Alibaba Cloud
Elastic Compute Service

Migration Service

Issue: 20200702

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

Document conventions

Style	Description	Example
	A danger notice indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	 **Danger:** Resetting will result in the loss of user configuration data.
	A warning notice indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	 **Warning:** Restarting will cause business interruption. About 10 minutes are required to restart an instance.
	A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.	 **Notice:** If the weight is set to 0, the server no longer receives new requests.
	A note indicates supplemental instructions, best practices, tips, and other content.	 **Note:** You can use Ctrl + A to select all files.
>	Closing angle brackets are used to indicate a multi-level menu cascade.	Click **Settings** > **Network** > **Set network type**.
Bold	Bold formatting is used for buttons, menus, page names, and other UI elements.	Click **OK**.
`Courier font`	Courier font is used for commands.	Run the `cd /d C:/window` command to enter the Windows system folder.
Italic	Italic formatting is used for parameters and variables.	`bae log list --instanceid` *Instance_ID*
[] or [a|b]	This format is used for an optional value, where only one item can be selected.	`ipconfig [-all|-t]`

Style	Description	Example
{} or {a|b}	This format is used for a required value, where only one item can be selected.	switch {active|stand}

Contents

1 Migrate servers

Server Migration Center (SMC) is a migration platform developed by Alibaba Cloud. SMC can help you migrate one or more source servers to Alibaba Cloud.

Overview

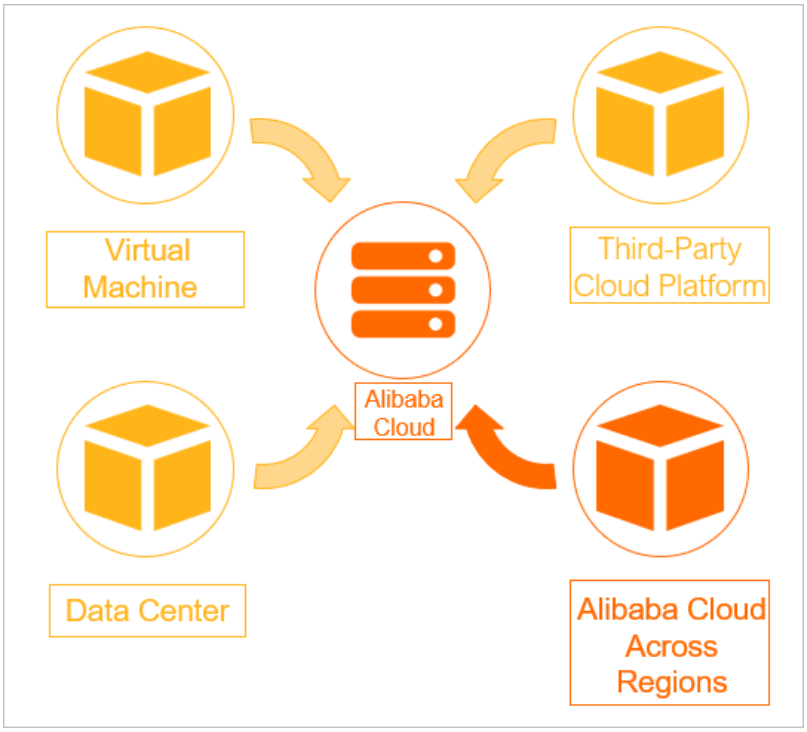
SMC can help you migrate one or more source servers to Alibaba Cloud. The source servers include IDC servers, virtual machines, cloud hosts on other cloud platforms, and other types of servers. For more information about SMC, its tutorials and best practices, see What is SMC?

Benefits

SMC has the following benefits:

- Support for migration from diverse platforms and environments
  - SMC supports diverse versions of Windows and Linux operating systems. For more information, see Limits.
  - SMC allows you to migrate data from user-created data centers, on-premises virtual machines, and third-party cloud platforms to Alibaba Cloud. On-premises virtual machines include VMware, Virtual Box, Xen, and KVM. Third-party cloud platforms

include Amazon AWS, Microsoft Azure, Google GCP, Huawei Cloud, Tencent Cloud, UCloud, Telecom Cloud, and QingCloud.



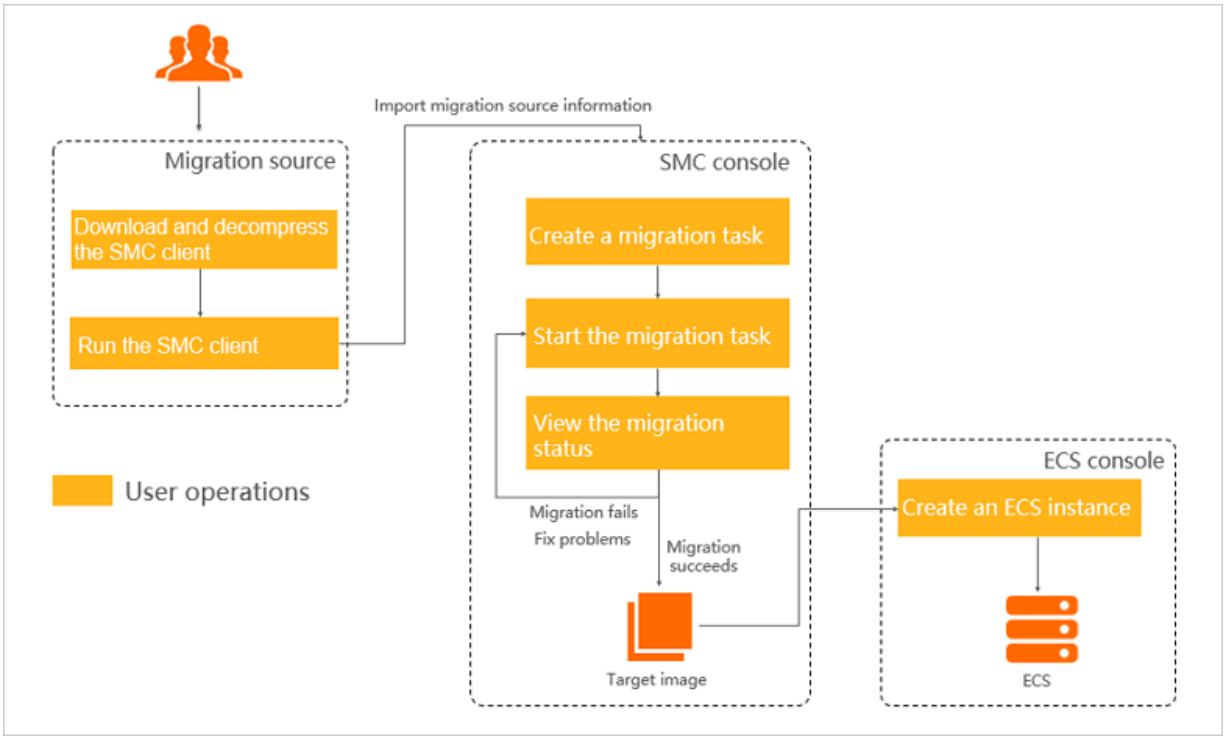
- No dependency on the underlying environments of source servers
  - SMC supports physical-to-cloud (P2C), virtual-to-cloud (V2C), and cloud-to-cloud (C2C) migration.
  - SMC supports diverse file systems and disk types.
- Migration without downtime

  During data migration, you do not need to stop services that run on the source servers.
- Easy-to-use, lightweight, and flexible configuration
  - The SMC client is lightweight and free of installation.
  - SMC provides various migration solutions and supports on-demand configuration.
  - After migration tasks are started, the migration process is automatically managed.
- Secure and stable migration with a high success rate
  - SMC supports whitelist-based verification, transmission channel encryption, and resumable transmission. SMC features high security and stability.
  - SMC has a high migration success rate because it provides high compatibility with the specifications of Alibaba Cloud server systems.

Migration process

SMC consists of a client and a console. Import the information of a source server to the console through the client. This step connects the source server with your Alibaba Cloud account. Then, create a migration task in the console for the source server and start the migration task to migrate the source server to Alibaba Cloud. For more information, see #unique_6.

The following figure shows how to use SMC to migrate a source server.



References

- SMC provides free expert support for your cloud migration. For more information, see #unique_7.
- SMC supports incremental migration to shorten the suspension of source server services and accelerate the final delivery of the services. For more information, see #unique_8.
- If your environment is equipped with high bandwidth, you can enable multi-threaded transfer to improve migration efficiency. For more information, see #unique_9.
- For information about how to use SMC API, see #unique_10.
- For information about usage examples of SMC SDKs, see #unique_11.
- If you want to migrate only databases, we recommend that you use Alibaba Cloud Data Transmission Service (DTS). For more information, see #unique_12.

2 Migration tutorials

2.3 Pre-migration evaluations

Before you start to migrate your servers, you must evaluate your services, the time required for migration, and related costs to develop an appropriate migration plan. This topic describes the major factors that you need to evaluate.

Operating systems

- Kernel version: CentOS 5 or later, Red Hat 5 or later, Ubuntu 10 or later, or Windows Server 2003 or later. If your kernel version is earlier than the preceding versions listed, you must upgrade your kernel to a supported version.
- Virtualized driver: The KVM virtio driver must be installed.
- Required services and software: For Linux systems, rsync is required and curl is recommended. For Windows systems, the Volume Shadow Copy Service (VSS) must be operating properly.
- Grand Unified Bootloader (GRUB): For operating systems with earlier kernel versions such as CentOS 5, Red Hat 5, and Debian 7, GRUB must be upgraded to V1.99 or later.
- Disk size: The system disk must be 40 GiB to 500 GiB in size, and the data disks must be 20 GiB to 32,768 GiB in size.

Application services

- Service suspension: If you are running large service applications such as Oracle, SQL Server, MongoDB, MySQL, and Docker databases, we recommend that you suspend them before starting the migration. If such service applications cannot be suspended, we recommend that you exclude the corresponding data directories from the migration, and then wait until the server migration is complete to synchronize the databases.
- Large data volume: If there is a large number of data files, we recommend that you migrate only the server application environment. You can then evaluate whether to migrate the files through a leased line or Data Transport for faster transfer speeds.
- Software licensing: You must evaluate whether licensed software in the source system will require a new license after migration.
- Network configuration: The public IP address changes after migration. You must evaluate whether this will affect the original services.

Network mode

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

The server migration process includes three phases:

1. Pre-migration resource preparation
2. Data transfer
3. Post-migration configuration

By default, the Internet is used in phases 1, 2, and 3. Therefore, the server to be migrated must have access to the following Alibaba Cloud service endpoints and ports:

- Phases 1 and 3:
  - ECS: https://ecs.aliyuncs.com:443. For more information about endpoints, see #unique_15.
  - VPC: https://vpc.aliyuncs.com:443.
  - STS: https://sts.aliyuncs.com:443.
- Phase 2: transfer of data through the public IP address and ports 8080 and 8703 of the temporary intermediate instance

Additionally, the Alibaba Cloud migration service supports the following transfer modes for specific network environments:

- Default transfer over the Internet: By default, the Internet is used in Phases 1, 2, and 3.
- Manual transfer over VPCs: The Internet is used in Phases 1 and 3 and VPCs are used in Phase 2.

  Manual transfer over VPCs applies to the server systems that can access the specified VPC but cannot access the preceding Alibaba Cloud service endpoints. In this case, you must prepare an additional server system of the same type that can access the preceding Alibaba Cloud service endpoints to facilitate the migration. For more information, see VPC-based migration.
- Automatic transfer over VPCs: The Internet is used in Phases 1 and 3 and VPCs are used in Phase 2.

  Automatic transfer over VPCs applies to the server systems that can access the preceding Alibaba Cloud service endpoints and the specified VPC. This mode also applies to the server systems whose data is transferred over VPCs in Phase 2. Automatic transfer over

VPCs requires simpler operations as compared with **manual transfer over VPCs**. For more information, see VPC-based migration.

Quantity of servers to migrate

If you need to migrate multiple servers at a time, take note of the following points:

1. Before migration:
   - Contact your local network operator to confirm the traffic limits, or set the upper limit of the transmission bandwidth by using Server Migration Center (SMC).
   - Submit a ticket to request an increase of your Alibaba Cloud quotas on images and pay-as-you-go resources such as vCPUs.
2. During migration:
   - Check whether the server systems support automated batch O&M to distribute and run the Cloud Migration tool on multiple servers.
   - Evaluate whether you need to collect statistics on and analyze the batch migration progress logs.
3. After migration:
   - Evaluate how to configure the migrated server systems in batches.
   - Evaluate how to validate the configurations of migrated server systems.

Migration period

The migration period is proportional to the number of servers that you migrate and the actual data volume. We recommend that you estimate the migration period by conducting tests in advance.

The migration period is composed of the time required for three phases: before migration, during migration, and after migration. You can calculate the time required for each phase as follows:

- Time required before migration
  - Time required before migration = Time taken to prepare for the migration
  - The amount of time taken to prepare for the migration varies based on the actual conditions.

- Time required during migration
  - Time required during migration = Data transfer time + Image production time (optional)
  - Data transfer time = Actual data volume/Actual network speed
  - Image production time = Actual data volume/Snapshot service speed

  Note:
  By default, the Cloud Migration tool enables compression during data transfer. This results in a transfer rate increase by 30% to 40%. The image production time depends on the speed of the snapshot service of Alibaba Cloud, which can be from 10 MB/s to 30 MB/s.
- Time required after migration
  - Time required after migration = Incremental system synchronization time after migration (optional) + System configuration validation time
  - Incremental system synchronization time = Actual incremental data volume/Actual network speed
  - The system configuration validation time varies based on the 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 destination instance. For more support, contact the migration service technical support personnel of Alibaba Cloud.

Migration costs

The Cloud Migration tool is provided free of charge. However, you will be charged for resources used during migration. During the migration, an ECS instance with the default name INSTANCE_FOR_GOTOALIYUN is created automatically under your Alibaba Cloud account to act as an intermediate instance. This intermediate instance is a pay-as-you-go instance. Ensure that you have enough account balance in your linked bank card.

Note:
After the migration is complete, all resources on the intermediate instance, including the cloud disks, are automatically released. If the migration fails, the intermediate instance will be retained in your ECS console for your next migration attempt. If you do not want to

continue with the migration, we recommend that you manually release the intermediate 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_config.json file.

   The user_config.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.

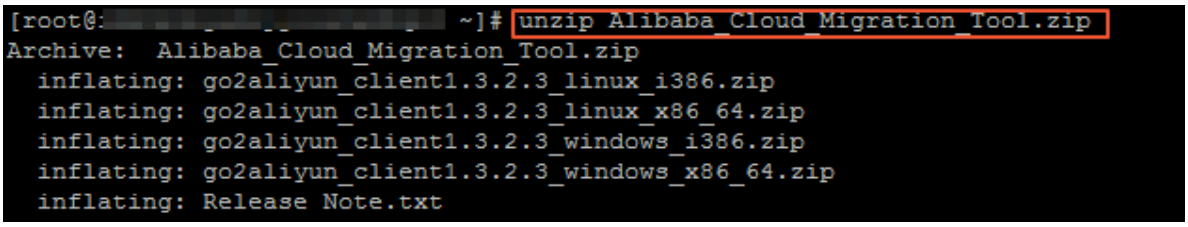
Preparations

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_Cloud_Migration_Tool.zip
```

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

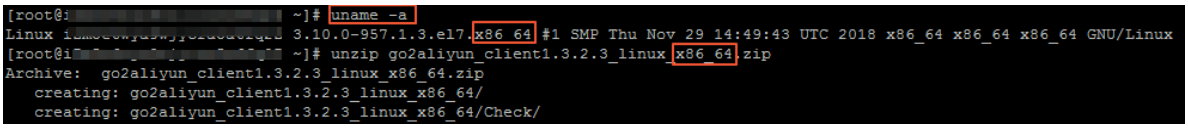
```
unzip Alibaba_Cloud_Migration_Tool.zip
```



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 architecture 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_x86_64.zip.



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

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

In this example, the command is `cd go2aliyun_client1.3.2.3_linux_x86_64`.

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

```
chmod +x ./Check/client_check
./Check/client_check --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_config.json file.

The user_config.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

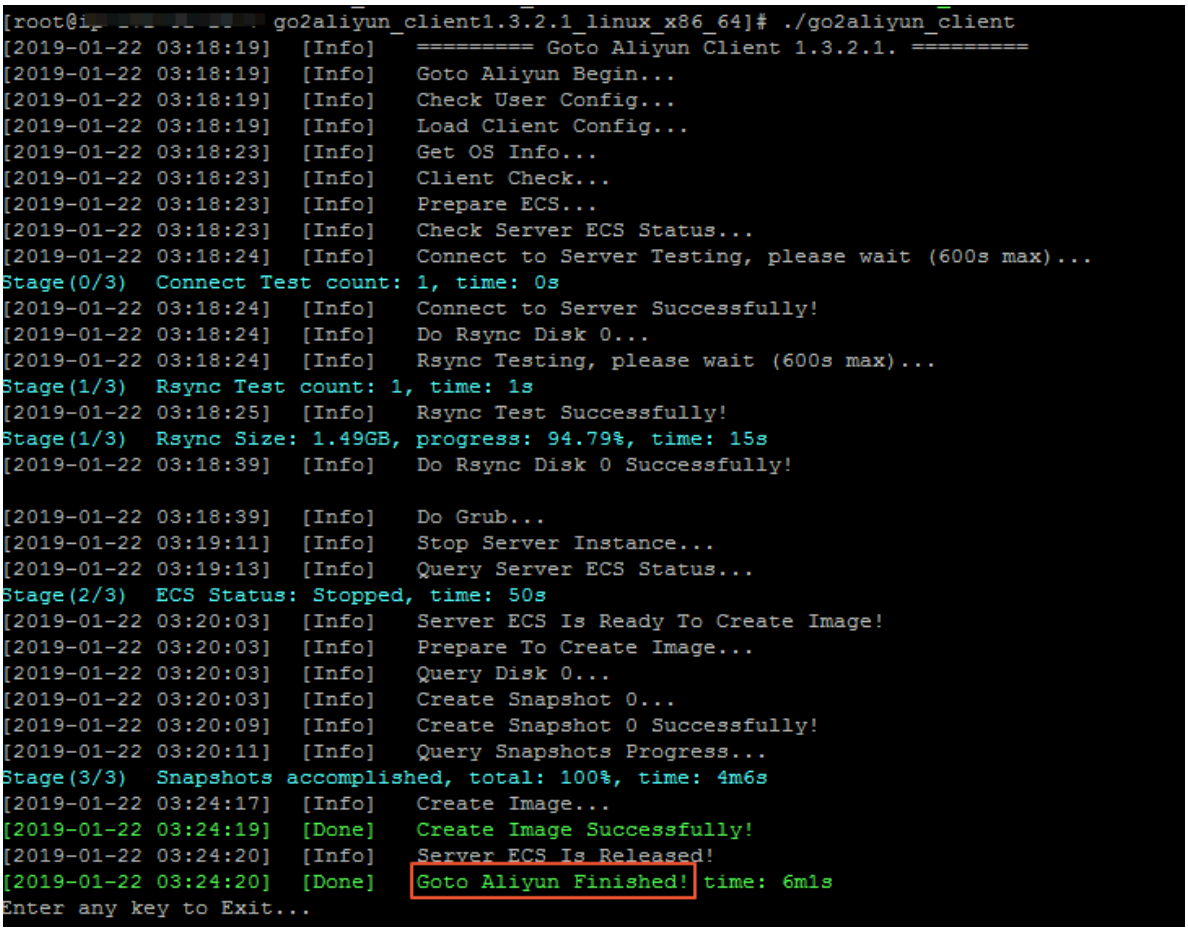
For the configuration methods of these items, see Configure the user_config.json file.

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

A full migration is created and a custom image (that is, a full image) is generated 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_x86_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_x86_64.zip"

# Run the scripts that modifies the configuration file.

ansible -f 6 -i host.file all -m shell -a "cd
/temp/go2aliyun_client1.2.9.1_linux_x86_64 && ./config.sh"

sleep 120

# The configuration 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 information
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_config.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_x86_64 && chmod +x go2aliyun_client
&&./go2aliyun_client --nocheckversion --noenterkey"

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

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

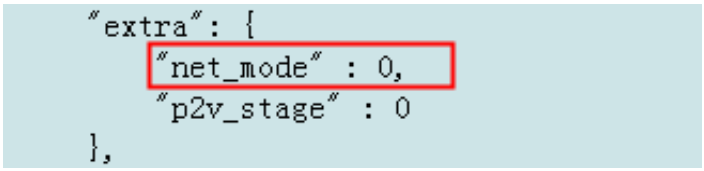
2.4.4 VPC-based migration

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 or VPN to connect to the target VPC, and then use the Cloud Migration tool to perform a VPC-based migration.

Background information

The Cloud Migration tool v1.2.8 and later versions support VPC-based migration. To perform a VPC-based migration, you need to set the **net_mode** field of **client_data** to **1** or **2**.



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. For more information, see Migrate your server to Alibaba Cloud by using the Cloud Migration tool.
   b. Configure the user_config.json file.
   c. Set the target **vpc_id** and **vswitch_id** in the client_data 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_config.json file and the client_data 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_config.json file and the client_data 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. For more information, see Migrate your server to Alibaba Cloud by using the Cloud Migration tool.
2. Configure the user_config.json file.
3. Set the target **vpc_id** and **vswitch_id** in the client_data 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": ""
},
```

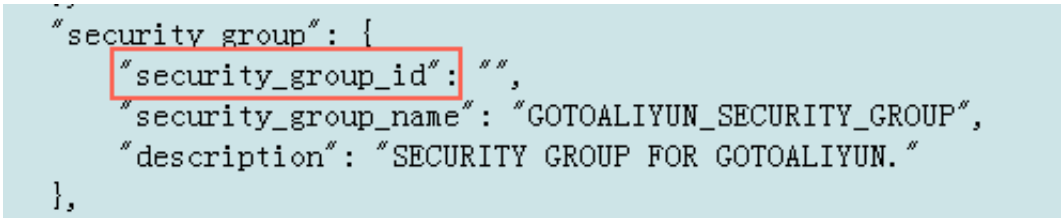
2. Set **vswitch_id** to the ID of the specified VSwitch.

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

3. (Optional) Set **security_group_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.



2.4.5 Other migration solutions

If your server uses an early operating system version or is not in the applicable list, you can contact Server Migration Center (SMC) technical support for migration solutions.

Migration solutions for servers with early operating system versions

You cannot migrate servers with early operating system versions such as versions earlier than CentOS 5.5 and Red Hat 5.5 to Alibaba Cloud. Their kernels do not support the necessary virtualization drivers such as VirtIO. This topic uses a server with CentOS 5.1 (kernel version is 2.6.18-53.el5) as an example to describe how to upgrade the operating system to CentOS 5.5 (kernel version to 2.6.18-194.el5) and migrate the server to Alibaba Cloud.

1. Run the following commands to ensure that the operating 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 commands to download and install 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 is prompted during installation, check the error log. If the error occurs because of conflicts between the original software version and the new kernel, manually uninstall the original software and re-install the new kernel. After the new kernel is installed, install the original software back.

3. Upgrade GRUB to v1.99. For more information, see #unique_28.

Note:

We recommend that you hide the GRUB v0.97 so that you do not mistake it for the new version.

4. Use GRUB v1.99 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 old kernel (2.6.18-53.el5) and the new kernel (2.6.18-194.el5) are contained in the configuration file.

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

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

   e) Run the cat /boot/grub/grub.cfg |grep menuentry command to view the startup item list.

   f) Find the label of the new kernel and run the following commands to set the new kernel as a default startup item:

   ```
   mkdir /usr/local/etc/default/ -p
   echo "GRUB_DEFAULT=<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, the commands are:

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

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

6. After the preceding operations are complete, download and install the Cloud Migration tool to migrate your server. For more information, see #unique_20.

Migration solutions for servers with other operating systems

- Upgrade GRUB to v2.02 or later for Amazon Linux operating systems. For more information, see #unique_28.
- If your operating system is not in the applicable list, such as XenServer, contact SMC technical support for system testing and migration solutions as needed. For more information, see #unique_29 and #unique_30.

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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
      telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance.When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate 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_config.json file.

   The user_config.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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
   > telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance.When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate 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_check --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_config.json file.

   The user_config.json file contains the following configuration items:

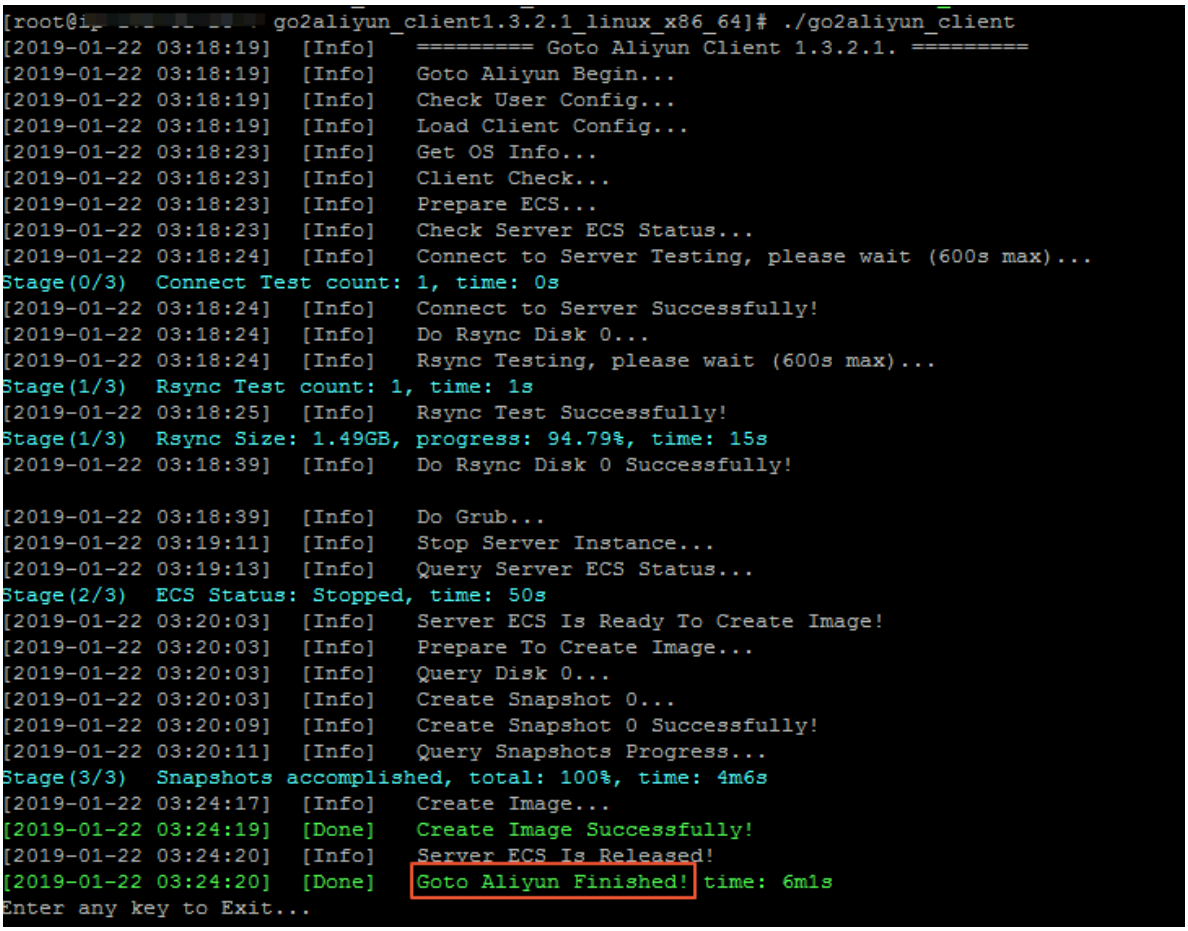
   - The AccessKey information of your Alibaba Cloud account
   - The target zone of migration and the name of the target image
   - (Optional) The size of the target system disk and the configuration of the target data disks
   - The platform and architecture of the source system to be migrated

   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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance.When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate 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_config.json file.

   The user_config.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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance.When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate 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_check --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_config.json file.

   The user_config.json file contains the following configuration items:

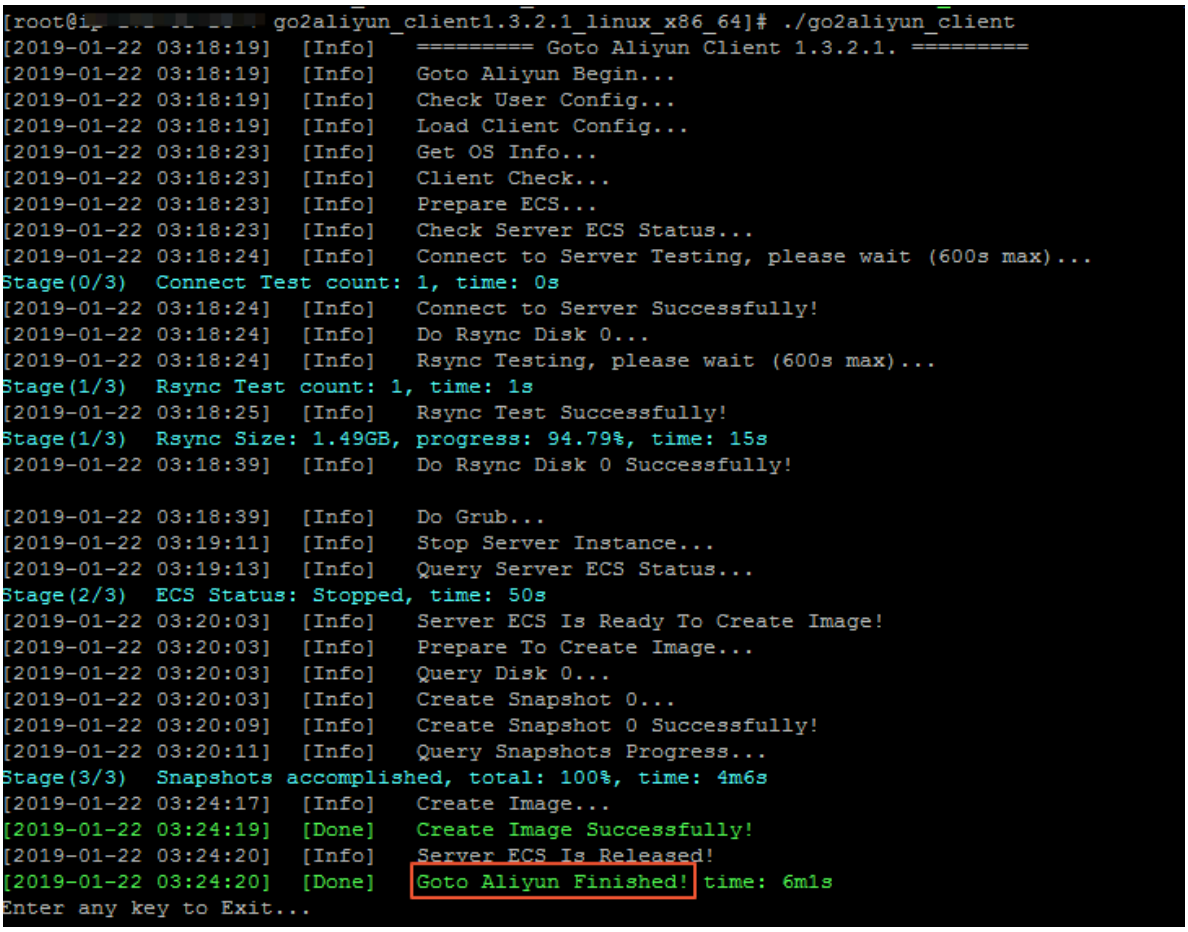
   - The AccessKey information of your Alibaba Cloud account
   - The target zone of migration and the name of the target image
   - (Optional) The size of the target system disk and the configuration of the target data disks
   - The platform and architecture of the source system to be migrated

   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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
   telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance.When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate 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_config.json file.

   The user_config.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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance.When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate 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_check --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_config.json file.

   The user_config.json file contains the following configuration items:

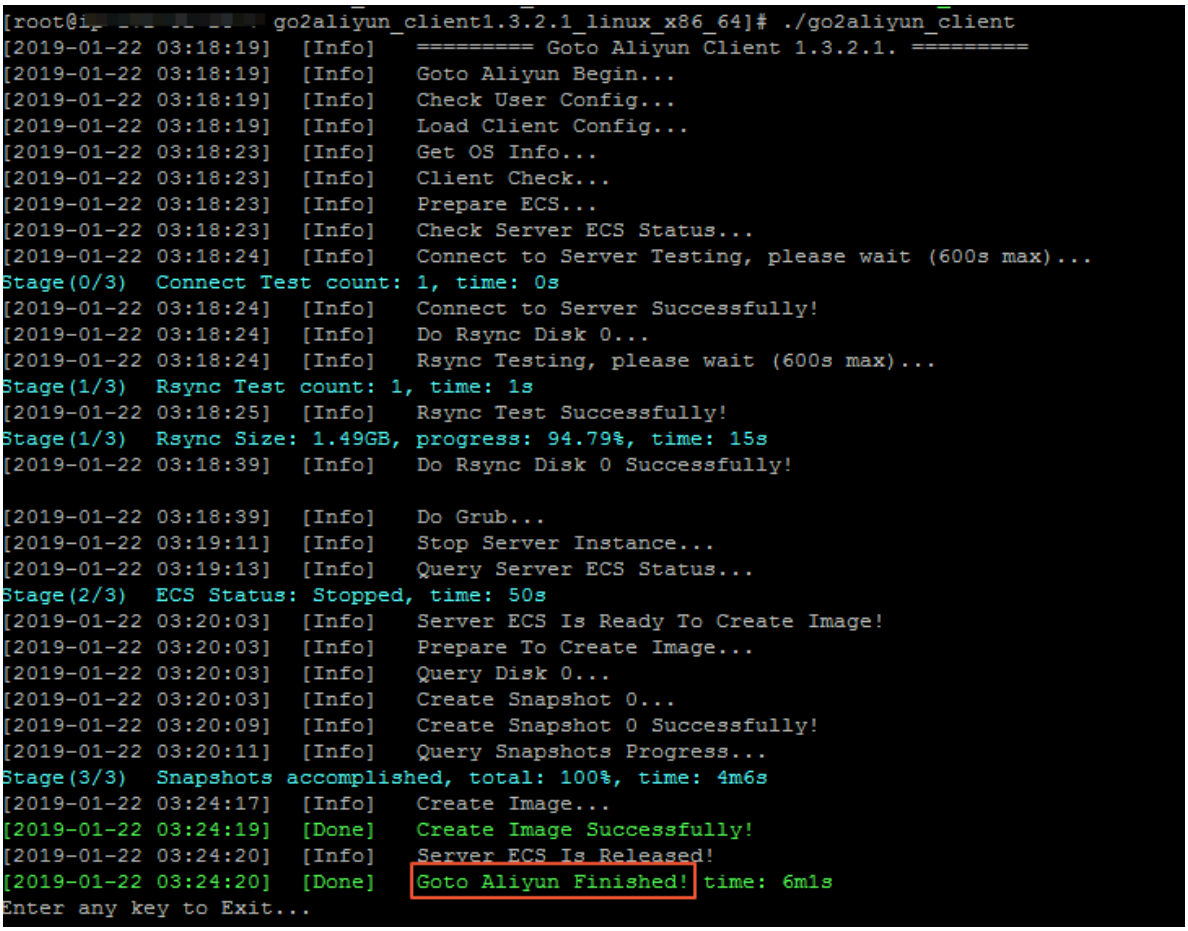
   - The AccessKey information of your Alibaba Cloud account
   - The target zone of migration and the name of the target image
   - (Optional) The size of the target system disk and the configuration of the target data disks
   - The platform and architecture of the source system to be migrated

   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_config.json file.

   The user_config.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_check --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_config.json file.

   The user_config.json file contains the following configuration items:

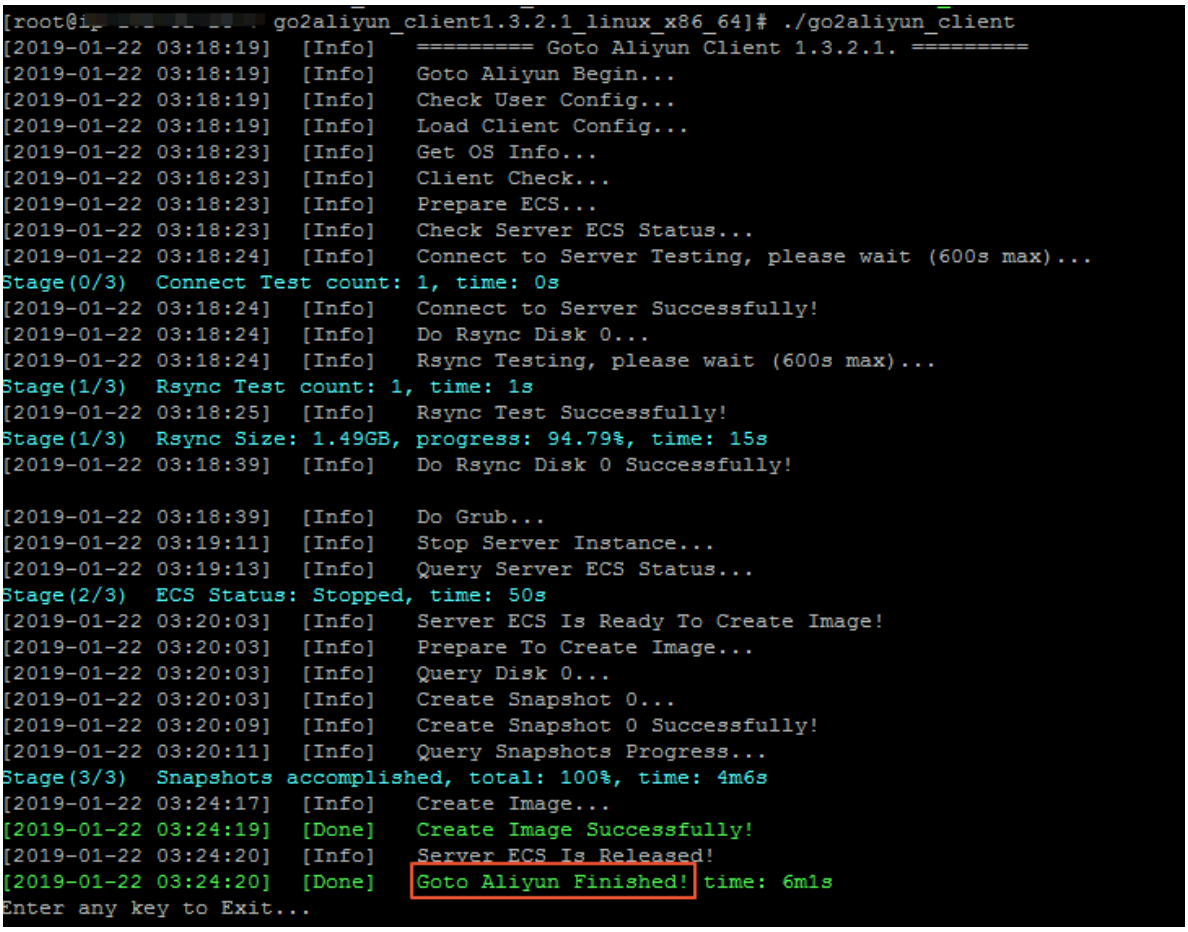
   - The AccessKey information of your Alibaba Cloud account
   - The target zone of migration and the name of the target image
   - (Optional) The size of the target system disk and the configuration of the target data disks
   - The platform and architecture of the source system to be migrated

   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 VMs to Alibaba Cloud ECS

This topic describes how to migrate your Azure virtual machines (VMs) to Alibaba Cloud ECS.

Migrate your Azure Windows VMs 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 VM is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may cause the associated application licenses to become 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 a pre-migration test to ensure successful migration.

Procedure

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

2. Configure the user_config.json file.

   The user_config.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 VMs 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 VM is migrated to Alibaba Cloud, the underlying hardware devices of the system will change, which may cause the associated application licenses to become 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_check --check` command to check whether the Azure VM 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 a pre-migration test to ensure successful migration.

Procedure

1. Configure the user_config.json file.

   The user_config.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

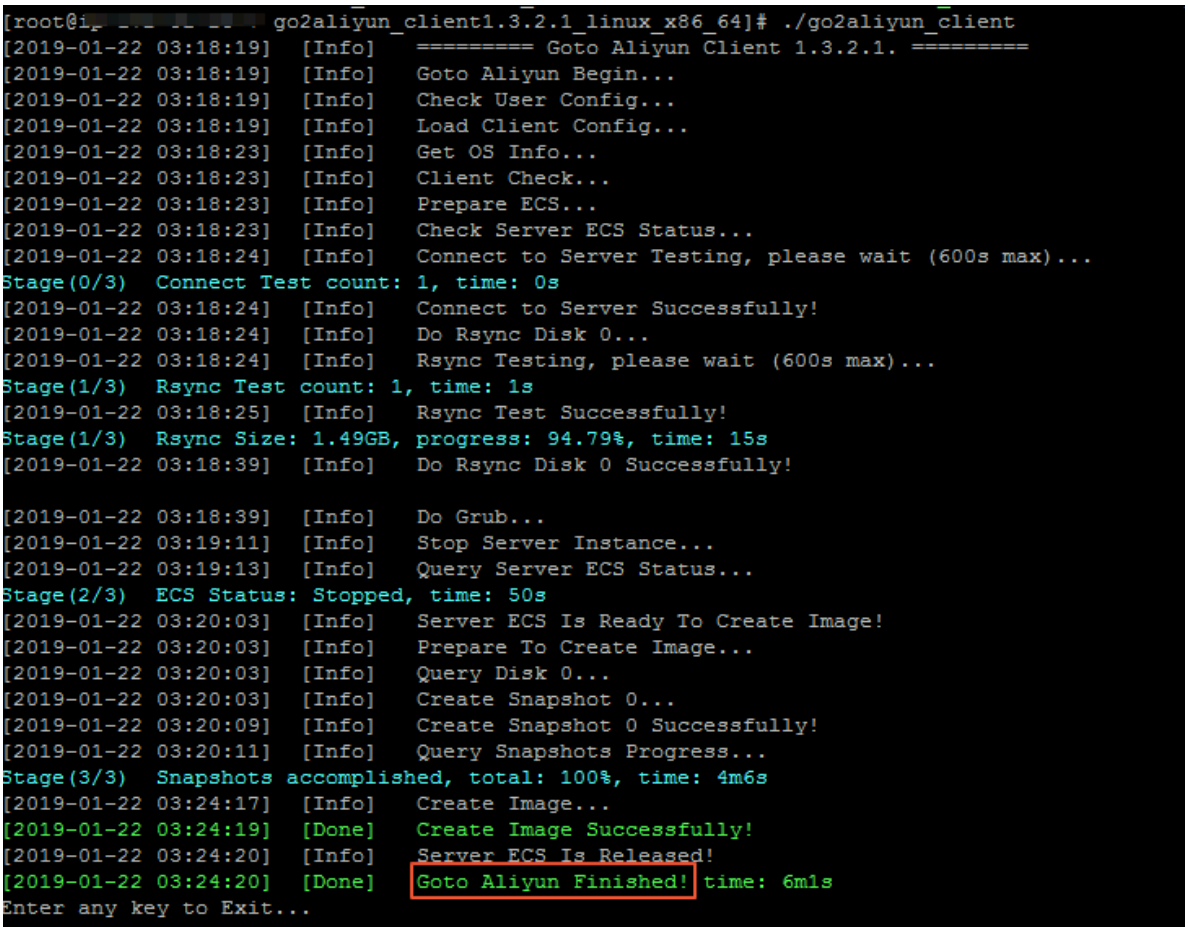
   For the configuration methods of these items, see Configure the user_config.json file.

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 VM to the corresponding international region of Alibaba Cloud. For more information, see Full migration. For example, if the Azure VM 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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
      telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance.When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate 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_config.json file.

   The user_config.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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance.When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
```

3. Ensure that Rsync is installed. If not, run one of the following commands to install it according to your operating system:

   - CentOS: yum -y install rsync.
   - Ubuntu: apt-get -y install rsync.
   - Debian: apt-get -y install rsync.
   - SUSE: zypper install rsync.
   - Other platforms: See the relevant document on the website of your platform.

4. 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.

5. 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_check 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_Cloud_Migration_Tool.zip
   ```

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

   ```
   unzip Alibaba_Cloud_Migration_Tool.zip
   ```

   ```
   [root@ ~]# unzip Alibaba_Cloud_Migration_Tool.zip
   Archive:  Alibaba_Cloud_Migration_Tool.zip
     inflating: go2aliyun_client1.3.2.3_linux_i386.zip
     inflating: go2aliyun_client1.3.2.3_linux_x86_64.zip
     inflating: go2aliyun_client1.3.2.3_windows_i386.zip
     inflating: go2aliyun_client1.3.2.3_windows_x86_64.zip
     inflating: Release Note.txt
   ```

   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 architecture 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_x86_64.zip.

   ```
   [root@ ~]# uname -a
   Linux  3.10.0-957.1.3.el7.x86_64 #1 SMP Thu Nov 29 14:49:43 UTC 2018 x86_64 x86_64 x86_64 GNU/Linux
   [root@ ~]# unzip go2aliyun_client1.3.2.3_linux_x86_64.zip
   Archive:  go2aliyun_client1.3.2.3_linux_x86_64.zip
      creating: go2aliyun_client1.3.2.3_linux_x86_64/
      creating: go2aliyun_client1.3.2.3_linux_x86_64/Check/
   ```

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

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

   In this example, the command is cd go2aliyun_client1.3.2.3_linux_x86_64.

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

   ```
   chmod +x ./Check/client_check
   ```

```
./Check/client_check --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_config.json file.

   The user_config.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.

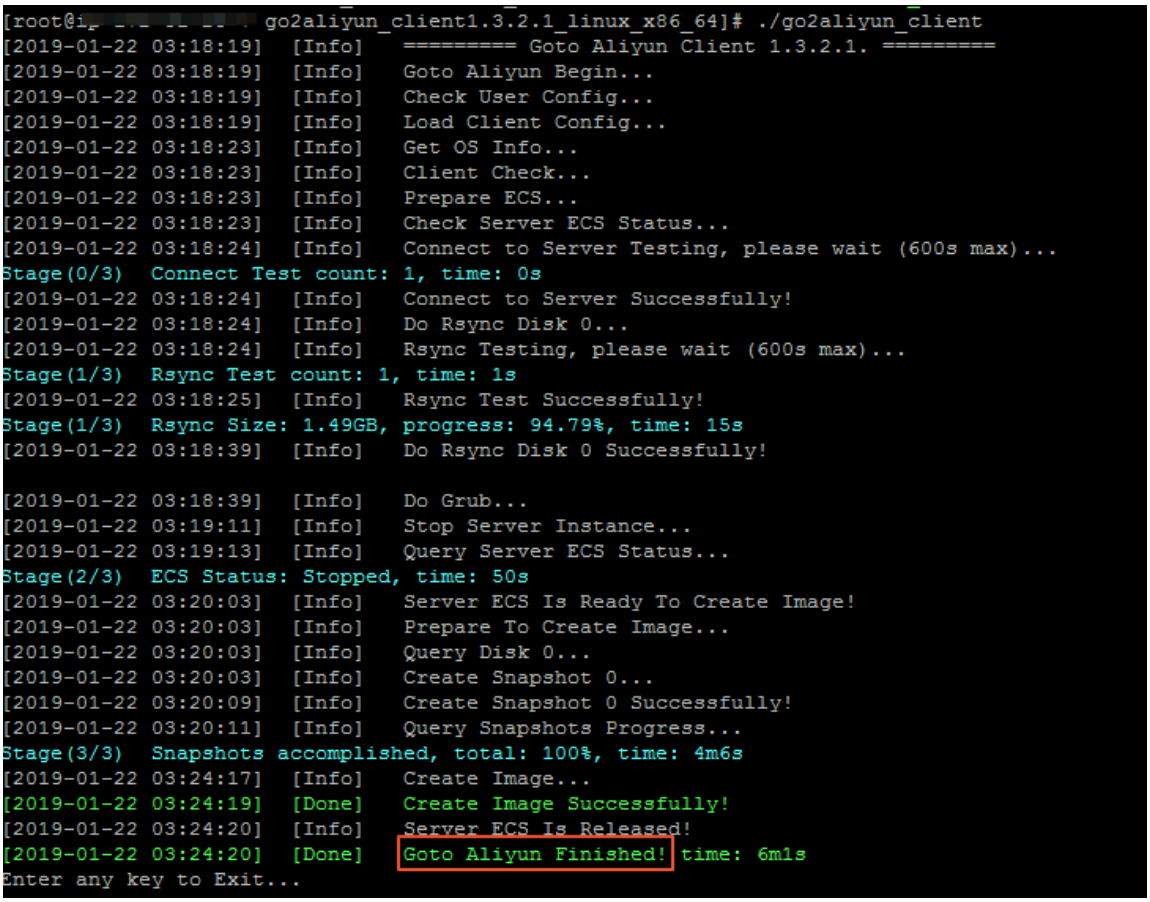
   b. (Optional) Configure the directories or files that do not need to be migrated. For more information, see Exclude files or directories from migration.

   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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance.When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate 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_config.json file.

   The user_config.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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance.When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate 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_check 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_Cloud_Migration_Tool.zip
   ```

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

   ```
   unzip Alibaba_Cloud_Migration_Tool.zip
   ```

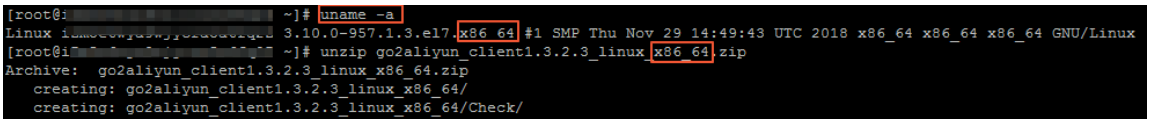
   ```
   [root@ ~]# unzip Alibaba_Cloud_Migration_Tool.zip
   Archive:  Alibaba_Cloud_Migration_Tool.zip
     inflating: go2aliyun_client1.3.2.3_linux_i386.zip
     inflating: go2aliyun_client1.3.2.3_linux_x86_64.zip
     inflating: go2aliyun_client1.3.2.3_windows_i386.zip
     inflating: go2aliyun_client1.3.2.3_windows_x86_64.zip
     inflating: Release Note.txt
   ```

   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 architecture
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_x86_64.zip.



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

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

In this example, the command is `cd go2aliyun_client1.3.2.3_linux_x86_64`.

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

```
chmod +x ./Check/client_check
./Check/client_check --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_config.json file.

The user_config.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.

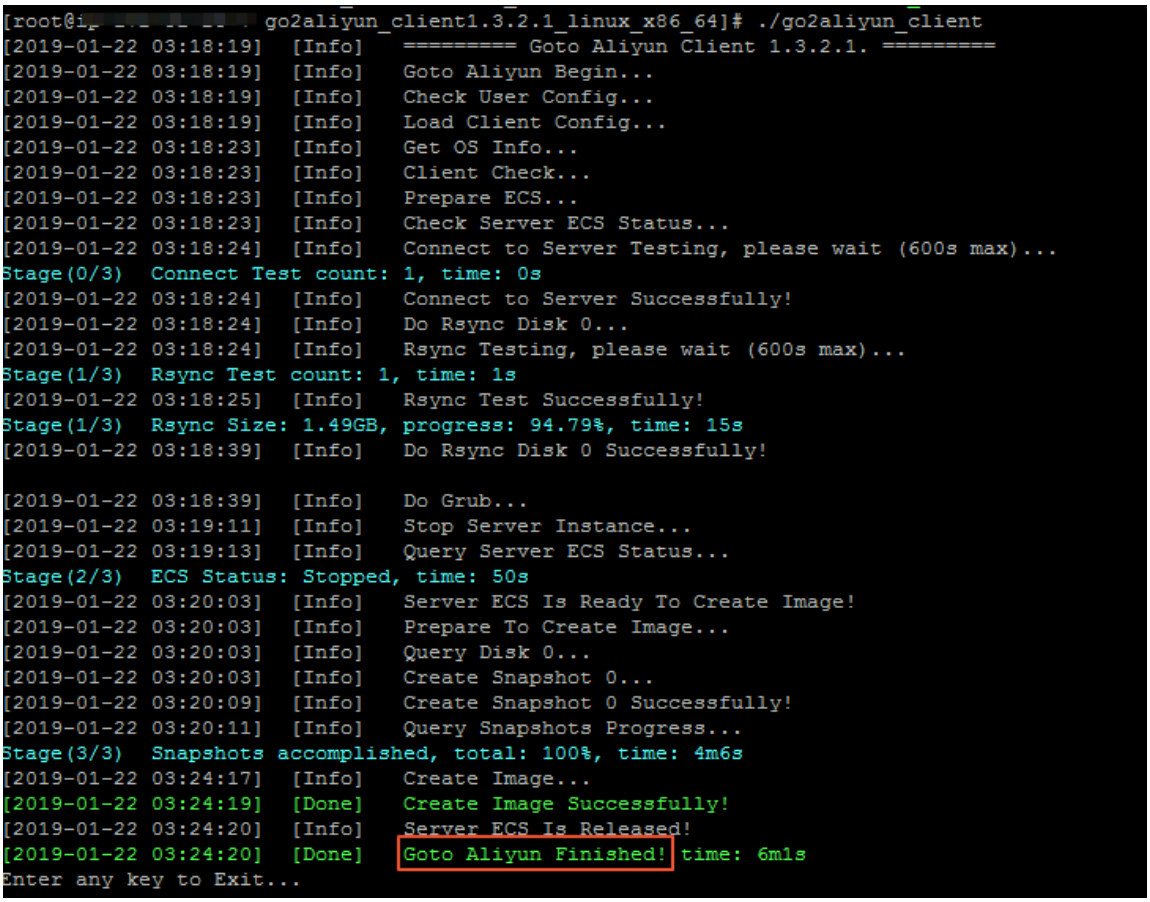
b. (Optional) Configure the directories or files that do not need to be migrated. For more information, see Exclude files or directories from migration.

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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate 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_config.json file.

   The user_config.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 intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate instance.
telnet xxx.xx.xxx.xx 8703  # where, xxx.xx.xxx.xx is the Internet IP address of the intermediate instance. When you perform the migration through VPC, xxx.xx.xxx.xx is the private IP address of the intermediate 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_check 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_Cloud_Migration_Tool.zip
   ```

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

   ```
   unzip Alibaba_Cloud_Migration_Tool.zip
   ```

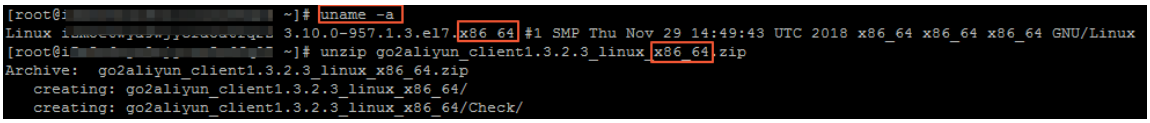
   ```
   [root@ ~]# unzip Alibaba_Cloud_Migration_Tool.zip
   Archive:  Alibaba_Cloud_Migration_Tool.zip
     inflating: go2aliyun_client1.3.2.3_linux_i386.zip
     inflating: go2aliyun_client1.3.2.3_linux_x86_64.zip
     inflating: go2aliyun_client1.3.2.3_windows_i386.zip
     inflating: go2aliyun_client1.3.2.3_windows_x86_64.zip
     inflating: Release Note.txt
   ```

   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 architecture
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_x86_64.zip.



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

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

In this example, the command is cd go2aliyun_client1.3.2.3_linux_x86_64.

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

```
chmod +x ./Check/client_check
./Check/client_check --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_config.json file.

The user_config.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.

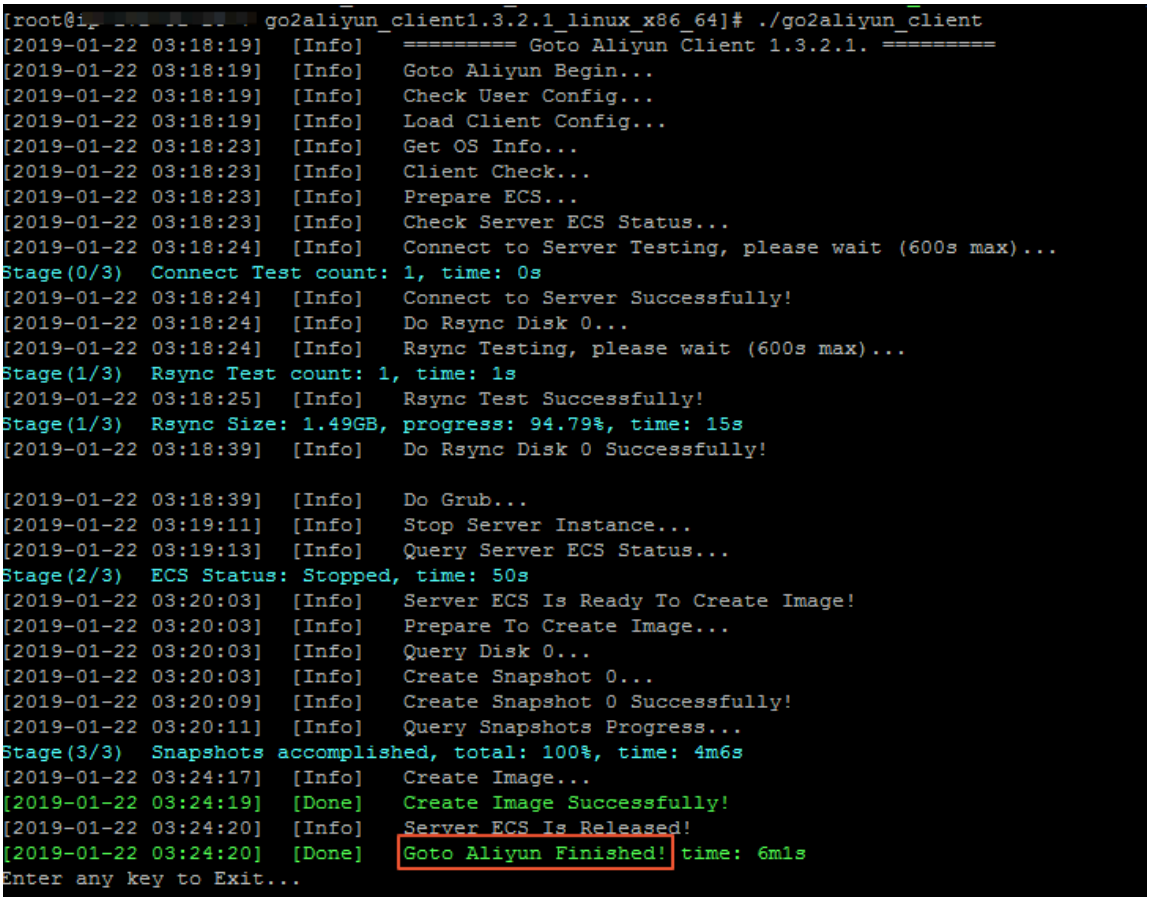
b. (Optional) Configure the directories or files that do not need to be migrated. For more information, see Exclude files or directories from migration.

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 contact Alibaba Cloud technical support.

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_config.json file.

   The user_config.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_check --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_config.json file.

   The user_config.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

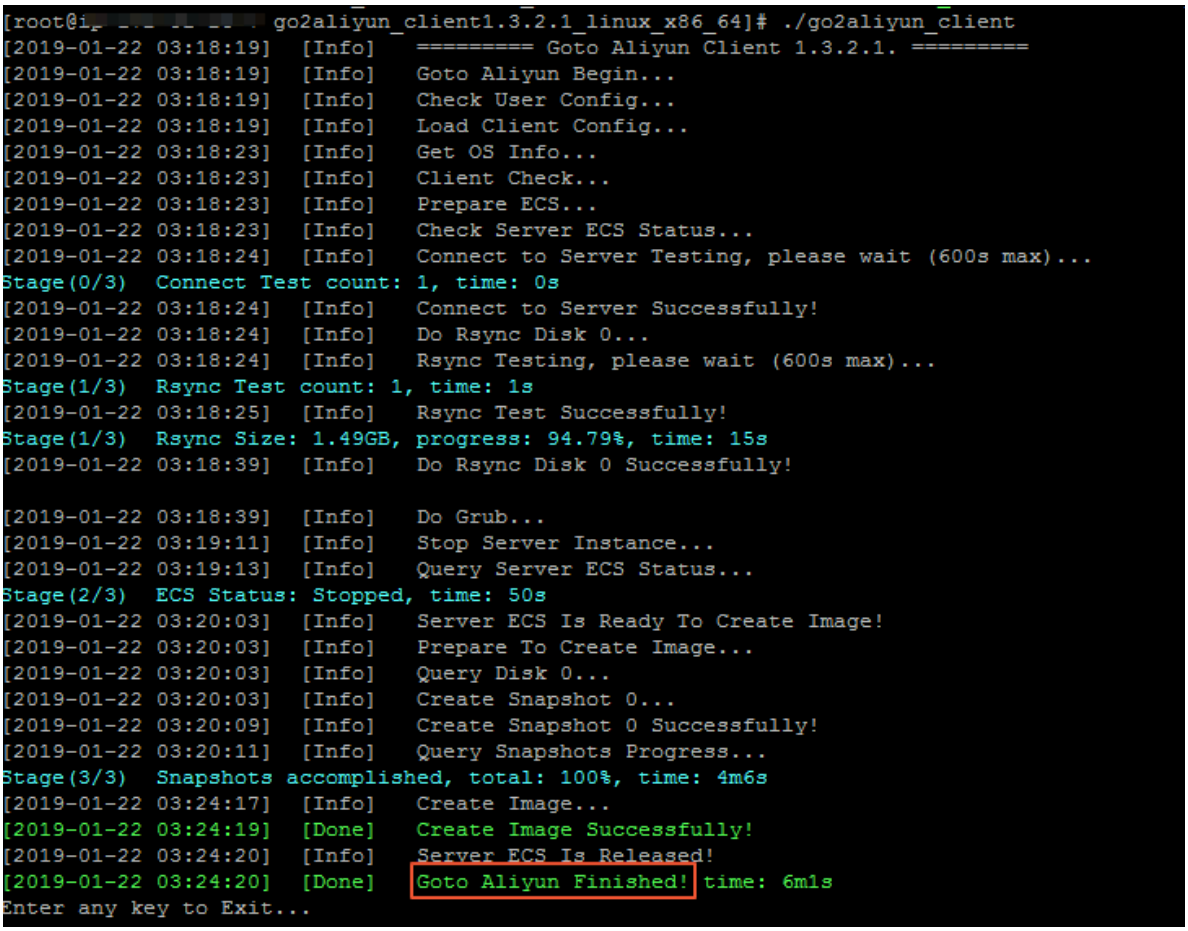
   For the configuration methods of these items, see Configure the user_config.json file.

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 Alibaba Cloud CLI and configure an AccessKeyId and AccessKeySecret.
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 CreateInstance --RegionId 'cn-qingdao' --ImageId 'm-xxxxxxxxx' --VSWitchId 'vsw-xxxxxxx' --PrivateIP '10.0.0.10' --InstanceType '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

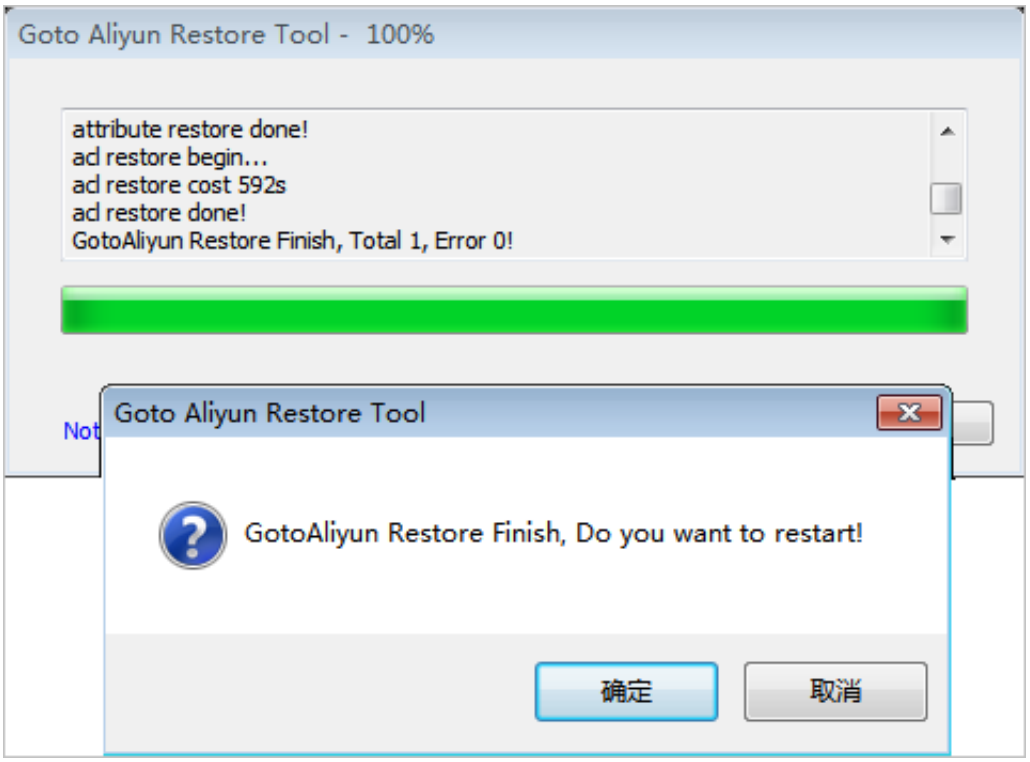
1. Ensure that the system disk data is complete.

2. If you have a data disk, attach it to an ECS instance. For more information, see #unique_50.
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.

3 Databases in ECS instances

3.1 Migrate a database between two ECS instances

Alibaba Cloud Data Transmission Service (DTS) allows you to exchange data between various data sources such as RDBMS, NoSQL, and OLAP. By taking the MySQL database as an example, this topic introduces how to configure a DTS migration task to migrate data in a database between two ECS instances.

Prerequisites

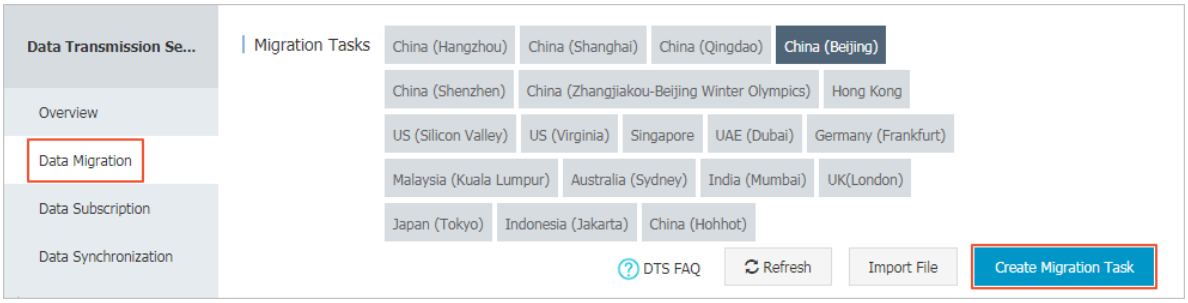
- In the security group of the target ECS instance, allow inboud access to the port on which the MySQL server listens. The default MySQL port is 3306.
- Create a non-root account for the MySQL databases on the source and target ECS instances.

  For example, you can run the following command to create an account for the MySQL database, with the name as dts and the password as 123456.

  ```
  grant all on *.*  to 'dts'@'%'  IDENTIFIED BY '123456';
  ```

Procedure

1. Log on to the DTS console.
2. In the left-side navigation pane, select **Data Migration.**
3. Select the region of the target ECS instance, and click **Create Migration Task**.



4. Configure a migration task.

   a) Specify a task name.

      You can use the default name or specify one.

   b) Configure the source database.

Parameter	Value
Instance Type	The database in the ECS instance.
Instance Region	The region to which the source ECS instance belongs.
ECS Instance ID	The ID of the source ECS instance. DTS supports ECS instances in classic networks or VPCs.
Database Engine	The type of the database in the source ECS instance, MySQL in this example.
Port	The port on which the MySQL server listens.
Database Account	The non-root account for accessing the MySQL database in the source ECS instance. **Note:** The database account cannot be a root account. Otherwise, errors will occur during the connection test.
Database Password	The password for the non-root account.

   c) Click **Test the Connection** in the lower right corner of the **Source Database** area.

      If the result **Test Passed** is returned, the source database has connected.

   d) Configure the target database.

Parameter	Value
Instance Type	The database in the ECS instance.
Instance Region	The region to which the target ECS instance belongs.
ECS Instance ID	The ID of the target ECS instance. DTS supports ECS instances in classic networks or VPCs.
Database Engine	The same as the database in the source ECS instance, MySQL in this example.
Port	The port on which the MySQL server listens.

Parameter	Value
Database Account	The non-root account for accessing the MySQL database in the target ECS instance. **Note:** The database account cannot be a root account. Otherwise, errors will occur during the connection test.
Database Password	The password for the non-root account.

e) Click **Test the Connection** in the lower right corner of the **Target Database** area.

If the result **Test Passed** is returned, the target database has connected.

f) Click **Authorize Whitelist and Enter into Next Step.**

5. Configure the migration type and migration object.

a) Configure the migration type.

- Zero downtime migration: Select Structure migration + Full data migration + Incremental data migration.
- Full data migration: Select Structure migration + Full data migration.

b) Configure the migration object.

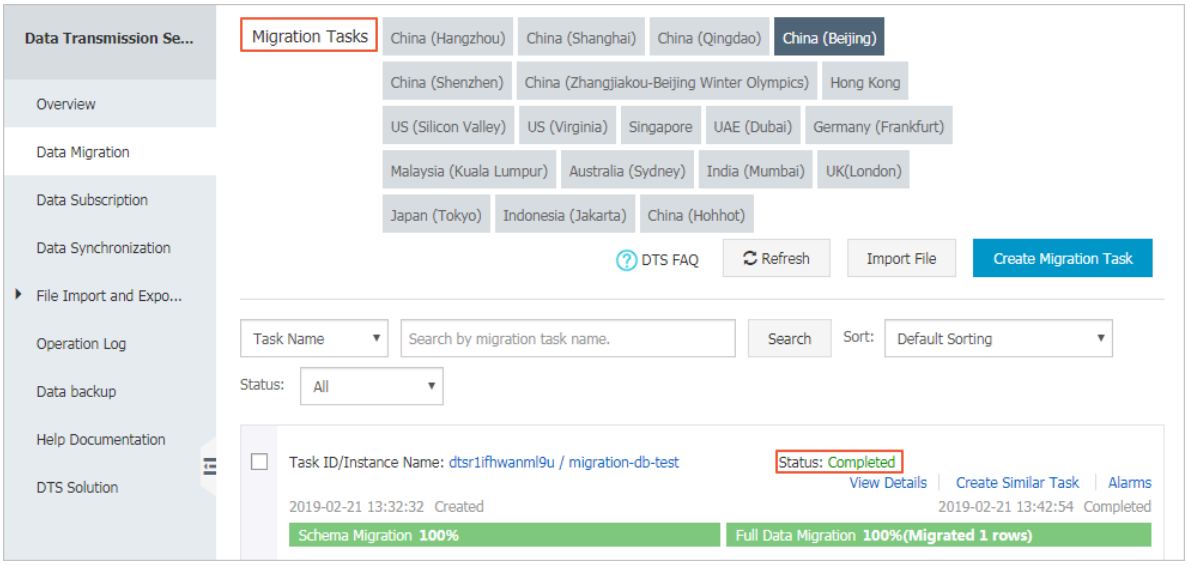
In the **Migration Object** box, click the database object to migrate, such as a database, table, or column. Then click **>** to add it to the **Selected Objects** box.

Note:
By default, after a database object is By default, after a database object is migrated to a MySQL database in your ECS instance, the object name remains the same as that in the local MySQL database. If the migrated database object has different names on the source and target instances, you need to use the object name mapping function provided by DTS to meet the requirements. For more information, see Object name mapping.

6. Click **Pre-Check and Start**.

   Before migration begins, DTS pre-checks the connectivity, authority, and log format of the database.

   After the pre-check is successful, you can view the status and progress of your tasks in the **Migration Task List**.



3.2 Migrate a local database to ECS

Alibaba Cloud Data Transmission Service (DTS) allows you to exchange data between various data sources, such as RDBMS, NoSQL, and OLAP. This topic provides an example scenario that describes how to configure a DTS migration task to migrate data from a MySQL database in your on-premises data center to an ECS instance on Alibaba Cloud.

Prerequisites

- Create an ECS instance. For more information, see #unique_54.
- In the security group of the ECS instance, allow inbound access to the port on which the MySQL server listens. The default MySQL port is 3306.
- Install the MySQL server on the ECS instance.
- Create a non-root account for the MySQL database on the ECS instance.

  For example, you can run the following command to create an account for the MySQL database, with the name as dts and the password as 123456.

  ```
  grant all on *.*  to 'dts'@'%'  IDENTIFIED BY '123456';
  ```

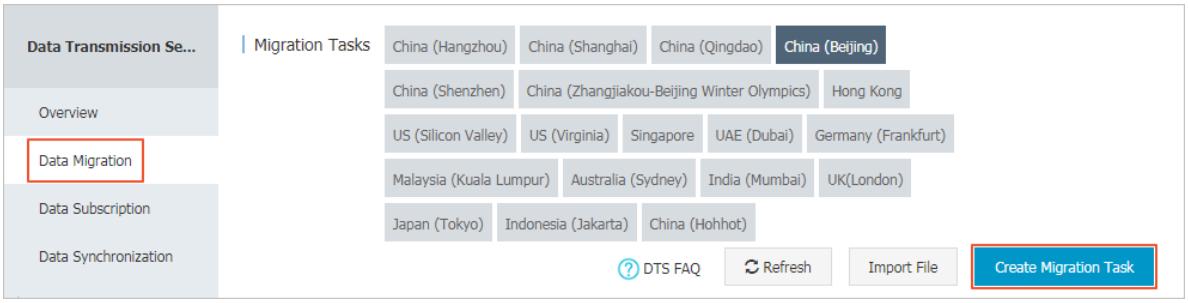
- Create a non-root account for the local MySQL database.

Context

DTS allows you to migrate data between heterogeneous and homogeneous data sources. It also provides multiple ETL features such as three-level object mapping (for databases, tables, and columns) and data filtering. You can use DTS for zero-downtime migration. During the migration process, the source database continues to provide services, minimizing the impact of migration on your business. For information about the databases supported by DTS, see Data migration.

Procedure

1. Log on to the DTS console.
2. In the left-side navigation pane, select **Data Migration.**
3. Select the target region, and click **Create Migration Task**.



4. Configure a migration task.

   a) Specify a task name.

   You can use the default name or specify one.

   b) Configure the source database.

   DTS supports databases accessed through the Internet, leased lines, VPN gateways , and intelligent gateways. The following configurations are described in terms of a database accessed through the Internet. For the migration scheme of other types of databases, see the DTS user manual.

Parameter	Description
Instance Type	The database with a public IP address.
Instance Region	The region to which the database belongs.
Database Engine	The type of the local database, MySQL in this example.
Host Name or IP Address	The host name or IP address of the server where the local database exists.
Port	The port number on which the MySQL server listens.

Parameter	Description
Database Account	The non-root account for accessing the local MySQL database.  **Note:** The database account cannot be a root account. Otherwise, errors will occur during connection tests.
Database Password	The password for the non-root account.

c) Click **Test the Connection** in the lower right corner of the **Source Database** area.

If the result **Test Passed** is returned, the source database has connected.

d) Configure the target database.

Parameter	Description
Instance Type	The database in the ECS instance.
Instance Region	The region to which the ECS instance belongs.
ECS Instance ID	The ID of the ECS instance. DTS supports ECS instances in classic networks or VPCs.
Database Engine	The same as the local database, MySQL in this example.
Port	The port number on which the MySQL server listens.
Database Account	The non-root account for accessing the MySQL database in the ECS instance.  **Note:** The database account cannot be a root account. Otherwise, errors will occur during connection tests.
Database Password	The password for the non-root account.

e) Click **Test the Connection** in the lower right corner of the **Target Database** area.

If the result **Test Passed** is returned, the target database has connected.

f) Click **Authorize Whitelist and Enter into Next Step.**

5. Configure the migration type and migration object.

   a) Configure the migration type.

   - Zero downtime migration: Select Structure migration + Full data migration + Incremental data migration.
   - Full data migration: Select Structure migration + Full data migration.

   b) Configure the migration object.

   In the **Migration Object** box, click the database object to migrate, such as a database, table, or column. Then click **>** to add it to the **Selected Objects** box.

   > **Note:**
   > By default, after a database object is By default, after a database object is migrated to a MySQL database in your ECS instance, the object name remains the same as that in the local MySQL database. If the migrated database object has different names on the source and target instances, you need to use the object name mapping function provided by DTS to meet the requirements. For more information, see Object name mapping.

6. Click **Pre-Check and Start**.

   Before migration begins, DTS pre-checks the connectivity, authority, and log format of the database.

   After the pre-check is successful, you can view the status and progress of your tasks in the **Migration Task List**.