

Alibaba Cloud Lightning Cube

Migrate data from NAS to OSS

Issue: 20190509

Legal disclaimer

Alibaba Cloud reminds you to carefully read and fully understand the terms and conditions of this legal disclaimer before you read or use this document. If you have read or used this document, it shall be deemed as your total acceptance of this legal disclaimer.








1. You shall download and obtain this document from the Alibaba Cloud website or other Alibaba Cloud-authorized channels, and use this document for your own legal business activities only. The content of this document is considered confidential information of Alibaba Cloud. You shall strictly abide by the confidentiality obligations. No part of this document shall be disclosed or provided to any third party for use without the prior written consent of Alibaba Cloud.
2. No part of this document shall be excerpted, translated, reproduced, transmitted, or disseminated by any organization, company, or individual in any form or by any means without the prior written consent of Alibaba Cloud.
3. The content of this document may be changed due to product version upgrades, adjustments, or other reasons. Alibaba Cloud reserves the right to modify the content of this document without notice and the updated versions of this document will be occasionally released through Alibaba Cloud-authorized channels. You shall pay attention to the version changes of this document as they occur and download and obtain the most up-to-date version of this document from Alibaba Cloud-authorized channels.
4. This document serves only as a reference guide for your use of Alibaba Cloud products and services. Alibaba Cloud provides the document in the context that Alibaba Cloud products and services are provided on an "as is", "with all faults" and "as available" basis. Alibaba Cloud makes every effort to provide relevant operational guidance based on existing technologies. However, Alibaba Cloud hereby makes a clear statement that it in no way guarantees the accuracy, integrity, applicability, and reliability of the content of this document, either explicitly or implicitly. Alibaba Cloud shall not bear any liability for any errors or financial losses incurred by any organizations, companies, or individuals arising from their download, use, or trust in this document. Alibaba Cloud shall not, under any circumstances, bear responsibility for any indirect, consequential, exemplary, incidental, special, or punitive damages, including lost profits arising from the use

or trust in this document, even if Alibaba Cloud has been notified of the possibility of such a loss.

5. By law, all the content of the Alibaba Cloud website, including but not limited to works, products, images, archives, information, materials, website architecture, website graphic layout, and webpage design, are intellectual property of Alibaba Cloud and/or its affiliates. This intellectual property includes, but is not limited to, trademark rights, patent rights, copyrights, and trade secrets. No part of the Alibaba Cloud website, product programs, or content shall be used, modified, reproduced, publicly transmitted, changed, disseminated, distributed, or published without the prior written consent of Alibaba Cloud and/or its affiliates. The names owned by Alibaba Cloud shall not be used, published, or reproduced for marketing, advertising, promotion, or other purposes without the prior written consent of Alibaba Cloud. The names owned by Alibaba Cloud include, but are not limited to, "Alibaba Cloud", "Aliyun", "HiChina", and other brands of Alibaba Cloud and/or its affiliates, which appear separately or in combination, as well as the auxiliary signs and patterns of the preceding brands, or anything similar to the company names, trade names, trademarks, product or service names, domain names, patterns, logos, marks, signs, or special descriptions that third parties identify as Alibaba Cloud and/or its affiliates).
6. Please contact Alibaba Cloud directly if you discover any errors in this document.

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.	 Danger: 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.	 Warning: 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.	 Notice: 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.	 Note: You can use Ctrl + A to select all files.
>	Multi-level menu cascade.	Settings > Network > Set network type
Bold	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>

Contents

Legal disclaimer.....	I
Generic conventions.....	I
1 Background information.....	1
2 Prerequisites.....	2
3 Create a migration job.....	5
4 Manage migration jobs.....	14

1 Background information

This section 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.



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.

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 view the list of files to be migrated and the list of files that failed to migrate.

This guide includes the following sections:

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

2 Prerequisites

This section 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.

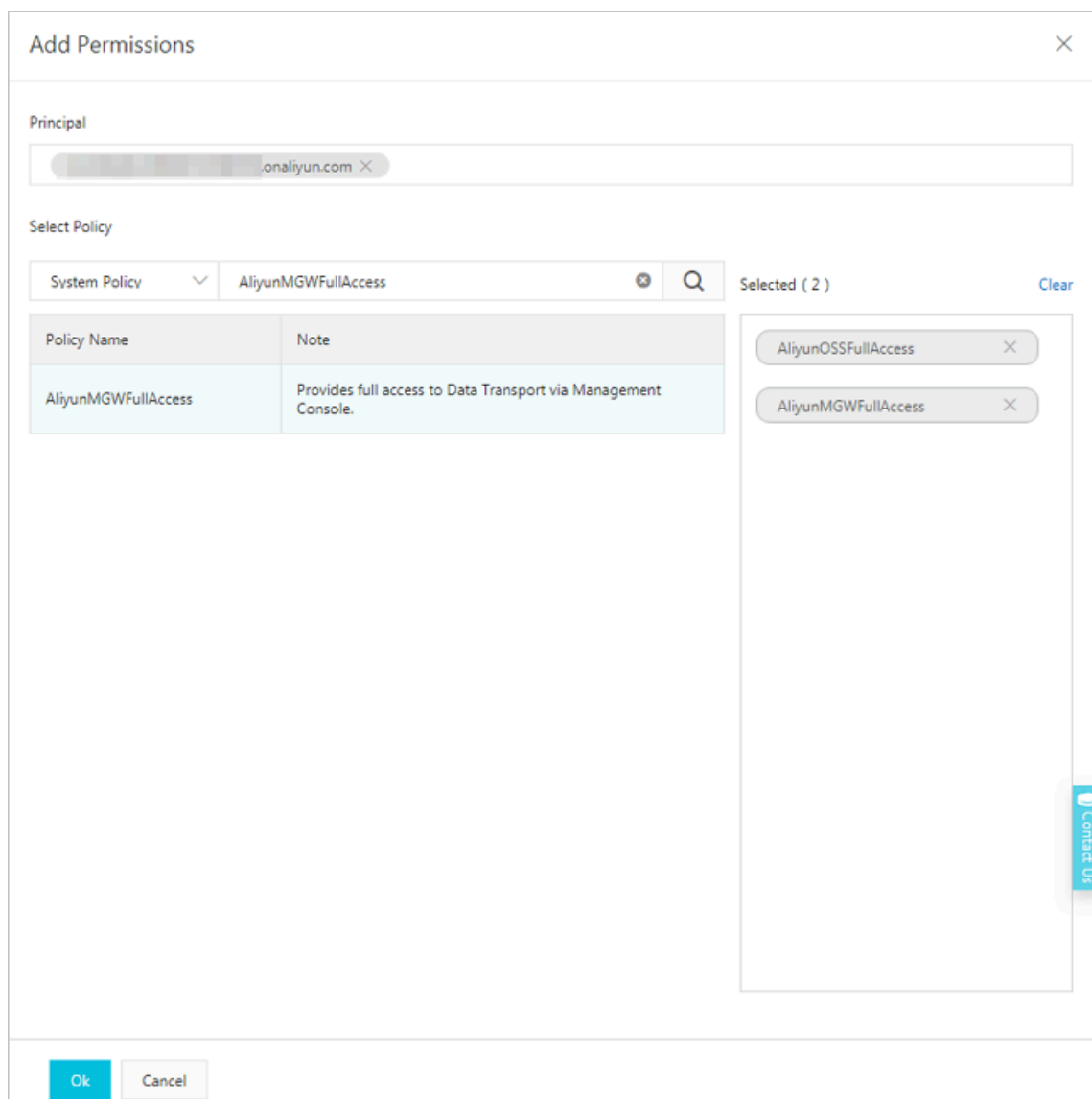
Alibaba Cloud Object Storage Service

- Create a destination bucket.

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

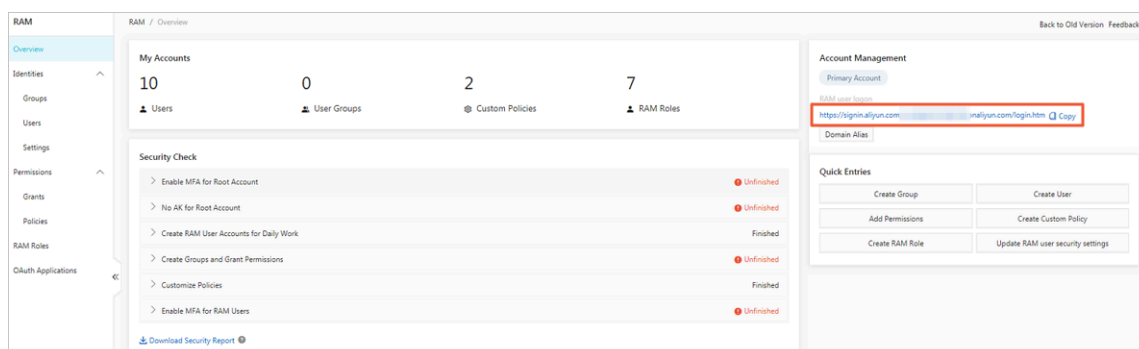
- Create and authorize a RAM user
 1. Log on to the [RAM console](#).
 2. Choose Identities > Users > Create User.
 3. Select Console Password Logon and Programmatic Access and enter the required User Account Information.
 4. Click OK to save the generated account, password, AccessKeyID, and AccessKeySecret.
 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 of the new RAM user to log on to the console.



3 Create a migration job

This section describes how to migrate data.

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 off-peak hours.
- 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 either one file and back up the files.
- Symbolic link files that exist at the source data address are disregarded during migration.

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 NAS.
Data Region	Yes	Select the region where the NAS file system is located. If you select Alibaba Cloud for the NAS Type, select the region where the NAS file system is located. If you select Others for the NAS Type, select the region that hosts the VPC where a third-party NAS file system is located.

Option	Required	Description
Data Name	Yes	The data name can be 3 to 63 characters in length. Special characters are not supported, except for hyphens (-) and underscores (_).
NAS Type	Yes	Select the required source of a NAS file system. <ul style="list-style-type: none"> Alibaba Cloud: a file system that is created in NAS. Others: a file system that is created in a third-party NAS service. You need to mount the file system on an ECS instance that is located in an Alibaba Cloud VPC network.
File System	Yes (only for Alibaba Cloud)	Select the required NAS file system.
Mount Point	Yes (only for Alibaba Cloud)	Select the required NAS mount point. <div>  Notice: Currently, you can only mount a NAS file system on an ECS instance that is located in a VPC network (classic network not supported). </div>
VPC	Yes (only for Others)	Select a VPC network where the third-party NAS file system is located.
Switches	Yes (only for Others)	Select a VSwitch that is owned by the VPC network.
NAS Address	Yes (only for Others)	Enter the IP address of the third-party NAS instance. This IP address must be accessible to the VPC.
Sub Folder	Optional	Enter the directory to be migrated. If you leave this field blank, all data in the root directory (/) is migrated. <div>  Notice: If you enter the Sub Folder, ensure that the directory exists in the NAS instance. Otherwise, the data address fails to be created. </div>

Option	Required	Description
Connection Method	Yes (only for Others)	Select a protocol type for NAS.
Connection Password	Yes (only for Others)	Select whether a password is required. <ul style="list-style-type: none">• No password: If no password is required to access the NAS service, select no password.• Use Password: Enter the required username and password. You must use the username and password to access the shared folder.

**Note:**

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

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

Step 2: Create a destination data address

1. Select Data Online Migration > Data Address and 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 Endpoints .


Option	Required	Description
AccessKeyId and AccessKeySecret	Yes	Enter an AccessKey that is used to migrate data. For more information, see Create an AccessKey .
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 / 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. Select 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 can 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> <p> Notice: You can open a ticket to apply for the permission of creating a cross-country migration job. 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.</p>

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 as the destination files. However, all the other files are migrated.</p> <ul style="list-style-type: none"> • Full: You can specify the Start Time Point of File. Files whose last modified time is later than the specified start time are migrated. After all of the files are migrated, a migration job is closed. When you perform a full migration job again, Data Transport only migrates files that have been changed after the last full migration job. • Incremental: You must specify the Migration Interval and Migration Times to perform an incremental migration job. You must specify the Start Point Time of File. Files whose last modified 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. At the source data address, files that are created or modified between the time when the last migration job started and before the time when this migration starts will be migrated to the destination data address. 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

Option	Required	Description
Start Time Point of File	Yes (only for Full and Incremental)	<ul style="list-style-type: none"> • All: All files are migrated. • 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. The files that are created or modified before the specified time will be disregarded.
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 Sync)	<ul style="list-style-type: none"> • All: All files are synchronized. • 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. Files that are created or modified before the specified time will be skipped.
Start Time of Job	Yes (only for Sync)	<ul style="list-style-type: none"> • Immediately: A synchronization immediately runs after a migration job is complete. • Schedule: You can set the scheduled time and synchronize data at the specified time.
Job Period	Yes (only for Sync)	The time interval between two synchronizations. A synchronization runs whenever a job period ends. Valid units: hour, day, and week.

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

4. Click Next to open the Performance tab.

- When you select Full or Incremental, enter the Data Size and the File Count.



Note:

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

- When 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 simultaneously run a maximum of 20 subtasks. Set an appropriate number of files for each subtask to reduce the time for 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 simultaneous subtasks that run. 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 simultaneously run a maximum of 20 subtasks. 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 40 GB of files. When you set the Subtask File Size to 2 GB, the migration job is separated into 20 simultaneous subtasks. When you set the Subtask File Size to 1 GB, the migration job is separated to 40 subtasks. Each time 20 simultaneous subtasks are run and the other subtasks are spooled.



Note:

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

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 completed.

View the status of a data address

After you create a NAS data address, only one data address status is displayed. The status can be one of the following:

- **Normal:** A data address is created.
- **Creating:** It takes time to create the first data address of an ECS instance (about three minutes). If the status of a data address is in the Creating state for a long time, you can click Refresh in the upper-right corner to update the status.
- **Invalid:** An error occurred while creating a data address. You can verify that the configuration is correct and Data Transport is allowed to access the shared files of an ECS instance. If this issue persists, you can contact [Alibaba Cloud technical support](#).

4 Manage migration jobs

This section 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, one of the following states is displayed:

- **Migrating:** indicates that data is migrating. 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 requirements.

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 a source data address is `nas ://< the name of a mount point >:/< prefix >/< objectName >`. For example, `nas :// 0a28888892 - afr82 . cn - hangzhou . nas . aliyuncs . com :/ 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. T
- Retry after a migration failure

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

clickRetry to migrate failed files. For more information about FAQ related to 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, only one synchronization job status is displayed. The status can be one of the following:

- **Migrating:** indicates that the synchronization job 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 cause of the 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 task 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:** indicates 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 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 from Google Cloud Storage to OSS](#)
- [Migrate data between NAS file systems](#)
- [Migrate data from ECS instances to OSS](#)