Server Migration Service

# Best Practices

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|---|---|
| **Issue** | 02 |
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# 1 Migrating HUAWEI CLOUD ECSs from Multiple Accounts to a Single Account

## Overview

Server Migration Service (SMS) can help you migrate Elastic Cloud Servers (ECSs) in the same or different regions in multiple HUAWEI CLOUD accounts to a single account for resource integration quickly.

## Procedure

1. Obtain the AK/SK pair of the HUAWEI CLOUD account you migrate to.
   - If you use an account for migration, see **How Do I Create an AK/SK Pair for an Account?**
   - If you use an IAM user under this account for migration, you need to assign the required permissions to the IAM user and create an AK/SK pair for the IAM user. For details, see **How Do I Create an AK/SK Pair for an IAM User?**
2. Install the Agent on a source ECS. For details, see **How Do I Install the Agent on Source Servers?**
3. Double-click SMS-Agent and enter the AK/SK pair obtained in **1** to start the Agent.

   NOTE

   After the Agent is started successfully, it automatically reports information about the source server to SMS. SMS automatically checks whether the source server can be migrated.
4. After the Agent is started, log in to the SMS console using the account you migrate to. In the server list on the **Servers** page, view information about the source ECS.
5. Create a migration task for the source ECS. For details, see **Configuring the Target Server**, **Starting a Full Replication**, and **Launching the Target Server**.

   If the source and target ECSs are in the same VPC on HUAWEI CLOUD, you can select **Direct Connect or VPN** for **Network Type**. During the migration, the private IP address of the target ECS is used to establish a connection with the source server. You do not need to configure an EIP for the target ECS.

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After the migration is complete, you can log in to the target ECS using the username and password of the source ECS

NOTE

- If the source and target ECSs are in the same account and region, but in different VPCs, you need to create a peering connection between the VPCs and set **Network Type** to **Direct Connect or VPN**. For more information, see **Creating a Peering Connection Between Two VPCs in One Account**.
- If the source and target ECSs are in the same region, but in different accounts and in different VPCs, you need to create a peering connection between the VPCs and set **Network Type** to **Direct Connect or VPN**. For more information, see **Creating a VPC Peering Connection with a VPC in Another Account**.


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# 2 Migrating On-Premises Physical Servers or Virtual Servers on a Third-Party Cloud to ECSs on HUAWEI CLOUD

## Overview

SMS helps you quickly migrate on-premises physical servers or virtual servers on a third-party cloud to ECSs on HUAWEI CLOUD.

## Procedure

1. Obtain the AK/SK pair of the HUAWEI CLOUD account you migrate to.
   - If you use an account for migration, see **How Do I Create an AK/SK Pair for an Account?**
   - If you use an IAM user under this account for migration, you need to assign the required permissions to the IAM user and create an AK/SK pair for the IAM user. For details, see **How Do I Create an AK/SK Pair for an IAM User?**
2. Install the Agent on a source ECS. For details, see **How Do I Install the Agent on Source Servers?**
3. Double-click SMS-Agent and enter the AK/SK pair obtained in **1** to start the Agent.

   NOTE

   After the Agent is started successfully, it automatically reports information about the source server to SMS. SMS automatically checks whether the source server can be migrated.
4. After the Agent is started, log in to the SMS console using the account you migrate to. In the server list on the **Servers** page, view information about the source ECS.
5. Create a migration task for the source server. For details, see **Configuring the Target Server**, **Starting a Full Replication**, and **Launching the Target Server**.

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**NOTE**

After the migration is complete, you can log in to the target server using the username and password of the source server.

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# 3 Migrating the System and Data Partitions of a Windows Server to a HUAWEI CLOUD ECS

## Overview

A HUAWEI CLOUD ECS has an independent system disk and data disks as shown in **Figure 3-1**. By contrast, a disk on a physical server may be divided into a system partition and other partitions.

This following describes how to migrate the system partition (C) and other partitions (D and E) of the disk shown in **Figure 3-2** to the system and data disks of a HUAWEI CLOUD ECS, respectively.

**Figure 3-1** HUAWEI CLOUD ECS

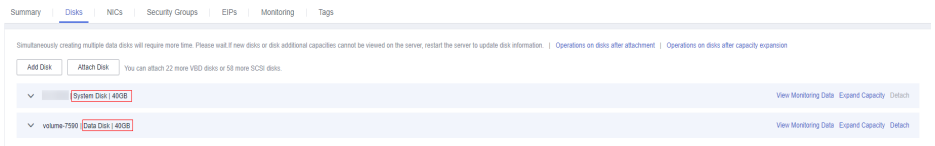


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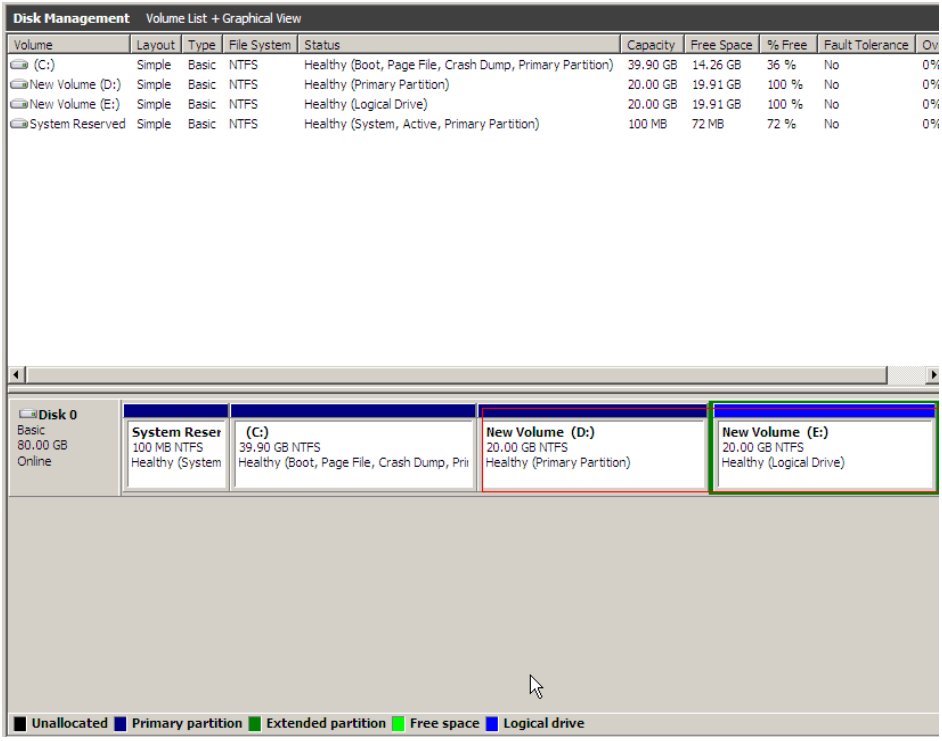
**Figure 3-2** Physical server




## Procedure

1. Obtain the AK/SK pair of the HUAWEI CLOUD account you migrate to.
   - If you use an account for migration, see **How Do I Create an AK/SK Pair for an Account?**
   - If you use an IAM user under this account for migration, you need to assign the required permissions to the IAM user and create an AK/SK pair for the IAM user. For details, see **How Do I Create an AK/SK Pair for an IAM User?**
2. Install the Agent on a source ECS. For details, see **How Do I Install the Agent on Source Servers?**
3. Before starting the Agent, go to the Agent installation directory, for example, **C:\SMS-Agent-Py?\config**. Modify configuration file **disk.cfg** as follows:

   ```
   [volmap]
   D=2
   E=2
   ```

   NOTE

   **D=2** and **E=2** indicate that both partitions D and E will be migrated to the second disk, a data disk, on the ECS.
4. Double-click SMS-Agent and enter the AK/SK pair obtained in **1** to start the Agent.

   NOTE

   After the Agent is started successfully, it automatically reports information about the source server to SMS. SMS automatically checks whether the source server can be migrated.

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5. After the Agent is started, log in to the SMS console using the account you migrate to. In the server list on the **Servers** page, view information about the source ECS.
6. Create a migration task for the source server. For details, see **Configuring the Target Server**, **Starting a Full Replication**, and **Launching the Target Server**.

   After the migration task is complete, the target ECS has an independent system disk and data disk.

   NOTE

   After the migration is complete, you can log in to the target ECS using the username and password of the source server.

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# 4 Migrating Servers to Enterprise Projects

## 4.1 Background

SMS allows you to migrate a server to a specific enterprise project. For details about enterprise project management, see **What Is Enterprise Project Management Service?**.

If your account has enabled the enterprise project function, when you enter the AK/SK pair during the startup of the Agent, the Agent queries and lists the enterprise projects with the SMS permission for you to select. After you select an enterprise project, SMS migrates servers to the enterprise project you select. This enables you to isolate permissions, resources, and finance during migration.

## 4.2 Enabling Enterprise Management and Creating Enterprise Projects

### Enabling Enterprise Project

Enable the enterprise project function. For details, see **Enabling the Enterprise Project Function**.

### Creating Enterprise Projects

Create user group **Test_EPS**, create IAM user **Test_EPS_User,** add IAM user **Test_EPS_User** to user group **Test_EPS**, and create enterprise project **Test_EPS_Project**. For details, see **Getting Started with Enterprise Management**.

NOTE

In this chapter, **Test_EPS**, **Test_EPS_User**, and **Test_EPS_Project** are examples only. You need to customize the names as required.

## 4.3 Assigning Permissions

Based on the enterprise project function, you can implement precise authorization for IAM users to ensure that the IAM users have operation permissions only for

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resources involved in the migration. The least privilege principle is implemented for IAM users to reduce risks during migration.

## Assigning Permissions to a User Group by Enterprise Projects

**Step 1** Create custom policy **SMS Custom Policy For EPS** by referring to section "Creating a Custom Policy in JSON View" in **Creating a Custom Policy**.

Copy the following information to the policy content:

```
{
   "Version": "1.1",
   "Statement": [
      {
         "Action": [
            "vpc:securityGroups:create",
            "vpc:vpcs:create",
            "vpc:publicIps:create",
            "vpc:subnets:create",
            "ecs:cloudServers:create",
            "ecs:cloudServers:attach",
            "ecs:cloudServers:detachVolume",
            "ecs:cloudServers:start",
            "ecs:cloudServers:stop",
            "ecs:cloudServers:delete",
            "ecs:cloudServers:reboot",
            "ecs:cloudServers:updateMetadata",
            "ecs:cloudServers:vnc",
            "ecs:serverPasswords:manage",
            "ecs:serverKeypairs:delete",
            "ecs:diskConfigs:use",
            "ecs:CloudServers:create",
            "ecs:servers:setMetadata",
            "ecs:serverVolumes:use",
            "ecs:serverKeypairs:create",
            "ecs:serverInterfaces:use",
            "ecs:serverGroups:manage",
            "ecs:securityGroups:use",
            "ecs:servers:unlock",
            "ecs:servers:rebuild",
            "ecs:servers:lock",
            "evs:volumes:use",
            "evs:volumes:create",
            "evs:volumes:update",
            "evs:volumes:delete",
            "evs:volumes:attach",
            "evs:volumes:detach",
            "evs:snapshots:create",
            "evs:snapshots:delete",
            "evs:snapshots:rollback",
            "ecs:*:get*",
            "ecs:*:list*",
            "evs:*:get*",
            "evs:*:list*",
            "vpc:*:list*",
            "vpc:*:get*",
            "ims:*:get*",
            "ims:*:list*"
         ],
         "Effect": "Allow"
      }
   ]
}
```

**Step 2** On the IAM console, choose **User Groups** in the navigation pane.

**Step 3** Click the created user group **Test_EPS**.

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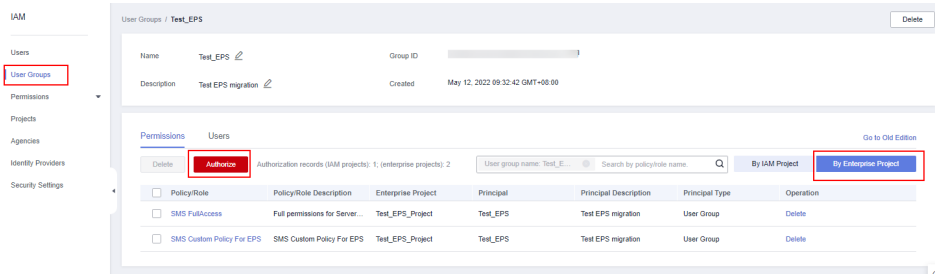
**Step 4** Click **By Enterprise Project** on the right and click **Authorize** to grant the **SMS FullAccess** and **SMS Custom Policy For EPS** permissions to the user group.




**----End**

## Assigning Permissions to a User Group by IAM Project

**Step 1** Create custom policy **SMS Custom Policy For EPS At IAM** by referring to section "Creating a Custom Policy in JSON View" in **Creating a Custom Policy**.

Copy the following information to the policy content:

```
{
   "Version": "1.1",
   "Statement": [
      {
         "Action": [
            "ecs:availabilityZones:list",
            "ecs:servers:list",
            "ecs:servers:unlock",
            "ecs:servers:lock",
            "ecs:serverPasswords:manage",
            "ecs:diskConfigs:use",
            "ecs:servers:setMetadata",
            "ecs:serverVolumes:use",
            "ecs:serverKeypairs:create",
            "ecs:serverKeypairs:get",
            "ecs:serverKeypairs:delete",
            "ecs:serverInterfaces:use",
            "ecs:serverGroups:manage",
            "ecs:securityGroups:use",
            "vpc:securityGroupRules:create",
            "vpc:securityGroupRules:get",
            "vpc:subnets:get",
            "vpc:subnets:create",
            "vpc:networks:get",
            "vpc:ports:get",
            "vpc:routers:get",
            "evs:types:get",
            "evs:volumes:update",
            "evs:volumes:delete",
            "evs:volumes:get",
            "evs:volumes:attach",
            "evs:volumes:detach"
         ],
         "Effect": "Allow"
      }
   ]
}
```

**Step 2** On the IAM console, choose **User Groups** in the navigation pane.

**Step 3** Click the created user group **Test_EPS**.

**Step 4** Click **By IAM Project** on the right and click **Authorize** to grant the **SMS Custom Policy For EPS At IAM** policy to the user group.

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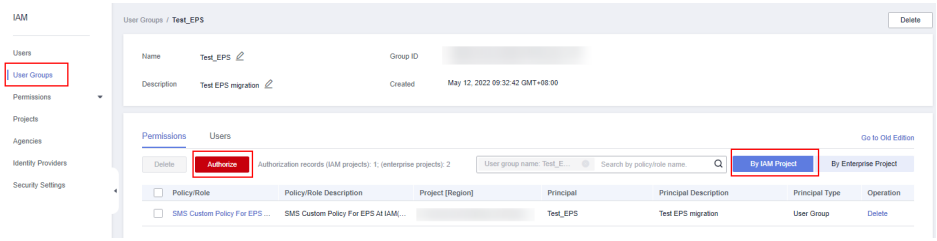



**----End**

# 4.4 Migrating Sources Servers

Select the Agent based on the OS of each source server:

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

## Linux Agent

**Step 1** **Install the Linux Agent**.

**Step 2** Start the Agent. The Agent queries and lists enterprise projects under your Huawei Cloud account. Select the enterprise project to which you want to migrate. In this example, select enterprise project **Test_EPS_Project** created in **Creating Enterprise Projects**.

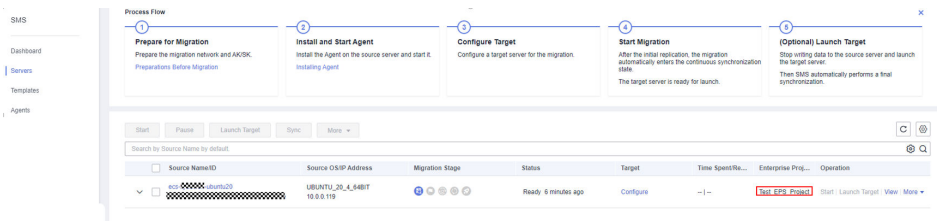
```
root@ecs-[redacted]-ubuntu20:~/SMS-Agent# ./startup.sh
After being started, the migration Agent collects system configuration information and uploads the information to SMS for
ser Guide. Are you sure you want to collect the information?(y/n)y
Please input AK(Access Key ID) of Pulbic Cloud:[redacted]
Please input SK(Secret Access Key) of Pulbic Cloud:********
agent is starting, this may take a few minutes...
querying enterprise projects ...
current user in enterprise projects below:
index                id                                   name
0                    [redacted]                           Test_EPS_Project

Select an enterprise project to register this server(input index,like 0,1...):0
selected enterprise project:
0 [redacted] Test_EPS_Project

check sms agent start ...

**********************************************************************************************************************
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
**********************************************************************************************************************
```

**Step 3** After the Agent is started, log in to the SMS console. You can view enterprise project **Test_EPS_Project** in the migration task for your source server.




**Step 4** Perform the remaining procedures by referring to **Configuring a Target Server**.

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NOTE

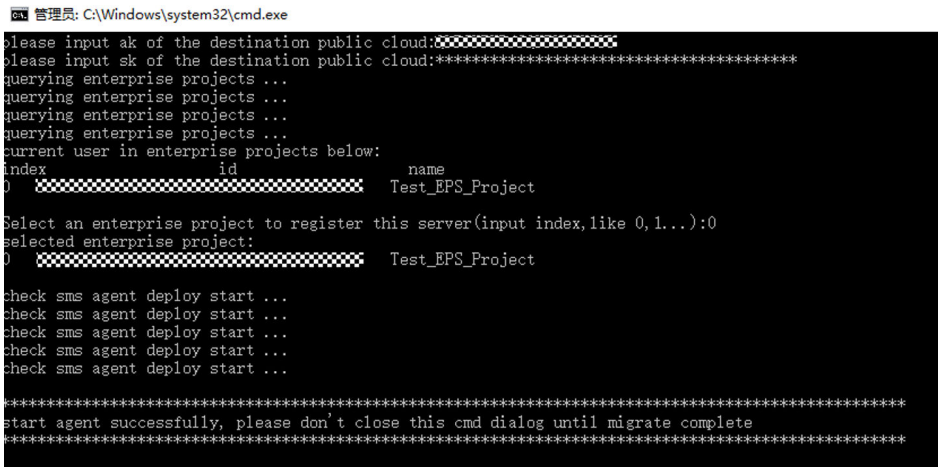
You are advised to create an ECS (that will be used as the target server), VPC, subnet, security group, and EIP in the target enterprise project such as **Test_EPS_Project** in advance to avoid insufficient permission errors during the migration.

**----End**

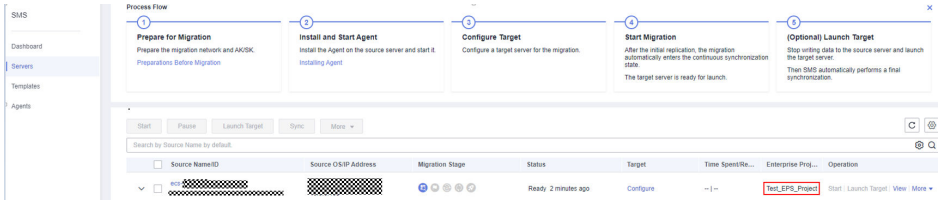
## CLI-based Windows Agent (Python 2)

**Step 1** **Install the Windows Agent**.

**Step 2** Start the Agent. The Agent queries and lists enterprise projects under your Huawei Cloud account. Select the enterprise project to which you want to migrate. In this example, select enterprise project **Test_EPS_Project** created in **Creating Enterprise Projects**.




**Step 3** After the Agent is started, log in to the SMS console. You can view enterprise project **Test_EPS_Project** in the migration task for your source server.




**Step 4** Perform the remaining procedures by referring to **Configuring a Target Server**.

NOTE

You are advised to create an ECS (that will be used as the target server), VPC, subnet, security group, and EIP in the target enterprise project such as **Test_EPS_Project** in advance to avoid insufficient permission errors during the migration.

**----End**

## GUI-based Windows Agent (Python 3)

**Step 1** **Install the Windows Agent**.

**Step 2** Start the Agent. The Agent queries and lists enterprise projects under your Huawei Cloud account. Select the enterprise project to which you want to migrate. In this

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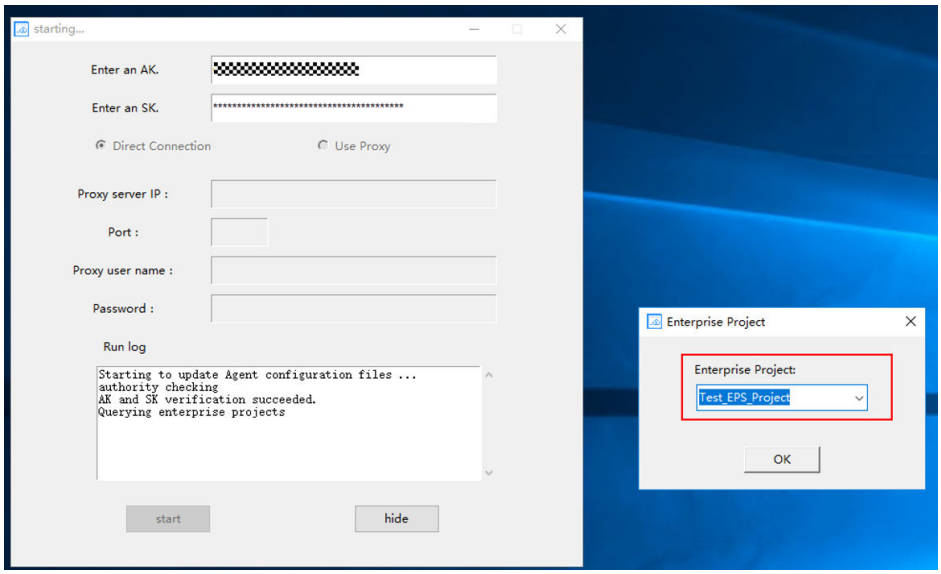
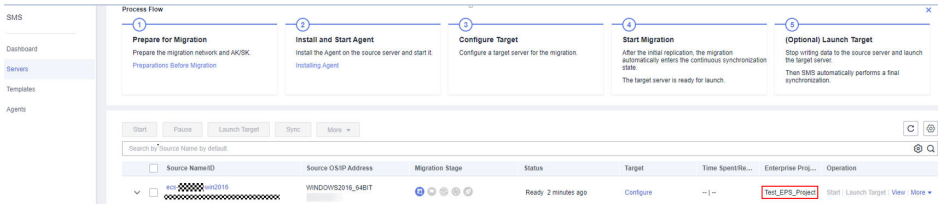
example, select enterprise project **Test_EPS_Project** created in **Creating Enterprise Projects**.




**Step 3** After the Agent is started, log in to the SMS console. You can view enterprise project **Test_EPS_Project** in the migration task for your source server.




**Step 4** Perform the remaining procedures by referring to **Configuring a Target Server**.

NOTE

You are advised to create an ECS (that will be used as the target server), VPC, subnet, security group, and EIP in the target enterprise project such as **Test_EPS_Project** in advance to avoid insufficient permission errors during the migration.

**----End**

# 4.5 FAQs

## 4.5.1 How Do I Fix Error "SMS.0204 Insufficient permissions" When the Migration Fails?

### Symptom

During the migration, the system prompts you to add corresponding fine-grained permissions.

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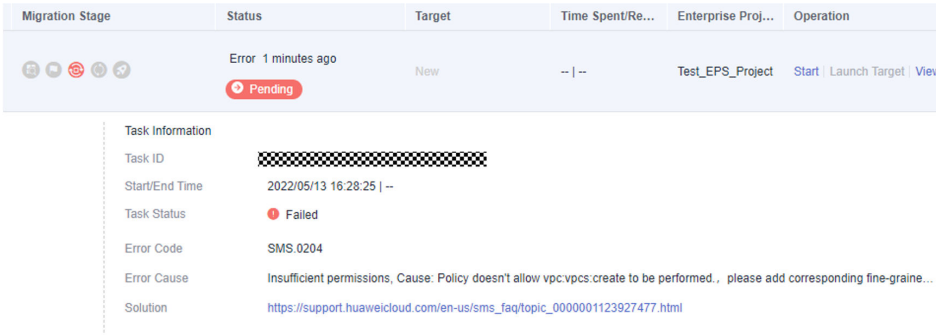


## Procedure

For details about how to configure fine-grained permissions, see **Assigning Permissions**.

# 4.5.2 How Do I Fix Error "Enterprise project not enabled" When I Start the Agent?

## Symptom

When you started the Agent, error message "Enterprise project not enabled" was reported.

NOTE

If you do not need to migrate the server to a specified enterprise project, ignore this message.

## Possible Causes and Solutions

- You may not have enabled the enterprise project function.

  Check whether you have enabled the enterprise project function. For details about how to enable the enterprise project function, see **Enabling Enterprise Project**.

- The enterprise project you migrate to may not have the **SMS FullAccess** permission.

  Check whether the target enterprise project has been assigned with the **SMS FullAccess** permission. If it has not, assign this permission to it by referring to **Assigning Permissions to a User Group by Enterprise Projects**.

- The enterprise project function is not available in the destination region.

  Check whether the enterprise project function is available in the region that you want to migrate to. If the enterprise project function is not available in the destination region, you cannot migrate servers to this region.

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# 5 Change History

| Release On | Description |
| --- | --- |
| 2022-05-16 | This issue is the second official release.<br>Added **Migrating Servers to Enterprise Projects**. |
| 2019-02-14 | This issue is the first official release. |

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