

# Alibaba Cloud Lightning Cube

## Migrate data from NAS to OSS

Issue: 20190726

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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> 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> 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> 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> 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.
Courier 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 topic describes how to migrate data from Network Attached Storage (NAS) to 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 progress and status of the job. Additionally, you can generate the migration report to view the list of migrated files and the list of files that failed to migrate.



## Notice:

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 to apply for the permission of creating 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 topics:

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

## 2 Prerequisites

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

### Network Attached Storage

- Alibaba Cloud NAS
  - For more information about how to add a mount point for a NAS file system, see [Add a mount point](#).
  - When you configure access permissions for a NAS instance, you must allow access to the NAS instance by all IP addresses in the same VPC where the NAS file system is located. For more information, see [Manage the access permissions of a file system](#).
- Third-party NAS file systems
  - You need to attach a NAS instance to a VPC.
    - You can connect to the VPC by using a dedicated leased line to enable access to the NAS instance from all IP addresses in the VPC. For more information, contact Alibaba Cloud technical support.
    - You can connect to the VPC by using a VPN network to enable access to the NAS instance from all IP addresses in the VPC.
  - When you configure access policies for a NAS instance, you must allow access to the NAS instance by all IP addresses in the same VPC where the NAS file system is located.

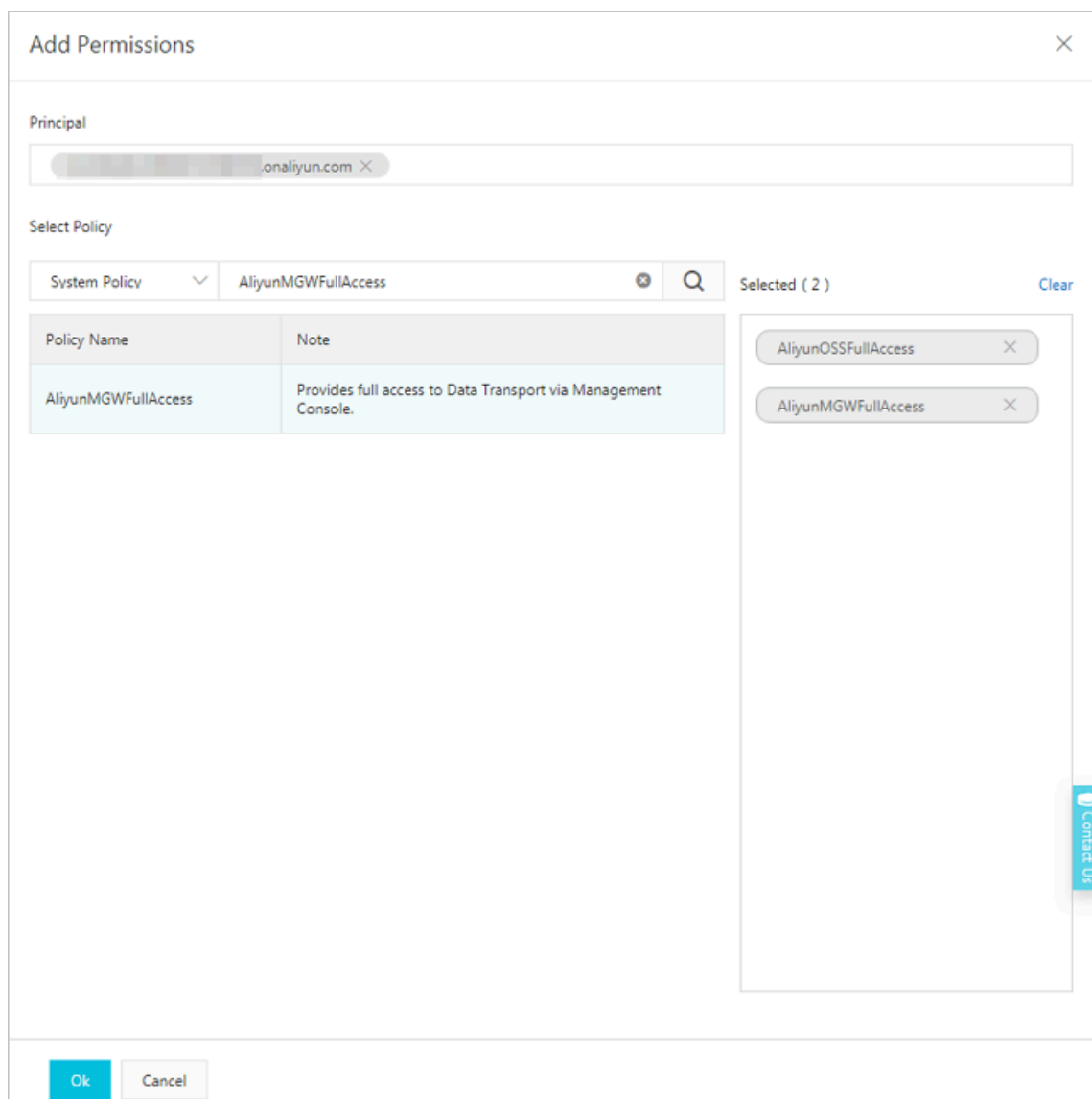
### Alibaba Cloud Object Storage Service

- Create a destination bucket.

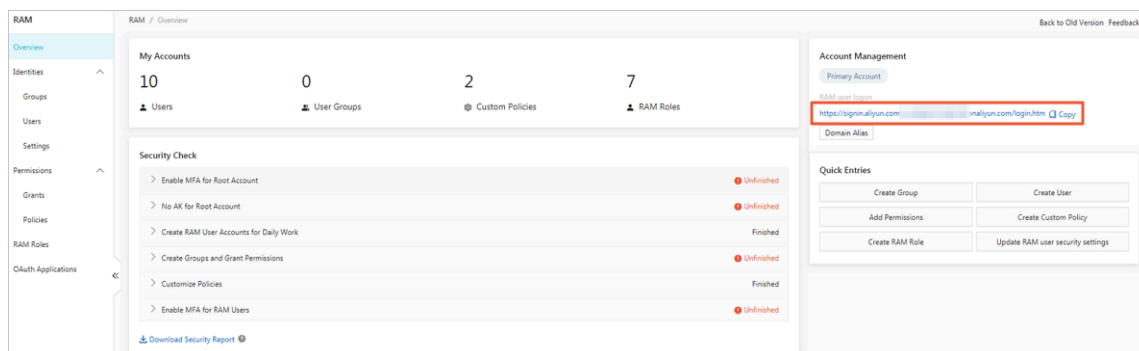
Create a destination bucket, which is used to store the migrated data. For more information, see [Create a bucket](#).

- 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 then 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. In the left-side navigation pane, select Overview, click the link in the RAM user logon section, and enter the username and password of the newly created RAM user to log on to the console.



## 3 Create a migration job

This topic describes the operations and considerations for data migration.

### Precautions



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

- Symbolic link files that exist at the source data address are ignored during migration.

### Step 1: Create a source data address

1. In the Create Data Address dialog box, configure the required settings and click OK. Settings are described in the following table.

Name	Required	Description
Data Type	Yes	Select NAS.
Data Region	Yes	Select the region where the NAS file system is located.  If you select Alibaba Cloud in the NAS Type field, select the region where the NAS file system is located. If you select Others for in the NAS Type field, select the region that hosts the VPC on which the third-party NAS file system is attached.
Data Name	Yes	A data name is 3 to 63 characters in length. Special characters are not supported, except for hyphens (-) and underscores (_).
NAS Type	Yes	Select the source of a NAS file system. <ul style="list-style-type: none"><li>· Alibaba Cloud: a file system that is created by using Alibaba Cloud NAS.</li><li>· Others: a file system that is created by using a third-party NAS service. You must mount the file system on an ECS instance that is located in a VPC.</li></ul>

Name	Required	Description
File System	Yes (only for Alibaba Cloud NAS)	Select the required NAS file system.
Mount Point	Yes (only for Alibaba Cloud NAS)	Select the mount point of the destination NAS file system.   <b>Notice:</b> You can only mount a NAS file system on an ECS instance that is located in a VPC network (classic network not supported).
VPC	Yes (only for third-party NAS services)	Select a VPC network where the third-party NAS file system is located.
Switches	Yes (only for third-party NAS services)	Select a VSwitch that is owned by the VPC network.
NAS Address	Yes (only for third-party NAS services)	Enter the IP address of the third-party NAS instance. This IP address must be accessible by the VPC.
Sub Folder	Optional	Enter the directory to be migrated. If you leave this field blank, all data stored in the root directory (/) is migrated.   <b>Notice:</b> If you specify a directory, ensure that the directory exists in the NAS instance. Otherwise, the data address fails to be created.
Connection Method	Yes (only for third-party NAS services)	Select a protocol type for NAS.

Name	Required	Description
Connection Password	Yes (only for third-party NAS services)	Select whether a password is required. <ul style="list-style-type: none"><li>• No password: No password is required to access the NAS service.</li><li>• Use Password: A username and password are required to access the NAS service. You must enter a valid username and password.</li></ul>

**Note:**

For more information about the status of a new data address, see [Data address status](#).

**Step 2: Create a destination data address**

1. Choose Data Online Migration > Data Address and click Create Data Address.
2. In the Create Data Address dialog box, configure the required settings and click OK. Settings are described in the following table.


Name	Required	Description
Data Type	Yes	Select OSS.
Data Region	Yes	Select a region where the destination data address is located.
Data Name	Yes	A data name is 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> .
AccessKey ID and AccessKey Secret	Yes	Enter an AccessKey pair that is used to migrate data. For more information, see <a href="#">Create an AccessKey pair</a> .
OSS Bucket	Yes	Select a bucket to store migration data.

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

### Step 3: Create a migration job

1. In the Create Job dialog box, configure the required settings and click Next.

Settings are described in the following table.

Name	Required	Description
Job Name	Yes	A job name is 3 to 63 characters in length and can contain lowercase letters, digits, and hyphens (-). A job name cannot start or end with a hyphen (-).
Source Data Address	Yes	Select the new source data address.
Destination Data Address	Yes	Select the new destination data address.   <b>Notice:</b> You can <a href="#">open a ticket</a> to apply for permissions 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 transit conforms to local rules and regulations, and that the data does not include illegal information.



Name	Required	Description
Migration Type	Yes	<ul style="list-style-type: none"> <li>• <b>Full:</b> You can specify the Start Time Point of File. If the last modification time of files is later than the specified start time, these files are migrated. After all of the files are migrated, a migration job is closed. When you repeat a full migration job, Data Transport only migrates files that have been changed.</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. If the last modification time of files is later than the specified start time, all the files are migrated during the first migration. After the first migration is complete, an incremental migration is performed based on the Migration Interval. An incremental migration job only migrates files that are created or modified between 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. Full migration is performed once. Incremental migration will be performed (N - 1) times. For example, you can set the Migration Interval to 1 and Migration Times to 5. Additionally, you can set the Start Time Point of File to 2019/03/05 08:00. The present date and time is 2019/03/10 08:00. When the first migration starts, Data Transport migrates files that have the last modification time between 2019/03/05 08:00 and 2019/03/10 08:00. Assume that the first migration requires one hour to complete. The second migration starts at 2019/03/10 10:00, which is two hours later than 2019/03/10 08:00. The first migration takes one hour, and the other hour is consumed by the</li> </ul>

Name	Required	Description
Start Time Point of File	Yes (only for full and incremental migration)	<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 2018/11/10 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.
Start Time Point of File	Yes (only for synchronization)	<ul style="list-style-type: none"> <li>• All: All files are synchronized.</li> <li>• Assign: Files that are created or modified after the specified time are synchronized. 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 synchronized. The files that are created or modified before the specified time will be ignored.</li> </ul>
Start Time of Job	Yes (only for synchronization)	<ul style="list-style-type: none"> <li>• Immediately: A synchronization job immediately runs after a migration job is complete.</li> <li>• Schedule: You can set the scheduled time to synchronize data at the specified time.</li> </ul>
Job Period	Yes (only for synchronization)	The time interval between two synchronizations. A synchronization runs when the specified Job Period ends. Valid units: hour, day, and week.

Name	Required	Description
The next synchronization runs until the last synchronization ends.	Yes (only for synchronization)	Don't trigger a new task if another task is running. Assume that you set the Job Period to 1 Hour and this setting is not selected. The next synchronization runs regardless of whether the last synchronization job is completed within one hour. This setting is selected by default.

## 2. Click Next to open the Performance tab.

- If you select Full or Incremental, 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](#).

- If you select Sync, enter the Subtask File Count and Subtask File Size.
  - Subtask File Count: You can separate a migration job into multiple subtasks based on the number of files that you specify. You can run a maximum of 20 subtasks at a time. Set the appropriate number of files for each subtask to reduce the time of a migration job. The default value is 1000. Assume that you need to migrate 10,000 files. When you set the Subtask File Count to 500, the migration job is separated into 20 subtasks that run at the same time. When you set the Subtask File Count to 100, the migration job is separated into 100 subtasks. Each time 20 subtasks run and the remaining subtasks are queued.
  - Subtask File Size: You can separate a migration job into multiple subtasks based on the number of files that you specify. You can run a maximum of 20 subtasks at a time. Set the appropriate size of files for each subtask to reduce the time of a migration job. The default value is 1 GB. Assume that you need to migrate files with a total size of 40 GB. When you set the Subtask File Size to 2 GB, the migration job is separated into 20 subtasks that run at the same time. When you set the Subtask File Size to 1 GB, the migration job is separated

into 40 subtasks. You can run a maximum of 20 subtasks at a time and the remaining subtasks are queued.



**Note:**

A subtask is generated when either the specified Subtask File Count or Subtask File Size is met. When the specified Subtask File Count is reached, but the specified Subtask File Size is not, a subtask is generated based on the number of files. When the specified Subtask File Size is reached, but the specified Subtask File Count is not, a subtask is generated based on the file size. Assume that you set the Subtask File Count to 1000 and Subtask File Size to 1 GB. When the number of files reaches 1,000 but the file size does not reach 1 GB, a subtask is generated based on the number of files. When the file size reaches 1 GB but the number of files does not reach 1,000, a subtask is generated based on the file size.

#### View the status of a data address

After you create the data address of an ECS instance, only one status for the data address of an ECS instance is displayed. The status can be one of the following:

- **Normal:** indicates that a data address is created.
- **Creating:** indicates that a data address is being created. This process of creating the first NAS data address requires about three minutes. If the status of a data address is Creating for a long period of time, you can click Refresh in the upper-right corner to update the status.
- **Invalid:** indicates that an error occurred while creating a data address. You can verify that the configuration is accurate and Data Transport is allowed to access the shared files of an ECS instance. For further assistance, contact [Alibaba Cloud technical support](#).

## 4 Manage migration jobs

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

Subsequent operations change based on the migration type. You can manage different types of migration jobs as follows.

### Manage full migration and incremental migration jobs


- 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. This process takes a while.
- **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. For more information about FAQs for migration failures, see [Common causes of a migration failure and solutions](#).

## Manage synchronization jobs

- View the status of a synchronization job



After you create a synchronization job, one of the following states can occur:

- **Migrating:** the synchronization task is in progress.
- **Stopped:** Click **Manage** next to a synchronization job to enter the Migration Report page. After you click **Stop**, the job status changes to **Stopped**.
- **Create Failed:** indicates that you failed to create a synchronization job. You can view the causes of failure and recreate a synchronization job.

- Manage a synchronization job

- **View the details of a synchronization job:** On the Migration Jobs page, click **Manage** next to a synchronization job to view the job details, such as Basic, Schedule, and Flow Control Time schedule.
- **Stop or start a synchronization job:** On the Migration Report page, you can stop or start the synchronization job at any time.
- **View the history of a job:** On the Migration Jobs page, locate a job and click **Check History** next to the job to view the job history.

■ After a synchronization job is complete, one of the following states for a task is displayed:

- **Scanning:** indicates that a synchronization job is scanning the files of the source data address. The number of scanned files is displayed in the File Count column.
- **Scan Finished:** indicates that a scan is complete. The total number and size of files are display in the File Count and File Size columns, respectively.
- **Success:** indicate that a synchronization job is complete. The number of synchronized files is displayed. You can click  next to **Completed** to download the list of completed files.
- **Failed:** An error may occur when you run a synchronization job. Click **Retry** to resynchronize failed files. You can click  next to **Failed** to download the list of failed files. Based on the list, you can view the details of failed files, such as deleted or lost source files.

## More information

For more information, see the following topics:

- [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 from Google Cloud Storage to OSS](#)
- [Migrate data between NAS file systems](#)
- [Migrate data from ECS instances to OSS](#)