Alibaba Cloud
Elastic Compute Service

Migration service

Issue: 20190318

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 `cd / d  C :/ windows` command to enter the Windows system folder.
Italics	It is used for parameters and variables.	`bae  log  list --` `instanceid` *`Instance_ID`*
[] or [a|b]	It indicates that it is a optional value, and only one item can be selected.	`ipconfig` *`[-all|-t]`*

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

Contents

1 Cloud Migration tool for P2V and V2V

1.1 Cloud Migration tool overview

This topic describes the usage of the Cloud Migration tool in Physical to Virtual (P2V) and Virtual to Virtual (V2V) migration scenarios.

Introduction

The Cloud Migration tool allows you to migrate your physical servers, Virtual Machines (VMs), and network hosts of other cloud platforms to Alibaba Cloud ECS to implement unified resource deployment and hybrid cloud computing architecture. The Cloud Migration tool applies to such migration scenarios as P2V (migrating physical IDCs to ECS) and V2V (migrating VMs or cloud hosts to ECS).

> **Note:**
> source server in this topic and other topics about the Cloud Migration tool refers to an IDC server, VM, or a network host of another cloud platform, including, but not limited to, AWS, Microsoft Azure, Google Cloud Platform, Tencent Cloud, and HUAWEI CLOUD.

After you download the Cloud Migration tool to your source server, the Cloud Migration tool can be used to create snapshots of the OS, applications, and application data in the disk partitions of the source server according to your configuration file. Then, the Cloud Migration tool synchronizes data and generates a custom image at the ECS side. You can use the custom image to quickly create an ECS instance. The following figure shows the workflow of how to migrate your source server by using the Cloud Migration tool.

Applicable operating systems

The Cloud Migration tool supports physical machines, VMs, or cloud hosts that are installed with the following 32-bit or 64-bit operating systems.

Windows	Linux
· Windows Server 2003 · Windows Server 2008 · Windows Server 2012 · Windows Server 2016	· Amazon Linux 2014 or later · CentOS 5/6/7 · Debian 7/8/9 · Gentoo 13.0 · OpenSUSE 13.1 · Oracle Linux 5/6/7 · Red Hat 5/6/7 · SUSE 11.4/12.1/12.2 · Ubuntu 10/12/14/16/17

If you need to migrate an operating system that is not listed in the preceding table, we recommend that you carefully read *Migrate your server to Alibaba Cloud by using the Cloud Migration tool*.

Billing details

The Cloud Migration tool is provided free of charge. However, you may be charged for using the following resources:

· During a cloud migration, an ECS instance named INSTANCE_FOR_GOTOALIYUN is automatically created under your Alibaba Cloud account as an intermediate instance. The intermediate instance is billed by the Pay-As-You-Go billing method . Therefore, you must make sure that the credit card associated to your Alibaba Cloud account has a sufficient balance for this transaction. .

> Note:
>
> If the cloud migration fails, the instance is retained in the ECS console. If you no longer require the instance, you can log on to the ECS console and *release the instance* to avoid incurring unnecessary charges.

References

· The Cloud Migration tool can also be used to shrink your cloud disk volume. For more information, see *Shrink disk volume*.

· You can also *import images* to ECS to implement P2V or V2V server migration.

· For information about database migration, see *Data migration*.

Update history

The following table describes the update history of the Cloud Migration tool.

Update date	Version	Description
January 23 , 2019	1.3.2.3	· Optimized HTTP access timeout settings. · Optimized the Windows restoration check function. · Added support for migration of large Windows data disks.
January 11 , 2019	1.3.2	· Fixed incompatible cloud-init configurations. · Added support for automatic mount of Linux data disks. · Added support for migration of large Linux data disks. · Optimized support for the SUSE/SLES OS.
November 12, 2018	1.3.1	· Added support for transferring data through SSH and for dynamic SSH security token authentication. · Optimized the transfer performance for Windows. · Optimized support for Amazon Linux, Oracle Linux, and SLES OSs. · Fixed several bugs.
August 29, 2018	1.3.0	· Increased the migration speed and fixed several bugs. · Added automatic restoration for Windows servers, eliminating the need to manually run the file permission resetting tool.
July 4, 2018	1.2.9.5	· Added support for migration of Ubuntu 17 servers. · Optimized the client functions of the Cloud Migration tool and fixed several bugs.
June 11, 2018	1.2.9	· Added a simplified Wizard GUI for the Cloud Migration tool in Windows. · Restored the default filter option for some Windows data disk files and directories that cannot be found.
April 28, 2018	1.2.8	· Added command line parameter options, which can be queried by running the `-- help` command in the directory where the Cloud Migration tool is located. · Added support for migrations from a leased-line VPC to Alibaba Cloud.

Update date	Version	Description
April 3, 2018	1.2.6	· Fixed the bug in which the parent directory of a Linux server data disk copied data from subdirectories repeatedly. · Added file transfer parameters.
March 7, 2018	1.2.3	· Shortened the first startup attempt for Linux instances. · Rectified the repeated disk space insufficiency prompt that occurred at every instance startup. Now the prompt displays only when disk space is determined to be insufficient. · Added support for Ubuntu 10 server.
February 8, 2018	1.2.1	· Simplified user interactions during the migration process. · Added support for temporarily disabling the SELinux feature of a Linux on-premises server.
January 18, 2018	1.2.0	· Added support for migration of more resources. · Enhanced the efficiency and stability of image creation.
January 11, 2018	1.1.8	· Added support for the SUSE 12 SP2 server. · Increased the connection speed. · Optimized the layout of migration logs. · Fixed the bug related to NetworkManager.
December 21, 2017	1.1.7	· Added support for the SUSE 12 SP1 server. · Added support for limiting the maximum data transfer bandwidth.
December 14, 2017	1.1.6	· Added support to scan for the latest release of the Cloud Migration tool. · Fixed error 6144 in data transfer. · Added support for proofreading the request parameters specified in the user_config.json configuration file.
December 8, 2017	1.1.5	· Fixed the bug of Linux data disk directory. · Highlighted error messages in the migration logs.
December 1, 2017	1.1.3	Added support for the Debian server.

1.2 Migrate to Alibaba Cloud by using Cloud Migration tool

This topic describes how to migrate your physical machines, VMs, or cloud hosts to Alibaba Cloud ECS. In this topic, we use on-premise server or server to represent the source of migration to make it easy to read. Thus, the migration steps also applies to your physical machines, VMs, or cloud hosts.

> **Note:**
>
> For on-premises databases to cloud migration, see *Data migration*.

Precautions

To use Cloud Migration tool, consider the following:

- The system time of the on-premises server is synchronized with the real time. Otherwise, an error indicating abnormal TimeStamp is recorded in the migration log file.
- The on-premises server must be able to reach the following network address and communication port to access the related Alibaba Cloud services, uninterruptedly:
  - The nearest ECS endpoint: `https :// ecs . aliyuncs . com : 443` . For other regional endpoints, see *API Reference Request structure*.
  - Virtual Private Cloud (VPC): `http :// vpc . aliyuncs . com : 443` .
  - Security Token (STS): `https :// sts . aliyuncs . com : 443` .
  - The intermediate instance: `https :// xxx . xx . xxx . xx : 8080` and `https :// xxx . xx . xxx . xx : 8703` . The `xxx . xx . xxx . xx` indicates the Internet IP address of the intermediate instance.
- Incremental data migration is not allowed. We recommend that applications such as databases and container services are paused, or related directories are filtered before migration to Alibaba Cloud. Synchronize any data related to those applications after the migration has been completed.
- During migration, an ECS instance named INSTANCE_FOR_GOTOALIYUN is created by default under your Alibaba Cloud account. It acts as an intermediate station. To avoid migration failure, do not stop, restart, or release the intermediate ECS instance. The intermediate ECS instance is automatically released once the migration completes.

- If the AccessKey that you create belongs to a RAM user, you must make sure that the specified RAM user is granted with `AliyunECSF  ullAccess` and `AliyunVPCF  ullAccess` role to operate the Alibaba Cloud resources. For more information, see *RAM* document *Authorization policies*.
- If shared memory is used in your on-premises server:
  - Default action:
    - For Windows servers: By default, Cloud Migration tool recognizes and uploads the data on a shared memory that is attached to the C drive as one part of the system disk.
    - For Linux servers: By default, Cloud Migration tool recognizes and uploads the data on a shared memory as one part of the system disk.
  - Custom action:
    - You can set the mount point directory of the shared memory as a data disk, and migrate it as an independent data disk.
    - Alternatively, you can filter out the directory of the shared memory from migration and the data on the shared memory will not be migrated.

For on-premises servers running Linux OS

When your on-premise server runs a Linux operation system, additional requirements is required:

- The Rsync library must have been pre-installed.
  - CentOS: Run `yum  install  rsync  - y`.
  - Ubuntu: Run `apt - get  install  rsync  - y`.
  - Debian: Run `apt - get  install  rsync  - y`.
  - Other releases: See the installation documents of the releases on their official website.
- SELinux must be deactivated. You can temporarily deactivate SELinux by running `setenforce  0`. However, we recommend that you disable the SELinux for better experience by specifying the `SELINUX = disabled` in the /etc/selinux/ config file.
- The Kernel-based Virtual Machine (KVM) driver is installed. For more information about how to install a KVM driver, see *Install virtio driver*.

· For server such as CentOS 5, Red Hat 5, or Debian that has a too old kernel, and the
version of GRUB (GRand Unified Bootloader) is earlier than 1.9. You may *update the
boot loader GRUB to a version later than 1.9* .

Prerequisite

You must have signed up for ECS snapshot service in the *ECS console*.

Step 1: Download and install the Cloud Migration tool

1. Download the *Cloud Migration tool package* accordingly. The lists of the decompressed
files are as follows:

Table 1-1: Windows server

File or file folder	Description
Excludes folder	Filters out the directories from the migration. An rsync_excl udes_win.txt file is included by default.
client_data	Maintains the record of transmission data during a migration. Transmission data includes the attributes of the intermediate instance for cloud migration, the process information of data disk migration, the generated custom image name, the region you plan to migrate to and so on.
user_config. json	The configuration file of your on-premise server
go2aliyun_gui .exe	A GUI wizard for Windows OS. For more information, see *Windows GUI of Cloud Migration tool*.
go2aliyun_ client.exe	Main program of Cloud Migration tool.

Table 1-2: Linux server

File or file folder	Description
Check	An image compliance detection tool. It contains a client_check program by default.

File or file folder	Description
client_data	Maintains the record of transmission data during a migration. Transmission data includes the attributes of the intermediate instance for cloud migration, the process information of data disk migration, the generated custom image name, the region you plan to migrate to and so on.
user_config. json	The configuration file of the on-premise server.
Excludes folder	Filters out the directories from the migration. An rsync_excl udes_win.txt file is included by default.
go2aliyun_ client	The main program of Cloud Migration tool.

2. Log on to the on-premise server, virtual machine, or cloud host to be migrated.

3. Decompress the Cloud Migration tool package to the specified directory.

Step 2: Edit the user_config.json file

The user_config.json configuration file is edited in JSON. It contains necessary configuration information when you migrate the target on-premises server, including your AccessKey and target custom image name. You are required to manually configure a few parameters.

> **Note:**
>
> If you are using the Windows GUI version, you can complete the user_config on the GUI interface. For more information, see *Windows GUI of Cloud Migration tool*.

1. Open the user_config.json file in the decompressed Cloud Migration tool. The following is the initial file:

```
{
    " access_id ": "",
    " secret_key ": "",
    " region_id ": " region ",
    " image_name ": "",
    " system_dis  k_size ":  40 ,
    " platform ": "",
    " architectu  re ": "",
    " bandwidth_  limit ": 0 ,
    " data_disks ": []
```

```
}
```

2. **Edit the file according to the parameters described in the following tables.**

Table 1-3: Parameters for server configuration

Name	Type	Required	Description
access_id	String	Yes	Your AccessKeyID for accessing Alibaba Cloud API. For more information, see *Create AccessKey*. 📋 Note: Migrating servers by using Cloud Migration tool requires your AccessKeyID and AccessKeySecret, which are important credentials, and you must keep them confidential and secured.
secret_key	String	Yes	Your AccessKeySecret for accessing Alibaba Cloud API. For more information, see *Create AccessKey*.
region_id	String	Yes	Alibaba Cloud Region ID to which your server is migrated, for example, `cn - hangzhou` (China East 1). For details about values, see *Region and Zones*.
image_name	String	Yes	Set a name for your server image, which must be different from all existing image names in the same Alibaba Cloud region. The name is a string of 2 to 128 characters. It must begin with an English or a Chinese character. It can contain A-Z, a-z, Chinese characters, numbers, periods (.), colons (:), underscores (_), and hyphens (-).

Name	Type	Required	Description
system_disk_size	Integer	No	Specify the system disk size in the unit of GiB. Value range: [20, 500]. 📋 Note: The value must be greater than the occupied space of the system disk on the on-premise server. For example, if the maximum system disk capacity is 500 GiB while the occupied space is 100 GiB, set this value to be greater than 100 GiB.
platform	String	No	Operating system of the on-premise server. Optional values: Windows Server 2003 | Windows Server 2008 | Windows Server 2012 | Windows Server 2016 | CentOS | Ubuntu | SUSE | OpenSUSE | Debian | RedHat | Others Linux 📋 Note: The value of `platform` parameter is case-sensitive.
Architecture	String	No	Processor architecture. Optional values: i386 | x86_64
bandwidth_limit	Integer	No	The maximum bandwidth of data transmission, in the units of measurement KB/s. The default value is 0, and 0 indicates no limit for the bandwidth.

Name	Type	Required	Description
data_disks	Array	No	List of data disks. A maximum of 16 data disks are supported. List of data disks in your on-premises server, in the units of measurement GiB. For more information about specific parameters, see the table Parameters for data disk configuration. A maximum of 16 data disks are supported. This parameter can be set to the expected value to shrink disk, however, it cannot be less than the actual space used by the data disk.

Table 1-4: Parameters for data disk configuration

Name	Type	Required	Description
data_disk_ index	Integer	No	Data disk serial number. Value range: [1, 16]. Default value: 1.
data_disk_size	Integer	No	Data disk size. In the units of measurement GiB. Value range: [20, 32768]. Note: The value must be greater than the actual used space of the data disk on the on-premises server. For example, if the source data disk capacity is 500 GiB while the actually occupied space is 100 GiB, set this value to be greater than 100 GiB.
src_path	String	Yes	The directory of a source data disk. Examples: In Windows, specify a drive letter, such as D:, E:, or F:. In Linux, specify a path, such as /mnt/disk1, mnt/disk2, or /mnt/disk3. Note: It cannot be the /root directory or system directories, such as /bin, /boot, /dev, /etc, /lib, /lib64, /sbin, /usr or /var.

3. Proofread the file and make sure that the configuration complies with the JSON syntax. For more information about JSON syntax, see *RFC 7159*.

Here are four scenarios that describe how to customize user_config.json based on the initial configuration file.

Scenario 1. Migrate a Windows server without data disk

· Assuming that the configuration of your on-premise server is as follows:

 - **Operating system: Windows Server 2008**

 - **Used space of system disk: 30 GiB**

 - **System architecture: 64-bit**

· Migration destination:

 - **Target migration region: Alibaba Cloud China East 1 region** (`cn - hangzhou`)

 - **Image name: P2V_CLIENT_IMAGE_WIN08_01**

 - **Expected size of system disk: 50 GiB**

```
{
    " access_id ": " YourAccess  KeyID ",
    " secret_key ": " YourAccess  KeySecret ",
    " region_id ": " cn - hangzhou ",
    " image_name ": " CLIENT_IMA  GE_WIN08_0  1 ",
    " system_dis  k_size ":  50 ,
    " platform ": " Windows   Server   2008 ",
    " architectu  re ": " x86_64 ",
    " data_disks ": [],
    " bandwidth_  limit ":  0
}
```

Scenario 2. Migrate a Windows server with data disks

Assuming that the three data disks are attached to the Windows server in Scenario 1. The drive letter and sizes of the data disks are as follows:

· **D: 100 GiB**

· **E: 150 GiB**

· **F: 200 GiB**

```
{
    " access_id ": " YourAccess  KeyID ",
    " secret_key ": " YourAccess  KeySecret ",
    " region_id ": " cn - hangzhou ",
    " image_name ": " CLIENT_IMA  GE_WIN08_0  1 ",
    " system_dis  k_size ":  50 ,
    " platform ": " Windows   Server   2008 ",
    " architectu  re ": " x86_64 ",
    " data_disks ": [ {
          " data_disk_  index ":  1 ,
```

```
            " data_disk_  size ":  100 ,
            " src_path ": " D :"
        }, {
            " data_disk_  index ":  2 ,
            " data_disk_  size ":  150 ,
            " src_path ": " E :"
        }, {
            " data_disk_  index ":  3 ,
            " data_disk_  size ":  200 ,
            " src_path ": " F :"
        }
    ],
    " bandwidth_  limit ":  0
}
```

Scenario 3. Migrate a Linux server without data disk

· Assuming that the configuration of your on-premise server is as follows:

  - Version: CentOS 7.2

  - Used space of system disk: 30 GiB

  - System architecture: 64-bit

· Migration destination:

  - Target migration region: Alibaba Cloud China East 1 region (`cn - hangzhou`)

  - Image name: CLIENT_IMAGE_CENTOS72_01

  - Size of system disk: 50 GiB

```
{
    " access_id ": " YourAccess  KeyID ",
    " secret_key ": " YourAccess  KeySecret ",
    " region_id ": " cn - hangzhou ",
    " image_name ": " CLIENT_IMA  GE_CENTOS7  2_01 ",
    " system_dis  k_size ":  50 ,
    " platform ": " CentOS ",
    " architectu  re ": " x86_64 ",
    " data_disks ": [],
    " bandwidth_  limit ":  0
}
```

Scenario 4. Migrate a Linux server with data disks

Assuming that the three data disks are attached to the Linux server in Scenario 3. The source path and sizes of the data disks are as follows:

· /mnt/disk1: 100 GiB

· /mnt/disk2: 150 GiB

· /mnt/disk3: 200 GiB

```
{
    " access_id ": " YourAccess  KeyID ",
    " secret_key ": " YourAccess  KeySecret ",
    " region_id ": " cn - hangzhou ",
```

```
    " image_name ": " CLIENT_IMA  GE_CENTOS7  2_01 ",
    " system_dis  k_size ":  50 ,
    " platform ": " CentOS ",
    " architectu  re ": " x86_64 ",
    " data_disks ": [ {
          " data_disk_  index ":  1 ,
          " data_disk_  size ":  100 ,
          " src_path ": "/ mnt / disk1 "
      }, {
          " data_disk_  index ":  2 ,
          " data_disk_  size ":  150 ,
          " src_path ": "/ mnt / disk2 "
      }, {
          " data_disk_  index ":  3 ,
          " data_disk_  size ":  200 ,
          " src_path ": "/ mnt / disk3 "
      }
    ],
    " bandwidth_  limit ":  0
 }
```

Step 3: Filter out directories from migration

Cloud Migration tool can filter out files or directories that are not migrated to Alibaba Cloud. You can configure *rsync* to filter out files and directories from migrating to Alibaba Cloud.

> **Note:**
>
> Cloud migration is a time-consuming task, and we recommend that you filter out the unnecessary directories and data disks. At the same time, the used storage space of cloud disks after the migration is reduced.

How to filter files for Windows server

Default filtered files (folders) include pagefile.sys, $RECYCLE.BIN, and System Volume Information.

- System disk: Write down the file paths in rsync_excludes_win.txt.
- Data disk: Create and open new TXT files with specific file names. Write down the file paths to be filtered in the TXT files and save to Excludes directory. The following are examples of TXT file names:

  - rsync_excludes_win_disk1.txt

  - rsync_excludes_win_disk2.txt

  - rsync_excludes_win_disk3.txt

    ......

Windows server example

- Assuming that you want to filter out the folder `C :\ MyDirs \ Docs \ Words`
  and file `C :\ MyDirs \ Docs \ Excels \ Report1 . xlsx` on a Windows
  server. You can write the configuration in the file rsync_excludes_win.txt as
  follows:

```
/ Mydirs / docs / words /
/ MyDirs / Docs / Excels / Report1 . xlsx
```

- Assuming that you want to filter out the folder `D :\ MyDirs \ Docs \ Words`
  and file `D :\ MyDirs \ Docs \ Excels \ Report1 . xlsx` on a Windows
  server. You can write the configuration in the file rsync_excludes_win_disk1.txt as
  follows:

```
/ Mydirs / docs / words /
/ MyDirs / Docs / Excels / Report1 . xlsx
```

How to filter files for Linux server

Default filtered files or directories include /dev/*, /sys/*, /proc/*, /media/*, lost+found/
, /mnt/, and /var/lib/lxcfs/*.

> **Note:**
>
> The /var/lib/lxcfs/* directory is only applicable to some versions. For example, when
> you do not have the access permission on the cache directory for Linux containers of
> Ubuntu, /var/lib/lxcfs/* must be filtered out before migration.

- System disk: Write down the file paths in rsync_excludes_linux.txt.
- Data disk: Create and open new TXT files with specific file names. Write down
  the file paths to be filtered in the TXT files and save to Excludes directory. The
  following are examples of TXT file names:

  - **rsync_excludes_linux_disk1.txt**

  - **rsync_excludes_linux_disk2.txt**

  - **rsync_excludes_linux_disk3.txt**

      ......

Linux server example

- **Assuming that you want to filter out the root folder** `/ var / mydirs / docs /`
  `words` **and file** `/ var / mydirs / docs / excels / report1 . sh` **on a Linux**

server. You can write the configuration in the file rsync_excludes_Linux.txt as
follows:

```
/ var / mydirs / docs / words /
/ var / mydirs / docs / excels / report1 . sh
```

· Assuming that you want to filter out the folder `/ mnt / disk1 / mydirs / docs
/ words` and file `/ mnt / disk1 / mydirs / docs / excels / report1 .
sh` on a data disk for Linux server. You can write the configuration in the file
rsync_excludes_linux_disk1.txt as follows:

```
/ mydirs / docs / words /
/ mydirs / docs / excels / report1 . sh
```

> **Note:**
> To filter out files and paths in data disk for Linux server, remove the data disk
> src_path prefix path, for example, remove /mnt/disk1 from the preceding
> example.

Step 4: (Optional) Edit the client_data file

> **Warning:**
> Only when you can directly access a VPC in an Alibaba Cloud region from
> your Integrated Data Center (IDC), virtual machines, or cloud hosts, you are
> recommended to edit the client_data file. Otherwise, the modification may affect
> cloud migration and running processes.

The client_data file maintains the record of transmission data during migration. For
more information about how to edit the client_data file, see *Cloud migration through VPC
intranet*.

After each successful migration, information about the intermediate ECS instance in
the ECS is automatically recorded in the client_data configuration file. For the next
migration, you must clear the current client_data file or use the default client_data
file to override the current file.

Step 5: Run the Cloud Migration tool

Windows server: Right-click go2aliyun_client.exe and select Run as administrator. If
you are using the Windows GUI version, see *Windows GUI of Cloud Migration tool*.

Linux server: Run Cloud Migration tool as a root user.

1. Run `chmod + x  go2aliyun_ client` .

2. Run `./ go2aliyun_ client` .

Results

If `Goto  Aliyun  Finished !` is displayed, go to the image page in the [ECS console](#) to check the results. After migration, the resource of your on-premises server, such as the operating system, applications, and application data, are convert to a custom image, which is displayed in the image page of the ECS console.

If `Goto  Aliyun  Not  Finished !` is displayed, check the log files in the logs folder for [troubleshooting](#). After the problem is rectified, run go2aliyun_client again, and it continues to proceed from where it was suspended during the preceding execution.

> 📋 **Note:**
>
> · The Cloud Migration tool reads data that is recorded in the client_data upon the beginning of each migration attempt, whether the previous task is interrupted or complete. For the next migration, you must clear the current client_data file or use the initial client_data file to override the current file.
> · After the client_data file is initialized, the task progress information is lost and the on-going migration is set to the beginning. In cases where cloud migration fails, such as when the intermediate instance, VPC, VSwitch, or other security groups do not exist, you can try clearing the client_data operation to resolve the issue.

What to do next

You can [create a Pay-As-You-Go instance by using the custom image](#) or [change the system disk by using the custom image](#) to test whether the custom image works or not.

After you migrate an on-premises Linux server, the data disks are not mounted by default. You may run `ls / dev / vd *` in the instances to mount the data disks manually as needed, and edit configuration file `/ etc / fstab` to configure the mounting file systems. For more information, see [Linux_Format and mount a data disk](#).

1.3 Cloud migration through VPC intranet

If you can directly access a VPC in an Alibaba Cloud region from your Integrated Data Center (IDC), virtual machines, or cloud hosts, we recommend that you set up the

cloud migration by connecting the source servers with the VPC intranet. Compared to cloud migration through public networks, cloud migration through VPC intranet makes data transmission faster and more stable, which improves the efficiency of cloud migration.

Prerequisites

Cloud migration through VPC intranet requires you to be able to access the target VPC from the IDC, virtual machines, or cloud hosts. You can choose either two methods for achieving this: Use the *physical connection* feature of the Express Connect service. Alternatively, *build VPN gateways* in the target VPC.

> 📋 **Note:**
>
> Express Connect and VPN Gateway are charged services. For more information, see Express Connect billing method and *VPN Gateway billing method*.

Client_data description

You are required to edit the client_data file on your own for cloud migration through VPC intranet. You can edit the client_data file to meet your needs for cloud migration through VPC intranet. The client_data file contains the following data for the cloud migration process:

· The attributes of the intermediate instance for cloud migration, such as instance ID, instance name, Internet bandwidth, and IP addresses.

· The process information of data disk migration.

· The generated custom image name.

· The region you plan to migrate to, and the network type of the intermediate instance.

· The VPC, VSwitch, and security group used by the intermediate instance.

    For more information about the client_data, see the relevant JSON file after the Cloud Migration tool is downloaded.

> ⚠️ **Warning:**
>
> Do not modify the client_data configuration file unless you want to migrate to Alibaba Cloud through VPC intranet. Otherwise, the modification may affect cloud migration and running processes.

After the *Cloud Migration tool is downloaded*, open the client_data file. The following

parameters are involved in the cloud migration through VPC intranet:

Name	Type	Required	Description
net_mode	Integer	No	Sets data transmission mode. Optional values: · 0 (default): Data is transmitted through the public network. The source server must be able to access the public network. · 1: Data is transmitted through the VPC intranet. The source server must be able to access the target VPC. · 2: Data is transmitted through the VPC intranet. The source server must be able to access both the public network and target VPC. For cloud migration through VPC intranet, `net_mode` needs to be set 1 or 2.
vpc	Array	No	Specifies the ID of the VPC that has the Express Connect service or VPN Gateway configured. The parameter is required when net_mode is set to `1` or `2`. A JSON array is composed of three string parameters: `vpc_id` (required), `vpc_name` (optional), and `descriptio n` (optional), which refer to VPC ID, VPC name, and VPC description respectively.
vswitch	Array	No	Specifies the ID of the VSwitch in the VPC. The parameter is required when net_mode is set to `1` or `2`. A JSON array is composed of three String parameters: `vswitch_id` (required), `vpc_name` (optional), and `descriptio n` (optional), which refer to VSwitch ID, VSwitch name, and VSwitch description respectively.
securegroupid	String	No	Specifies the ID of the security group within the VPC.

Access VPC from the source server

The following steps are applicable when net_mode is set to `1` . The cloud migration is divided into three stages. `Stage 1` and `Stage 3` are completed on a backup server. The backup server must be able to access the public network. Data transmission at `Stage 2` is completed on the source server to be migrated.

1. Log on to the backup server that can access the public network.

2. Edit the client_data file of the Cloud Migration tool. Set net_mode to `1` , set `vpc_id` to the ID of the VPC that has configured the Express Connect service or the VPN Gateway, and set `vswitch_id` and `zone_id` parameters.

3. (Optional) Configure the parameter `security_g roup_id` in the client_data file, however, you must permit inbound traffic through proxy ports 8080 and 8703 of the security group. For more information, see *add Security Group Rules*.

4. Run the Cloud Migration tool on the backup server by following *the steps of cloud migration through public network* until you receive the notice `Stage 1 Is Done` `!`.

```
[2018-04-10 20:43:16]  [Info]   Server ECS Is Running!
[2018-04-10 20:43:16]  [Done]   Stage 1 is Done!
[2018-04-10 20:43:16]  [Info]   Goto Aliyun Not Finished, Read
Enter any key to Exit...
```

5. Log on to the source server. Copy the user_config.json, rsync, and client_data configuration files of the Cloud Migration tool from the backup server to the source server, while keeping the contents unchanged.

6. Run the Cloud Migration tool on the backup server by following *the steps of cloud migration through public network* until you receive the notice `Stage 2 Is Done` `!`.

```
[2018-04-10 20:47:43]  [Info]   Do Grub...
[2018-04-10 20:48:20]  [Done]   Stage 2 is Done!
[2018-04-10 20:48:20]  [Info]   Goto Aliyun Not Finished, Read
Enter any key to Exit...
```

7. Log on to backup server. Copy the user_config.json, rsync, and client_data configuration files of the Cloud Migration tool from the source server to the backup server, while keeping the contents unchanged.

8. Run the Cloud Migration tool on the backup server again by following *the steps of cloud migration through public network* until you receive the notice `Stage 3 Is Done !`, which means the cloud migration through VPC intranet has been completed.

```
[2018-04-10 20:55:52]  [Done]    Create Image Successfully!
[2018-04-10 20:55:53]  [Info]    Server ECS Is Released!
[2018-04-10 20:55:53]  [Done]    Stage 3 is Done!
[2018-04-10 20:55:53]  [Done]    Goto Aliyun Finished!
Enter any key to Exit...
```

Access the public network and VPC from the source server

The following steps are applicable when `net_mode = 2` and the steps are the same as cloud migration through the public network (when `net_mode = 0`). When `net_mode = 2`, data is automatically migrated to Alibaba Cloud through VPC and the rest of the process is completed through the public network. The transmission speed is slightly slower compared to the method of cloud migration through VPC intranet (when `net_mode = 1`).

1. Log on to the source server that can access the public network and run the Cloud Migration tool following *the steps of cloud migration through public network*.

2. Edit the client_data file of the Cloud Migration tool. Set net_mode to `2`, set `vpc_id` as the ID of the VPC that has configured the Express Connect service or the VPN Gateway, and set `vswitch_id` and `zone_id` parameters.

3. (Optional) Configure the parameter `security_g roup_id` in the client_data file, however, you must permit inbound traffic through proxy ports 8080 and 8703 of the security group. For more information, see *add Security Group Rules*.

4. Run the Cloud Migration tool following *the steps of cloud migration through public network*.

FAQ

If the cloud migration process is interrupted, you can check the *Cloud Migration tool troubleshooting*. Alternatively, you can *join the DingTalk customer feedback group* for the Cloud Migration tool to contact ECS cloud migration technical support.

1.4 Windows GUI of Cloud Migration tool

Cloud Migration tool version 1.2.9 and later supports a GUI for Windows OS. You can run the file go2aliyun_gui.exe to access the GUI. If you are using an earlier version of the Cloud Migration tool, you can download the *compressed Cloud Migration tool* for a better experience. The settings available for the Cloud Migration tool on the GUI are identical to those in the command line interface.

Display introduction

When using the Cloud Migration tool on Windows, you can use either the GUI or the command line interface. As shown in the figure below:

Display description

1. Menu bar, consisting of Config, Logs, and Help.

2. User-defined configurations (user_config.json) editor. It is used to configure the source server. Configurations include your AccessKey information, source server operating system, system disk size, and the Alibaba Cloud region ID that the source service is being moved to. It is used to create the custom image configuration and information after the ECS image has been created. For more information, see *Using the Cloud Migration tool* to edit *user_config.json*.

3. List of system disk and data disks that are about to migrated. In this area, you can right-click to add disks to be migrated, and double click to access the disk information edit page.

4. Task progress and log area. After running the cloud migration tool, you can track the task progress in this area, and troubleshoot any issues that arise in accordance with the interface prompts.

5. Menu where you can click Rsync to set the upper bandwidth limit in KB/s for the transfer, click Save User Config to save the current page configuration for batch operation, or click Clear Client Data to initialize the client configuration file. For more information, see *Using the Cloud Migration tool*.

6. Menu where you can click Open Log File to open the log file, or click Open Log Dir to open the path where the log file is located.

7. Menu where you can check help documentation or Cloud Migration tool version information.

8. You can add a data disk here. The Cloud Migration tool automatically queries the data disk of your server and displays occupied disk space. The size of the data disk must be greater than the space currently used on the source server data disk. For example, if the source server has 500 GiB of space and is using 100 GiB, you must specify a size larger than 100 GiB. The value must be greater than the occupied space of the data disk on the source server. For example, if the original data disk size is 500 GiB and the occupied space is 100 GiB, set this value to be greater than 100 GiB.

After you have configured the server information in the GUI, you can click Start to begin the cloud migration. After solving any problems, run the Cloud Migration tool to restore the migration. The cloud migration resumes from where it was stopped. If the prompt message `Goto Aliyun Finished !` appears in the task progress and log area, you can go to the image details page in the *ECS console* to view the results. If the prompt message `Goto Aliyun Not Finished !` appears, you can select Logs from the menu and look through the logs to *troubleshoot the issue*. After fixing any problems, run Cloud Migration Tool again to resume volume shrinking. The tool continues the most recent migration execution and does not start over.

1.5 CLI parameters

The Cloud Migration tool supports command line interface (CLI) parameters for version 1.2.8 and later. Run the `-- help` command in the path of the Cloud Migration tool to view the list of the parameters. You can configure the Cloud Migration tool, adjust user-defined usage habits, and clear the client_data file with one click. No need to open the various JSON files. If you are using a version earlier than 1.2.8 of the Cloud Migration tool, *download the compressed package file* for a better experience. To use CLI parameters, you must have some prior knowledge of the migration tool. To learn more about the tool, see the usage of the *Cloud Migration tool*.

Cloud Migration tool parameters for Windows

A complete list of CLI parameters of the Cloud Migration tool for Windows is as follows:

```
usage : go2aliyun_ client . exe  [ options ]
options :
 -- help                        show    usage .
 -- version                     show    version .
 -- nocheckver  sion               no    check   for    new    version
 .
```

```
-- noenterkey                          no    enter   key    to    exit .
-- progressfi  le                       set   progress   file   path .
-- cleardata                           clear   client   data    and
server   ecs .
-- accesssid =< accesss_id >         set    access   id .
-- secretkey =< secret_key >         set    secret   key .
-- regionid =< region_id >           set    region   id .
-- imagename =< image_name >         set    image   name .
-- systemdisk  size =< sdsize >       set    system   disk   size .
-- platform =< platform >            set    platform .
-- architectu  re =< arch >           set    architectu  re .
-- datadisks =< data_disks >         set    data    disks .
   data_disks = data_disk_  index | data_disk_  size | src_path ;
   e . g . -- data_disks = 1 | 100 | D :; 2 | 150 | E :
-- bandwidthl  imit =< limit >        set    bandwidth   limit .
-- netmode =< net_mode >             set    net    mode .
-- vpcid =< vpc_id >                 set    vpc    id .
-- vswitchid =< vswitch_id >         set    vswitch   id .
-- zoneid =< zone_id >               set    zone    id .
-- securegrou  pid =< sgid >          set    secure   group    id .
```

Cloud Migration tool parameters for Linux

A complete list of CLI parameters of the Cloud Migration tool for Linux is as follows:

```
usage : ./ go2aliyun_  client  [ options ]
options :
-- help                          show    usage .
-- version                       show    version .
-- nocheckver   sion              no    check   for    new    version .
-- noenterkey                     no    enter   key    to    exit .
-- progressfi  le                  set    progress   file   path .
-- cleardata                      clear   client   data    and    server
 ecs .
-- accesssid =< accesss_id >      set    access   id .
-- secretkey =< secret_key >      set    secret   key .
-- regionid =< region_id >        set    region   id .
-- imagename =< image_name >      set    image   name .
-- systemdisk  size =< sdsize >    set    system   disk   size .
-- platform =< platform >         set    platform .
-- architectu  re =< arch >        set    architectu  re .
-- datadisks =< data_disks >      set    data    disks .
   data_disks = data_disk_  index | data_disk_  size | src_path ;
   e . g . -- data_disks = 1 | 100 |/ mnt / disk1 ; 2 | 150 |/ mnt /
disk2
-- bandwidthl  imit =< limit >     set    bandwidth   limit .
-- netmode =< net_mode >          set    net    mode .
-- vpcid =< vpc_id >              set    vpc    id .
-- vswitchid =< vswitch_id >      set    vswitch   id .
-- zoneid =< zone_id >            set    zone    id .
-- securegrou  pid =< sgid >       set    secure    group    id .
```

General parameters

The general parameters of the Cloud Migration tool for both Windows and Linux are as follows: General parameters are usually used for adjusting usage habits and interactive interfaces of the Cloud Migration tool. They do not affect configurations of the tool or the cloud migration process.

Parameters	Description
nocheckver sion	The migration tool stops version update reminds.
noenterkey	The migration tool does not give a prompt before completion. Instead, it exits directly.
progressfile	Sets the migration progress output file. The file contains two rows in the following format: · The first row contains one of the four progress indicators: `PrepareFor Rsync` (data transmission preparation stage), `DoRsync` (data transmission stage), `CreateImag e` (image creation stage), and `Finished` (cloud migration finished stage). · The second row contains the progress value, which shows the progress of each stage. The value is an Integer ranging from 0 to 100.
cleardata	Clears the client_data file and releases the `Running` intermediate instance.

⚠️ **Warning:**

Do not use the `cleardata` parameter before your cloud migration job is complete. Otherwise, the cloud migration are interrupted and the migration progress becomes invalid.

User_config parameters

The relevant CLI parameters for user_config configuration are as follows. For more information about user_config, see *the usage of the Cloud Migration tool*.

📋 **Note:**

After you use CLI parameters to configure user_config, the Cloud Migration tool uses your new configuration and ignores the configuration file.

```
-- accesssid =< accesss_id >     #  Sets    AccessKey    ID    in
 user_confi  g .
-- secretkey =< secret_key >     #  Sets    AccessKey    Secret    in
 user_confi  g .
-- regionid =< region_id >     #  Sets    Region    ID    in
 user_confi  g .
-- imagename =< image_name >     #  Sets   user - defined    image
 name    in    user_confi  g .
-- systemdisk  size =< sdsize >    #  Sets    system    disk    capacity
   in    user_confi  g .
```

```
-- platform =< platform >        # Sets   the   mapping   image
 releasing   platform   in   user_confi  g .
-- architectu  re =< arch >         # Sets   the   image   architectu
 re   in   user_confi  g .
-- datadisks =< data_disks >     # Sets   data   disks   in
 user_confi  g . Disk   values   are   separated   by   vertical
 bars   (|)   and   semicolons   (;),   for   example ,   data_disk_   index
 | data_disk_  size | src_path ;
-- bandwidthl  imit =< limit >      # Sets   the   upper   limit   of
   the   public   network   outbound   bandwidth   in   user_confi  g
 .
```

Client_data parameters

The following section describes relevant parameters for cloud migration through VPC

intranet. For more information, see *VPC Intranet Network Cloud Migration*.

```
-- netmode =< net_mode >         # Sets   cloud   migration   method
 in   client_dat  a . The   values   can   be   0 ,   1 ,   or   2 .
-- vpcid =< vpc_id >             # Sets   the   VPC   that   has
   configured   Express   Connect   or   VPN   Gateway   in
 client_dat  a .
-- vswitchid =< vswitch_id >    # Sets   the   VSwitch   under   the
   VPC   in   client_dat  a .
-- securegrou  pid =< sgid >       # Sets   the   security   group
 under   the   VPC   in   client_dat  a .
```

1.6 Cloud Migration tool FAQ

- *What scenarios can I use the Cloud Migration tool for?*

- *What is the migration process of the Cloud Migration tool?*

- *Does the Cloud Migration tool support resumable transfers?*

- *Does the migration tool support incremental migration?*

- *What are the results after the cloud migration is complete?*

- *What do I do when the migration is complete and a custom image is displayed?*

- *What can I do if the connection for cloud migration is closed or if migration fails?*

- *What do I need to know about the intermediate instance?*

- *What do I need to know about user_config.json?*

- *When do I need to filter a directory or file?*

- *What do I need to know about the client_data file?*

- *When do I need to clear the client_data file?*

- *After cloud migration has been completed, how do I perform a new cloud migration?*

- *What do I do if I released an intermediate instance by mistake?*

- *Why have I received "NotEnoughBalance" error message?*

- *Why have I received a "Forbidden.RAM" error message?*
- *Why have I received a "Forbidden.Subuser" error message?*
- *What Internet IP addresses and ports does my server need to access?*
- *How can I check my system after migrating a Windows server?*
- *Which Windows server licenses can Alibaba Cloud support activation for?*
- *Before migrating a Linux server, how can I check that all of the requirements for cloud migration are met?*
- *How can I check my system after migrating a Linux server?*

1. What scenarios can I use the Cloud Migration tool for?

The tool can migrate data from physical servers, virtual machines, and other cloud platform hosts to Alibaba Cloud ECS for most Windows Server and Linux operating systems. For more information, see *What is the Cloud Migration tool and P2V*.

2. What is the migration process of the Cloud Migration tool?

- Checks whether the source server meets the requirements for migration or not.
- Creates an intermediate instance with a name INSTANCE_FOR_GO_TOALIYUN. The files and the data of source server system are transferred to the intermediate instance.
- Creates snapshots for the intermediate instance and then use the snapshots to create a custom image.

3. Does the Cloud Migration tool support resumable transfers?

Yes. The Cloud Migration tool does support resumable transfers. If the data transfer has been interrupted, you can restart the migration tool to continue from the previous stopping point.

4. Does the migration tool support incremental migration?

Not supported. Incremental data migration is not allowed. We recommend that applications such as databases and container services be paused, or related directories be *filtered* before migration to Alibaba Cloud. Synchronize any data related to those applications after the migration has been completed.

5. What are the results after the cloud migration is complete?

After a custom image of the source server is created, you can log on to the *ECS console*
and view the custom image from the image list in the corresponding region.

6. What do I do after the migration is complete?

We recommend that you first create a Pay-As-You-Go instance and make sure that
the system is operating normally. After confirming the image is functioning, select
instance types and *create one or more ECS instances*.

7. What can I do if the connection for cloud migration is closed or if migration fails?

- If the migration tool suddenly closes or becomes frozen, you can try restarting the
  operation to restore cloud migration.
- If cloud migration fails and the prompt `Not  Finished` is displayed, you can
  check the log files and directory, and look up the reported errors in the *Cloud
  Migration tool troubleshooting* or *API Error Center*.

  If the issue is still not resolved, we recommend you join the *Cloud Migration Tool
  Support group on DingTalk*, an enterprise communication and collaboration platform
  Developed by Alibaba Group. You can also collect the log file and *open a ticket* to
  contact after-sales customer support for assistance.

8. What do I need to know about the intermediate instance?

- The Cloud Migration tool automatically creates, starts, stops, and releases
  intermediate instance. To make sure the cloud migration completes successfully,
  do not interfere with the status of the intermediate instance.
- The default security group for the intermediate instance is on ports 8080 and 8703
  in the inbound direction. As these are the cloud migration service ports, do not
  modify or delete the security group rules.
- After cloud migration is complete, the intermediate instance is released
  automatically. If migration fails, you have to manually *release the instance*.

9. What do I need to know about user_config.json?

If cloud migration has already started and the intermediate instance has already
been created, do not change the system disk size or data disk size specified in the
user_config.json. If you still need to modify these parameters, you must first clear the
client_data file and then restart migration to cloud.

10. When do I need to filter a directory or file?

When the source server has data directories or files that do not need to be uploaded, they can be filtered out by configuring the "Excludes" file to improve the efficiency of cloud migration.

In particular, you can filter out databases, Docker containers, and other active data directories and files which cannot be paused to improve the stability of data transmission during migration.

11. What do I need to know about the client_data file?

The client_data file records data from the cloud migration process, including the intermediate instance information and migration progress. Do not manually modify or delete the client_data file unless necessary, otherwise cloud migration may fail.

12. When do I need to clear the client_data file?

To clear the client_data file, you can use the *CLI command* `-- cleardata` , or through the *Windows GUI* Client Data menu.

- · If you want to restart cloud migration after it has begun, you can clear the current client_data file or use the default client_data file to override the current file.
- · In cases where cloud migration fails, such as when the intermediate instance, VPC , VSwitch, or other security groups do not exist, you can try clearing the client_data operation to resolve the issue.

13. After cloud migration has been completed, how do I perform a new cloud migration?

Clear the client_data file, and then run the Cloud Migration tool again to perform a new cloud migration.

14. What do I do if I released an intermediate instance by mistake?

Clear the client_data file, and then run the Cloud Migration tool again to perform a new cloud migration.

15. Why have I received "NotEnoughBalance" error message?

The Cloud Migration tool itself is free, but a *Pay-As-You-Go* intermediate instance is created by default during cloud migration. Creating a Pay-As-You-Go instance requires the balance of any of your payment methods to be no less than 100 RMB to complete.

16. Why have I received a "Forbidden.RAM" error message?

The AccessKey created by your RAM user account does not have the permissions to manage ECS and VPC resources. We recommend that you contact the Alibaba Cloud user to grant `AliyunECSF ullAccess` and `AliyunVPCF ullAccess` permissions.

17. Why have I received a "Forbidden.Subuser" error message?

The Cloud Migration tool must use the account AccessKeyID and AccessKeySecret to create an intermediate instance. If the RAM account does not have permission to create instances, a Forbidden.SubUser error occurs. We recommend that you use the Alibaba Cloud account to perform the cloud migration.

18. What Internet IP addresses and ports does my server need to access?

The on-premises server must be able to reach the following network address and communication port to access the related Alibaba Cloud services, uninterruptedly:

· The nearest ECS endpoint: `https :// ecs . aliyuncs . com : 443` . For other regional endpoints, see *API Reference* *Request structure*.

· Virtual Private Cloud (VPC): `http :// vpc . aliyuncs . com : 443` .

· Security Token (STS): `https :// sts . aliyuncs . com : 443` .

· The intermediate instance: `https :// xxx . xx . xxx . xx : 8080` and `https :// xxx . xx . xxx . xx : 8703` . The `xxx . xx . xxx . xx` indicates the Internet IP address of the intermediate instance.

> **Note:**
> The source server does not need to open any inbound ports, but it needs to have access in the outbound direction to the Internet IP addresses and ports.

19. How can I check my system after migrating a Windows server?

When you first start an instance of Windows after migration:

1. Check whether the system disk data is complete or not.

2. Go to the disc manager to check whether the disk is missing.

3. If you are using Windows Server 2008 or a later system, wait for a moment while the automatic recovery of the file system access permission is processing.

> **Note:**

> If the Goto Aliyun Restore Tool is not started at the first startup attempt, you can run the `C :\ go2aliyun_ prepare \ go2aliyun_ restore . exe` to manually invoke the automatic recovery process. However, make sure that your ECS instance have mounted the same number of disks as the source server does.

4. Check whether the network service is normal.

5. Check that other system application services are operating normally.

20. Which Windows server licenses can Alibaba Cloud support activation for?

Alibaba Cloud allows you to activate licenses on Windows Server 2003, 2008, 2012, and 2016. For other versions of Windows not listed here, if they are migrated to ECS, you must *apply for a licensed mobility certificate*.

21. Before migrating a Linux server, how can I check that all of the requirements for cloud migration are met?

You can use the client_check tool that comes with the Cloud Migration tool. Run the `./ client_che ck -- check` when ready, if the test prompt displays `OK`, all the cloud migration requirements are met.

22. How can I check my system after migrating a Linux server?

When you first start a Linux instance after migration:

· Check whether the system disk data is complete or not.

· If a data disk exists, you must *mount the data disk*.

· Check whether the network service is running normally.

· Check whether other system services are operating normally.

1.7 Troubleshooting

After you fix the error, run go2aliyun_client of the Cloud Migration Tool again. The migration resumes from where it was suspended.

> **Note:**
>
> · If you are using the 1.3.0 or later version of Cloud Migration tool, after the migration job is finished for an on-premises server running Windows Server 2008 and later version of Windows Server, please wait for the automatic recovery of file system access permission at the first instance startup attempt. For more information, see *FAQ 19 How can I check my system after migrating a Windows server*.

- If you are using the 1.3.0 or earlier version of Cloud Migration tool, to avoid abnormal components and service failure, please run the *Reset File Permission* tool to restore the file system permission of Windows Server 2008 and later operating system.

- *Keyword "IllegalTimestamp" appears in the migration logs.*

- *Keyword "UnKnownError" appears in the migration logs.*

- *Keyword "OperationDenied" appears in the migration logs.*

- *Keyword "InvalidAccountStatus.NotEnoughBalance" appears in the migration logs.*

- *Keyword "Forbidden.RAM" appears in the migration logs.*

- *Keyword "InvalidImageName.Duplicated" appears in the migration logs.*

- *Keyword " InvalidAccountStatus.SnapshotServiceUnavailable" appears in the migration logs.*

- *Keyword "Connect to Server Failed" appears in the migration logs.*

- *Keyword "Do Rsync Disk x Failed" appears in the migration logs.*

- *Winodws server migration stops at the "Prepare For Rsync Disk 0" stage.*

- *What can I do if the Windows requires me to activate Microsoft license after the Windows server migration?*

- *What can I do if the drive letters of data disks are missing or wrong after the Windows server migration?*

- *Keyword "check rsync failed" appears in the migration logs of a Linux server.*

- *Keyword "check virtio failed" appears in the migration logs of a Linux server.*

- *Keyword "check selinux failed" appears in the migration logs of a Linux server.*

- *Keyword "Do Grub Failed" appears in the migration logs of a Linux server.*

- *Why no data is found in the original data disk directory in the started Linux ECS instances?*

- *Why cannot I start the created ECS instances after Linux server migration?*

- *What can I do if network service is abnormal when I start the migrated Others Linux instances?*

Keyword "IllegalTimestamp" appears in the migration logs.

Check whether the system time is correct or not.

Keyword "UnKnownError" appears in the migration logs.

Check whether the value of the `platform` parameter is correct in file user_config.json or not.

Keyword "OperationDenied" appears in the migration logs.

If `rsync : send_files failed to open "…": Permission denied ( 13 )` is displayed in the log, Alibaba Cloud Migration Tool has no access permission on the directory or folder, which leads to rsync failure. In this case, you can configure rsync_excludes_linux.txt or Rsync/etc/rsync_excludes_win.txt to filter this directory or folder and try again.

Keyword "InvalidAccountStatus.NotEnoughBalance" appears in the migration logs.

The default billing method of the intermediate instance is *Pay-As-You-Go*. You must make sure that no credit limit is set to your credit card and it allows the payment to go through.

Keyword "Forbidden.RAM" appears in the migration logs.

The RAM user are not granted with operation permission and cannot access the APIs.

If the AccessKey that you create belongs to a RAM user, you must make sure that the specified RAM user is authorized the permission of `AliyunECSF ullAccess` and `AliyunVPCF ullAccess` to operate the ECS and VPC resources. For more information, see *RAM* document *Authorization policies*.

Keyword "InvalidImageName.Duplicated" appears in the migration logs.

The specified parameter `image_name` cannot be the same as an existing image name.

Keyword InvalidAccountStatus.SnapshotServiceUnavailable appears in the migration logs.

It indicates that you have not signed up for the ECS snapshot services. You can go to the *ECS console* to sign up the ECS snapshot service and try cloud migration again.

Keyword "Connect to Server Failed" appears in the migration logs.

It indicates that the tool is unable to connect the intermediate instance. Follow these steps:

1. View the migration log for any migration exception.

2. Before you proceed, check the following:

    · Whether the status of the intermediate instance is abnormal or not in the ECS console.

    · Whether the network service of the on-premises server is abnormal or not. The TCP port 80, 443, 8703, and 8080 have been enabled because the Cloud Migration Tool needs the access permission of those ports.

3. After the error is fixed, run the go2aliyun_client again.

Keyword "Do Rsync Disk x Failed" appears in the migration logs.

It indicates that the data transmission is interrupted. Follow these steps:

1. View the migration log for any migration exception. Specifically, if the return: 3072 or return: 7680 is displayed in the log file, you must make sure the database or container service in the on-premises server has been disabled, such as Oracle, MySQL, MS SQL Server, MongoDB, and Docker. In that case, you can disable the service or filter out the related directory before you start the migration again.

2. Before you proceed, check the following:

    · Whether the status of the intermediate instance is abnormal or not in the ECS console.

    · Whether the network service of the on-premises server is abnormal or not. The TCP port 80, 443, 8703, and 8080 have been enabled because the Cloud Migration Tool needs the access permission of those ports.

3. After the error is fixed, run the go2aliyun_client again.

Winodws server migration stops at the "Prepare For Rsync Disk 0" stage.

Winodws server migration stops at the "Prepare For Rsync Disk 0" stage, meanwhile , the log file record that "VssSnapshotul::VssSnapshotul GetSnapshotul Failed: 0x80042308". Follow these steps:

1. To enable the Volume Shadow Copy Service, for example, in Windows Server 2016:

    a. Log on to your on-premises server, and click Start, enter Services and select the gadget icon.

    b. Locate the Volume Shadow Copy Service, and click Start the service.

2. **To uninstall the qemu guest agent software:**

   a. Log on to your on-premises server, and click Start, enter Services and select the gadget icon.

   b. Check that whether the QEMU Guest Agent VSS Provider service is running or not. And if this service is not available, you can run the Cloud Migration tool directly.

   c. Find the uninstall program, possibly in the C:\Program Files (x86)\virtio\ monitor\uninstall.bat directory, execute the program to uninstall the QEMU Guest Agent.

3. Run the Cloud Migration tool again.

What can I do if the Windows requires me to activate Microsoft license after the Windows server migration?

You can activate Windows service via KMS after reinstalling Windows KMS Client Key .

- Log on to the Windows instance.
- On the Microsoft *Appendix A: KMS Client Setup Keys* page, find your relevant KMS Client Key, here, it is assumed to be xxxx-xxxx-xxxx-xxxx-xxxx.
- Open the command-line tool with administrative permission, and run the following command:

```
slmgr  / upk
slmgr  / ipk   xxxx - xxxx - xxxx - xxxx - xxxx
```

What can I do if the drive letters of data disks are missing or wrong after the Windows server migration?

If the drive letters are missing, you can add the drive letters in the Disk Management.

1. Select Control Panel > System and Security > Administrative Tools > Computer Management.

2. Locate and right-click the target data disk in Disk Management module, and click Change Drive Letters and Path....

3. Click Add and specify a drive letter.

If the drive letter is in disorder, you can open the Disk Management and change it again.

1. Select Control Panel > System and Security > Administrative Tools > Computer
   Management.

2. Locate and right-click the target data disk in Disk Management module, and click
   Change Drive Letters and Path....

3. Click Change and assign a drive letter.

Keyword "check rsync failed" appears in the migration logs of a Linux server.

Check whether the rsync component is installed or not.

The keyword "check virtio failed" appears in the migration logs.

Check whether the *virtio driver* is installed or not.

The keyword "check selinux failed" appears in the migration logs.

Check whether SELinux is deactivated or not.

You can temporarily deactivate SELinux by running `setenforce   0` .

Keyword "Do Grub Failed" appears in the migration logs of a Linux server.

Check whether the on-premises server has correctly installed the GRUB (GRand
Unified Bootloader) or not when `Do   Grub   Failed` is received. You can *install a
GRUB with the version newer than 1.9 and try again* and try again.

Why no data is found in the original data disk directory in the started Linux ECS
instances?

After you migrate an on-premises Linux server, the data disks are not mounted by
default. You can run the command `ls  / dev / vd *` to view the data disk devices.
You may mount the data disks manually as needed, and edit configuration file `/ etc
 / fstab` to configure the mounting file systems.

Why cannot I start the created ECS instances after Linux server migration?

- Check the driver. Before creating the I/O optimized instances, make sure that the
  virtio driver is installed on the on-premises server.
- Check whether the boot configurations of the on-premises server are normal.

- Connect to the ECS instance by using the *Management Terminal* in the ECS console, if
  the following output appears:

  Perhaps the kernel of your on-premises Linux servers is the earlier version, and the
  version of GRUB (GRand Unified Bootloader) is earlier than 1.9. You may *update the
  boot loader GRUB to a version later than 1.9* .

What can I do if network service is abnormal when I start the migrated Others Linux
instances?

When an image of Others Linux type is imported, Alibaba Cloud performs no
configuration, including network configuration and SSH configuration, on ECS
instances created by custom images. You can manually modify the network service
configurations.

After the migration job is finished, we provide the created instance a single virtual
network interface that uses DHCP to assign addresses. If network configuration still
fails, *open a ticket* to contact Alibaba Cloud.

If the problem persists, *join the dedicated DingTalk Migration Tool group chat* or *open a ticket*
to contact Alibaba Cloud.

1.8 Feedback and support

This article provides options for access to technical support and additional server
migration support.

Feedback channels specific to the migration to Alibaba Cloud are as follows.

- In the ECS console, *open a ticket* .
- Business hours access to cloud support via email of *server-migration@alibabacloud.com*
  .
- *Join the dedicated DingTalk Migration Tool group chat* , share us your cloud migration
  experiences, and consult the experts for advice. DingTalk is an enterprise
  communication and collaboration platform developed by Alibaba Group. You can
  navigate to the official website of *DingTalk* to download an appropriate client.

2 Migration service

2.1 Migration overview

This topic describes how you can easily migrate your services to Alibaba Cloud.

Background information

In response to the rapid rise of cloud computing services, Alibaba Cloud has launched a comprehensive server migration service. This migration service is a one-click solution that provides easy-to-use server system migration tools, helping to reducing costs while streamlining the server migration process.

For more information, see *Cloud Migration tool for P2V and V2V*.

Workflow

1. Practice using the migration tools by performing trial migrations.
2. Estimate the costs and time of migration and make a migration plan.
3. Migrate your systems. For technical support, contact Alibaba Cloud.
4. Create Pay-As-You-Go instances and debug the system services.
5. Switch over all systems to the cloud and upgrade your instances to Subscription instances.

2.2 Supported systems and scopes of migration

Service migration depends on such factors as operating systems, source platforms, and general scope of migration. This topic describes the systems and migration scenarios supported by the Alibaba Cloud migration service.

Supported operating systems

Previously, a standard server system migration typically experienced the following issues:

· Complicated configurations: Advanced IT knowledge is required for virtualized driver configurations, system boot configurations, and disk configurations.

· High migration costs: An equivalent amount of local storage space needs to be used for the migration process, which may therefore take a long time and can be disrupted easily.

· Different migration methods: Because of different OSs involved, there is no unified method to migrate Windows or Linux operating systems.

To resolve the preceding issues, the Alibaba Cloud migration service provides:

A one-click automatic system configuration function that includes resumable upload/download and compressed transfer features. Additionally, the service does not occupy local storage, and supports the following Windows and Linux operating systems:

· Windows Server 2003/2008/2012/2016
· CentOS 5/6/7
· Ubuntu 10/12/14/16/17/18
· Debian 7/8/9
· Red Hat 5/6/7
· SUSE 11.4/12.1/12.2
· Amazon Linux 2014 or later
· Oracle Linux 5/6/7

Supported server platforms

Previously, a standard server platform migration typically encountered the following compatibility issues:

· Incompatible underlying server environments between physical machines and virtual machines.
· Incompatible file systems, including different file formats, partition types, and disk types.
· Incompatible system services, for example, Cloud-Init and SELINUX.

To resolve the preceding issues, the Alibaba Cloud migration service provides:

Support for P2V/V2V migration (physical machine/virtual machine migration) without a dependency on the underlying environment. The service is also compatible with multiple file formats, partition types, and disk types, and can automatically process specified system services. Currently, the following server platforms are supported:

· On-premises IDCs
· Local virtual machines (VMware/Vitrual Box/XEN/KVM)
· Alibaba Cloud (across accounts or regions)

- AWS EC2

- Azure VM

- Google VM

- Huawei ECS

- Tencent Cloud (CVM)

- Other mainstream cloud vendors (for example, UCloud, e-Surfing Cloud, and QingCloud)

Supported scopes of migration

Previously, service migrations that were performed manually typically experienced the following issues :

- Extensive operation and deployment preparations

- Excessive consumption of resources

- Lengthy migration process

To resolve the preceding issues, the Alibaba Cloud migration service provides:

- Automatic on-demand migration resource responses, using the elastic computing resources of Alibaba cloud, which enable flexible service expansion.

- Concurrent processing of massive migration tasks

- Easy batch migration. You can call the easy-to-distribute migration service tool through the CLI by running automated scripts that you create.

The scope of migration that the Alibaba Cloud migration service supports ranges from tens of servers (small-scale migration) to thousands of servers (large-scale migration).

2.3 Migration assessment

Before you perform a system migration, you need to assess your service contents, the time required for migration, and related costs, and create a migration plan accordingly. This topic describes the key assessment factors that you need to consider when planning a system migration.

Operating system requirements

- Kernel version: CentOS/Red Hat 5 or later, Ubuntu 10 or later, and Windows Server 2003 or later. If your kernel version is earlier than the preceding versions listed, you need to upgrade your kernel to a supported version.

- Virtualized driver: The KVM virtio driver must be installed.
- Service software: For Linux systems, rsync is required and curl is recommended. For Windows systems, the Volume Shadow Services (VSSs) must be operating properly.
- Grand Unified Bootloader (GRUB): For operating systems with earlier kernel versions, such as CentOS/Red Hat 5 and Debian 7, GRUB must be upgraded to V1.99 or later.
- Disk size: The system disk must be 40 to 500 GiB, and the data disk must be 20 to 32768 GiB.

Service applications

- Service suspension: If you are running large service applications, such as Oracle, SQLServer, MongoDB, MySQL, and Docker databases, we recommend that you suspend them before performing the service migration. If such service applications cannot be suspended, we recommend that you exclude the corresponding data directories from being migrated, and then synchronize the database data after the server migration is completed.
- Large data volume: If there are a massive number of data files, we recommend that you migrate only the server application environment, and then decide whether to migrate these data files by using a physical connection or Lightning Cube for faster transfer.
- Software licensing: You need to assess whether the software that must be licensed in the source system requires a new license after migration.
- Network configuration: The Internet IP address changes after migration. You need to assess whether this will affect the original services.

Network transfer modes

You need to assess the network transfer mode required for the server system to be migrated.

Server migration is divided into three phases:

1. Migration resource preparation
2. Data transfer
3. Migration closing

All three phases are conducted through the Internet. Therefore, the server to be migrated must have access to the following Alibaba Cloud service addresses and ports :

· Phase 1 and phase 3

   - ECS service: https://ecs.aliyuncs.com, port 443. For more addresses, see *Request structure*.

   - VPC sevice: https://vpc.aliyuncs.com, port 443.

   - STS service: https://sts.aliyuncs.com, port 443.

· Phase 2: IP address (the Internet address by default) of the temporary intermediate instance, port 8080 and port 8703.

If the preceding migration method cannot be conducted through the Internet entirely , the Alibaba Cloud migration service supports the following transfer modes for specific network environments:

· Default Internet transfer: The Internet is used by default in phases 1, 2, and 3.

· Manual intranet transfer: The Internet is used in phases 1 and 3 and the VPC is used in phase 2. Manual intranet transfer applies to the server systems that can access the VPC but cannot access the preceding Alibaba Cloud service addresses. In this case, you need to prepare an additional system of the same type that can access the preceding Alibaba Cloud service addresses to cooperate with the operation. For more information, see *VPC-based migration*.

· Automatic intranet transfer: The Internet is used in phases 1 and 3. The VPC is used in phase 2. Automatic intranet transfer applies to the server systems that can access the preceding Alibaba Cloud service addresses and the specified VPC. This mode also applies to the server systems whose data is transferred through the VPC in phase 2. Compared with Manual intranet transfer, this mode is simpler. For more information, see *VPC-based migration*.

Migration quantity

The following information is recommended if you want to migrate your servers in batches.

1. Before a batch migration, you need to:

    · Contact your local network operator to confirm the traffic limits, or set the
       upper limit of the transmission bandwidth by using the Cloud Migration tool.

    · Open a ticket to cancel the limits on the number of Alibaba Cloud images and
       the quota of Pay-As-You-Go resources (for example, vCPU).

2. During a batch migration, you need to:

    · Check whether the server system supports automated batch O&M to run
       commands in batches and run the Cloud Migration tool.

    · Check whether you need to analyze the statistics of batch migration progress
       logs.

3. After a batch migration, you need to:

    · Create and configure the server systems.

    · Validate the server systems.

Migration period

The migration period is determined by the number of servers and the actual data
volume. We recommend that you assess how much migration time is required by
conducting tests in advance.

The migration period is divided into three parts: pre-migration, migration, and post-
migration.

· Pre-migration time = migration preparation time

   The migration preparation time varies with the actual conditions.

· Migration time = data transfer time + image production time (optional)

   Data transfer time = actual data volume / actual transfer rate

   Image production time = actual data volume / snapshot service speed

   > 📋 Note:
   >
   > By default, the Cloud Migration tool enables the compression transfer function
   > during data transfer. This results in an transfer rate increase by 30% to 40%. The
   > image production time depends on the snapshot service of Alibaba Cloud (the
   > current speed is approximately 10 to 30 MB/s).

· Post-migration time = incremental system synchronization time after migration (
optional) + system configuration validation time

Incremental system synchronization time = actual incremental data volume /
actual transfer rate

The system configuration validation time varies according to actual conditions.

Note:

By default, the migration service generates a full image. If you want to minimize the
migration period, you can also migrate data directly to the target instance. For more
support, contact the migration service engineers of Alibaba Cloud.

Migration costs

The Cloud Migration tool is provided free of charge. However, an ECS instance named
INSTANCE_FOR_GOTOALIYUN is created by default under your Alibaba Cloud
account during the migration to act as an intermediate station. The ECS instance is a
Pay-As-You-Go instance. You need to ensure that the credit card associated with your
account has a sufficient balance.

Note:

After the migration, the intermediate instance resources (including the cloud disks)
are automatically released. If the migration fails, the intermediate instance remains
in the ECS console so that you can re-migrate data. If you do not need to continue
with the migration, we recommend that you manually release the instance to avoid
incurring unnecessary fees.

2.4 Migration solutions

2.4.1 Full migration

This topic describes how to perform a full migration. When you migrate a server from
an on-premises IDC or a static application environment to Alibaba Cloud for the first
time, you need to perform a full migration. During the full migration, you do not need
to stop your current services, but you do need to perform an incremental migration
later.

Full migration of a Windows server

Preparations

1. Verify that the Windows VSS service is enabled.

2. Check whether you have installed the qemu-agent tool. If so, uninstall it. For more information, see *Cloud Migration tool FAQ*.

Procedure

1. *Download and install the Cloud Migration tool* onto the server to be migrated.

2. Configure the `user_confi  g . json` file.

   The `user_confi  g . json` file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

3. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

4. Run the main program of the Cloud Migration tool.

   Run go2aliyun_client.exe or go2aliyun_gui.exe as the administrator. If the main program is a GUI version, click the Start button to start the migration.

Full migration of a Linux server

The following procedure uses CentOS 7.6 as an example to describe how to perform a full migration of a Linux server.

Preparations

1. Run the following command to download the Cloud Migration tool to the server to be migrated:

   ```
   wget   http :// p2v - tools . oss - cn - hangzhou . aliyuncs . com
   / Alibaba_Cl  oud_Migrat  ion_Tool . zip
   ```

2. Run the following command to decompress the Cloud Migration tool:

   ```
   unzip   Alibaba_Cl  oud_Migrat  ion_Tool . zip
   ```

3. Run the following command to view the hardware architecture of the Linux server
   to be migrated and decompress the Cloud Migration tool package that applies to
   this hardware architecture:

```
uname  - a
unzip  < the   Cloud   Migration   tool   package   that   applies
   to   the   hardware   architectu  re   of   the   Linux   system
   to   be   migrated >
```

In this example, the Linux hardware architecture is `x86_64` . Therefore, the Cloud
Migration tool package that applies to this hardware architecture is *go2aliyun_*
client1 . 3 . 2 . 3_linux_x8 6_64 . zip .

4. Run the following command to access the directory where the decompressed Cloud
   Migration tool is located:

```
cd  < the   directory   where   the   decompress  ed   Cloud
Migration   tool   is   located >
```

In this example, the command is `cd   go2aliyun_   client1 . 3 . 2 .`
`3_linux_x8  6_64` .

5. Run the following command to check whether the Linux server meets the
   migration conditions:

```
chmod  + x  ./ Check / client_che  ck
./ Check / client_che  ck  -- check
```

If all check items are `OK` , it means that the Linux server meets the migration
conditions and you can start the migration.

Procedure

1. Configure the *user_confi g . json* file.

   The *user_confi g . json* file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target
     data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

2. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

3. Run the following command as the root user to grant the execution permission to the main program, and then run this program.

```
chmod  + x   go2aliyun_  client
./ go2aliyun_  client
```

4. Wait until the main program of the Cloud Migration tool has been completely executed. When the message `Go   to   Aliyun   Finished !` is displayed, the migration is successfully completed.

What to do next

Go to the image details page in the ECS console to view the result. The OS, applications, and relevant data of your source system are displayed in the ECS console in the format of a custom image.

For the incremental data that is generated during the full migration, you need to perform an *Incremental migration*.

2.4.2 Incremental migration

After you perform a full migration, we recommend that you suspend your services and perform an incremental migration to synchronize any data changes from the source server to the target ECS instance.

If you want to synchronize the incremental data online, we recommend that you use the *Alibaba Cloud Data Transmission Service (DTS)*.

Prerequisite

You have successfully performed a *Full migration*, which has generated a custom image (that is, a full image) in the ECS console.

Procedure

1. Suspend your services.

2. Use the full image to *create a Pay-As-You-Go instance*, and configure the network to connect to the source system.

3. Using an incremental synchronization tool to synchronize the incremental data from the source system to the target ECS instance.

   We recommend that you use the rsync or goodsync synchronization tool. In this example, rsync is used to describe how to synchronize incremental data from the source system to the target ECS instance. If the IP address of your target ECS instance is 10.0.0.11 and the directory that you need to synchronize is `/ disk1` , then the example code of the rsync command is `rsync  - azvASX  -- partial -- progress  - e  " ssh  " / disk1 /  root @ 10 . 0 . 0 . 11 :/ disk1 /`. For more information, see the *parameter descriptions on the rsync official website*.

   > **Note:**
   > For incremental database synchronization, you can use the Alibaba Cloud DTS service.

2.4.3 Batch migration

This topic describes how to perform a batch migration of servers by running scripts. Batch server migration is useful when you need to migrate a large amount of servers at a time.

Context

Automated O&M tools (for example, Ansible) are generally used to manage a large group of server systems. With Ansible, you can easily complete repetitive work. For example, you can copy the same file to 100 servers or install and start the Apache service on 100 servers simultaneously.

Automated O&M tools allow you to distribute and run scripts in batches. The Cloud Migration tool provided by Alibaba Cloud is a client program that can be used without any installation or complicated configurations required.

Procedure

1. Prepare an automated batch O&M tool.

2. Use command lines to call the Cloud Migration tool.

   The Cloud Migration tool provides a series of command line parameters that apply to scenarios where you want to call the Cloud Migration tool. For example:

   · --noenterkey: disables interaction.

   · --nocheckversion: disables version update notification.

   · --progressfile: sets the progress log file.

3. Create scripts for batch migration.

   Create scripts for automated batch migration task as needed. The scripts include the following operations:

   a. Distribute the Cloud Migration tool to the servers to be migrated.

   b. Configure the Cloud Migration tool.

   c. Run the Cloud Migration tool and obtain the migration task result.

Example scripts

```
# Send    the    Cloud    Migration    tool    program    to    all
 servers .

 ansible  - f   6  - i   host . file   all   - m   copy  - a
" src = go2aliyun_  client1 . 2 . 9 . 1_linux_x8  6_64 . zip   dest =/
 temp "

#  Decompress    the    program .

 ansible  - f   6  - i    host . file   all  - m   shell  - a  " cd  /
 temp  &&
 unzip  \

 go2aliyun_  client1 . 2 . 9 . 1_linux_x8  6_64 . zip "

# Run    the    scripts    that    modifies    the    configurat  ion
 file .

 ansible  - f   6  - i    host . file   all  - m   shell  - a  " cd
/ temp / go2aliyun_  client1 . 2 . 9 . 1_linux_x8  6_64  && ./ config
 . sh "

 sleep   120

#  The    configurat  ion    file    script  ". / config . sh " is
 used    to    configure    the    target    image    name    according    to
   the    subnet    IP    address . ( Other    items    such    as    AK ,
 zone ,    and    disk    informatio  n    have    been    configured )

#! / bin / bash

 image_name =` ip    a  |  grep    inet  |  grep    eth0  |  grep    brd
 |  awk  '{ print
$ 2 }' |  awk  - F  '/' '{ print  $ 1 }'|  awk  - F  '.' '{ print
" move_ "$ 1 " _ "$ 2 " _ "$ 3 " _ "$ 4 }'`
```

```
sed – i " s / IMAGE_NANE /${ image_ame }/" user_confi g . json


# Run six migration scripts at the same time .

 ansible – f 6 – i host . file all – m shell – a " cd
/ temp / go2aliyun_ client1 . 2 . 9 . 1_linux_x8 6_64 && chmod +
 x go2aliyun_ client
&&./ go2aliyun_ client –– nocheckver sion –– noenterkey "

# Obtain the cloud migration result by obtaining the
  generated image ID and the migration status from
 client_dat a .

# Check the status displayed in client_dat a . If the
 status is Finished , it means that the cloud migration
  is completed . The image_id field is the generated
 image ID .
```

2.4.4 VPC-based migration

If you can directly access a VPC from your on-premises IDC, virtual machine, or cloud host, but want to fully migrate your services to Alibaba Cloud, you can connect your source server with your target VPC to easily migrate your services. Compared with migrating your cloud services through the Internet, migrating your cloud services using Alibaba Cloud VPC transfers data at faster speeds and with greater stability.

You can use *Express Connect* and *VPN* to connect with the VPC, and then use the Cloud Migration tool to perform a VPC-based migration.

Context

The V1.2.8 Cloud Migration tool and later versions support VPC-based migration. To perform a VPC-based migration, you need to set the `net_mode` field of

`client_dat a` to `1` or `2` .

```
"extra": {
    "net_mode" : 0,
    "p2v_stage" : 0
},
```

The options of the `net_mode` parameter are described as follows:

· 0: the default value, which indicates Internet-based migration. The system to be migrated must support data transfer through the Internet.

· 1: indicates that the system to be migrated can access the specified VPC. The migration process is divided into phase 1, phase 2, and phase 3. In phase 2, data is

transferred in the current system. In phase 1 and phase 3, data is transferred in other Internet environments.

· 2: indicates that the system to be migrated can access the Internet and the specified VPC. Data is transferred through the specified VPC.

Different parameter settings apply to different migration methods.

Method 1

If you set `net_mode` to `1`, follow these steps to migrate the system:

1. Create an intermediate instance in the Internet environment.

   a. Log on to the target system (system A, in this example) that has access to the Internet, and then download the Cloud Migration tool.

   b. Configure the `user_confi  g . json` file.

   c. Set the target `vpc_id`, `vswitch_id`, and `zone_id` in the `client_dat  a` file. For more information, see *Configure the client_data file to the specified VPC*.

   d. Run the Cloud Migration tool until the message `Stage   1   is   done !` is displayed.

   ```
   [2018-04-10 20:43:16]  [Info]   Server ECS Is Running!
   [2018-04-10 20:43:16]  [Done]   Stage 1 is Done!
   [2018-04-10 20:43:16]  [Info]   Goto Aliyun Not Finished, Ready To Next Stage!
   Enter any key to Exit...
   ```

2. Transfer system data in the VPC.

   a. Log on to the system to be migrated to the VPC (system B, in this example).

   b. Copy the Cloud Migration tool from system A to system B.

   > **Note:**
   >
   > The `user_confi  g . json` file and the `client_dat  a` file in system B must be the same as those in the Cloud Migration tool in system A.

   c. Run the Cloud Migration tool until the message `Stage   2   is   done !` is displayed.

   ```
   [2018-04-10 20:47:43]  [Info]   Do Grub...
   [2018-04-10 20:48:20]  [Done]   Stage 2 is Done!
   [2018-04-10 20:48:20]  [Info]   Goto Aliyun Not Finished, Ready To Next Stage!
   Enter any key to Exit...
   ```

3. Create an image in the Internet environment.

    a. Go back to system A, and then copy the Cloud Migration tool from system B to system A.

> ◳ **Note:**
>
> The *user_confi g . json* file and the *client_dat a* file must be the same as those in the Cloud Migration tool in system A.

    b. Run the Cloud Migration tool until the message `Stage 3 is done !` is displayed, which indicates the cloud migration is finished.

```
[2018-04-10 20:55:52]  [Done]   Create Image Successfully!
[2018-04-10 20:55:53]  [Info]   Server ECS Is Released!
[2018-04-10 20:55:53]  [Done]   Stage 3 is Done!
[2018-04-10 20:55:53]  [Done]   Goto Aliyun Finished!
Enter any key to Exit...
```

Method 2

If you set `net_mode` to `2` , follow these steps to migrate the system:

1. Log on to the system to be migrated, and then download the Cloud Migration tool.

2. Configure the *user_confi g . json* file.

3. Set the target `vpc_id` , `vswitch_id` , and `zone_id` in the *client_dat a* file. For more information, see *Configure the client_data file to the specified VPC*.

4. Run the Cloud Migration tool until the migration is completed.

> ◳ **Note:**
>
> During the migration, data is transferred through the VPC in the data migration phase, or through the Internet in other phases.

Configure the client_data file.

To configure the client_data file to the specified VPC, follow these steps:

1. Set `vpc_id` to the ID of the specified VPC.

```
"vpc": {
    "vpc_id": "",
    "vpc_name": "GOTOALIYUN_VPC",
    "description": "VPC FOR GOTOALIYUN.",
    "status": ""
},
```

2. Set `vswitch_id` to the ID of the specified VSwitch.

```
"vswitch": {
    "vswitch_id": "",
    "vswitch_name": "GOTOALIYUN_VSWITCH",
    "description": "VSWITCH FOR GOTOALIYUN.",
    "status": ""
},
```

3. Set `zone_id` to the ID of the specified zone.

```
"instance": {
    "instance_id": "",
    "instance_name": "INSTANCE_FOR_GOTOALIYUN",
    "description": "",
    "zone_id": "",
    "internet_max_bandwidth_out": "1",
    "public_ip_address": "",
    "private_ip_address": "",
    "status": ""
},
```

4. (Optional) Set `security_g  roup_id` to the ID of the specified security group. If you do not set this parameter, it will be automatically created.

> **Note:**
> The specified security group must enable port 8080 and port 8703 in the inbound direction.

```
"security group": {
    "security_group_id": "",
    "security_group_name": "GOTOALIYUN_SECURITY_GROUP",
    "description": "SECURITY GROUP FOR GOTOALIYUN."
},
```

2.4.5 Migrate a source instance to a target instance

Generally, the Cloud Migration tool migrates ECS instances by creating snapshots and generating custom images. If you have created the corresponding target ECS instances, you can migrate the source instances directly to the target instances.

This speeds up the instance migration process because you do not need to create snapshots or generate custom images.

Preparations

- *Contact technical support* to obtain the related permissions.
- Prepare one or more target ECS instances in the target Alibaba Cloud region. The number of target ECS instances is the same as the number of source instances. The source ECS instances must be in stopped state.
- Back up the data in the system disks of the target instances. This is recommended because the system disks will be replaced after the migration.

Procedure

To migrate a source instance to its target instance, follow these steps: If you want to migrate multiple instances, you can repeat the steps detailed in this procedure as needed until all instances are migrated.

1. Download the Cloud Migration tool (V1.2.9.7 or later).
2. Configure the `client_dat a` file and set `target_ins tance_id` in `extra`.

```
"extra": {
    "net_mode" : 0,
    "p2v_stage" : 0,
    "target_instance_id" : "i-xxxxxxxxxxxxxxxxxx"
},
```

> 📋 Note:
> By default, the disk of the target instance is an ultra disk. If the disk is an SSD disk, you need to configure the `client_dat a` file by set `instance_d isk_cloud_ ssd` to `true`.

3. Configure the `user_confi g . json` file. For more information, see *Full migration*.
4. Run the Cloud Migration tool until the migration is completed.

What to do next

Start the target ECS instance to verify that the system runs normally.

2.4.6 Other migration solutions

If you are using an earlier server OS, or your server OS is not in the list of supported systems, you can contact Alibaba Cloud technical support for applicable cloud migration solutions.

Migrate earlier server OSs to Alibaba Cloud

Some earlier server OSs, for example, OSs earlier than CentOS 5.5 and Red Hat 5.5, cannot be migrated to Alibaba Cloud directly because their kernels do not support the necessary virtualization drivers, such as virtio. The following procedure takes CentOS 5.1 (old version, kernel version: 2.6.18-53.el5) and CentOS 5.5 (new version, kernel version: 2.6.18-194.el5) as example OSs to describe how to upgrade the kernel version and migrate such systems to Alibaba Cloud.

Procedure

1. Run the following command to confirm that the system version is CentOS 5.1 and the kernel version is 2.6.18-53.el5:

   ```
   cat  / etc / redhat - release
   uname  - r
   ```

2. Run the following command to download and install the kernel installation package of CentOS 5.5:

   ```
   wget  http :// vault . centos . org / 5 . 5 / os / x86_64 / CentOS
   / kernel - 2 . 6 . 18 - 194 . el5 . x86_64 . rpm
   rpm  - ivh  ./ kernel - 2 . 6 . 18 - 194 . el5 . x86_64 . rpm
   ```

   > **Note:**
   >
   > If an error occurs during the installation of the new kernel, you need to check the error log for details. If the error is caused by a conflict between the existing software and the new kernel, you need to manually uninstall the existing software and then reinstall the new kernel. After you install the new kernel successfully, you can reinstall the previous software.

3. Upgrade the GRUB of your system to version 1.99. For more information, see *Update GRUB 1.99 for a Linux server*.

   > **Note:**
   >
   > We recommend that you mask the old GRUB 0.97 program so that you do not mistake it for the new version.

4. Run GRUB 1.99 as follows:

    a. Run the `grub - mkconfig  - o  / boot / grub / grub . cfg` command to update the GRUB configuration file.

    b. Run the `cat  / boot / grub / grub . cfg` command to check whether the configuration file contains the old kernel 2.6.18-53.el5 and the new kernel 2.6.18-194.el5.

    c. Run the `fdisk  - l` command to find the system disk.

    d. If your system disk is `/ dev / sda`, run the `grub - install  -- no - floppy  -- modules = part_msdos  -- boot - directory =/ boot  / dev / sda` command.

    e. Set the new kernel as a default startup item:

        A. Run the `cat  / boot / grub / grub . cfg | grep   menuentry` command to check the startup item list of the kernel.

        B. Find the label of the new kernel, and then run the following command to set the new kernel as a default startup item:

```
mkdir  / usr / local / etc / default / - p
echo  " GRUB_DEFAU  LT =< label   of   the   new   kernel >"
>> / usr / local / etc / default / grub
grub - mkconfig  - o  / boot / grub / grub . cfg
```

For example, if the new kernel is GNU/Linux (with Linux 2.6.18-194.el5) and the corresponding label is 2, run the following command:

```
mkdir  / usr / local / etc / default / - p
echo  " GRUB_DEFAU  LT = 2 " >> / usr / local / etc / default
/ grub
grub - mkconfig  - o  / boot / grub / grub . cfg
```

5. Restart the OS. The GRUB menu page is displayed and the system is restarted using the new kernel 2.6.18-194.el5.

6. *Download and install the Cloud Migration tool* to conduct the migration.

Migrate other systems to Alibaba Cloud

If your system is not listed in *Supported systems and scopes of migration*, for example, Oracle Linux, Amazon Linux, and XenServer, *contact technical support* for custom system tests and migration solutions.

2.5 Migration scenarios

2.5.1 Migrate your physical server to Alibaba Cloud ECS

This topic describes how to migrate your physical server to Alibaba Cloud ECS.

Migrate your Windows physical server to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Make sure that the system time is the same as the standard time of the local region.

3. Ensure that your physical server can access the following websites and ports:

   a. ECS: `https :// ecs . aliyuncs . com : 443 .`

   > **Note:**
   >
   > For information about ECS API endpoints of other regions, see *Endpoints*.

   b. VPC: `https :// vpc . aliyuncs . com : 443 .`

   c. STS: `https :// sts . aliyuncs . com : 443 .`

   d. Intermediate instance: port 8080 and port 8703.

   > **Note:**
   >
   > An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to ensure that the physical server to be migrated has access to port 8080 and port 8703 of the intermediate instance by running the following commands:

   ```
   telnet   xxx . xx . xxx . xx   8080   #  where ,   xxx . xx
   . xxx . xx   is   the   Internet   IP   address   of   the
     intermedia  te   instance . When   you   perform   the
   migration   through   VPC ,   xxx . xx . xxx . xx   is   the
   private   IP   address   of   the   intermedia  te   instance .
   telnet   xxx . xx . xxx . xx   8703   #  where ,   xxx . xx
   . xxx . xx   is   the   Internet   IP   address   of   the
     intermedia  te   instance . When   you   perform   the
   migration   through   VPC ,   xxx . xx . xxx . xx   is   the
   private   IP   address   of   the   intermedia  te   instance .
   ```

4. Check your virtualized applications.

   > **Note:**

Generally, Alibaba Cloud ECS instances do not support built-in virtualized applications. Therefore, VMware Workstation, Virtual Box, and Hyper-V, which can only be used in a physical machine environment, will no longer be supported after the migration.

5. Ensure that the Windows VSS service is enabled.

6. Check whether you have installed the qemu-agent tool. If so, uninstall it. For more information, see *Cloud Migration tool FAQ*.

7. Check the validity of your application licenses.

> **Note:**
>
> After your physical server is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

8. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. *Download and install the Cloud Migration tool* onto the server to be migrated.

2. Configure the `user_confi g . json` file.

   The `user_confi g . json` file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

3. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

4. Run the main program of the Cloud Migration tool.

   Run go2aliyun_client.exe or go2aliyun_gui.exe as the administrator. If the main program is a GUI version, click the Start button to start the migration.

Migrate your Linux physical server to Alibaba Cloud

Preparations

1. **Create a snapshot to back up your data.**

2. **Make sure that the system time is the same as the standard time of the local region.**

3. **Ensure that your physical server can access the following websites and ports:**

   a. **ECS:** `https :// ecs . aliyuncs . com : 443 .`

   > **Note:**
   > For information about ECS API endpoints of other regions, see *Endpoints*.

   b. **VPC:** `https :// vpc . aliyuncs . com : 443 .`

   c. **STS:** `https :// sts . aliyuncs . com : 443 .`

   d. **Intermediate instance: port 8080 and port 8703.**

   > **Note:**
   > An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to ensure that the physical server to be migrated has access to port 8080 and port 8703 of the intermediate instance by running the following commands:

   ```
   telnet   xxx . xx . xxx . xx   8080   #  where ,   xxx . xx
   . xxx . xx   is   the   Internet   IP   address   of   the
     intermedia  te   instance .  When   you   perform   the
   migration   through   VPC ,   xxx . xx . xxx . xx   is   the
   private   IP   address   of   the   intermedia  te   instance .
   telnet   xxx . xx . xxx . xx   8703   #  where ,   xxx . xx
   . xxx . xx   is   the   Internet   IP   address   of   the
     intermedia  te   instance .  When   you   perform   the
   migration   through   VPC ,   xxx . xx . xxx . xx   is   the
   private   IP   address   of   the   intermedia  te   instance .
   ```

4. *Download and install the Cloud Migration tool*.

5. **Go to the directory where the Cloud Migration tool is located. Run the** `./ Check / client_che  ck  -- check` **command to check whether the physical server to be migrated meets the migration conditions.**

   > **Note:**

If all check items are `OK` , you can start the migration. Otherwise, you need to conduct the following additional checks:

a. Check SELinux. For CentOS or Red Hat systems, check whether SELinux is disabled. If SELinux is enabled, disable it by using either of the following methods:

   A. Run the `setenforce    0` command to disable SELinux temporarily.

   B. Modify the `/ etc / selinux / config` file to set `SELINUX = disabled` to disable SELinux permanently.

b. Check the virtualization driver. For more information, see *Install the virtio driver*.

c. Check the GRUB bootloader and upgrade GRUB to 1.99 or a later version for systems with earlier kernel versions (such as CentOS 5, Red Hat 5, and Debian 7). For more information, see *Update GRUB 1.99 for a Linux server*.

6. Check your virtualized applications.

   📋 Note:
   Generally, Alibaba Cloud ECS instances do not support built-in virtualized applications. Therefore, VMware Workstation, Virtual Box, and Hyper-V, which can only be used in a physical machine environment, will no longer be supported after the migration.

7. Check the validity of your application licenses.

   📋 Note:
   After your physical server is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

8. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. Configure the *user_confi g . json* file.

   The *user_confi g . json* file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

2. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

3. Run the following command as the root user to grant the execution permission to the main program, and then run this program.

   ```
   chmod  + x   go2aliyun_  client
   ./ go2aliyun_  client
   ```

4. Wait until the main program of the Cloud Migration tool has been completely executed. When the message `Go   to   Aliyun   Finished !` is displayed, the migration is successfully completed.

2.5.2 Migrate your VMware VM to Alibaba Cloud ECS

This topic describes how to migrate your VMware Virtual Machine (VM) to Alibaba Cloud ECS.

Migrate your VMWare Windows VM to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Make sure that the system time is the same as the standard time of the local region.

3. Ensure that your VM can access the following websites and ports:

   a. ECS: `https :// ecs . aliyuncs . com : 443 .`

   > **Note:**

> For information about ECS API endpoints of other regions, see *Endpoints*.

b. VPC: `https :// vpc . aliyuncs . com : 443 .`

c. STS: `https :// sts . aliyuncs . com : 443 .`

d. Intermediate instance: port 8080 and port 8703.

> 📋 **Note:**
>
> An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to ensure that the VM to be migrated has access to port 8080 and port 8703 of the intermediate instance by running the following commands:

```
telnet    xxx . xx . xxx . xx    8080    #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address    of    the
  intermedia  te    instance .  When    you    perform    the
migration    through    VPC ,   xxx . xx . xxx . xx    is    the
private    IP    address    of    the    intermedia  te    instance .
telnet    xxx . xx . xxx . xx    8703    #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address    of    the
  intermedia  te    instance .  When    you    perform    the
migration    through    VPC ,   xxx . xx . xxx . xx    is    the
private    IP    address    of    the    intermedia  te    instance .
```

4. Ensure that the Windows VSS service is enabled.

5. Check whether you have installed the qemu-agent tool. If so, uninstall it. For more information, see *Cloud Migration tool FAQ*.

6. Check the validity of your application licenses.

> 📋 **Note:**
>
> After your VM is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

7. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. *Download and install the Cloud Migration tool* onto the server to be migrated.

2. Configure the *user_confi g . json* file.

   The *user_confi g . json* file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

3. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

4. Run the main program of the Cloud Migration tool.

   Run go2aliyun_client.exe or go2aliyun_gui.exe as the administrator. If the main program is a GUI version, click the Start button to start the migration.

Migrate your VMWare Linux VM to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Make sure that the system time is the same as the standard time of the local region.

3. Ensure that your VM can access the following websites and ports:

   a. ECS: `https :// ecs . aliyuncs . com : 443 .`

   > **Note:**
   > For information about ECS API endpoints of other regions, see *Endpoints*.

   b. VPC: `https :// vpc . aliyuncs . com : 443 .`

   c. STS: `https :// sts . aliyuncs . com : 443 .`

   d. Intermediate instance: port 8080 and port 8703.

   > **Note:**
   > An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to ensure that the VM to be migrated has

access to port 8080 and port 8703 of the intermediate instance by running the

following commands:

```
telnet   xxx . xx . xxx . xx    8080    #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address    of    the
  intermedia  te    instance .  When    you    perform    the
migration   through   VPC ,   xxx . xx . xxx . xx    is    the
private   IP   address   of   the   intermedia  te   instance .
telnet   xxx . xx . xxx . xx    8703    #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address    of    the
  intermedia  te    instance .  When    you    perform    the
migration   through   VPC ,   xxx . xx . xxx . xx    is    the
private   IP   address   of   the   intermedia  te   instance .
```

4. *Download and install the Cloud Migration tool*.

5. Go to the directory where the Cloud Migration tool is located. Run the `./ Check /
   client_che ck -- check` command to check whether the VM to be migrated
   meets the migration conditions.

   Note:
   If all check items are `OK`, you can start the migration. Otherwise, you need to
   conduct the following additional checks:

   a. Check SELinux. For CentOS or Red Hat systems, check whether SELinux is
      disabled. If SELinux is enabled, disable it by using either of the following
      methods:

      A. Run the `setenforce   0` command to disable SELinux temporarily.

      B. Modify the `/ etc / selinux / config` file to set `SELINUX = disabled` to
         disable SELinux permanently.

   b. Check the virtualization driver. For more information, see *Install the virtio driver*.

   c. Check the GRUB bootloader and upgrade GRUB to 1.99 or a later version for
      systems with earlier kernel versions (such as CentOS 5, Red Hat 5, and Debian 7).
      For more information, see *Update GRUB 1.99 for a Linux server*.

6. Check the validity of your application licenses.

   Note:
   After your VM is migrated to Alibaba Cloud, the underlying hardware devices of
   the system will change, which may result in the associated application licenses
   becoming invalid.

   Procedure

1. Configure the *user_confi g . json* file.

   The *user_confi g . json* file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

2. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

3. Run the following command as the root user to grant the execution permission to the main program, and then run this program.

   ```
    chmod  + x   go2aliyun_  client
   ./ go2aliyun_  client
   ```

4. Wait until the main program of the Cloud Migration tool has been completely executed. When the message `Go   to   Aliyun   Finished !` is displayed, the migration is successfully completed.

> 📋 **Note:**
> After your VMware VM is successfully migrated to Alibaba Cloud ECS, you no longer need VMtools to manage the relevant instance in Alibaba Cloud.

2.5.3 Migrate your Xen/KVM/Hyper-V VM to Alibaba Cloud ECS

This topic describes how to migrate your Xen/KVM/Hyper-V Virtual Machine (VM) to Alibaba Cloud ECS.

Migrate your Windows VM to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.
2. Make sure that the system time is the same as the standard time of the local region.

3. Ensure that your VM can access the following websites and ports:

   a. ECS: `https :// ecs . aliyuncs . com : 443 .`

   > **Note:**
   > For information about ECS API endpoints of other regions, see *Endpoints*.

   b. VPC: `https :// vpc . aliyuncs . com : 443 .`

   c. STS: `https :// sts . aliyuncs . com : 443 .`

   d. Intermediate instance: port 8080 and port 8703.

   > **Note:**
   > An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to ensure that the VM to be migrated has access to port 8080 and port 8703 of the intermediate instance by running the following commands:

   ```
   telnet   xxx . xx . xxx . xx   8080   #  where ,   xxx . xx
   . xxx . xx   is   the   Internet   IP   address   of   the
     intermedia  te   instance .  When   you   perform   the
   migration   through   VPC ,   xxx . xx . xxx . xx   is   the
   private   IP   address   of   the   intermedia  te   instance .
   telnet   xxx . xx . xxx . xx   8703   #  where ,   xxx . xx
   . xxx . xx   is   the   Internet   IP   address   of   the
     intermedia  te   instance . When   you   perform   the
   migration   through   VPC ,   xxx . xx . xxx . xx   is   the
   private   IP   address   of   the   intermedia  te   instance .
   ```

4. Ensure that the Windows VSS service is enabled.

5. Check whether you have installed the qemu-agent tool. If so, uninstall it. For more information, see *Cloud Migration tool FAQ*.

6. Check the validity of your application licenses.

   > **Note:**
   > After your VM is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

7. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. *Download and install the Cloud Migration tool* onto the server to be migrated.

2. Configure the `user_confi g . json` file.

   The `user_confi g . json` file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

3. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

4. Run the main program of the Cloud Migration tool.

   Run go2aliyun_client.exe or go2aliyun_gui.exe as the administrator. If the main program is a GUI version, click the Start button to start the migration.

Migrate your Linux VM to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Make sure that the system time is the same as the standard time of the local region.

3. Ensure that your VM can access the following websites and ports:

   a. ECS: `https :// ecs . aliyuncs . com : 443 .`

   > 📋 Note:
   > For information about ECS API endpoints of other regions, see *Endpoints*.

   b. VPC: `https :// vpc . aliyuncs . com : 443 .`

   c. STS: `https :// sts . aliyuncs . com : 443 .`

   d. Intermediate instance: port 8080 and port 8703.

   > 📋 Note:
   > An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to ensure that the VM to be migrated has

access to port 8080 and port 8703 of the intermediate instance by running the
following commands:

```
telnet   xxx . xx . xxx . xx    8080    #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address   of    the
   intermedia  te   instance .  When   you    perform    the
migration    through   VPC ,   xxx . xx . xxx . xx    is    the
private   IP   address   of    the   intermedia  te   instance .
telnet   xxx . xx . xxx . xx   8703   #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address   of    the
   intermedia  te   instance . When   you    perform    the
migration    through   VPC ,   xxx . xx . xxx . xx    is    the
private   IP   address   of    the   intermedia  te   instance .
```

4. *Download and install the Cloud Migration tool*.

5. Go to the directory where the Cloud Migration tool is located. Run the `./ Check /`
`client_che  ck  -- check` command to check whether the VM to be migrated
meets the migration conditions.

Note:

If all check items are `OK` , you can start the migration. Otherwise, you need to
conduct the following additional checks:

a. Check SELinux. For CentOS or Red Hat systems, check whether SELinux is
disabled. If SELinux is enabled, disable it by using either of the following
methods:

   A. Run the `setenforce   0` command to disable SELinux temporarily.

   B. Modify the `/ etc / selinux / config` file to set `SELINUX = disabled` to
   disable SELinux permanently.

b. Check the virtualization driver. For more information, see *Install the virtio driver*.

c. Check the GRUB bootloader and upgrade GRUB to 1.99 or a later version for
systems with earlier kernel versions (such as CentOS 5, Red Hat 5, and Debian 7).
For more information, see *Update GRUB 1.99 for a Linux server*.

6. Check the validity of your application licenses.

Note:

After your VM is migrated to Alibaba Cloud, the underlying hardware devices of
the system will change, which may result in the associated application licenses
becoming invalid.

Procedure

1. Configure the *user_confi g . json* file.

   The *user_confi g . json* file contains the following configuration items:

   - The AccessKey information of your Alibaba Cloud account
   - The target zone of migration and the name of the target image
   - (Optional) The size of the target system disk and the configuration of the target data disks
   - The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

2. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

3. Run the following command as the root user to grant the execution permission to the main program, and then run this program.

   ```
   chmod  + x   go2aliyun_  client
   ./ go2aliyun_  client
   ```

4. Wait until the main program of the Cloud Migration tool has been completely executed. When the message `Go   to   Aliyun   Finished !` is displayed, the migration is successfully completed.

2.5.4 Migrate your AWS EC2 instance to Alibaba Cloud ECS

This topic describes how to migrate your AWS EC2 instance to Alibaba Cloud ECS.

Migrate your EC2 Windows instance to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.
2. Check the validity of your application licenses.

   > 📋 **Note:**
   >
   > After your instance is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

3. Check your network environment.

   · If your network uses international regions, see *Cloud migration across international regions*.

   · If your network can connect to VPC, see *VPC-based migration*.

4. Verify that the Windows VSS service is enabled.

5. Check whether you have installed the qemu-agent tool. If so, uninstall it. For more information, see *Cloud Migration tool FAQ*.

6. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. *Download and install the Cloud Migration tool* onto the server to be migrated.

2. Configure the `user_confi  g . json` file.

   The `user_confi  g . json` file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

3. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

4. Run the main program of the Cloud Migration tool.

   Run go2aliyun_client.exe or go2aliyun_gui.exe as the administrator. If the main program is a GUI version, click the Start button to start the migration.

Migrate your EC2 Linux instance to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Check the validity of your application licenses.

    Note:

> After your instance is migrated to Alibaba Cloud, the underlying hardware devices
> of the system will change, which may result in the associated application licenses
> becoming invalid.

3. Check your network environment.

   · If your network uses international regions, see *Cloud migration across international
     regions*.

   · If your network can connect to VPC, see *VPC-based migration*.

4. *Download and install the Cloud Migration tool*.

5. Go to the directory where the Cloud Migration tool is located. Run the `./ Check /
   client_che ck -- check` command to check whether the EC2 instance to be
   migrated meets the migration conditions.

   📋 **Note:**

   If all check items are `OK`, you can start the migration. Otherwise, you need to
   conduct the following additional checks:

   · Check the cloud-init service. cloud-init is a service used by multiple cloud
     platforms to automatically initialize the configuration system. However, the
     cloud-init service configuration of AWS is incompatible with that of Alibaba
     Cloud. Therefore, the system migrated from AWS may fail to start normally
     due to a cloud-init startup failure, and the network cannot be connected. We
     recommend that you use the cloud-init configuration of Alibaba Cloud before
     migrating your AWS EC2 instance. For more information, see *Install cloud-init*.
     Alternatively, you can uninstall the cloud-init service of your AWS EC2 instance.

   · Check the GRUB bootloader.

     a. *Upgrade GRUB to 2.02 or a later version* for Amazon Linux systems as the root
        user.

     b. *Upgrade GRUB to 1.99 or a later version* for systems with earlier kernel versions
        (such as CentOS 5, Red Hat 5, and Debian 7) as the root user.

6. We recommend that you use a test machine to conduct migration tests before
   completing the actual procedure to ensure the migration is successful.

Procedure

1. Configure the *user_confi g . json* file.

   The *user_confi g . json* file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

2. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

3. Run the following command as the root user to grant the execution permission to the main program, and then run this program.

   ```
   chmod + x  go2aliyun_ client
   ./ go2aliyun_ client
   ```

4. Wait until the main program of the Cloud Migration tool has been completely executed. When the message `Go to Aliyun Finished !` is displayed, the migration is successfully completed.

Cloud migration across international regions

1. Migrate the AWS EC2 instance to the corresponding international region of Alibaba Cloud. For more information, see *Full migration*. For example, if the EC2 instance to be migrated is located in a region in the United States (such as US East (N. Virginia)), you can migrate it to an Alibaba Cloud region that is also in the United States (such as US East 1). For information about regions and their corresponding IDs, see *Regions and zones*.

2. Copy the newly created image to the target Alibaba Cloud region. For more information, see *Copy images*.

3. Use this image to create an instance in the target Alibaba Cloud region.

What to do next

By default, logon to your AWS EC2 instance using the root password is disabled by SSH. You can log on to your Alibaba Cloud instance by using your AWS username and SSH key.

2.5.5 Migrate your Azure instance to Alibaba Cloud ECS

This topic describes how to migrate your Azure instance to Alibaba Cloud ECS.

Migrate your Azure Windows instance to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Check the validity of your application licenses.

> 📋 Note:
>
> After your Azure instance is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

3. Check your network environment.

   · If your network uses international regions, see *Cloud migration across international regions*.

   · If your network can connect to VPC, see *VPC-based migration*.

4. Ensure that the Windows VSS service is enabled.

5. Check whether you have installed the qemu-agent tool. If so, uninstall it. For more information, see *Cloud Migration tool FAQ*.

6. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. *Download and install the Cloud Migration tool* onto the server to be migrated.

2. Configure the `user_confi g . json` file.

   The `user_confi g . json` file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account

   · The target zone of migration and the name of the target image

   · (Optional) The size of the target system disk and the configuration of the target data disks

   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

3. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

4. Run the main program of the Cloud Migration tool.

   Run go2aliyun_client.exe or go2aliyun_gui.exe as the administrator. If the main program is a GUI version, click the Start button to start the migration.

Migrate your Azure Linux instance to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Check the validity of your application licenses.

   > **Note:**
   >
   > After your Azure instance is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

3. Check your network environment.

   · If your network uses international regions, see *Cloud migration across international regions*.

   · If your network can connect to VPC, see *VPC-based migration*.

4. *Download and install the Cloud Migration tool*.

5. Go to the directory where the Cloud Migration tool is located. Run the `./ Check /` `client_che ck -- check` command to check whether the Azure instance to be migrated meets the migration conditions.

   > **Note:**
   >
   > If all check items are `OK`, you can start the migration. Otherwise, you need to perform the following additional checks:
   >
   > · Check the cloud-init service. For more information, see *Install cloud-init*.
   >
   > · Check the GRUB bootloader. *Upgrade GRUB to 1.99 or a later version* for systems with earlier kernel versions (such as CentOS 5, Red Hat 5, and Debian 7) as the root user.

6. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. Configure the *user_confi g . json* file.

   The *user_confi g . json* file contains the following configuration items:

   - The AccessKey information of your Alibaba Cloud account
   - The target zone of migration and the name of the target image
   - (Optional) The size of the target system disk and the configuration of the target data disks
   - The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

2. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

3. Run the following command as the root user to grant the execution permission to the main program, and then run this program.

   ```
   chmod + x   go2aliyun_ client
   ./ go2aliyun_ client
   ```

4. Wait until the main program of the Cloud Migration tool has been completely executed. When the message `Go to Aliyun Finished !` is displayed, the migration is successfully completed.

Cloud migration across international regions

1. Migrate the Azure instance to the corresponding international region of Alibaba Cloud. For more information, see *Full migration*. For example, if the Azure instance is located in a region in the United States (such as US East (N. Virginia)), you can migrate it to an Alibaba Cloud region that is also in the United States (such as US East 1). For information about regions and their corresponding IDs, see *Regions and zones*.

2. Copy the newly created image to the target Alibaba Cloud region. For more information, see *Copy images*.

3. Use this image to create an instance in the target Alibaba Cloud region. For more information, see *Create an instance by using a custom image*.

2.5.6 Migrate your HUAWEI CLOUD ECS instance to Alibaba Cloud ECS

This topic describes how to migrate your HUAWEI CLOUD ECS instance to Alibaba Cloud ECS.

Migrate your HUAWEI CLOUD ECS Windows instance to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Ensure that your ECS instance can access the following websites and ports:

   a. ECS: `https :// ecs . aliyuncs . com : 443 .`

   > **Note:**
   >
   > For information about ECS API endpoints of other regions, see *Endpoints*.

   b. VPC: `https :// vpc . aliyuncs . com : 443 .`

   c. STS: `https :// sts . aliyuncs . com : 443 .`

   d. Intermediate instance: port 8080 and port 8703.

   > **Note:**
   >
   > An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to ensure that the ECS instance to be migrated has access to port 8080 and port 8703 of the intermediate instance by running the following commands:

   ```
   telnet   xxx . xx . xxx . xx   8080   # where ,   xxx . xx
   . xxx . xx   is   the   Internet   IP   address   of   the
     intermedia te   instance . When   you   perform   the
   migration   through   VPC ,   xxx . xx . xxx . xx   is   the
   private   IP   address   of   the   intermedia te   instance .
   telnet   xxx . xx . xxx . xx   8703   # where ,   xxx . xx
   . xxx . xx   is   the   Internet   IP   address   of   the
     intermedia te   instance . When   you   perform   the
   migration   through   VPC ,   xxx . xx . xxx . xx   is   the
   private   IP   address   of   the   intermedia te   instance .
   ```

3. Check whether you have installed QEMU Guest Agent VSS Provider. If so, go to the installation directory (for example, `C :\ Program   Files  ( x86 )\ virtio  \ monitor`), and then locate and run the `uninstall . bat` script to uninstall QEMU Guest Agent.

4. Ensure that the Windows VSS service is enabled.

5. Check whether you have installed the qemu-agent tool. If so, uninstall it. For more information, see *Cloud Migration tool FAQ*.

6. Check the validity of your application licenses.

> **Note:**
> After your instance is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

7. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. *Download and install the Cloud Migration tool* onto the server to be migrated.

2. Configure the `user_confi g . json` file.

   The `user_confi g . json` file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

3. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

4. Run the main program of the Cloud Migration tool.

   Run go2aliyun_client.exe or go2aliyun_gui.exe as the administrator. If the main program is a GUI version, click the Start button to start the migration.

Migrate your HUAWEI CLOUD ECS Linux instance to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. **Ensure that your ECS instance can access the following websites and ports:**

   a. ECS: `https :// ecs . aliyuncs . com : 443 .`

   > **Note:**
   > For information about ECS API endpoints of other regions, see *Endpoints*.

   b. VPC: `https :// vpc . aliyuncs . com : 443 .`

   c. STS: `https :// sts . aliyuncs . com : 443 .`

   d. Intermediate instance: port 8080 and port 8703.

   > **Note:**
   > An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to ensure that the ECS instance to be migrated has access to port 8080 and port 8703 of the intermediate instance by run the following commands:

   ```
   telnet   xxx . xx . xxx . xx    8080   #  where ,   xxx . xx
   . xxx . xx    is    the    Internet    IP    address    of    the
     intermedia  te    instance .  When    you    perform    the
   migration    through    VPC ,   xxx . xx . xxx . xx    is    the
   private    IP    address    of    the    intermedia  te    instance .
   telnet   xxx . xx . xxx . xx    8703   #  where ,   xxx . xx
   . xxx . xx    is    the    Internet    IP    address    of    the
     intermedia  te    instance .  When    you    perform    the
   migration    through    VPC ,   xxx . xx . xxx . xx    is    the
   private    IP    address    of    the    intermedia  te    instance .
   ```

3. **Check the validity of your application licenses.**

   > **Note:**
   > After your instance is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

4. **We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.**

Procedure

1. **Download and decompress the Cloud Migration tool.**

2. Run the `client_che ck` script of the tool to check whether the ECS instance to be migrated meets the migration conditions.

   a. Run the following command to download the Cloud Migration tool to the server to be migrated:

   ```
   wget   http ://  p2v – tools . oss – cn – hangzhou . aliyuncs .
   com / Alibaba_Cl  oud_Migrat  ion_Tool . zip
   ```

   b. Run the following command to decompress the Cloud Migration tool:

   ```
   unzip   Alibaba_Cl  oud_Migrat  ion_Tool . zip
   ```

   c. Run the following command to view the hardware architecture of the Linux server to be migrated and decompress the Cloud Migration tool package that applies to this hardware architecture:

   ```
   uname  – a
   unzip  < the   Cloud   Migration   tool   package   that
   applies   to   the   hardware   architectu  re   of   the   Linux
    system   to   be   migrated >
   ```

   In this example, the Linux hardware architecture is `x86_64` . Therefore, the Cloud Migration tool package that applies to this hardware architecture is `go2aliyun_  client1 . 3 . 2 . 3_linux_x8  6_64 . zip` .

   d. Run the following command to access the directory where the decompressed Cloud Migration tool is located:

   ```
   cd  < the   directory   where   the   decompress  ed   Cloud
   Migration   tool   is   located >
   ```

   In this example, the command is `cd   go2aliyun_  client1 . 3 . 2 . 3_linux_x8  6_64` .

   e. Run the following command to check whether the Linux server meets the migration conditions:

   ```
   chmod  + x  ./ Check / client_che  ck
   ./ Check / client_che  ck  -- check
   ```

   If all check items are `OK` , it means that the Linux server meets the migration conditions and you can start the migration.

3. Set the migration parameters as needed, and then run the Cloud Migration tool.

    a. Configure the `user_confi g . json` file.

       The `user_confi g . json` file contains the following configuration items:

- The AccessKey information of your Alibaba Cloud account
- The target zone of migration and the name of the target image
- (Optional) The size of the target system disk and the configuration of the target data disks
- The platform and architecture of the source system to be migrated

       For the configuration methods of these items, see *Configure the user_config.json file*.

    b. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

    c. Run the following command as the root user to grant the execution permission to the main program, and then run this program.

```
chmod  + x   go2aliyun_  client
./ go2aliyun_  client
```

    d. Wait until the main program of the Cloud Migration tool has been completely executed. When the message `Go   to   Aliyun   Finished !` is displayed, the migration is successfully completed.

2.5.7 Migrate your Tencent Cloud CVM instance to Alibaba Cloud ECS

This topic describes how to migrate your Tencent Cloud CVM instance to Alibaba Cloud ECS.

Migrate your Tencent Cloud CVM Windows instance to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Verify that your CVM instance can access the following websites and ports:

    a. ECS: `https :// ecs . aliyuncs . com : 443 .`

       📋 Note:

For information about ECS API endpoints of other regions, see *Endpoints*.

b. VPC: `https :// vpc . aliyuncs . com : 443 .`

c. STS: `https :// sts . aliyuncs . com : 443 .`

d. Intermediate instance: port 8080 and port 8703.

> 📋 **Note:**
>
> An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to verify that the CVM instance to be migrated has access to port 8080 and port 8703 of the intermediate instance by running the following commands:

```
telnet   xxx . xx . xxx . xx    8080   #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address    of    the
   intermedia  te   instance .  When    you    perform    the
migration    through    VPC ,   xxx . xx . xxx . xx    is    the
private   IP   address    of    the   intermedia  te   instance .
telnet   xxx . xx . xxx . xx    8703   #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address    of    the
   intermedia  te   instance .  When    you    perform    the
migration    through    VPC ,   xxx . xx . xxx . xx    is    the
private   IP   address    of    the   intermedia  te   instance .
```

3. Verify that the Windows VSS service is enabled.

4. Check whether you have installed the qemu-agent tool. If so, uninstall it. For more information, see *Cloud Migration tool FAQ*.

5. Check the validity of your application licenses.

> 📋 **Note:**
>
> After your instance is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

6. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. *Download and install the Cloud Migration tool* onto the server to be migrated.

2. Configure the *user_confi g . json* file.

   The *user_confi g . json* file contains the following configuration items:

   - The AccessKey information of your Alibaba Cloud account
   - The target zone of migration and the name of the target image
   - (Optional) The size of the target system disk and the configuration of the target data disks
   - The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

3. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

4. Run the main program of the Cloud Migration tool.

   Run go2aliyun_client.exe or go2aliyun_gui.exe as the administrator. If the main program is a GUI version, click the Start button to start the migration.

Migrate your Tencent Cloud CVM Linux instance to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Verify that your CVM instance can access the following websites and ports:

   a. ECS: `https :// ecs . aliyuncs . com : 443 .`

   > 📋 **Note:**
   > For information about ECS API endpoints of other regions, see *Endpoints*.

   b. VPC: `https :// vpc . aliyuncs . com : 443 .`

   c. STS: `https :// sts . aliyuncs . com : 443 .`

   d. Intermediate instance: port 8080 and port 8703.

   > 📋 **Note:**
   > An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to verify that the CVM instance to be

> migrated has access to port 8080 and port 8703 of the intermediate instance by
> running the following commands:

```
telnet   xxx . xx . xxx . xx    8080   #  where ,   xxx . xx
. xxx . xx    is    the    Internet   IP    address    of    the
  intermedia  te   instance . When   you    perform    the
migration    through    VPC ,   xxx . xx . xxx . xx    is    the
private   IP    address    of    the    intermedia  te    instance .
telnet   xxx . xx . xxx . xx    8703   #  where ,   xxx . xx
. xxx . xx    is    the    Internet   IP    address    of    the
  intermedia  te   instance . When   you    perform    the
migration    through    VPC ,   xxx . xx . xxx . xx    is    the
private   IP    address    of    the    intermedia  te    instance .
```

3. Check the validity of your application licenses.

> **Note:**
>
> After your instance is migrated to Alibaba Cloud, the underlying hardware devices
> of the system will change, which may result in the associated application licenses
> becoming invalid.

4. We recommend that you use a test machine to conduct migration tests before
   completing the actual procedure to ensure the migration is successful.

Procedure

1. Download and decompress the Cloud Migration tool.

2. Run the `client_che  ck` script of the tool to check whether the ECS instance to
   be migrated meets the migration conditions.

   a. Run the following command to download the Cloud Migration tool to the server
      to be migrated:

   ```
   wget   http :// p2v - tools . oss - cn - hangzhou . aliyuncs .
   com / Alibaba_Cl  oud_Migrat  ion_Tool . zip
   ```

   b. Run the following command to decompress the Cloud Migration tool:

   ```
   unzip   Alibaba_Cl  oud_Migrat  ion_Tool . zip
   ```

   c. Run the following command to view the hardware architecture of the Linux
      server to be migrated and decompress the Cloud Migration tool package that
      applies to this hardware architecture:

   ```
   uname  - a
   ```

```
unzip  <  the    Cloud    Migration    tool    package    that
applies    to    the    hardware    architectu    re    of    the    Linux
  system    to    be    migrated >
```

In this example, the Linux hardware architecture is `x86_64` . Therefore, the

Cloud Migration tool package that applies to this hardware architecture is

go2aliyun_   client1 . 3 . 2 . 3_linux_x8   6_64 . zip .

d. Run the following command to access the directory where the decompressed

Cloud Migration tool is located:

```
cd  <  the    directory    where    the    decompress  ed    Cloud
Migration    tool    is    located >
```

In this example, the command is `cd    go2aliyun_    client1 . 3 . 2 .`

`3_linux_x8    6_64` .

e. Run the following command to check whether the Linux server meets the

migration conditions:

```
chmod   + x   ./ Check / client_che   ck
./ Check / client_che   ck   -- check
```

If all check items are `OK` , it means that the Linux server meets the migration

conditions and you can start the migration.

3. Set the migration parameters as needed, and then run the Cloud Migration tool.

   a. Configure the `user_confi  g . json` file.

      The `user_confi  g . json` file contains the following configuration items:

      · The AccessKey information of your Alibaba Cloud account

      · The target zone of migration and the name of the target image

      · (Optional) The size of the target system disk and the configuration of the
        target data disks

      · The platform and architecture of the source system to be migrated

      For the configuration methods of these items, see *Configure the user_config.json file*.

   b. (Optional) Configure the directories or files that do not need to be migrated. For
      more information, see *Exclude files or directories from migration*.

   c. Run the following command as the root user to grant the execution permission
      to the main program, and then run this program.

      ```
       chmod  + x   go2aliyun_  client
      ./ go2aliyun_  client
      ```

   d. Wait until the main program of the Cloud Migration tool has been completely
      executed. When the message `Go  to  Aliyun  Finished !` is displayed,
      the migration is successfully completed.

2.5.8 Migrate your UCloud host to Alibaba Cloud ECS

This topic describes how to migrate your UCloud host to Alibaba Cloud ECS.

Migrate your UCloud Windows host to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Verify that your UCloud host can access the following websites and ports:

   a. ECS: `https :// ecs . aliyuncs . com : 443 .`

       Note:

For information about ECS API endpoints of other regions, see *Endpoints*.

b. VPC: `https :// vpc . aliyuncs . com : 443` .

c. STS: `https :// sts . aliyuncs . com : 443` .

d. Intermediate instance: port 8080 and port 8703.

> **Note:**
>
> An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to verify that the UCloud host to be migrated has access to port 8080 and port 8703 of the intermediate instance by running the following commands:

```
telnet    xxx . xx . xxx . xx    8080    #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address    of    the
   intermedia  te   instance . When    you    perform    the
migration    through    VPC ,   xxx . xx . xxx . xx    is    the
private    IP    address    of    the    intermedia  te    instance .
telnet    xxx . xx . xxx . xx    8703    #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address    of    the
   intermedia  te   instance . When    you    perform    the
migration    through    VPC ,   xxx . xx . xxx . xx    is    the
private    IP    address    of    the    intermedia  te    instance .
```

3. Verify that the Windows VSS service is enabled.

4. Check whether you have installed the qemu-agent tool. If so, uninstall it. For more information, see *Cloud Migration tool FAQ*.

5. Check the validity of your application licenses.

> **Note:**
>
> After your UCloud host is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

6. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. *Download and install the Cloud Migration tool* onto the server to be migrated.

2. Configure the `user_confi g . json` file.

   The `user_confi g . json` file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

3. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

4. Run the main program of the Cloud Migration tool.

   Run go2aliyun_client.exe or go2aliyun_gui.exe as the administrator. If the main program is a GUI version, click the Start button to start the migration.

Migrate your UCloud Linux host to Alibaba Cloud

Preparations

1. Create a snapshot to back up your data.

2. Verify that your UCloud host can access the following websites and ports:

   a. ECS: `https :// ecs . aliyuncs . com : 443 .`

   > **Note:**
   > For information about ECS API endpoints of other regions, see *Endpoints*.

   b. VPC: `https :// vpc . aliyuncs . com : 443 .`

   c. STS: `https :// sts . aliyuncs . com : 443 .`

   d. Intermediate instance: port 8080 and port 8703.

   > **Note:**
   > An intermediate instance is a temporary instance that is automatically created during the running of the Cloud Migration tool. If a network connection error occurs during the migration, you need to verify that the UCloud host to be

migrated has access to port 8080 and port 8703 of the intermediate instance by running the following commands:

```
telnet    xxx . xx . xxx . xx    8080    #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address    of    the
  intermedia  te   instance . When   you    perform    the
migration    through    VPC ,   xxx . xx . xxx . xx    is    the
private   IP   address   of   the   intermedia  te   instance .
telnet    xxx . xx . xxx . xx    8703    #  where ,   xxx . xx
. xxx . xx    is    the    Internet    IP    address    of    the
  intermedia  te   instance . When    you    perform    the
migration    through    VPC ,   xxx . xx . xxx . xx    is    the
private    IP   address   of   the   intermedia  te    instance .
```

3. Check the validity of your application licenses.

> **Note:**
>
> After your UCloud host is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may result in failure of some application licenses associated to the hardware.

4. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. Download and decompress the Cloud Migration tool.

2. Run the `client_che  ck` script of the tool to check whether the UCloud host to be migrated meets the migration conditions.

   a. Run the following command to download the Cloud Migration tool to the server to be migrated:

   ```
   wget   http :// p2v - tools . oss - cn - hangzhou . aliyuncs .
   com / Alibaba_Cl  oud_Migrat  ion_Tool . zip
   ```

   b. Run the following command to decompress the Cloud Migration tool:

   ```
   unzip   Alibaba_Cl  oud_Migrat  ion_Tool . zip
   ```

   c. Run the following command to view the hardware architecture of the Linux server to be migrated and decompress the Cloud Migration tool package that applies to this hardware architecture:

   ```
   uname  - a
   ```

```
unzip  < the   Cloud  Migration  tool  package   that
applies  to   the  hardware  architectu re  of  the  Linux
  system  to  be  migrated >
```

In this example, the Linux hardware architecture is `x86_64` . Therefore, the

Cloud Migration tool package that applies to this hardware architecture is

go2aliyun_ client1 . 3 . 2 . 3_linux_x8 6_64 . zip .

d. Run the following command to access the directory where the decompressed

Cloud Migration tool is located:

```
cd  < the   directory   where   the   decompress  ed   Cloud
Migration   tool   is   located >
```

In this example, the command is `cd   go2aliyun_   client1 . 3 . 2 .`
`3_linux_x8  6_64` .

e. Run the following command to check whether the Linux server meets the

migration conditions:

```
chmod  + x  ./ Check / client_che  ck
./ Check / client_che  ck  -- check
```

If all check items are `OK` , it means that the Linux server meets the migration

conditions and you can start the migration.

3. **Set the migration parameters as needed, and then run the Cloud Migration tool.**

   a. Configure the `user_confi g . json` file.

      The `user_confi g . json` file contains the following configuration items:

      · The AccessKey information of your Alibaba Cloud account

      · The target zone of migration and the name of the target image

      · (Optional) The size of the target system disk and the configuration of the target data disks

      · The platform and architecture of the source system to be migrated

      For the configuration methods of these items, see *Configure the user_config.json file*.

   b. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

   c. Run the following command as the root user to grant the execution permission to the main program, and then run this program.

      ```
      chmod  + x   go2aliyun_  client
      ./ go2aliyun_  client
      ```

   d. Wait until the main program of the Cloud Migration tool has been completely executed. When the message `Go  to  Aliyun  Finished !` is displayed, the migration is successfully completed.

FAQ

Why am I unable to start or stop the newly migrated Linux instance in the Alibaba Cloud ECS console?

Because some Linux system kernels are customized on the UCloud platform, the customized kernels may be incompatible with Alibaba Cloud ECS. To resolve this issue, you can replace the Linux system kernels. For example, you can replace a customized CentOS kernel with an *official CentOS kernel*. Alternatively, you can *open a ticket*.

2.5.9 Migrate your instance within Alibaba Cloud ECS

This topic describes how to migrate your instance within Alibaba Cloud ECS.

If you want to migrate your ECS instance within Alibaba Cloud ECS, we recommend that you *Copy images* and *Share images*. If these two methods do not apply, you can use the following procedures as needed.

Migrate your ECS instance within the same VPC

This method applies to scenarios where you need to shrink your ECS disk volume. For more information, see *Shrink disk volume*.

In these scenarios, we recommend that you migrate your instance through VPC to maximize transfer efficiency. For more information, see *VPC-based migration*.

Migrate your ECS Windows instance between different VPCs

This method applies to scenarios where you need to migrate your ECS Windows instance between different accounts, regions, or VPCs.

Preparations

1. Create a snapshot to back up your data.
2. Check the validity of your application licenses.

   > **Note:**
   > After your ECS instance is migrated between different Alibaba Cloud VPCs, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

3. Check your network environment.

   · If your network uses international regions, the migration may be slow due to unstable network connections.

   · If your network can connect to VPC, see *VPC-based migration*.

4. Verify that the Windows VSS service is enabled.
5. Check whether you have installed the qemu-agent tool. If so, uninstall it. For more information, see *Cloud Migration tool FAQ*.
6. We recommend that you use a test machine to conduct migration tests before completing the actual procedure to ensure the migration is successful.

Procedure

1. *Download and install the Cloud Migration tool* onto the server to be migrated.

2. Configure the `user_confi g . json` file.

   The `user_confi g . json` file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

3. (Optional) Configure the directories or files that do not need to be migrated. For more information, see *Exclude files or directories from migration*.

4. Run the main program of the Cloud Migration tool.

   Run go2aliyun_client.exe or go2aliyun_gui.exe as the administrator. If the main program is a GUI version, click the Start button to start the migration.

Migrate your ECS Linux instance between different VPCs

This method applies to scenarios where you need to migrate your ECS Linux instance between different accounts, regions, or VPCs.

Preparations

1. Create a snapshot to back up your data.

2. Check the validity of your application licenses.

   > **Note:**
   > After your ECS instance is migrated between different Alibaba Cloud VPCs, the underlying hardware devices of the system will change, which may result in the associated application licenses becoming invalid.

3. Check your network environment.

   · If your network uses international regions, the migration may be slow due to unstable network connections.
   · If your network can connect to VPC, see *VPC-based migration*.

4. *Download and install the Cloud Migration tool*.

5. Go to the directory where the Cloud Migration tool is located. Run the `./ Check /`
   `client_che ck -- check` command to check whether the EC2 instance to be
   migrated meets the migration conditions.

   > **Note:**
   > If all check items are `OK`, you can start the migration. Otherwise, you need to
   > check the GRUB bootloader and *Upgrade GRUB to 1.99 or a later version* (applicable to
   > systems with earlier kernels (such as CentOS 5, Red Hat 5, and Debian 7)) as the
   > root user.

6. We recommend that you use a test machine to conduct migration tests before
   completing the actual procedure to ensure the migration is successful.

Procedure

1. Configure the *user_confi g . json* file.

   The *user_confi g . json* file contains the following configuration items:

   · The AccessKey information of your Alibaba Cloud account
   · The target zone of migration and the name of the target image
   · (Optional) The size of the target system disk and the configuration of the target
     data disks
   · The platform and architecture of the source system to be migrated

   For the configuration methods of these items, see *Configure the user_config.json file*.

2. (Optional) Configure the directories or files that do not need to be migrated. For
   more information, see *Exclude files or directories from migration*.

3. Run the following command as the root user to grant the execution permission to
   the main program, and then run this program.

   ```
   chmod + x  go2aliyun_ client
   ./ go2aliyun_ client
   ```

4. Wait until the main program of the Cloud Migration tool has been completely
   executed. When the message `Go to Aliyun Finished !` is displayed, the
   migration is successfully completed.

2.6 Subsequent operations

This topic describes the subsequent operations that you need to perform after you migrate your servers to Alibaba Cloud. The purpose of these operations is to ensure that the system can operate normally.

Create an instance

After you migrate a number of servers to Alibaba Cloud, you obtain the same number of custom images. You need to use these custom images to create instances and test the system. We recommend the following use scenarios based on the relative number of instances that you create.

· Create a small number of instances

If you need to create only a small number of instances, then we recommend that you use custom images to create the instances on the ECS instance purchase page in the ECS console. When you create an instance, you can select Pay-As-You-Go as the billing method, and specify the VPC, VSwitch, and security group, among other network parameters. Then, you can modify the IP address to the specified intranet IP address.

· Create a large number of instances

If you need to create a large number of instances, make sure that you do the following:

  - Create Pay-As-You-Go instances for testing, and then convert these instances to Subscription instances.

  - Maintain the subnet IP address of the original system to maintain the previous service scenario.

  - Use an appropriate tool to create instances in batches.

  To write a script to call the Alibaba Cloud CLI and use the CLI to call the relevant API, follow these steps:

1. Download the Alibaba Cloud CLI and configure an AccessKeyId and AccessKeySecret. For more information, see *What is the Alibaba Cloud CLI*.

2. Call the API *RunInstances* to create one or more instances.

   For example, if the region in which you want to create an instance is `cn -qingdao`, the image ID is `m - xxxxxxxxx`, the VSwitch is `vsw - xxxxxxx`,

the subnet IP address is `10 . 0 . 0 . 10` , and the instance type is `ecs . n1 . samll` . Then, call the API by using the following code:

```
aliyun   ecs   CreateInst  ance   -- RegionId  ' cn - qingdao '
-- ImageId  ' m - xxxxxxxxx ' -- VSWitchId  ' vsw - xxxxxxx ' --
PrivateIP  ' 10 . 0 . 0 . 10 ' -- InstanceTy  pe  ' ecs . n1 .
samll '
```

3. Write a script that contains the image ID and the subnet IP address generated by the Cloud Migration tool, and then call the Alibaba Cloud CLI to automatically read the information and create instances in batches.

> **Note:**
>
> After you create instances in batches and start these instances, you can use the *Cloud assistant* to manage and configure the instances.

Check a migrated Linux server

1. Ensure that the system disk data is complete.

2. If you have a data disk, attach it to an ECS instance. For more information, see *Attach a cloud disk*.

3. Ensure that the network operates normally.

4. Ensure that other systems operate normally.

Check a migrated Windows server

1. Ensure that the system disk data is complete.

2. If any data disk is lost, start the disk management tool to check whether any driver letter is lost.

3. Wait until the restoration process is finished, and then restart the instance.

> **Note:**
>
> The restoration process is used to repair the permissions of the file system. If the file system does not start the restoration process automatically after you start an ECS instance for the first time, you can run the `C :\ go2aliyun_  prepare \ go2aliyun_  restore . exe` command to conduct a manual repair. Before you run the command, you need to ensure that the number and path of the disks in the instance is the same as those in the original system.

4. Ensure that the network operates normally.

5. **Ensure that other systems operate normally.**