets*
- *Migrate data from HTTP/HTTPS sources to OSS*
- *Migrate data from Tencent Cloud Object Service (COS) to OSS*
- *Migrate data from Amazon Simple Storage Service (Amazon S3) to OSS*
- *Migrate data from Azure Blob to OSS*
- *Migrate data from Qiniu Cloud-Object Storage (KODO) to OSS*
- *Migrate data from Baidu Object Storage (BOS) to OSS*
- *Migrate data from Kingsoft Standard Storage Service (KS3) to OSS*
- *Migrate data from UPYUN Storage Service (USS) to OSS*
- *Migrate data between NAS file systems*
- *Migrate data from NAS to OSS*
- *Migrate data from ECS instances to OSS*