

# Alibaba Cloud

Data Online Migration  
Migrate data from OSS to NAS

Document Version: 20220628

# 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 because of product version upgrade, adjustment, or other reasons. Alibaba Cloud reserves the right to modify the content of this document without notice and an updated version of this document will be released through Alibaba Cloud-authorized channels from time to time. You should 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 this document based on the "status quo", "being defective", and "existing functions" of its products and services. 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 take legal responsibility for any errors or lost profits incurred by any organization, company, or individual arising from download, use, or trust in this document. Alibaba Cloud shall not, under any circumstances, take responsibility for any indirect, consequential, punitive, contingent, 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 contents in Alibaba Cloud documents, including but not limited to pictures, architecture design, page layout, and text description, 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 this document 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 directly contact Alibaba Cloud for any errors of this document.

# Document conventions

Style	Description	Example
 <b>Danger</b>	A danger notice 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.
 <b>Warning</b>	A warning notice 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 restart an instance.
 <b>Notice</b>	A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.	 <b>Notice:</b> If the weight is set to 0, the server no longer receives new requests.
 <b>Note</b>	A note indicates supplemental instructions, best practices, tips, and other content.	 <b>Note:</b> You can use Ctrl + A to select all files.
>	Closing angle brackets are used to indicate a multi-level menu cascade.	Click <b>Settings&gt; Network&gt; Set network type</b> .
<b>Bold</b>	Bold formatting is used for buttons, menus, page names, and other UI elements.	Click <b>OK</b> .
<code>Courier font</code>	Courier font is used for commands	Run the <code>cd /d C:/window</code> command to enter the Windows system folder.
<i>Italic</i>	Italic formatting is used for parameters and variables.	<code>bae log list --instanceid</code> <i>Instance_ID</i>
[ ] or [a b]	This format is used for an optional value, where only one item can be selected.	<code>ipconfig [-all -t]</code>
{ } or {a b}	This format is used for a required value, where only one item can be selected.	<code>switch {active stand}</code>

# Table of Contents

1. Background information .....	05
2. Prerequisites .....	06
3. Migrate data .....	08
4. Manage migration jobs .....	16

# 1. Background information

This topic describes how to migrate data from Alibaba Cloud Object Storage Service (OSS) to Alibaba Cloud Network Attached Storage (NAS).

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 NAS.

With Data Transport, you only need to log on to the console, specify a source data address and a destination NAS data address, and then create a migration job. After a migration job is started, you can manage the job. For example, you can view the progress and status of the job and view the list of successful migration files and the list of failed migration files.

This guide includes the following topics:

- [Prerequisites](#)
- [Migrate data](#)
- [Manage migration jobs](#)

## 2. Prerequisites


This topic describes what you need to prepare before migration.

### Precautions

If the account that hosts Apsara File Storage NAS is different from the account that hosts Object Storage Service (OSS), log on to the **Data Transport** console with the account that hosts NAS to create an NAS data address.


### Estimate the amount of data to be migrated.

Estimate the size and the number of files to be migrated. Log on to the **OSS console**, click the name of the bucket to be migrated, and then check the size and number of objects (files).

 **Note** To ensure a successful migration, you must enter an appropriate size and number of files when **you create a migration job**.

### Create and authorize a RAM user

1. Log on to the **RAM console**.
2. In the left-side navigation pane, choose **Identities > Users**.
3. On the **Users** page, click **Create User**.
4. On the **Create User** page, specify Logon Name and Display Name in the User Account Information section.
5. In the Access Mode section, select Console Access and OpenAPI Access. Then, save the generated logon name, password, AccessKey ID, and AccessKey secret.
  - Console Access: If you select this option, you must configure the console password, password reset settings, and multi-factor authentication settings.
  - OpenAPI Access: If you select this option, an AccessKey pair is automatically created for the RAM user. The RAM user can call API operations or use other development tools to access Alibaba Cloud resources.

 **Note** If you need to migrate data across accounts, you must save the logon name, password, AccessKey ID, and AccessKey secret that are generated for each RAM user by the corresponding Alibaba Cloud account.

6. After the RAM user is created, return to the **Users** page. Find the RAM user and click **Add Permissions** in the Actions column. In the panel that appears, select the AliyunOSSFullAccess and AliyunMGWFullAccess policies and click OK. This way, the RAM user is granted the permissions to read and write files from OSS and perform online data migrations.
7. In the left-side navigation pane, click **Overview**.
8. On the page that appears, navigate to the Account Management section and click the link under RAM user logon. On the page that appears, enter the logon name and password of the RAM user to log on to the Alibaba Cloud Management Console.

### Apsara File Storage NAS

- You must mount your Apsara File Storage NAS file system on an Elastic Compute Service (ECS) instance. For more information, see [Mount an NFS file system on a Windows ECS instance](#).
- If you configure a permission group for the Apsara File Storage NAS file system, you must add all IP addresses in the virtual private cloud (VPC) in which the ECS instance is deployed to the authorized address list. For more information, see [Manage a permission group](#).

# 3.Migrate data

This topic describes how to migrate data.


## Usage notes

When you perform an online migration job, take note of the following items:


- A migration job occupies the network resources of the source and destination data addresses. To ensure business continuity, we recommend that you specify a rate limit for your migration job or run your migration job during off-peak hours.
- Before an online migration job starts, the system checks the files at the source data address and the destination data address. If the source and destination have files with the same name, and the last modification time of the source file is later than the last modification time of the destination file, the destination file is overwritten. If both files are important and contain different information, we recommend that you change the name of one file or back up the destination file.

## Step 1: Create a source data address

1. Log on to the [Alibaba Cloud Data Transport console](#).
2. In the left-side navigation pane, choose **Data Online Migration > Data Address**. On the page that appears, click **Create Data Address**.
3. In the **Create Data Address** panel, configure the parameters and click **OK**. The following table describes the parameters.

Parameter	Required	Description
Data types	Yes	Select <b>OSS</b> .
Data Name	Yes	Enter a name. The name must be 3 to 63 characters in length. The name cannot contain special characters except for hyphens (-) and underscores (_)
Data Region	Yes	Select the region where the source data address resides, such as <b>China (Zhangjiakou)</b> .
Enable Transfer Acceleration	No	<p>If you want to use Data Online Migration together with the transfer acceleration feature of Object Storage Service (OSS), you must enable the transfer acceleration feature for buckets. The transfer acceleration feature takes effect within 30 minutes after it is enabled. After you enable the feature, wait for 30 minutes before you create a migration job.</p> <div> <b>Notice</b> If you use the transfer acceleration feature to access OSS buckets, you are charged additional transfer acceleration fees. For more information, see <a href="#">Transfer acceleration</a>.</div>






Parameter	Required	Description
OSS Endpoint	Yes	<p>Select an endpoint based on the region in which your data is stored. For more information, see <a href="#">Regions and endpoints</a>.</p> <ul style="list-style-type: none"> <li>http://oss-cn-endpoint.aliyuncs.com: indicates that you use an HTTP-based endpoint to access OSS over the Internet.</li> <li>https://oss-cn-endpoint.aliyuncs.com: indicates that you use an HTTPS-based endpoint to access OSS over the Internet.</li> <li>http://oss-cn-qingdao-internal.aliyuncs.com: indicates that you use an internal HTTP-based endpoint to access OSS.</li> <li>https://oss-cn-qingdao-internal.aliyuncs.com: indicates that you use an internal HTTPS-based endpoint to access OSS.</li> </ul> <div>  <b>Notice</b> For example, an OSS data address uses a private endpoint and is used as the source data address when you create a migration job. In this case, the destination data address can be only an Apsara File Storage NAS or OSS data address in the same region. </div>
AccessKey Id	Yes	Specify the AccessKey pair that is used to migrate data. For more information, see <a href="#">Create and authorize a RAM user</a> .
AccessKey Secret	Yes	
OSS Bucket	Yes	Select the bucket in which the data that you want to migrate is stored.
OSS Prefix	Yes	An OSS prefix cannot start with a forward slash (/). An OSS prefix must end with a forward slash (/). For example, you can specify <code>data/to/oss/</code> as the OSS prefix.

- (Optional) If the system prompts that this feature is in public preview, click **Application** to apply to use the feature.
- (Optional) Enter the required information and submit the application. After the application is approved, the system sends a text message to notify you.

## Step 2: Create a destination data address


- In the left-side navigation pane, choose **Data Online Migration > Data Address**. On the page that appears, click **Create Data Address**.
- In the **Create Data Address** panel, configure the parameters and click **OK**. The following table describes the parameters.

Parameter	Required	Description
Data types	Yes	Select <b>NAS</b> .
Data Name	Yes	Enter a name. The name must be 3 to 63 characters in length. The name cannot contain special characters except for hyphens (-) and underscores (_)
Data Region	Yes	Select the region where the Network Attached Storage (NAS) file system resides.
NAS Type	Yes	Select <i>Alibaba Cloud</i> .
File System	Yes	Select the corresponding NAS file system.
Mount Point	Yes	Select the mount target of the NAS file system.   <b>Notice</b> You can mount a NAS file system only on a destination workload that resides in a virtual private cloud (VPC). The classic network is not supported.
Sub Folder	No	Select a subdirectory to store migrated data. If you do not configure this parameter, the root directory (/) is used.   <b>Notice</b> If you specify a subdirectory, make sure that the subdirectory exists on the NAS server. Otherwise, the data address fails to be created.

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

### Step 3: Create a migration job

1. In the left-side navigation pane, choose **Data Online Migration > Migration Jobs**. On the page that appears, click **Create Job**.
2. In the **Create Job** panel, read the terms of the migration service and select **I understand the above terms and conditions, and apply for opening data migration service**. Then, click **Next**.
3. In the **Fee Reminder** dialog box, click **Yes, Go Ahead**.
4. In the **Job Config** step, configure the parameters and click **Next**. The following table describes the parameters.

Parameter	Required	Description
Job Name	Yes	Enter a job name. The name must be 3 to 63 characters in length and can contain only lowercase letters, digits, and hyphens (-). It cannot start or end with a hyphen (-).
Source Data Address	Yes	Select the source data address that you created.
Destination Data Address	Yes	Select the destination data address that you created.
Specified Directory	No	<p>Specify directories in which the files and subdirectories are migrated or not migrated.</p> <ul style="list-style-type: none"> <li>◦ <b>Do not filter:</b> All data from the source data address is migrated.</li> <li>◦ <b>Exclude:</b> The files and subdirectories in the specified directories are not migrated.</li> <li>◦ <b>Contain:</b> Only the files and subdirectories in the specified directories are migrated.</li> </ul> <div> <p> <b>Note</b></p> <ul style="list-style-type: none"> <li>◦ Before you configure the Specified Directory parameter, you must configure a whitelist. For more information, see <a href="#">Advanced features</a>.</li> <li>◦ A directory name cannot start with a forward slash (/) or a backslash (\), and cannot contain double slashes (/ /), double periods (..), or double quotation marks ("). The character string that consists of all the specified directory names cannot exceed 10 KB in length.</li> <li>◦ A directory name must end with a forward slash (/). For example, you can specify <i>docs/</i> as the directory name.</li> <li>◦ You can specify up to 20 directories of the Exclude or Contain type.</li> </ul> </div>
		<p>Select the data migration mode.</p> <ul style="list-style-type: none"> <li>◦ <b>Full:</b> The system migrates all data from the source data address to the destination data address. You must configure the <b>Start Time Point of File</b> parameter. The system migrates all data whose last modification time is later than the specified time. After all data is migrated, the migration job ends.</li> </ul>


Parameter	Required	Description
Migration Type	Yes	<p>If you change the data at the source data address after the migration job is completed, you can submit another job to migrate all data. In this case, the system migrates only the changed data.</p> <ul style="list-style-type: none"> <li>◦ <b>Incremental:</b> The system runs a migration job based on the values that you specified for the <b>Migration Interval</b> and <b>Migration Times</b> parameters. <ul style="list-style-type: none"> <li>■ You must configure the <b>Start Time Point of File</b> parameter. During the first migration, the system migrates all data whose last modification time is later than the specified time. After the first migration job is completed, incremental migration jobs are performed based on the value that you specified for the <b>Migration Interval</b> parameter. For each incremental migration, the system migrates only the data that is created or modified after the previous migration starts and before the current migration starts.</li> <li>■ If you set the Migration Times parameter to N, full migration is performed once and then incremental migration is performed (N - 1) times.</li> </ul> </li> </ul> <p>For example, the current time is 08:00, March 10, 2019 and you set the Migration Interval parameter to 1, the Migration Times parameter to 5, and the <b>Start Time Point of File</b> parameter to 08:00, March 5, 2019. When the first migration starts, the system migrates all files whose last modification time is between 08:00, March 5, 2019 and 08:00, March 10, 2019. In this example, the first migration requires one hour to complete and the second migration starts at 10:00, March 10, 2019. The duration from 08:00 to 10:00 consists of one hour for the first migration process and one hour for the migration interval. During the second migration, the system migrates the files whose last modification time is between 08:00, March 10, 2019 and 10:00, March 10, 2019. The migration job consists of one full migration and four incremental migrations.</p>

Parameter	Required	Description
		<p><b>Notice</b> Before you start a full or incremental migration job, the system compares the files at the source data address with the files at the destination data address. If a source file has the same name as a destination file, the destination file is overwritten when one of the following conditions is met:</p> <ul style="list-style-type: none"> <li>◦ The Content-Type values of the source file and the destination file are different.</li> <li>◦ The last modification time of the source file is later than that of the destination file.</li> <li>◦ The size of the source file is different from that of the destination file.</li> </ul>
<b>Start Time Point of File</b>	Yes	<p>Specify a time to filter data to be migrated. Data will be migrated if it is created or modified after the specified time.</p> <ul style="list-style-type: none"> <li>◦ All: All files are migrated.</li> <li>◦ Assign: Only the files that are created or modified after the specified time are migrated.</li> </ul> <p>For example, if you set the time to 08:00:00, November 1, 2018, only the files that are created or modified after 08:00:00, November 1, 2018 are migrated.</p>
<b>Migration Interval</b>	This parameter is required when you set the Migration Type parameter to Incremental.	The default value is 1 and the maximum value is 24. Unit: hours.
<b>Migration Times</b>	This parameter is required when you set the Migration Type parameter to Incremental.	The default value is 1 and the maximum value is 30.


Parameter	Required	Description
File Overwrite Method	Yes	<p>The method that is used to process the source file whose name is the same as that of a destination file. Valid values:</p> <ul style="list-style-type: none"><li>◦ LastModified: If a source file has the same name as a destination file, the system compares the last modification time that is indicated by the LastModified property of the files.<ul style="list-style-type: none"><li>■ If the last modification time of the source file is later than that of the destination file, the source file is migrated and the destination file is overwritten.</li><li>■ If the last modification time of the source file is earlier than that of the destination file, the source file is not migrated and the destination file is retained.</li><li>■ If the two files have the same last modification time, the system checks the values of the Size and Content-Type properties of the files.<p>If the files have the same Size and Content-Type values, the source file is not migrated. If the two files have different values of at least one property, the source file is migrated and the destination file is overwritten.</p></li></ul></li><li>◦ Condition: If a source file has the same name as a destination file, the system compares the values of the LastModified, Size, and Content-Type properties of the two files.<ul style="list-style-type: none"><li>■ If all property values of the two files are the same, the source file is not migrated.</li><li>■ If the two files have different values of at least one property, the source file is migrated and the destination file is overwritten.</li></ul></li><li>◦ All: If a source file has the same name as a destination file, the system performs no comparison and directly overwrites the destination file with the source file.</li><li>◦ No: If a source file has the same name as a destination file, the system performs no comparison and directly skips the source file in the migration.</li></ul>

5. In the **Performance** step, go to the **Data Prediction** section and configure the **Data Size** and

**File Count** parameters.

 **Note** To ensure a successful migration job, we recommend that you estimate the volume of data that you want to migrate as accurately as possible. For more information, see [Estimate the amount of data to be migrated..](#)

6. (Optional) In the **Performance** step, go to the **Flow Control** section, configure the **Time Range** and **Max Flow(MB/s)** parameters, and then click **Add**.

 **Note** To ensure business continuity, we recommend that you configure the **Time Range** and **Max Flow** parameters based on the workload peaks and troughs.

7. Click **Create** and wait until the migration job is complete.

## 4. Manage migration jobs

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

Subsequent operations vary with the types of migration jobs. You can manage migration jobs of different types as follows.

### Manage full migration and incremental migration jobs


- View the status of a full or incremental migration job

After you create a migration job, one of the following states is displayed for the job:

- Migrating: Data is being migrated. Wait until the migration job is completed.
- Create Failed: The migration job has failed to be created. You can view the cause of the failure and create another migration job.
- Finished: The migration job is completed. You can view the migration report.
- Failed: The migration job has failed. You can view the migration report and migrate the files that have failed to be migrated.

- Modify the throttling settings of a migration job

During migration, you can modify the throttling settings of a migration job based on your needs.

- In the **Data Transport console**, choose **Data Online Migration > Migration Jobs**. On the Migration Jobs page, find the migration job and click **Manage**.
- Click **Stop** and confirm that the job is stopped.
- On the Flow Control Time Schedule chart, click **Reset**.
  - To add a throttling setting, select an appropriate time range and maximum flow, and then click **Add**.
  - To delete a throttling setting, click  next to the throttling setting.
  - To modify a throttling setting, you must delete the current setting. Then, you can add a new throttling setting.
- Click **OK** and then click **Start** to restart the job.

- View a migration report

- On the Migration Jobs page, find the migration job and click **Manage**.
- Click **Generate Migration Report**. After a report is generated, click **Export** to export the report.

In a migration report, the following files appear in the **File lists** section:


- The file whose name ends with `_total_list`. This file lists all files that need to be migrated.
  - The file whose name ends with `_completed_list`. This file lists the files that are migrated.
  - The file whose name ends with `_error_list`. This file lists the files that failed to be migrated.
- At the destination NAS data address, find the generated folder `aliyun_mgw_import_report/`. The folder includes the three files listed in the migration report. You can download the files and




view the detailed list included in each file.

Each list consists of the following columns:

- The columns of the file name that ends with `_total_list` include the source data address, file name, source version ID, and destination version ID. The columns also display whether the job version is latest at source data address and whether the job version is deleted at source data address. The last two columns display the file size (measured in bytes) and time when the file was last modified. 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 columns of the file name ends with `_completed_list` include the file name, source version ID, destination version ID. The columns also display whether the job version is latest at source data address and whether the job version is deleted at source data address. The last four columns display the file size (measured in bytes), CRC-64 checksum, time when the migration job was completed, and whether the migration was skipped.

 **Note** Skip migration: indicates whether the file was skipped during migration. Valid values: 1 and 0. The value 1 indicates that the file was skipped during migration. The value 0 indicates that the file was migrated. The value of this field depends on the value of the **File Overwrite Method** parameter.

- The columns of the file name ends with `_error_list` include the file name, source version ID, destination version ID. The columns also display whether the job version is latest at source data address and whether the job version is deleted at source data address. The last three columns display the time when the migration job started, time when the migration job ended, and error description.

 **Note** The following four fields apply only when the migration job has multiple versions.

- Source version ID: the version ID of the file at the source data address.
- Destination version ID: the version ID of the file at the destination data address.
- Latest at source data address: indicates whether the current version is the latest version of the file at the source data address. Valid values: true and false.
- Deleted at source data address: indicates whether the current version is deleted at the source data address. Valid values: true and false.

- **Retry a job after a migration failure**

If a migration job fails, you can check the generated file whose name ends in `_error_list` to identify the cause of failure and resolve the issue. On the Migration Jobs page, find the failed job, click **Manage**, and click **Retry** to migrate the files of the job again. For more information, see [Common causes of a migration failure and solutions](#).