

Alibaba Cloud

**Data Online Migration
Migrate data from OSS to NAS**

Document Version: 20200907

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
 Danger	A danger notice 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.
 Warning	A warning notice 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 restart an instance.
 Notice	A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.	 Notice: If the weight is set to 0, the server no longer receives new requests.
 Note	A note indicates supplemental instructions, best practices, tips, and other content.	 Note: You can use Ctrl + A to select all files.
>	Closing angle brackets are used to indicate a multi-level menu cascade.	Click Settings> Network> Set network type .
Bold	Bold formatting is used for buttons, menus, page names, and other UI elements.	Click OK .
Courier font	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. Create a migration job	08
4. Manage migration jobs	17

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](#)
- [Create a migration job](#)
- [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.

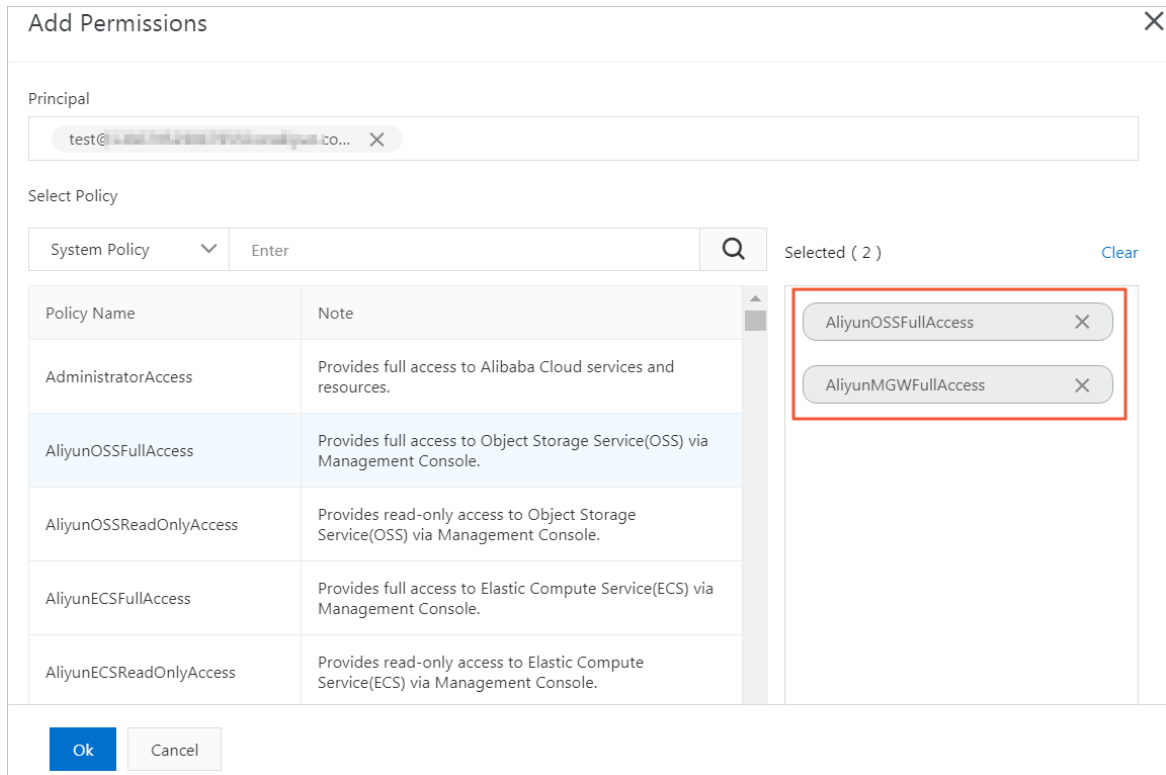
Estimate the amount of data to be migrated.

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).

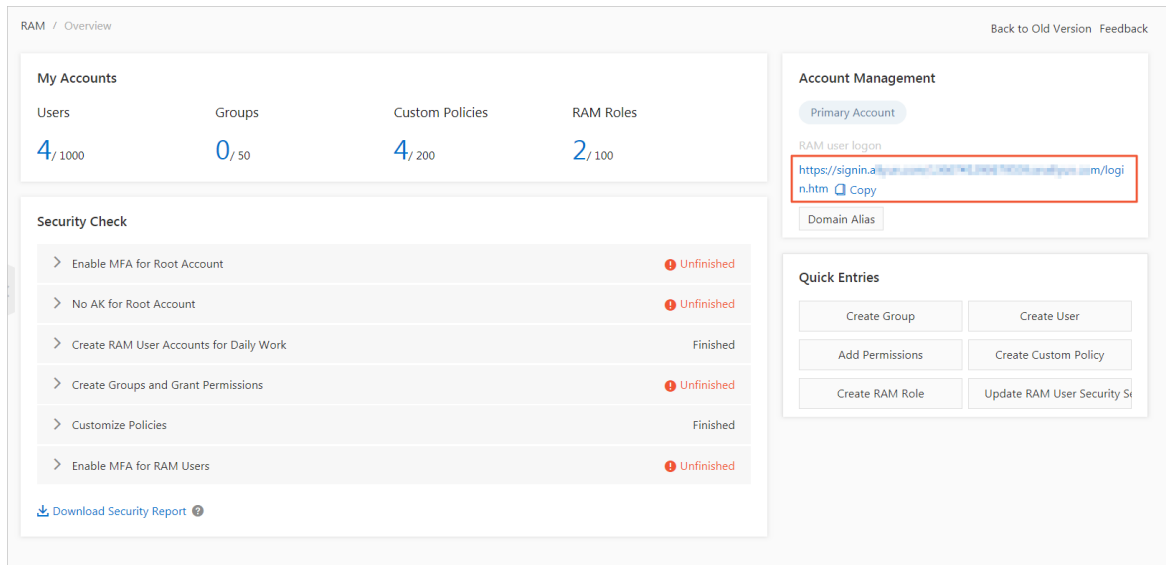
 **Note** To ensure a successful migration, you must enter an appropriate size and number of files when **you create a migration job**.

Create and authorize a RAM user

1. Log on to the **RAM console**.
2. Choose **Identities > Users > Create User**.
3. Select **Console Password Logon and Programmatic Access**, and enter the required user account information.
4. Save the new account, password, AccessKey ID, and AccessKey secret.
5. Find the user account, and click **Add Permissions** to grant the OSS read/write permission (AliyunOSSFullAccess) and Data Transport management permission (AliyunMGWFullAccess) to the RAM user.



- 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 new RAM user to log on to the console.



Apsara File Storage NAS

- For more information about how to add a mount target to an NAS file system, see [Access an NFS file system from a Windows ECS instance](#).
- If access to an NAS file system is restricted, you must allow access to the NAS file system from all IP addresses in the VPC where the NAS file system resides. For more information, see [Control access to a file system](#).

3. Create a migration job

This topic describes the precautions and procedure 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 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 the source data address and the destination data address are checked. The files at the destination data address are overwritten if the source files have the same name as the destination files and have a later modification time. If two files have the same name but different content, you must change the name of one file or back up the files.

Step 1: Create a source data address

1. Log on to the [Data Transport console](#).
2. Choose **Data Online Migration > Data Address**, and click **Create Data Address**.
3. In the **Create Data Address** dialog box, configure the parameters and click **OK**.

Parameter	Required	Description
Data Type	Yes	Select OSS.
Data Region	Yes	Select a region where the source data address is located. For example, China (Zhangjiakou-Beijing Winter Olympics).
Data Name	Yes	A data name is 3 to 63 characters in length. Special characters are not supported, except for hyphens (-) and underscores (_).

Parameter	Required	Description
OSS Endpoint	Yes	<p>Select an endpoint based on the region where your data is located.</p> <ul style="list-style-type: none"> You can use an HTTP endpoint to access OSS from the Internet, for example, <code>http://oss-cn-endpoint.aliyuncs.com</code>. You can also use an HTTPS endpoint to access OSS from the Internet, for example, <code>https://oss-cn-endpoint.aliyuncs.com</code>. You can use an internal HTTP endpoint to access OSS from the internal network, for example, <code>http://oss-cn-qingdao-internal.aliyuncs.com</code>. You can use an internal HTTPS endpoint to access OSS from the internal network, for example, <code>https://oss-cn-qingdao-internal.aliyuncs.com</code>. <p>For more information about OSS endpoints, see Regions and endpoints.</p> <div style="border: 1px solid #ccc; background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p> Notice When creating a migration job, you can use an OSS bucket that is deployed in an internal network as the source data address. In this case, the destination data address can only be a network-attached storage (NAS) file system or OSS bucket that is deployed in the same region.</p> </div>
AccessKey Id and AccessKey Secret	Yes	Enter an AccessKey pair that is used to migrate data. For more information, see Create and authorize a RAM user .
OSS Bucket	Yes	Select a bucket where data to be migrated is stored.
OSS Prefix	Yes	An OSS prefix cannot start with a forward slash (/) and must end with a forward slash (/). For example, <code>data/to/oss/</code> .



4. Apply for the permission to use this feature. This step is required because this feature is in


public preview. Click **Application**.

5. Enter the required information and submit the application for using this feature. After the application is approved, you will receive a short message service (SMS) notification.

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 parameters and click **OK**.

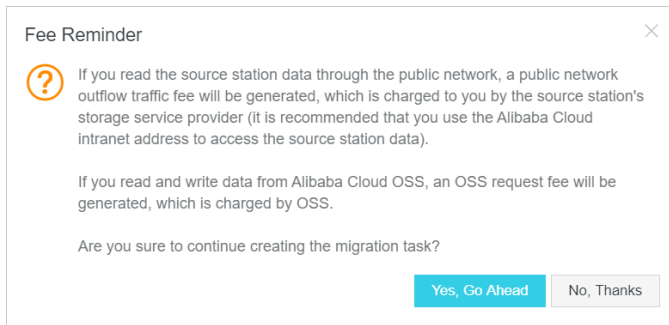
Parameter	Required	Description
Data Type	Yes	Select NAS .
Data Region	Yes	Select the region where the NAS file system is located.
Data Name	Yes	A data name is 3 to 63 characters in length. Special characters are not supported, except for hyphens (-) and underscores (_).
NAS Type	Yes	Select <i>Alibaba Cloud</i> .
File System	Yes	Select the destination NAS file system.
Mount Point	Yes	Select the mount point of the destination NAS file system.  Notice You can only mount a NAS file system on an ECS instance that is located in a VPC. The classic network is not supported.
Sub Folder	No	Select a subdirectory to store migrated data. If you leave this field blank, migrated data is stored in the root directory (/).  Notice Ensure that the specified 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. Choose **Data Online Migration > Migration Jobs**, and click **Create Job**.
2. In the **Create Job** dialog box, read the **Terms of Migration Service**, select **I understand the above terms and conditions**, and apply for opening **Data Transport**, and click **Next**. Then,

the Fee Reminder dialog box appears.




3. In the Create Job dialog box, configure the parameters and click Next.

Parameter	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 source data address that you have created.
Destination Data Address	Yes	Select the destination data address that you have created.  Notice If the source data address and the destination data address are located in different countries, you can submit a ticket to request permissions to create a cross-national migration job. You must ensure that your business is legitimate, data transit conforms to local rules and regulations, and data does not include illegal information.

Parameter	Required	Description
Specified Directory	No	<ul style="list-style-type: none"> ◦ Do not filter: All data at the source data address is migrated. ◦ Exclude: During migration, the files and subdirectories under the specified directory are not migrated. ◦ Contain: During migration, only the files and subdirectories under the specified directory are migrated. <div style="background-color: #e1f5fe; padding: 10px; margin-top: 10px;"> <p> Note</p> <ul style="list-style-type: none"> ◦ A directory cannot start with a forward slash (/) or a backslash (\), and cannot contain double slashes (//), double periods (..), or double quotation marks ("). The total length of characters you enter for the directories is constrained by a maximum size of 10 KB. ◦ A directory must end with a forward slash (/), for example, <i>docs/</i>. ◦ You can specify a maximum of 20 directories of the Exclude or Contain type. </div>
		<ul style="list-style-type: none"> ◦ Full: You can specify the Start Time Point of File parameter. Files with the last modification time later than the specified start time point will be migrated. After the


Parameter	Required	Description
Migration Type	Yes	<p>files are migrated, the migration job is closed. You can submit the job again if the data at the source data address changes. In this case, Data Transport only migrates the data that is changed after the previous job.</p> <ul style="list-style-type: none"> ○ Incremental: You must specify the Migration Interval and Migration Times parameters to perform an incremental migration job. You must specify the Start Point Time of File parameter. Files with the last modification time later than the specified start time point 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 after the previous migration started and before 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, the migration times to 5, and the start time point to 2019/03/05 08:00. The present time is 2019/03/10 08:00. When the first migration starts, Data Transport migrates files that are modified 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 specified migration interval. During the second migration, if the last modification time of files is between 2019/03/10 08:00 and 2019/03/10 10:00, these files are migrated. The migration job includes a full migration and four incremental migrations. ○ Sync: You can synchronize data from the source data address to the destination data address. A synchronization job continues to run based on the specified synchronization interval until you manually stop the job. When a synchronization job is performed for the first time, files are synchronized based on the specified start time point. After the first synchronization is complete, files that are created or modified after the start time of the last synchronization will be synchronized when the specified synchronization interval ends. For example, the first synchronization is performed at 2018/11/01 08:00. For the second

Parameter	Required	Description
		<p>synchronization, files that are created or modified after 2018/11/01 08:00 are synchronized.</p> <div style="background-color: #e1f5fe; padding: 10px; border: 1px solid #cfe2f3;"> <p> Notice</p> <ul style="list-style-type: none"> ○ You can select Sync if the source data address and the destination data address are located in the same region. Otherwise, you cannot select this option. ○ Before you start a migration job of the Full, Incremental, or Sync type, Data Transport compares files of the source data address with those of the destination data address. If a source file has the same name as a destination file, the destination file is overwritten when either of the following conditions is met: <ul style="list-style-type: none"> ■ The source file has a later modification time. ■ The size of the source file is different from that of the destination file. </div>
Start Time Point of File	Yes (only for full and incremental migration)	<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 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 are skipped.
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.

Parameter	Required	Description
Start Time Point of File	Yes (only for synchronization)	<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 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 are skipped.
Start Time of Job	Yes (only for synchronization)	<ul style="list-style-type: none"> ○ Immediately: A synchronization job 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 synchronization)	The time interval between two synchronizations. A synchronization job starts each time an interval ends. Unit: hour, day, and week.
Don't trigger new task if another task running	Yes (only for synchronization)	Specifies whether to start a synchronization job if the last synchronization job is still running when the synchronization interval ends. You must combine the use of this parameter with Job Period. Assume that you set Job Period to 1 hour and do not select this parameter. The next synchronization job runs regardless of whether the last synchronization job is complete within one hour. By default, this parameter is selected.


4. Click Next to go to the Performance tab.

- If you select **Full** or **Incremental** for the job type, specify the **Data Size** and **File Count** parameters.


 **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** for the job type, specify the **Subtask File Count** and **Subtask File Size** parameters.
 - **Subtask File Count:** You can separate a migration job into multiple subtasks based on the number of files that you specify. A maximum of 20 subtasks can run at a time. Set an 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. If you set the Subtask File Count to 500, the migration job is separated into 20 subtasks that run at the same time. If 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. A maximum of 20 subtasks can run at a time. Set an 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. If you set the Subtask File Size to 2 GB, the migration job is separated into 20 subtasks that run at the same time. If you set the Subtask File Size to 1 GB, the migration job is separated into 40 subtasks. Each time 20 subtasks run and the remaining subtasks are queued.

 **Note** Subtasks are generated if the specified Subtask File Count or Subtask File Size parameter value is reached. If the number of files reaches the specified Subtask File Count parameter value but the file size does not reach the specified Subtask File Size parameter value, subtasks are generated based on the number of files. If the file size reaches the specified Subtask File Size parameter value but the number of files does not reach the specified Subtask File Count parameter value, subtasks are generated based on the file size. Assume that you set the Subtask File Count parameter to 1000 and Subtask File Size parameter to 1 GB. If the number of files reaches 1,000 but the file size does not reach 1 GB, subtasks are generated based on the number of files. If the file size reaches 1 GB but the number of files does not reach 1,000, subtasks are generated based on the file size.

5. **Optional.** On the **Performance** tab, navigate to the **Flow Control** section, specify the **Time Range** and **Max Flow** parameters, and then click **Add**.

 **Note** To ensure business continuity, we recommend that you specify the **Time Range** and **Max Flow** parameters based on the fluctuation of workloads.

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

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:** requires about three minutes to create the first NAS data address. This process takes a while. 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 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 migration job

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

- **Migrating.** This state indicates that data is being migrated. Wait until the migration job is completed.
- **Create Failed.** This state indicates that the migration job failed to be created. You can view the cause of the failure and create a new migration job.
- **Completed.** This state indicates that the migration job is completed. You can view the migration report.
- **Failed.** This state indicates that the migration job failed. You can view the migration report and migrate the files that failed to be migrated.

- Modify flow control settings

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

- In the [Data Transport console](#), choose **Data Online Migration > Migration Jobs**. On the Migration Jobs page, find a migration job and click **Manage**.
- Click **Stop** and ensure that the job is stopped.
- On the Flow Control Time Schedule chart, click **Reset**.
 - To add a flow control setting, select an appropriate time range and maximum 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 delete the previous setting and add a new flow control setting.
- Click **OK** and click **Start** to restart the job.

- View a migration report

- On the Migration Jobs page, find a 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 contains a list of all files that need to be migrated.
- The file whose name ends with `_completed_list`. This file contains a list of files that are successfully migrated.

- The file whose name ends with `_error_list` . This file contains a list of files that failed to be migrated.
- iii. At the destination NAS data address, find the generated folder *aliyun_mgw_import_report* /. The folder includes the three files that appear in the migration report. You can download these files to view the detailed lists.

Each list consists of four columns. The description of four columns is provided as follows:

- For the file whose name ends with `_total_list`, the four columns include the source data address, name, size (measured in bytes), and last modification time of each file that needs to be migrated. 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` .
 - For the file whose name ends with `_completed_list`, the four columns include the name, size (measured in Bytes), CRC-64 checksum, and completion time of each migrated file.
 - For the file whose name ends with `_error_list`, the four columns include the name, start time, completion time, and error description of each file that failed to be migrated.
- **Retry a failed migration job**

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, find the failed job, click **Manage**, and click **Retry** to remigrate the files that failed to be migrated. For more information about FAQ for migration failures, see [Common causes of a migration failure and solutions](#).