

Server Migration Service

FAQS

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- [Can I Ask Huawei Cloud Technical Support to Help Me Migrate Services?](#)
- [How Do I Migrate an ECS from One Account to Another?](#)
- [How Do I Migrate an ECS from One Region to Another Using SMS?](#)
- [Can I Migrate Workloads to FlexusL and FlexusX Instances, DeHs, DeCs, Kunpeng ECSs, or BMSs Using SMS?](#)
- [Can I Migrate ECSs from Huawei Cloud to On-Premises Environments or Other Clouds Using SMS?](#)
- [How Do I Obtain an AK/SK Pair for a Huawei Cloud Account?](#)
- [How Do I Obtain an AK/SK Pair for an IAM User?](#)
- [Does SMS Support Resumable Data Transfer?](#)
- [How Do I Display the OS Name of a Target Server on the ECS Console?](#)
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- [If I Change the Password of the Source Server and Perform an Incremental Synchronization After the Full Migration Is Complete, Will the New Password Be Synchronized to the Target Server?](#)

2 Product Consultation

2.1 Can I Migrate Servers from Other Clouds to Huawei Cloud?

Yes.

You can use SMS to migrate x86 cloud servers from AWS, Azure, Alibaba Cloud, Tencent Cloud, and many other popular cloud platforms. You can also use SMS to migrate on-premises x86 physical or virtual servers.

For details about the supported OSs, see [What OSs Can Be Migrated by and What Are the Restrictions on Using SMS?](#)

2.2 Can I Migrate ECSs from Huawei Cloud to On-Premises Environments or Other Clouds Using SMS?

No, but you can create images for your ECSs, export the images, and download them to your local servers or transfer them to other clouds. For details, see [Exporting Images](#).

2.3 Can I Ask Huawei Cloud Technical Support to Help Me Migrate Services?

We do not directly migrate your services. To learn how to use SMS for the migration, see [SMS Documentation](#).

If you need professional migration solutions and tools, [Cloud Migration Service](#) on Huawei Cloud is available for you. It helps you smoothly and quickly migrate services and makes you stay focused on service development.

2.4 Can I Migrate Workloads to FlexusL and FlexusX Instances, DeHs, DeCs, Kunpeng ECSs, or BMSs Using SMS?

FlexusL and FlexusX Instances

Yes. Before the migration, [purchase a FlexusL instance](#) or [purchase a FlexusX instance](#). When you create a migration task, use the created FlexusL or FlexusX instance as the target server.

DeH

Yes. Before the migration, [purchase a DeH](#). When you configure the target server, select the DeH that you purchased.

DeCs

Yes. Before the migration, [enable a DeC](#) and apply for an ECS. When configuring the target server, select the ECS you requested.

Kunpeng ECSs

No

BMSs

No

2.5 Does SMS Support Resumable Data Transfer?

Yes. Data transfer can be resumed if:

- The transfer is interrupted because the source server is disconnected from SMS due to network problems or other reasons. In this case, you do not need to worry about data loss or migration failure. All you need to do is restore the connection and restart the migration using the **Start** button on the SMS console. For details about how to restore the connection, see [How Do I Restore the Connection Between the Agent and SMS?](#)
- You are performing a Linux file-level migration, but the transfer is interrupted because the source server is disconnected from SMS after the Agent or the source server is restarted. You need to click **Start** on the SMS console to continue the unfinished migration task. If you are performing a Windows or Linux block-level migration, the data transfer cannot be resumed, and you need to delete the migration task and create a new one to migrate all data again.

2.6 How Do I Migrate an ECS from One Account to Another?

To migrate an ECS from one account to another, perform the following operations:

1. Install the Agent on the ECS under the original account, but when starting the Agent, enter the AK/SK pair of the destination account. To learn how to install the Agent, see [Installing the Windows Agent](#) or [Installing the Linux Agent](#).
2. Sign in to the console using the destination account, [configure the target server](#), [start the replication](#), and [launch the target server](#).

NOTE

You can also migrate ECSs across regions. For details, see [How Do I Migrate an ECS from One Region to Another Using SMS?](#)

2.7 How Do I Migrate an ECS from One Region to Another Using SMS?

If you need to migrate an ECS from one region to another, for example, from **CN South-Guangzhou** to **CN North-Beijing1**, you need to install the Agent on the ECS in **CN South-Guangzhou**. When creating a migration task, select **CN North-Beijing1** as the target region.

NOTE

You can also use SMS to migrate ECSs across accounts. For details, see [How Do I Migrate an ECS from One Account to Another?](#)

2.8 Will My Services on the Source Server Be Interrupted During Migration?

No. The migration consumes the source bandwidth, but requires a small amount of other source resources such as CPU and memory.

Before the migration, you are advised to check the source bandwidth usage and properly allocate bandwidth to the migration process.

2.9 How Do I Obtain an AK/SK Pair for a Huawei Cloud Account?

An access key comprises an access key ID (AK) and secret access key (SK). It is used as long-term identity credentials to sign your requests for Huawei Cloud APIs. AK is used together with SK to sign requests cryptographically, ensuring that the requests are secret, complete, and correct.

You need to provide an AK/SK pair when using SMS. To learn how to obtain an AK/SK pair for your Huawei Cloud account, see [Access Keys](#).

 **CAUTION**

During the migration, do not delete the AK/SK pair, or the migration will fail.

2.10 How Do I Obtain an AK/SK Pair for an IAM User?

Scenarios

You need to provide an AK/SK pair when using SMS. To safeguard the resources in your account on Huawei Cloud, you are advised to create an IAM user, grant permissions to the user, create an AK/SK pair for the user, and use the user for migration.

Procedure

Step 1 [Create a user group and assign permissions](#) to it.

- If the IAM user to be added to this group needs all SMS permissions, attach system-defined policies **SMS FullAccess**, **OBS OperateAccess**, **ECS FullAccess**, **VPC FullAccess**, and **EVS FullAccess** to the group. EVS KMSAccess must be attached if disk encryption is required.
- If the IAM user only needs specific SMS permissions, create custom policies and attach these policies to the user group. For details, see [SMS Custom Policies](#).

 **NOTE**

Compared with system-defined policies, custom policies provide more fine-grained and secure permissions control.

Step 2 [Create an IAM user](#).

Step 3 [Grant permissions to the IAM user](#).

Add the IAM user to the group created in step 1.

Step 4 [Sign in](#) as the IAM user.

Step 5 Create an AK/SK pair of the IAM user. For details, see [Access Keys](#).

----End

2.11 How Do I Migrate a Linux Source Server as a Non-root User?

Scenarios

If you must use a non-root user account to perform the migration, ensure that the user has the required permissions.

Procedure

Step 1 For a hypothetical user, **test**, check whether the user is included in **/etc/passwd**. If it is not, run the two commands below to add the user and set a password for it.

If it is, confirm that user **test** has a **/home** directory. If the user does not have a home directory, add one.

```
useradd -m test
passwd test
```

Step 2 Modify the **/etc/sudoers** file to configure permissions.

1. Add the following information to the end of the **/etc/sudoers** file based on the OS distribution:

- Debian and Ubuntu


```
test ALL=(ALL:ALL) ALL
test ALL=(ALL:ALL) NOPASSWD:ALL
```
- Other distributions


```
test ALL=(ALL) ALL
test ALL=(ALL) NOPASSWD:ALL
```

2. If **Defaults requiretty** is in the **/etc/sudoers** file, comment it out.

CAUTION

These modifications to the **sudoers** file enable the user to execute administrator-level commands without entering a password. After the migration is completed, you need to undo the modifications, or an exception occurs.

Step 3 Switch to the regular account (**test** in this example) and run the following command to start the Agent:

```
sudo ./startup.sh
```

----End

2.12 What Information Does SMS Collect About Source Servers?

SMS uses the Agent to collect source server details to evaluate the migration feasibility and provide data required for selecting or configuring target servers. [Table 2-1](#) lists the data collected from a Windows server. [Table 2-2](#) lists the data collected from a Linux server. All collected data is used for migration only.

Table 2-1 Collected Windows server details

Item	Sub-Item	Usage
Environment information	OS version	Used for migration feasibility check. Only source servers with OSs included in Table 3-2 can be migrated.

Item	Sub-Item	Usage
	Firmware type	Used for migration feasibility check. The source server can be booted from BIOS or UEFI.
	CPU	Used for recommending the target server flavor.
	Memory	Used for recommending the target server flavor.
	System directory	Used for configuring the target server. After the migration is complete, it will be used to restore the registry.
	Disk partition style	Used for configuring the target server. Before the migration starts, the disks of the target server must be formatted based on the disk settings of the source server.
	File system	Used for migration feasibility check. Only the NTFS partitions can be migrated.
	Available space	Used for migration feasibility check. If there is not enough space on a source server partition, the migration may fail.
	OEM system check	Used for migration feasibility check. If the system is an OEM system, the OS needs to be reactivated after the migration is complete.
	Driver files	Used for migration feasibility check. The source server must have basic disk drivers.
	System services	Used for migration feasibility check. Volume Shadow Copy Service (VSS) must be available on the source server.
	User permissions	Used for migration feasibility check. You must have the administrator permissions to run the Agent.
Disk information	<ul style="list-style-type: none"> ● Disk name ● Disk partition style ● Disk size ● Used space 	Used for checking whether the disk specifications of the target server meet the migration requirements.

Table 2-2 Collected Linux server details

Item	Sub-Item	Usage
Environment information	OS version	Used for migration feasibility check. Only servers with OSs included in Table 3-3 or Table 3-4 can be migrated.
	CPU	Used for recommending the target server flavor.
	Memory	Used for recommending the target server flavor.
	Paravirtualization	Used for migration feasibility check. SMS cannot migrate paravirtualized source servers.
	Firmware type	Used for migration feasibility check. The source server can be booted from BIOS or UEFI.
	Boot mode	Used for migration feasibility check. The source server must be booted from BIOS.
	rsync	Used for evaluating synchronization feasibility. SMS synchronization depends on rsync on the source server.
	Raw device	Used for migration feasibility check. Source servers using raw devices cannot be migrated.
	Disk partition	Used for migration feasibility check. The source disk partition style must be Main Boot Record (MBR) or GUID Partition Table (GPT).
	Disk partition style	Used for configuring the target server. Before the migration starts, the disks of the target server must be formatted based on the disk settings of the source server.
	File system	Used for migration feasibility check. Supported file systems include Ext2, Ext3, Ext4, VFAT, XFS, and Btrfs.
Disk information	<ul style="list-style-type: none"> ● Disk name ● Disk partition style ● Disk size ● Used space 	Used for checking whether the disk specifications of the target server meet the requirements.

2.13 How Do I Select a Target Server?

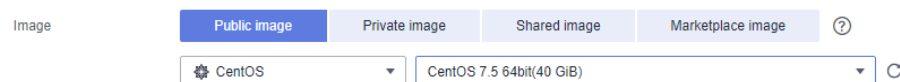
NOTE

Source servers can be migrated to pay-per-use or yearly/monthly ECSs. You can select whichever billing mode that best suits your needs.

A target server must meet the requirements described here. If no existing ECSs meet these requirements, you can create one. For details, see "How Do I Create an ECS?" in *Elastic Cloud Server User Guide*.

- A target server running Windows must have at least 2 GB of memory.
- A target server must have at least as many disks as the source server, and each disk on the target server must be at least as large as the paired source disk.
- A target server must run the same type of OS as the source server. Otherwise, OS inconsistency will occur.

Figure 2-1 Available types of images for purchasing an ECS




2.14 How Do I Create an ECS?

Scenarios

Source servers can be migrated to ECSs on Huawei Cloud. You can prepare one or more ECSs as target servers on Huawei Cloud before the migration.

Procedure

- Step 1** Sign in to the console.
- Step 2** Click  in the upper left corner and select the desired region and project.
- Step 3** Click **Service List** and choose **Compute > Elastic Cloud Server**.
The **Elastic Cloud Server** page is displayed.
- Step 4** Click **Buy ECS** and configure basic parameters.
For more information, see [Purchasing an ECS](#).

NOTE

- A target server running Windows must have at least 2 GB of memory.
- A target server must run the same type of OS as the source server.
- A target server must have at least as many disks as the source server, and each disk on the target server must be at least as large as the paired source disk.

Step 5 Click Next.

After the ECS is purchased, it will be displayed in the ECS list.

----End

2.15 What Is Block-Level Migration?

What is a block?

In block-level migrations, a block refers to a disk block. A disk block is the minimum logical unit for file systems to manage disk partitions. Disk blocks are similar to clusters in Windows. A block is also the minimum logic unit of disks used by OSs and software. The smallest unit for disk read or write is a sector. A sector is a physical area on a disk. The read and write operations to disk blocks are performed in sectors. Generally, a file is stored in several blocks, and one block maps to several physical sectors.

What is a block-level migration?

In block-level migrations, file systems are migrated by blocks. If the network is interrupted before the migration is complete, only impacted blocks need to be migrated again after the network recovers. If files are modified during the migration, only modified blocks need to be synchronized.

In file-level migrations, various tools like TAR are used for remote replication over SSH or other transmission protocols. If a file is modified during decompression or the network is interrupted before the migration is complete, the migration will fail. In addition, if a file is modified during the migration, the entire file needs to be synchronized. It means that all the blocks of the file must be synchronized. So, the synchronization efficiency is low.

2.16 What are Valid Data Blocks?

Valid data blocks are **blocks** that are allocated or used by a file system, for example, Ext. SMS migrates only valid data blocks. SMS does not migrate data blocks that are not allocated or used. This reduces the amount of data that needs to be migrated and improves migration efficiency.

2.17 How Does Migration Using SMS Differ from Migration Using IMS?

Migration Using SMS

SMS helps you migrate applications and data from x86 physical or virtual servers on premises or in other private or public clouds to ECSs on Huawei Cloud.

Advantages

- Ease of use

You just need to install and configure the Agent on source servers and configure the target servers and start the migration on the SMS console. SMS takes care of the remaining work automatically.

- Seamless migration

Your services do not have to go down during the migration. If the network is interrupted during migration, SMS allows you to restart the migration and continue transferring data from where it left off.

- High security

The Agent installed on source servers uses AK/SK pairs for authentication. Dynamically generated SSL certificates and keys are used to encrypt transmission channels for data security.

Constraints

For details, see [What OSs Can Be Migrated and What Are the Restrictions on Using SMS?](#)

Migration Using IMS

If you want to migrate a server using IMS, you need to complete the initial network and driver (Xen or KVM) configurations on the server, create an image of the server, import the image to the IMS console, and use the image to create an ECS.

Advantages

- IMS enables you to import local images to the cloud platform and use the images to quickly create cloud servers for service migration to the cloud.
 - Image files in a variety of formats can be imported to the cloud platform, including VHD, VMDK, QCOW2, RAW, VHDX, QCOW, VDI, QED, ZVHD, and ZVHD2. Image files in other formats need to be converted into any of these supported formats before being imported. The open-source tool `qemu-img` is provided for you to convert image file formats.
 - Many popular OSs, such as SUSE, Oracle Linux, Red Hat Enterprise Linux, Ubuntu, openSUSE, CentOS, Debian, Fedora, and EulerOS are compatible.
- IMS allows you to share or replicate images across regions to migrate ECSs between accounts and regions.
- IMS enables you to create system and data disk images and use these images on the cloud platform for batch deployment.

Constraints

Local storage space is occupied, and only image files no larger than 1 TB can be imported.

2.18 Why Is the OS Name of the Target ECS Displayed on the ECS Console Different from That of the Source Server?

The console displays the ECS image name rather than the OS name.

Figure 2-2 Image name



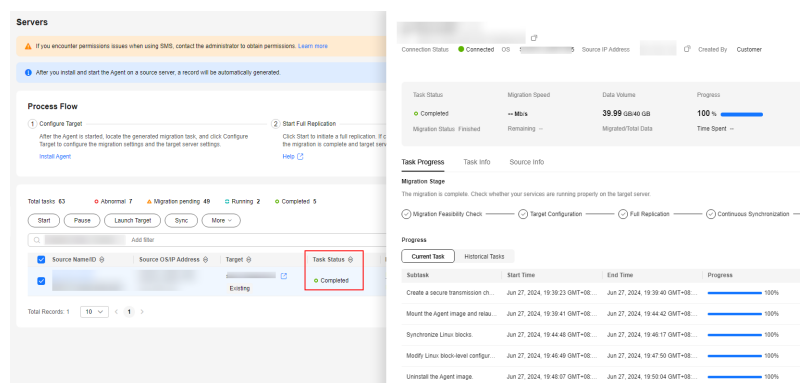
- If you use an existing ECS as the target server, the name of the image used to create the ECS is displayed on the ECS console.
- If you choose to automatically create an ECS as the target server, the name of the public image selected by SMS is displayed on the ECS console.

NOTICE

To display the OS name of the source server on the ECS console, prepare an image named after the source server OS, create an ECS using that image, and use that ECS as the target server.

2.19 How Do I Determine Whether a Migration Is Complete?

A migration in the **Finished** status is complete.



2.20 Can I Migrate Only Some Workloads from a Source Server?

No. SMS migrates entire servers. If you want to migrate only some applications such as databases on source servers, [Data Replication Service \(DRS\)](#) can help you.

2.21 Can the Target Server Run a Different Type of OS from the Source Server?

The OS types of target and source servers must be the same, but the OS versions can be different.

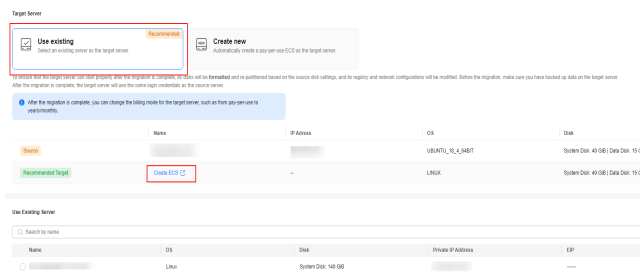
For example, if the source server runs Windows Server 2008, the target server can run Windows Server 2012; if the source server runs Ubuntu, the target server can run CentOS.

2.22 What Determines the Specifications of a Target Server?

The specifications of a target server are determined by the option you select when you configure the target server.

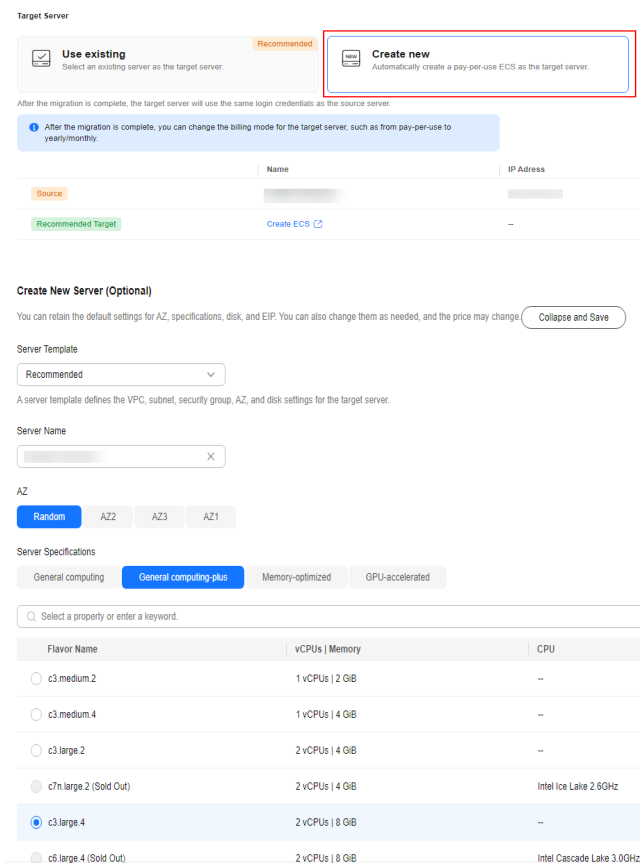
- Use existing

If you select this option, the target server will have the same specifications as the existing server that you choose.



- Create new



If you select this option, the target server will have the specifications that you configure.



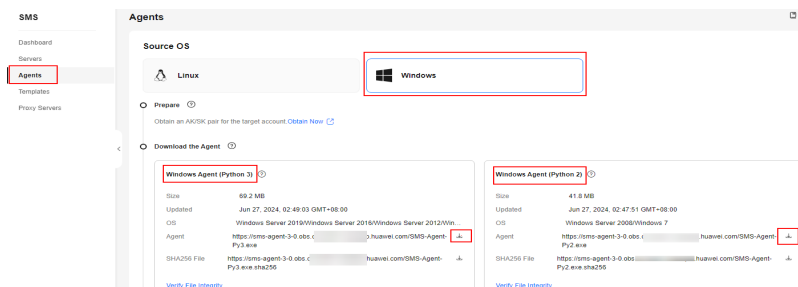
2.23 How Do I Download the SMS-Agent for Windows and the SHA256 Verification File?

Step 1 Sign in to the [SMS console](#).

Step 2 In the navigation pane on the left, choose **Agents**.

Step 3 Select the **Windows** card. Locate the Agent that matches your source server, and click the  icon next to **Agent** to download the SMS-Agent installation package. Click the  icon next to **SHA256 File** to download the file that contains the hash value used to verify the integrity of the Agent installation package.

- GUI-based Windows Agent (Python 3): Windows Server 2019, Windows Server 2016, Windows Server 2012, Windows 10, and Windows 8.1
- CLI-based Windows Agent (Python 2): Windows Server 2008 and Windows 7



----End

2.24 Can I Migrate a Source Server If There Is No Corresponding Image Available on Huawei Cloud?

Yes. Yes. You can do so by preparing an image by yourself, as long as the source server OS is supported by SMS. Check the [OSs supported by SMS](#).

2.25 How Does SMS Differ from IMS in the Migration Scenario?

The following describes the differences between SMS and IMS in terms of application scenarios, migration processes, and service continuity.

Application Scenarios

- IMS is used to migrate on-premises servers to the cloud. IMS enables you to create images for source servers and use the images for migration. The images are usually used for deploying specific software environments, batch deploying software environments, and backing up server running environments. For details, see [IMS Application Scenarios](#).

- SMS is used to migrate x86 physical servers or VMs on premises or in private or public clouds to Huawei Cloud. For details, see [What Is SMS?](#)

Migration Process

- To use IMS for migration, you need to create images for source servers and then use the images to create target servers. For details, see [Creating a Private Image](#).
- To use SMS for migration, you need to install and start the Agent on each source server and start the migration. For details, see [How Do I Install the Agent on Source Servers?](#)

Service Continuity

- If you use IMS for migration, your services need to be stopped for a long time for image creation.
- If you use SMS for migration, your services do not have to go down during the migration. You only need to pause services briefly for service cutover before the final synchronization. After the final synchronization is complete, you can start services on the target server. SMS ensures minimal downtime.

NOTE

Service cutover refers to switching services from the source to the target.

2.26 How Do I Display the OS Name of a Target Server on the ECS Console?

Symptom

On the ECS console, you found that the OS name of your target server was different from the actual OS name of the server.

NOTE

This is a normal event resulting from a limitation of the ECS console.

Possible Causes

The ECS console displays the image name of an ECS, not the OS name. The two names may be different. When you configure the target server:

- If you choose to automatically create an ECS as the target server, an SMS-defined image name will be displayed for the new ECS on the ECS console, such as **LinuxServer** or **WindowsServer**.
- If you choose to use an existing ECS as the target server, the image name of the existing ECS is displayed on the ECS console.

Solution

To display the actual OS name of your target server on the ECS console, perform the following steps:

Step 1 Obtain an image file based on the source server OS.

Step 2 Upload the image file to an OBS bucket.

Step 3 Use the image file to create a private image.

1. Sign in to the console and choose **Compute > Image Management Service**.
2. On the **Image Management Service** page, click **Create Image**.
3. Set **Type** to **Import Image** and **Image Type** to **System disk image**.
4. Select the image file uploaded to your OBS bucket.

Image Type and Source

* Type

* Region

Regions are geographic areas isolated from each other. Resources are region-specific and cannot be used across regions through internal network connections. For low and quick resource access, select the nearest region.

* Image Type System disk image Data disk image ISO image

* Select Image File

- Image file format must be VHD, ZVHD, VMDK, QCOW2, RAW, ZVHD2, VHDX, QCOW, VDI, or QED.
- The size of image files (excluding files in RAW or ZVHD2 format) must be less than 128 GB. [Learn more](#)
- Image files must be configured and then be uploaded to an OBS bucket with Standard storage before they can be used to create private images. [Learn more](#)
- The created private image may be different from the source image file in format and size.
- The Fast Create function applies only to an optimized image file in RAW or ZVHD2 format. [Learn more](#)
- Before creating an image, please check the known issues with image OSs. [Learn more](#)

Bucket Name	Storage Class	Created
	Standard	Jun 28, 2019 10:14:15 GMT+08:00
	Standard	Jun 28, 2019 10:13:28 GMT+08:00
	Standard	Jun 26, 2019 20:54:23 GMT+08:00

6 Total Records: 15 < 1 2 3 >

Create Bucket

5. Select **ECS system disk image** for **Function** and **x86** for **Architecture**. Set **Boot Mode** to the actual boot mode of the source server.

You can see the boot mode of the source server on the SMS console. For more information, see [Checking the Firmware Type of a Source Server](#).

6. Set **OS** to the source server OS. If the source server OS is not an available option, select **Other** from the drop-down list.
7. Set **System Disk** based on the system disk of the source server. If the source system disk is smaller than 40 GB, set **System Disk** to **40 GB**.
8. Set **Name** to the source server OS. The name you specified here will be displayed on the ECS console.
9. Select an enterprise project for the target server. If no other enterprise projects are available, select **Default**.

Image Information

Enable automatic configuration [Learn more](#)

* Function ECS system disk image BMS system disk image

Architecture x86 ARM

If the system detects an architecture type different from that you set, the architecture type detected by the system prevails. If the system fails to detect architecture type you set prevails.

Boot Mode BIOS UEFI

The boot mode must be the same as that of the OS contained in the image file. Otherwise, ECSs created from this system disk image will fail to start.

OS CentOS 7.6 64bit

If the OS in the image file is different from the one you selected, the OS in the image file will be used to create the image. If IMS fails to detect the OS selected will be used to create the image. [View supported OSs](#)

* System Disk (GiB) 40 Ensure that the system disk size is greater than the image file size.

[+](#) Add Data Disk You can add 3 more data disks.

* Name CentOS_7.6-64bit

Encryption KMS encryption [?](#)

* Enterprise Project --Select-- [C](#) [?](#)

Tag It is recommended that you use TMS's predefined tag function to add the same tag to different cloud resources. [View predefined tags](#) [?](#)

Tag key Tag value

You can add 10 more tags.

Step 4 Confirm the configuration details, select **I have read and agree to the Statement of Commitment to Image Creation and Image Disclaimer**, and click **Next**. On the **Resource Details** page that is displayed, click **Submit**. Wait for the image creation to complete.

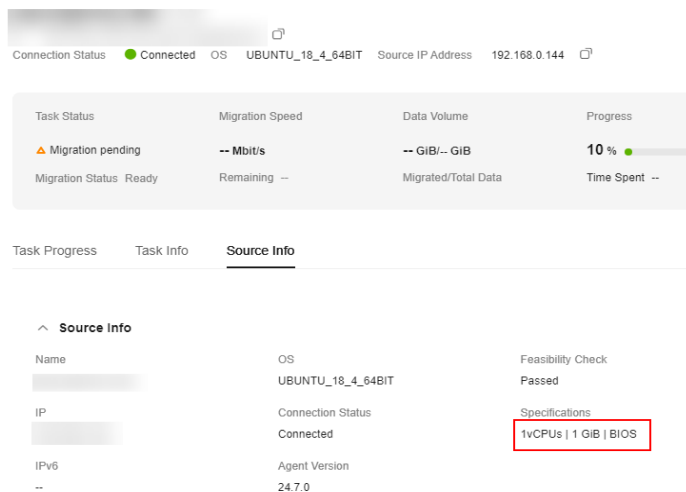
Step 5 If you have an ECS suitable as a target server, use this image to change the OS of the ECS. If you have no suitable ECS available, use this image to create one.

Step 6 When configuring the target server on the SMS console, select the one you prepared above. For more details, see [Configuring the Target Server](#).

----End

Checking the Firmware Type of a Source Server

After the Agent is installed and started on the source server, it reports source server details to SMS. On the SMS console, you can click the source server name on the **Servers** page and on the displayed page, review the firmware type of the source server.



2.27 What Are the Snapshots of a Target Server Used for?

SMS creates the following types of snapshots for each target server disk:

- **Cutover snapshots:** After a migration is complete, SMS creates a snapshot for each target server disk before the service cutover. These snapshots are used for rollback if any service faults happen. Old snapshots are deleted and new snapshots are created automatically whenever the target server is launched again.

NOTE

It is recommended that these snapshots are deleted after your services have been running properly on the target server.

- **Synchronization snapshots:** For a Windows migration or Linux block-level migration, after the source data is migrated and synchronized and before the target server is launched, SMS creates a snapshot for each target server disk to ensure data consistency between the source and target.
- **Clone snapshots:** When you clone a target server, SMS creates a snapshot for each target server disk. These snapshots are used to clone the target server and put the migration status back to continuous synchronization after the clone is complete.

2.28 Will an Incremental Synchronization Overwrite Existing Data on a Launched Target Server?

Yes. Data existing on the target server will be overwritten by data synchronized from the source server.

Reasons

- Linux file-level synchronizations depend on rsync. During a synchronization, data changes are identified by comparing data on the source and target

servers. These changes will be synchronized to the target server, and existing data on the target server will be overwritten or deleted.

- Linux and Windows block-level migrations are performed by block. During a synchronization, the system identifies the differences between disk blocks on the source and target servers. It does not compare the data on those disk blocks. The changed disk blocks on the source server will be synchronized to the target server, and existing data on these data blocks of the target server will be overwritten or deleted.

2.29 How Do I Create a Target Server That Meets the SMS Requirements?

When you use SMS to migrate a server, you can prepare a target server on Huawei Cloud to receive data from your source server.

SMS supports migration to ECSs, DeHs, and DeCs.

Target Server Requirements

1. A target server must run the same type of OS as the source server. For details, see [Can the Target Server Run a Different Type of OS from the Source Server?](#) Otherwise, there will be a server name conflict or other problems.
2. A target server running Windows must have at least 2 GB of memory.
3. A target server must use the same type of firmware as the source server. Otherwise, the system will warn you the target server uses a firmware type different from the source server, or the firmware type of the source server is unknown. For details, see [How Do I Check the Firmware Type of a Source Server?](#)
4. The disk requirements for a target server include:
 - A target server must have at least as many disks as the source server. Otherwise, the error "Insufficient disks on the target server" will be reported. To resolve this error, see [How Do I Resolve Error "Insufficient disks on the Target ECS"?](#)
 - Each target server disk must be at least as large as the paired source server disk, or the migration cannot continue.
In such a case, see [How Do I Resolve Error "Some disks on the target server are smaller than those on the source server. Select another target server" When I Configure the Target Server?](#)
5. The required ports are enabled in a security group the target server belongs to.
 - Windows: TCP ports 8899, 8900, and 22
 - Linux: TCP port 22 for file-level migration, and ports 8900 and 22 for block-level migration

 CAUTION

- For security purposes, you are advised to only allow traffic from the source server to the ECS over these ports.
- The firewall of the target server must allow traffic to these ports.

For details, see [How Do I Configure Security Group Rules for Target Servers?](#)

How to Create a Target Server

Method 1: Create a target server before the migration

Create an [ECS](#), [DeH](#), or [DeC](#) that meets the requirements.

When you configure the target server on the SMS console, set **Server** to **Use existing** and select the server you created.

Method 2: Create a target server during the migration

When you configure the target server on the SMS console, set **Server** to **Create new**.

For details, see step 7 in [Configuring the Target Server](#).

2.30 Can I Use SMS to Migrate Self-built Databases, Big Data Services, or Websites Deployed on a Source Server?

You are not advised to use SMS to migrate databases, big data clusters, or container clusters.

If you still want to use SMS in the above scenarios, the required migration time cannot be estimated. After the migration is complete, you need to pause the source services but do not stop the source servers or the Agent before performing the final service cutover. Otherwise, the target servers may take a long time to launch, data will be inconsistent between the source and target servers, or your services may be unable to start on the target servers.

2.31 Can I Use an AK/SK Pair of a Federated User (Virtual IAM User) for Authentication During the SMS-Agent Startup?

SMS does not support authentication using AK/SK pairs of federated users (virtual users) during the SMS-Agent startup.

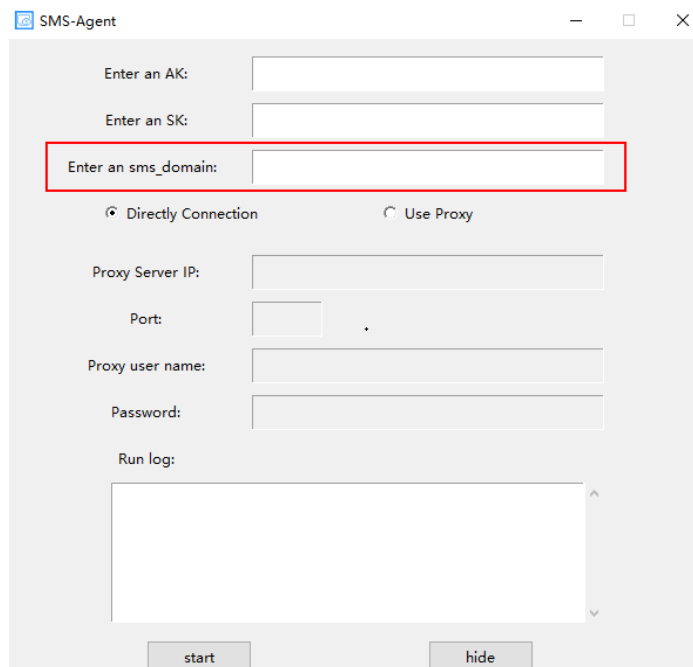
2.32 Will the Migration Be Affected If the SSH Service Does Not Use Default Port on the Source Server?

The migration will not be affected, regardless of what OS the source server runs.

2.33 How Do I Obtain the SMS Domain Name?

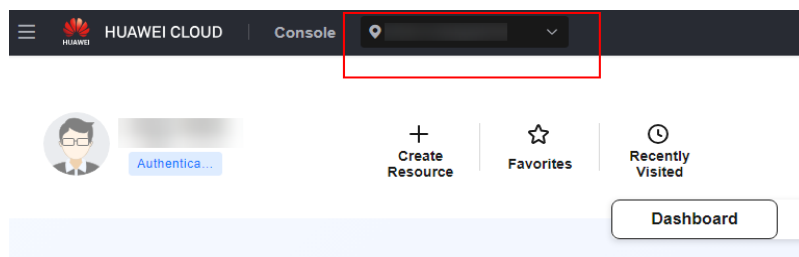
Scenarios

When starting the Agent, you need to enter the SMS domain name, so the Agen can obtain the latest configuration files.



Procedure

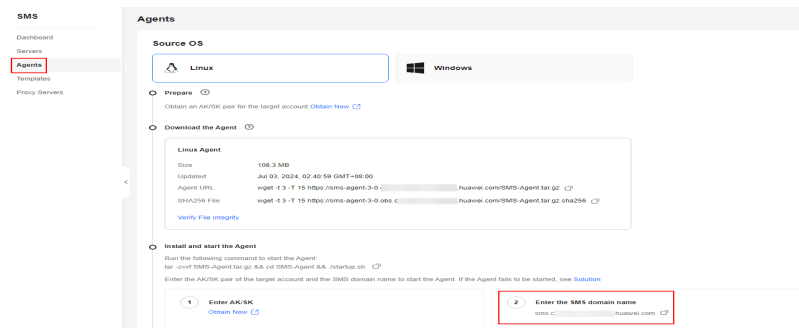
- Step 1** Sign in to the [SMS console](#).
- Step 2** In the upper left corner of the page, select the region you are migrating to.



- Step 3** Click **Service List**. Under **Migration**, choose **Server Migration Service**.
- Step 4** In the navigation pane on the left, choose **Agents**.

Step 5 Select the **Linux** or **Windows** card, and you can see the SMS domain name, as shown in **Figure 2-3**.

Figure 2-3 Obtaining the SMS domain name



----End

2.34 How Many Resources Will Be Used for a Linux Block-Level Migration?

Memory Usage (of Data Cache)

There are six data cache nodes configured by the Agent on a source server. The default size of a single cache node is 4 MB.

- Minimum memory occupied by data cache: 6 x 1 MB = 6 MB
- Default memory occupied by data cache: 6 x 4 MB = 24 MB
- Maximum memory occupied by data cache: 6 x 8 MB = 48 MB

CPU Usage

The following table describes how much CPU resource is used by a Linux block-level migration.

Number of CPUs	CPU Usage Before the Agent Starts (n)	Default Compression Threads Configured by the Agent	CPU Usage After the Agent Starts
1	-	0. Data is not compressed.	< n + 10%
2	n ≥ 50%	0. Data is not compressed.	< n + 10%
2	n < 50%	1	< n + 50%
4	n ≥ 75%	0. Data is not compressed.	< n + 4%
4	50% ≤ n ≤ 75%	1	< n + 25%

Number of CPUs	CPU Usage Before the Agent Starts (n)	Default Compression Threads Configured by the Agent	CPU Usage After the Agent Starts
4	$25\% \leq n < 50\%$	2	$< n + 50\%$
4	$n < 25\%$	3	$< n + 75\%$
8	$n \geq 87\%$	0. Data is not compressed.	$< n + 3\%$
8	$75\% \leq n < 87\%$	1	$< n + 13\%$
8	$62\% \leq n < 75\%$	2	$< n + 25\%$
8	$n < 62\%$	3	$< n + 38\%$
16	$n \geq 93\%$	0. Data is not compressed.	$< n + 1\%$
16	$87\% \leq n < 93\%$	1	$< n + 6\%$
16	$82\% \leq n < 87\%$	2	$< n + 13\%$
16	$n < 82\%$	3	$< n + 17\%$
≥ 32	-	3	$< n + 10\%$

- If the number of compression threads is larger than 0, the CPU usage after the Agent starts can be calculated as follows:

$$CPU\ usage < (n + \frac{p \times 100}{c})\%$$

in which, **c** indicates the number of CPUs, **p** indicates the number of compression threads, and **n** indicates the CPU usage before the Agent starts.

- If the number of compression threads is 0, the Agent occupies less than 10% of the CPU capacity. The formula for calculating the CPU usage is as follows:

$$CPU\ usage < (n + 10)\%$$

By default, data compression is enabled for Linux block-level migrations. To disable this function, see, see [How Do I Disable Data Compression When the CPU Usage Is Too High During a Linux Block-level Migration?](#)

2.35 How Do I Configure Data Compression for a Linux Block-Level Migration?

Scenario

By default, data compression is enabled for Linux block-level migrations. The number of compression threads is automatically configured based on the resource usage of source servers. The number of compressions threads depends on the number of idle CPUs but is limited to 3 at most. This may cause high CPU usage. In this case, you can modify the number of compression threads or disable data compression on the SMS console.

Procedure

Step 1 Sign in to the [SMS console](#).

Step 2 In the server list, locate the source server to be migrated and click **Configure Target** in the **Migration Stage/Status** column.

Step 3 On the **Configure Basic Settings** tab page, expand **Migration Scope (Optional)**.

^ **Migration Scope (Optional)**
 For a Linux block-level migration, you can control whether to compress data d

Data Compression

No Yes

Cache Node Size (MB)

4

Cache nodes temporarily store data on the disks during migration, to facilitate

Step 4 Configure the advanced options listed in the following table.

Parameter	Setting
Data Compression	<ul style="list-style-type: none"> Select Yes if you want to enable data compression during the migration. Then Compression Threads will be available for you to configure. Select No if you do not want to enable data compression during the migration.
Compression Threads	Configure the maximum number of compression threads that can be launched. If you select auto for this option, the system determines the number automatically. You can also enter an integer from 1 to 3.
Cache Node Size (MB)	Specify the size of a single data cache node. The value must be an integer ranging from 1 to 8. The default value is 4.

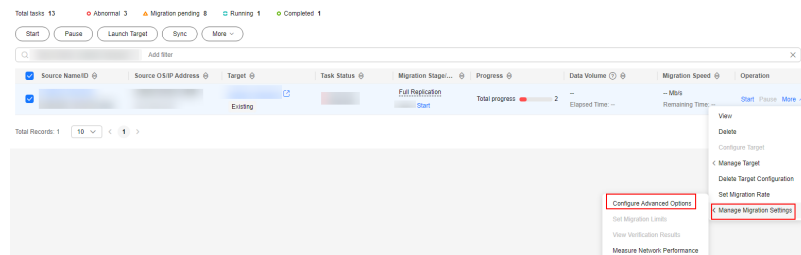
CAUTION

Data compression occupies a large amount of CPU resources. If you enable this function, you need to consider the actual resource usage of the source server to prevent services on it from being affected. For details about the default resource usage, see [How Many Resources Will Be Used for a Linux Block-Level Migration?](#)

----End

Modifying Advanced Options

You can only modify the advanced migration options if a task has the target server configured but is not started, is paused, or is waiting to execute an incremental synchronization. After locating the task, in the **Operation** column, choose **More > Manage Migration Settings > Configure Advanced Options**. Then you can modify the settings of **Data Compression**, **Compression Threads**, and **Cache Node Size**.



2.36 Do I Need to Activate the Windows OS and Paid Software After the Migration Is Complete?

SMS migrates entire servers. After you use SMS to migrate a source server running Windows, you need to activate Windows and other paid software on the target server by yourself. SMS cannot help you do that. You can ask help from the software providers.

2.37 What Do I Do If the Linux Source Server's Clocks Are Not Synchronized to the Target Server?

Symptom

After a Linux migration was complete, the target server had a system time and hardware time different from the source server, as shown in [Figure 2-4](#) and [Figure 2-5](#).

Figure 2-4 Time on the source server

```
>_ 1. root@time-centos6:~ ×
[root@time-centos6 ~]# date
Tue Oct 20 19:13:36 CST 2020
[root@time-centos6 ~]# clock
Tue Oct 20 19:13:40 2020 -0.883472 seconds
[root@time-centos6 ~]# hwclock
Tue Oct 20 19:13:43 2020 -0.592314 seconds
[root@time-centos6 ~]#
```

Figure 2-5 Time on the target server

```
[root@time-centos6 ~]# date
Tue Oct 20 11:13:26 CST 2020
[root@time-centos6 ~]# clock
Tue 20 Oct 2020 11:13:31 AM CST -0.695426 seconds
[root@time-centos6 ~]# hwclock
Tue 20 Oct 2020 11:13:33 AM CST -0.203283 seconds
[root@time-centos6 ~]#
```

Solution

From CentOS 6, CentOS 7, CentOS 8, and Ubuntu, you can configure the Huawei Cloud image source and NTP server to resolve this time inconsistency problem.

Step 1 Start the target server.

Step 2 Log in to the target server as user **root**, go to the directory where SMS-Agent is installed, and run the following command:

```
./ntp_set.sh
```

```
[root@ecs-test-ntp home]# cd SMS-Agent
[root@ecs-test-ntp SMS-Agent]# ls
agent agent-cli.sh mirrors_source.sh ntp_set.sh restart.sh shutdown.sh startup.sh
[root@ecs-test-ntp SMS-Agent]# ./ntp_set.sh
```

CAUTION

If the SMS-Agent is installed in the **/tmp** directory, the SMS-Agent directory will be deleted from the target server after the migration. You can download and install the SMS-Agent again on the target server.

Step 3 Determine whether to configure the Huawei Cloud image source (Yum repository for CentOS and APT repository for Ubuntu) and NTP server. **y** indicates yes, and **n** indicates **no**.

```
Do you need to configure the image repository? Please enter Y/y or N/n: y
Do you need to configure the NTP server? Please enter Y/y or N/n:
```

- To configure the Huawei Cloud image source, enter **y** and perform the operations described in [How Can I Use an Automated Tool to Configure a Huawei Cloud Image Source?](#) The operations apply only to target servers in the following regions: CN North-Beijing1, CN North-Beijing4, CN East-

Shanghai1, CN East-Shanghai2, CN South-Guangzhou, and CN-Hong Kong. For target servers running in other regions, configure the image source by referring to [How Do I Configure the Yum Repository After the Migration?](#)

For CentOS, run the following command to check whether the image source address has been changed to that of the Huawei Cloud Yum repository.

`vim /etc/yum.repos.d/CentOS-Base.repo`

```

[base]
name=CentOS-$releasever - Base
#mirrorlist=http://mirrorlist.centos.org/?release=$releasever&arch=$basearch&repo=os
baseurl=http://mirrors.myhuaweicloud.com/centos/$releasever/os/$basearch/
gpgcheck=1
enabled=1
gpgkey=http://mirrors.myhuaweicloud.com/centos/RPM-GPG-KEY-CentOS-7
    
```

For Ubuntu, run the following command to check whether the image source address has been changed to that of the Huawei Cloud APT repository.

`vim /etc/apt/sources.list`

```

deb http://mirrors.myhuaweicloud.com/ubuntu/ bionic main restricted universe multiverse
deb http://mirrors.myhuaweicloud.com/ubuntu/ bionic-security main restricted universe multiverse
deb http://mirrors.myhuaweicloud.com/ubuntu/ bionic-updates main restricted universe multiverse
deb http://mirrors.myhuaweicloud.com/ubuntu/ bionic-proposed main restricted universe multiverse
deb http://mirrors.myhuaweicloud.com/ubuntu/ bionic-backports main restricted universe multiverse
deb-src http://mirrors.myhuaweicloud.com/ubuntu/ bionic main restricted universe multiverse
deb-src http://mirrors.myhuaweicloud.com/ubuntu/ bionic-security main restricted universe multiverse
deb-src http://mirrors.myhuaweicloud.com/ubuntu/ bionic-updates main restricted universe multiverse
deb-src http://mirrors.myhuaweicloud.com/ubuntu/ bionic-proposed main restricted universe multiverse
deb-src http://mirrors.myhuaweicloud.com/ubuntu/ bionic-backports main restricted universe multiverse
    
```

- To configure the Huawei Cloud NTP server, enter **y**, enter the domain name of the Huawei Cloud NTP server (**ntp.myhuaweicloud.com**), and press **Enter**. If the following information is displayed, the NTP server is configured successfully.

```

NTP server is configured successfully.
Script execution is complete.
    
```

Then check whether the IP address of the NTP server has been changed to that of the Huawei Cloud NTP server.

`ntpq -p`

- Step 4** Run the **date** and **hwclock** commands to check whether the system time and hardware time on the target server have been synchronized with the source server.

```

[root@iZbp1feekj37gs6100z9a8Z ~]# ntpstat
synchronised to NTP server (100.125.1.251) at stratum 4
time correct to within 1316 ms
polling server every 64 s
[root@iZbp1feekj37gs6100z9a8Z ~]# date
Tue Jan 10 10:23:04 CST 2023
[root@iZbp1feekj37gs6100z9a8Z ~]# clock
Tue 10 Jan 2023 10:23:09 AM CST -0.721779 seconds
[root@iZbp1feekj37gs6100z9a8Z ~]# hwclock
Tue 10 Jan 2023 10:23:13 AM CST -0.554448 seconds
[root@iZbp1feekj37gs6100z9a8Z ~]#
    
```

----End

2.38 How Do I Set the Number of Concurrent Processes for Linux File-Level Migrations?

Overview

You can set the maximum number of processes (1 to 4) that the SMS-Agent can start concurrently to migrate and synchronize files from a Linux source server. The

number of processes that can actually be started depends on how well the source server performs and how many disks and partitions the source server has.

⚠ CAUTION

- Enabling concurrency consumes source server resources, especially disk I/O, bandwidth, and CPU resources. To prevent the services on the source server from being affected, before enabling this function, you can evaluate the impacts on source services or [set resource limits for the SMS-Agent](#).
 - If the migration bandwidth from the source server to the target server is less than 300 Mbit/s, you are not advised to enable this function.
-

Calculating How Many Concurrent Processes Can Be Started

The formula is:

Max. concurrent processes = Min. (Disks, Network bandwidth/Disk read or write performance, 4)

where

Disks is the number of disks to be migrated on the source server.

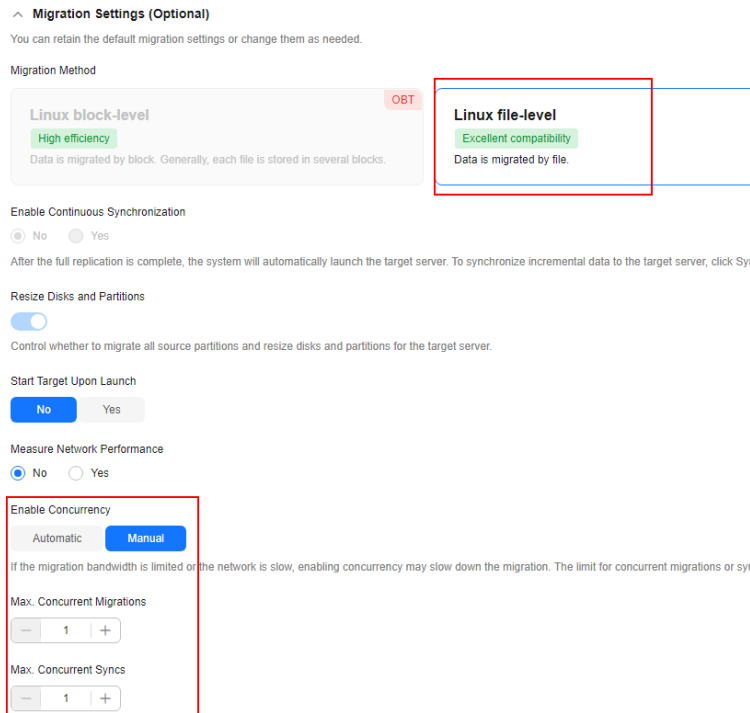
Network bandwidth is the network bandwidth between the source server and the target server. You can calculate the bandwidth by referring to [How Do I Test the Network Between the Source and Target Servers Using iPerf?](#)

Disk read or write performance is either the average disk read performance of the source server or the average disk write performance of the target server, whichever is smaller.

Assume that the migration involves four disks, the network bandwidth is 1,000 Mbit/s, the average read performance of the source server is 500 Mbit/s, and the average write performance of the target server is 300 Mbit/s. In this example, we need to divide the network bandwidth by the average write performance of the target server (1,000 Mbit/s/300 Mbit/s ≈ 3). That makes the three values for the formula, respectively, 4, 3 and 4, which means there can be 3 concurrent processes for this migration.

Setting the Maximum Number of Concurrent Processes

On the **Configure Basic Settings** tab page, expand **Migration Settings (Optional)**, set **Migration Method** to **Linux file-level**, and set **Enable Concurrency** to **Manual**. Then you can define how many processes can be launched to execute the full migration and incremental synchronization.



2.39 Which Directories Are Not Synchronized by Default During Incremental Synchronization on a Linux Server?

When incremental synchronization is performed after full replication is complete on a Linux server, data will not be synchronized for the following directories related to server configurations:

```
/proc/*,
/sys/*,
/lost+found/*,
/tmp/_MEI*,
/var/lib/ntp/proc/*,
/boot/*,
/boot/efi/*,
/etc/fstab,
/etc/*,
/etc/X11/*,
/root/initrd_bak/*,
/lib/modules/*,
/boot/grub2/x86_64-efi/*,
/boot/grub2/i386-pc/*
```

Reasons

After the full migration of a Linux server, some parameter settings in the preceding directories on the target server are modified to make the target server compatible with Huawei Cloud and ensure that the target server can start properly. During incremental synchronization, to ensure that the parameter settings in these directories on the target server are not overwritten or modified by the source server settings, these directories are not synchronized by default.

Important Notes

If there is service data in the preceding directories, you need to manually synchronize the incremental service data to the target server.

2.40 How Do I Verify Data Consistency Between the Source and Target Servers?

SMS consistency verification allows you to verify data consistency before and after the migration. You can enable this function when you start an incremental synchronization.

Precautions

- Before enabling this function, you are advised to stop services (and databases if any) on the source server. If they are not stopped, data on the source server keeps changing, which will affect the consistency.

NOTE

It is normal for some directories on the source and target servers to have slight differences. For instance, there are directories on the source server where data is always changing, such as the directory where SMS-Agent was installed and the `/var/log` directory where stores system logs.

- The time required for consistency verification depends on the number and size of files to be verified. If consistency verification takes a long time during the final incremental synchronization, the time required for service cutover will also increase. Evaluate the impacts on your services.
- Consistency verification occupies significant source disk I/O resources. Evaluate the potential impacts on your source services.

Constraints

- Consistency verification does not apply to migration scenarios where disks or partitions are adjusted. In this case, paths on the source and target servers are not perfectly mapped to each other.
- It is not applicable to verification of cross-file system files or shared folders.
- To prevent your services on the source server from being affected, a maximum of 100,000 files can be verified in a single directory.
- To prevent excessive memory usage, only paths that are shorter than 1024 bytes are verified.

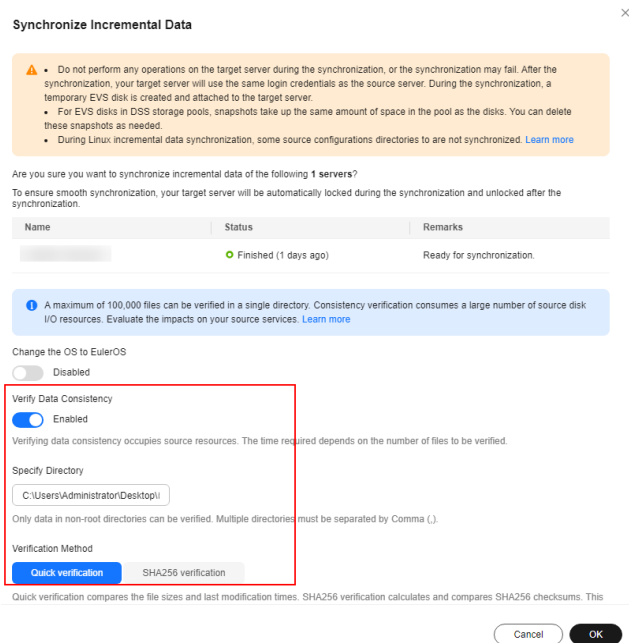
Enabling Consistency Verification

Step 1 Open the **Sync Incremental Data** page by referring to [Synchronizing Incremental Data](#).

Step 2 Enable **Verify Consistency** and correctly enter the directories for which data consistency is to be verified. If the entered directories are incorrect or empty, 0 will be displayed for these directories in the verification results.

NOTICE

- The larger the amount of data to be verified, the longer the consistency verification goes on. You are advised to verify only key directories.
- The following directories will be excluded from consistency verification by default:
 - `/, /etc, /dev, /sys, /usr, /boot, and /run` in Linux
 - Root directories of partitions in Windows, for example, `C:\` and `D:\`.



Step 3 Select a verification method.

- **Quick verification:** compares the file size and last modification time.
- **SHA256 verification:** compares SHA256 checksums. This option is only available if SMS-Agent V3.35.0 or later is used. This method scans file content in binary mode. It consumes a large amount of disk I/O resources and takes a long time but is more accurate.

Step 4 (Optional) Enable **Verify Inconsistencies** to verify files that were verified to be inconsistent in the previous verification. This option can only be enabled after at least one consistency verification is complete.

Step 5 Click **Yes** to synchronize incremental data and verify consistency. After the synchronization and verification are complete, you can view the verification results by referring to **Viewing Verification Results**.

----End

Disabling Consistency Verification

If you want to disable consistency verification after the incremental synchronization starts, perform the following steps:

Step 1 Choose **More > Pause** in the **Operation** column to pause the synchronization task.

Step 2 Click **Start** in the **Operation** column.

Step 3 In the displayed window, disable **Verify Consistency** and click **Yes**.

----End

Viewing Verification Results

To view the data consistency verification results, choose **More > Manage Migration Settings > View Verification Results** in the **Operation** column.

If **0** is displayed in the **Files Verified** column, it means the specified directory could not be found or is empty.

All files verified to be inconsistent are recorded in the log file **sms_cmp_result.log** in the SMS-Agent installation directory (***/SmsAgent/agent/Logs/** on Linux and **C://SMS-Agent-Py*/Logs** on Windows) on the source server.

Estimating Verification Time

The following table lists the verification time tested on servers where only the migration process runs but is for reference only.

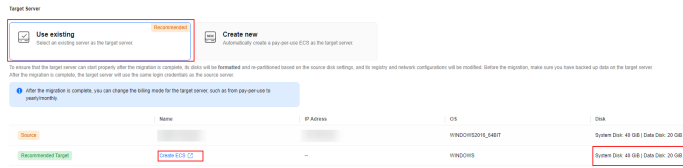
OS	Specifications	Disk Performance	Verification Time (per 100 GB)
Windows	2 vCPUs and 4 GB of memory	5,000 IOPS/150 MB/s	About 17 minutes
Linux	2 vCPUs and 4 GB of memory	5,000 IOPS/150 MB/s	About 13 minutes

2.41 Can I Use a Temporary AK/SK Pair for Migration?

No. Temporary AK/SK pairs are valid for a short period of time and may become invalid before the migration completes. To ensure a successful migration, use a permanent AK/SK pair. For more information about how to obtain such a AK/SK pair for your Huawei Cloud account, see [Access Keys](#).

2.42 Why Can't the Create new Option Be Selected When I Configure a Migration Task for a Windows Source Server?

SMS does not support automatic creation of Windows target servers. You need to create a server with the recommended specifications and use the server as the target server.



3 OS Compatibility and Migration Restrictions

3.1 What OSs Can Be Migrated by and What Are the Restrictions on Using SMS?

SMS Limitations

Table 3-1 SMS limitations

Item	Description
Server specifications	<ul style="list-style-type: none"> Windows: Source and target servers must have more than 1 CPU and 1 GB memory. Linux: Source and target servers must have at least 1 CPU and 1 GB memory.
Source server quantity	A maximum of 1,000 source servers are allowed per account. Delete the migrated servers from the server list in a timely manner so that other servers can continue to be migrated.
OSs	<ul style="list-style-type: none"> Supported Windows OSs Supported Linux OSs A server running multiple OSs cannot be migrated.
Available disk space	<ul style="list-style-type: none"> Windows <ul style="list-style-type: none"> At least 320 MB available space on a partition not smaller than 600 MB At least 40 MB available space on a partition smaller than 600 MB Linux <ul style="list-style-type: none"> At least 200 MB of available space on the root partition

Item	Description
File systems	<ul style="list-style-type: none"> Windows: Only NTFS file systems are supported. Linux: Only Ext2, Ext3, Ext4, VFAT, XFS, and Btrfs file systems are supported.
Shared file systems	SMS cannot migrate data from shared file systems such as NFS or CIFS, or from NAS devices.
External storage of servers	SMS cannot migrate data from the external storage attached to a source server.
Encrypted files	SMS cannot migrate OSs that contain protected folders or encrypted volumes.
Servers running multi-node databases and Active Directory Domain Services (AD DS)	SMS cannot migrate servers that host active directories or multi-node databases.
Data of database applications and domain controller applications	SMS cannot migrate data of database applications and domain controller applications.
Applications bound to hardware	SMS cannot migrate the OSs that contain applications bound to hardware.
Dynamic disks	Dynamic disks in Windows systems are migrated as basic disks. After the migration is complete, the target server will not have dynamic disks.
Servers added to domains	After migrating servers added to a domain, you need to add them to the domain again.
Servers with system volumes located on disks other than the first disk	SMS cannot migrate servers whose system volumes are not on the first disk.
Thinly-provisioned volumes	SMS cannot migrate thinly-provisioned volumes.
Servers with RAID arrays	SMS cannot migrate servers with RAID arrays.
Big data clusters and container clusters	SMS cannot migrate clusters including but not limited to container clusters and big data clusters.

Supported OSs

For details about the OSs supported by SMS, see [Supported Windows OSs, Table 3-3](#) and [Table 3-4](#).

If you need to migrate a source server that runs an OS not supported by SMS, there are several ways to do this.

- Use IMS to create an image for the source system disk from an external image file and use the image to create a server on Huawei Cloud. For details, see [Creating a Windows System Disk Image from an External Image File](#) or [Creating a Linux System Disk Image from an External Image File](#).
- Use a public or Marketplace image to create a server and deploy your applications on the server.
- Use the [Cloud Migration Service](#) on Huawei Cloud.

The following tables list the OSs supported by SMS.

Table 3-2 Supported Windows OSs

OS	Bit	UEFI	Remarks
Windows Server 2008	64	No	Windows Server 2008 and Windows Server 2008 R2 cannot boot in UEFI mode.
Windows Server 2008 R2	64	No	
Windows Server 2012	64	Yes	-
Windows Server 2012 R2	64	Yes	
Windows Server 2016	64	Yes	
Windows Server 2019	64	Yes	
Windows Server 2022	64	Yes	
Windows 7	64	No	
Windows 8.1	64	No	
Windows 10	64	Yes	

Table 3-3 Linux distributions supported for file-level migration

OS	Version	Bit	UEFI Support	Remarks
Red Hat Enterprise Linux	Red Hat Enterprise Linux 6.0 (Only KVM servers are supported.)	64	No	-
	Red Hat Enterprise Linux 6.1/6.2/6.3/6.4/6.5/6.7/6.8/6.9/6.10	64	No	
	Red Hat Enterprise Linux 7.0	64	No	
	Red Hat Enterprise Linux 7.1/7.2/7.3/7.4/7.5/7.6/7.7/7.8/7.9	64	Yes	
	Red Hat Enterprise Linux 8.0/8.1/8.2/8.3/8.4/8.5/8.7/8.8/8.9	64	Yes	
	Red Hat Enterprise Linux 9.0/9.1/9.2/9.3	64	Yes	
CentOS	CentOS 6.0 (Only KVM servers are supported.)	64	No	-
	CentOS 6.1/6.2/6.3/6.4/6.5/6.6/6.7/6.8/6.9/6.10	64	No	
	CentOS 7.0	64	No	
	CentOS 7.1/7.2/7.3/7.4/7.5/7.6/7.7/7.8/7.9	64	Yes	
	CentOS 8.0/8.1/8.2/8.3/8.4/8.5	64	Yes	
	CentOS Stream 8	64	Yes	This distribution will be identified as CentOS 8.0. This does not affect the migration.
	CentOS Stream 9	64	Yes	This distribution will be identified as CentOS 9.0. This does not affect the migration.

OS	Version	Bit	UEFI Support	Remarks
Oracle	Oracle Linux 6.0/6.1/6.2/6.3/6.4/6.5/6.6/6.7/6.8/6.9/6.10	64	No	-
	Oracle Linux 7.0	64	No	
	Oracle Linux 7.1/7.2/7.3/7.4/7.5/7.6/7.7/7.8/7.9	64	Yes	
	Oracle Linux 8.0/8.1/8.2/8.3/8.4/8.5/8.6/8.7/8.8	64	Yes	
	Oracle Linux 9.0/9.1/9.2/9.3	64	Yes	
SUSE	SUSE Linux Enterprise Server 11 SP3	64	No	-
	SUSE Linux Enterprise Server 11 SP4	64	Yes	
	SUSE Linux Enterprise Server 12 SP0	64	Yes	Btrfs file systems on this distribution cannot be migrated.
	SUSE Linux Enterprise Server 12 SP1/SP2/SP3/SP4/SP5	64	Yes	-
	SUSE Linux Enterprise Server 15 SP0/SP1/SP2/SP3/SP5	64	Yes	
	SUSE Linux Enterprise Server 15 SP4	64	No	
Ubuntu	Ubuntu Server 12.04	64	No	
	Ubuntu Server 12.10	64	Yes	
	Ubuntu Server 13.10	64	Yes	
	Ubuntu Server 14.04/14.10	64	Yes	
	Ubuntu Server 15.04/15.10	64	Yes	
	Ubuntu Server 16.04/16.10	64	Yes	
	Ubuntu Server 17.04/17.10	64	Yes	
	Ubuntu Server 18.04	64	Yes	
	Ubuntu Server 18.10	64	No	
	Ubuntu Server 19.04/19.10	64	Yes	
	Ubuntu Server 20.04	64	Yes	

OS	Version	Bit	UEFI Support	Remarks
	Ubuntu Server 21.04/21.10	64	Yes	
	Ubuntu Server 22.04/22.10	64	Yes	
	Ubuntu Server 23.04/23.10	64	Yes	
	Ubuntu Server 24.04	64	Yes	
Debian	Debian GNU/Linux 6.0.10	64	No	-
	Debian GNU/Linux 7.11.0	64	No	
	Debian GNU/Linux 8.0/8.1/8.2/8.3/8.4/8.5/8.6/8.7/8.8/8.9/8.10/8.11	64	No	
	Debian GNU/Linux 9.0/9.1/9.2/9.3/9.4/9.5/9.6/9.7/9.8/9.9/9.10/9.11/9.12/9.13	64	No	
	Debian GNU/Linux 10.0/10.1/10.2/10.3/10.4/10.5/10.6/10.7/10.8/10.9/10.10/10.11/10.12/10.13	64	Yes	
	Debian GNU/Linux 11.0/11.1/11.2	64	Yes	
	Debian GNU/Linux 11.3/11.4/11.5/11.7	64	No	
	Debian GNU/Linux 12.0/12.1/12.2/12.4/12.5	64	Yes	
Fedora	Fedora 23/24/25/26/27/28/29/33/34/35/36/37	64	No	-
	Fedora 30/31/32/38/39	64	Yes	
EulerOS	EulerOS 2.2.0	64	No	-
	EulerOS 2.3.0	64	No	
	EulerOS 2.5.0	64	No	
Amazon Linux	Amazon Linux 2.0	64	No	-
	Amazon Linux 2018.3	64	No	
	Amazon Linux 2023 AMI	64	Yes	-
Alibaba Cloud Linux	Alibaba Cloud Linux 3.2104	64	Yes	-
	Alibaba Cloud Linux 3.2104 (Quick Start)	64	No	

OS	Version	Bit	UEFI Support	Remarks
	Alibaba Cloud Linux 3.2104 SCC	64	Yes	
	Alibaba Cloud Linux 3.2104 LTS (CCSP 2.0 Level 3)	64	No	
	Alibaba Cloud Linux 2.1903 LTS	64	Yes	
	Alibaba Cloud Linux 2.1903 LTS SCC	64	No	
	Alibaba Cloud Linux 2.1903 LTS (Quick Start)	64	No	
	Alibaba Cloud Linux 2.1903 LTS (CCSP 2.0 Level 3)	64	No	
AlmaLinux	AlmaLinux OS 8.3/8.4/8.5/8.6/8.7/8.8/8.9/9.0/9.1/9.2/9.3	64	Yes	-
Tencent OS	TencentOS Server 2.4	64	No	-
	TencentOS Server 2.4 (TK4)	64	No	
	TencentOS Server 3.1 (TK4)	64	No	
Kylin	Kylin Linux Advanced Server V10 (Sword)	64	No	-
openEuler	openEuler 20.03	64	No	-
	openEuler 21.09	64	No	
openSUSE	OpenSUSE 15.1/15.2/15.3/15.4	64	No	-
	OpenSUSE 15.0/15.5	64	Yes	-
Rocky Linux	Rocky Linux 8.5/8.6/8.7/9.0/9.1	64	No	-
	Rocky Linux 8.3/8.4/8.8/8.9/9.2/9.3	64	Yes	

Table 3-4 Linux OSs and kernel versions supported for block-level migration

OS	Kernel Version
CentOS	2.6.32-131.0.15.el6.x86_64 2.6.32-220.13.1.el6.x86_64 2.6.32-220.17.1.el6.x86_64 2.6.32-220.2.1.el6.x86_64 2.6.32-220.23.1.el6.x86_64 2.6.32-220.4.1.el6.x86_64 2.6.32-220.4.2.el6.x86_64 2.6.32-220.7.1.el6.x86_64 2.6.32-220.el6.x86_64
	2.6.32-279.11.1.el6.x86_64 2.6.32-279.1.1.el6.x86_64 2.6.32-279.14.1.el6.x86_64 2.6.32-279.19.1.el6.x86_64 2.6.32-279.2.1.el6.x86_64 2.6.32-279.22.1.el6.x86_64 2.6.32-279.5.1.el6.x86_64 2.6.32-279.5.2.el6.x86_64 2.6.32-279.9.1.el6.x86_64 2.6.32-279.el6.x86_64
	2.6.32-358.0.1.el6.x86_64 2.6.32-358.11.1.el6.x86_64 2.6.32-358.14.1.el6.x86_64 2.6.32-358.18.1.el6.x86_64 2.6.32-358.2.1.el6.x86_64 2.6.32-358.23.2.el6.x86_64 2.6.32-358.6.1.el6.x86_64 2.6.32-358.6.2.el6.x86_64 2.6.32-358.el6.x86_64

OS	Kernel Version
	2.6.32-431.11.2.el6.x86_64 2.6.32-431.1.2.0.1.el6.x86_64 2.6.32-431.17.1.el6.x86_64 2.6.32-431.20.3.el6.x86_64 2.6.32-431.20.5.el6.x86_64 2.6.32-431.23.3.el6.x86_64 2.6.32-431.29.2.el6.x86_64 2.6.32-431.3.1.el6.x86_64 2.6.32-431.5.1.el6.x86_64 2.6.32-431.el6.x86_64
	2.6.32-504.12.2.el6.x86_64 2.6.32-504.1.3.el6.x86_64 2.6.32-504.16.2.el6.x86_64 2.6.32-504.23.4.el6.x86_64 2.6.32-504.30.3.el6.x86_64 2.6.32-504.3.3.el6.x86_64 2.6.32-504.8.1.el6.x86_64 2.6.32-504.el6.x86_64
	2.6.32-573.1.1.el6.x86_64 2.6.32-573.12.1.el6.x86_64 2.6.32-573.18.1.el6.x86_64 2.6.32-573.22.1.el6.x86_64 2.6.32-573.26.1.el6.x86_64 2.6.32-573.3.1.el6.x86_64 2.6.32-573.7.1.el6.x86_64 2.6.32-573.8.1.el6.x86_64 2.6.32-573.el6.x86_64
	2.6.32-642.11.1.el6.x86_64 2.6.32-642.1.1.el6.x86_64 2.6.32-642.13.1.el6.x86_64 2.6.32-642.13.2.el6.x86_64 2.6.32-642.15.1.el6.x86_64 2.6.32-642.3.1.el6.x86_64 2.6.32-642.4.2.el6.x86_64 2.6.32-642.6.1.el6.x86_64 2.6.32-642.6.2.el6.x86_64 2.6.32-642.el6.x86_64

OS	Kernel Version
	2.6.32-696.10.1.el6.x86_64 2.6.32-696.10.2.el6.x86_64 2.6.32-696.10.3.el6.x86_64 2.6.32-696.1.1.el6.x86_64 2.6.32-696.13.2.el6.x86_64 2.6.32-696.16.1.el6.x86_64 2.6.32-696.18.7.el6.x86_64 2.6.32-696.20.1.el6.x86_64 2.6.32-696.23.1.el6.x86_64 2.6.32-696.28.1.el6.x86_64 2.6.32-696.30.1.el6.x86_64 2.6.32-696.3.1.el6.x86_64 2.6.32-696.3.2.el6.x86_64 2.6.32-696.6.3.el6.x86_64 2.6.32-696.el6.x86_64
	2.6.32-71.14.1.el6.x86_64 2.6.32-71.18.1.el6.x86_64 2.6.32-71.18.2.el6.x86_64 2.6.32-71.24.1.el6.x86_64 2.6.32-71.29.1.el6.x86_64 2.6.32-71.7.1.el6.x86_64 2.6.32-71.el6.x86_64

OS	Kernel Version
	2.6.32-754.10.1.el6.x86_64 2.6.32-754.11.1.el6.x86_64 2.6.32-754.12.1.el6.x86_64 2.6.32-754.14.2.el6.x86_64 2.6.32-754.15.3.el6.x86_64 2.6.32-754.17.1.el6.x86_64 2.6.32-754.18.2.el6.x86_64 2.6.32-754.2.1.el6.x86_64 2.6.32-754.22.1.el6.x86_64 2.6.32-754.23.1.el6.x86_64 2.6.32-754.24.2.el6.x86_64 2.6.32-754.24.3.el6.x86_64 2.6.32-754.25.1.el6.x86_64 2.6.32-754.27.1.el6.x86_64 2.6.32-754.28.1.el6.x86_64 2.6.32-754.29.1.el6.x86_64 2.6.32-754.29.2.el6.x86_64 2.6.32-754.30.2.el6.x86_64 2.6.32-754.31.1.el6.x86_64 2.6.32-754.33.1.el6.x86_64 2.6.32-754.35.1.el6.x86_64 2.6.32-754.3.5.el6.x86_64 2.6.32-754.6.3.el6.x86_64 2.6.32-754.9.1.el6.x86_64 2.6.32-754.el6.x86_64
	3.10.0-1062.1.1.el7.x86_64 3.10.0-1062.12.1.el7.x86_64 3.10.0-1062.1.2.el7.x86_64 3.10.0-1062.18.1.el7.x86_64 3.10.0-1062.4.1.el7.x86_64 3.10.0-1062.4.2.el7.x86_64 3.10.0-1062.4.3.el7.x86_64 3.10.0-1062.7.1.el7.x86_64 3.10.0-1062.9.1.el7.x86_64 3.10.0-1062.el7.x86_64

OS	Kernel Version
	3.10.0-1127.10.1.el7.x86_64 3.10.0-1127.13.1.el7.x86_64 3.10.0-1127.18.2.el7.x86_64 3.10.0-1127.19.1.el7.x86_64 3.10.0-1127.8.2.el7.x86_64 3.10.0-1127.el7.x86_64
	3.10.0-1160.2.1.el7.x86_64 3.10.0-1160.2.2.el7.x86_64 3.10.0-1160.el7.x86_64
	3.10.0-123.1.2.el7.x86_64 3.10.0-123.13.1.el7.x86_64 3.10.0-123.13.2.el7.x86_64 3.10.0-123.20.1.el7.x86_64 3.10.0-123.4.2.el7.x86_64 3.10.0-123.4.4.el7.x86_64 3.10.0-123.6.3.el7.x86_64 3.10.0-123.8.1.el7.x86_64 3.10.0-123.9.2.el7.x86_64 3.10.0-123.9.3.el7.x86_64 3.10.0-123.el7.x86_64
	3.10.0-229.11.1.el7.x86_64 3.10.0-229.1.2.el7.x86_64 3.10.0-229.14.1.el7.x86_64 3.10.0-229.20.1.el7.x86_64 3.10.0-229.4.2.el7.x86_64 3.10.0-229.7.2.el7.x86_64 3.10.0-229.el7.x86_64

OS	Kernel Version
	3.10.0-327.10.1.el7.x86_64 3.10.0-327.13.1.el7.x86_64 3.10.0-327.18.2.el7.x86_64 3.10.0-327.22.2.el7.x86_64 3.10.0-327.28.2.el7.x86_64 3.10.0-327.28.3.el7.x86_64 3.10.0-327.3.1.el7.x86_64 3.10.0-327.36.1.el7.x86_64 3.10.0-327.36.2.el7.x86_64 3.10.0-327.36.3.el7.x86_64 3.10.0-327.4.4.el7.x86_64 3.10.0-327.4.5.el7.x86_64 3.10.0-327.el7.x86_64
	3.10.0-514.10.2.el7.x86_64 3.10.0-514.16.1.el7.x86_64 3.10.0-514.21.1.el7.x86_64 3.10.0-514.21.2.el7.x86_64 3.10.0-514.2.2.el7.x86_64 3.10.0-514.26.1.el7.x86_64 3.10.0-514.26.2.el7.x86_64 3.10.0-514.6.1.el7.x86_64 3.10.0-514.6.2.el7.x86_64 3.10.0-514.el7.x86_64
	3.10.0-693.11.1.el7.x86_64 3.10.0-693.11.6.el7.x86_64 3.10.0-693.1.1.el7.x86_64 3.10.0-693.17.1.el7.x86_64 3.10.0-693.21.1.el7.x86_64 3.10.0-693.2.1.el7.x86_64 3.10.0-693.2.2.el7.x86_64 3.10.0-693.5.2.el7.x86_64 3.10.0-693.el7.x86_64

OS	Kernel Version
	3.10.0-862.11.6.el7.x86_64 3.10.0-862.14.4.el7.x86_64 3.10.0-862.2.3.el7.x86_64 3.10.0-862.3.2.el7.x86_64 3.10.0-862.3.3.el7.x86_64 3.10.0-862.6.3.el7.x86_64 3.10.0-862.9.1.el7.x86_64 3.10.0-862.el7.x86_64

OS	Kernel Version
Ubuntu	4.4.0-21-generic 4.4.0-22-generic 4.4.0-24-generic 4.4.0-28-generic 4.4.0-31-generic 4.4.0-34-generic 4.4.0-36-generic 4.4.0-38-generic 4.4.0-42-generic 4.4.0-43-generic 4.4.0-45-generic 4.4.0-47-generic 4.4.0-51-generic 4.4.0-53-generic 4.4.0-57-generic 4.4.0-59-generic 4.4.0-62-generic 4.4.0-63-generic 4.4.0-64-generic 4.4.0-66-generic 4.4.0-67-generic 4.4.0-70-generic 4.4.0-71-generic 4.4.0-72-generic 4.4.0-75-generic 4.4.0-77-generic 4.4.0-78-generic 4.4.0-79-generic 4.4.0-81-generic 4.4.0-83-generic 4.4.0-87-generic 4.4.0-89-generic 4.4.0-91-generic 4.4.0-92-generic 4.4.0-93-generic 4.4.0-96-generic 4.4.0-97-generic 4.4.0-98-generic

OS	Kernel Version
	4.4.0-101-generic
	4.4.0-103-generic
	4.4.0-104-generic
	4.4.0-116-generic
	4.4.0-119-generic
	4.4.0-121-generic
	4.4.0-122-generic
	4.4.0-124-generic
	4.4.0-127-generic
	4.4.0-128-generic
	4.4.0-130-generic
	4.4.0-131-generic
	4.4.0-133-generic
	4.4.0-134-generic
	4.4.0-135-generic
	4.4.0-137-generic
	4.4.0-138-generic
	4.4.0-139-generic
	4.4.0-140-generic
	4.4.0-141-generic
	4.4.0-142-generic
	4.4.0-143-generic
	4.4.0-145-generic
	4.4.0-146-generic
	4.4.0-148-generic
	4.4.0-150-generic
	4.4.0-151-generic
	4.4.0-154-generic
	4.4.0-157-generic
	4.4.0-159-generic
	4.4.0-161-generic
	4.4.0-164-generic
	4.4.0-165-generic
	4.4.0-166-generic
	4.4.0-168-generic
	4.4.0-169-generic
	4.4.0-170-generic
	4.4.0-171-generic

OS	Kernel Version
	4.4.0-173-generic 4.4.0-174-generic 4.4.0-176-generic 4.4.0-177-generic 4.4.0-178-generic 4.4.0-179-generic 4.4.0-184-generic 4.4.0-185-generic 4.4.0-186-generic 4.4.0-187-generic 4.4.0-189-generic 4.4.0-190-generic 4.4.0-193-generic 4.4.0-194-generic 4.4.0-197-generic 4.4.0-198-generic 4.4.0-200-generic 4.4.0-201-generic 4.4.0-203-generic 4.4.0-204-generic

OS	Kernel Version
	4.15.0-20-generic 4.15.0-22-generic 4.15.0-23-generic 4.15.0-24-generic 4.15.0-29-generic 4.15.0-30-generic 4.15.0-32-generic 4.15.0-33-generic 4.15.0-34-generic 4.15.0-36-generic 4.15.0-38-generic 4.15.0-39-generic 4.15.0-42-generic 4.15.0-43-generic 4.15.0-44-generic 4.15.0-45-generic 4.15.0-46-generic 4.15.0-47-generic 4.15.0-48-generic 4.15.0-50-generic 4.15.0-51-generic 4.15.0-52-generic 4.15.0-54-generic 4.15.0-55-generic 4.15.0-58-generic 4.15.0-60-generic 4.15.0-62-generic 4.15.0-64-generic 4.15.0-65-generic 4.15.0-66-generic 4.15.0-69-generic 4.15.0-70-generic 4.15.0-72-generic 4.15.0-74-generic 4.15.0-76-generic 4.15.0-101-generic 4.15.0-106-generic 4.15.0-108-generic

OS	Kernel Version
	4.15.0-109-generic 4.15.0-111-generic 4.15.0-112-generic 4.15.0-115-generic 4.15.0-117-generic 4.15.0-118-generic 4.15.0-121-generic 4.15.0-122-generic 4.15.0-123-generic 4.15.0-124-generic 4.15.0-128-generic 4.15.0-129-generic 4.15.0-130-generic 4.15.0-132-generic 4.15.0-134-generic 4.15.0-135-generic 4.15.0-136-generic 4.15.0-137-generic
SUSE	4.4.21-69-default 4.12.14-94.41-default 4.12.14-95.29-default 4.12.14-122.46-default 4.12.14-197.64-default 4.12.14-122.176-default 4.12.14-122.186-default 4.12.14-122.201-default 4.12.14-122.216-default

3.2 What Are the Important Statements of SMS?

- Source server data collection

After the Agent is started on a source server, it will report source server details to SMS. This information will only be used to check the feasibility of a migration. For details about what information will be collected from the source server, see [What Information Does SMS Collect About Source Servers?](#)
- License invalidity

After OSs, applications, and files on source servers are migrated to target servers, the SIDs and MAC addresses of the servers will change. This means

that some OS or application licenses may become invalid. SMS is not responsible for this type of issue. You can use the license server on Huawei Cloud to obtain new Windows OS licenses and update or obtain application licenses at your own expense.

- Do not perform operations on the OS or disks of target servers before the migration is complete. This includes, but is not limited to, changing or reinstalling the OS. SMS is not responsible for any fees or data damage resulting from such actions.
- Target server disk formatting

During the migration, disks on the target server are formatted and re-partitioned based on the source disk settings. Any existing data on the target server will be lost. Before the migration, make sure you have backed up any data on the target server that you need to save and ensure that the disks can be formatted. SMS is not responsible for any data losses incurred.
- Source disk data security

SMS does not monitor data in source disks during the migration. You need to ensure the security of your source disk data yourself. If the target servers or servers in the same VPC as the target servers are infected by any Trojans or viruses migrated from the source servers, SMS is not responsible for such problems.
- Migration errors caused by source servers

SMS is not responsible for migration errors caused by source server problems, including but is not limited to damaged hardware (such as damaged disks or NICs), improper configurations, or software compatibility issues (such as incompatible OSs and applications), damaged data files, heavy service traffic, or slow network speeds. You can fix these problems by yourself, but if any such problems persist, you can contact Huawei Cloud for assistance. Huawei Cloud will make every effort to assist in resolving the problems but does not guarantee all possible problems can be resolved. The following problems with a source server may lead to migration errors:

 - A faulty source server OS. For example, a Windows startup file is damaged or missing.
 - An incorrectly configured source server OS. For example, GRUB or fstab is incorrectly configured on the source server.
 - Source server network problems. For example, the source server cannot access the Internet, the network is too slow, or the SSH connection or firewall is faulty.
 - Slow I/O on source server disks, too much incremental data, scattered effective clusters (on Windows), or too many small files (on Linux). These problems can slow down the migration or synchronization progress.
 - An incompatible source platform service or software
 - The Agent may be disabled by a source platform service or software, or the I/O monitoring could be disabled by antivirus software on the source server.
- If your target servers on Huawei Cloud cannot be started after the migration is complete, Huawei Cloud can provide technical support to help you solve problems, but does not promise that the all possible problems can be resolved. There are many possible reasons that a target server may be unable to start, for example:

- The source server cannot be restarted.
- The source server has a non-standard OS configuration.
- The source server has drivers or software that is incompatible with Huawei Cloud.
- To ensure compatibility with Huawei Cloud, SMS modifies the system configurations of target servers. For details, see [What Are the Differences Between Target and Source Servers After the Migration?](#) SMS can ensure data consistency before and after the migration but cannot ensure that your services run properly after the migration. You need to modify related service configurations thereafter.
- You are advised not to add data to target servers before the service cutover or to source servers after the service cutover. If new data is generated on both your source and target servers after the service cutover, SMS cannot combine data on the source and target servers. If you want to combine the new data on the source and target servers, you must design a solution by yourself.
- GPU server driver problems
If driver problems, such as lacking drivers for computing or graphics acceleration, occur on target GPU servers after the migration is complete, you need to install related drivers. If the problem persists, Huawei Cloud can provide technical support for you, but does not guarantee all problems can be resolved.
- Change to Huawei Cloud EulerOS (HCE)
HCE is an openEuler-based cloud operating system. When migrating servers running CentOS 7 or CentOS 8, SMS allows you to change the OS to HCE. But you need to use [x2hce-ca](#) to evaluate the compatibility of applications with HCE and perform the OS change only after the applications are adapted to HCE. If services on the target servers cannot run properly, Huawei Cloud can provide technical support for you, but does not guarantee all problems can be resolved.
- When migrating Windows servers, SMS calls some Windows APIs to obtain data. SMS is not responsible for any call failures caused by the OS configuration and hardware problems of these Windows servers. You need to solve the problems by yourself.
- Service isolation and conflicts
SMS does not check your services on source servers or target servers, let alone conflicts between them. You need to identify service conflicts and make isolation if necessary. If there are such conflicts, SMS is not responsible.
- **Temporary disks**
SMS is free, but you pay for the temporary disks used during the migration. For each migration, a temporary disk is created and attached to the target server to ensure that the migration proceeds smoothly. Once the migration is complete, the disk is automatically detached and deleted.
 - If you delete a migration task before it is complete, you need to manually delete the temporary disk. Otherwise, the disk will continue to be billed, resulting in additional costs.
 - If you reinstall or change the OS for the target server before the migration is complete, the migration task will fail. You need to manually delete the temporary disk used for the migration. Otherwise, the disk will continue to be billed, resulting in additional costs.

SMS is not liable for any additional fees incurred due to the temporary disk.

3.3 How Many Servers Can I Migrate Concurrently Using SMS?

You can migrate a maximum of 1,000 servers concurrently. If you need to migrate more than 1,000 servers, delete the migrated servers from the server list in a timely manner so that other servers can continue to be migrated.

3.4 How Do I Resolve Error "Inconsistent firmware type. Source: UEFI, Target: BIOS" When I Create a Migration Task?

Symptom

When you created a migration task for a source server booted from UEFI, you selected a target server booted from BIOS, and the system reported this error.

Possible Causes

The target server uses a different boot mode from the source server. In this case, the target server cannot be launched after the migration. You must select a target server created from an image with UEFI configured.

NOTE

SMS requires that the target server OS uses the same type of firmware as the source server OS.

- If the source server uses BIOS, Huawei Cloud will automatically provide a public image with BIOS configured for you to create the target server. You can also use a private image configured with BIOS to create the target server.
- If the source server uses UEFI, you need to use an image with UEFI configured to create the target server.

Solution Using the Console

Step 1 Obtain an image file with UEFI configured and upload the image file to your OBS bucket. If you already have such an image file stored in your bucket, go to [2](#).

Step 2 Use the image file to create a private image on the IMS console.

1. Sign in to the console and choose **Compute > Image Management Service**.
2. On the **Image Management Service** page, click **Create Image**.
3. Set **Type** to **Import Image** and **Image Type** to **System disk image**.
4. Select the image file uploaded to your OBS bucket.
5. Set **Boot Mode** to **UEFI**.

* Type Create Image Import Image

* Region

Regions are geographic areas isolated from each other. Resources are region-specific and cannot be used across regions through internal network connections. For low network and quick resource access, select the nearest region.

* Image Type System disk image Data disk image ISO image

* Select Image File

- Image file format must be VHD, ZVHD, VMDK, QCOW2, RAW, ZVHD2, VHDX, QCOW, VDI, or CED.
- The size of image files (excluding files in RAW or ZVHD2 format) must be less than 128 GB. [Learn more](#)
- Image files must be configured and then be uploaded to an OBS bucket with Standard storage before they can be used to create private images. [Learn more](#)
- The created private image may be different from the source image file in format and size.
- The Fast Create function applies only to an optimized image file in RAW or ZVHD2 format. [Learn more](#)
- Before creating an image, please check the known issues with image CSs. [Learn more](#)

Enter a bucket name.

Bucket Name	Storage Class	Created
	Standard	Jun 26, 2019 10:14:15 GMT+08:00
	Standard	Jun 26, 2019 10:13:28 GMT+08:00
	Standard	Jun 26, 2019 20:54:23 GMT+08:00

6 Total Records: 15 < 1 2 3 >

Create Bucket

Image Information

* Function ECS system disk image BMS system disk image

Architecture x86 ARM

If the system detects an architecture type different from that you set, the architecture type detected by the system prevails. If the system fails to detect the architecture type, the architecture type you set prevails.

Boot Mode BIOS UEFI

Step 3 Use the private image created in [Step 2](#) to create an ECS as the target server.

For details, see [Creating a Windows System Disk Image from an External Image File](#) or [Creating a Linux System Disk Image from an External Image File](#).

----End

Solution Using APIs

If changing the boot mode specified in an image through the console is not supported in the current region, you can call the API described here to change the value of `hw_firmware_type` to `uefi`.

Step 1 Call the API with the URI of `PATCH /v2/cloudimages/{Image_id}`.

For details about how to call the API, see [Updating Image Information](#).

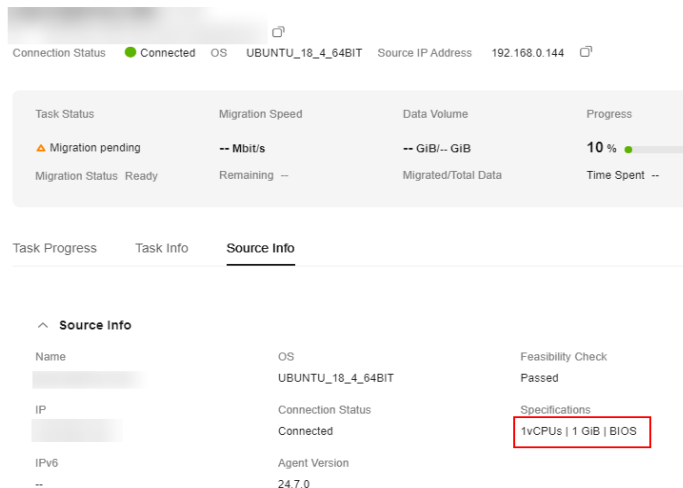
```
[
  {
    "op": "add",
    "path": "/hw_firmware_type",
    "value": "uefi"
  }
]
```

Step 2 Use the updated image to create an ECS as the target server.

----End

3.5 How Do I Check the Firmware Type of a Source Server?

After the Agent is installed and started on the source server, it reports source server details to SMS. On the SMS console, you can click the source server name on the **Servers** page and on the displayed page, review the firmware type of the source server.



3.6 Why Can't I Save the Migration Configuration as a Template?

Symptom

After you completed the migration configuration, you clicked **Save as Template** to save the configuration as a template for future use, but the message "Failed to save the configuration" was displayed.

Possible Causes

The image used to create the target server is a private image and has been deleted. SMS cannot identify the information about this private image.

Solution

Go to the ECS console and reinstall or change the OS of the target server.

If you want to change the firmware type of the target server from BIOS to UEFI, create a private image by following the instructions provided in [How Do I Resolve Error "Inconsistent firmware type. Source: UEFI, Target: BIOS" When I Create a Migration Task?](#)

3.7 How Do I Limit Resource Allocation for the Agent in a Linux Migration?

You can limit how many CPU, memory, and disk throughput resources of the Linux source server can be used by the SMS-Agent.

Precautions

Limiting resources for SMS-Agent requires the built-in cgroups feature on Linux. If cgroups on the source server is broken or abnormal, the resource limits may not be applied. If you need help, contact SMS technical support.

Prerequisites

Cgroups has been installed and enabled on the source server.

To check if it has been installed, run the following command on the source server:

```
mount | grep cgroup
```

If the cgroups (V1 or V2) mounting information is displayed, cgroups is enabled on the source server. Otherwise, it is not.

Before setting resource limits on the SMS console, evaluate whether installing or enabling cgroups will affect services on the source server. If source services use cgroups, submit a service ticket to ask SMS migration experts whether the SMS resource limits conflict with the source services.

- Cgroups V1

```
root@ecs:~# mount | grep cgroup
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,mode=755)
cgroup on /sys/fs/cgroup/unified type cgroup2 (rw,nosuid,nodev,noexec,relatime)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,xattr,name=systemd)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net_cls,net_prio)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,cpuset)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids)
cgroup on /sys/fs/cgroup/rdma type cgroup (rw,nosuid,nodev,noexec,relatime,rdma)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,blkio)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpu,cpuacct)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_event)
```

The example output shows that the following three mount points were attached to the CPU, memory, and disk I/O controllers, respectively.

- /sys/fs/cgroup/CPU,CPUacct
- /sys/fs/cgroup/memory
- /sys/fs/cgroup/blkio

- Cgroups V2

```
root@ecs:~# mount | grep cgroup
cgroup2 on /sys/fs/cgroup type cgroup2 (rw,nosuid,nodev,noexec,relatime,nsdelegate,memory_recursiveprot)
```

Cgroups V2 is mounted on /sys/fs/cgroup. Unlike V1, cgroups V2 has no mount points attached to specific resources.

Procedure

- Step 1** Sign in to the [SMS console](#).
- Step 2** In the navigation pane on the left, choose **Servers**.
- Step 3** In the server list, locate the source server to be migrated and click **Configure Target** in the **Migration Stage/Status** column.
- Step 4** Expand **Resource Limits (Optional)**, read [parameter description and precautions](#) carefully, and set **CPU Limit**, **Memory Limit**, and **Disk Throughput Limit**.

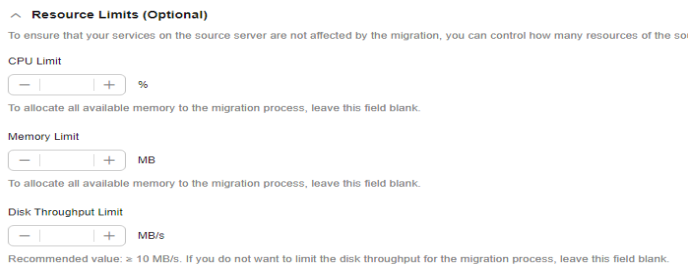


Table 3-5 Parameters for setting resource limits

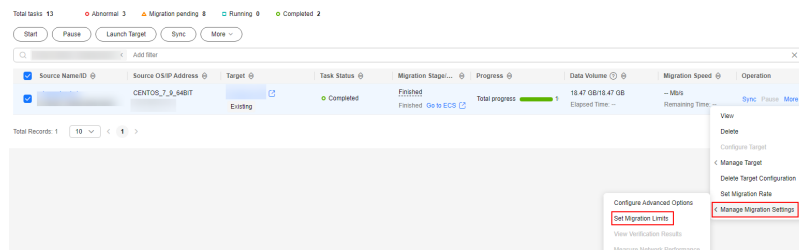
Parameter	Description	Precaution
CPU Limit	<p>Controls the maximum percentage of CPUs to be used by the SMS-Agent on the source server.</p> <ul style="list-style-type: none"> • If this parameter is left blank, the CPU usage of SMS-Agent is not limited. • $1\% \leq \text{CPU limit (integer)} \leq 100\%$ • To ensure a smooth migration, allocate at least 0.2 CPUs to SMS-Agent. <p>Formula: CPU limit (%) = Maximum number of CPUs allowed for SMS-Agent/Total number of CPUs x 100%</p> <p>For example: If the source server has 4 CPUs, and you want to allocate 0.5 CPUs for SMS-Agent, you can enter 13% ($0.5/4 \times 100\%$).</p>	<ul style="list-style-type: none"> • The CPU limit and disk throughput limit may affect the migration speed. • When the resource limits are applied, a folder named sms_mig_cgroup will be created in /sys/fs/cgroup on the source server, and parameters for configured limits are created here.

Parameter	Description	Precaution
Memory Limit	<p>Controls the maximum of memory to be used by SMS-Agent. If the configured limit is reached, SMS-Agent will be stopped or ended.</p> <ul style="list-style-type: none"> • If this parameter is left blank, the memory usage of SMS-Agent is not limited. • $200 \text{ MB} \leq \text{Memory Limit} \leq 1,000 \text{ MB}$ • To ensure a successful migration, allocate at least 200 MB of memory to SMS-Agent. 	
Disk Throughput Limit	<p>Controls the maximum disk throughput to be used by SMS-Agent. After the limit is set, the disk read/write speed of SMS-Agent will not exceed the limit.</p> <ul style="list-style-type: none"> • If this parameter is left blank, the disk throughput of SMS-Agent is not limited. • $10 \text{ MB/s} \leq \text{Disk Throughput Limit} \leq 1000 \text{ MB/s}$ • To ensure a successful migration, set a limit to at least 10 MB/s. 	

----End

Modifying Resource Limits

You can modify resource limits if a task has a target server configured but is not started, is paused, or is waiting to execute an incremental synchronization. After locating the task, in the **Operation** column, choose **More > Manage Migration Settings > Set Migration Limits**. Then you can modify the resource limits.



Viewing Resource Usage

You can run the **top** or **iostat** command on the source server to view the resource usage during the migration. It is normal for the resource usage of SMS-Agent to slightly exceed the configured limits.

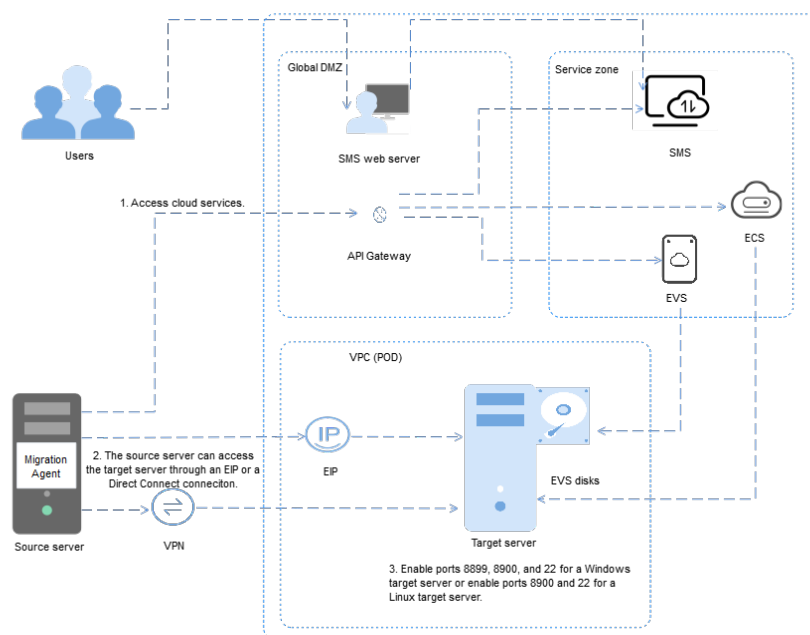
4 Migration Network

4.1 How Do I Set Up a Secure Migration Network for Using SMS?

Scenarios

To use SMS, you need to install the Agent on each source server to be migrated. During the migration, each source server must continuously communicate with SMS and the paired target server.

Figure 4-1 SMS networking



Connecting Source Servers to Huawei Cloud API Gateway

- The Agent installed on source servers must communicate with Huawei Cloud services IAM, ECS, EVS, IMS, VPC, SMS, OBS, and DNS during the migration. You must ensure that the Agent can call the APIs of these services in the region you are migrating to.
 - IAM and SMS are global-level services. The Agent needs to access their endpoints **iam.myhuaweicloud.com** and **sms.ap-southeast-3.myhuaweicloud.com**.
 - ECS, EVS, IMS, VPC, and DNS are region-level services. The Agent needs to access their endpoints in the region you are migrating to.
 - The Agent needs to access the OBS endpoint **obs.cn-north-1.myhuaweicloud.com** and the OBS endpoint in the region you are migrating to.

Table 4-1 lists the endpoints of the involved services when you migrate to the region CN South-Guangzhou.

Table 4-1 Addresses of involved services and buckets

Service/Bucket	Endpoint/Bucket Address	Remarks
IAM	iam.myhuaweicloud.com	Endpoints of involved global-level services
SMS	sms.ap-southeast-3.myhuaweicloud.com	
OBS	obs.cn-north-1.myhuaweicloud.com	
ECS	ecs.cn-south-1.myhuaweicloud.com	Endpoints of involved region-level services in CN South-Guangzhou
EVS	evs.cn-south-1.myhuaweicloud.com	
VPC	vpc.cn-south-1.myhuaweicloud.com	
IMS	ims.cn-south-1.myhuaweicloud.com	
OBS	obs.cn-south-1.myhuaweicloud.com	
DNS	dns.cn-south-1.myhuaweicloud.com	
sms-resource-intl-ap-southeast-3	sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com	Addresses of the OBS buckets to be accessed by the SMS-Agent
sms-agent-config-inter	sms-agent-config-inter.obs.ap-southeast-3.myhuaweicloud.com	

NOTE

Retain the default values for **sms-resource-intl-ap-southeast-3** and **sms-agent-config-inter**. The URLs of other dependent services depend on the target region.

SMS uses domain names such as **bbs.huaweicloud.com**, **support.huaweicloud.com**, and **console.huaweicloud.com** to provide migration and consulting services.

- If the DNS server addresses are not configured on the source server, you need to map each endpoint to its IP address in the local hosts file (**C:\Windows\System32\drivers\etc\hosts** for Windows and **/etc/hosts** for Linux).

The IP addresses can be obtained by pinging the endpoints, as shown in [Figure 4-2](#).

Figure 4-2 Pinging an endpoint

```
C:\Users\Administrator>ping iam.myhuaweicloud.com  
Pinging iam.myhuaweicloud.com [100.125.1.237] with 32 bytes of data:
```

Connecting Source Servers to Target Servers

- If you want to migrate over the Internet, you need to purchase an EIP for the target server.
- If you want to migrate over a private network, you need to purchase a Direct Connect or VPN connection from your source environment to Huawei Cloud.

Opening Required Ports on Target Servers

- Open the required inbound ports in the security group of each target server.
 - Windows: ports 8899, 8900, and 22
 - Linux: ports 8900 and 22
- If a network ACL is configured for the subnet you are migrating to, you also need to open the required inbound ports in the ACL.

For details, see [How Do I Configure Security Group Rules for Target Servers?](#)

4.2 How Do I Prepare a Target Server Before the Migration?

If you want to use an existing ECS as the target server, make the following preparations:

- Step 1** Make sure the ECS meets the requirements described in [How Do I Select a Target Server?](#)
- Step 2** Connect the source server to the ECS using an EIP or VPN or Direct Connect connection.
- Step 3** Correctly configure the security group associated with the ECS.

If the ECS runs Windows, enable TCP ports 8899, 8900, and 22. If the target ECS runs Linux, enable TCP port 22 for a file-level migration or ports 8900 and 22 for a block-level migration.

For details about how to configure security group rules, see [How Do I Configure Security Group Rules for Target Servers?](#)

CAUTION

If you indeed use the ECS as the target server, do not perform any operations on the ECS during the migration, such as stopping or restarting the ECS, attaching or detaching a disk, or changing the password, or the migration will fail.

----End

4.3 How Do I Configure Security Group Rules for Target Servers?


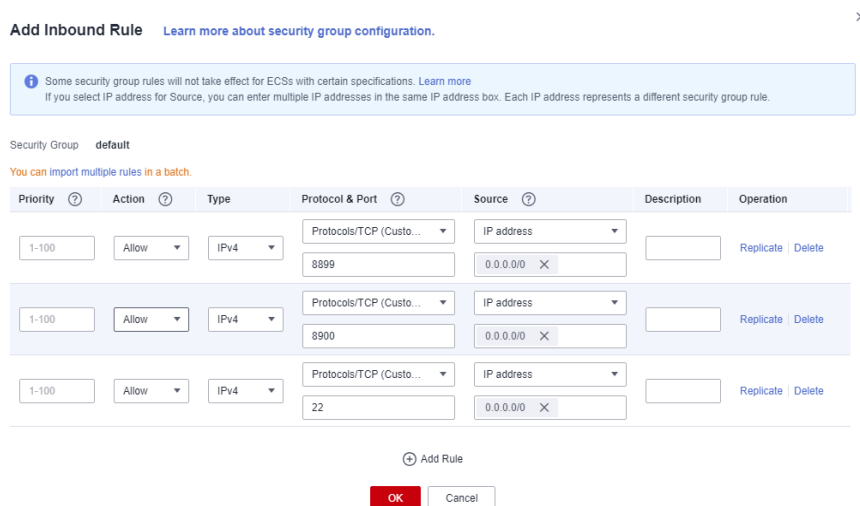
1. Sign in to the console.
2. Click  in the upper left corner and select the desired region and project.
3. Under **Compute**, click **Elastic Cloud Server**.
4. In the ECS list, click the name of the target ECS.
The page providing details about the ECS is displayed.
5. Click the **Security Groups** tab and view security group rules.
6. Click **Manage Rule**.
The **Summary** page of the security group is displayed.
7. On the **Inbound Rules** tab, click **Add Rule** to configure an inbound rule.
 - If the ECS runs Windows, configure three rules: one for port 8899, one for port 8900, and one for port 22. For each, set the protocol to **TCP**.

Figure 4-3 Adding inbound rules

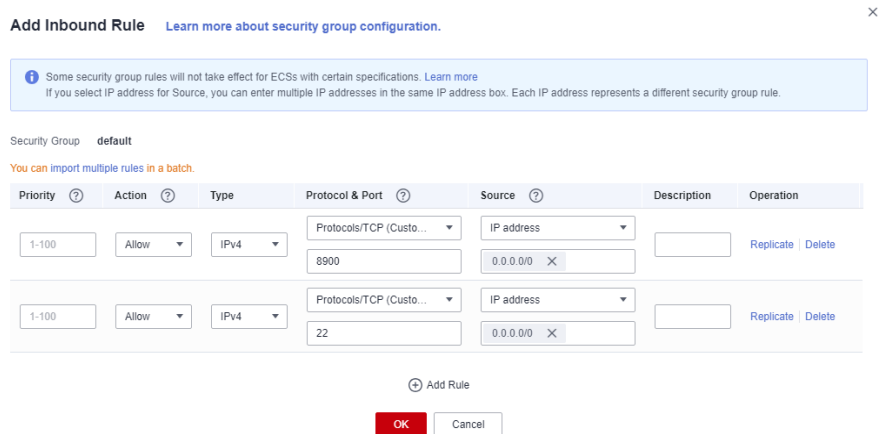


- If the ECS runs Linux, configure two rules: one for port 8900 and one for port 22. For each, set the protocol to TCP.

NOTE

Port 22 is required for a Linux file-level migration.
Ports 8900 and 22 are required for a Linux block-level migration.

Figure 4-4 Adding inbound rules



- For all the rules, set **Source** to the IP address range containing the IP addresses that you want to allow to access the ECS over the Internet.

CAUTION

- For security purposes, you are advised to only allow traffic from the source server to the ECS over these ports.
If you retain the default value **0.0.0.0/0** for **Source IP Address**, it indicates that all IP addresses can access the ECS.
- The firewall of the ECS must allow traffic to these ports.

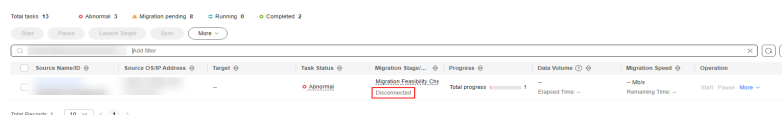
8. Click **OK**.

4.4 How Do I Restore the Connection Between the Agent and SMS?

Symptom

During the migration, the error message "SMS.6603 The connection to SMS was lost" was displayed. The server migration was in the **Disconnected** status, so most operations could not be performed.

Figure 4-5 Disconnection



Possible Causes

- The Agent on the source server is not running.
- The Agent is disconnected from SMS. This can happen if no operations are performed on the Agent for a long time (30 days by default, but this can be changed using the `heartmonitorday` parameter in the `config/g-property.cfg` file).
- The network connection between the Agent and SMS is abnormal.
- The SMS-Agent-Py3 or SMS-Agent-Py2 process exits. This can happen if you have been logged out of or have exited from the source server automatically.
- The AK/SK authentication fails. This can happen if the system time in the source server is more than 15 minutes ahead of or behind the local standard time because, for example, the NTP server on the source server is incorrectly configured.

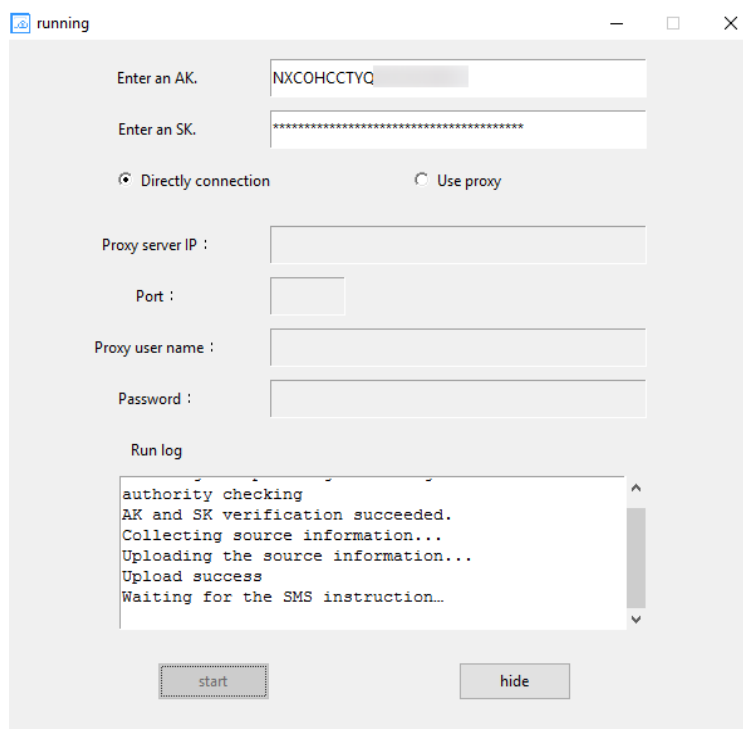
Windows Server 2019/2016/2012 and Windows 10/8.1

Step 1 Log in to the source server, search for the Agent icon in the lower right corner, and check whether the Agent is running properly.

- If the Agent has exited, restart the Agent.
- If the Agent is running properly, go to [Step 2](#).

Step 2 On the **Agent** operation page, check whether the **Start** button can be clicked.

- If it can, the Agent has proactively disconnected from SMS. Click **Start** to reconnect to it.
- If it cannot, go to [Step 3](#).



Step 3 In the cmd window, run `telnet sms.ap-southeast-3.myhuaweicloud.com 443` to check the connection between the source server and SMS.

- If the connection is unavailable, check whether the DNS and firewall of the source server are correctly configured.
- If the connection is available and data is being transmitted, check whether the outbound bandwidth of the source server is lower than 10 Mbit/s. If it is, the data transmission may be using up all the bandwidth, which can cause the connection between the Agent and SMS to time out. In this case, increase the outbound bandwidth of the source server to more than 10 Mbit/s, and then continue the migration.

```
Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.
C:\Users\Administrator>telnet sms.ap-southeast-1.myhuaweicloud.com 443
```

Step 4 Wait for about a minute and sign in to the console.

Step 5 Click **Service List**. Under **Migration**, click **Server Migration Service**.

The SMS console is displayed.

Step 6 In the navigation pane on the left, choose **Servers**.

In the **Status** column, view the connection status of the source server.

----End

Windows Server 2008 and Windows 7

Step 1 Log in to the source server and check whether the **SMSAgentDeploy.exe** process is running properly.

- If the process does not exist, restart the Agent and go to [Step 2](#).



If you restart the Agent, you need to repeat the migration.

- If the process exists, go to [Step 2](#).

Step 2 In the cmd window, run **telnet sms.ap-southeast-3.myhuaweicloud.com 443** to check the connection between the source server and SMS.

- If the connection is unavailable, check whether the DNS and firewall of the source server are correctly configured.
- If the connection is available and data is being transmitted, check whether the outbound bandwidth of the source server is lower than 10 Mbit/s. If it is, the data transmission may be using up all the bandwidth, which can cause the connection between the Agent and SMS to time out. In this case, increase the outbound bandwidth of the source server to more than 10 Mbit/s, and then continue the migration.

```
Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.
C:\Users\Administrator>telnet sms.ap-southeast-1.myhuaweicloud.com 443
```

Step 3 Wait for about a minute and sign in to the console.

Step 4 Click **Service List**. Under **Migration**, click **Server Migration Service**.

The SMS console is displayed.

Step 5 In the navigation pane on the left, choose **Servers**.

In the **Status** column, view the connection status of the source server.

----End

Linux

Step 1 Use PuTTY or another SSH client to log in to the source server.

Step 2 Run `ps -ef | grep -v grep | grep linuxmain` to check whether the Agent is running properly.

- If the **linuxmain** process is not running, restart the Agent.
- If the **linuxmain** process is running, go to **3**.

```
[root@ ~]# ps -ef | grep -v grep | grep linuxmain
root    30634      1  0 Aug28 ?        00:00:00 ./linuxmain 1
root    30636  30634  0 Aug28 ?        00:00:14 ./linuxmain 1
```

Step 3 In the cmd window, run `telnet sms.ap-southeast-3.myhuaweicloud.com 443` to check the connection between the source server and SMS.

- If the connection is unavailable, check whether the DNS and firewall of the source server are correctly configured.
- If the connection is available and data is being transmitted, check whether the outbound bandwidth of the source server is lower than 10 Mbit/s. If it is, the data transmission may be using up all the bandwidth, which can cause the connection between the Agent and SMS to time out. In this case, increase the outbound bandwidth of the source server to more than 10 Mbit/s, and then continue the migration.

```
Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>telnet sms.ap-southeast-1.myhuaweicloud.com 443
```

Step 4 Wait for about a minute and sign in to the console.

Step 5 Click **Service List**. Under **Migration**, click **Server Migration Service**.

The SMS console is displayed.

Step 6 In the navigation pane on the left, choose **Servers**.

In the **Status** column, view the connection status of the source server.

----End

4.5 Why the Migration Progress Is Suspended or Slow?

Symptom

During the migration, the progress bar changes slowly or does not change.

Possible Causes

This problem may be caused by multiple factors, such as the network bandwidth, the number of small files on the source server, and the difference comparison during incremental synchronization.

Solutions

- Check the bandwidths of the source and target servers. Allocate sufficient bandwidth for the migration process without affecting services.
- Check whether there are a large number of small files on the source server. If there are, delete as many unnecessary files as possible.
- During a Linux file-level migration, if the synchronization progress stays at 6% for a long time, please wait patiently. The migration process is comparing and synchronizing the differences between the source and target servers.
- Check the migration status on the SMS console. If it is **Connected**, wait patiently. If it is **Disconnected**, see [How Do I Restore the Connection Between the Agent and SMS?](#)

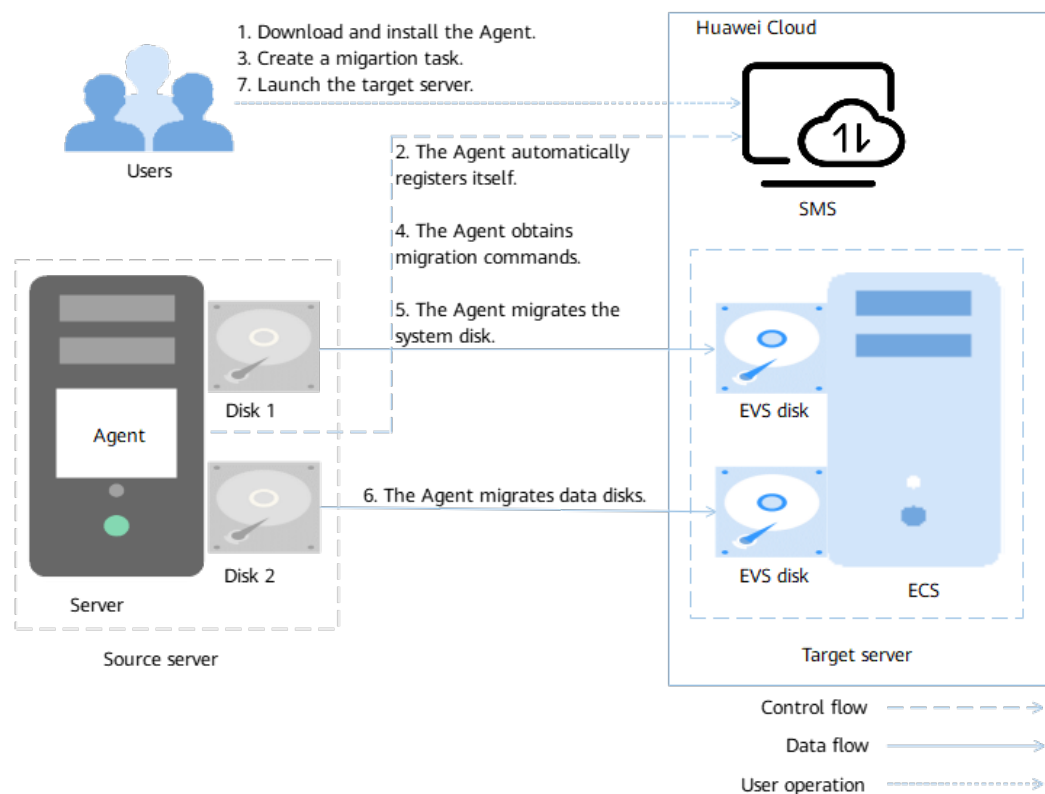
4.6 Does a Source Server Have to Connect to the Internet?

The source server must connect to the Internet. It does not matter if it connects to the target server through a Direct Connect connection, VPN connection, or VPC peering connection. In the following figure, the Direct Connect connection, VPN connection, or VPC peering connection between the source and target servers is used only for data flow transmission. The control flow between the source server and SMS needs to be transmitted over the Internet.

NOTE

If the source server cannot access the Internet, you can configure a proxy server for the source server.

The following figure shows how SMS works.



- Control flow: the interaction process between the source server and SMS
The interactions include:
Step 2: The Agent registers itself with SMS and reports the information about the source server to SMS. Then, SMS evaluates migration feasibility of the source server.
Step 4: The Agent receives and executes the migration commands sent by SMS.
- Data flow: the process of migrating data on the source server
The data migration includes:
Step 5: SMS migrates the system disk of the source server.
Step 6: SMS migrates the data disks of the source server.

4.7 How Do I Configure a Source Server to Access Huawei Cloud Through a Proxy?

Scenarios

Each source server must continuously communicate with SMS over the Internet. If the migration source cannot access the Internet, you can configure a proxy for it.

NOTICE

The IP address and port number in this FAQ are used as examples only.

Preparations

- Prepare a CentOS server that will serve as a proxy server. CentOS 7.2 64-bit is used as an example here.

NOTE

The proxy server must be able to communicate with the source server over the private network.

- Obtain the Squid installation package.

Procedure

Step 1 Configure the proxy server.

1. Install Squid.

```
[root@ecs ~]# yum -y install squid
```

2. Edit the **squid.conf** file as follows.

```
[root@ecs ~]# cp /etc/squid/squid.conf /etc/squid/squid.conf_bak
[root@ecs ~]# cat /etc/squid/squid.conf
http_port 3128
cache_mem 64 MB
maximum_object_size 4 MB
cache_dir ufs /var/spool/squid 100 16 256
access_log /var/log/squid/access.log
acl localnet src 192.168.0.0/16
http_access allow localnet
http_access deny all
```

```
http_port 3128
cache_mem 64 MB
maximum_object_size 4 MB
cache_dir ufs /var/spool/squid 100 16 256
access_log /var/log/squid/access.log
acl localnet src 192.168.0.0/16
http_access allow localnet
http_access deny all
```

NOTE

http_port is the port specified for Squid. **acl localnet src** is the private IP address of the source server that needs to access the Internet using the proxy server. You can also set **acl localnet src** to **0.0.0.0/0** to allow access from all servers.

3. Initialize Squid.

```
[root@ ~]# squid -z
2021/04/13 15:25:40 kid1: Creating missing swap directories
2021/04/13 15:25:40 kid1: /var/spool/squid exists
2021/04/13 15:25:40 kid1: /var/spool/squid/00 exists
2021/04/13 15:25:40 kid1: Making directories in /var/spool/squid/00
2021/04/13 15:25:40 kid1: /var/spool/squid/01 exists
2021/04/13 15:25:40 kid1: Making directories in /var/spool/squid/01
2021/04/13 15:25:40 kid1: /var/spool/squid/02 exists
2021/04/13 15:25:40 kid1: Making directories in /var/spool/squid/02
2021/04/13 15:25:40 kid1: /var/spool/squid/03 exists
2021/04/13 15:25:40 kid1: Making directories in /var/spool/squid/03
2021/04/13 15:25:40 kid1: /var/spool/squid/04 exists
2021/04/13 15:25:40 kid1: Making directories in /var/spool/squid/04
2021/04/13 15:25:40 kid1: /var/spool/squid/05 exists
2021/04/13 15:25:40 kid1: Making directories in /var/spool/squid/05
2021/04/13 15:25:40 kid1: /var/spool/squid/06 exists
2021/04/13 15:25:40 kid1: Making directories in /var/spool/squid/06
2021/04/13 15:25:40 kid1: /var/spool/squid/07 exists
2021/04/13 15:25:40 kid1: Making directories in /var/spool/squid/07
2021/04/13 15:25:40 kid1: /var/spool/squid/08 exists
2021/04/13 15:25:40 kid1: Making directories in /var/spool/squid/08
2021/04/13 15:25:40 kid1: /var/spool/squid/09 exists
2021/04/13 15:25:40 kid1: Making directories in /var/spool/squid/09
2021/04/13 15:25:40 kid1: /var/spool/squid/0A exists
```

4. Start Squid and set it to automatically start upon system boot.

```
[root@ ~]# systemctl enable squid.service --now
Created symlink from /etc/systemd/system/multi-user.target.wants/squid.service to /usr/lib/systemd/system/squid.service.
[root@ ~]# netstat -ntlp | grep squid
tcp6      0      0  :::3128          :::*               LISTEN    1692B/(squid-1)
```

Step 2 Download and install the Agent on the source server.

- Linux
 - a. Run the following command on the source server to download the Agent:


```
curl -x http://<proxy-server-IP-address>:<proxy-port> -O https://sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com/SMS-Agent.tar.gz
```

- b. Decompress the installation package.


```
tar -zxvf SMS-Agent.tar.gz
```

```
[root@ ~]# curl -O https://sms-agent-2-0-cn-north-1.obs.cn-north-1.myhuaweicloud.com/SMS-Agent.tar.gz
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 100M 100 100M 0 0 9913k 0 0:00:10 0:00:10 --:--:-- 11.4M
[root@ ~]# ll
total 183236
-rw-r--r-- 1 root root 185711407 Apr 27 11:28 SMS-Agent.tar.gz
[root@ ~]# tar -zxvf SMS-Agent.tar.gz && yum -y install rsync _
```

- c. Go to the **SMS-Agent/agent/config** directory and modify the **auth.cfg** file.

```
[root@ ~]# cd SMS-Agent/agent/config/

root@ecs-ubun:~/SMS-Agent/agent/config# cat auth.cfg
[proxy-config]
enable = true
proxy_addr = http://192.168.10.72
proxy_port = 3128
proxy_user =
use_password = false
```

NOTE

proxy_addr indicates the private IP address of the proxy server that the source server uses to access SMS over port 3128. This IP address is different from the IP address of the target server.

- d. Enter the AK/SK pair of the Huawei Cloud account you will use for migration as prompted.

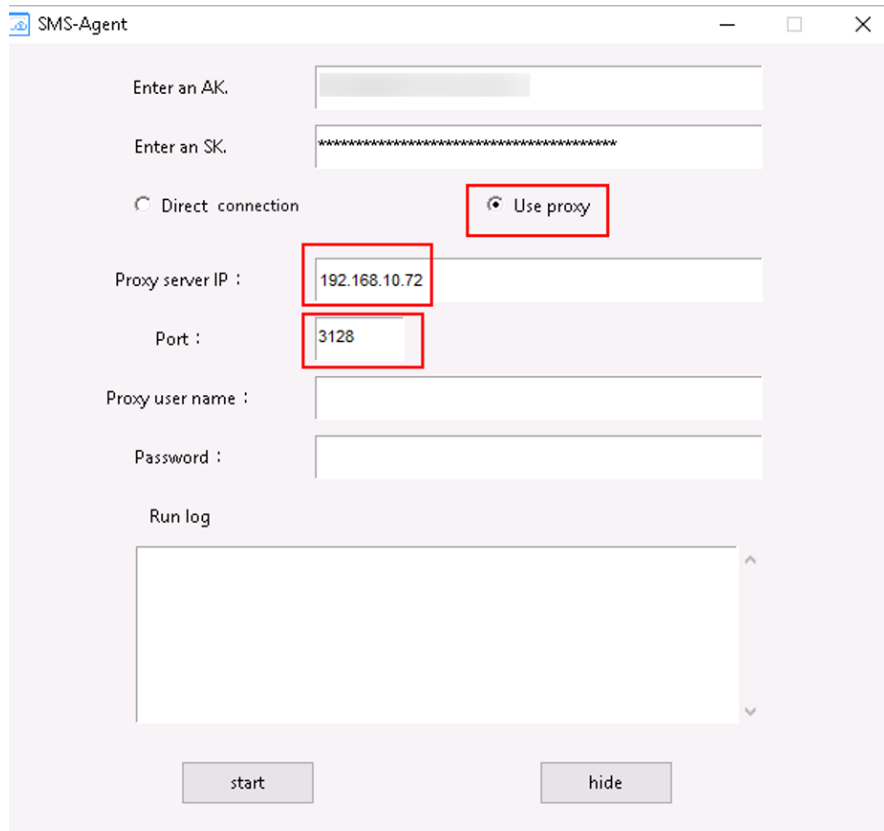
When the message "sms agent starts up successfully" is displayed, the Agent has started and will start reporting source server information to SMS.

```
[root@~]# cd ../..
[root@~]# SMS-Agent# ./startup.sh
After being started, the migration Agent collects system configuration information and uploads the information to SMS for migration task creation. The information to be collected includes server IP address and MAC address. For details, see the Server Migration Service User Guide. Are you sure you want to collect the information?(y/n)y
Please input AK(Access Key ID) of Huawei Cloud:*****
Please input SK(Secret Access Key) of Huawei Cloud:*****
agent is starting, this may take a few minutes...

SMS agent start up successfully!
check the source server in Server Migration Service Console now!
You can use the agent-cli tool to monitor the sms agent
```

- Windows
 - a. Download and install the Agent on the source server.
 - If the source server runs Windows Server 2019, Windows Server 2016, Windows Server 2012, Windows 10, or Windows 8.1, run the following command in PowerShell on the source server to download the Agent:


```
Invoke-WebRequest -Proxy http://<proxy-server-IP-address>:<proxy-port> -Uri https://sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com/SMS-Agent-Py3.exe -OutFile C:\\SMS-Agent-Py3.exe -UseBasicParsing
```
 - If the source server runs Windows Server 2008 or Windows 7, download the Agent (Python 2) from the proxy server, upload the Agent package to the source server, and install the Agent.
For details, see [Installing the Windows Agent](#).
 - b. In the displayed SMS-Agent GUI, enter the AK/SK pair of the Huawei Cloud account you will use for migration, and click **Start**.
 - If you do not need to use an HTTPS proxy, select **Directly connection**.
 - If you need to use an HTTPS proxy, select **Use proxy** and enter the IP address, port number, username, and password of the proxy server. Ignore **Proxy user name** and **Password** because no username or password is configured for the proxy server in this example.



NOTE

proxy_addr indicates the private IP address of the proxy server that the source server uses to access SMS over port 3128. This IP address is different from the IP address of the target server.

When the message "Upload success. Waiting for the SMS instruction" is displayed, the Agent has been started. You can sign in to the SMS console and perform subsequent operations.

CAUTION

After a Windows source server is migrated, you are advised to reset the browser proxy settings to avoid its effects on the source server.

----End

4.8 Can I Release or Change the Target Server EIP During the Migration?

No.

If you choose to migrate over the Internet, the Agent on the source server records the target server EIP when the migration starts, and uses that EIP for data transmission during the migration. Releasing or changing the EIP during the migration will cause the migration to fail.

You can release or modify the EIP only after the migration is complete and no data synchronization is required.

4.9 How Do I Measure the Network Performance Before the Migration?

Background

Poor network performance may prolong the migration or cause migration failures. SMS can help you measure the network performance before the migration.

CAUTION

- It takes 4 to 5 minutes to complete the measurement. To accurately measure the network performance, the migration rate limits you configure are not applied during the measurement, and more network resources may be used. You are advised to evaluate the actual resource usage on the source server to ensure that your services run properly.
- You must make sure that inbound ICMP traffic is allowed in the security group of the target server.

Procedure

You can measure the network performance when:

- You create a migration task.
On the **Configure Basic Settings** tab page, expand **Migration Settings (Optional)**, set **Measure Network Performance** to **Yes**. During the full migration, SMS will generate a subtask called **Measure the network performance**.

Figure 4-6 Determining whether to measure the network performance.

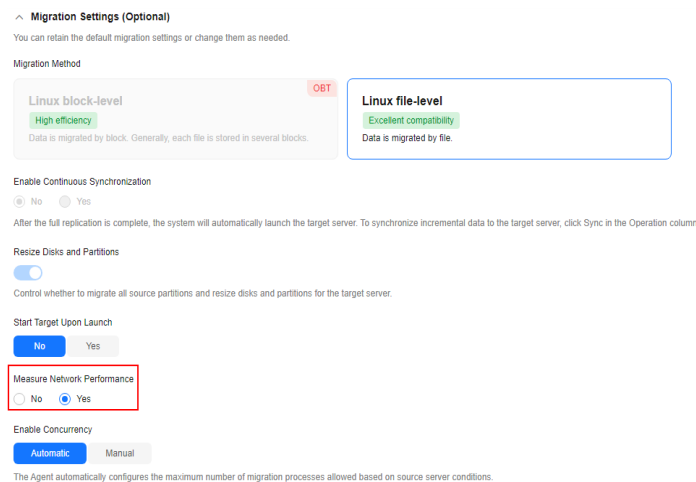


Figure 4-7 The subtask for measuring the network performance

Subtask	Start Time	End Time	Progress
Create a secure transmission channel	Apr 15, 2024, 17:51:18 GMT+08:00	Apr 15, 2024, 17:51:21 GMT+08:00	100%
Mount the Agent image and relaunch the target	Apr 15, 2024, 17:51:21 GMT+08:00	Apr 15, 2024, 17:55:49 GMT+08:00	100%
Synchronize Linux file-level data	Apr 15, 2024, 17:55:52 GMT+08:00	Apr 15, 2024, 17:57:23 GMT+08:00	100%
Measure the network performance	Apr 15, 2024, 17:58:08 GMT+08:00	Apr 15, 2024, 18:00:24 GMT+08:00	100%
Modify Linux file-level configuration	Apr 15, 2024, 17:57:41 GMT+08:00	—	0%
Unmount the Agent image	—	—	0%

- An error was reported during the subtask for migrating data, synchronizing data, or modifying configuration, or such a subtask was paused.
You can choose **More > Manage Migration Settings > Measure Network Performance** in the **Operation** column.

Measurement Results

During the network performance measurement, the system will check whether the source server can connect to the target server and related cloud services, such as IMS, ECS, EVS, and VPC, using their domain names. In addition, it measures four core network metrics: packet loss rate, jitter, network latency, and bandwidth, as well as two factors that indirectly affect network performance: memory usage and CPU usage. The measurement results are displayed in green, orange, and red, which indicate good, medium, and poor respectively. After the measurement is complete, SMS will display how well your network is performing and estimate how long the migration will take.

NOTE

- The evaluation result represents only the network performance during the test.
- The migration duration is estimated when the migration rate limits are not applied and is for reference only. In addition to the migration network, the migration duration is affected by many other factors, such as the number of small files on the source server, network fluctuation, disk read/write speed, and network traffic limit. A more reliable indicator is the remaining migration time displayed in the task list.

4.10 Can I Set a Rate Limit for a Migration?

Yes. To ensure your source services are not affected by the migration, you can limit the migration bandwidth by referring to section [Setting a Migration Rate](#).

4.11 How Do I Configure Automatic Recovery?

Background

Before, if the network between the source and target servers was disconnected, the migration task would fail, and you would have to manually restart it. Now, you can use the automatic recovery feature of SMS-Agent to restart the migration task automatically once network connectivity is restored.

Precautions

- The automatic recovery feature can be triggered by errors SMS.0807, SMS.1807, SMS.2802, SMS.3802, SMS.2805, and SMS.2806.
- You can control the maximum number of attempts to restart a failed migration task. After that, the automatic recovery program automatically exits, and you need to manually restart the migration task on the SMS console after the network is restored.

Configuration Parameters

To use automatic recovery, you need to configure the following parameters:

- **auto_start_interval_seconds**: The interval for executing the automatic recovery program, in seconds. For example, if you want to let this feature try to restart a failed migration task every half an hour, set this parameter to **1800** (the number of seconds in half an hour).
- **auto_start_max_retry_times**: The maximum number of times that the automatic recovery program can be executed before exiting.
- **auto_start_each_addition_seconds**: The increment of the interval after each execution of the automatic recovery task program, in seconds. For example, if **auto_start_each_addition_seconds** is set to **10** and **auto_start_interval_seconds** is set to **3600**, the execution interval of the automatic recovery program increases by 10 seconds each time, incrementing to 3610 seconds, 3620 seconds, and so on.

Configuration File Path

The path of the configuration file depends on the source server OS.

- Linux: **.../SMS-Agent/agent/config/g-property.cfg**
- Windows:
 - Windows Agent (Python 3): **C:\SMS-Agent-Py3\config\g-property.cfg**
 - Windows Agent (Python 2): **C:\SMS-Agent-Py2\config\g-property.cfg**

5 Migration Duration

5.1 How Long Does a Migration Take?

1. Pre-migration evaluation

Test the TCP speed from a source server to the target server. For details, see [How Do I Test the Network Bandwidth Between the Source and Target Servers Using iPerf?](#)

$$T = \frac{C \times 1000 \times 8}{S \times 3600 \times U}$$

where

- T : the required migration time, in hours
- C : the total data volume of the source server, in GB
- S : the TCP speed (in Mbit/s) from the source server to the target ECS, that is, the TCP speed obtained in [Step 4.2](#)
- U : the network usage, which is related to network quality (jitter, delay, and packet loss). The value is usually between 50% and 80%.

Assume that the total data volume of the source server is 100 GB, the TCP speed tested by iPerf is 100 Mbit/s, and the network usage is 70%. The migration duration is calculated as follows:

Migration time $T = 100 \text{ GB} \times 1000 \times 8 / 100 \text{ Mbit/s} / 3600 / 70\% \approx 3.17$ hours

You can refer to [Table 5-1](#) to view the time required for migrating source servers with different volumes of data and the TCP speeds assuming that the network usage U is 70%.

Table 5-1 Estimated migration duration

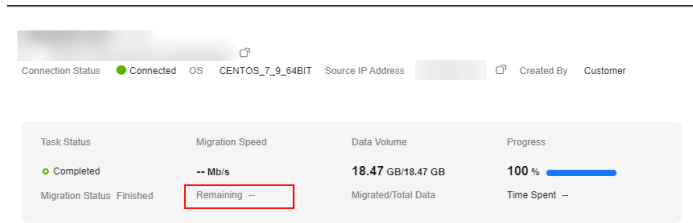
Total Data Volume on Source Server (C) (GB)	TCP Speed (S) (Mbit/s)	Migration Time (T) (Hour) NOTE For migration time T, if the unit is hour, two digits are retained after the decimal point. If the unit is minute, the value is an integer.
10 GB	0.5 Mbit/s	SMS is not recommended. NOTE If a small bandwidth is used to migrate a large amount of data, the migration may be interrupted due to high network latency.
	1 Mbit/s	SMS is not recommended.
	5 Mbit/s	6.35 hours
	10 Mbit/s	3.17 hours
	100 Mbit/s	0.32 hours (about 19 minutes)
	500 Mbit/s	0.06 hours (about 4 minutes)
	1,000 Mbit/s	0.03 hours (about 2 minutes)
30 GB	0.5 Mbit/s	SMS is not recommended.
	1 Mbit/s	SMS is not recommended.
	5 Mbit/s	19.04 hours
	10 Mbit/s	9.52 hours
	100 Mbit/s	0.95 hours (about 57 minutes)
	500 Mbit/s	0.19 hours (about 11 minutes)
	1,000 Mbit/s	0.10 hours (about 6 minutes)
50 GB	0.5 Mbit/s	SMS is not recommended.
	1 Mbit/s	SMS is not recommended.
	5 Mbit/s	SMS is not recommended.
	10 Mbit/s	15.87 hours
	100 Mbit/s	1.59 hours
	500 Mbit/s	0.32 hours (about 19 minutes)
	1,000 Mbit/s	0.16 hours (about 10 minutes)
100 GB	0.5 Mbit/s	SMS is not recommended.
	1 Mbit/s	
	5 Mbit/s	

Total Data Volume on Source Server (C) (GB)	TCP Speed (S) (Mbit/s)	Migration Time (T) (Hour) NOTE For migration time T, if the unit is hour, two digits are retained after the decimal point. If the unit is minute, the value is an integer.
	10 Mbit/s	
	100 Mbit/s	3.17 hours
	500 Mbit/s	0.63 hours (about 38 minutes)
	1,000 Mbit/s	0.32 hours (about 19 minutes)
500 GB	0.5 Mbit/s	SMS is not recommended.
	1 Mbit/s	
	5 Mbit/s	
	10 Mbit/s	
	100 Mbit/s	15.87 hours
	500 Mbit/s	3.17 hours
	1,000 Mbit/s	1.59 hours
1 TB	0.5 Mbit/s	SMS is not recommended.
	1 Mbit/s	
	5 Mbit/s	
	10 Mbit/s	
	100 Mbit/s	
	500 Mbit/s	6.50 hours
	1,000 Mbit/s	3.25 hours
Greater than 1 TB	-	SMS is not recommended.

2. Evaluation during migration (remaining time)

$$T = C \times 1000 \times 8 \times (80\% - P) / 60\% / S / 3600$$

- *T*: the time required, in hours
- *C*: the total data volume of the source server
- *P*: the transmission progress. *P* can be viewed on the SMS console. If *P* is larger than 80%, the data transmission is complete and you do not need to evaluate the remaining time.



----End

5.3 How Is the Migration Rate Displayed on the SMS Console Calculated?

Metrics

Table 5-2 Related metrics

Metric	Windows Block-Level	Linux File-Level	Linux Block-Level
Total data	Total used space of all partitions to be migrated. You can right-click a partition and choose Properties from the shortcut menu. On the General tab, you see the partition usage.	Total used space of all partitions to be migrated. You can run df -TH to view the used and available space on each partition.	Total size of all partitions to be migrated. You can run fdisk -lu to view the size of each partition.
Migrated data	Total size of all migrated data blocks that are located in the used partition space.	Total size of all migrated files.	Total size of all migrated data blocks in the partition.
Elapsed time	Time elapsed after a migration starts.		
Remaining time	Remaining time = (Total data - Migrated data)/Migration rate		

Metric	Windows Block-Level	Linux File-Level	Linux Block-Level
Migration rate	<p>Calculated using the amount of data migrated over the last 5 seconds. For example, if 200 MB data was migrated over the last 5 seconds, the migration rate is 320 Mbit/s ($200 \text{ MB} \times 8/5\text{s}$). The migration rate is different from the NIC throughput because the data is compressed before being transmitted through the NIC. For details, see Windows Block-Level Migration.</p>	<p>Actual migration speed, which is the NIC rate of the target server.</p>	<p>Calculated using the amount of data migrated over the last 5 seconds. For example, if 200 MB data was migrated over the last 5 seconds, the migration rate is 320 Mbit/s ($200 \text{ MB} \times 8/5\text{s}$). The migration rate is different from the NIC throughput because the data is compressed before being transmitted through the NIC. For details, see Linux Block-Level Migration.</p>

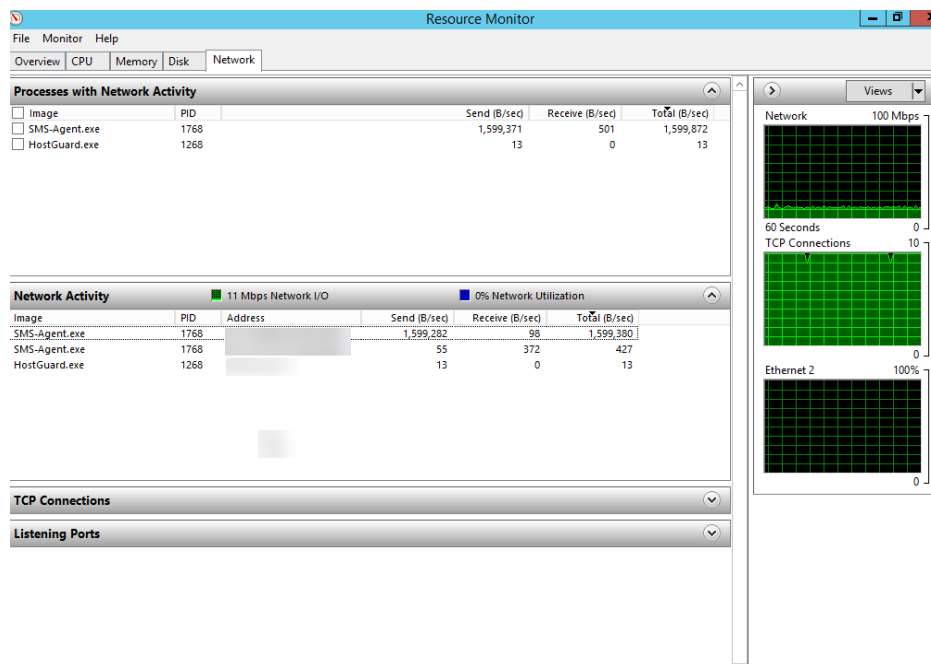
Windows Block-Level Migration

There are two types of Windows block-level migration rates. One is the rate displayed on the SMS console, which is the average migration rate over the last 5 seconds. The other is the actual NIC throughput for the migration process, which is less than what is displayed on the console because the data is compressed before being transmitted through the NIC.

- Migration rate displayed on the SMS console (before compression)**

The migration rate displayed on the console is the actual amount of data migrated per second, which is the data transmission rate before compression. It is the average amount of data migrated over the last 5 seconds. For example, if 200 MB of data was transmitted over the last 5 seconds, and the amount of data after compression is 50 MB, the rate displayed on the console is 320 Mbit/s ($200 \text{ MB} \times 8/5\text{s}$), but the NIC throughput for the migration process is 80 Mbit/s ($50 \text{ MB} \times 8/5\text{s}$).
- NIC throughput (after compression)**

During a Windows block-level migration, the Agent compresses data before transmitting it to the target server. The Agent on the target server decompresses the data and writes the data to disks. The NIC throughput is the network bandwidth used for the migration. You can view this rate in the task managers on the source server and target server. However, you can view this rate only after the target server is unlocked. The following uses Windows Server 2012 as an example.



CAUTION

- You can view the network bandwidth occupied by the migration process in the task manager. Use the migration rate displayed on the SMS console to estimate how long the migration will take.
- The NIC throughput of the source server also includes the bandwidth occupied by applications running on the source server. A more reliable metric is the migration rate of the migration process. The rate displayed in the task manager is the compressed data transmission rate.
- A Windows block-level migration rate is more stable because it is not affected by the number or size of files to be migrated.

Linux File-Level Migration

During a Linux file-level migration, data is not compressed, so the migration rate displayed on the console and the NIC throughput should match.

However, there is an exception. A Linux file-level migration is inefficient when transferring small files. When migrating a large number of small files, the network bandwidth cannot be fully utilized. In such a scenario, the migration rate is far lower than the available network bandwidth.

Linux Block-Level Migration

During a Linux file-level migration, data is not compressed, so the migration rate displayed on the console and the NIC throughput should match.

5.4 How Do I Speed Up Migration?

- Improve your network speed. You can test the network performance from the source server to the target server on Huawei Cloud. For details, see [How Do I Test the Network Bandwidth Between the Source and Target Servers Using iPerf?](#) If the network speed is less than 500 kbit/s, check the following items:
 - If the source server is in a data center, check the bandwidth, switches, routers, security devices (such as firewalls), network lines, and network protocols between the source server and the Internet. If there are any issues, contact network engineers. It is recommended that the network speed from the source server to Huawei Cloud over the Internet be at least 10 Mbit/s.
 - Check the outbound bandwidth of the source server and the **inbound bandwidth** of the target server. Increase the smaller bandwidth or both as needed. For the influence of bandwidth on migration duration, see [Table 5-1](#).
 - Check that the OS settings of the source and target servers. In Windows, you can run **perfmon** to invoke Performance Monitor to monitor the network. In Linux, you are advised to use the sar tool to monitor the network and use **/proc/net/dev** to monitor the NIC speed. If the network is slow, the OS configuration may be incorrect. Note that your OS services and processes cannot limit the NIC speed.
- Delete any files you no longer need from the source server before migration.
- Check the I/O read and write performance and CPU performance of the source server. In Windows, you can run **perfmon** to invoke Performance Monitor to monitor the CPU and I/O read and write performance. In Linux, you can use **top** or **ps** to monitor the CPU, and use **iostat** or **iotop** to monitor the I/O performance. If the I/O and CPU performance of your source server is poor, you are advised to increase the I/O and CPU resources or reduce the workloads on the source server.

5.5 Why Does the Migration Speed Fluctuate?

During the migration, operations such as module initializations, backups, and deletions are performed. It is difficult to accurately estimate how long these operations will take. Speed fluctuation is a normal phenomenon.

5.6 How Do I Test the Network Bandwidth Between the Source and Target Servers Using iPerf?

Prerequisites

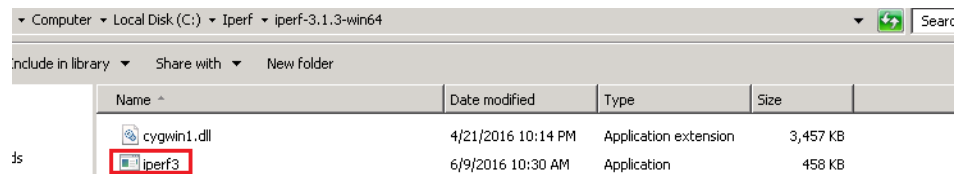
Ensure that the network between the source and target server is connected, and the port used for the iPerf test is allowed by a security group rule configured for the target server. For how to configure a security group rule, see [How Do I Configure Security Group Rules for Target Servers?](#)

This test must be performed before the migration, and workloads running on the source server must have little impact on the network, or the test results will be inaccurate.

Procedure

Step 1 Download **iPerf** based on the source server OS.

Step 2 Extract the iPerf installation package into directories on the source and target servers (or another server in the same region as the target server). On a Windows server, the iPerf installation package looks like follows.



Step 3 On the target server, run iPerf in server mode using the CLI. The following uses Windows as an example.

1. Switch to the directory with the iPerf executable:

```
cd /d path
```

In this command, *path* is where you extracted iPerf on the target server in [Step 2](#).

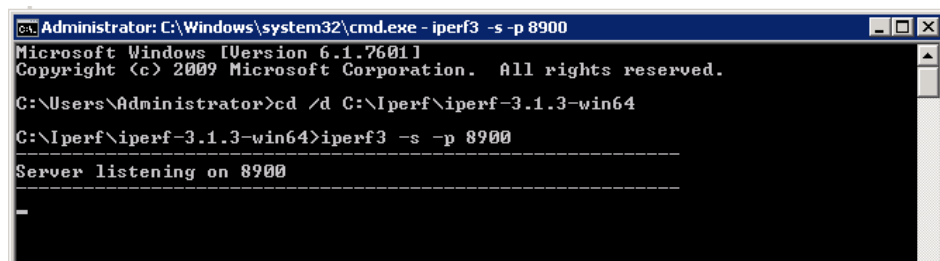
2. Run iPerf in server mode:

```
iperf3 -p port -s
```

In this command, *port* is the port the iPerf server listens on. It is recommended that port 8900 be used for Windows and port 22 for Linux since the two ports are configured as data transmission ports. You can also use another port for testing, but ensure that this TCP or UDP port is allowed in security group rules configured for the target server.

For details about more parameters, run the **iperf -h** command.

Assuming that port 8900 is used for Windows, if **Server listening on 8900** is displayed in the command output, iPerf is running.



Step 4 On the source server, run iPerf in client mode using the CLI. Test the TCP bandwidth, UDP jitter, packet loss rate, and bandwidth. The following uses Windows as an example.

1. Switch to the directory with the iPerf executable:

```
cd /d path
```

In this command, *path* is where you extracted iPerf on the source server in [Step 2](#).

2. Test the TCP bandwidth using iPerf:

iperf3 -c target_IP -p port -t time

In the preceding command, -c is used to run iPerf in client mode.

- target_IP is the IP address of the target server (iPerf server).
- port is the port used for connecting to the target server, that is, the iPerf listening port in [Step 3.2](#).
- time is the total test time. The default unit is second.

Wait for the iPerf client to connect to the iPerf server and the bandwidth test to complete, and then check the results. The following figure uses port 8900 on Windows as an example.

```
F:\Temp Folder\TCP\iperf-3.1.3-win64> iperf3 -c -p 8900 -t 10
Connecting to host , port 8900
[ 41] local port 64904 connected to port 8900
[ ID] Interval           Transfer     Bandwidth
[ 41] 0.00-1.00 sec    1.75 MBytes  14.7 Mbits/sec
[ 41] 1.00-2.00 sec    640 KBytes   5.24 Mbits/sec
[ 41] 2.00-3.00 sec    768 KBytes   6.29 Mbits/sec
[ 41] 3.00-4.00 sec    1.38 MBytes  11.5 Mbits/sec
[ 41] 4.00-5.00 sec    1.25 MBytes  10.5 Mbits/sec
[ 41] 5.00-6.00 sec    1.00 MBytes   8.39 Mbits/sec
[ 41] 6.00-7.00 sec    1.25 MBytes  10.5 Mbits/sec
[ 41] 7.00-8.00 sec    1.25 MBytes  10.5 Mbits/sec
[ 41] 8.00-9.00 sec    640 KBytes   5.24 Mbits/sec
[ 41] 9.00-10.00 sec   768 KBytes   6.29 Mbits/sec
-----
[ ID] Interval           Transfer     Bandwidth
[ 41] 0.00-10.00 sec   10.6 MBytes  8.91 Mbits/sec  sender
[ 41] 0.00-10.00 sec   10.5 MBytes  8.79 Mbits/sec  receiver

iperf Done.

F:\Temp Folder\TCP\iperf-3.1.3-win64>
```

3. Test the UDP jitter, packet loss rate, and bandwidth.

iperf3 -c target_IP -p port -u -t time

-u is used to measure the UDP jitter, packet loss rate, and bandwidth.

- target_IP is the IP address of the target server (iPerf server).
- port is the port for connecting to the target server, that is, the iPerf listening port in [Step 3.2](#).
- time is the total test time. The default unit is second.

Wait for the iPerf client is connected to the iPerf server and the test is complete, and check the result. The following figure uses port 8900 on Windows as an example.

```
F:\Temp Folder\TCP\iperf-3.1.3-win64>iperf3 -c [redacted] -p 8900 -u -t 10
Connecting to host [redacted], port 8900
[ 41] local [redacted] port 61677 connected to [redacted] port 8900
[ ID] Interval      Transfer      Bandwidth      Total Datagrams
[ 41] 0.00-1.00    sec         128 KBytes     1.05 Mbits/sec    16
[ 41] 1.00-2.00    sec         128 KBytes     1.05 Mbits/sec    16
[ 41] 2.00-3.00    sec         128 KBytes     1.05 Mbits/sec    16
[ 41] 3.00-4.00    sec         128 KBytes     1.05 Mbits/sec    16
[ 41] 4.00-5.00    sec         128 KBytes     1.05 Mbits/sec    16
[ 41] 5.00-6.00    sec         136 KBytes     1.11 Mbits/sec    17
[ 41] 6.00-7.00    sec         128 KBytes     1.05 Mbits/sec    16
[ 41] 7.00-8.00    sec         128 KBytes     1.05 Mbits/sec    16
[ 41] 8.00-9.00    sec         128 KBytes     1.05 Mbits/sec    16
[ 41] 9.00-10.00   sec         128 KBytes     1.05 Mbits/sec    16
-----
[ ID] Interval      Transfer      Bandwidth      Jitter      Lost/Total Datagrams
[ 41] 0.00-10.00   sec         1.26 MBytes     1.06 Mbits/sec  4.700 ms    0/161 (0%)
[ 41] Sent 161 datagrams

iperf Done.

F:\Temp Folder\TCP\iperf-3.1.3-win64>
```

4. Run the following command to measure the network latency:

ping *target_IP*

target_IP is the IP address of the target server (iPerf server).

Ensure the ICMP packets are allowed to pass through by the security group rules of the VPC that the target server belongs to.

Step 5 View all testing options. Alternatively, you can obtain the help information about **iPerf** on its official website.

iperf3 -h

----End

5.7 Why Isn't the Increased Bandwidth Being Used During the Migration?

The bandwidth being used will be limited by one of the three bottlenecks:

- The newly increased bandwidth of the source server
- The inbound bandwidth of the target server. For details, see [What Are Inbound Bandwidth and Outbound Bandwidth?](#)
- The migration rate limit you configured on the SMS console. For details, see [Setting a Migration Rate.](#)

CAUTION

As long as there is no other bottleneck, the newly increased bandwidth takes effect after 5 to 10 minutes.

Parameter	Description
speed	The migration rate
task progress	The migration progress
total size	The amount of data to be migrated
replicate size	The amount of data migrated

 **NOTE**

If the migration rate is not 0 and the amount of migrated data keeps increasing, the migration runs normally.

- Scenario 3: Target Launch
 - After you launch the target server, the task progress bar stays at 0% for a long time.
After you launch the target server, the system performs an incremental data synchronization. The incremental data volume determines how much time is required for the synchronization. The synchronization progress may remain unchanged for a long time if there is too much incremental data on the source server.
To check whether data is being synchronized, view the latest **sms_Info.log** file. If no error logs are generated during the target server launch, the migration goes smoothly.
 - After you launch the target server, the task progress bar remains unchanged for a long time.
You can pause the task and start it again. Wait for about 10 minutes and check whether the progress bar changes.

5.10 What Factors Affect the Migration Speed?

The following table lists the factors that may affect the migration speed and duration.

OS	Factor	Description
None	CPU or memory usage	The migration occupies some memory and CPU resources of the source server. The usage varies depending on the source conditions. Before the migration, ensure that both the CPU usage and memory usage of the source server are not higher than 75%, and the available memory is at least 520 MB.

OS	Factor	Description
	Network bandwidth	The network latency between the source and target servers must not be too high. The migration speed depends on the source bandwidth and the target bandwidth, whichever is smaller. For details about network requirements, see How Do I Set Up a Secure Migration Network for Using SMS?
Windows	Disk fragments	SMS supports only block-level migration for Windows servers. Only valid blocks are migrated. A large number of disk fragments will be generated on disks in daily use. It takes time to identify valid blocks among these fragments.
Linux	<ul style="list-style-type: none"> • Large files • Too many small files 	<p>For a file-level Linux migration, the migration speed will be affected if</p> <ul style="list-style-type: none"> • There are files larger than 2 GB. • There are a large number of small files, such as, those smaller than 20 KB.

The following table lists the factors that may affect the synchronization duration.

OS	Factor	Description
None	<ul style="list-style-type: none"> • Too much new data on the source server • Too much changed data on the source server 	During an incremental synchronization, if a large amount of data is newly generated or changed on the source server, the synchronization takes a long time.
Windows	Too many file fragments	During a synchronization, if a large number of file fragments are generated on the source server, the synchronization takes a long time.
Linux	Large sparse files	During a synchronization, the system scans but does not migrate sparse files. If there are large sparse files on the source server, the synchronization takes a long time.

5.11 Why Is the Linux Block-Level Migration Very Slow?

Symptom

During a Linux block-level migration, you found that the actual migration rate was far lower than the bandwidth limit you configured.

Possible Causes

The possible causes are as follows:

- A small amount of data is stored in disk blocks.
- A large number of sparse files are stored in source disks.


In a Linux block-level migration, data is compressed before being transmitted. If the disk blocks to be migrated store a small amount of data or are empty, the data compression rate is high, for example, 100 MB of data is compressed to 5 MB. Though the displayed migration rate is very low, the migration is performance quickly, and the network connection and the bandwidth are normal.

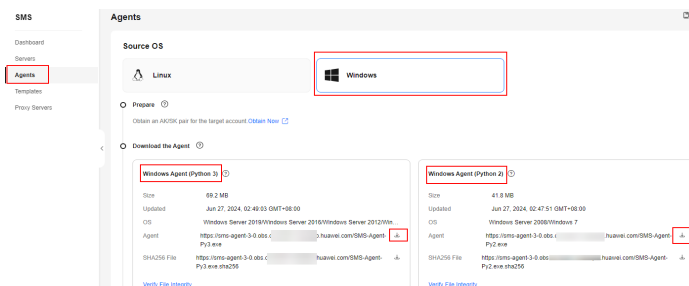
6 Agent Installation and Startup

6.1 How Do I Download and Install the Agent on Source Servers?

Windows

Step 1 Sign in to the SMS console. In the navigation pane on the left, choose **Agents**.

Step 2 Select the **Windows** card. Locate the Agent that matches your source server, click the  icon next to **Agent** to download the Agent installation package.



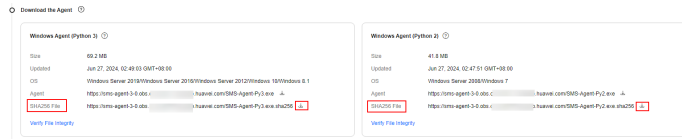
You can also use the following links to download the desired Agent:

- Windows Agent (Python 3)
<https://sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com/SMS-Agent-Py3.exe>
- Windows Agent (Python 2)
<https://sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com/SMS-Agent-Py2.exe>

CAUTION

When you download the Agent from the preceding links, you need to go to the SMS console to read and agree to the **Service Statement**.

Step 3 Click the  icon next to **SHA256 File** to download the SHA256 verification code. Verify the integrity of the Agent installation package by referring to [How Do I Verify the Integrity of the Agent Installation File?](#)



You can also run the following command to download SHA256 verification code:

- Windows Agent (Python 3)
`https://sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com/SMS-Agent-Py3.exe.sha256`
- Windows Agent (Python 2)
`https://sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com/SMS-Agent-Py2.exe.sha256`

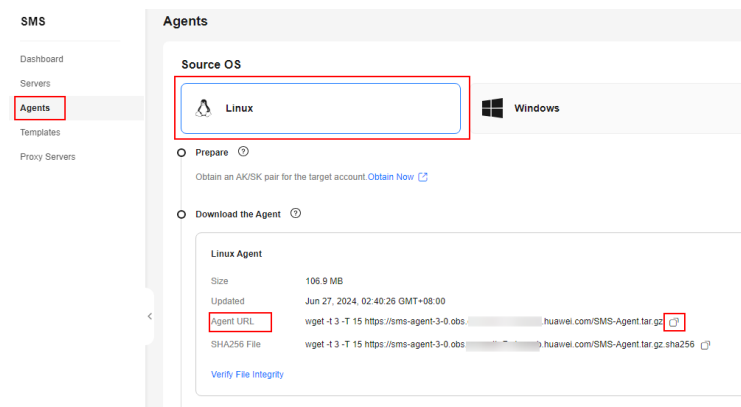
Step 4 Install the software by referring to [Windows](#).

----End

Linux

Step 1 Sign in to the SMS console. In the navigation pane on the left, choose **Agents**.

Step 2 Select the **Linux** card, and in the **Linux Agent** pane, click the  icon next to **Agent** to copy the Agent download command. Then download the Agent installation package from the source server.



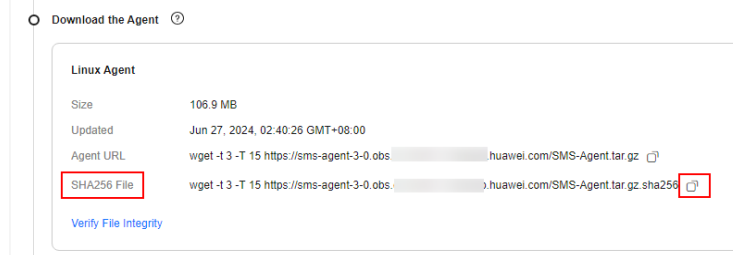
You can also use either of the following commands to download the Agent:

```
wget -t 3 -T 15 https://sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com/SMS-Agent.tar.gz
curl -O https://sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com/SMS-Agent.tar.gz
```



When you download the Agent using the preceding commands, you need to go to the SMS console to read and agree to the [Service Statement](#).

- Step 3** Copy the command next to **SHA256 File** and run the command on the source server. Use the hash value contained in the SHA256 file to verify the integrity of the Agent installation package. For details, see [How Do I Verify the Integrity of the Agent Installation File?](#)



You can also run either of the following commands to download the SHA256 verification code:

```
wget -t 3 -T 15 https://sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com/SMS-Agent.tar.gz.sha256
```

- Step 4** Decompress the Agent software package.

```
tar -zxvf SMS-Agent.tar.gz
```

- Step 5** Switch to the **SMS-Agent** directory on the source server.

```
cd SMS-Agent
```

- Step 6** If you do not need to use an HTTPS proxy, go to [7](#).

If you do not need to use an HTTPS proxy, go to [8](#).

CAUTION

- If your source server cannot access Huawei Cloud over the Internet, a proxy server can help you. You need to configure a proxy server by yourself.
- The proxy is used for registering the source server with SMS when a Direct Connect or VPN connection is used. It is not used for data migration.

- Step 7** (Optional) Configure the HTTP/HTTPS proxy for the Agent.

1. Go to the **config** directory.

```
cd SMS-Agent/agent/config
```
2. Open and edit the **auth.cfg** file. Do not edit the **auth.cfg** file unless you need to use an HTTP/HTTPS proxy.

```
vi auth.cfg
```

The values shown here are for reference only.

```
[proxy-config]
enable = true
proxy_addr = https://your-proxy-addr.com
proxy_port = 3128
proxy_user = root
use_password = true
```

NOTE

- **enable**: To use a proxy, set it to **true**.
 - **proxy_addr**: Replace *your-proxy-addr* with the IP address of the proxy server, not that of the target server. Use the protocol configured for the proxy. HTTPS is recommended.
 - **proxy_user**: Enter the username required for the proxy. If no username is required, leave it blank.
 - **use_password**: If a password is required for the proxy, set it to **true**. If no password is required, set it to **false**.
3. Save the **auth.cfg** file and exit.
- ```
:wq
```

**Step 8** Start the Agent.

```
./startup.sh
```

**Step 9** Carefully review what information will be collected by the Agent, enter **y**, and press **Enter**.

**Figure 6-1** Entering y

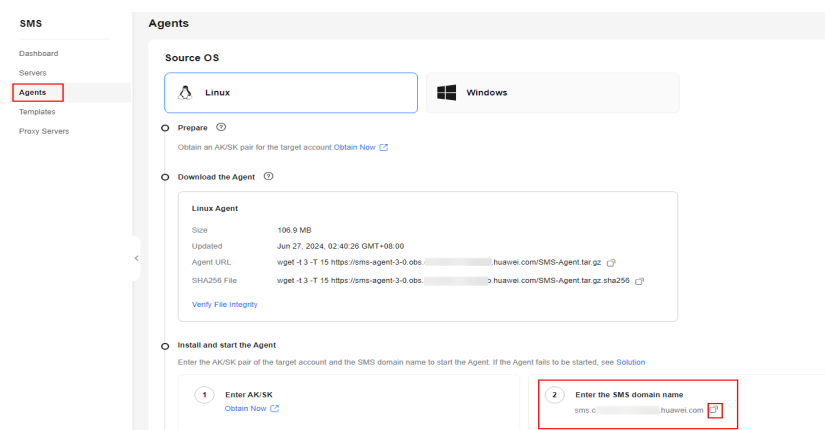
```
After being started, the migration Agent collects system configuration information and uploads the information to SMS for migration task creation. The information to be collected includes server IP address and MAC address. For details, see the Server Migration Service User Guide. Are you sure you want to collect the information?(y/n)y
```

**Step 10** Enter the AK/SK pair for the Huawei Cloud account and the SMS domain name for the region you are migrating to. You can obtain the SMS domain name on the **Agents** page of the SMS console, as shown in **Figure 6-3**.

**Figure 6-2** Entering the AK/SK pair

```
After being started, the migration Agent collects system configuration information and uploads the information to SMS for migration task creation. The information to be collected includes server IP address and MAC address. For details, see the Server Migration Service User Guide. Are you sure you want to collect the information?(y/n)y
Please input AK(Access Key ID) of Public Cloud:*****
Please input SK(Secret Access Key) of Public Cloud:*****
Please input smsdomain of Public Cloud: sms.c.....huawei.com
```

**Figure 6-3** Obtaining the SMS domain name



If the EPS service has been enabled for the Huawei Cloud account, after you entered the AK/SK pair, the Agent will list all enterprise projects the account is allowed to access. You can select the enterprise you would like to migrate the source server to. This enables you to isolate permissions, resources, and finance

during the migration. For details, see [Migrating Servers into an Enterprise Project](#).

When the following information is displayed, the Agent has been started up and will automatically start reporting source server information to SMS. You can go to the **Servers** page on the SMS console to view the record of the source server.

**Figure 6-4** Agent running

```
Select an enterprise project to register this server(input index,like 0,1...):0
selected enterprise project:
0 0 default

check sms agent start ...

sms agent start up successfully!
check the source server in Server Migration Service Console now!
[root@ecs-migrate-to-hecs1 SMS-Agent]#
```

----End

## 6.2 What Can I Do If I Fail to Download the Agent Installation File?

**Step 1** Check that your computer can access the Internet. Then, run the following command in the cmd window to check whether **Address** is followed by the IP address shown in the figure below.

```
nslookup sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com
```

```
C:\Users\Administrator>nslookup sms-agent-2-0.obs.ap-southeast-1.myhuaweicloud.com
Server: UnKnown
Address: 100.125.1.250

Non-authoritative answer:
Name: obs.lz01.ap-southeast-1.myhuaweicloud.com
Addresses: 100.125.100.2
 100.125.100.3
Aliases: sms-agent-2-0.obs.ap-southeast-1.myhuaweicloud.com
```

**Step 2** If the IP address is not displayed, add the following record to the hosts file, and download the package again:

```
100.125.100.2 sms-resource-intl-ap-southeast-3.obs.ap-southeast-3.myhuaweicloud.com
```

**NOTE**

In Windows, the hosts file is stored in the `C:\Windows\System32\drivers\etc` directory and can only be edited by the super administrator. In Linux, the hosts file is stored in the `/etc` directory.

**Step 3** If the IP address is displayed, check whether the domain name corresponding to the IP address is in the hosts file. If it is, delete the record and download the package again.

**Step 4** If the download still fails after you have performed the preceding steps, you are advised to use another computer to download the package and upload it to the source server from there.

----End

## 6.3 How Do I Verify the Integrity of the Agent Installation File?

**Step 1** Sign in to the SMS console.

**Step 2** In the navigation pane on the left, choose **Agents**. Click **SHA256 File** in the pane of the Agent you need to save the file containing the hash value to a local directory.

**Step 3** Obtain the hash value of the Agent installation file you have downloaded.

- Windows Agent  
**certutil -hashfile SMS-Agent-PyN.exe SHA256**  
*SMS-Agent-PyN.exe* is the Agent installation file name.
- Linux Agent  
**sha256sum SMS-Agent.tar.gz**

**Step 4** Compare the hash values obtained in [Step 2](#) and [Step 3](#).

- If they are consistent, the Agent installation file is complete.
- If they are inconsistent, download the Agent you need again and repeat [3](#) and [4](#) for verification.

----End

## 6.4 Why Wasn't My Source Server Added to the SMS Console After I Configured the Agent?

After the Agent was installed and configured on the source server, the source server information was not added to the SMS console. In this case, you need to perform the following operations:

**Step 1** Check whether the source server has been registered with SMS. If the source server is registered with SMS, the message "sms agent start up successfully" will be displayed on the CLIs of Windows Agent Python 2 and Linux Agent, and the message "Upload success" will be displayed in the GUI of Windows Agent Python 3.

**Step 2** Check whether you use the correct account to sign in to the SMS console and whether the AK/SK pair of the account is entered when you start the Agent.

**Step 3** If the source server has been successfully registered with SMS, and the console version matches the Agent version, but no records are displayed, wait for about a minute and refresh the page.

----End

## 6.5 How Do I Configure Certificate Verification in the SMS-Agent Configuration File?

You can enable or disable certificate verification for requests from SMS-Agent to Huawei Cloud APIs. To do so, you need to configure the **servercheck** parameter in the SMS-Agent configure file **g-property.cfg** which is located in the SMS-Agent installation directory.

- If **servercheck** is set to **True**, certificate verification is enabled. When an API request is sent, certificate verification is performed.
- If **servercheck** is set to **False**, certificate verification is disabled. In this case, certificate verification is not performed when an API request is sent.

```

g-property.cfg
1 [ssl_config]
2 servercheck = False
3 [property]
4 times = 20
5 debug = False
6 file exist check = \Windows\system32
7 enablesync = True
8 enablesnapshot = True
9 enablelinuxblock = True
10 disableplatformservice = True

```

## 6.6 Where Can I Find the Agent Run Logs?

The run logs of the Agent are stored in the **Logs** folder under the installation directory of the Agent. For details, see [Agent log files](#).

**Table 6-1** Agent log files

| File               | Location                                                                                                                                                                                           | Description                     |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| startup.log        | <ul style="list-style-type: none"> <li>Windows</li> </ul>                                                                                                                                          | Records the Agent startup logs. |
| SmsAgent_Info.log  | <ul style="list-style-type: none"> <li>C:\SMS-Agent-Py3\Logs or C:\SMS-Agent-Py2\Logs</li> </ul>                                                                                                   | Records the Agent run logs.     |
| SmsAgent_Error.log | <ul style="list-style-type: none"> <li>Linux</li> <li>../SMS-Agent/agent/Logs</li> </ul> <p><b>NOTE</b><br/>In the preceding directory, ../ indicates the directory where the Agent is stored.</p> | Logs Agent errors.              |

[Table 6-2](#) lists the log files generated during the migration and synchronization of a Linux server and their paths.

**Table 6-2** Log files generated during the migration and synchronization of a Linux server

| File                     | Location                           | Description                                                     |
|--------------------------|------------------------------------|-----------------------------------------------------------------|
| f2f_migrate_schedule.log | /root/<br>f2f_migrate_schedule.log | Logs generated during Linux migration and synchronization       |
| f2f_migrate_error.log    | /root/<br>f2f_migrate_error.log    | Error logs generated during Linux migration and synchronization |

## 6.7 Why Is My Target Server Locked During the Migration?

During the migration, operations on the target server may cause migration failures. To ensure a smooth migration, the target server will be automatically locked during the migration and unlocked after the migration. For details about how to unlock the target server manually, see [How Do I Unlock a Target Server Manually?](#)

## 6.8 How Do I Unlock a Target Server Manually?

### Symptom

After the migration is complete, the target server should be automatically unlocked. However, there are a number of reasons a target server may fail to be unlocked. For instance, there may be insufficient permissions or network issues. In this case, you can unlock the target server manually by performing the operations described in this section.

### Possible Causes

The most typical reasons are:

- The token is invalid or the network is faulty.
- Account permissions are insufficient.

### Solution

1. Check whether the corresponding server record still exists. If the record has not been deleted, in the **Operation** column, choose **More > Manage Target > Unlock Target Server** to unlock the target server.

If the system displays a message indicating that you do not have the permission to unlock the target server, use an account with the required permission and try again.

2. If the migration record has been deleted, unlock the server by following the instructions provided in [Unlocking an ECS](#).

## 6.9 How Do I Resolve Error "The application cannot be started due to incorrect parallel configuration" When I Start the Agent?

### Symptom

When you started the Agent (Python 2), you received error message "SMS.5109 The application cannot be started due to incorrect parallel configuration."

### Solution

For details, see [Why Does the Agent Not Start the First Time I Launch It?](#)

## 6.10 Why Does the Agent Not Start the First Time I Launch It?

Due to the permission structure on some Windows machines, the Agent cannot be started the first time you launch it. If this happens:

1. Right-click the **Start** menu.
2. Click **Run** and enter **cmd**.
3. Enter **cd C:\SMS-Agent-Py2** to switch to the Agent installation directory. Run the following command:

```
echo {ak} {sk} {sms_domain} | SMSAgentDeploy.exe pipe
```

Replace **{ak}**, **{sk}**, and **{sms\_domain}** with the AK/SK pair and SMS domain name required for starting the Agent.

```
C:\SMS-Agent-Py2>echo XE8CK1Fm0v0c9b0MA0G LliiTYnpE... Bje0QxamzoAlNk sms.cn-100... huawei.com |
SMSAgentDeploy.exe pipe
C:\Users\Administrator\AppData\Local\Temp\2\pip-install-za94dm\Fyinstaller\FyInstaller\loader\pyimod03_importers.py:391: Crypt
ographyDeprecationWarning: Python 2 is no longer supported by the Python core team. Support for it is now deprecated in
cryptorgraphy, and will be removed in the next release.
2024-03-11T16:30:58.348+08:00 - INFO - MainThread - sms_agent_cmd.py - <module> - [line:478] - start agent...
```

### NOTE

- You must have a valid AK/SK pair. For details about how to obtain an AK/SK pair, see [How Do I Create an AK/SK Pair for an Account?](#) or [How Do I Create an AK/SK Pair for an IAM User?](#)
- If message "[401:{"error\_msg": " Incorrect IAM authentication in formation: xxx xxx not exist","error\_code":"APIGW.0301","request\_id":"xxx"}]" is displayed during the execution, check whether the entered AK and SK are correct.



## 6.11 Why Does the Windows Agent Executable Not Run When I Double-Click It?

### Symptom

You double-clicked the Windows Agent executable to install the Agent, but the file did not run.

### Possible Causes

The file is blocked by the system.

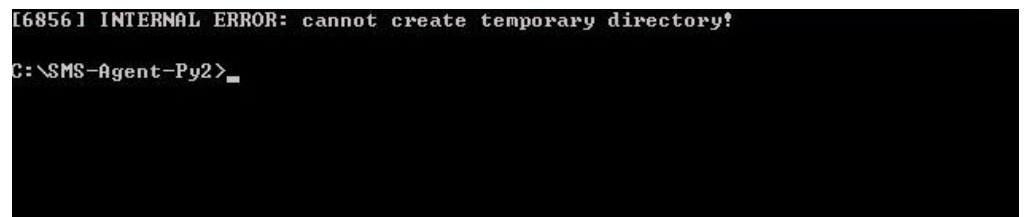
### Solution

Right-click **SMS-Agent-py\*.exe** and select **Properties** from the shortcut. In the **Security** area of the **General** tab, select **Unblock**, and run the file again.

## 6.12 How Do I Fix Error "INTERNAL ERROR: cannot create temporary directory!" When I Start the Agent?

### Symptom

When you started the SMS-Agent-Py2, you received error message "INTERNAL ERROR: cannot create temporary directory!"



```
[6856] INTERNAL ERROR: cannot create temporary directory!
C:\SMS-Agent-Py2>_
```

### Possible Causes

Some files will be generated in a temp directory of the C: drive when you install the Agent. This error occurs if the available space of the C: drive is insufficient or if you do not have the permission to create a temp directory there.

### Solutions

- Check how much space is available on the C: drive. If there is not enough space, clean up the drive.
- Check whether you can create a temp directory on the C: drive. You may need to obtain write permissions.

## 6.13 How Do I Troubleshoot Failures of Pasting the AK/SK Pair When I Start the Agent (Python 2)?

### Symptom

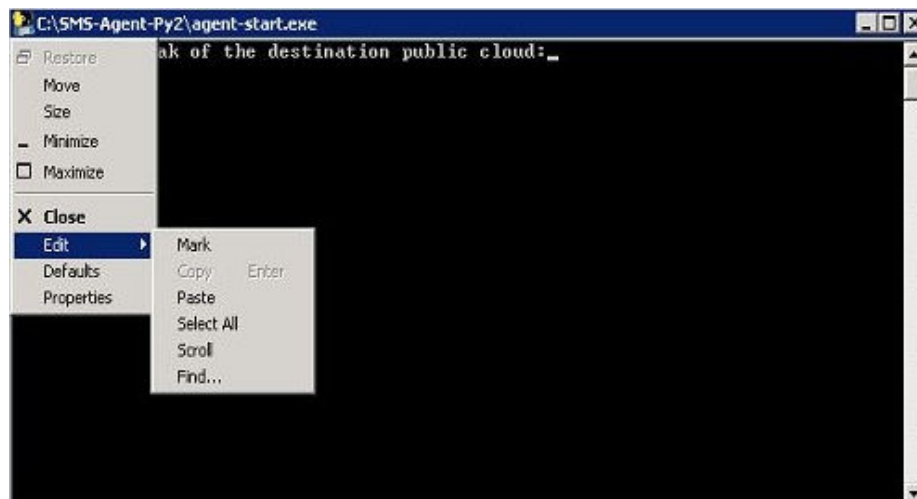
When you started the SMS-Agent (Python 2), you could not paste the AK/SK pair by right-clicking in the command window.

### Prerequisites

You have obtained the AK/SK pair. For details, see [How Do I Obtain an AK/SK Pair for a Huawei Cloud Account?](#) or [How Do I Obtain an AK/SK Pair for an IAM User?](#)

### Solution

- Step 1** Log in to the source server.
- Step 2** Go to the Agent installation directory `C:\SMS-Agent-Py2` and double-click `agent-start.exe`.
- Step 3** Copy the AK, click the icon in the upper left corner of the window, choose **Edit > Paste** from the displayed menu, and press **Enter**.
- Step 4** Copy the SK, click the icon in the upper left corner of the window, choose **Edit > Paste** from the displayed menu, and press **Enter**.

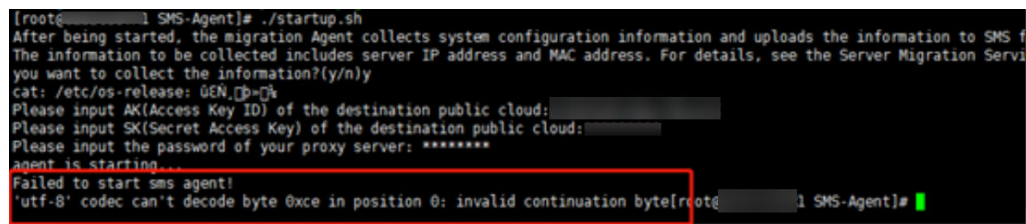


----End

## 6.14 How Do I Resolve Error "utf-8 codec can't decode byte 0xce in position 0: invalid continuation byte" When I Start the Agent?

### Symptom

In Linux, after you ran `./startup.sh` or `bash startup.sh` to start the Agent, the following message was displayed: "utf-8 codec can't decode byte 0xce in position 0: invalid continuation byte."



```
[root@... SMS-Agent]# ./startup.sh
After being started, the migration Agent collects system configuration information and uploads the information to SMS f
The information to be collected includes server IP address and MAC address. For details, see the Server Migration Servi
you want to collect the information?(y/n)y
cat: /etc/os-release: 0EN[?]
Please input AK(Access Key ID) of the destination public cloud:
Please input SK(Secret Access Key) of the destination public cloud:
Please input the password of your proxy server: *****
agent is starting...
Failed to start sms agent!
'utf-8' codec can't decode byte 0xce in position 0: invalid continuation byte[root@... SMS-Agent]#
```

### Possible Causes

The character set of the source system is incorrect and is incompatible with SMS. As a result, the Agent could not be started.

### Handling Method

1. Log in to the source server.
2. Set the character set.  
`export LANG="en_US.UTF-8"`
3. Restart the Agent. If the problem persists, set the character set again.  
`export LC_ALL="en_US.UTF-8"`  
`export LANG="en_US.UTF-8"`

### Impact Scope

Setting the character set affects only the current shell and applications in the shell. It does not affect your files or other applications.

## 6.15 How Do I Restart the Agent?

### Windows

- Windows Agent (Python 3)
  - a. Right-click the SMS-Agent icon in the task tray and choose **Quit** from the shortcut menu.
  - b. Open the `C:\SMS-Agent-Py3` folder and double-click **SMS-Agent.exe**.
  - c. On the page that is displayed, enter the AK/SK pair when promoted and click **Start**.

- Windows Agent (Python 2)
  - a. Open the **C:\SMS-Agent-Py2** folder and double-click **restart.bat**.
  - b. In the CMD window that is displayed, enter the AK/SK pair and SMS domain name when prompted.

## Linux

1. Go to the directory where the SMS-Agent installation package is decompressed and run **./restart.sh**.
2. Enter the AK/SK pair and SMS domain name when prompted.

## 6.16 How Do I Fix Agent Startup Failures Due to Insufficient Space in /tmp on a Linux Source Server?

### Symptom

When you ran **sh startup.sh** to start the SMS Agent, the following message was displayed:

```
Failed to write all bytes for cffibackend.cpython-36m-x86_64-linux.gnu.so
fwrite: No space left on device
```

### Possible Causes

When the Agent is being started, directories and files are generated in the **/tmp** directory on the source server. These files will occupy about 40 MB of space. You need to reserve more than 100 MB space for the **/tmp** directory.

### Solution

- Step 1** Log in to the source server.
  - Step 2** Run the **df -lh** command to check whether there is a volume mounted to the **/tmp** directory. If there is, check the available space on that volume.
  - Step 3** If the available space in the **/tmp** directory is insufficient for the mounted volume, perform either of the following operations:
    - Delete unnecessary files or expand the capacity of the volume mounted to the **/tmp** directory.
    - Run **export TMPDIR=/home/user/tmpdir** (replace **/home/user/tmpdir** with a directory that has enough available space) to change the cache directory.
- End



2. Run the `source /etc/profile` command and restart the SMS Agent.

## 6.18 How Do I Fix Error "Failed to obtain information about disk X" When I Start the Agent on a Linux Source Server?

### Symptom

When you started the Agent on a Linux source server, you received message "Failed to obtain information about disk %s. Cause: unknown physical volume!"

```
.....
After being started, the migration Agent collects system configuration information and uploads the information to SMS for migration task creation. The information to be collected includes server IP address,
CPU MC address. For details, see the Server Migration Service User Guide. Are you sure you want to collect the information?(y/n)y
Please input SK(Secret Access Key ID) of Public Cloud:
Please input SK(Secret Access Key) of Public Cloud:*****
Agent is starting, this may take a few minutes.
.....
Failed to obtain information about disk /root/SMS-Agent/agent/unknown:centos-vg. Cause: unknown physical volume!
.....
root@ecs-xiaojuntao SMS-Agent#
```

### Possible Causes

The source server uses LVM, and there are unknown physical volumes on the server. The Agent cannot collect the information about these volumes.

You can run the `pvs` command on the source server to check the details about its physical volumes.

```
root@ecs-xiaojuntao SMS-Agent# pvs
WARNING: Device for PV L3BK7W-isYi-QHAL-DU48-lXwd-0pjr-mr0AYm not found or rejected by a filter.
WARNING: Device for PV L3BK7W-isYi-QHAL-DU48-lXwd-0pjr-mr0AYm not found or rejected by a filter.
WARNING: Device for PV L3BK7W-isYi-QHAL-DU48-lXwd-0pjr-mr0AYm not found or rejected by a filter.
Couldn't find device with uuid L3BK7W-isYi-QHAL-DU48-lXwd-0pjr-mr0AYm.
PV VG Fmt Attr PSize PFree
/dev/vda2 centos-vg lvm2 a-- <20.00g <9.98g
[unknown] centos-vg lvm2 a-m <40.00g <40.00g
root@ecs-xiaojuntao SMS-Agent#
```

### Solutions

**Step 1** Contact technical support of the source platform to restore the source server.

**Step 2** After the source server is restored, run the `pvs` command to check if there are still any unknown physical volumes on the server.

If there are no unknown physical volumes, restart the Agent.

----End

## 6.19 How Do I Choose When the System Asks Whether to Disable the Google Services Detected on My Source Server on Google Cloud?

### Description

When I started the Agent on the Linux source server running on Google Cloud, the system asked me whether to disable the detected Google services.

```
Start the migration pre-check. Please waiting...
checking migration risks ...
checking migration risks ...
Pre-migration failed. The following problems are found:
LinuxCheckBeforeStartup:
Warning!!! GOOGLE services are detected on the source server. To ensure successful launch of and proper service running on the target server after migration,
the migration Agent will disable these Google services. For details, see the Server Migration Service User Guide.
The above warnings may affect the migration. You can ignore them or modify the source configurations and restart the SMS-Agent. Do you want to ignore the warn
ings and continue?(y/n)
```

## Background

Some Google services depend on Google Cloud. After the source server is migrated to Huawei Cloud, Google services cannot run properly. As a result, after the migration, the target server may fail to be launched or other services may fail to be started. Before the migration, read [Description of Disabling Google Services](#) and make evaluations based on service requirements.

### NOTE

- Disabling these services does not affect the source server. It only affects the configuration of startup services on the target server.
- If your services depend on Google services, contact Huawei Cloud technical support before the migration.
- If you choose to disable these Google services, enter **y**. During the target server configuration, the Agent will disable these services on the target server.
- If you choose not to disable Google services, enter **n** and change the value of **disableplatformservice** to **False** in the **.../SMS-Agent/agent/config/g-property.cfg** file in the SMS-Agent installation directory. After the migration, all service settings are retained, and the target server or some services may fail to be started.

## What Happens If You Choose to Disable Google Services

- Servers with startup services in the **/etc/systemd/system** directory, such as those running Ubuntu, CentOS 8, or CentOS 9

If you choose to disable the Google services, the Agent will only delete the soft links related to these services in the **/etc/systemd/system** directory. The service files pointed by the soft links are not affected.

### NOTE

Deleting the soft links of a service prevents the service from starting automatically at startup but does not affect the actual files of the service.

- Servers with startup services in the **/etc/init** directory, such as those running CentOS 6

If you choose to disable the Google services, the Agent will check the configuration files whose names start with **google** in the **/etc/init** directory, move these configuration files to **/etc/backup\_googleconf**, and compress the folder into package **google\_conf\_bak.tar.gz** for backup.

# 7 Disk Management

---

## 7.1 Why Was a 40-GB EVS Disk Added to the Target Server During the Migration?

SMS creates and attaches a 40 GB EVS disk to each target server temporarily during the migration. These EVS disks are billed on a pay-per-use basis. After the migration is complete, these EVS disks will be released. Do not delete these EVS disks during the migration or change their billing modes to yearly/monthly, or the migration will fail.

## 7.2 Why Can't I Attach the Original System Disk Back to a Target Server?

### Symptom

A migration failed, and you found that the target server still used the temporary system disk whose name started with **SMS** and its original system back could not be attached back.

### Possible Causes

The temporary system disk was not detached. You need to manually detach the temporary disk.

### Procedure

The following uses Linux as an example to describe how to handle this problem.

1. Switch to the **SMS-Agent** directory on the source server, running **./agent-cli**, enter **connect**, and press **Enter** to connect the source server to SMS.



```
region_name
[root@SMS-Agent]# ./agent-cli
Type "help", "status", "stop", "disconnect", "connect", "clear" or "showlog" for more information
Type exit() to leave this client
>>connect
=====
Source Id:2e940cb8-f4cc-4eee-af09-bdb5be7093f3
Os Type:Linux
Os Version:CENTOS_6_5_64BIT
=====
Connected between sms agent and sms server: True
Task Id:
'region_name'
```

2. Run **clear** in the CLI.

After about a minute, the temporary disk on the target server will be detached and deleted, and the original system disk will be re-attached.

```
[root@SMS-Agent]# ./agent-cli
Type "help", "status", "stop", "disconnect", "connect", "clear" or "showlog" for more information
Type exit() to leave this client
>>clear
=====
Source Id:2e940cb8-f4cc-4eee-af09-bdb5be7093f3
Os Type:Linux
Os Version:CENTOS_6_5_64BIT
```

## 7.3 How Do I Resize Partitions and Disks When I Migrate a Windows Source Server?

### Scenarios

You need to manually resize partitions and disks if:

- The system disk of a source server is larger than 1 TB.
- A file system on the source server is not supported by SMS.
- There are partitions that do not need to be migrated or there are other resizing requirements.

### Scenario 1

The source system disk is 1.1 TB, with 100 GB allocated for the system and boot partitions and 1,024 GB for drive D. You can prepare a 100-GB disk and a 1,024-GB disk on the target server for receiving data from the source system disk.

The procedure is as follows:

1. Go to the Agent configuration directory on the source server.
  - Windows Agent (Python 3)  
**C:\SMS-Agent-Py3\config**
  - Windows Agent (Python 2)  
**C:\SMS-Agent-Py2\config**
2. Modify the **disk.cfg** file as follows and save it.

```
[vol_mount_modify]
D = 2
E = 3
F = 4
...
```

 NOTE

- **D = 2** indicates that data in drive D will be migrated to the second disk on the target server.
  - If there are multiple partitions on the source server, and you want to migrate them to different disks on the target server, modify the **disk.cfg** file in the same way, such as D=2, E=3, F=4.
3. Go to the SMS console, and delete the migration task for this source server.
  4. Restart the Agent installed on the source server. Go back to the SMS console to check that the disk information has been changed in the source server details.

 CAUTION

This method cannot be used to locate the system and boot partitions to different disks, because the system and boot partitions can be migrated only to the first disk on the target server.

## Scenario 2

Drive D on the source server use the FAT32 file system, but the file system is not supported by SMS. You can exclude this partition from migration using the configuration file.

The procedure is as follows:

1. Go to the Agent configuration directory on the source server.
  - Windows Agent (Python 3)  
**C:\SMS-Agent-Py3\config**
  - Windows Agent (Python 2)  
**C:\SMS-Agent-Py2\config**
2. Modify the **disk.cfg** file as follows and save it.  

```
[vol_mount_modify]
D = -1
```


 NOTE

- **D = -1** indicates that drive D will not be migrated.
3. Go to the SMS console, and delete the record corresponding to this source server.
  4. Restart the Agent. Go back to the SMS console to check that the disk information has been changed in the source server details.

## Scenario 3

The source server has one system disk (the first disk) and two data disks (disk D and disk E). You want to migrate the two data disks to the same disk on the target server.

The procedure is as follows:

1. Go to the Agent configuration directory on the source server.
    - Agent (Python 3)  
**C:\SMS-Agent-Py3\config**
    - Agent (Python 2)  
**C:\SMS-Agent-Py2\config**
  2. Modify the **disk.cfg** file and save it.  
[vol\_mount\_modify]  
E = 2
-  **NOTE**
- E = 2 indicates that data in disk E will be migrated to the second disk on the target server.
3. Go to the SMS console, and delete the record corresponding to this source server.
  4. Restart the Agent. Go back to the SMS console to check whether in the source server details, there is only one data disk which consists of partition D and partition E.

## 7.4 How Do I Shrink the Disk Partitions on a Windows Source Server?

### Symptom

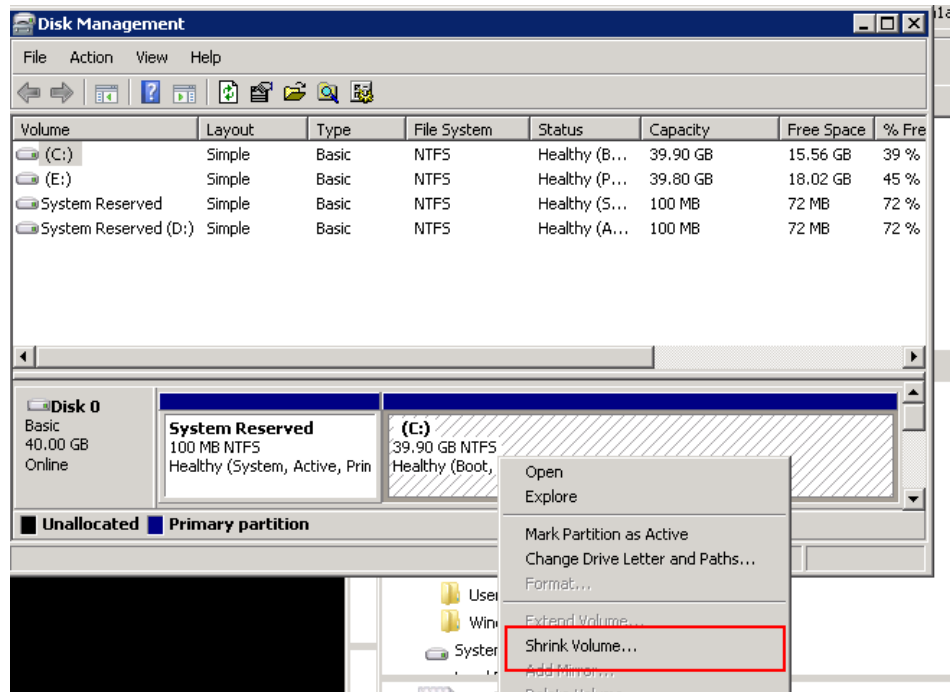
When you use SMS to migrate a source server running Windows, the disks on the target server should be at least the size recommended on the **Source Management** page. Otherwise, the migration may fail. If you want to use an existing server as the target server and the server's disks are too small, you can shrink the source server disks to be no larger than the target server disks.

### Possible Causes

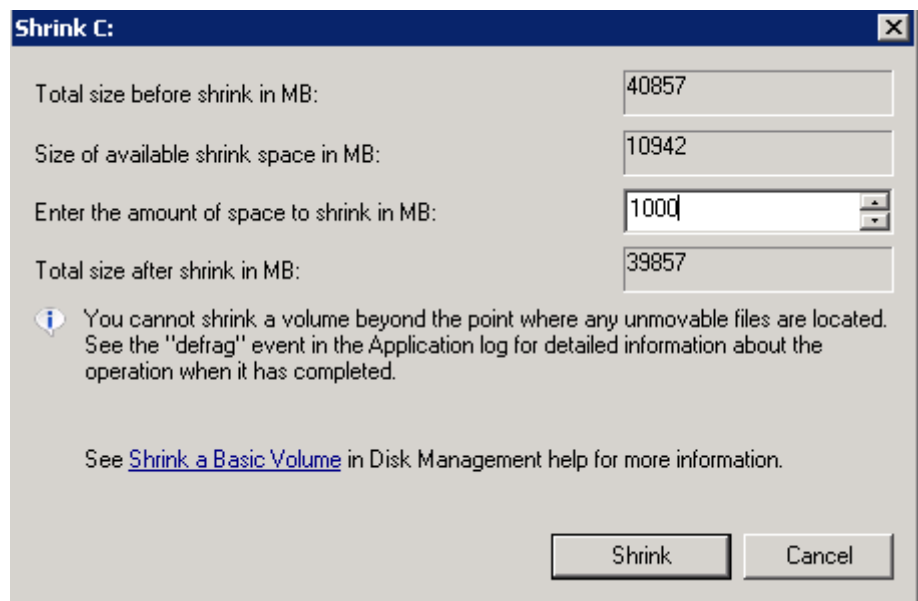
For a migration to be successful, the target server disks must be at least as large as the source disks. If they are not, you need to either scale up the target server disk or shrink the source server disk. On a Windows server, you can shrink disk partitions of the source server using the Windows Disk Management tool.

### Procedure

1. Choose **Start**, enter **diskmgmt.msc** in the search box.  
The **Disk Management** tool is displayed.
2. Right-click the partition of the disk you want to shrink and choose **Shrink Volume**.  
The **Shrink Volume** dialog box is displayed.

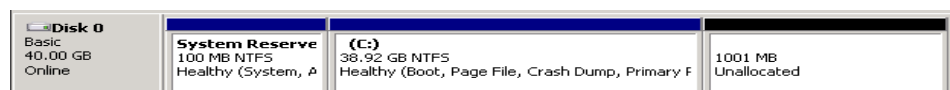


3. Enter the amount you wish to shrink the partition by in the **Enter the amount of space to shrink in MB** text box.



4. Click **Shrink**.  
The new space available is displayed as unallocated space.

**Figure 7-1** Disk partition after shrink



5. Sign in to the console.
6. Click **Service List**. Under **Migration**, click **Server Migration Service**.  
The SMS console is displayed.

7. In the navigation pane on the left, choose **Servers**.  
The server list is displayed.
8. Locate the source server to be deleted, and in the **Operation** column, choose **More > Delete**.  
You can also select the target source server and choose **More > Delete** in the upper left corner of the server list.
9. In the displayed **Delete Server** dialog box, click **OK**.
10. Report the information about the source server to SMS again.
  - If the Agent has been uninstalled from the source server, install the Agent again. For details, see [Installing the Windows Agent](#).
  - If the Agent has been installed on your source server, restart the Agent to report the source server information to SMS.

## 7.5 How Do I Exclude a Partition from Migration in Windows?

### Procedure

**Step 1** Go to the Agent configuration directory on the source server.

- Agent (Python 3)  
**C:\SMS-Agent-Py3\config**
- Agent (Python 2)  
**C:\SMS-Agent-Py2\config**

**Step 2** Modify the **disk.cfg** file as follows and save it.

```
disk.cfg
1 ##The du command is used for this configuration items(vol_mount_modify), which may cause performance problems.
2 [vol_mount_modify]
3 D = -1
4 [vol_disk_modify]
5
6 [vol_add]
7
8 [disk_add]
9
10 [vol_size_modify]
11
12 [disk_size_modify]
13
```

```
[vol_mount_modify]
D = -1
```

#### NOTE

D = -1 indicates that disk D will not be migrated.

**Step 3** Restart the Agent. You will see that disk D is not displayed in the source server details. If drive D is still displayed in the source server details, delete the source server record on the SMS console and register the source server with SMS again.

#### NOTE

This method is only suitable for exclusion before the migration, because restarting the Agent during the migration will cause a migration failure.

----End

## 7.6 How Do I Resolve Error "Target server has fewer disks than source server. Select another target server" When I Configure the Target Server?

### Symptom

When you clicked **Next: Confirm** after you select an existing ECS as the target server, the message "Target server has fewer disks than source server. Select another target server" was displayed.

### Possible Causes

When configuring the target server, SMS checks whether the target server has the same number of disks as the source server. The number of disks on the target server is less than that on the source server because some disks on the target server may have been deleted or detached.

### Solution

- Step 1** In the navigation pane of the SMS console, choose **Servers**.
- Step 2** Locate the source server and choose **More > Delete Target Configuration**.
- Step 3** Attach disks to the target server to ensure that the target server has at least as many disks as the source server.
- Step 4** Go back to SMS console, locate the source server in the server list, and click **Configure** in the **Target** column. Configure a target server and perform the migration again.

----End

## 7.7 What Are the Requirements on Disks on a Target Server?

- If you do not need to resize disks or partitions for the target server, the requirements are as follows:
  - a. There must be at least as many disks on the target server as there are on the source server.
  - b. Every disk on the target server must be larger than their pair on the source server.
- If you need to resize disks or partitions for the target server, the requirements are as follows:
  - a. There must be at least as many disks on the target server as you specify during resizing.
  - b. Every disk on the target server must be larger than the size you specify during resizing.

For details about partition resizing rules, see [Resizing disks and partitions](#).

## 7.8 How Can I Migrate a Source Server with a Large System Disk?

### Windows

- If the system disk of the source server is too large, and the total size of the system and boot partitions is greater than 1 TB, SMS cannot migrate the source server.
- If the system disk of the source server is larger than 1 TB, but the total size of the system and boot partitions is less than 1 TB, you can modify the Agent configuration file to perform the migration successfully.

Assume that the source system disk is 1.1 TB, with 100 GB for the system and boot partitions and 1,024 GB for drive D. You can prepare a 100-GB disk and a 1,024-GB disk on the target server for receiving data from the source system disk.

---

#### CAUTION

The system and boot partitions on the source server can only be migrated to the first disk on the target server.

You can view the total size of the two partitions using Disk Management in Windows.

---

### Procedure

- a. Go to the Agent configuration directory on the source server.
  - Agent (Python 3)  
**C:\SMS-Agent-Py3\config**
  - Agent (Python 2)  
**C:\SMS-Agent-Py2\config**
- b. Modify the **disk.cfg** file as follows and save it.

```
[vol_mount_modify]
D = 2
E = 3
...
```

#### NOTE

1. **D = 2** indicates that data in drive D will be migrated to the second disk on the target server.
  2. If there are multiple partitions on the source server, and you want to migrate them to different disks on the target server, modify the **disk.cfg** file in the same way, such as D=2, E=3, F=4.
- c. Restart the Agent. You will see that the partition locations have been changed.

## Linux

You can perform a file-level migration and resize disks and partitions. For details, see [Resizing disks and partitions](#). If this method does not work, contact technical support.

## 7.9 How Do I Resolve Error "Some disks on the target server are smaller than those on the source server. Select another target server" When I Configure the Target Server?

### Symptom

When you clicked **Next: Confirm** after you select an existing ECS as the target server, message "Some disks on the target server are smaller than those on the source server. Select another target server" was displayed.

### Possible Causes

SMS has the following requirements for a target server:

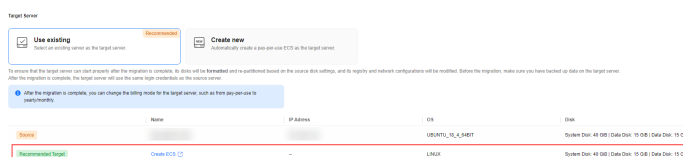
- The target server must have at least as many disks as the source server.
- Each disk on the target server must be at least as large as the paired disk on the source server.

The ECS you selected fails to meet the second requirement.

### Solution

**Step 1** On the ECS console, locate any target server disks that are smaller than their pairs on the source server and expand the disk capacity.

You can expand the target server disks based on the recommended disk sizes on the **Configure Target** page of the SMS console.



If the capacity requirement can be met by adjusting the disk mounting sequence, perform the following steps:

1. Go to the ECS console and stop the target server.
2. Detach all of the disks from the target server.
3. Attach these disks back to the target server based on the recommended disk sequence displayed on the **Configure Target** page of the SMS console.

**Step 2** Switch to the SMS console and select the target server you just configured.

----End



## 7.10 Can SMS Migrate Local Disks on a Source Server?

SMS cannot migrate local disks on source servers. You are advised to replace the local disks with [EVS disks](#).

## 7.11 When I Migrate a Windows Source Server from Alibaba Cloud, Why Do I Need to Choose a Target Disk at Least 1 GB Larger than the Paired GPT Source Disk?

### Scenario

You wanted to migrate a Windows server from Alibaba Cloud. The server had a 40-GB GPT disk, and the disk only had a single partition. When you configured the target server, you chose a 40-GB disk as the disk pair, and the system displayed the message "Some disks on the target server are smaller than those on the source server. Select another target server." The size recommended for this target server disk is 41 GB.

### Possible Causes

When a disk is formatted using GPT, an MSR partition is automatically generated. This partition is invisible to users and can only be viewed using DiskPart.

On Alibaba Cloud, an MSR partition occupies 15 MB.

On Huawei Cloud, an MSR partition occupies 128 MB.

When a GPT disk is migrated from Alibaba Cloud to Huawei Cloud, 113 MB more space needs to be reserved for the MSR partition. In addition, EVS requires that disk capacity be expanded in increments of 1 GB. Therefore, the paired target server disk must be at least 1 GB larger than the source GPT disk.

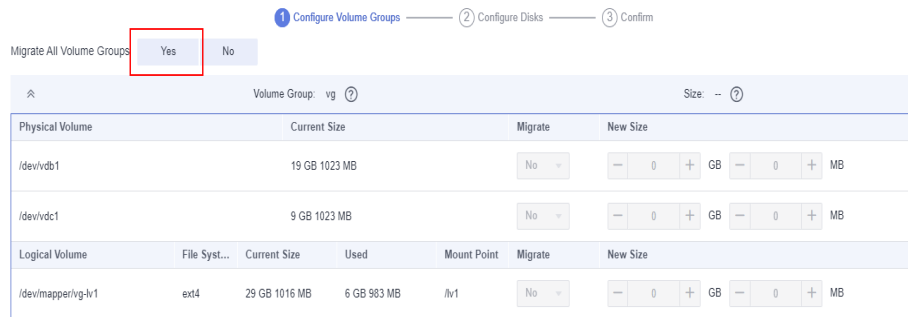
### Solutions

- Solution 1  
Expand the capacity of the target server disk to be at least the size recommended by the system.
- Solution 2  
[Shrink the source disk partition.](#)

## 7.12 Why Can't I Specify Whether to Migrate a Physical Volume When I Resize Disk Partitions in Linux?

- Case 1: For a physical volume, **Migrate** is set to **No** and cannot be modified because it is grayed out.

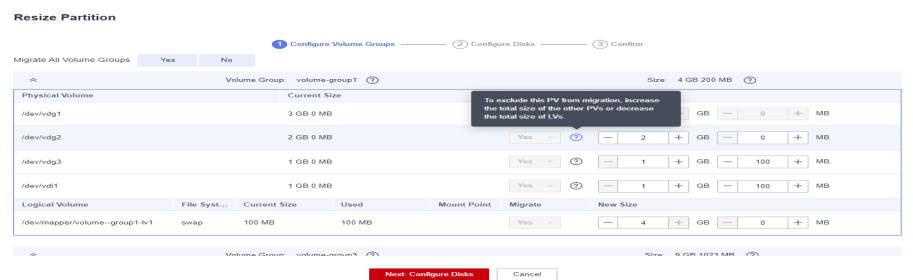
If none of the logical volumes in a volume group are migrated, their physical volumes are not migrated by default. If you want to change the settings, select **Yes** for **Migrate All Volume Groups** and try again.



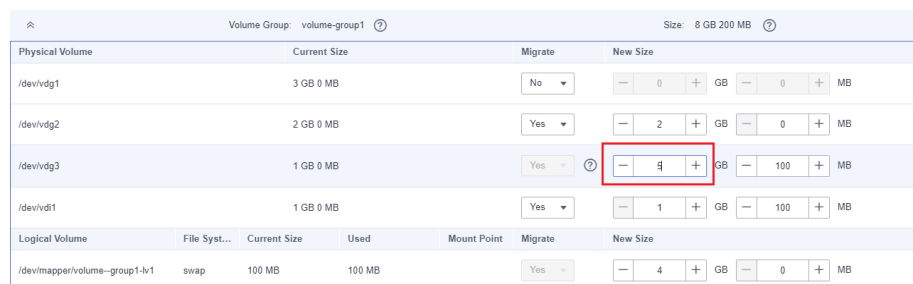
- Case 2: For a logical volume, **Migrate** is set to **Yes** and cannot be modified because it is grayed out.

If there are physical volumes that do not need to be migrated, increase the total size of the other physical volumes or decrease the total size of logical volumes, to ensure that the total size of physical volumes is larger than that of logical volumes.

For details, see [What Are the Rules for Resizing Volume Groups, Disks, and Partitions?](#)



**Figure 7-2** Increasing the total size of the other physical volumes



**Figure 7-3** Decreasing the size of a logical volume or excluding a logical volume from migration

| Physical Volume                |  | Current Size | Migrate      | New Size |             |         |          |      |
|--------------------------------|--|--------------|--------------|----------|-------------|---------|----------|------|
| /dev/vdg1                      |  | 3 GB 0 MB    | No           | 0        | 0 MB        |         |          |      |
| /dev/vdg2                      |  | 2 GB 0 MB    | Yes          | 2        | 0 MB        |         |          |      |
| /dev/vdg3                      |  | 1 GB 0 MB    | Yes          | 1        | 100 MB      |         |          |      |
| /dev/vdl1                      |  | 1 GB 0 MB    | Yes          | 1        | 100 MB      |         |          |      |
| Logical Volume                 |  | File Syst... | Current Size | Used     | Mount Point | Migrate | New Size |      |
| /dev/mapper/volume--group1-lv1 |  | swap         | 100 MB       | 100 MB   |             | Yes     | 1        | 0 MB |

- Case 3: In a Linux block-level migration, you can choose to migrate either all or none of the volume groups.  
For a block-level migration of a Linux server using LVM, physical volumes and logical volumes cannot be resized.

### 7.13 Why Can't I Specify Whether to Migrate a Logical Volume When I Resize Disk Partitions in Linux?

- Case 1: Logical volumes without mount points are migrated by default.
- Case 2: For a logical volume, **Migrate** is set to **No** and cannot be modified because it is grayed out.

To migrate this logical volume, increase the volume group size to ensure that it is larger than the total logical volume size.

For details, see [What Are the Rules for Resizing Volume Groups, Disks, and Partitions?](#)

| Physical Volume                |  | Current Size | Migrate      | New Size |                |         |          |      |
|--------------------------------|--|--------------|--------------|----------|----------------|---------|----------|------|
| /dev/vdk1                      |  | 9 GB 1023 MB | Yes          | 6        | 1,023 MB       |         |          |      |
| Logical Volume                 |  | File Syst... | Current Size | Used     | Mount Point    | Migrate | New Size |      |
| /dev/mapper/volume--group3-lv5 |  | xfs          | 3 GB 0 MB    | 36 MB    | /mnt/lvm-xf... | No      | 0        | 0 MB |
| /dev/mapper/volume--group3-lv6 |  | xfs          | 4 GB 0 MB    | 846 MB   | /mnt/lvm-xf... | Yes     | 4        | 0 MB |

**Figure 7-4** Increasing the total size of physical volumes

| Physical Volume                |  | Current Size | Migrate      | New Size |                |         |          |      |
|--------------------------------|--|--------------|--------------|----------|----------------|---------|----------|------|
| /dev/vdk1                      |  | 9 GB 1023 MB | Yes          | 10       | 0 MB           |         |          |      |
| Logical Volume                 |  | File Syst... | Current Size | Used     | Mount Point    | Migrate | New Size |      |
| /dev/mapper/volume--group3-lv5 |  | xfs          | 3 GB 0 MB    | 36 MB    | /mnt/lvm-xf... | No      | 0        | 0 MB |
| /dev/mapper/volume--group3-lv6 |  | xfs          | 4 GB 0 MB    | 846 MB   | /mnt/lvm-xf... | Yes     | 4        | 0 MB |

- Case 3: In a Linux block-level migration, you can choose to migrate either all or none of the volume groups.

For a block-level migration of a Linux server using LVM, physical volumes and logical volumes cannot be resized.

## 7.14 What Are the Rules for Resizing Volume Groups, Disks, and Partitions?

**Table 7-1** Rules for resizing disks and partitions in Windows

| Item           | Minimum Size                                                                                                                                                                                                                                                                                                                                                                                                           | Maximum Size                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Disk           | <ul style="list-style-type: none"> <li>• System disk, the larger value between:                             <ul style="list-style-type: none"> <li>- Total partition size after resizing</li> <li>- 40 GB</li> </ul> </li> <li>• Data disk, the larger value between:                             <ul style="list-style-type: none"> <li>- Total partition size after resizing</li> <li>- 10 GB</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• System disk: 1,024 GB</li> <li>• Data disk: 32,768 GB</li> </ul> |
| Disk partition | The smaller value between: <ul style="list-style-type: none"> <li>• Used space + 1 GB</li> <li>• Size before resizing</li> </ul>                                                                                                                                                                                                                                                                                       | Disk size after resizing – Total size of the other partitions on the disk                                 |

**Table 7-2** Rules for resizing volumes, disks, and partitions in Linux

| Scenario | Item                | Minimum Size                                                                                                                                                       | Maximum Size                                                              |
|----------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| LVM      | Logical volume (LV) | The smaller value between: <ul style="list-style-type: none"> <li>• Used space + 1 GB</li> <li>• Size before resizing</li> </ul>                                   | Volume group (VG) size after resizing – Size of the other LVs in the VG   |
|          | Physical disk       | The larger value between: <ul style="list-style-type: none"> <li>• 10 GB</li> <li>• Total size of LVs in the VG – Total size of the other PVs in the VG</li> </ul> | 32,768 GB                                                                 |
|          | Physical partition  | The larger value between: <ul style="list-style-type: none"> <li>• 1 GB</li> <li>• Total size of LVs in the VG – Total size of the other PVs in the VG</li> </ul>  | Disk size after resizing – Total size of the other partitions on the disk |

| Scenario | Item      | Minimum Size                                                                                                                                                                                                                                         | Maximum Size                                                                                          |
|----------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Non-LVM  | Disk      | <ul style="list-style-type: none"> <li>System disk, the larger value between:                             <ul style="list-style-type: none"> <li>Total partition size after resizing</li> <li>40 GB</li> </ul> </li> <li>Data disk: 10 GB</li> </ul> | <ul style="list-style-type: none"> <li>System disk: 1,024 GB</li> <li>Data disk: 32,768 GB</li> </ul> |
|          | Partition | The smaller value between: <ul style="list-style-type: none"> <li>Used space + 1 GB</li> <li>Size before resizing</li> </ul>                                                                                                                         | Disk size after resizing – Total size of the other partitions on the disk                             |

## 7.15 How Do I Migrate a Server with a System Disk Larger Than 1 TB?

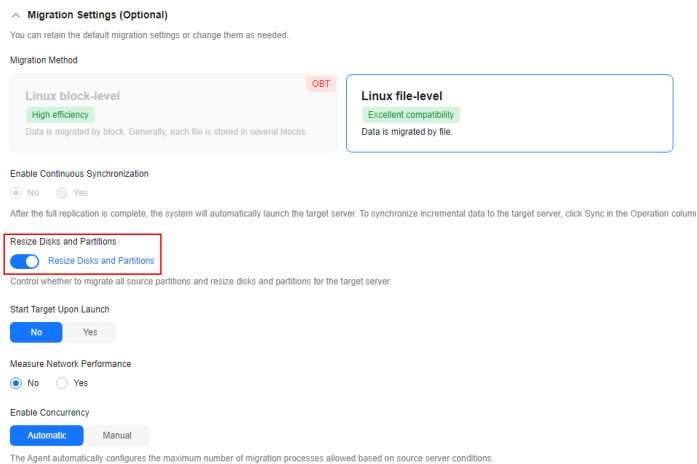
### Background

SMS is restricted by an IMS limitation on the system disk size. When you use an image to create an ECS, the system disk cannot be larger than 1 TB. If the system disk of the source server to be migrated is larger than 1 TB, the migration can only be performed when certain conditions are met and the disk is resized.

### Linux File-Level Migration

If the source system disk is larger than 1 TB but the disk usage is low (less than 1 TB of space used), you can resize the system disk and system partition of the target server before migration.

- Step 1** Install the Agent on the source server. For more information, see [Installing the Agent](#).
- Step 2** Start the Agent. After the Agent is started, [configure the target server](#). When you configure the basic settings, select **Yes** for **Partition Resize** to resize the disks and partitions for the target server.



**Step 3** In the **Resize Partition** window, set a new size for the system disk and partition as needed.

**Step 4** Click **Next: Configure Target** to complete the migration configuration and start the migration.

----End

## Windows Migration

See [How Do I Resize Partitions and Disks on a Target Server Running Windows Before the Migration?](#)

## 7.16 How Do I Manually Detach the Temporary System Disk from My Target Server and Re-attach the Original System Disk?

The solution described here works for ECSs. It does not work for FlexusL instances because FlexusL does not allow you to detach or attach disks. If your target server is a FlexusL instance, submit a service ticket to get technical support.

### Symptom

After you deleted a failed or suspended migration task from the SMS console, the target server was still using the temporary system disk whose name starts with **SMS**, and its original system disk could not be re-attached.

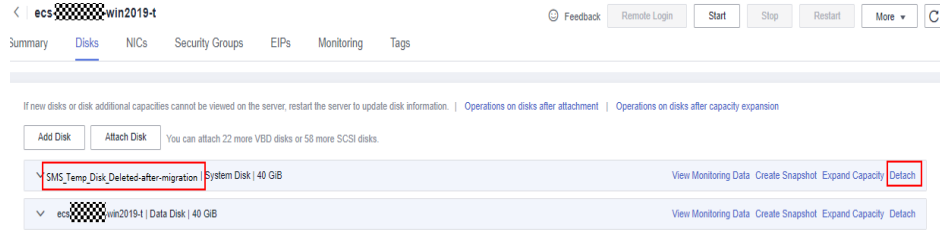
### Possible Causes

If a migration task fails or is suspended, the system will not automatically detach the temporary system disk and re-attach the original system disk. If you want to restore this server to its original condition, you need to perform this step manually.

### Solution

**Step 1** Detach the temporary system disk.

1. Sign in to the ECS console.
2. In the server list, locate this server and click its name.
3. Click the **Disks** tab, locate disk **SMS-Temp\_Disk\_Deleted-after-migration**, and click **Detach**.



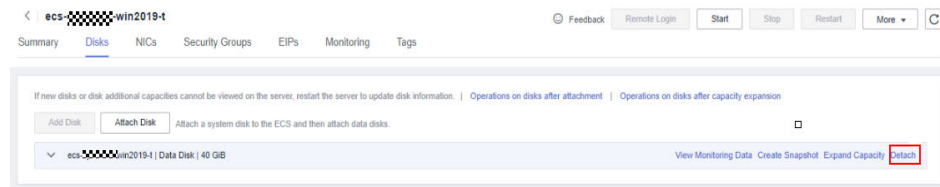
4. Click **Yes**.

**Step 2** Detach the original system disk.

**NOTE**

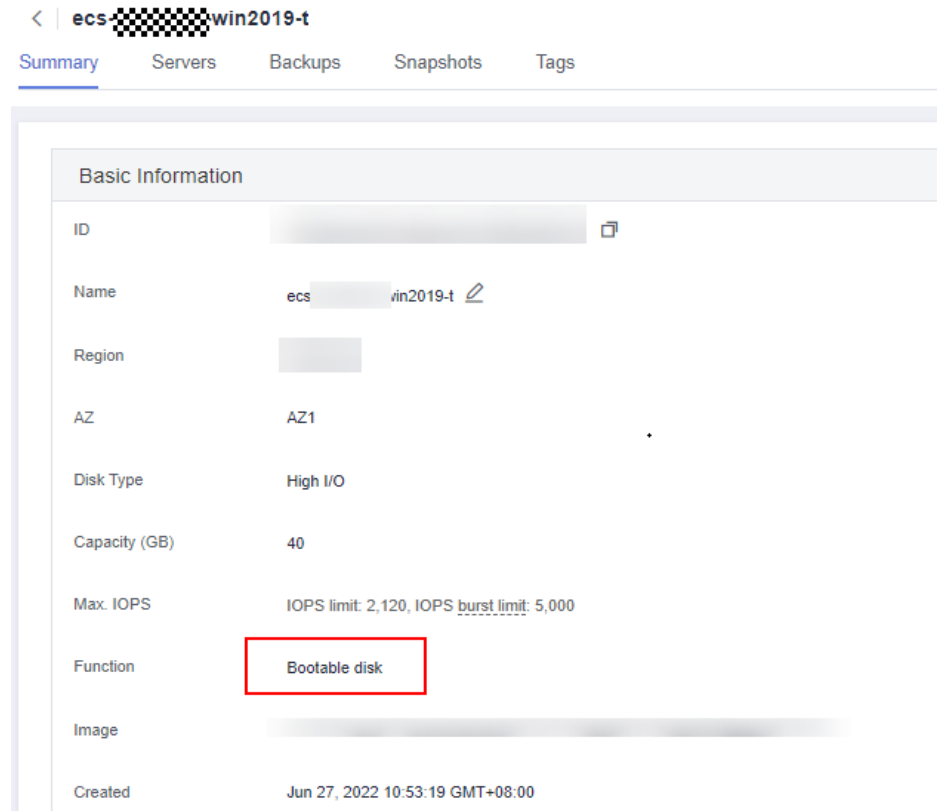
The original system disk is attached as a data disk. You need to detach it and attach it as a system disk.

1. Detach the original system disk from the target server by referring to step 1.



2. Switch to the EVS console. In the disk list, locate the disk you detached and click the disk name.

Check whether the disk has changed from a **Data disk** to a **Bootable disk**. If it has, go to the next step.



**Step 3** Re-attach the original system disk.

Re-attach the disk you detached in step 2 as a system disk to the target server. For details, see [Calling APIs](#).

----End

## 7.17 Why Is the Amount of Migrated Data Less Than the Total Amount of Data to Be Migrated After the Migration Is Complete?

### Symptom

After the migration was complete, the amount of migrated data was less than the total amount of data scanned on the source server.

### Possible Causes

The Agents collect how much data to be migrated on the source server using the **df-TH** command. The amount of migrated data displayed on the console is the combined size of all the migrated files.

If these two amounts are different, the possible causes are as follows:

- **Possible cause 1: Some files were deleted from the source server, but the processes using these files still exist.**



The **rm** command or other software is often used to delete files. If a file is used by a running process when the file is deleted, the file will still be accessible to this process and will continue to occupy disk space.

- a. On the source server, run **df -TH** to check whether the used disk space is the same as the total amount of migrated data.

```
[root@PROD-SCRM-WE7003 /]# df -TH
Filesystem Type Size Used Avail Use% Mounted on
devtmpfs devtmpfs 4.0G 0 4.0G 0% /dev
tmpfs tmpfs 4.0G 0 4.0G 0% /dev/shm
tmpfs tmpfs 4.0G 562k 4.0G 1% /run
tmpfs tmpfs 4.0G 0 4.0G 0% /sys/fs/cgroup
/dev/vda1 ext4 212G 136G 67G 68% /
tmpfs tmpfs 792M 0 792M 0% /run/user/0
[root@PROD-SCRM-WE7003 /]#
```

- b. In the root directory of the source server, run **du -sh \*** to check the usage of disk directories.

```
[root@PROD-SCRM-WE7003 /]# du -sh *
0 bin
147M boot
0 dev
39M etc
38G home
0 lib
0 lib64
16K lost+found
4.0K media
4.0K mnt
38M opt
du: cannot access 'proc/8184/task/8184/fd/4': No such file or directory
du: cannot access 'proc/8184/task/8184/fdinfo/4': No such file or directory
du: cannot access 'proc/8184/fd/4': No such file or directory
du: cannot access 'proc/8184/fdinfo/4': No such file or directory
0 proc
264K root
548K run
0 sbin
4.0K srv
0 sys
557M tmp
2.1G usr
3.3G var
```

In the above figures, **df** reports a larger data volume than **du**.

- c. Run the following command on the source server:

```
lsof -n | grep deleted
```

If information similar to the following is displayed, some files were deleted but are still in use by some running processes.

```
tmp/ibSF7sXt (deleted)
/tmp/ibCCM4U4 (deleted)
/tmp/ibKuAG2E (deleted)
```

- If the migration task can be finished and the target server can be launched, the data not migrated has no effects on the target server, and this problem can be ignored.
- (Optional) On the source server, run **lsof -n | grep deleted** and stop all the processes returned.
- (Optional) Restart the source server at a right time to stop the processes.

- **Possible cause 2: Some directories were excluded from migration.**

In Linux, the Agent does not migrate files in the following directories by default:

`/proc/*`

`/sys/*`

`/lost+found/*`

`/var/lib/ntp/proc/*`

But these directories are counted in the total volume of source data scanned by the Agent.

In the root directory of the source server, run `du -sh *` to check how much space is occupied by directories that were not migrated, such as `/proc/*`, `/sys/*`, `/lost+found/*`, and `/var/lib/ntp/proc/*`.

If the total size of these excluded directories equals to the size of data not migrated, the migration is successful, and this problem can be ignored.

- **Possible cause 3: There were data changes on the source server during the migration.**

When a migration starts, the Agent runs the `df -TH` command to obtain information about directories where each partition is mounted and traverses these directories to calculate the amount of data to be migrated.

Data that has been migrated is not affected by changes to the source data. However, if data that has not been migrated changes, the most current version is what migrated.

The amount of data displayed on the SMS console is collected from the source server during the first scan. During the migration, if a large amount of data is changed on the source server, for example, a large amount of data is deleted before being migrated, the amount of data migrated may be less than the total amount of data scanned for the first time.

You can run `df -TH` on the source and target servers for comparison.

- **Possible cause 4: A large number of sparse files existed on the source server.**

Sparse files are scanned but ignored during the migration. This may lead to the amount of migrated data less than the total amount of data calculated during the first scan.

 **NOTE**

There are many ways to generate sparse files in Linux, such as running the `dd` command.

## 7.18 How Do I Merge Disks During a Linux Migration?

### Scenario

When you migrate a Linux server, you can migrate partitions from different disks on the source server to a single disk on the target server.

### Solution

You can modify the SMS-Agent configuration file on the source server.

**NOTICE**

- The modified configuration file will only be used for the target server. It will not affect the source server.
- The migration progress bar on the SMS console may not be able to show the real-time progress after you modify the configuration file.

**Step 1** On the source server, go to the **config** directory in the Agent installation directory.

```
cd SMS-Agent/agent/config
```

**Step 2** Open and edit the **disk.cfg** configuration file in **config**.

```
vi disk.cfg
```

**Step 3** Modify parameters under **vol\_disk\_modify**.

- **vol\_name**: Enter the names of the source partitions.
- **new\_vol\_name**: Enter the names of the target partitions.
- **disk\_name**: Enter the names of disks where the source partitions are located.
- **new\_disk\_name**: Enter the names of target disks.

In this example, we will migrate the **vdc1** partition on the **vdc** disk and the **vdd1** partition on the **vdd** disk of the source server to the **vdb4** and **vdb5** partitions on the **vdb** disk of the target server.

```
[vol_disk_modify]
vol_name=/dev/vdc1;/dev/vdd1
new_vol_name=/dev/vdb4;/dev/vdb5
disk_name=/dev/vdc;/dev/vdd
new_disk_name=/dev/vdb;/dev/vdb
```

**CAUTION**

- Use semicolons (;) to separate disk or partition names. Make sure that the same number of values configured for each of the above four parameters.
- Make sure the target disk is larger than the total size of all the partitions on it, or the migration may fail. If you need to resize the target disk or add a new disk, see [Resizing Disks](#) and [Adding Disks](#).
- Make sure that you follow the right naming format of "Disk name+Partition number", for example, vdb4. The new partition name must be unique.
- Neither LVM nor Btrfs partitions can be merged.

**Step 4** Save settings in the **disk.cfg** configuration file and restart the Agent.

```
:wq
```

----End

## Resizing Disks

You can resize target disks by modifying the **disk\_size\_modify** parameter in the **disk.cfg** configuration file.

- **disk\_name**: Enter the names of target disks.

- **adjust\_size**: Enter the new disk sizes.

In the following example, we will change the size of the target disk **vdb** to 40 GB.

```
[disk_size_modify]
disk_name=/dev/vdb
adjust_size=40G
```

---

 **CAUTION**

- If the target disk is a system disk, its size range must be from 40 GB to 1024 GB.
  - If the target disk is a data disk, its size range must be from 40 GB to 32,768 GB.
- 

## Adding Disks

You can add disks by modifying the **disk\_add** parameter in the **disk.cfg** configuration file.

- **disk\_name**: Enter the names of new disks.
- **adjust\_size**: Enter the sizes of new disks, in GB.

In the following example, we will add a 10 GB disk called **vdd** to a target server.

```
[disk_add]
disk_name=/dev/vdd
disk_size=10G
```

---

 **CAUTION**

- The disk name must comply with the naming rules and must be unique.
  - The disk size range must be from 10 GB to 32,768 GB.
- 

## 7.19 How Do I Split a Disk During a Linux Migration?

### Scenario

When you migrate a Linux server, you can migrate partitions from a disk on the source server to different disks on the target server.

If you need to reduce the size of a partition or disk on the target server, you can resize the partition or disk when creating a task on the SMS console after the SMS-Agent is started.

### Solution

You can modify the SMS-Agent configuration file on the source server.

**NOTICE**

- The modified configuration file will only be used for the target server. It will not affect the source server.
- The migration progress bar on the SMS console may not be able to show the real-time progress after you modify the configuration file.

## Splitting by Partition

You can split a partition by modifying the partition mapping.

**Step 1** On the source server, go to the **config** directory in the Agent installation directory.

```
cd SMS-Agent/agent/config
```

**Step 2** Open and edit the **disk.cfg** configuration file in **config**.

```
vi disk.cfg
```

**Step 3** Modify parameters under **vol\_disk\_modify**.

- **vol\_name**: Enter the names of the original partitions.
- **new\_vol\_name**: Enter the names of the new partitions.
- **disk\_name**: Enter the names of disks where the original partitions are located.
- **new\_disk\_name**: Enter the names of target disks where the new partitions are located.

In the following example, we will migrate the **vda2** and **vda3** partitions from the source disk **vda** to the target disks **vdb** and **vdc**.

```
[vol_disk_modify]
vol_name=/dev/vda2;/dev/vda3
new_vol_name=/dev/vdb2;/dev/vdc2
disk_name=/dev/vda;/dev/vda
new_disk_name=/dev/vdb;/dev/vdc
```

**CAUTION**

- Use semicolons (;) to separate disk or partition names. Make sure that the same number of values configured for each of the above four parameters.
- Make sure that the available space on the target server can accommodate the new partitions, or the migration may fail. To adjust the size, see [Resizing Disks](#) or [Adding Disks](#).
- Make sure that you follow the right naming format of "Disk name+Partition number", for example, vdb4. The new partition name must be unique.

**Step 4** Save settings in the **disk.cfg** configuration file and restart the Agent.

```
:wq
```

```
----End
```

## Resizing Disks

You can resize target disks by modifying the **disk\_size\_modify** parameter in the **disk.cfg** configuration file.

- **disk\_name**: Enter the names of target disks.
- **adjust\_size**: Enter the new disk sizes.

In the following example, we will change the size of the target disk **vdb** to 40 GB.

```
[disk_size_modify]
disk_name=/dev/vdb
adjust_size=40G
```

---

### CAUTION

- If the target disk is a system disk, its size range must be from 40 GB to 1024 GB.
  - If the target disk is a data disk, its size range must be from 40 GB to 32,768 GB.
- 

## Adding Disks

You can add disks by modifying the **disk\_add** parameter in the **disk.cfg** configuration file.

- **disk\_name**: Enter the names of new disks.
- **adjust\_size**: Enter the sizes of new disks, in GB.

In the following example, we will add a 10 GB disk called **vdd** to a target server.

```
[disk_add]
disk_name=/dev/vdd
disk_size=10G
```

---

### CAUTION

- The disk name must comply with the naming rules and must be unique.
  - The disk size range must be from 10 GB to 32,768 GB.
- 

## 7.20 How Do I Detach the Temporary System Disk from My Target Server and Re-attach the Original System Disk using SMS-Agent?

### Windows

**Step 1** Go to the Agent installation directory on the source server.

- Windows Agent (Python 3): **C:\SMS-Agent-Py3\script**
- Windows Agent (Python 2): **C:\SMS-Agent-Py2\script**

**Step 2** Double-click the **rollback.bat** script in the **script** directory.

**Step 3** Enter the AK/SK pair and other parameters as prompted.

```
C:\WINDOWS\system32\cmd.exe - sms_agent_cmd_py3.exe rollback
sms\util\log_util.py:170: PytzUsageWarning: The localize method is no
old attribute (PEP 495). For more details on migrating to a PEP 495-co
on-shim. readthedocs.io/en/latest/migration.html

start to check ak/sk info from iaas...

Please input AK(Access Key ID) of Public Cloud:
Please input SK(Secret Access Key) of Public Cloud:
Please input region_id ::
Please input target_server_id ::
Please input system_disk_id ::
Please input migration_disk_id ::
Please input task_id ::
```

- **AK/SK (Access Key ID/Secret Access Key)**: indicates the AK/SK pair of your target cloud account. For details about how to obtain them, see [How Do I Obtain an Access Key \(AK/SK\)?](#)
- **region\_id**: indicates the ID of the region where the target server is located, for example, ap-southeast-3 for AP-Singapore.
- **target\_server\_id**: specifies the ID of the target server.
- **system\_disk\_id**: specifies the ID of the original system disk on the target server.
- **migration\_disk\_id**: specifies the ID of the temporary system disk (containing agent image) created in the migration task.
- **task\_id**: specifies the ID of the migration task. If you do not know the migration task ID, open the ...\**config\rollback.cfg** file in the Agent installation directory and change the value of **enable\_check\_task** to **false**. Then you do not need to enter the migration task ID. Then, run the **rollback.bat** script again.

**Step 4** Wait for the script execution to complete.

----End

## Linux

**Step 1** Go to the Agent installation directory .../**SMS-Agent** on the source server.

**Step 2** Run the **./rollback.sh** command to run the **rollback** script.

**Step 3** Enter the AK/SK pair and other parameters as prompted.

```
/SMS-Agent# ./rollback.sh
rollback task is starting, this may take a few minutes...

start to check ak/sk info from iaas...

Please input AK(Access Key ID) of Public Cloud:X
Please input SK(Secret Access Key) of Public Cloud:*****

Please input region_id:
Please input target_server_id:
Please input system_disk_id:
Please input migration_disk_id:
Please input task_id:
```

- **AK/SK (Access Key ID/Secret Access Key)**: indicates the AK/SK pair of your target cloud account. For details about how to obtain them, see [How Do I Obtain an Access Key \(AK/SK\)?](#)
- **region\_id**: indicates the ID of the region where your target server is located, for example, ap-southeast-3 for AP-Singapore.

- **target\_server\_id**: specifies the ID of the target server.
- **system\_disk\_id**: specifies the ID of the original system disk on the target server.
- **migration\_disk\_id**: specifies the ID of the temporary system disk (containing agent image) created in the migration task.
- **task\_id**: specifies the ID of the migration task. If you do not know the migration task ID, open the `.../SMS-Agent/agent/configconfig/rollback.cfg` file in the Agent installation directory and change the value of **enable\_check\_task** to false. Then you do not need to enter the migration task ID. Then, run the **rollback.bat** script again.

**Step 4** Wait for the script execution to complete.

----End



# 8 Migration or Synchronization Failures

## 8.1 After the Migration Is Complete, How Do I Replicate Any New Data from the Source Server to the Target Server?

To replicate the incremental data from a source server to a launched target server, click **Sync** in the **Operation** column to start an incremental replication. When the migration status changes to **Continuous sync**, click **Launch Target**. When the migration status changes to **Completed**, the incremental data has been replicated to the target server.

## 8.2 What Do I Do If the SMS-Agent Exits Suddenly and Disconnects a Windows Source Server from the SMS Console During a Migration?

### Symptom

During the migration, the Windows source server was suddenly disconnected from the SMS console. It was found that the SMS-Agent program exited from the source server.

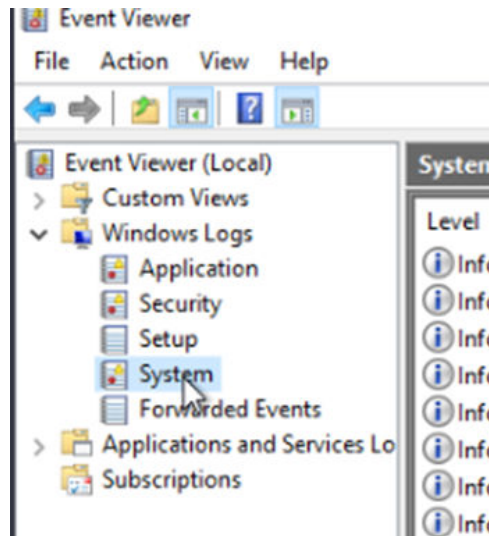
### Possible Causes

The SMS-Agent program may exit if the Customer Experience Improvement Program on the source server is turned on.

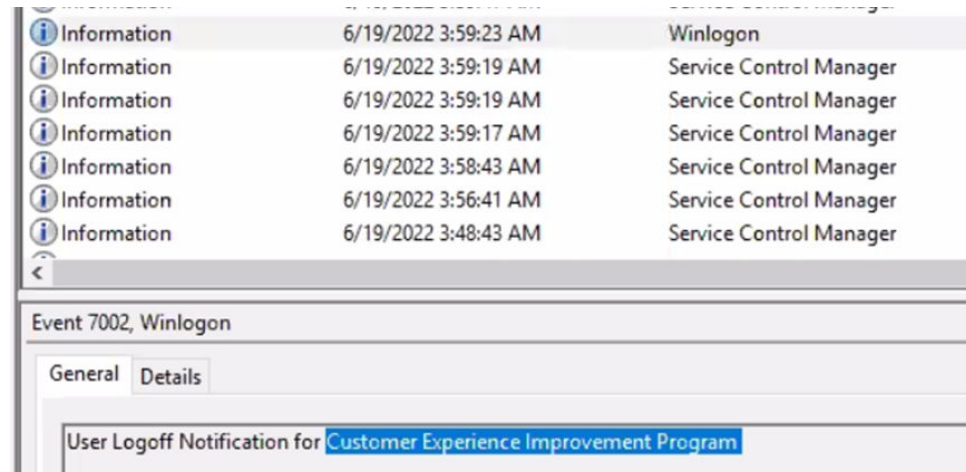
1. Check the disconnection time in the SMS-Agent migration logs stored in **C:\SMS-Agent-Py3\SmsAgent\_Info.log**.

```
2022-01-18 19:21:08.635000-05:00 - INFO - Dummy-18 - task_util.py - migration_process_monitor - [line:153] - migrate speed: 0.00, total size:425766285312, replicate size:0, cpu usage: 1.4, mem usage: 17.9, progress: 0
2022-01-18 19:21:08.638000-05:00 - INFO - Dummy-18 - migrator.py - get_current_task_percentage - [line:198] - nt_clone_get_status 0
2022-01-18 19:21:08.640000-05:00 - INFO - Dummy-18 - migrator.py - get_current_task_percentage - [line:207] - Current task percentage: 0
```

2. On the source server, open **Event Viewer > Windows Logs > System**.



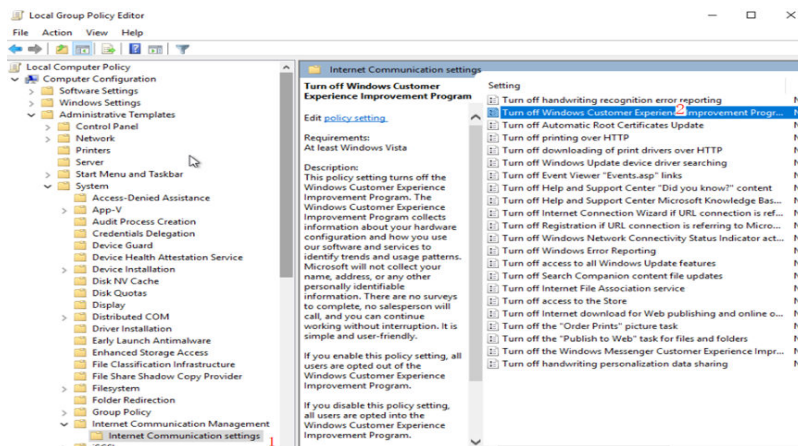
3. In the system logs, check the log generated at the SMS-Agent disconnection time. The log says that the source server was automatically restarted due to a user logout notification for the Customer Experience Improvement Program.



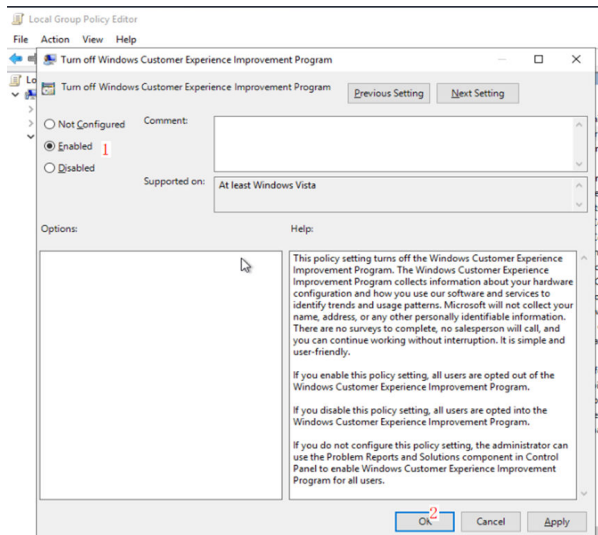
## Solution

Turn off the Customer Experience Improvement Program.

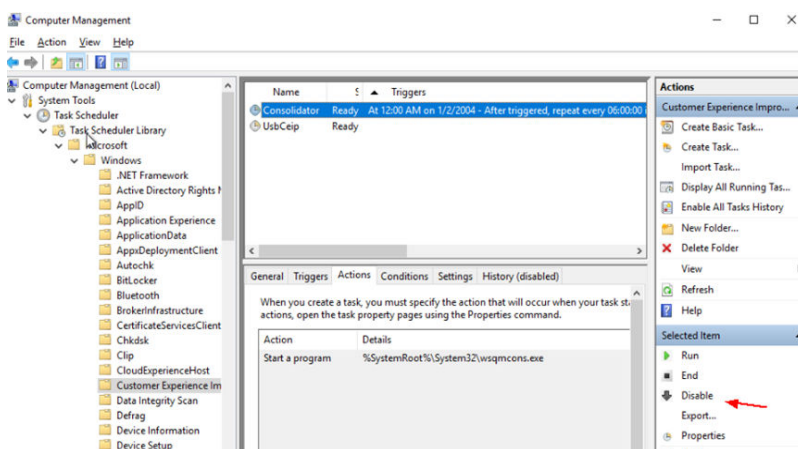
- Step 1** On the source server, open the **Run** window, enter **gpedit.msc**, and click **OK**.
- Step 2** In the navigation tree, choose **Computer Configuration > Administrative Templates > System > Internet Communication Management > Internet Communication settings**, and locate **Turn off Windows Customer Experience Improvement Program**.

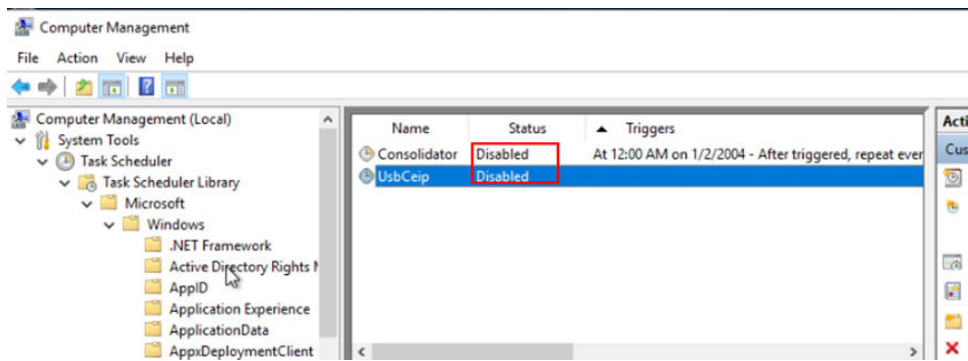


**Step 3** Double-click **Turn off Windows Customer Experience Improvement Program**. In the displayed window, select **Enabled** and click **OK**.

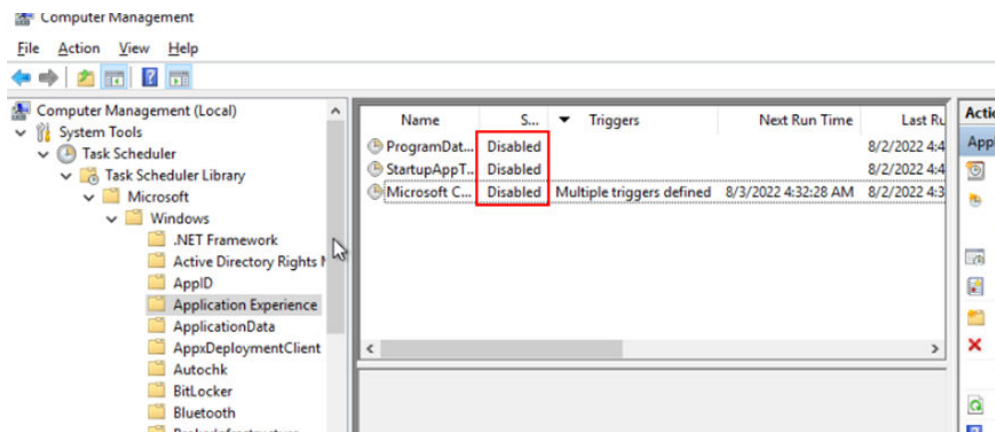
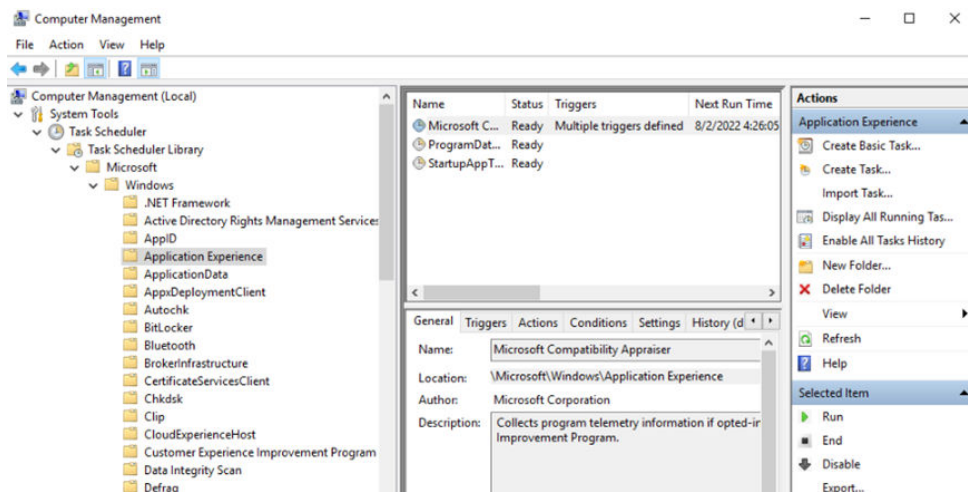


**Step 4** Open **Computer Management**. Choose **System Tools > Task Scheduler Library > Microsoft > Windows > Customer Experience Improvement Program**, and disable all tasks.





**Step 5** Choose **System Tools > Task Scheduler Library > Microsoft > Windows > Application Experience**, and disable all tasks.



**Step 6** Delete the migration task on the SMS console, create a task for the source server again, and start the migration task.

----End

# 9 Target Server Configuration and Launch

## 9.1 What Are the Differences Between Target and Source Servers After the Migration?

The target server settings such as OS, OS files, and parameters you configure when you create a migration task are applied on the target server. So there are some differences between the source and target servers. They are listed in the following tables (for reference purposes only and with the final interpretation by SMS). In addition, the target server settings will change with system updates after the migration.

**Table 9-1** Items that are not changed (applicable to both Windows and Linux)

| Item                     | After Migration                                                                           | Remarks                                                                                                                                                                                                                              |
|--------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OS type                  | The target server runs the same type of OS as the source server.                          | The original OS of the target server is overwritten.                                                                                                                                                                                 |
| IP address               | The IP addresses of the target server are used.                                           | The target server uses its original public IP address. If the private IP address of the source server is included in the network segment of the VPC to which the target server belongs, the private IP address can remain unchanged. |
| Username                 | The target server uses the same username as the source server.                            | None                                                                                                                                                                                                                                 |
| Password/<br>Certificate | The target server uses the same username, certificate, and password as the source server. | None                                                                                                                                                                                                                                 |

| Item | After Migration                                                                                               | Remarks |
|------|---------------------------------------------------------------------------------------------------------------|---------|
| Data | The target server has the same data, including files, applications, and configurations, as the source server. | None    |

**Table 9-2** Items that are changed - Windows

| Item                      | After Migration                                                                                                                                                                                                                                                                                                                                 | Remarks                                                                                                                                                                                                                                 |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Host name                 | The host name may be changed.                                                                                                                                                                                                                                                                                                                   | Services associated with the host name may be affected.                                                                                                                                                                                 |
| MAC address               | The MAC address of the target server is used.                                                                                                                                                                                                                                                                                                   | A MAC address is a unique identifier assigned to a NIC when a target server is created.                                                                                                                                                 |
| DNS                       | <p>The DNS settings are probably changed on the target server.</p> <ul style="list-style-type: none"> <li>• The DNS configuration files on the target server are the same as those on the source server.</li> <li>• The DNS settings of the subnet that the target server belongs to affect the DNS resolution of the target server.</li> </ul> | After the migration is complete, you can modify the DNS settings of the target server.                                                                                                                                                  |
| EIP                       | The EIP bound to the target server is used.                                                                                                                                                                                                                                                                                                     | None                                                                                                                                                                                                                                    |
| Disk and partition sizes  | The disk and partition settings from the source server are retained on the target server.                                                                                                                                                                                                                                                       | If you choose to resize disks and partitions for the target server when you configure the migration task, the new disk and partition settings are applied on the target server.                                                         |
| Security Identifier (SID) | The SID of the target server is used.                                                                                                                                                                                                                                                                                                           | In Windows, a SID is a unique, immutable identifier for a server in a given domain. If the source server is added to a domain, the SID will become invalid on the target server. You need to add the target server to the domain again. |

| Item                   | After Migration                                                                      | Remarks                                                                             |
|------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Registry and BCD files | The registry and BCD file are modified as needed.                                    | SMS modifies the registry and BCD files to adapt the target server to Huawei Cloud. |
| Dynamic partitioning   | The dynamic partitioning settings are modified.                                      | This is for Windows servers that boot from BIOS.                                    |
| Driver file directory  | The source driver files are replicated to the driver directory on the target server. | None                                                                                |

**Table 9-3** Items that are changed - Linux

| Item                     | After Migration                                                                                                                                                                                                                                                                                                                                 | Remarks                                                                                                                                                                         |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Host name                | The host name may be changed.                                                                                                                                                                                                                                                                                                                   | Services associated with the host name may be affected.                                                                                                                         |
| MAC address              | The MAC address of the target server is used.                                                                                                                                                                                                                                                                                                   | A MAC address is a unique identifier assigned to a NIC when a target server is created.                                                                                         |
| DNS                      | <p>The DNS settings are probably changed on the target server.</p> <ul style="list-style-type: none"> <li>• The DNS configuration files on the target server are the same as those on the source server.</li> <li>• The DNS settings of the subnet that the target server belongs to affect the DNS resolution of the target server.</li> </ul> | After the migration is complete, you can modify the DNS settings of the target server.                                                                                          |
| EIP                      | The EIP bound to the target server is used.                                                                                                                                                                                                                                                                                                     | None                                                                                                                                                                            |
| Disk and partition sizes | The disk and partition settings from the source server are retained on the target server.                                                                                                                                                                                                                                                       | If you choose to resize disks and partitions for the target server when you configure the migration task, the new disk and partition settings are applied on the target server. |

| Item                                        | After Migration                                                                                                                                                                                                                     | Remarks                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disk name                                   | New disk names are generated based on the virtualization type of the target server.                                                                                                                                                 | Services are not affected.                                                                                                                                                                                                                                                                                                                                                                          |
| UUIDs and PARTUUIDs of disks and partitions | New UUIDs and PARTUUIDs are generated on the target server.                                                                                                                                                                         | This only applies to Linux file-level migrations.                                                                                                                                                                                                                                                                                                                                                   |
| GRUB configuration files                    | GRUB configuration files are modified based on the boot disk or boot partition UUID on the target server.                                                                                                                           | <ul style="list-style-type: none"> <li>GRUB needs to be installed on target servers that boot from the BIOS. SMS modifies the GRUB configuration files in the <b>/boot/grub</b> directory of every target server.</li> <li>For target servers that boot from UEFI, SMS modifies UUID in the GRUB configuration files located in the <b>/boot/efi/</b> and <b>/boot/grub</b> directories.</li> </ul> |
| initrd or initramfs for startup             | SMS injects related drivers into the initrd or initramfs file.                                                                                                                                                                      | This is to ensure that the target server can start properly on Huawei Cloud.                                                                                                                                                                                                                                                                                                                        |
| X11 configuration file <b>xorg.conf</b>     | Configuration file <b>/etc/X11/xorg.conf</b> is modified on the target server.                                                                                                                                                      | This file stores the GUI and display settings. The original file is backed up as <b>/etc/X11/xorg.conf.bak</b> .                                                                                                                                                                                                                                                                                    |
| Third-party tools                           | The following tools are deleted from the target server: <ul style="list-style-type: none"> <li><b>/etc/rc.d/rc5.d/vmware-tools</b></li> <li><b>/etc/rc.d/rc3.d/vmware-tools</b></li> <li><b>/etc/init.d/vmware-tools</b></li> </ul> | None                                                                                                                                                                                                                                                                                                                                                                                                |
| SELinux security configurations             | A new <b>/.autorelabel</b> file is generated to relabel all file systems.                                                                                                                                                           | This only applies to Red Hat, CentOS, and Oracle Linux distributions.                                                                                                                                                                                                                                                                                                                               |
| Password reset plug-in                      | Password reset plug-in <b>CloudRestPwdAgent</b> is installed in the <b>/home</b> directory on the target server.                                                                                                                    | If you do not want to install this plug-in, change the value of <b>installPwdAgent</b> in the <b>g-property.cfg</b> configuration file to <b>false</b> before the migration.                                                                                                                                                                                                                        |



| Item                | After Migration                                                                                                                                                                      | Remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| System time         | NTP configuration file <b>/etc/ntp.conf</b> is modified on the target server.                                                                                                        | The system time is changed to the standard time of the region where the target server is located.                                                                                                                                                                                                                                                                                                                                                                         |
| MOTD                | The <b>/etc/motd</b> file is cleared on the target server.                                                                                                                           | By default, no startup screen message is set on the target server.                                                                                                                                                                                                                                                                                                                                                                                                        |
| fstab startup items | A new fstab file is generated based on the UUIDs and mounting statuses of partitions on the target server.                                                                           | Startup records in the original <b>/etc/fstab</b> file are commented out on the target server.                                                                                                                                                                                                                                                                                                                                                                            |
| Cloud-Init          | Cloud-Init is disabled on the target server.                                                                                                                                         | The <b>/etc/cloud/cloud.cfg</b> file is deleted.<br><b>CAUTION</b><br>After the migration is complete, you need to install and configure Cloud-Init. For details, see <a href="#">Installing Cloud-Init</a> and <a href="#">Configuring Cloud-Init</a> .                                                                                                                                                                                                                  |
| NIC settings        | SMS deletes some network-related configuration files from the <b>/etc/udev/rules.d/</b> directory, and backs up and modifies DHCP configuration files based on the target server OS. | The NIC configuration file varies with OS.<br>For example: <ul style="list-style-type: none"> <li>• ifcfg-ethx: Red Hat, CentOS, SUSE, and EulerOS</li> <li>• Yaml file: Debian and Ubuntu</li> </ul>                                                                                                                                                                                                                                                                     |
| Google services     | Services on the source platform, such as Google services, are disabled on the target server by default.                                                                              | Services from source platforms cannot run on Huawei Cloud. If these services are not disabled, the target server may fail to start or the services may be abnormal.<br>You can run the following command on the source server to check whether there are Google-related strings in the automatic startup program:<br><pre>(find /etc/systemd/system/ -name 'google*' -type l   grep 'service') &amp; (find /etc/init/ -name 'google*'   grep 'conf') 2&gt;/dev/null</pre> |

## 9.2 How Will the Authentication of a Target Server Change After the Migration?

The changes to the authentication of a target server are as follows:

- For a completed migration, the target server uses the same login credentials as the source server. Any usernames, certificates, and passwords will remain unchanged.
- For an ongoing Linux migration, the login credentials of the target server depend on the option you choose when you configure the target server.
  - If **Use existing** is selected, the target server uses its original login credentials.
  - If **Create new** is selected, a random password is generated. After the migration is complete, the target server uses the same credentials as the source server.

## 9.3 How Do I Optimize a Windows Target Server After the Migration Is Complete?

### Scenarios

After the migration is complete, you need to manually install drivers on the target server to solve compatibility issues.

### Procedure

1. Sign in to the console.
2. Under **Compute**, click **Elastic Cloud Server**.
3. In the ECS list, view the flavor of the target ECS.

ECS flavors are named in the "AB.C.D" format, for example, m2.8xlarge.8.

**A** specifies the ECS type. **B** specifies the type ID. **C** specifies the flavor size. **D** specifies the ratio of memory to vCPUs expressed in a digit. For details about ECS flavors, see [ECS Types](#).

  - If **B** of the target ECS is 1, for example, s1.small.2, the ECS uses Xen virtualization, and you will need to install the PV driver.
  - If **B** of your target ECS is not 1, for example, s2.small.3, the ECS uses KVM virtualization, and you will need to install UVP VMTools.
4. Check whether there is a PV driver or UVP VMTools software package on the target ECS based on the virtualization type queried in [3](#).
  - If there is, go to [7](#).
  - If there is not, go to [5](#).
5. Download the PV driver or UVP VMTools software package to the source server based on the virtualization type queried in [3](#). For more information, see [Obtaining Required Software Packages](#).

6. Synchronize the PV driver or UVP VMTools software package from the source server to the target ECS, and then go to [7](#).
7. Install the required drivers on the target ECS.
  - a. [Installing UVP VMTools](#).
  - b. [Installing the PV Driver](#)

## 9.4 How Do I Fix the Error "SMS.1113 Failed to reconfigure partition details on the target server" When I Launch the Target Server?

### Symptom

The target server failed to be launched, and the message "SMS.1113 Failed to reconfigure partition details on the target server" was displayed.

### Possible Causes

When the system attempted to obtain the command, the connection timed out due to an unstable network, and the target server could not be launched.

### Solution

Ensure that the source bandwidth is sufficient. Pause the migration task and then restart it.

## 9.5 After a Windows Server Is Migrated, Why Is the Used Space of C: Drive Increased?

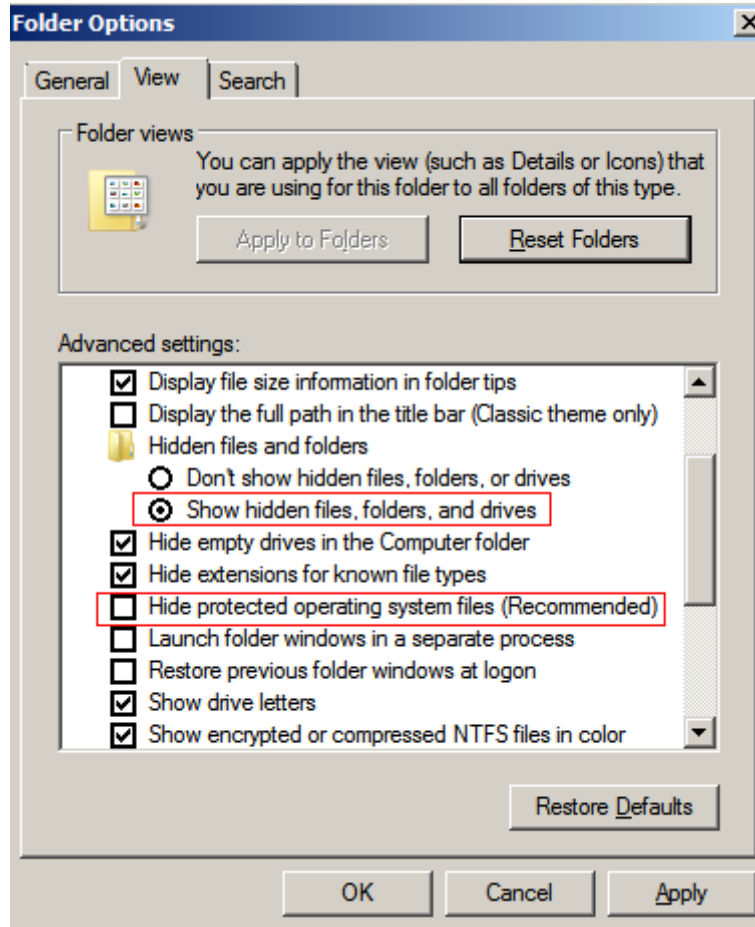
### Symptom

After a Windows server was migrated to Huawei Cloud, the used space of C: drive increased at least 1 GB.

### Possible Causes

This is a normal because the size of the paging file, used for virtual memory, tends to be larger after the migration is complete.

1. Log in to the source server.
2. Choose **Start > Control Panel > Folder Options**.  
The **Folder Options** dialog box is displayed.
3. Click the **View** tab. In the **Advanced settings** area, perform the following operations:
  - Deselect **Hide protected operating system files (Recommended)**.
  - Select **Show hidden files, folders, and drives** and click **Apply**.



4. Log in to the target server and repeat 2 and 3.
5. Compare the size of the virtual memory file **pagefile.sys** in the **Local Disk (C:)** on the source and target servers.

The **pagefile.sys** file on the target server is larger than that on the source server.

The size difference of **pagefile.sys** on the two servers should account for the difference in used space.

6. On the target server, click **Start**.
7. Choose **Control Panel > System > Advanced system settings**.

The **System Properties** dialog box is displayed.

8. Click the **Advanced** tab, click **Settings** in the **Performance** area.

The **Performance Options** page is displayed.

9. Click the **Advanced** tab, click **Change** in the **Virtual memory** area.

The **Virtual Memory** is displayed.

You can see that the target server uses **Automatically manage paging file size for all drives**. The size of virtual memory file **pagefile.sys** on the target server is equal to the size of file **Installed Memory (RAM)** on the server.

If the size of file **Installed Memory (RAM)** on the target server is different from that on the source server, the used space of C: drive on the target server is inconsistent with that on the source server.

## 9.6 How Do I Uninstall the SMS-Agent from the Source and Target Servers After the Migration Is Complete?

### Windows

- Method 1
  - a. Log in to the server where the SMS-Agent is to be uninstalled.
  - b. Choose **Start > All Programs**.
  - c. In the **All Programs** panel, click the **SMS-Agent** folder.
  - d. Click **Uninstall** in the **SMS-Agent** file.
  - e. In the **SMS-Agent-1.0.0 Uninstall** dialog box, click **Yes**.
- Method 2
  - a. Log in to the server where the SMS-Agent is to be uninstalled.
  - b. Click **Start**, and then select **Computer**.
  - c. Go to the **C:\Program Files (x86)\SMS-Agent** directory.
  - d. Double-click **Uninstall.exe**.
  - e. In the **SMS-Agent-1.0.0 Uninstall** dialog box, click **Yes**.

### Linux

1. Log in to the server where SMS-Agent is to be uninstalled as user **root**.
2. Go to the SMS-Agent installation directory.
3. Stop the SMS-Agent.  
`./shutdown.sh`
4. Go to the upper-level directory.  
`cd ..`
5. Delete the SMS-Agent installation directory.  
`rm -rf SMS-Agent`

## 9.7 How Do I Configure the Yum Repository for the Target Server After the Migration Is Complete?

### Scenarios

The yum repository used by Alibaba Cloud servers does not have a public IP address. After you migrate a server from Alibaba Cloud to Huawei Cloud, the yum repository configured for the source server will be unavailable for the target server.

### Constraints

- Huawei Cloud private DNS servers must be configured for the target server for domain name resolution. For how to obtain IP addresses of Huawei Cloud

private DNS servers, see [What Are Huawei Cloud Private DNS Server Addresses?](#)

- The operations described here apply to x86\_64 ECSs.

## Procedure

1. Log in to the ECS as **root**. For details, see [Logging In to a Linux ECS](#).
2. Back up the **CentOS-Base.repo** file.  
**mkdir -p /etc/yum.repos.d/repo\_bak/**  
**mv /etc/yum.repos.d/\*.repo /etc/yum.repos.d/repo\_bak/**
3. Use **curl** to download the **CentOS-Base.repo** file, and save the file into **/etc/yum.repos.d/**:
  - CentOS 6  
The CentOS community no longer provides security patch update or image source support for CentOS 6. The CentOS 6 image source package has been removed from the source address <http://mirror.centos.org/centos-6/> and third-party images. If you want to continue to use CentOS 6, see [How Can I Use the Automated Tool to Configure a Huawei Cloud Image Source \(x86\\_64 and Arm\)?](#)
  - CentOS 7  
**curl -o /etc/yum.repos.d/CentOS-Base.repo http://mirrors.myhuaweicloud.com/repo/CentOS-Base-7.repo**
4. Clear the original yum cache:  
**yum clean all**
5. Generate a new cache.  
**yum makecache**

## 9.8 Why Is the File System Size Inconsistent Before and After the Migration?

### Symptom

- After the migration is complete, the used partition space on the target server is different from that on the source server.
- After the migration is complete, a particular file size on the target server is different from that on the source server.

### Possible Causes

If there are sparse files on the source server, the total size of the migrated files on the target server may be smaller than that on the source server. This is because rsync automatically truncates sparse files during transmission. The file system transparently converts metadata representing empty blocks into "real" blocks filled with null bytes at runtime.

You can check whether the files are consistent before and after the migration. For details, see [Procedure](#).

 NOTE

In a UNIX file system, when the file displacement is greater than the file length, the next write operation will extend the file length and form a hole in the file, creating a sparse file. This is achieved by writing brief information (metadata) representing the empty blocks to disks instead of the actual "empty" space which makes up the block, thus consuming less disk space. The full block size is written to disk as the actual size only when the block contains "real" (non-empty) data.

## Procedure

1. Check the size of the file on the source server and the used disk space. The `/tmp/test-data.img` file is used as an example.
  - a. Check the size of the `/tmp/test-data.img` file.  
**`ll /tmp/test-data.img`**
  - b. Check the disk space occupied by `/tmp/test-data.img`.  
**`du -sh /tmp/test-data.img`**

Figure 9-1 Checking the file size

```
root@ubuntu:~# ll /tmp/test-data.img
-rw-r--r-- 1 root root 1073741824 Aug 19 08:54 /tmp/test-data.img
root@ubuntu:~# du -sh /tmp/test-data.img
1.1G /tmp/test-data.img
```

2. After the migration is complete, check the size of the migrated file on the target server. [Figure 9-2](#) shows that the used disk space decreases after the migration.

Figure 9-2 Checking target server file size

```
root@ubuntu:~# ll /tmp/test-data.img
-rw-r--r-- 1 root root 1073741824 Aug 19 08:54 /tmp/test-data.img
root@ubuntu:~# du -sh /tmp/test-data.img
5.5M /tmp/test-data.img
```

3. Run the following command on the source server and target server to obtain the SHA256 values of the files to determine whether the files are the same. If the SHA256 values of the files are the same, the file content is consistent.  
**`sha256sum /tmp/test-data.img`**

Figure 9-3 Obtaining the sha256 value

```
root@ubuntu:~# sha256sum /tmp/test-data.img
82348a9b82fb96c86cd1431a32e94d67f6242ef551d28703e2b9b3f68e8f3333 /tmp/test-data.img
root@ubuntu:~# █
```

## 9.9 Why Can't I See Data Disks on a Windows Target Server After the Migration Is Complete?

### Possible Causes

The SAN policy for the source server OS is Offline Shared. This means the data disks will be offline on the target server after the migration is complete.

## Solutions

- If you do not need to perform an incremental synchronization, you can fix this issue by modifying the target server. For more information, see [Solution 1](#) or [Solution 2](#).
- If you need to perform an incremental synchronization, you can fix this issue by modifying the source server before the synchronization. For more information, see [Solution 3](#).

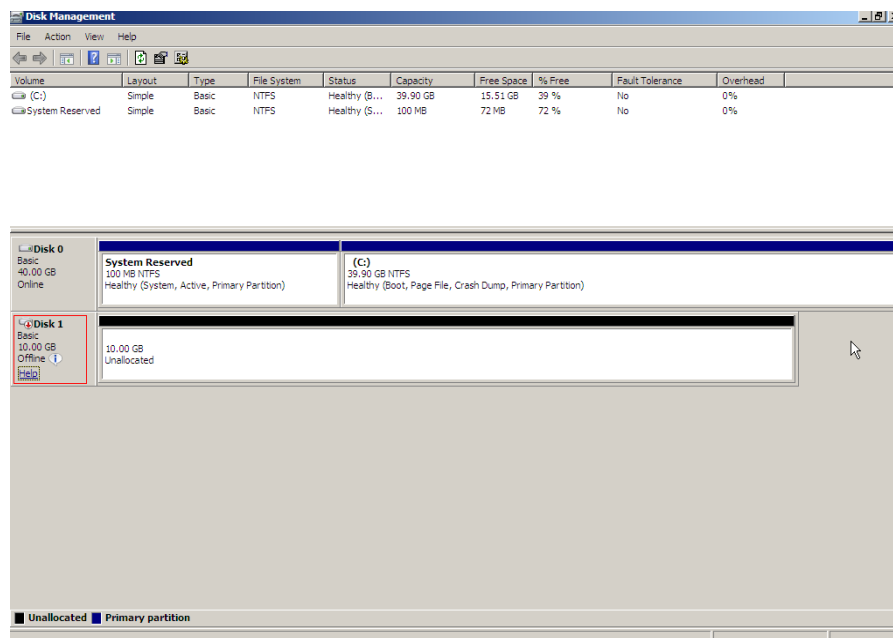
### Solution 1

**Step 1** Choose **Start > Run**.

**Step 2** Enter **diskmgmt.msc** and press **Enter** to open the **Disk Management** window.

In the following figure, **disk 1** is offline.

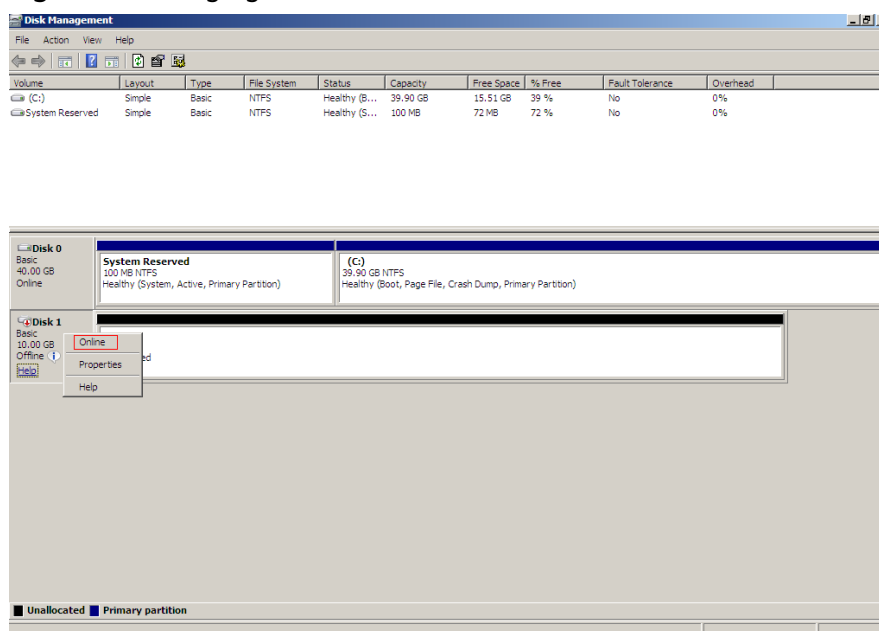
**Figure 9-4** Offline



**Step 3** Right-click the offline data disk and select **online** from the pop-up menu.



**Figure 9-5** Bringing the disk online



----End

### Solution 2

- Step 1** Right-click the **Start** menu.
- Step 2** Click **Run** and enter **cmd**.
- Step 3** Run **diskpart** to start the disk management tool.
- Step 4** Run **list disk** to list all disks on the current server. In the following figure, **disk 0** is online and **disk 1** is offline.

```

C:\> Select Administrator: C:\Windows\system32\cmd.exe - diskpart
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>diskpart

Microsoft DiskPart version 10.0.14393.0

Copyright (C) 1999-2013 Microsoft Corporation.
On computer:

DISKPART> list disk

 Disk ### Status Size Free Dyn Gpt
 ----- -
 Disk 0 Online 40 GB 0 B
 Disk 1 Offline 40 GB 40 GB

DISKPART>

```

- Step 5** Run **select disk 1**.
- Step 6** Run **online disk** to change the disk status from offline to online.

```
Administrator: C:\Windows\system32\cmd.exe - diskpart
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>diskpart

Microsoft DiskPart version 10.0.14393.0

Copyright (C) 1999-2013 Microsoft Corporation.
On computer: ██████████

DISKPART> list disk

 Disk ### Status Size Free Dyn Gpt
 ----- -
 Disk 0 Online 40 GB 0 B
 Disk 1 Offline 40 GB 40 GB

DISKPART> select disk 1

Disk 1 is now the selected disk.

DISKPART> online disk

DiskPart successfully onlined the selected disk.

DISKPART> _
```

**Step 7** If the disk is read only after it goes online, run the **attribute disk clear readonly** command to remove the write protection on the disk.

----End

### Solution 3

**Step 1** On the source server, right-click the **Start** menu.

**Step 2** Click **Run** and enter **cmd**.

**Step 3** Run **diskpart** to start the disk management tool.

**Step 4** Run the **san** command to query the current disk policy. If **SAN Policy: Offline Shared** is returned, the disks will be offline by default.

**Step 5** Run the **san policy=onlineAll** command to bring disks online by default.

```
Administrator: Command Prompt - diskpart
Microsoft Windows [Version 10.0.17763.2114]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>diskpart

Microsoft DiskPart version 10.0.17763.1911

Copyright (C) Microsoft Corporation.
On computer: ██████████

DISKPART> san

SAN Policy : Offline Shared

DISKPART> san policy=onlineAll

DiskPart successfully changed the SAN policy for the current operating system.

DISKPART> san

SAN Policy : Online All

DISKPART> _
```

- Step 6** On the SMS console, click **Sync** to start an incremental synchronization. After the synchronization is complete, the disks on the target server will be online automatically.

---

 **CAUTION**

- After the source server is modified, you do not need to restart it.
  - The modified disk policy will be synchronized to the target server, and disks on the target server will be brought online automatically. SMS has no requirements on disk policies. You can restore the disk policy for the source server as needed.
- 

----End

## 9.10 Why Can't a Windows Target Server Access the Internet After the Migration Is Complete?

### Symptom

After a migration was completed, the Windows target server could not access the Internet and the message "SMS.5603: The target server running Windows cannot access the Internet" was displayed.

### Possible Causes

The possible causes are as follows:

- There are abnormal network adapter drivers on the target server.
- The network configuration of the target server is incorrect.

### Solutions

- Solution for abnormal network adapter drivers
  - a. Locate the abnormal network device using the device manager. Use the **Search automatically for updated driver software** option to update its driver. Then restart the target server.
  - b. If the fault persists, disable the driver and enable it, and restart the target server.
  - c. If the fault persists, find another ECS that is in the same AZ as the target server and can access the Internet. Then, detach a data disk from the target server and attach this disk to the ECS you find.
    - i. On the temporary ECS, download the **VMTools** installation package to the disk you have attached but do not install VMTools.
    - ii. Attach the data disk back to the target server. Then, log in to the target server and install VMTools.
    - iii. Restart the target server.
- Solution for incorrect network configuration

- a. Open the **cmd** window, run **ipconfig** to view the private IP address of the target server. Check whether the IP address is the same as that displayed on the ECS console. If they are different, a static IP address may be set for the target server. In this case, change the IP address acquisition mode to DHCP.
- b. If the EIP of the target server can be pinged, but the domain name you want to access cannot be pinged, see [Configuring DNS](#).

## 9.11 Why Is the System Recovery Options Window Displayed When the Target Server Is Started?

### Symptom

After the migration is complete, the target server starts and the System Recovery Options window is displayed.

### Possible Causes

Something is wrong with the key startup files.

### Solution

Run **BCDBoot** to resolve the problem.

- a. Stop the target server, create a snapshot for its system disk, and detach the disk.
- b. Purchase a temporary pay-per-use Windows server with 1 vCPU, 2 GB memory, and 40 GB system disk. The temporary server must be in the same region and AZ as the target server.
- c. Attach the system disk of the target server to the temporary server as a data disk.
- d. Run **cmd** as administrator on the temporary server. Run the following command:

**bcdboot e:\windows /s d:**

#### NOTE

In the preceding command, **e:\windows** indicates the path of the system disk on the target server, and **d:** indicates the path of the boot disk on the target server.

You can run **bcdboot /?** to view the help information.

- e. After the command is executed, detach the disk from the temporary server and attach the disk back to the target server. Refresh the page for several times, and start the target server.
- f. If the system still cannot be started, use the created snapshot for rollback. If the problem persists, contact technical support.



**Figure 9-6** Editing the GRUB installation script file

```
#install grub2
function install_grub2() {
 log_info "install grub2"
 if type grub-install 2>/dev/null; then
 log_info "begin to install grub2 with grub-install..."
 grub-install --no-floppy $device_path
 ret=$?
 if [$ret -ne 0]; then
 log_error "Failed to install grub2 with grub-install"
 log_info "try to install grub2 with grub2-install"
 else
 log_info "success to install grub2 with grub-install"
 return 0
 fi
 fi

 if type grub2-install 2>/dev/null; then
 log_info "begin to install grub2 with grub2-install..."
 grub2-install --no-floppy $device_path
 yum -y update grub2
 grub2-install --no-floppy $device_path
 ret=$?
 if [$ret -ne 0]; then
 log_error "Failed to install grub2"
 exit $ret
 fi
 else
 log_error "Can not find binary to install grub2"
 exit 1
 fi
 log_info "Success to install grub2"
}
```

## 9.13 What Do I Do If a Target Server Fails to Be Created?

### Symptom

During the migration, the error "SMS. 0601 ECS creation failed. Cause: xxx" was reported.

### Possible Causes

There are many causes for target server creation failures.

- The account balance is insufficient.
- The quota is insufficient.
- The requested AZ is unavailable.

### Solutions

- Solution for insufficient quota  
Check whether the relevant quotas have been exhausted. If they have, increase the quotas or delete unnecessary resources to release the quotas.
- Solution for unavailable AZ

Delete the target server configuration. Select another AZ when you create a task again.

## 9.14 How Do I Troubleshoot a MySQL Startup Failure on the Target Server After the Migration?

### Symptom

After the migration, the MySQL service on the target server could not start up or immediately exited after being started.

```
root@l:/var/log/mysql# systemctl status mariadb.service
● mariadb.service
 Loaded: not-found (Reason: No such file or directory)
 Active: inactive (dead)
root@l:/var/log/mysql# systemctl status mysql.service
● mysql.service - MySQL Community Server
 Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset: enabled)
 Active: activating (start-post) (Result: signal) since Fri 2020-11-27 09:31:14 CST; 18s ago
 Process: 12294 ExecStart=/usr/sbin/mysqld (code=killed, signal=ABRT)
 Process: 12286 ExecStartPre=/usr/share/mysql/mysql-systemd-start pre (code=exited, status=0/SUCCESS)
 Main PID: 12294 (code=killed, signal=ABRT); : 12295 (mysql-systemd-s)
 Tasks: 2
 Memory: 12.3M
 CPU: 345ms
 CGroup: /system.slice/mysql.service
 └─control
 └─12295 /bin/bash /usr/share/mysql/mysql-systemd-start post
 └─12383 sleep 1

Nov 27 09:31:14 1 systemd[1]: Starting MySQL Community Server...
Nov 27 09:31:15 1 systemd[1]: mysql.service: Main process exited, code=killed, status=6/ABRT
root@l:/var/log/mysql# systemctl status mysql.service
```

### Possible Causes

The MySQL service on the source server is not stopped after the migration. As a result, the related files on the target server do not match with those on the source server.

### Solution

Stop the MySQL service on the source service, perform a synchronization, and try again.

## 9.15 How Do I Resolve Error "SELinux targeted" When I Start a Linux Target Server After the Migration Is Complete?

### Symptom

When you started a Linux target server after the migration succeeded, message "SELinux targeted" was displayed.





---

**NOTICE**

SMS only ensures data consistency before and after migration. You need to modify service configurations as needed.

---

## 9.17 Why Is the Usable Memory (RAM) Less Than the Total Installed Memory on a Target Server Running 64-bit Windows?

### Symptom

On a target server running 64-bit Windows, the usable memory (RAM) is much less than the installed memory. For example, the system may report that there is only 2 GB of usable memory on a target server with 32 GB of memory installed.

### Possible Causes

The maximum memory is set for the target server.

### Solution

- Step 1** Press **Win** and **R** on the keyboard to open the **Run** window. Enter **msconfig** and click **OK**. The **System Configuration** window is displayed.
  - Step 2** Click the **Boot** tab and click **Advanced options**.
  - Step 3** Check whether **Maximum memory** is selected. If it is, deselect it and click **OK**.
  - Step 4** Click **OK** to close the system configuration window and restart the target server.
- End

## 9.18 After the Migration Is Complete, Will Deleting the Target Server Configuration or Server Record Affect the Source or Target Server?

After the migration is complete, if services are verified on the target server, and no synchronization is required, you can delete the target server configuration and the server record, and the source and target servers are not affected.

 **CAUTION**

- If a target server configuration is deleted, the migration task will still be in the list, but the target server information will be gone. It will no longer be possible to perform incremental synchronizations. To perform the migration again, you will need to configure a target server again.
- If a server record is deleted, the migration task will be deleted from the list. To migrate the source server, you will need to restart the Agent on the source server, and the system will generate a server record for you.

## 9.19 How Do I Fix BSOD Errors When I Start a Windows Target Server After the Migration?

### Symptom

After the migration, you started and logged in to the Windows target server. However, the blue screen of death (BSOD) happened and the system restarted automatically.

### Possible Causes

This issue may be caused by antivirus software.

### Solution

**Step 1** Start the target server in safe mode. If the server starts, go to [2](#).

**Step 2** Check whether any antivirus software such as Sophos or Kaspersky is installed.

If any antivirus software is installed, there are two methods to fix the issue.

- **Method 1**

- a. Create an ECS in the same region and AZ as the target server. Detach the system disk from the target server and attach the disk to the ECS. Search for and delete all antivirus software-related installation directories, registries, and startup items.
- b. Attach the disk back to target server, restart the system several times to check that BSOD does not occur.

- **Method 2**

- a. Uninstall the antivirus software on the source server and perform an incremental synchronization.

 **NOTE**

If you cannot uninstall some antivirus software, contact their providers.

- b. After the synchronization is complete, restart the target server several times to ensure there is no BSOD.

----End

## 9.20 How Do I Fix Startup Failures of a Windows Target Server After the Migration?

### Symptom

After the migration, the Windows target server could not be started, even in safe mode.

### Possible Causes

The KVM driver or KVM registry is missing.

### Solutions

- **Solution 1**

- a. Create a temporary ECS in the same region and AZ as the target server. Detach the system disk from the target server and attach it to the temporary ECS.
- b. Check for the KVM driver.
  - Check whether files **viostor.sys** and **vioscsi.sys** are in the **Windows\System32\drivers** directory of the disk.
  - Check whether files **viostor.cat** and **vioscsi.cat** are in the **Windows\System32\CatRoot\{F750E6C3-38EE-11D1-85E5-00C04FC295EE}** directory of the disk.
  - Check whether files **viostor.inf** and **vioscsi.inf** are in the **Windows\System32\drivers** directory of the disk.

If any of the preceding files is missing, [install the VirtIO drivers](#) on the temporary ECS. Copy the desired file to the corresponding directory on the system disk of the target server.

---

 **CAUTION**

The **.sys**, **.cat**, and **.inf** files are used in pairs. You need to copy a file pair, not just a single file.

---

- c. Check the registry.
  - i. Open the **Registry Editor** and click **HKEY\_LOCAL\_MACHINE** in the navigation pane on the left.
  - ii. On the menu bar, choose **File > Local Hive**, locate registry **C:\Windows\System32\config\SYSTEM**, and change its name from **SYSTEM** to **p2v**.
  - iii. Open the registry and check whether entries **p2v/ControlSet001/services/viostor** and **p2v/ControlSet001/services/vioscsi** are there. If they are there, manually add them to the registry by referring to the registry of the temporary ECS.

- d. Stop the temporary ECS, and attach the disk as the system disk to the target server. Then restart the target server.
- **Solution 2**  
**Install the VirtIO drivers** on the source server and then perform a synchronization to the target server.

---

 **CAUTION**

After the VirtIO drivers are installed, do not restart the source server, or the synchronization will fail.

---

## 9.21 If I Change the Password of the Source Server and Perform an Incremental Synchronization After the Full Migration Is Complete, Will the New Password Be Synchronized to the Target Server?

SMS migrates the passwords of source servers to target servers during the full migration. If you change the password of a Windows source server after the full migration is complete, an incremental synchronization cannot be performed. For a Linux source server, an incremental synchronization can be performed, but the new password will not be synchronized to the target server.

---

 **CAUTION**

- After changing the password of the source server, you need to restart the server to apply the change.
- For a Windows source server, after the full migration is complete, restarting the source server or Agent will disconnect the Agent from SMS. If this happens, you cannot perform an incremental synchronization for the source server. You will need to delete the original migration task, create a new task, and perform a full migration again.
- For a Linux source server, after the full migration is complete, you can perform an incremental synchronization even if you have restarted the source server or Agent. However, if you change the password of the source server, the new password will not be synchronized to the target server.

---

After the migration is complete, if you need to reset the password of the target server, see [Resetting the Password for Logging In to an ECS on the Console](#).

If you cannot reset the password on the console, see [Installing One-Click Password Reset Plug-in](#).

If the password reset plug-in cannot be installed, see:

- [Resetting the Password for Logging In to a Windows ECS Without Password Reset Plug-in Installed](#)

- [Resetting the Password for Logging In to a Linux ECS Without Password Reset Plug-in Installed](#)

## 9.22 What ECS Types Are Supported by SMS?

SMS migrates only x86 servers, and the target servers must use the x86 architecture. The following lists the x86-based ECS types. For more information, see [Instance Types](#).

- General computing-basic
- General computing
- General computing-plus
- Memory-optimized
- Large-memory
- High-performance computing
- Ultra-high performance computing
- FPGA-accelerated
- AI inference-accelerated
- GPU-accelerated

## 9.23 What Configuration Items Do I Need to Modify for the Target Server After the Migration Is Complete?

### Background

When you use SMS to migrate a source server, the target server configurations will be automatically modified based on your settings in the migration task. For details about the items modified, see [What Are the Differences Between the Target and Source Servers After the Migration?](#) You also need to modify the configurations of the target server based on service requirements after the migration. These auto or manual modifications are made to ensure that the target server can run normally and your services match your business processes and security standards. Here we list some configuration items you may need to modify based on service requirements.

---

** CAUTION**

The items listed here need to be modified after the migration and service cutover are complete.

---

### Synchronizing NTP Clocks (Recommended)

If the system time and hardware time on a Linux target server are inconsistent with those on the source server, rectify the fault by referring to [What Do I Do If the Source Server's Clocks Are Not Synchronized to the Target Server?](#)

## Modifying Network Configurations (Recommended)

To ensure compatibility with Huawei Cloud, SMS modifies the network configurations of target servers. After the service cutover is complete, you can modify the network configuration files about NICs, DNS, SSH, and other items based on service requirements.

## Clearing Residual SMS Installation Packages (Recommended)

During a migration, SMS migrates all data on the source server to the target server, including the SMS migration software. After the migration is complete, you are advised to delete the SMS software from the target server.

## Modifying Security Group and Policy Settings (Recommended)

- During a migration, the security group of the target server needs to allow traffic from the source server over certain ports based on the OS type and migration method. Ports 8899, 8900, and 22 are required for a Windows block-level migration, ports 8900 and 22 are required for a Linux block-level migration, and port 22 is required for a Linux file-level migration. After the migration is complete, it is essential for you to review and adjust the security group settings as necessary. It is best to disable high-risk ports.
- During the migration, it is necessary to disable the firewall or security software. Once the migration is complete, you need to reconfigure the security protection policy.

## Configuring Software Sources (Optional)

SMS does not automatically modify software sources for target servers, such as yum, apt, and zypper repositories. After the migration is complete, you can configure proper software sources based on service requirements.

## Clearing Components and Services from Source Platforms (Optional)

After a server is migrated from another cloud platform, there may be leftover components or services from the source platform, for example, Alibaba's Cloud Shield or platform services. You can determine whether to uninstall these components or services as required.

## Installing Huawei Cloud Password Reset Plug-in (Optional)

To use the password reset function on the ECS console, you can install the Huawei Cloud password reset plug-in to reset the password with a few clicks. For more information, see:

- [Installing the One-Click Password Reset Plug-In \(Linux\)](#).
- [Installing the One-Click Password Reset Plug-in \(Windows\)](#)

# 10 Known Errors and Solutions

---

## 10.1 SMS.0202 AK/SK Authentication Failed. Ensure that the AK and SK Are Correct

### Symptom

When you started the Agent, the error "SMS.0202 AK/SK authentication failed. Ensure that the AK and SK are correct" was reported.

### Possible Causes

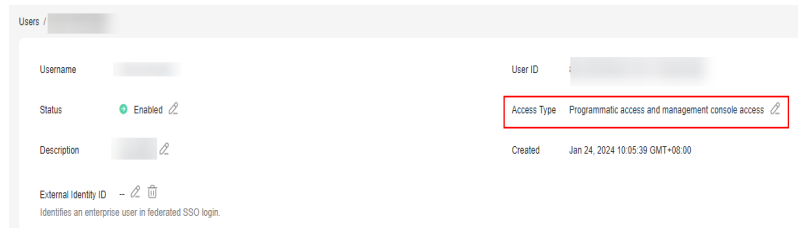
Possible causes are:

- The entered AK or SK is incorrect.
- The AK/SK pair has been deleted or disabled.
- The programmatic access method is not enabled for the Huawei Cloud account you used for migration.

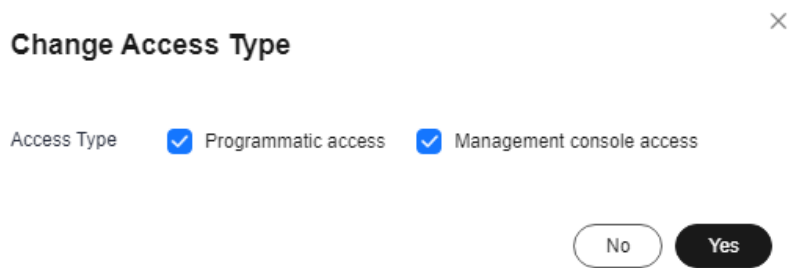
### Handling Methods

- The entered AK or SK is incorrect.  
Check whether the entered AK/SK pair of the Huawei Cloud account is correct, especially whether any spaces or characters are missed during the copy. Enter the AK/SK pair for authentication again.
- The AK/SK pair has been deleted or disabled.  
Choose **My Credentials > Access Keys** to check whether the AK is in the list.
  - If it is not, use an AK/SK pair in the list for authentication or create an AK/SK pair.
  - If it is, check whether it is disabled. If the AK/SK pair is disabled, enable it.
- The programmatic access method is not enabled for the Huawei Cloud account you used for migration.
  - a. Sign in to the console.

- b. Click the username in the upper right corner and choose **Identity and Access Management**.
- c. In the navigation pane on the left, choose **Users** and click the username you used for migration.
- d. In the basic information area, check whether **Programmatic access** is selected for **Access Type**.



- e. If it is not, click , select **Programmatic access**, and click **Yes**.



## 10.2 SMS.0203 Connection from Source Server to API Gateway Timed Out

### Symptom

When you started the Agent, the error "SMS.0203 Connection from source server to API Gateway timed out" was reported.

### Possible Causes

The source server does not have Internet access and cannot communicate with SMS, IAM, ECS, EVS, IMS, VPC, or EPS. In this case, check the source network.

### Solution

**Step 1** Log in to the source server.

**Step 2** Confirm that you can access IAM and SMS from the source server.

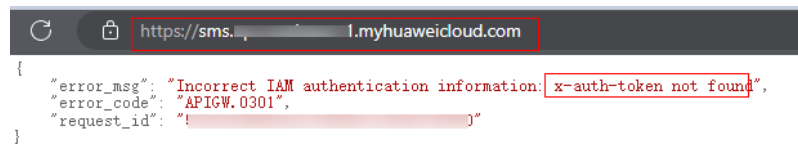
```
curl -v https://iam.myhuaweicloud.com:443
curl -v https://sms.ap-southeast-3.myhuaweicloud.com:443
```

Check whether the source server can access ECS, EVS, IMS, and VPC using the commands for the region you are migrating to.

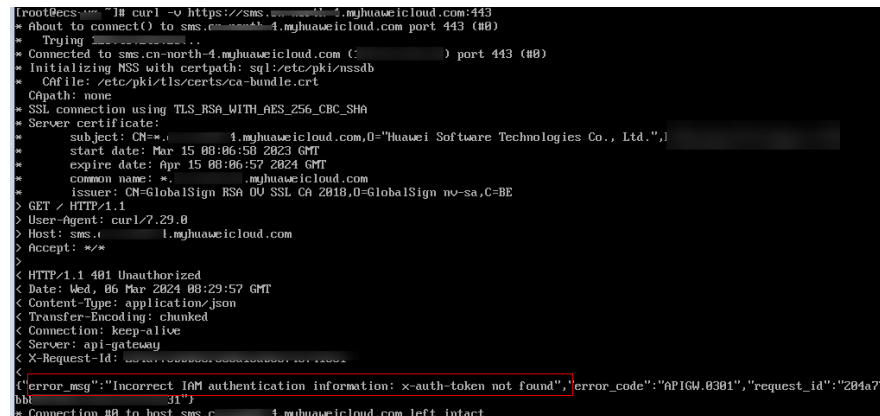


| Command                                                                                                                                                                                                                                                                                                                              | Remarks                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• curl -v https://ecs.<br/>{regionCode}.myhuaweicloud.com:443</li> <li>• curl -v https://evs.<br/>{regionCode}.myhuaweicloud.com:443</li> <li>• curl -v https://ims.<br/>{regionCode}.myhuaweicloud.com:443</li> <li>• curl -v https://vpc.<br/>{regionCode}.myhuaweicloud.com:443</li> </ul> | <p>Replace <b>{Region code}</b> with the ID of the region you are migrating to. For details, see <a href="#">Obtaining Region Information</a>.</p> |

If the source server runs Windows and curl is not available on it, you can also use a browser to access the preceding domain names. If the information shown in the following figure is displayed, the access is successful.



**Step 3** Check if the curl operation is successful. If it is, the information shown in the following figure is returned, and the source server can access the domain name of the cloud service. Restart the Agent on the source server.



If the curl operation fails, for example, the operation timed out, check the network and firewall configurations of the source server and rectify network issues if any. Then confirm the source server can access the preceding domain names.

----End

## 10.3 SMS.0204 Insufficient Permissions. Obtain the Required Fine-Grained Permissions

### Symptom

During the migration, you received the error message "SMS.0204 Insufficient permissions. Cause: xxx. Obtain the required fine-grained permissions."

### Possible Causes

Using SMS requires that you have permissions for ECS, VPC, IMS and EVS, or the migration will fail.

### Solution

Obtain the required permissions and try again. For details, see [Creating a User and Granting Permissions](#).

## 10.4 SMS.0205 Incorrect System Time or Time Zone On Source Server

### Symptom

When you started the Agent, you received the error message "SMS.0205 Incorrect system time or time zone on source server."

### Possible Causes

Possible causes are:

- The system time of the source server is consistent with the local standard time.
- The time zone in the source server is configured incorrectly.

### Solution

Check whether the system time of the source server is consistent with the standard time of the time zone where the source server is located. If the time zone is incorrectly configured, change the time zone for the source server by referring to [Changing the Time Zone for an ECS](#). Change the system time to the local standard time, and enter the AK/SK pair for authentication again.

---

 CAUTION

If services on the source server depend on the system time, check whether the time can be changed to avoid impact on services.

---

## 10.5 SMS.0206 Only x86 Servers Can Be Migrated

### Symptom

When you started the Agent, you got the error message "Only x86 servers can be migrated."

```

SMS.0206: Only servers with X86 architecture can be migrated.

```

### Possible Causes

SMS can only migrate x86 servers.

## 10.6 SMS.0210 Failed to Create File on Target Server

### Symptom

During the migration, the error message "SMS.0210 Failed to create file on target server" was displayed on the SMS console.

### Possible Causes

The network between the source server and the target server is abnormal.

### Solution

Check whether the source server can access the target servers over port 22. If it cannot, rectify the fault by referring to [Solutions for Error SMS.3802](#).

## 10.7 SMS.0212 Agent Restarted

### Symptom

During a Windows migration, the migration task was abnormal, and the error message "SMS.0212 Agent restarted" was displayed.

### Possible Causes

Possible causes include:

- The SMS-Agent program was manually restarted on the source server.
- After the source system account was deregistered, the SMS-Agent program exited and then was started again.

## Solutions

- **Solution 1**
  - a. In the server list on the SMS console, locate the source server record and choose **More > Delete Target Configuration** in the **Operation** column.
  - b. Configure a target server and start the migration again.
- **Solution 2**
  - a. In the service list on the SMS console, locate the source server record and choose **More > Delete** in the **Operation** column. Then delete the server record.
  - b. Log in to the source server, stop the SMS-Agent program, and run it again.

---

 **CAUTION**

If the SMS-Agent exits due to account deregistration, you are advised to use the SMS-Agent (Python 2) for the migration.

---

- Windows Agent (Python 3): Double-click **SMS-Agent.exe** in the **SMS-Agent-Py3** directory to restart the SMS-Agent.
- Windows Agent (Python 2): Double-click **restart.bat** in the **SMS-Agent-Py2** directory to restart the SMS-Agent.
- c. Enter the AK/SK pair for the Huawei Cloud account and the SMS domain name for the region you are migrating to.
- d. After the Agent is started, go to the SMS console and configure a target server again.

## 10.8 SMS.0303 Unable to Access Domain Name

### Symptom

When you started the migration, the error message "SMS.0303 Unable to access domain name XXX" was displayed on the SMS console.

### Possible Causes

For a successful migration, the source server must access all required domain names. If any domain name fails to be connected, this error message is displayed.

The possible causes are as follows:

- The network is abnormal, for example, the connection times out or the network is disconnected or inaccessible.
- The access is blocked by the firewall.
- Security alarms are generated on the source server, or the source server EIP is unbound or frozen.

- The access is blocked by the security group of the source server.

## Solutions

- Ping another domain name.
  - If the ping operation succeeds, the network is normal.
  - If the ping operation fails, the network is abnormal. Check the local network.
- Check the firewall settings of the source server.
- If the access is blocked, allow the access and continue the migration.
- Check whether security alarms are generated on the source server, or the source server EIP is unbound or frozen.
  - If the EIP is unbound, you can bind it back or use a private network for migration.
  - If the EIP is frozen, contact ECS or EIP technical support.
- Check whether the required outbound ports are allowed in the security group of the source server.
  - If there are no outbound rules for the protocols and ports shown in [Figure 10-1](#), add rules for them.
  - If there are outbound rules for the ports but **Action** is set to **Deny**, change the actions to **Allow**.
  - If there are outbound rules for allowing the ports but the destination IP addresses are not **0.0.0.0/0**, change them to **0.0.0.0/0**.

**Figure 10-1** Outbound rules

| <input type="checkbox"/> | Priority <sup>?</sup> | Action <sup>?</sup> | Protocol & Port <sup>?</sup> | Type | Destination <sup>?</sup> |
|--------------------------|-----------------------|---------------------|------------------------------|------|--------------------------|
| <input type="checkbox"/> | 1                     | Allow               | All                          | IPv4 | 0.0.0.0/0 <sup>?</sup>   |
| <input type="checkbox"/> | 1                     | Allow               | ICMP : All                   | IPv4 | 0.0.0.0/0 <sup>?</sup>   |

## 10.9 SMS.0304 SSL/TSL Authentication Failed

### Symptom

When the SMS-Agent was started, any of the following messages was returned:

- Linux: SMS.0304: Network request TSL/SSL authentication failed.
- Windows (Python 2): SMS.0304: Network request TSL/SSL authentication failed.
- Windows (Python 3): SMS.0304: Network request TSL/SSL authentication failed.

### Possible Causes

If the TLS/SSL authentication fails when you start the SMS-Agent, the CA certificate verification fails. A CA certificate is issued by an authoritative organization to verify the server identity and ensure data transmission security.

After the SMS-Agent is started, it attempts to remotely access SMS over the network and verifies the CA certificate. If the verification fails, the error message is displayed.

## Solution

- Step 1** Log in to the source server.
- Step 2** Open the **g-property.cfg** configuration file of the SMS-Agent. The path of the configuration file is:
- Linux: **.../SMS-Agent/agent/config/g-property.cfg**
  - Windows:
    - Windows Agent (Python 3): **C:\SMS-Agent-Py3\config\g-property.cfg**
    - Windows Agent (Python 2): **C:\SMS-Agent-Py2\config\g-property.cfg**
- Step 3** In the **g-property.cfg** configuration file, change **servercheck = True** to **servercheck = False**.
- Step 4** Save the configuration file and restart the SMS-Agent.
- End

## 10.10 SMS.0410 Failed to Obtain NIC Information

### Symptom

When you started the Agent on a Linux server, one of the following messages was displayed:

- SMS.0410: Failed to obtain NicName information of source server.

```

SMS.0410: Failed to obtain NicName information of source server.

```

- SMS.0410: Failed to obtain IPAddress information of source server.

```

SMS.0410: Failed to obtain IPAddress information of source server.

```

### Possible Causes

If the source server has multiple NICs, the Agent may fail to obtain the default gateway information of the source server. As a result, the correct NIC name, MAC address, and IP address cannot be obtained.

### Solutions

- Solution for error "SMS.0410: Failed to obtain NicName information of source server"
  - a. View the routing table.

```
#route -n
[root@ ~]# route -n
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
0.0.0.0 172.17.0.1 0.0.0.0 UG 0 0 0 eth0
0.0.0.0 172.17.0.1 0.0.0.0 UG 1001 0 0 eth1
```

The following table describes the parameters.

| Parameter   | Description                                                                              |
|-------------|------------------------------------------------------------------------------------------|
| Destination | The destination IP address. The gateway corresponding to 0.0.0.0 is the default gateway. |
| Gateway     | The gateway IP address.                                                                  |
| Iface       | The network interface.                                                                   |

As shown in the preceding figure, if the source server has multiple default gateways, the Agent may fail to obtain the default gateway information. In this case, proceed with the subsequent steps.

- b. Check the network configuration.

```
#ifconfig -a
```

```
root@ ~# ifconfig -a
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
 inet 192.168.0.194 netmask 255.255.255.0 broadcast 192.168.0.255
 inet6 fe80::f816:3eff:feeb:5316 prefixlen 64 scopeid 0x20<link>
 ether fa:16:3e:fb:53:16 txqueuelen 1000 (Ethernet)
 RX packets 675234 bytes 234215792 (234.2 MB)
 RX errors 0 dropped 0 overruns 0 frame 0
 TX packets 230160 bytes 1216062615 (1.2 GB)
 TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
 inet 127.0.0.1 netmask 255.0.0.0
 inet6 ::1 prefixlen 128 scopeid 0x10<host>
 loop txqueuelen 1000 (Local Loopback)
 RX packets 30239 bytes 2703074 (2.7 MB)
 RX errors 0 dropped 0 overruns 0 frame 0
 TX packets 30239 bytes 2703074 (2.7 MB)
 TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

**NOTE**

- The leftmost column lists NICs, such as ethx, ensx, and enp0sx.
  - **inet** is the IP address of a NIC.
  - **ether** is the MAC address of a NIC.
- c. Modify **network.dev** in the **.../SMS-Agent/agent/config/g-property.cfg** configuration file.

You need to check which NIC of the source server is used for migration. Then set **network.dev** to the name of the NIC used for migration.

Assume the NICs queried in step **b** include **eth0**, **eth1**, and **eth2**, and the NIC used for migration is **eth0**. **network.dev** must set to be **eth0**.

```

[ssl.config]
servercheck = False

[property]
times = 20
debug = False
file exist check = \\Windows\system32\DRIVERS\natapi.sys,\\Windows\system32\DRIVERS\pciindex.sys,\\Windows\system32\DRIVERS\intelide.
sys
enablessync = True
enablesnapshot = True
enablelinuxblock = False
umi = True
targetip =
heartmonitorday = 30
stopsync = 0
uefifbios = False

[environmentcheck]
vss depend service = USS

[linux.config]
linux.support.filesystem = ext2,ext3,ext4,xfs,ofat,btrfs
linux.unsupported.filesystem =
tar.exclude.dir = /proc/*,/sys/*,/lost+found/*,/var/lib/ntp/proc/*
tar.interval = 30
rsync.exclude.dir = /proc/*,/sys/*,/lost+found/*,/tmp/_MEI*,/var/lib/ntp/proc/*,/boot/*,/boot/efi/*,/etc/fstab,/etc/*,/etc/X11/*
,/root/initrd_bak/*,lib/modules/*,/boot/grub2/x86_64-efi/*,/boot/grub2/i386-pc/*
rsync.interval = 30
network.dev =
network.gateway =
installPudAgent = true
fstab.tmp.filesystem = tmpfs,devpts,devtmpfs,sysfs,proc,ramfs
fstab.ignore_mount_path =
fstab.keep_mount_path =
show_vol_progress = True
inode_used_limit = 2000000

```

- d. After the configuration is complete, restart the Agent.
- Solution for error "SMS.0410: Failed to obtain IPAddress information of source server"
  - a. Check whether the **network.dev** parameter in the **.../SMS-Agent/agent/config/g-property.cfg** file has been configured.
    - If it has, go to step **b**.
    - If it has not, go to step **3**.
  - b. Check whether the NIC specified by **network.dev** is the one used for migration by referring to **Solution for error 1**.
    - If it is not, modify it and restart the Agent. If the problem persists, go to step **3**.
    - If it is, go to step **3**.
  - c. Modify **network.macaddr** and **network.ipaddr** in the **.../SMS-Agent/agent/config/g-property.cfg** configuration file.

Set **network.macaddr** and **network.ipaddr** to the values of **inet** (IP address) and **ether** (MAC address) corresponding to the correct NIC queried in **step 2 in handling error 1**.

**network.macaddr** = *xx-xx-xx-xx-xx-xx* (MAC address)  
**network.ipaddr** = *xxx.xxx.xxx.xxx* (IP address)



```
[ssl_config]
servercheck = False

[property]
times = 20
debug = False
file exist check = \Windows\system32\DRIVERS\atap.sys,\Windows\system32\DRIVERS\pciindex.sys,\Windows\system32\DRIVERS\intelide.
sys
enablesync = True
enablesnapshot = True
enablelinuxblock = False
uni = True
targetip =
heartmonitorday = 30
stopsync = 0
uefi2bios = False

[environmentcheck]
vss depend service = USS

[linux_config]
linux.support.filesystem = ext2,ext3,ext4,xfs,ufat,btrfs
linux.unsupported.filesystem =
tar.exclude.dir = /proc/*,/sys/*,/lost+found/*,/var/lib/ntp/proc/*
tar.interval = 30
rsync.exclude.dir = /proc/*,/sys/*,/lost+found/*,/tmp/.MEI*,/var/lib/ntp/proc/*,/boot/*,/boot/efi/*,/etc/fstab,/etc/*,/etc/X11/*
,/root/initrd.img/*,lib/modules/*,/boot/grub2/x86_64-efi/*,/boot/grub2/i386-pc/*
rsync.interval = 30
network.dev =
network.gateway =
network.macaddr =
network.ipaddr =
installPudAgent = true
fstab.tmp.filesystem = tmpfs,devpts,devtmpfs,sysfs,proc,ramfs
fstab.ignore_mount_path =
fstab.keep_mount_path =
show_uol_progress = True
inode_used_limit = 2000000
-
```

 CAUTION

Both the MAC address and IP address need to be configured. The six groups of characters in the MAC address must be separated by hyphens (-).

- d. After the configuration is complete, restart the Agent.

## 10.11 SMS.0412 Target Server Does Not Exist

### Symptom

During the migration, the error message "SMS.0412 ECS does not exist" was displayed on the SMS console.

### Possible Causes

Information about the target server cannot be queried during the migration. The server may have been deleted unexpectedly.

### Solution

In the server list on the SMS console, locate the desired record, and choose **More > Delete Target Configuration** in the **Operation** column. Then configure a target server again.

## 10.12 SMS.0515 Migration Failed. Source Disk Information Has Changed. Delete Target Server Configuration and Restart the Agent

### Symptom

When you started the migration, you got the error message "SMS.0515 Migration failed. Source disk information has changed. Delete target server configuration and restart the Agent."

### Possible Causes

The Agent collects information about the disks on the source server every two hours. This error will occur if the source server disks are changed during the period from the last collection to the start of migration. Possible disk changes include:

- Disks or partitions were attached to or detached from the source server.
- A source partition was expanded, and now the target disk space is insufficient.
- A large amount of data was written to a source partition, and now the target partition space is insufficient.
- The file system type of the source partition was changed.

### Solution

**Step 1** Sign in to the console.

**Step 2** In the navigation pane on the left, choose **Servers**.

Locate the row that contains the source server, and in the **Operation** column, choose **More > Delete**.

**Step 3** Log in to the source server and restart the Agent. The Agent automatically reports changed source disk information to SMS.

**Step 4** [Configure the target server](#), [start the full replication](#), and [launch the target server](#).

----End

## 10.13 SMS.0609 An Older Version of Agent Is Detected. Please Exit The Current Program, Uninstall the Old Agent Completely, and Install the Newest One

### Symptom

During the startup of the Agent on Linux, the Agent reported that the migration pre-check failed and returned the message "SMS.0609 An older version of Agent is

detected. Please exit the current program, uninstall the old Agent completely, and install the newest one."

```
Pre-migration failed. The following problems are found:
CheckResidualAgent:
Error!!!SMS.0809 An older version of Agent is detected. Please exit the current program, uninstall the old Agent completely, and install the newest one
```

## Possible Causes

If an earlier version of the Agent is not uninstalled or completely uninstalled, files cannot be completely replaced and the latest version cannot be installed correctly.

## Solution

1. Uninstall the earlier version of the Agent. For details, see [Uninstalling the Agent](#).
2. Install the latest version of the Agent. For details, see [Installing the Agent on Linux](#).

# 10.14 SMS.0805 Failed to Migrate Partition to Target Server

## Symptom

During the migration, the message "SMS.0805 Failed to migrate partition XXX to target server XXX" was displayed.

## Possible Causes

Possible causes are as follows:

- The network between the source server and the target server is disconnected.
- There is not enough space on the paired disk partition of the target server.
- The paired disk of the target server is detached.

## Solutions

- Check whether the fault is caused by a network disconnection. If it is, rectify the network fault by referring to [SMS.3802 Failed to Establish an SSH Connection with the Target Server](#)
- Check whether there is enough space on the target partition. If there is not enough space, delete any unnecessary files from the partition on the target server or the source server to release enough space, and try again.
- Check whether the paired target server disk is detached. If it is, attach the disk to the target server. Then sign in to the SMS console, choose **Servers** in the navigation pane on the left, locate the source server, and click **Start** in the **Operation** column.

## 10.15 SMS.0806 Failed to Synchronize Partition to Target Server

### Symptom

During an incremental synchronization, the message "SMS.0806 Failed to synchronize partition XXX to target server XXX" was displayed.

### Possible Causes

The possible causes are as follows:

1. The network between the source server and the target server is disconnected.
2. There is not enough space on the paired disk partition of the target server.
3. The paired disk of the target server is detached.

### Solution

1. Check whether the fault is caused by a network disconnection. If it is, rectify the network fault by referring to [SMS.3802 Failed to Establish an SSH Connection with the Target Server](#)
2. Check whether there is enough space on the target partition. If there is not enough space, delete any unnecessary files from the partition on the target server or the source server to release enough space, and try again.
3. Check whether the paired target server disk is detached. If it is, attach the disk to the target server. Then sign in to the SMS console, choose **Servers** in the navigation pane on the left, locate the source server, and click **Start** in the **Operation** column.

## 10.16 SMS.1104 Failed to Detach disk xx

### Symptom

A migration task failed, and the error message "SMS.1104 Failed to detach disk xxx. Failure cause: xxx" was displayed.

### Possible Causes

During the migration, operations such as detaching disks, creating temporary disks, and attaching disks are performed on the target server. Detaching a disk from the target server may fail if:

- **The target server was locked or does not support disk detachment.**  
Disks cannot be detached from a locked ECS, a spot ECS, a FlexusL instance (original HECS L), or a server created from an ISO image.
- **The purchase order was not completed.**  
A disk cannot be detached if the server or disk purchase order is not completed.

## Solutions

- The target server was locked or does not support disk detachment.
  - If the target server was a spot ECS or a locked ECS, delete the current migration task, create a migration task again, and select another cloud server that supports disk detachment.
  - If the target server was a FlexusL instance (original HECS L), delete the current migration task, use the latest Agent, and create a migration task again.
  - If the target server was created from an ISO image, delete the current migration task. Then, use an ISO image to create a temporary ECS, use the temporary ECS to create a system disk image, use the system disk image to create an ECS, generate a new ECS, and use the new ECS to create a migration task.
- The purchase order was not completed.

If the target server was billed based on a yearly/monthly basis, check whether the server and disk purchase orders have been completed. If they are not, wait for the orders to complete or complete the orders and try the migration again.

## 10.17 SMS.1105 Disk Creation Failed

### Symptom

During the creation of a target server, the message "SMS.1105 Disk creation failed" was displayed.

### Possible Causes

- Your account is in arrears.
- The EVS quotas are exhausted. To prevent unforeseen spikes in resource usage, there are preset quotas on the EVS disk quantity, the EVS disk capacity, and the EVS snapshot quantity. For details about EVS quotas, see [Querying EVS Resource Quotas](#).

### Solutions

- Make sure that your account has sufficient balance. For details, see [Resource Expiration Rules](#).
- Increase the EVS disk quotas and try again. For details, see [Increasing EVS Resource Quotas](#).

## 10.18 SMS.1106 Failed to Delete Disk *XX*

### Symptom

After the migration was complete, I received the message "SMS.1106 Failed to delete disk *XX*. Cause: periodic volume cannot be deleted!"

 **NOTE**

The migration task has been completed, and you can log in to, verify, and use the target server. If you need to synchronize incremental data from the source server to the target server, handle the problem using the solution below and then perform the migration again.

## Possible Causes

SMS attaches a temporary pay-per-use system disk with name starting with SMS to the target server during the migration, and detaches and deletes the disk after the migration is complete. If you manually change the billing mode of the disk to yearly/monthly during the migration, the disk cannot be automatically deleted after the migration is complete.

## Solution

- Step 1** Sign in to the EVS console and locate the disk based on the disk ID displayed in the migration failure cause.
- Step 2** Contact customer service to unsubscribe from the disk.
- Step 3** After the unsubscription, click **Start** on the migration task page to continue the migration.

----End

## 10.19 SMS.1204 Failed to Create File on Source Server

### Symptom

During the migration, the error message "SMS.1204 Failed to create file on source server" was displayed on the SMS console.

### Possible Causes

There is no space available for creating new files on the source server.

### Solution

1. Check the usage of each disk partition on the source server using **df -Th**.
2. If the available space on each partition is less than 1 GB, clear up more disk space or expand the capacity.
3. Delete the source server record from the SMS console. Restart the Agent installed on the source server and perform the migration again.

## 10.20 SMS.1205 Failed to Load WMI

### Symptom

When you started the Agent, the message "SMS.1205 Failed to load WMI" was reported.

**Figure 10-2** WMI loading failure

```
C:\Windows\system32\cmd.exe - agent-start.exe SMS-Agent
SMS.1205, failed to load wmi. Please go to the official website to view the solution.
```

## Possible Causes

Files related to Windows Management Instrumentation (WMI) are missing or damaged and need to be restored. In Windows, the Agent uses the WMI module to collect source server details, such as the CPU, memory, and disk information.

---

**CAUTION**

- WMI will be stopped during the restoration. Confirm that stopping WMI will not affect services on the source server. The restoration will also change the files on the source server, which may involve certain risks. It is recommended that you perform the operations on a cloned source server first.
  - If the issue persists, you can create an ECS by following the instructions provided in [Creating a Windows ECS from an Image](#).
- 

## Restoring WMI

**Step 1** Right-click **This Computer** in the navigation pane on the left in your file explorer and choose **Manage** from the shortcut menu.

**Step 2** On the **Computer Management** page, choose **Services and Applications > Services**. Stop **Windows Management Instrumentation**.

**Step 3** Change **C:\Windows\System32\wbem\repository** to **C:\Windows\System32\wbem\repository\_old**.

**Step 4** Start **Windows Management Instrumentation**.

**Step 5** Open the cmd window as administrator.

**Step 6** Go to the **C:\Windows\System32\wbem\** directory.

```
cd C:\Windows\System32\wbem\
```

**Step 7** Restore WMI.

```
for /f %s in ('dir /b *.mof') do mofcomp %s
```

```
for /f %s in ('dir /b en-us*.mfl') do mofcomp en-us\%s
```

**Step 8** Restart the Agent.

```
----End
```

## 10.21 SMS.1351: Mount Point /xxx Detected on the Source Server, Which Has No Free Space. Ensure that There Is at Least 1 MB of Space

### Symptom

On a Linux source server, the Agent failed to be started, and the message "SMS.1351: Mount point /xxx detected on the source server, which has no free space. Ensure that there is at least 1 MB of space" was displayed.

### Possible Causes

A directory used as a mount point on the source server is full.

### Solution

**Step 1** Run the `df -TH` command on the source server to identify which directory is full.

```
Filesystem Size Used Avail Use% Mounted on
/dev/vda1 99G 96G 0G 100% /
devtmpfs 3.9G 0 3.9G 0% /dev
tmpfs 3.9G 24K 3.9G 1% /dev/shm
tmpfs 3.9G 540K 3.9G 1% /run
tmpfs 3.9G 0 3.9G 0% /sys/fs/cgroup
tmpfs 783M 0 783M 0% /run/user/0
```

**Step 2** Redistribute the data across different directories to ensure that each directory has at least 1 MB of free space.

**Step 3** Run the `df -TH` command again to confirm that there is a required free space in each directory. Then restart the SMS-Agent.

----End

## 10.22 SMS.1352: Unknown Physical Volumes Detected on the Source Server

### Symptom

On a Linux source server, the Agent failed to be started, and the message "SMS.1352: Unknown physical volumes detected on the source server" was displayed.

### Possible Causes

A volume group on the source server is created from two physical volumes, but one of the physical volumes is detached.



As shown in the following figure, the # **pvs** command tells that an unknown physical volume is detected. Volume group **testvg** is created from two physical volumes, but one of the physical volumes is detached.

```

root@ecs-check-test:~# pvs
WARNING: Device for PV D16w6o-S9Qy-XrT9-Q9cD-3Ntg-7B7z-Fe9P0b not found or rejected by a filter.
WARNING: Device for PV D16w6o-S9Qy-XrT9-Q9cD-3Ntg-7B7z-Fe9P0b not found or rejected by a filter.
PV VG Fmt Attr PSize PFree
 /dev/vdc1 testvg lvm2 a-- <4.00g <4.00g
 [unknown] testvg lvm2 a-m <5.00g <5.00g

```

## Solution

Attach the detached physical volume back to the source server, run the # **pvs** command to ensure that there are no unknown physical volumes, and then perform the migration again.

## 10.23 SMS.1353: Bind Mount or Repeated Mount Detected on /xxx of the Source Server

### Symptom

On a Linux source server, the Agent failed to be started, and the message "SMS.1353: Bind mount or repeated mount detected on /xxx of the source server" was displayed.

```

Start the migration pre-check. Please waiting...
checking migration risks ...
checking migration risks ...

Pre-migration failed. The following problems are found:
LinuxCheckBeforeStartup:
Warning!!! SMS.1353: Bind mount or repeated mount detected on /xxxx of the source server.
The above warnings may affect the migration. You can ignore them or modify the source configurations and restart the SMS-Agent. Do you want to ignore the warnings and continue?(y/n)

```

### Possible Causes

The source server may have repeated or bind mounts. In this case, data may be migrated repeatedly or the disk space of the target server may be insufficient.

A repeated mount indicates that a disk or partition has multiple mount points. For example, partition **/dev/vda1** is mounted on both the root directory **/** and the **/home/mnt\_test** directory.

A bind mount indicates that a disk or partition is mounted on a directory while the directory is mounted on another directory. For example, partition **/dev/vda1** is mounted on the root directory **/**, and the root directory **/** is mounted on the **/root/bind\_test/bind\_mount** directory.

Repeated mounts and bind mounts have the following features:

- If the data in a directory changes, the changes will be synchronized to other directories.
- A disk or partition is identified at several locations by the **mount** command.

#### NOTE

The disks and folders mentioned in this section are only examples. Replace them as required.

- **Possible cause 1: Repeated mounts**

Check method

- a. Run **mount** on the source server to check whether a disk or partition is mounted on multiple directories. In the following figure, **/dev/vda1** is mounted on both the root directory **/** and the **/home/mnt\_test** directory.

```
[root@ecs-9fd0 ~]# mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
devtmpfs on /dev type devtmpfs (rw,nosuid,size=496696k,nr_inodes=124174,mode=755)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,nodev,mode=755)
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,mode=755)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,xattr,release_agent=/usr/lib/systemd/systemd-cgroup-agent,name=systemd)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net_prio,net_cls)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_event)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,blkio)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpuacct,cpu)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,cpuset)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb)
configfs on /sys/kernel/config type configfs (rw,relatime)
/dev/vda1 on / type ext4 (rw,relatime,data=ordered)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=25,pgrp=1,timeout=0,minproto=5,maxproto=5,direct,pipe_ino=1037)
mqueue on /dev/mqueue type mqueue (rw,relatime)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime)
debugfs on /sys/kernel/debug type debugfs (rw,relatime)
tmpfs on /run/user/0 type tmpfs (rw,nosuid,nodev,relatime,size=101432k,mode=700)
/dev/vda1 on /home/mnt_test type ext4 (rw,relatime,data=ordered)
```

- b. The SMS-Agent uses **df -TH** to determine how much data is on the source server. As shown in the following figure, **df -TH** only returns one of the two mount directories. So the amount of data displayed on the SMS console (which relies on **df -TH**) is less than the amount of data actually migrated (data in **/dev/vda1** gets migrated twice).

```
[root@ecs-9fd0 ~]# df -Th
Filesystem Type Size Used Avail Use% Mounted on
devtmpfs devtmpfs 486M 0 486M 0% /dev
tmpfs tmpfs 496M 0 496M 0% /dev/shm
tmpfs tmpfs 496M 6.8M 489M 2% /run
tmpfs tmpfs 496M 0 496M 0% /sys/fs/cgroup
/dev/vda1 ext4 40G 2.1G 36G 6% /
tmpfs tmpfs 100M 0 100M 0% /run/user/0
```

- c. Run the **ls** command to check the files in the root directory **/** and **/home/mnt\_test**. If the files are the same, it indicates that a repeated mount exists. To learn how to fix this problem, see [Solution for repeated mounts](#).

- **Possible cause 2: Bind mounts**

Check method

- a. Run **mount** on the source server to check whether a disk or partition is mounted on multiple directories. In the following figure, the **/dev/vda1** disk is mounted on both the **/** and **/root/bind\_test/bind\_mount** directories.

```
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,cpuset)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,blkio)
configfs on /sys/kernel/config type configfs (rw,relatime)
/dev/vda1 on / type ext3 (rw,relatime,data=ordered)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs
(rw,relatime,fd=33,pgrp=1,timeout=0,minproto=5,maxproto=5,direct,pipe_ino=9755)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime)
debugfs on /sys/kernel/debug type debugfs (rw,relatime)
mqueue on /dev/mqueue type mqueue (rw,relatime)
tmpfs on /run/user/0 type tmpfs (rw,nosuid,nodev,relatime,size=188312k,mode=700)
/dev/vdb1 on /mnt type ext4 (ro,relatime,data=ordered)
/dev/vda1 on /root/bind_test/bind_mount type ext3 (rw,relatime,data=ordered)
```

- b. Run **df -TH** on the source server. Only one mount point is returned.

| Filesystem | Type     | Size | Used | Avail | Use% | Mounted on     |
|------------|----------|------|------|-------|------|----------------|
| /dev/vda1  | ext3     | 40G  | 7.3G | 31G   | 20%  | /              |
| devtmpfs   | devtmpfs | 911M | 0    | 911M  | 0%   | /dev           |
| tmpfs      | tmpfs    | 920M | 68K  | 920M  | 1%   | /dev/shm       |
| tmpfs      | tmpfs    | 920M | 25M  | 896M  | 3%   | /run           |
| tmpfs      | tmpfs    | 920M | 0    | 920M  | 0%   | /sys/fs/cgroup |
| tmpfs      | tmpfs    | 184M | 0    | 184M  | 0%   | /run/user/0    |
| /dev/vdb1  | ext4     | 9.8G | 37M  | 9.2G  | 1%   | /mnt           |

- c. In the **/root** directory on the source server, run the **# du -h --max-depth=1 ~** command to check how large the **bind\_test** folder is.

Run the **# du -h --max-depth=1 ~/bind\_test** command to check how large the **/root/bind\_test/bind\_mount** folder is. As shown in the command outputs, the subdirectory is larger than its parent directory. This indicates a bind mount exists. To learn how to fix this problem, see [Solution for bind mounts](#).

```
[root@...-centos7 ~]# du -h --max-depth=1 ~
160K /root/rda
1.1M /root/usr
167M /root/code
8.0K /root/.pki
28K /root/rpmbuild
8.0K /root/zai
40K /root/locale
16K /root/.local
24K /root/.ssh_p2v_back
13M /root/scapy-2.4.3
40K /root/.ssh
8.0K /root/pip
1.4G /root/sms2.0
8.0K /root/.oracle_jre_usage
5.6G /root/bind_test
15M /root/test_tools
58M /root/SMS-Server_1.0.0.2346525
204K /root/linux
7.2G /root
[root@...-centos7 ~]# du -h --max-depth=1 ~/bind_test
7.2G /root/bind_test/bind_mount
9.0M /root/bind_test/SMS-Static_1.0.0.2488799
12K /root/bind_test/shell
7.2G /root/bind_test
```

## Solutions

- **Solution for repeated mounts**

- a. In the **.../SMS-Agent/agent/config/g-property.cfg** file in directory where the SMS-Agent is installed on the source server, add mount points to be excluded from migration after the **tar.exclude.dir** and **rsync.exclude.dir** parameters.

For example **1**, if **/home/mnt\_test/\*** is added to the end of **tar.exclude.dir** and **rsync.exclude.dir**, all files in the **/home/mnt\_test/** directory will not be migrated and synchronized.

```
[property]
times = 20
debug = False
file_exist_check = \Windows\system32\DRIVERS\atapi.sys,\Windows\system32\DRIVER
enablesync = True
enablesnapshot = True
enablelinuxblock = False
disableplatformservice = True
wmi = True
targetip =
heartmonitorday = 30
stopsync = 0
uefi2bios = False
controlServerPort = 8899

[environmentcheck]
vss depend service = VSS

[linux.config]
linux.support.filesystem = ext2,ext3,ext4,xfs,vfat,btrfs
linux.unsupport.filesystem =
tar.exclude.dir = /proc/*,/sys/*,/lost+found/*,/var/lib/ntp/proc/*
tar.interval = 30
rsync.exclude.dir = /proc/*,/sys/*,/lost+found/*,/tmp/.MEI*,/var/lib/ntp/proc/*
itrd_bak/*,/lib/modules/*,/boot/grub2/x86_64-efi/*,/boot/grub2/1386-pc/*
rsync.interval = 30
network.dev =
network.gateway =
network.macaddr =
network.ipaddr =
installPwAgent = true
fstab.tmp.filesystem = tmpfs,devpts,devtmpfs,sysfs,proc,ramfs
fstab.ignore_mount_path =
fstab.keep_mount_path =
show_vol_progress = True
inode_used_limit = 2000000
[windows.config]
efi_check = False
total_size = 0
start_offset = 0
disk_number = 0
start_by_manual = False
~
~
~
```

- b. (Optional) If you want that the target server has the same mount points as the source server after the migration is complete, perform the following operations:

After the migration is complete, modify the mount points in the **/etc/fstab** file on the target server, as shown in the figure below. Ensure that the disk **/dev/vdb** on the target server is automatically mounted to the **/mnt** and **/home/mnt\_test** directories.

```
/etc/fstab: static file system information.
#
Use 'blkid' to print the universally unique identifier for a
device; this may be used with UUID= as a more robust way to name devices
that works even if disks are added and removed. See fstab(5).
#
<file system> <mount point> <type> <options> <dump> <pass>
/ was on /dev/udal during installation
UUID=bbd3ea56-da3b-4e1a-b14e-159e41299ea3 / ext4 errors=remount-ro 0 1
/dev/vdb /mnt ext4 defaults 0 0
/dev/vdb /home/mnt_test ext4 defaults 0 0
```

- c. Restart the SMS-Agent.
- **Solution for bind mounts**
  - a. Add mount points to be excluded from migration after the **tar.exclude.dir** and **rsync.exclude.dir** parameters in the **.../SMS-Agent/agent/config/g-property.cfg** file in the SMS-Agent installation path on the source server.

For example **2**, if **/root/bind\_test/bind\_mount/** is added to the end of **tar.exclude.dir** and **rsync.exclude.dir**, all files in the **/root/bind\_test/bind\_mount/** directory will be excluded from migration and synchronization.

- b. (Optional) If you want that the target server has the same mount points as the source server after the migration is complete, perform the following operations:

Modify the mount point information in the **/etc/fstab** file on the target server, as shown in the figure below. Ensure that partition **/dev/vda1** on the target server is automatically mounted to the **/root/bind\_test/bind\_mount** directory.

```
/ /root/bind_test/bind_mount ext3 rw,bind 0 0
```

```
/etc/fstab: static file system information.
#
Use 'blkid' to print the universally unique identifier for a
device; this may be used with UUID= as a more robust way to name devices
that works even if disks are added and removed. See fstab(5).
#
<file system> <mount point> <type> <options> <dump> <pass>
/ was on /dev/uda1 during installation
UUID=bbd3ea56-da3b-4c1a-b14c-159e41299ea3 / ext3 errors=remount-ro 0 1
/ /root/bind_test/bind_mount ext3 rw,bind 0 0
```

#### NOTE

Change the mount points based on your requirements. In the command shown in the above figure, the first item (/) is the mount directory, the second item (/root/bind\_test/bind\_mount) is the mount point, and the third item (ext3) is the file system type. Retain **rw,bind 0 0**.

- c. Restart the SMS-Agent.

## 10.24 SMS.1402 SSH Client Not Installed

### Symptom

When you started the Agent on a Linux source server, you received the error "SMS.1402 SSH client not installed. Install the openssh-clients package and check the installation with ssh -V."

### Possible Causes

An SSH connection must be established between the source server and the target server. If the SSH client is not correctly installed on the source server, this message is displayed.

### Solution

Log in to the source server as user **root** and run the following command. If the SSH path is not returned, reinstall the SSH client on the source server.

```
command -v ssh
```

```
[root@~ -centos ~]#
[root@~ -centos ~]# command -v ssh
/usr/bin/ssh
```

## 10.25 SMS.1414 The Migration Module Stopped Abnormally and Cannot Synchronize Data

### Symptom

During continuous synchronization, the message "SMS.1414 The migration module stops abnormally and cannot synchronize data" was displayed.

## Possible Causes

The Agent or the source server has been restarted.

### NOTE

On the source server, there is a process that monitors disk changes and synchronizes the incremental data from the source server to the target server. If the source server or the Agent is restarted, this process is stopped, and the incremental synchronization cannot be performed.

## Solution

Delete the task and create a migration task for the source server again. To prevent this issue from happening, take care to avoid restarting the source server or Agent during migration.

## 10.26 SMS.1807 Failed to Connect to the Target Server. Check Whether Its IP Address Is Reachable and Confirm that Port 8900 Is Enabled

### Symptom

The target server could not be accessed, and the following message was displayed: SMS.1807 Failed to connect to the target server. Check whether its IP address is reachable and confirm that port 8900 is enabled.

### Possible Causes

For a Windows migration, ports 8900 must be enabled on the target server for communicating with SMS and the source server. If communications cannot be established, this error occurs. You can locate the fault by:

- [Checking Whether the Source Server Can Connect to the Target Server](#)
- [Checking Whether Port 8900 Is Enabled in the Security Group of the Target Server](#)
- [Checking Whether Port 8900 Is Allowed in the Network ACL of the Target Server](#)
- [Checking Whether the Peagent on the Target Server Is Running Properly](#)

### Checking Whether the Source Server Can Connect to the Target Server

**Step 1** Log in to the source server.

**Step 2** Run `telnet Target server IP address 8900`.

- If the Telnet connection succeeds, click **Start** on the SMS console to continue the migration.
- If the Telnet connection fails, check the DNS, firewall, security group, and local network settings of the source and target servers.

----End

## Checking Whether Port 8900 Is Enabled in the Security Group of the Target Server

**Step 1** Sign in to the SMS console.

**Step 2** In the service list, under **Compute**, choose **Elastic Cloud Server**. In the ECS list, click the name of the target ECS.

**Step 3** On the ECS details page, click the **Security Groups** tab. Check whether port 8900 is opened and the source IP address is specified correctly.

If port 8900 is not open, add an inbound rule for the port. If such a rule exists but the source IP address is not 0.0.0.0/0 or the IP address of the source server, change it to 0.0.0.0/0.

For detailed instructions, see [How Do I Configure Security Group Rules for Target Servers?](#)

----End

## Checking Whether Port 8900 Is Allowed in the Network ACL of the Target Server

**Step 1** Sign in to the SMS console.

**Step 2** Check whether the subnet of the target server is associated with a network ACL.

If a network ACL has been associated, and there is an inbound rule configured for port 8900, change the action to **Allow**.

For details, see [Modifying a Network ACL Rule](#).

The screenshot shows the 'Inbound Rules' tab of a Network ACL configuration page. There are two rules listed:

| Priority | Status  | Type | Action | Protocol | Source  | Source Port Range | Destination | Destination Port Range | Description | Operation          |
|----------|---------|------|--------|----------|---------|-------------------|-------------|------------------------|-------------|--------------------|
| 1        | Enabled | IPv4 | Deny   | TCP      | 0.0.0.0 | All               | 0.0.0.0     | 8999                   | --          | Modify Delete More |
| 2        | Enabled | IPv4 | Deny   | TCP      | 0.0.0.0 | All               | 0.0.0.0     | 8900                   | --          | Modify Delete More |

----End

## Checking Whether the Peagent on the Target Server Is Running Properly

After confirming the network is normal, forcibly restart the target server. Wait for about 3 minutes and start the migration again.

## 10.27 SMS.1901 Agent Could Not Read Disk Information

### Symptom

When you started the Agent on a source server running Windows, the message "SMS.1901, Agent could not read disk information" was displayed.

## Possible Causes

- The disk manager on the source server cannot be opened.
- There is faulty hardware on the source server.

## Solutions

- Solution for problem 1
  - a. Restart the source server.
  - b. Open the **Run** dialog box, enter **cmd**, and click **OK**.
  - c. Enter **diskmgmt.msc** and press **Enter**.
    - i. If the **Disk Management** box can be opened, restart the Agent.
    - ii. If the **Disk Management** box cannot be opened, use solution 2.
- Solution for problem 2  
Migrate the source server using [IMS](#).

## 10.28 SMS.1902 Failed to Start the I/O Monitoring Module

### Symptom

When you started the Agent, you received the error message "SMS.1902 Failed to start the I/O monitoring module."

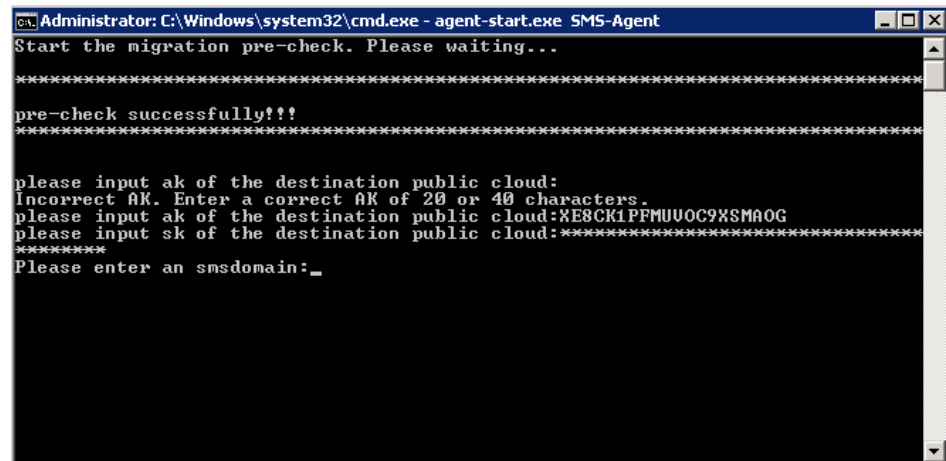
### Solution

To fix the problem, perform the following operations:

1. Uninstall the Agent and re-install it.
  - a. If the Agent (Python 3) is installed, enter the AK/SK pair and SMS domain name when prompted.
  - b. If the Agent (Python 2) is installed, enter the AK/SK pair and SMS domain name when prompted, as shown in [Figure 10-3](#). If no prompt is displayed, double-click **start.bat** in the installation directory and enter the AK and SK when prompted.



**Figure 10-3** Entering the AK/SK pair and SMS domain name



2. Check whether antivirus software is installed on the source server.
  - a. If any antivirus or security software is installed, or the firewall is enabled, a pop-up window may be displayed indicating the I/O monitoring driver was blocked. Allow the system to run the I/O monitoring process.
  - b. If there is no pop-up warning, but the driver is blocked, you need to start the I/O monitoring driver manually. Add **C:\Windows\System32\drivers\HwDiskMon.sys** to the trusted zone of the antivirus software and restart the Agent. If the problem persists, uninstall the antivirus software.

**NOTE**

Some antivirus software has persistent blocking functions and may block the driver even if disabled.

3. Modify the configuration file to disable I/O monitoring.
 

If you do not need to synchronize data, you can modify the configuration file to disable I/O monitoring.

In the Agent installation directory **config**, change the value of **enablesync** to **False** in the **g-property.cfg** file, and then restart the Agent.

**Figure 10-4** Modifying the **g-property.cfg** file

```
[ssl_config]
servercheck = False

[property]
times = 1000
file_exist_check = C:\Windows\system32\DRIVERS\atapi.sys,C:\Windows\system32\DR
enablesync = False
smsuserid = /3c935440684521bd7dff67432f4084
wmi = True
targetip =
heartmonitorday = 7
stopsync = 0

[enviromentcheck]
vss depend service = RPCSS,EventSystem,SENS,VSS,SWPRV,COMSYSAPP

[linux.config]
linux.support.filesystem = ext2,ext3,ext4,vfat,xfs,reiserfs
linux.unsupport.filesystem = btrfs
tar.exclude.dir = /proc*/,/sys*/,/lost+found*/,/var/lib/ntp/proc/*
tar.check.schedule.times = 4
tar.interval = 30
```

## 10.29 SMS.1904 Failed to Create a Snapshot for the Windows Server

### Symptom

During the migration, the message "SMS.1904 Failed to create a snapshot for the Windows server" was reported.

### Possible Causes

Before data is migrated from a Windows source server, the VSS module is used to create snapshots for the source server. These snapshots will be used to ensure that data on the source and target servers is from the same point in time after the migration is complete. If the VSS module on the source server is faulty, the snapshot creation will fail.

### Solution

**Step 1** Go to the Agent configuration directory on the source server.

- Agent (Python 3)  
C:\SMS-Agent-Py3\config.
- Agent (Python 2)  
C:\SMS-Agent-Py2\config

**Step 2** Open the **g-property.cfg** file and change the value of **enablesnapshot** to **False**.

Restart the migration task. The migration task will now skip snapshot creation.

**Figure 10-5** Modifying the configuration parameter

```
[ssl_config]
servercheck = False

[property]
times = 100
file exist check = \Windows\system32\DRIVERS\atapci.sys,\Windows\system32\DRIVERS\pciindex.sys,\Windows\system32\DRIVERS\intelide.sys
enablesync = True
enablesnapshot = False
smuserid = 73c935494068452fbd7dff67432f4084
wmi = True
targetip =
heartmonitorday = 7
stopsync = 0
disktype = SATA

[environmentcheck]
vss depend service = VSS

[linux_config]
linux.support.filesystem = ext2,ext3,ext4,vfat,xfs,reiserfs,btrfs
linux.unsupport.filesystem =
tar.exclude.dir = /proc/*,/sys/*,/lost+found/*,/var/lib/ntp/proc/*
tar.check.schedule.times = 4
tar.interval = 30
rayno.exclude.dir = /proc/*,/sys/*,/lost+found/*,/var/lib/ntp/proc/*,/boot/*,/boot/eti/*,/etc/fstab,/etc/*,/etc/X11/*,/root/intrd_bak/*,lib/modules/*
rsync.interval = 30
network.dev =
network.gateway =
exclude.filesystem = tmpfs,devpts,devtmpfs,sysfs,proc,ramfs
installPwAgent = true

[connector_config]
server_ip =
server_port =

[uuid]
uuid = 91cfe030-4c6a-11e9-b17e-b8a8870750ef

[network_config]
enable = False
dev.name =
dev.ip =
dev.mac =

[collect_log_config]
obs.domain = obs.myhuaweicloud.com
obs.bucket.location.region = cn-north-1
```

 NOTE

If you skip snapshot creation, data on the target server and the source server may be from different points in time during migration, and services on the target server may fail to be started. If this happens, you can stop the software on the source server when no services are running, and then perform a data synchronization to ensure that the data on the source and target servers is from the same point in time.

----End

## 10.30 SMS.2802 Failed to Connect to the Target Server. Check Whether Its IP Address Is Reachable and Port 8899 Is Enabled

### Symptom

The target server could not be accessed, and the following message was displayed: SMS.2802 Failed to connect to the target server. Check whether its IP address is reachable and port 8899 is enabled.

### Possible Causes

For a Windows migration, ports 8899 must be enabled on the target server for communicating with SMS and the source server. If communications cannot be established, this error occurs. You can locate the fault by:

- [Checking Whether the Source Server Can Connect to the Target Server](#)
- [Checking Whether Port 8899 Is Enabled in the Security Group of the Target Server](#)
- [Checking Whether Port 8899 Is Allowed in the Network ACL of the Target Server](#)
- [Checking Whether the Peagent on the Target Server Is Running Properly](#)

### Checking Whether the Source Server Can Connect to the Target Server

**Step 1** Log in to the source server.

**Step 2** Run `telnet Target server IP address 8899`.

- If the IP address is reachable, click **Start** on the SMS console to continue the migration.
- If the Telnet connection fails, check the DNS, firewall, security group, and local network settings of the source and target servers.

----End

### Checking Whether Port 8899 Is Enabled in the Security Group of the Target Server

**Step 1** Sign in to the SMS console.

**Step 2** In the service list, under **Compute**, choose **Elastic Cloud Server**. In the ECS list, click the name of the target ECS.

**Step 3** On the ECS details page, click the **Security Groups** tab. Check whether port 8899 is opened and the source IP address is specified correctly.

If port 8899 is not open, add an inbound rule for the port. If such a rule exists but the source IP address is not 0.0.0.0/0 or the IP address of the source server, change it to 0.0.0.0/0.

For detailed instructions, see [How Do I Configure Security Group Rules for Target Servers?](#)

----End

## Checking Whether Port 8899 Is Allowed in the Network ACL of the Target Server

**Step 1** Sign in to the console.

**Step 2** Check whether the subnet of the target server is associated with a network ACL.

If a network ACL has been associated, and there is an inbound rule configured for port 8899, change the action to **Allow**.

For details, see [Modifying a Network ACL Rule](#).

The screenshot shows the 'Inbound Rules' tab of a Network ACL configuration page. It contains a table with two rules. Both rules have 'Deny' as the action and '8899' as the destination port range. The source is set to '0.0.0.0' and the protocol is 'TCP'.

| Priority | Status  | Type | Action | Protocol | Source  | Source Port Range | Destination | Destination Port Range | Description | Operation          |
|----------|---------|------|--------|----------|---------|-------------------|-------------|------------------------|-------------|--------------------|
| 1        | Enabled | IPv4 | Deny   | TCP      | 0.0.0.0 | All               | 0.0.0.0     | 8899                   | --          | Modify Delete More |
| 2        | Enabled | IPv4 | Deny   | TCP      | 0.0.0.0 | All               | 0.0.0.0     | 8899                   | --          | Modify Delete More |

----End

## Checking Whether the Peagent on the Target Server Is Running Properly

After confirming the network is normal, forcibly restart the target server. Wait for about 3 minutes and start the migration again.

## 10.31 SMS.3205 Failed to Mount Partition *XXX* to Directory *XXX*

### Symptom

A Linux file-level migration failed, and you received message "SMS.3205 Failed to mount partition /dev/vdc1 to directory /mnt/vdc1."

### Possible Causes

Some file systems on the source server are not supported by SMS.

## Solution

Currently, SMS supports Ext2, Ext3, Ext4, XFS, VFAT, and Btrfs file systems for Linux.

For unsupported file systems such as ReiserFS, you can copy files to other file systems, uninstall the unsupported file systems, and then perform the migration.

If this is not possible on the source server, you can:

- Use IMS to create a system disk image for the source server from an external image file and use the image to create a server on Huawei Cloud. For details, see [Creating a Windows System Disk Image from an External Image File](#) or [Creating a Linux System Disk Image from an External Image File](#).
- Use a public or Marketplace image to create a server and deploy your applications on the server.
- Use the [Cloud Migration Service](#) on Huawei Cloud.

## 10.32 SMS.3802 Failed to Establish an SSH Connection with the Target Server

During a migration, an SSH connection must be established between the source server and target server. This error message is displayed when the SSH client reports the error "SSHException", indicating that an exception occurs during SSH connection setup. The possible causes and solutions are:

- **The currently installed SMS-Agent is not the latest version.**  
Go to the **Agents** page on the SMS console, download and install the latest SMS-Agent, and create a migration task again.
- **Security software or firewalls may block the connection from the source server to the target server.**
  - Check the firewall settings of the source server and ensure that no outbound traffic is intercepted. If the traffic is blocked, enable the involved ports and try again.
  - Check whether there is security software running on the source server. If there is, disable the security software, stop related services if necessary, and try again.

## 10.33 SMS.3803 The Connection to the Port 22 of Target Server Failed, Because an Error Occurred During the Public Key Verification on the Target Server

During a migration, an SSH connection must be established between the source server and target server. This error message is displayed when the SSH client reports error "BadHostkeyException", indicating that the public key in the **known\_hosts** file fails to be verified. The possible causes and solutions are:

- **Security software or firewalls may block the connection from the source server to the target server.**

- Check the firewall settings of the source server and ensure that no outbound traffic is intercepted. If the traffic is blocked, enable the involved ports and try again.
- Check whether there is security software running on the source server. If there is, disable the security software, stop related services if necessary, and try again.
- **The IP address of the target server is changed after you configure the target server in the migration task or the full migration is complete.**

The source server cannot identify the changed IP address of the target server. As a result, the authentication fails. You can delete the current task and create a new one, or change the IP address of the target server back to the original one.
- **Packet loss occurs when the target server obtains ECS metadata.**

In certain regions, such as AF-Johannesburg and AP-Jakarta, the target server may fail to obtain ECS metadata. In this case, you are advised to change the target server and perform the migration again.
- **The migration is executed using a private network, and there is an IP address conflict between the source and target servers.**

The source server may fail to access the IP address of the target server if there is an IP address conflict between them. Check and modify the network configuration, ensure that the IP addresses do not conflict, and then try the migration again.

## 10.34 SMS.3804 The Connection to the Port 22 of Target Server Failed Due to Invalid Connection Credential

During a migration, an SSH connection must be established between the source server and target server. This error message is displayed when the SSH client reports the error "AuthenticationException" indicating that the identity authentication fails. Check whether the target server runs Windows and uses a key for login. If it does, use another cloud server as the target server and then try again.

---

### NOTICE

Such Windows servers cannot be used as target servers for migration.

---

## 10.35 SMS.3805 The Connection to the Port 22 of Target Server Timed Out

During a migration, an SSH connection must be established between the source server and target server. This error message is displayed when OpenSSH reports the error "connect timeout", indicating that the SSH connection times out. As a result, the source server cannot connect to the IP address of the target server. The possible causes and solutions are:

- **Check whether the security groups, firewalls, and ACL rules allow the source server to access the target server with the IP address.**

Check whether the connection is disallowed by any security groups, firewalls, or ACL rules on the network between the source and target servers. If it is, modify their settings to allow the source server to access the target server and retry the migration task.

- **Check the network connectivity between the source and target servers. If a private network is used, check whether the source and target servers are in the same network range.**

Use SSH or Telnet to test the network connectivity between the source and target servers. If the connection fails, check the network and firewall settings.

The commands are in the following format:

- telnet <target-server-IP-address> <port>
- ssh <target-server-IP-address> <port>

For example, if the target server's IP address is 192.168.0.x and port 22 is used, run either of the following commands:

```
telnet 192.168.0.x 22
ssh 192.168.0.x 22
```

- **Check whether the target server is stopped.**
  - a. Sign in to the console.
  - b. On the Elastic Cloud Server page, check the ECS (target server) status. If the ECS is stopped, choose **More > Start** in the **Operation** column.

## 10.36 SMS.3806 The Connection to the Port 22 of Target Server was Rejected

During a migration, an SSH connection must be established between the source server and target server. This message is displayed when OpenSSH reports the error "connect refused", which means the connection to the target server's IP address is rejected. The possible causes and solutions are:

- **Check whether the security groups, firewalls, and ACL rules allow the source server to access the target server with the IP address.**

Check whether the connection is disallowed by any security groups, firewalls, or ACL rules on the network between the source and target servers. If it is, modify their settings to allow the source server to access the target server and retry the migration task.

- **Check the network connectivity between the source and target servers. If a private network is used, check whether the source and target servers are in the same network range.**

Use SSH or Telnet to test the network connectivity between the source and target servers. If the connection fails, check the network and firewall settings.

The commands are in the following format:

- telnet <target-server-IP-address> <port>
- ssh <target-server-IP-address> <port>

For example, if the target server's IP address is 192.168.0.x and port 22 is used, run either of the following commands:

```
telnet 192.168.0.x 22
ssh 192.168.0.x 22
```

## 10.37 SMS.5102 Agent Startup Failed Because the noexec Permission Is Unavailable on /tmp in Linux

### Symptom

When you ran **sh startup.sh** to start the Agent, the following message was reported: "SMS.5102 Agent startup failed because the noexec permission is unavailable on /tmp in Linux."

### Possible Causes

There is a block device mounted to the **/tmp** directory, but the exec permission was not assigned or the noexec permission was assigned during the mounting.

### Solution

**Step 1** Log in to the source server.

**Step 2** Run **mount -l | grep /tmp**. If information similar to the following is displayed, the noexec permission is assigned:

```
/dev/vdb1 on /tmp type ext4 (rw, noexec, relatime, data=ordered)
```

**Step 3** Remount the block device to the **/tmp** directory. Do not assign the noexec permission during the mounting. Alternatively, run **mount -o remount exec /tmp** to assign the **exec** permission.

**Step 4** Run **mount -l | grep /tmp** again. If information similar to the following is displayed, the exec permission is assigned. Then restart the Agent.

```
/dev/vdb1 on /tmp type ext4 (rw, relatime, data=ordered)
```

----End

## 10.38 SMS.5105 Agent Startup Failed. Insufficient Permissions to Add Files to or Delete Files from xxx

### Symptom

When you started the Agent on a Linux source server, you received the error "SMS.5105 Agent startup failed. Insufficient permissions to add files to or delete files from xxx."

### Possible Causes

The root directory on the source server is set to be unmodifiable. Files cannot be added to or modified in the root directory.

Log in to the source server and run the following command to check the attributes of the root directory:



```
lsattr -d /root
```

If the root directory has the `i` attribute, files cannot be added to or modified in the root directory.

```
root@ ~ # lsattr -d /root
---i-----e--- /root
```

## Solution

1. Run the following command to remove the unmodifiable attribute from the root directory:

```
chattr -i /root
```

2. Run the following command to check the attribute is removed from the root directory:

```
lsattr -d /root
```

```
root@ ~ # lsattr -d /root
-----e--- /root
```

3. Restart the Agent.

## 10.39 SMS.5108 Failed to Execute df -TH

### Symptom

When you started the Linux Agent by running the `startup.sh` script, error "SMS.5108 Failed to execute df -TH" was reported.

### Possible Causes

After you run `df -TH` and `echo $?` on the source server, if the command output is not `0`, the command execution failed.

In this case, it is possible that a mounted device is offline or does not exist.

### Solution

Unmount the device. Run `df -TH` and `echo $?` and check whether the output is `0`.

## 10.40 MS.5112: Agent Main Program linuxmain Could Not Run

### Symptom

The Agent failed to be started on Linux, and the error message "Error. SMS.5112 Agent main program linuxmain could not run" was displayed.

### Possible Causes

The source system does not support the linuxmain program.

## Solution

Check whether the source server OS is supported by SMS. Learn more about [Supported Linux OSs](#).

- If the source server OS is not supported, the server cannot be migrated by SMS.
- If the source server OS is supported, contact Huawei Cloud technical support.

## 10.41 SMS.5113 Check %s on Linux Timed Out

### Symptom

The Agent failed to be started on Linux, and the error message "Error. SMS.5113 Check %s on Linux timed out" was displayed.

### Possible Causes

The execution of some commands takes a long time in the migration feasibility check stage. You can resolve the issue based on the specific check item.

### Solution

**Step 1** Go to the `...SMS-Agent/agent/linux/resources/shell` directory and run the precheck script. `xxx` indicates the check item for which the error is reported.

```
./pre_check.sh check_<xxx>
```

**Step 2** Perform operations based on the running time and result.

- If the running time is less than 30 seconds and no error is reported, run the Agent again.
- If the running time is longer than 30 seconds and no error is reported, edit the `pre_check.sh` file and add the involved check item to the end of `exclude_items` to exclude the check item. Then run the Agent again.
- If no response or error is returned for a long time, some commands for the check item experience errors. For example, `df -TH` for check item `check_df_result` may hang if there are unresponsive external storage devices. You need to check each command involved in the check item based on the instructions below.
  - a. Open the `pre_check.sh` file and search for `check_xxx`. `xxx` represents the check item for which the error is reported.
  - b. Manually run the commands involved in the check item one by one to locate the command that causes the error.
  - c. Rectify the command issue and run the Agent again.

----End

## 10.42 SMS.6303 The Installed Agent Is of an Earlier Version. Download the Latest Version

### Symptom

When the Agent tried to register the source server with SMS, the error message "The installed Agent is of an earlier version. Download the latest version" was reported.

### Possible Causes

The version of the Agent installed on the source server is too early. You need to download and install the latest Agent.

### Solution

1. Uninstall the earlier version of the Agent. For details, see [Uninstalling the Agent](#).
2. Install the latest version of the Agent. For details, see [Installing the Agent on Linux](#).

## 10.43 SMS.6509 Incompatible File System of the Source Server

### Symptom

After the migration feasibility check was complete, you received error message "SMS.6509 Incompatible file system of the source server."

### Possible Causes

There are unsupported file systems on the source server.

### Solution

Currently, SMS supports Ext2, Ext3, Ext4, XFS, VFAT, and Btrfs file systems for Linux.

For unsupported file systems such as ReiserFS, you can copy files to other file systems, uninstall the unsupported file systems, and then perform the migration.

If this is not possible on the source server, you can:

- Use IMS to create a system disk image for the source server from an external image file and use the image to create a server on Huawei Cloud. For details, see [Creating a Windows System Disk Image from an External Image File](#) or [Creating a Linux System Disk Image from an External Image File](#).
- Use a public or Marketplace image to create a server and deploy your applications on the server.

- Use the [Cloud Migration Service](#) on Huawei Cloud.

## 10.44 SMS.6511 The Source Server Lacks Driver Files

### Symptom

After you started the Agent, the source server did not pass the migration feasibility check, and you received error message "SMS.6511 Source server lacks driver files" on the SMS console.

### Possible Causes

After the Agent is started, it will verify the driver files on the source server. If any necessary driver files are missing, the preceding error is reported.

The following files are necessary:

- \* C:\Windows\system32\DRIVERS\atapi.sys
- \* C:\Windows\system32\DRIVERS\pciindex.sys
- \* C:\Windows\system32\DRIVERS\intelide.sys

### Solution

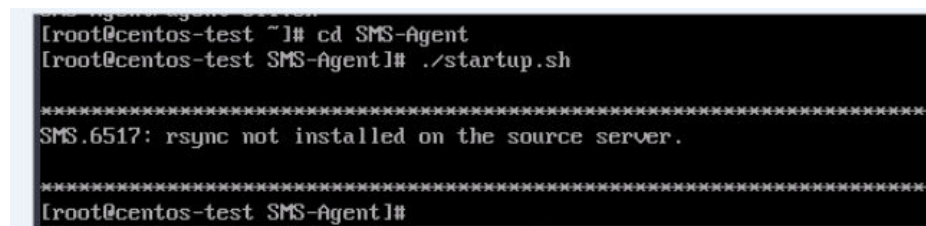
Check whether the preceding files are there on the source server. If any of them are missing, use the driver repair tool to repair the files or copy the files from another server.

## 10.45 SMS.6517 rsync Not Installed on the Source Server

### Symptom

When you started the Agent installed on a Linux source server, the "rsync not installed on the source server" message was reported, as shown in [Figure 10-6](#). You need to install rsync and restart the Agent.

**Figure 10-6** Error message



```
[root@centos-test ~]# cd SMS-Agent
[root@centos-test SMS-Agent]# ./startup.sh

SMS.6517: rsync not installed on the source server.

[root@centos-test SMS-Agent]#
```

### Possible Causes

Linux migration depends on rsync. If rsync is not installed on the source server, the Agent cannot be started.

## Solutions

The operations for different OSs are as follows:

### CentOS and Red Hat

1. Use PuTTY or another SSH client to log in to the source server as user **root**.
2. Check whether rsync exists in the yum repository.

#### yum search rsync

- If rsync exists, go to step **3**.
- If rsync does not exist and the source server runs CentOS 8, update the yum repository.

```
mv /etc/yum.repos.d /etc/yum.repos.d.huawei.bak
```

```
mkdir /etc/yum.repos.d
```

**vi /etc/yum.repos.d/CentOS-Base.repo** (Enter the following information, and save the changes and exit.)

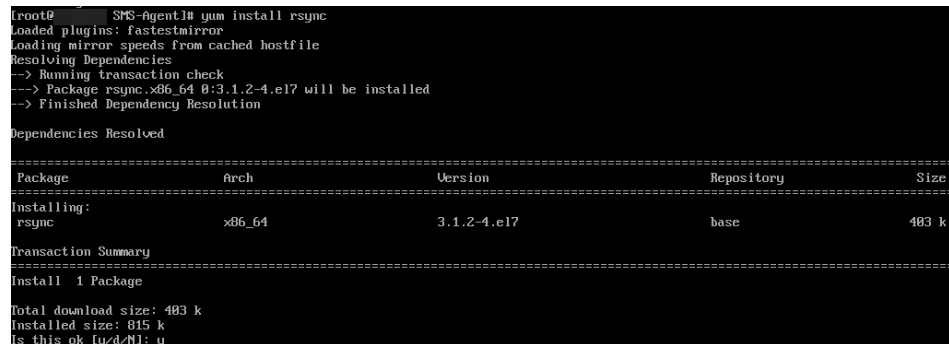
```
[BaseOS]
name=CentOS-$releasever - Base
baseurl=https://repo.huaweicloud.com/centos-vault/$contentdir/$releasever/BaseOS/
$basearch/os/
gpgcheck=1
enabled=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-centosofficial
```

```
yum clean all
```

```
yum makecache
```

3. Install rsync.

#### yum install rsync



```
root@SPS-Agent1# yum install rsync
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
Resolving Dependencies
--> Running transaction check
--> Package rsync.x86_64 0:3.1.2-4.e17 will be installed
--> Finished Dependency Resolution

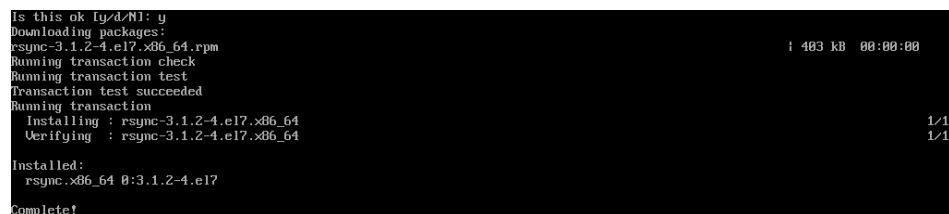
Dependencies Resolved

=====
Package arch Version Repository Size
=====
Installing:
rsync x86_64 3.1.2-4.e17 base 403 k
Transaction Summary

Install 1 Package

Total download size: 403 k
Installed size: 815 k
Is this ok [y/d/N]: y
```

4. Enter **y** and press **Enter**.



```
Is this ok [y/d/N]: y
Downloading packages:
rsync-3.1.2-4.e17.x86_64.rpm | 403 kB 00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
 Installing : rsync-3.1.2-4.e17.x86_64 1/1
 Verifying : rsync-3.1.2-4.e17.x86_64 1/1
Installed:
rsync.x86_64 0:3.1.2-4.e17
Complete!
```

5. Display rsync details.

#### rsync --version

If the following information is displayed, rsync has been installed:

```
rsync --version
rsync version 3.1.2 protocol version 31
Copyright (C) 1996-2015 by Andrew Tridgell, Wayne Davison, and others.
Web site: http://rsync.samba.org/
Capabilities:
 64-bit files, 64-bit inums, 64-bit timestamps, 64-bit long ints,
 socketpairs, hardlinks, symlinks, IPv6, batchfiles, inplace,
 append, ACLs, xattrs, iconv, symtimes, prealloc

rsync comes with ABSOLUTELY NO WARRANTY. This is free software, and you
are welcome to redistribute it under certain conditions. See the GNU
General Public Licence for details.
```

6. Start the Agent.  
**./startup.sh**
7. Read the displayed information carefully, enter **y**, and press **Enter**.

**Figure 10-7 Confirmation**

After being started, the migration Agent collects system configuration information and uploads the information to SMS for migration task creation. The information to be collected includes server IP address and MAC address. For details, see the Server Migration Service User Guide. Are you sure you want to collect the information?(y/n)y

8. Enter the AK/SK pair of the Huawei Cloud account that you migrate to.  
When the following information is displayed, the Agent has been started up and will automatically start reporting source server information to SMS.

```
Please input AK(Access Key ID) of :
Please input SK(Secret Access Key) of :
agent is starting..
sms agent start up successfully!
check the source server in Server Migration Service Console now!
You can use the agent-cli tool to monitor the sms agent
```

**SUSE**

1. Use PuTTY or another SSH client to log in to the source server as user **root**.
2. Install rsync.

**zypper install rsync**

```
zypper install rsync
Loading repository data...
Reading installed packages...
Resolving package dependencies...

The following NEW package is going to be installed:
 rsync

1 new package to install.
Overall download size: 363.0 KiB. After the operation, additional 713.0 KiB
will be used.
Continue? [y/n/? shows all options] (y):
```

3. Enter **y** and press **Enter**.

```
Continue? [y/n/? shows all options] (y): y
Retrieving package rsync-3.0.4-2.53.6.1.x86_64 (1/1), 363.0 KiB (713.0 KiB unpac
ked)
Retrieving: rsync-3.0.4-2.53.6.1.x86_64.rpm [done]
Installing: rsync-3.0.4-2.53.6.1 [done]
Additional rpm output:
insserv: warning: script 'S01agentwatch' missing LSB tags
insserv: warning: script 'agentwatch' missing LSB tags
```

4. Display rsync details.

**rsync --version**

If the following information is displayed, rsync has been installed:

```
rsync --version
rsync version 3.0.4 protocol version 30
Copyright (C) 1996-2008 by Andrew Tridgell, Wayne Davison, and others.
Web site: http://rsync.samba.org/
Capabilities:
 64-bit files, 64-bit inums, 64-bit timestamps, 64-bit long ints,
 socketpairs, hardlinks, symlinks, IPv6, batchfiles, inplace,
 append, ACLs, xattrs, iconv, symtimes, SLP

rsync comes with ABSOLUTELY NO WARRANTY. This is free software, and you
are welcome to redistribute it under certain conditions. See the GNU
General Public Licence for details.
```

5. Start the Agent.  
**./startup.sh**
6. Read the displayed information carefully, enter **y**, and press **Enter**.

**Figure 10-8 Confirmation**

```
After being started, the migration Agent collects system configuration information and uploads the
information to SMS for migration task creation. The information to be collected includes server IP
address and MAC address. For details, see the Server Migration Service User Guide. Are you sure you
want to collect the information?(y/n)y
```

7. Enter the AK/SK pair of the Huawei Cloud account that you migrate to.  
When the following information is displayed, the Agent has been started up and will automatically start reporting source server information to SMS.

```
Please input AK(Access Key ID) of :
Please input SK(Secret Access Key) of :
agent is starting...
sms agent start up successfully!
check the source server in Server Migration Service Console now!
You can use the agent-cli tool to monitor the sms agent
```

**Ubuntu**

1. Use PuTTY or another SSH client to log in to the source server as user **root**.
2. Install rsync.

**apt-get install rsync**

```
root@ :# apt-get install rsync
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
 rsync
0 upgraded, 1 newly installed, 0 to remove and 113 not upgraded.
Need to get 329 kB of archives.
After this operation, 709 kB of additional disk space will be used.
Get:1 http://mirrors.cloud.aliyuncs.com/ubuntu xenial-updates/main amd64 rsync amd64 3.1.1-3ubuntu1.2 [329 kB]
Fetched 329 kB in 0s (1,106 kB/s)
Selecting previously unselected package rsync.
(Reading database ... 99895 files and directories currently installed.)
Preparing to unpack .../rsync_3.1.1-3ubuntu1.2_amd64.deb ...
Unpacking rsync (3.1.1-3ubuntu1.2) ...
Processing triggers for systemd (229-4ubuntu21.2) ...
Processing triggers for ureadahead (0.100.0-19) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up rsync (3.1.1-3ubuntu1.2) ...
inserv: can not symlink(/init.d/aegis, ../rc2.d/S02aegis): File exists
inserv: can not symlink(/init.d/aegis, ../rc3.d/S02aegis): File exists
inserv: can not symlink(/init.d/aegis, ../rc4.d/S02aegis): File exists
inserv: can not symlink(/init.d/aegis, ../rc5.d/S02aegis): File exists
```

3. Display rsync details.  
**rsync --version**  
If the following information is displayed, rsync has been installed:

```
rsync --version
rsync version 3.1.1 protocol version 31
Copyright (C) 1996-2014 by Andrew Tridgell, Wayne Davison, and others.
Web site: http://rsync.samba.org/
Capabilities:
 64-bit files, 64-bit inums, 64-bit timestamps, 64-bit long ints,
 socketpairs, hardlinks, symlinks, IPv6, batchfiles, inplace,
 append, ACLs, xattrs, iconv, symtimes, prealloc

rsync comes with ABSOLUTELY NO WARRANTY. This is free software, and you
are welcome to redistribute it under certain conditions. See the GNU
General Public Licence for details.
```

4. Start the Agent.

```
./startup.sh
```

5. Read the displayed information carefully, enter **y**, and press **Enter**.

```
After being started, the migration Agent collects system configuration information and uploads the
information to SMS for migration task creation. The information to be collected includes server IP
address and MAC address. For details, see the Server Migration Service User Guide. Are you sure you
want to collect the information?(y/n)y
```

6. Enter the AK/SK pair of the Huawei Cloud account that you migrate to.

When the following information is displayed, the Agent has been started up and will automatically start reporting source server information to SMS.

```
Please input AK(Access Key ID) of :
Please input SK(Secret Access Key) of :
agent is starting..
sms agent start up successfully!
check the source server in Server Migration Service Console now!
You can use the agent-cli tool to monitor the sms agent
```

## 10.46 SMS.6528 Complete Real-name Authentication to Invoke SMS APIs

### Symptom

When the Agent starts to register the source server with SMS, the following error message was displayed: SMS.6528 Complete real-name authentication to invoke SMS APIs.

### Possible Causes

Before using SMS, you need to complete real-name authentication.

### Solution

Complete [real-name authentication](#) and try again.

## 10.47 SMS.6533 VSS Not Installed on the Source Server

### Symptom

After the Agent was started on a Windows source server, the source server did not pass the migration feasibility check, and the error message "SMS.6533 VSS not installed on the source server" was displayed on the SMS console.



## Possible Causes

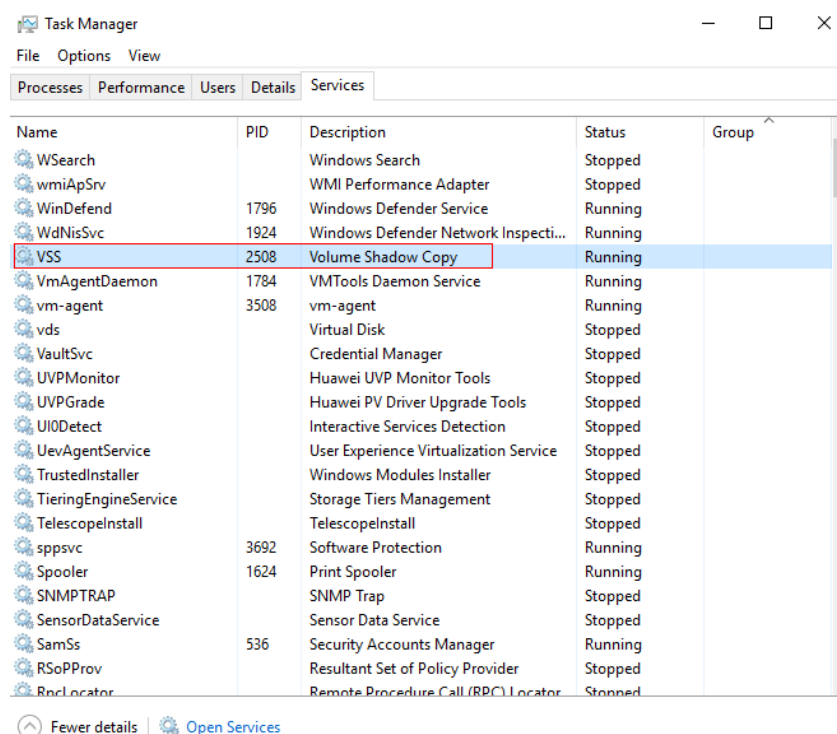
The possible causes are as follows:

1. The VSS service is not installed on the source server.
2. The VSS service is disabled on the source server.

## Solution

1. Open the **Task Manager** and check whether the VSS service is there.  
If it is, go to **2**.  
If it is not, go to **3**.

**Figure 10-9** Checking whether VSS exists



2. Modify the configuration file to skip snapshot creation.

Open the `\config\g-property.cfg` file in the Agent installation directory and change the value of `enablesnapshot` to **False**. The migration task will skip snapshot creation.

### NOTICE

Skipping snapshot creation may cause data time difference between the target server and the source server after the migration is complete, and your services may fail to start on the target server. To ensure data consistency, you are advised to pause services running on the source server during off-peak hours and then perform an incremental synchronization.

**Figure 10-10** Modifying the `g-property.cfg` file

```
[ssl_config]
servercheck = False

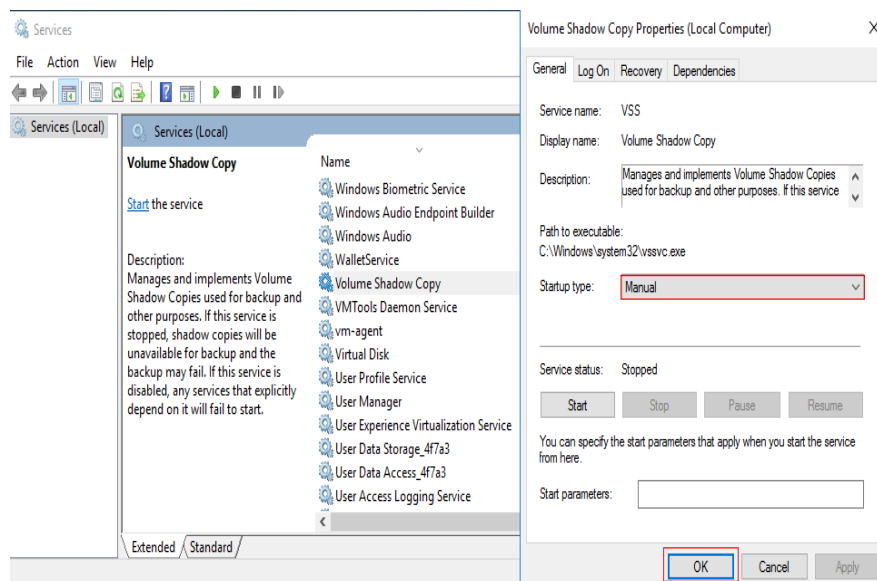
[property]
times = 100
file exist check = \Windows\system32\DRIVERS\atapi.sys, \Windows\
enablesync = True
enablesnapshot = False
smsuserid = ' ' 34
wmi = True
targetip =
heartmonitorday = 7
stopsync = 0
disktype = SATA

[enviromentcheck]
vss depend service = VSS

[linux.config]
linux.support.filesystem = ext2,ext3,ext4,vfat,xfs,reiserfs,btrfs
linux.unsupport.filesystem =
tar.exclude.dir = /proc/*,/sys/*,/lost+found/*,/var/lib/ntp/proc
tar.check.schedule.times = 4
tar.interval = 30
rsync.exclude.dir = /proc/*,/sys/*,/lost+found/*,/var/lib/ntp/pr
rsync.interval = 30
network.dev =
network.gateway =
```

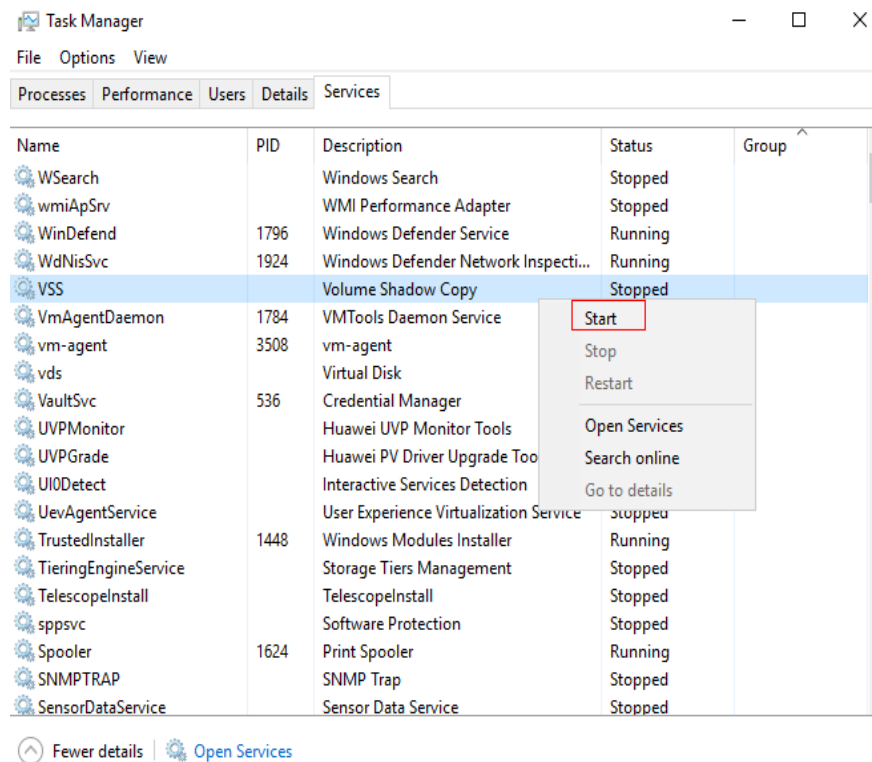
3. Check VSS status. If its status is **Stopped**, right-click the service and choose **Open Services** from the shortcut menu. Locate and right-click **Volume Shadow Copy**, and choose **Properties** from the shortcut menu. On the displayed **Volume Shadow Copy Properties** window, change the **Startup type** to **Manual**. Click **OK**.

**Figure 10-11** Changing the startup mode of VSS



4. Go back to the **Task Manager** window, locate and right-click **VSS**, and choose **Start** from the shortcut menu.

**Figure 10-12** Starting VSS



5. Sign in to the SMS console, locate the server record, and in the **Operation** column, choose **More > Delete**.  
After the deletion is complete, restart the Agent.

## 10.48 SMS.6537 SMS Cannot Migrate System Disks Larger Than 1 TB

### Symptom

After the Agent was started, the following error message was displayed on the SMS console: SMS.6537 SMS cannot migrate system disks greater than 1 TB.

### Possible Causes

SMS is restricted by an IMS limitation on the system disk size. When you use an image to create an ECS, the system disk cannot be larger than 1 TB.

### Solution

Resize the system disk by referring to [How Do I Migrate a Server with a System Disk Larger Than 1 TB?](#) Then, perform the migration.

## 10.49 SMS.6562 Component i386-pc Not Found on Source Server. For solution, see SMS API Reference

### Symptom

When you started the Agent installed on a Linux source server, you received error message "SMS.6562: Component i386-pc not found on source server. For solution, see SMS API Reference."

```

SMS.6562: Component i386-pc not found on source server. For solution, see SMS API Reference.

```

### Possible Causes

Huawei Cloud requires that component **i386-pc** be available on servers booted in BIOS mode for installing GRUB. The error message indicates that the source server is started in BIOS mode but does not have component **i386-pc**. In this case, during the target server configuration by the Agent, GRUB will fail to be installed. As a result, this error is reported during the configuration.

#### NOTE

The **i386-pc** component is located in the `/usr/lib/grub/` directory.

### Solution

**Step 1** Check whether the source server is booted to BIOS.

```
[-d /sys/firmware/efi] && echo UEFI || echo BIOS
```

- If the output is **bios**, the server is booted to BIOS.
- If the output is **uefi**, the server is booted to UEFI.

**Step 2** Check whether the **i386-pc** folder is in the `/usr/lib/grub/` directory.

```
ls /usr/lib/grub
```

- If the **i386-pc** folder is not there, go to step **3**.
- If the **i386-pc** folder is there, check whether the **i386-pc** folder is empty.

```
ls /usr/lib/grub/i386-pc
```

**Step 3** On the source cloud platform or Huawei Cloud, use a public image to create a temporary server that runs the same OS as the source server.

**Step 4** Log in to the temporary server and transfer the **i386-pc** folder in the `/usr/lib/grub/` directory on the temporary server to the `/usr/lib/grub/` directory on the source server. If there is an empty **i386-pc** folder on the source server, overwrite it.

You can use Secure Copy (SCP) or rsync to transfer the folder. The following command uses SCP as an example:

```
scp -r /usr/lib/grub/i386-pc Username@xx.xx.xx.xx:/usr/lib/grub/
```

```
scp -r /usr/lib/grub/i386-pc/ root@xxxxxxxxxx:/usr/lib/grub/_
```

**CAUTION**

- Replace *Username* with the username of the source server.
- Replace *xx.xx.xx.xx* with the IP address of the source server.
- Modify the security group of the source server to allow access from the temporary server.

**Step 5** Log in to the source server, check that the **i386-pc** folder is in the **/usr/lib/grub/** directory, and restart the Agent.

```
root@ecs-ubuntu-18:/usr/lib/grub# ls
grub-mkconfig_lib i386-pc
```

----End

## 10.50 SMS.6563 File **initrd** or **initramfs** of the *xxxx* version Not Found Under **/boot** Directory. For solution, see SMS API Reference

### Symptom

When you started the Agent installed on a Linux source server, you received error message "SMS.6563: File **initrd** or **initramfs** of the *xxxx* version not found under /boot directory. For solution, see SMS API Reference."

```
[root@SMS-Agent]# ./startup.sh
SMS.6563: File initrd or initramfs of the [REDACTED] version not found under /boot directory. For
solution, see SMS API Reference.
```

### Possible Causes

The source server does not have the **initrd** or **initramfs** image file. Servers on some cloud platforms use custom kernels. The servers can be started without the **initrd** or **initramfs** image file. However, servers on Huawei Cloud cannot be started without the **initrd** or **initramfs** image file.

**NOTE**

The functions of **Initrd** and **Initramfs** are basically the same. They both provide the drivers required for starting the kernel.

Different OSs use different image files. For example, Ubuntu uses **Initrd** and the filename format is **initrd.img-xxx**, and some CentOS distributions use **Initramfs** and the filename format is **initramfs-xxx.img**.

### Solution

The following operations will generate an image file that matches the kernel file on the source server. This may affect the OS on the source server.

| OS                 | Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                   | Reference                                                                   |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| CentOS and EulerOS | <p>CentOS 7.0 is used as an example in the following.</p> <ol style="list-style-type: none"> <li>In the <b>/etc/dracut.conf</b> file, add VirtIO drivers to <b>add_drivers</b>, including virtio_blk, virtio_scsi, virtio_net, virtio_pci, virtio_ring, and virtio. Separate driver names with spaces.</li> <li>Save and exit the <b>/etc/dracut.conf</b> file and run the <b>dracut -f</b> command to generate <b>initrd</b> again.</li> </ol> | <a href="#">CentOS and EulerOS</a>                                          |
| Ubuntu and Debian  | <ol style="list-style-type: none"> <li>In the <b>/etc/initramfs-tools/modules</b> file, add VirtIO drivers, including virtio_blk, virtio_scsi, virtio_net, virtio_pci, virtio_ring, and virtio. Separate driver names with spaces.</li> <li>Save and exit the <b>/etc/initramfs-tools/modules</b> file and run the <b>update-initramfs -u</b> command to generate <b>initrd</b> again.</li> </ol>                                               | <a href="#">Ubuntu and Debian</a>                                           |
| SUSE and openSUSE  | <p>If the OS version is earlier than SUSE 12 SP1 or openSUSE 13:</p> <ol style="list-style-type: none"> <li>In the <b>/etc/sysconfig/kernel</b> file, add VirtIO drivers to <b>INITRD_MODULES=""</b>. VirtIO drivers include virtio_blk, virtio_scsi, virtio_net, virtio_pci, virtio_ring, and virtio. Separate driver names with spaces.</li> <li>Run the <b>mkinitrd</b> command to generate <b>initrd</b> again.</li> </ol>                  | <a href="#">SUSE and openSUSE (Earlier than SUSE 12 SP1 or openSUSE 13)</a> |

| OS | Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                            | Reference                                                                        |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|    | <p>If the OS version is SUSE 12 SP1:</p> <ol style="list-style-type: none"> <li>In the <b>/etc/dracut.conf</b> file, add VirtIO drivers to <b>add_drivers</b>, including virtio_blk, virtio_scsi, virtio_net, virtio_pci, virtio_ring, and virtio. Separate driver names with spaces.</li> <li>Run the <b>dracut -f</b> command to generate <b>initrd</b> again.</li> </ol>                                                                              | <p><a href="#">SUSE and openSUSE (SUSE 12 SP1)</a></p>                           |
|    | <p>If the OS version is later than SUSE 12 SP1 or openSUSE 13:</p> <ol style="list-style-type: none"> <li>In the <b>/etc/dracut.conf</b> file, add VirtIO drivers to <b>add_drivers</b>, including virtio_blk, virtio_scsi, virtio_net, virtio_pci, virtio_ring, and virtio. Separate driver names with spaces.</li> <li>Save and exit the <b>/etc/dracut.conf</b> file and run the <b>dracut -f</b> command to generate <b>initrd</b> again.</li> </ol> | <p><a href="#">SUSE and openSUSE (Later than SUSE 12 SP1 or openSUSE 13)</a></p> |

## 10.51 SMS.6616 The Current OS Does Not Support Block-level Migration/SMS.6617 The Current Kernel Version Does Not Support Block-level Migration

### Symptom

When the Agent started to register the source server with SMS, either of the following messages was displayed:

- SMS.6616 The current OS does not support block-level migration.
- SMS.6617 The current kernel version does not support block-level migration.

### Possible Causes

The OS or kernel version of the source server was not supported for SMS block-level migration. For details, see [Linux OSs and kernel versions available for block-level migration](#).

## Solution

- Check if the OS or version of the source server is listed in in [Linux OSs available for file-level migration](#). If it is, use the file-level migration method.

# 10.52 SMS.9007 Migration Task Paused. Rate Limit Not Applied. Rate Exceeded Limit Multiple Times

## Symptom

During the migration of a Linux server, the message "SMS.9007 Migration task paused. Rate limit not applied. Rate exceeded limit multiple times." was displayed.

## Possible Causes

The configured rate limit was not applied due to the following reasons:

- There were traffic limiting rules on the NIC of the source server.
- Traffic Control (TC) was missing or abnormal on the source server.
- Class Based Queuing (CBQ) was missing on the source server.
- The source server did not have the route command.

## Solutions

- Check whether the source server has rate limiting rules (including but not limited to those for NICs) and evaluate whether deleting the existing rules will affect services. To view the NIC rate limiting rule, perform the following steps:

Log in to the source server as the **root** user and run the following command to display the configurations of all NICs:

```
ifconfig
```

Run the following command to display the traffic control rules of a specific NIC. **eth0** is used in the following example.

```
tc qdisc show dev eth0
```

- If deleting existing rules affects services, go to the SMS console, delete the migration rate limit you configured and start the migration task. For details, see [Setting a Migration Rate](#).

- If deleting existing rules does not affect services, run the following command to delete the rules. **eth0** is used in the following example. Then click **Start** on the SMS console to continue the migration.

```
tc qdisc del dev eth0 root
```

- Run the following commands on the source server to check whether the required commands and modules are available:

```
tc -V Check whether TC is available.
```

```
route Check whether the route command is available.
```

```
Run the lsmod | grep sch_cbq Check whether CBQ is available.
```

If any command or module is missing, rectify the fault and run the following command to delete related log files. Then click **Start** on the SMS console to continue the migration.

```
rm -f /SMS-Agent/agent/Logs/handleRecord.log
```