Server Migration Service

User Guide

Issue   20
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Security Declaration

Vulnerability

Huawei's regulations on product vulnerability management are subject to the *Vul. Response Process.* For details about this process, visit the following web page:
https://www.huawei.com/en/psirt/vul-response-process
For vulnerability information, enterprise customers can visit the following web page:
https://securitybulletin.huawei.com/enterprise/en/security-advisory

Contents

1 Permissions Management

1.1 Creating a User and Assigning Permissions

This section describes how to use **IAM** for fine-grained permissions control on your SMS resources. With IAM, you can:

- Create IAM users for employees based on the organizational structure of your enterprise. Each IAM user is assigned their own distinct security credentials for SMS.

- Assign only the minimum permissions required for users to perform a given task.

- Entrust a Huawei Cloud account or cloud service to perform professional and efficient O&M on your SMS resources.

⬚ NOTE

A Huawei Cloud account has all the permissions required for using SMS by default. If you use your Huawei Cloud account to perform migration, skip this chapter.

**Figure 1-1** shows the process for assigning permissions.

Prerequisites

Before assigning permissions to user groups, you should learn about system policies supported by SMS and choose policies or roles based on service requirements. For more information about system policies supported by SMS, see **SMS Permissions**. For the permissions supported by other services, see **System-defined Permissions**.

Process Flow

Figure 1-1 Process for assigning SMS permissions
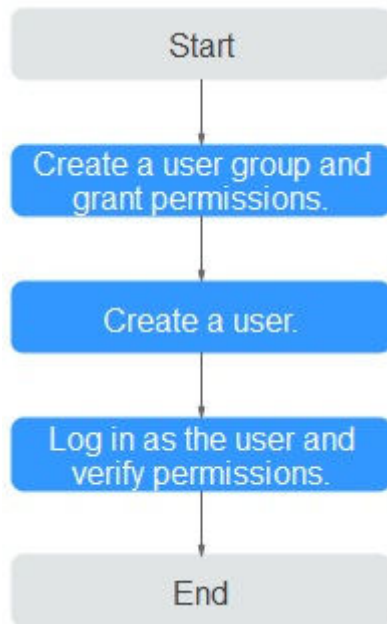
Procedure

Step 1 **Create a user group and assign permissions** to it.

- If the IAM users who will be added to this group need all SMS permissions, attach system-defined policies **SMS FullAccess**, **OBS OperateAccess**, **ECS FullAccess**, **VPC FullAccess**, and **EVS FullAccess** to the group.

- If the IAM users only need 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 a user and add it to a user group**.

Create a user on the IAM console and add the user to the group created in **Step 1**.

Step 3 **Log in to the management console as the created user**.

In the authorized region, perform the following operations:

- Choose **Service List** > **Server Migration Service**. In the navigation pane on the left, choose **Servers**. In the server list, locate the server to be migrated, and click **Configure** in the **Target** column to configure the target server. If the target server can be configured, the permissions have taken effect.

- Choose a service other than SMS and its dependents services in the **Service List**. If a message appears indicating that you have insufficient permissions to access the service, the permissions have taken effect.

----End

1.2 SMS Custom Policies

You can create custom policies using the visual editor, or with a JSON file.

- Visual editor: Select cloud services, actions, resources, and request conditions. This does not require knowledge of policy syntax.
- JSON: Edit JSON policies from scratch or based on an existing policy.

For details, see **Creating a Custom Policy**. If you need to migrate source servers to a specific enterprise project, create a custom policy by referring to **Assigning Permissions to a User Group by Enterprise Project**.

The following are example SMS custom policies:

- Example SMS policy that contains permissions for project-level services

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Action": [
                "vpc:securityGroups:create",
                "vpc:securityGroupRules: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: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",
                "ecs:servers:reboot",
                "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"
        }
    ]
}
```

● Example SMS policy that contains permissions for global services

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "sms:server:registerServer",
                "sms:server:migrationServer",
                "sms:server:queryServer"
            ]
        }
    ]
}
```

For details about policies supported by SMS, see **Table 1-1**.

Table 1-1 Policy description

Policy	Permission Description
sms:server:queryServer	Read-only permission for viewing source servers
sms:server:registerServer	Read/write permissions for registering source servers
sms:server:migrationServer	Read/write permissions for migrating source servers

2 Migration Management

2.1 Configuring a Target Server

Scenarios

Before starting the migration, you need to configure a target server for receiving data migrated from the source server. You can clone the target server for service testing, and then only launch the target server after you verify that your services can run properly on the clone.

Prerequisites

The migration task is in the **Ready** status.

Procedure

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

Step 2 In the navigation pane on the left, choose **Servers**.
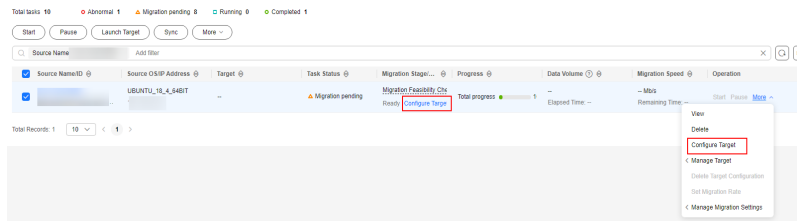
Figure 2-1 Server list
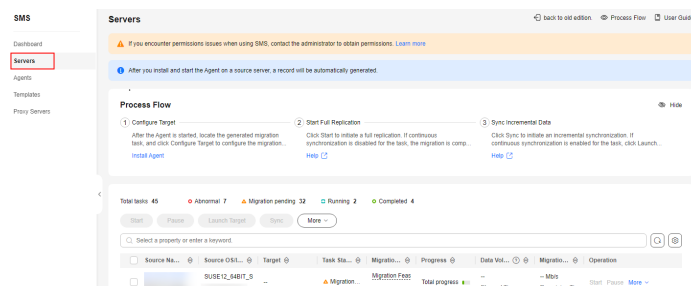
Step 3 In the server list, locate the source server to be migrated and click **Configure Target** in the **Migration Stage/Status** column.

You can also choose **More** > **Configure Target** in the **Operation** column.

> **NOTICE**
>
> If you do not find your source server, check whether you have logged in to the account you are migrating to.

Step 4 On the **Configure Basic Settings** page, configure parameters by referring to **Table 2-1**.

Table 2-1 Basic parameter settings

Parameter	Option	Description
Migration Template	N/A	After you select a migration template, the system populates **Network**, **Migration Rate Limit**, **Migration Method**, **Continuous Synchronization**, **Partition Resizing**, **Region**, and **Project** based on the template. You can choose the default template created by the system or any one you created. To learn how to create a migration template, see **Creating a Migration Template**.
Network Type	Public	An EIP must be bound to the target server. **Public** is the default value of **Network Type**.
	Private	A Direct Connect connection, VPN connection, VPC peering connection, VPC subnet, or Cloud Connect connection must be provisioned. The private IP address of the target server will be used for migration.

Parameter	Option	Description
Migration Rate Limit	-	You can configure the rate limiting based on the source bandwidth and service requirements. If you do not want to limit the migration rate, set this parameter to **0**. **NOTE** For a Linux migration, traffic limiting is done with Traffic Control (TC). If TC is not installed on the source server, the migration rate limit you configured here will not be applied during the migration. Some Linux distributions do not support traffic limiting. For example, CentOS 8 and other CentOS 8-based distributions do not come with the TC module preinstalled.
CPU Limit	N/A	These options are only available for Linux migrations. For details, see **How Do I Set Resource Limits for SMS-Agent During a Linux Server Migration?**
Memory Limit	-	
Disk Throughput Limit	-	
Migration Method	Linux block-level	Migration and synchronization are performed by block. This method is efficient but the compatibility is poor.
	Linux file-level	Migration and synchronization are performed by file. This method is inefficient, but the compatibility is excellent.
	Windows block-level	Migration and synchronization are performed by block. This method is very efficient and is the only migration method available for Windows servers.
IP Address Version	IPv4	IPv4 can be used for data migration.
	IPv6	On a dual-stack network, IPv6 can be used for migration. For details about the preparations and precautions for migration over IPv6, see **Migrating Servers over an IPv6 Network**.
Continuous Synchronization	No	After the full replication is complete, SMS will automatically launch the target server without synchronizing incremental data. To synchronize incremental data, you will need to click **Sync** in the **Operation** column.

Parameter	Option	Description
	Yes	After the full replication is complete, the migration will enter the continuous synchronization stage. During this stage, incremental data will be periodically synchronized from the source server to the target server, and you will be unable to use the target server since it has not been launched yet. To finish this stage, you will need to click **Launch Target** in the **Operation** column.
Partition Resizing	No	The disk and partition settings from the source server will be retained on the target server.
	Yes	You can resize the disks and partitions on the target server. For details, see **Resizing disks and partitions**.
Start Target Upon Launch	No	The target server will be stopped after the migration is complete.
	Yes	The target server will be started after the migration is complete.
Measure Network Performance	No	Network performance will not be measured.
	Yes	Before the full migration starts, the packet loss rate, network jitter, network latency, bandwidth, memory usage, and CPU usage will be measured. For details, see **How Do I Measure the Network Performance Before the Migration?**
Enable Concurrency	No	By default, one process is used for migration and synchronization.
	Yes	You need to set **Max. Concurrent Migrations** and **Max. Concurrent Syncs**, which determine the maximum number of processes the Agent can start concurrently to execute migration and synchronization. This parameter is available for Linux file-level migrations. To learn how to configure it, see **How Do I Set the Number of Concurrent Processes for Linux File-Level Migrations?**

- Resizing disks and partitions

1. Select **Yes** for **Partition Resizing** and click **Resize Partition**. In the displayed dialog box, resize the disks and partitions on the target server as needed.

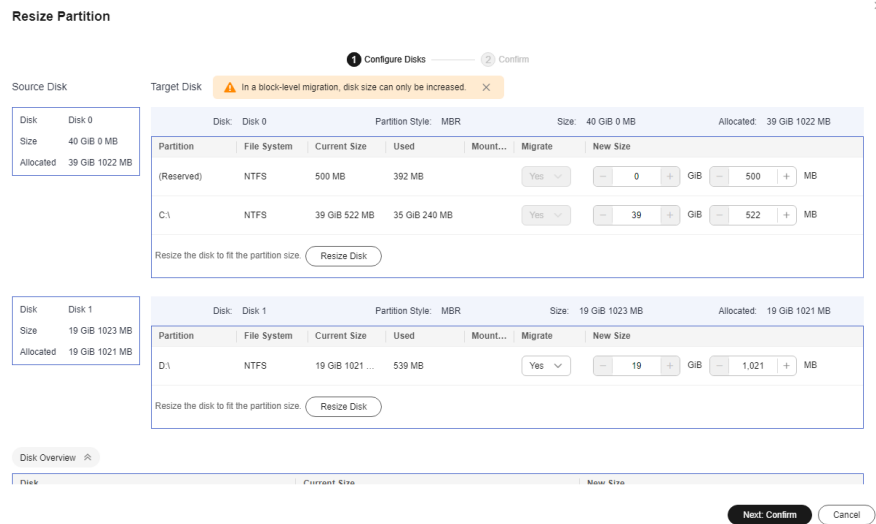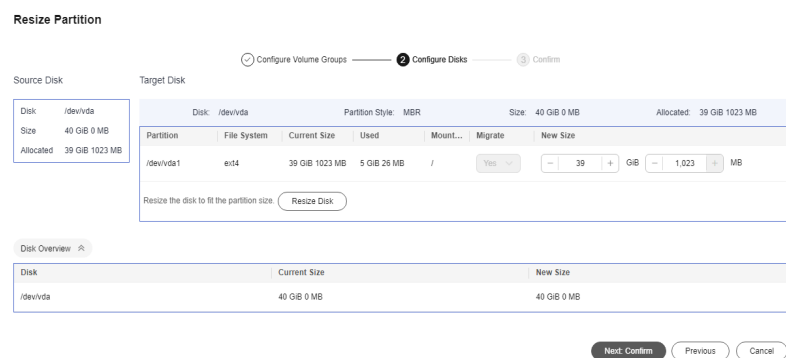**Figure 2-2** Resizing disks and partitions (Windows)

Figure 2-3 Resizing disks and partitions (Linux)

◻ **NOTE**

- You can choose whether to migrate source partitions and resize the paired target partitions.
- For a Linux server using LVM, you can choose whether to migrate physical or logical volumes and resize the paired target volumes.

⚠ CAUTION

- In a Windows migration, the system and boot partitions are migrated by default.
- In a Windows migration, you can increase the sizes of partitions, but you cannot decrease them.
- Partition resizing is not available for Btrfs partitions on Linux.
- In a Linux migration, the system and swap partitions are migrated by default.
- You can choose to migrate all or none volume groups by configuring **Migrate All Volume Groups**.
- If you choose to migrate none of the logical volumes in a volume group, their physical volumes will not be migrated by default.
- In a Linux block-level migration, you can increase the sizes of partitions, but you cannot decrease them.
- In a Linux file-level migration, you can increase or decrease size of each partition. The new partition size must be at least 1 GB larger than the used partition space. If the current partition size is not 1 GB larger than the used partition space, the partition size cannot be decreased. For details, see **What Are the Rules for Resizing Volume Groups, Disks, and Partitions?**
- If the total partition size after resizing is larger than the disk size, you need to expand the disk capacity to fit the partition size.
- If the total partition size after resizing is much smaller than the disk size, you can decrease the disk size as needed.

2. Click **Next: Configure Disks**. Resize the disks as needed. Then confirm the configurations and click **OK**.

⚠ CAUTION

After you click **OK**, the value of **Partition Resizing** cannot be changed from **Yes** to **No**. If you want to restore the disk partition settings as they were, locate the source server to be migrated and choose **More** > **Delete** in the **Operation** column. Then restart the Agent on the source server, configure the target server again, and set **Partition Resizing** to **No**.

Step 5 Click **Next: Configure Target** in the lower right corner.

Figure 2-4 Configure Target
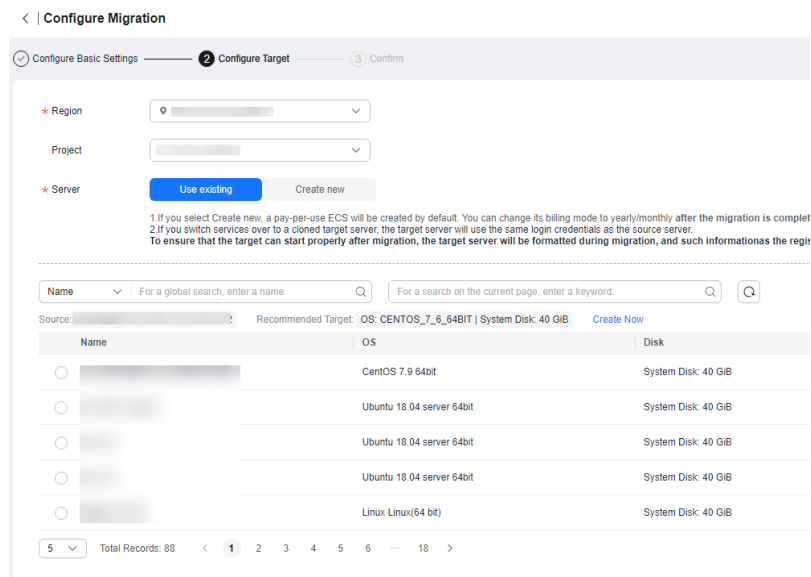
Step 6   On the **Configure Target** page, set parameters as prompted.

Table 2-2 Parameters for configuring a target server

Parameter	Option	Operation
Region	-	Select a region where you want to provision the target server. Consider your service requirements when selecting a region.
Project	-	Select a project in the region from the drop-down list. You can select a project only after a region is selected.
Server	Use existing	Select an existing server based on the recommended specifications above the server list. For details, see **Use existing**.
	Create new	Configure **VPC**, **Subnet**, **Security Group**, and the parameters in **Advanced Settings**. For details, see **Create new**.

● Use existing

The target server must meet requirements listed below. If no existing server meets the requirements, click **Create Now** to create one based on the recommended specifications. For details, see **Purchasing an ECS**.

📖 NOTE

> Source servers can be migrated to pay-per-use or yearly/monthly ECSs. You can select ECSs of whichever billing mode is appropriate.

– 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 the size recommended by the system.

– A target server must run the same OS as the source server, or there will be a server name conflict or other problems.

– A target server must be reachable by the source server. An EIP must be bound to the target server, or a VPN or Direct Connect connection must be established between the source and target.

– The security group of the target server must be correctly configured. It must be configured to allow access on TCP ports 8899, 8900, and 22 for a Windows migration, on ports 8900 and 22 for a Linux block-level migration, or on port 22 for a Linux file-level migration.

⚠️ CAUTION

- For security purposes, you are advised to open these ports only to the source server.

- 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?**

● Create new

– If you select **Recommended** for **Server Template**, a VPC, subnet, and security group will be automatically created based on source settings. You can change the recommended settings as needed.

Advanced options such as the server name, AZ, specifications, system disk, data disk and EIP are automatically configured. You can change the settings as needed.

Figure 2-5 Recommended

Figure 2-6 Advanced Settings

📖 **NOTE**

- Data disks must be either VBD or SCSI. VBD is the default device type for data disks. For details about disk device types, see **Device Types and Usage Instructions**.

- Data disks can be created as shared disks. For details about shared disks, see **Shared EVS Disks and Usage Instructions**.

– If you select a custom template, the VPC, subnet, security group, AZ, and disk will be populated based on the template. You can change the settings as needed. To learn how to create a server template, see **Creating a Server Template**.
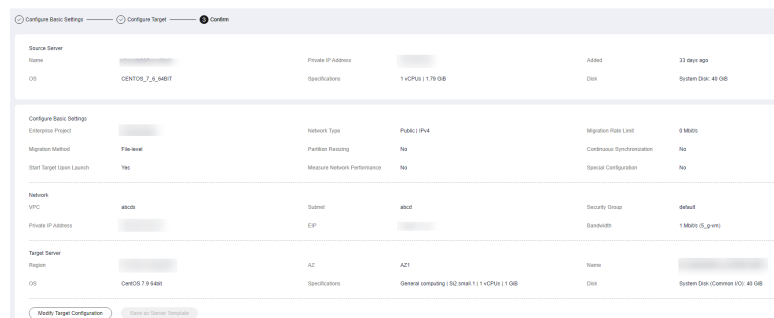
◫ NOTE

If you select **Recommended** for **Server Template**, SMS will automatically:

▪ Create a VPC and subnet.

   If the source IP address is 192.168.*X.X*, SMS creates a VPC and a subnet that both belong to the network range 192.168.0.0/16.

   If the source IP address is 172.16.*X.X*, SMS creates a VPC and a subnet that both belong to the network range 172.16.0.0/12.

   If the source IP address is 10.*X.X.X*, SMS creates a VPC and a subnet that both belong to the network range 10.0.0.0/8.

▪ Create a security group and allow traffic to the target server over the ports required by SMS: ports 8899, 8900, and 22 for a Windows migration, ports 8900 and 22 for a Linux block-level migration, or port 22 for a Linux file-level migration.

Step 7 Click **Next: Confirm** in the lower right corner.

Figure 2-7 The configuration confirmation page

Step 8 (Optional) Click **Save as Server Template**. In the displayed **Create Server Template** dialog box, enter a template name and click **OK** to save the target server settings as a template.

◫ NOTE

Save as Server Template is available only when you select **Create new** for **Server**.

Figure 2-8 Create Server Template

Step 9 Confirm the configuration and click **Save**. In the displayed dialog box, read the migration conditions and click **OK**.

If you want to start the migration immediately, click **Save and Start**. In the displayed dialog box, read the migration conditions and click **OK**.

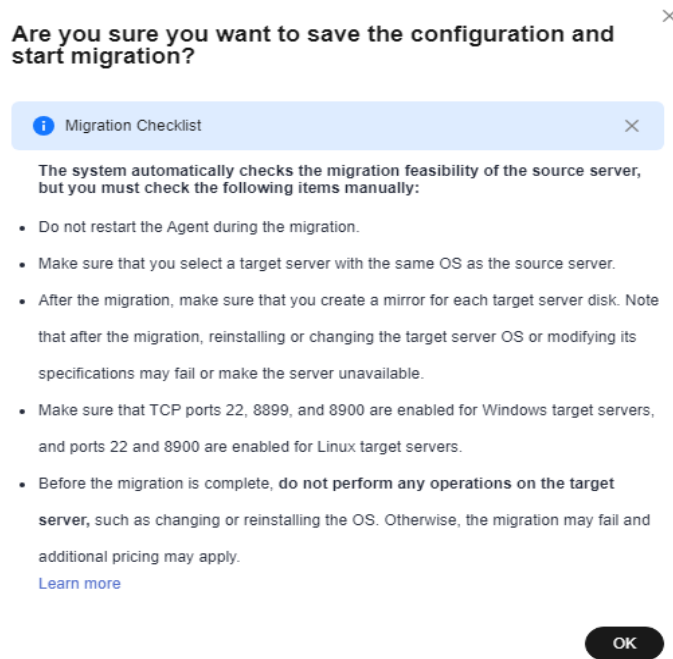**Figure 2-9** Saving the configuration

Figure 2-10 Saving the configuration and starting the migration

 NOTE

If is displayed in the **Migration Stage** column, the target server has been configured.

----End

2.2 Starting a Full Replication

Scenarios

A full replication replicates all data from the source server to the target server. The replication speed depends on the outbound bandwidth of the source server or the inbound bandwidth of the target server, whichever is smaller.

Constraints

After a full replication starts, do not restart the source server or Agent, or the migration will fail.

Prerequisites

- You have configured a target server. For details, see **Configuring a Target Server**.
- The migration task is in the **Full Replication** stage and the status is **Ready**.

Procedure

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

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

Step 3 Locate the source server to be migrated and click **Start** in the **Migration Stage/ Status** or **Operation** column. In the displayed **Start Migration** dialog box, click **Yes** to start a full replication.

You can also select the source server to be migrated and click **Start** above the server list. In the displayed **Start Migration** dialog box, click **Yes**.

Figure 2-11 Starting a full replication
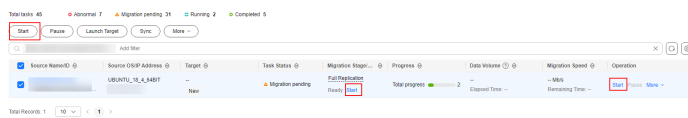
Figure 2-12 Confirmation
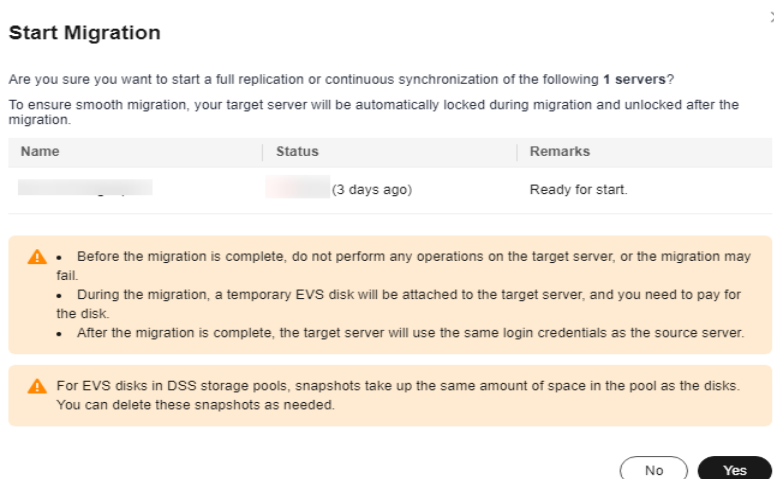
☐☐ **NOTE**

> During the full replication, the target server is locked by default and you are not allowed to perform any operations on it. After the migration is complete, SMS automatically unlocks the target server. If you need to perform operations on the target server during the replication, unlock the target server first by referring to **Unlocking a Target Server**.

Step 4 In the server list, click the name of the source server to view the migration progress.

Step 5 Wait for the full replication to complete.

- If you set **Continuous Synchronization** to **No** when you configure the migration settings, after the full replication is complete, the system puts the migration to a **Target Launch** stage and launches the target server to complete the migration automatically.

- If you set **Continuous Synchronization** to **Yes** when you configure the migration settings, after the full replication is complete, the system puts the

migration to a **Continuous sync** status. You will need to manually launch the target server to complete the migration. For details, see **Launching a Target Server**.

----End

2.3 (Optional) Cloning a Target Server

Scenarios

Before launching a target server, you can clone the target server for service testing, and only launch the target server after tests confirm there are no issues.

📖 **NOTE**

The cloned server must be in the same AZ as the target server, but can be in a different VPC.

Prerequisites

The migration task is in the **Continuous sync** stage.

Procedure

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

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

Step 3 Locate the target server you want to clone, choose **More** > **Manage Target** > **Clone Target** in the **Operation** column.

Step 4 Set the parameters and click **Clone Target**.

- If you select **Recommended** for **Server Template**, the system automatically sets **VPC**, **Subnet**, **Security Group**, and parameters in **Advanced Settings** based on the current target server configuration. You can modify these parameters.

- If you select an existing template for **Server Template**, parameters **VPC**, **Subnet**, **Security Group**, and those in **Advanced Settings** are determined by the template. You can modify these parameters.

----End

2.4 Launching a Target Server

If you set **Continuous Synchronization** to **Yes** when configuring the migration settings, you need to manually launch the target server after the full replication is complete

📖 **NOTE**

If you set **Continuous Synchronization** to **No**, skip this section as the system will automatically launch the target server after the full replication is complete.

Scenarios

You can launch a target server for a migration in the **Continuous sync** status, and the continuous synchronization will be interrupted. If you want to perform a continuous synchronization after you launch the target server, click **Sync** to synchronize the incremental data.

Before launching a target server, you can clone the target server for service testing, and only launch the target server after tests confirm there are no issues.

📖 **NOTE**

The cloned server must be in the same AZ as the target server, but it can be in a different VPC.

Procedure

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

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

Step 3 Locate the target server you want to launch, and click **Launch Target** in the **Migration Stage/Status** column.

Alternatively, select the server you want to launch, and click **Launch Target** above the server list.

Figure 2-13 Launch Target
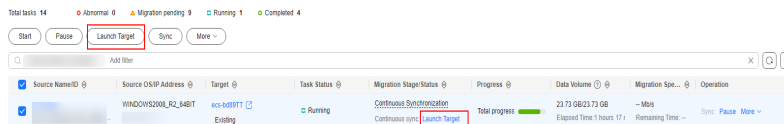
Step 4 In the displayed **Launch Target** dialog box, click **Yes**.

Figure 2-14 Confirmation
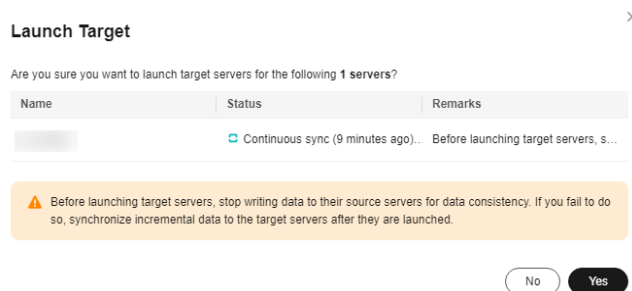
Step 5 Check whether **Finished** is displayed in the **Migration Stage/Status** column. If it is, the target server has been launched and the migration is complete.

Figure 2-15 Migration completed
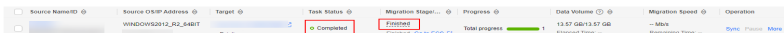
----End

2.5 Viewing the Details of a Server

Scenarios

After the Agent is installed and started on a source server, it automatically reports the source server information to SMS. All collected data is used for migration only. For details, see **What Information Does SMS Collect About Source Servers?** You can log in to the SMS console to view the server information at any time. You can see source server details, target server configurations, migration status, and error messages if any.

Procedure

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

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

Step 3 In the server list, click the server name. The task details show up on the right.

You can also move the cursor to the migration stage and click **View Details** in the displayed window. The task details show up on the right.
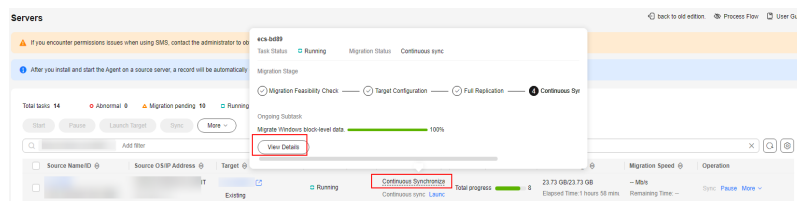
Step 4 Click the **Source Info** tab, and you can view the source server details, including the basic information, migration check results, disk and partition information, and NIC information.

Figure 2-16 Viewing server details
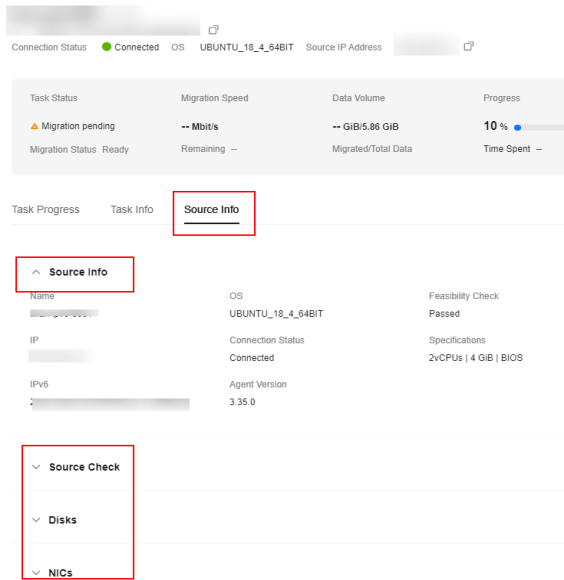
----**End**

2.6 Synchronizing Incremental Data

Scenarios

After the target server is launched, if there are data changes on your source server, you can synchronize the incremental data to the target server.

NOTE

You can synchronize data from a source server only when its migration status is **Finished**.

Procedure

Step 1 Log 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 you want to synchronize and click **Sync** in the **Operation** column.
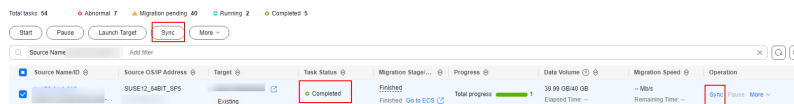
Step 4 In the **Sync Incremental Data** dialog box, carefully read the tips, enable **Verify Consistency** if needed, and click **OK**. For details about this option, see **How Do I Verify Data Consistency Between the Source and Target Servers?**

----End

2.7 Deleting a Target Server Configuration

Scenarios

If a target server is incorrectly configured or its configuration need to be modified, you can delete the configuration and reconfigure the target server.

⚠️ **CAUTION**

After the target server configuration is deleted, the migration task is still in the list but cannot be performed. You can configure a new target server to perform the migration again.

Procedure

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

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

Step 3 Locate the server for which you want to delete the target server configuration, and choose **More** > **Delete Target Configuration** in the **Operation** column.

You can also choose **More** > **Delete Target Configuration** in the upper left corner of the server list.

Step 4 In the displayed **Delete Target Configuration** dialog box, click **OK**.

Figure 2-17 Confirmation

----End

2.8 (Optional) Deleting a Server Clone

Scenarios

You can delete a server clone when it is no longer needed or the service tests are complete.

📖 **NOTE**

You can switch to the ECS console to check whether the deletion is successful.

Procedure

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

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

Step 3 Locate the server for which you want to delete the clone, and choose **More** > **Manage Target** > **Delete Clone** in the **Operation** column.

Step 4 In the **Delete Clone** dialog box, click **OK**.

----End

2.9 Deleting a Server Record

Scenarios

You can delete a server record based on service requirements.

⚠️ **CAUTION**

- After deleting a server record, if you want to register the source server again with SMS, restart the Agent on the source server.
- Deleting a server record will not delete the involved source or target server.

Procedure

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

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

Step 3   Locate the server record you want to delete, and choose **More** > **Delete** in the
Operation column.

You can also select the server record and choose **More** > **Delete** in the upper left
corner of the server list.

Step 4   In the displayed **Delete Server** dialog box, click **OK**.

Figure 2-18 Confirmation
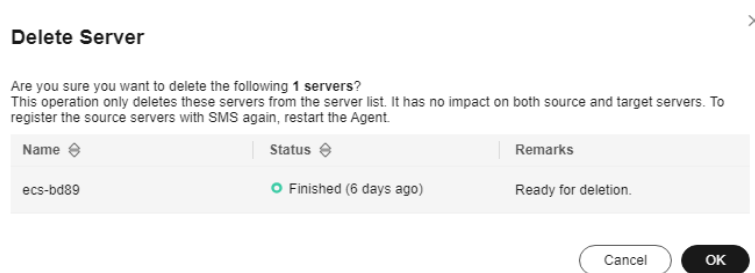
----End

2.10 Setting a Migration Rate

Scenarios

During a migration, a large amount of traffic is generated and bandwidth
consumed. To reduce the impact of the migration on services, you can limit the
migration rate.

Procedure

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

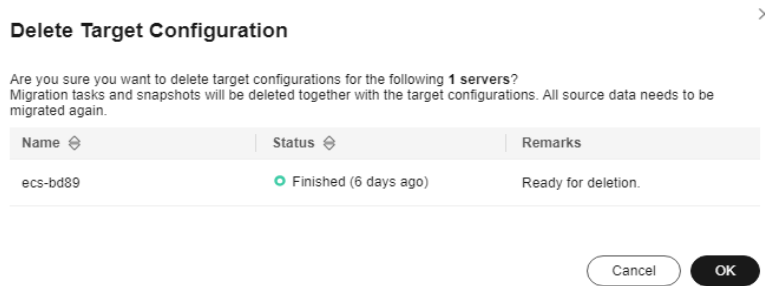**Step 2**   In the navigation pane on the left, choose **Servers**.

Step 3   Locate the server for which you want to set the migration rate, and choose **More**
> **Set Migration Rate** in the **Operation** column.

Step 4   In the displayed **Set Migration Rate** dialog box, set migration rate limits for
different periods of time and click **OK**.

Figure 2-19 Setting migration rate limits

Set Migration Rate   ✕

> ℹ Set at least one time period. You can set up to five time periods without overlaps.
> The migration rate limit ranges from 1 to 1000 Mbit/s.

Time Periods in Source Time Zone

Start Time	End Time	Migration Rate Limit (Mbit/s)	⊕
00:00 🕐	23:59 🕐	0	🗑

Cancel   OK

📖 **NOTE**

A migration rate limit must be an integer from 0 to 1,000.

- You can enter **0** or leave this field blank to remove migration rate limits. Then data will be migrated at the speed of the network between the source and target servers.
- The migration rate is bottlenecked by the migration rate limit you configure or the actual network speed, whichever is smaller.

----End

2.11 Unlocking a Target Server

Scenarios

During a migration, the target server is locked by default and you are not allowed to perform any operations on it. After the migration is complete, the system automatically unlocks the target server. If you need to perform operations on the target server during the migration, unlock the target server first.

Procedure

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

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

Step 3 Locate the server for which you want to unlock the target server, and choose **More** > **Manage Target** > **Unlock Target** in the **Operation** column.

Step 4 In the displayed **Unlock Target** dialog box, click **Yes**.

Figure 2-20 Confirmation
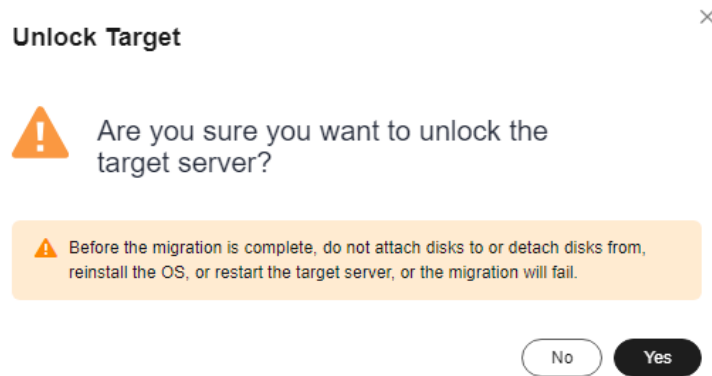
----**End**

2.12 Deleting an EVS Snapshot

Scenarios

SMS creates snapshots for EVS disks on each target server during the full replication, incremental synchronization, and target cloning. For EVS disks in DSS storage pools, snapshots take up the same amount of space in the pool as the disks. You can delete these snapshots as needed.

📖 **NOTE**

If a migration task is deleted, the disk snapshots are also deleted.

Although snapshots themselves do not differ in a technical sense, SMS distinguishes between three types of snapshots, based on the events that trigger them:

● **Cutover snapshots**: After a migration is complete, SMS creates a snapshot for each target server disk. These snapshots are used for rollback if any service faults happen.

📖 **NOTE**

You are advised to delete these snapshots after the service cutover is complete and your services run stably on the target server.

● **Synchronization snapshots**: For a Windows server 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.

⚠️ **CAUTION**

After the snapshots are deleted, no further synchronization can be performed.

● **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.

Procedure

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

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

Step 3 In the server list, locate the server and choose **More** > **Manage Target Delete EVS Snapshot** in the **Operation** column.

Step 4 In the displayed **Delete EVS Snapshot** dialog box, select the snapshots to be deleted and click **OK**.

Figure 2-21 Confirming the deletion
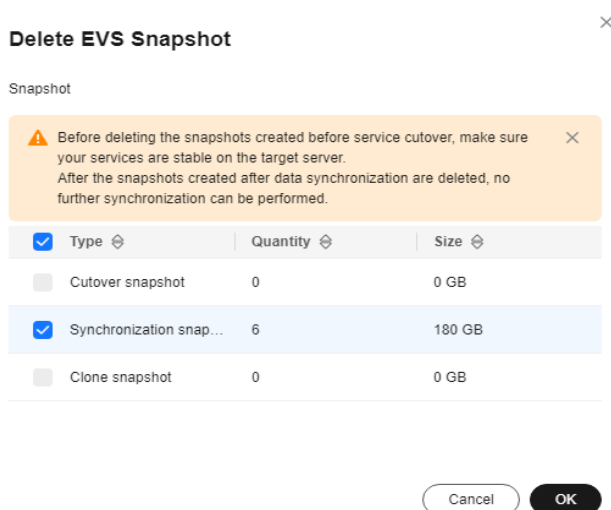
----End

3 Template Management

3.1 Creating a Migration Template

Scenarios

SMS allows you to create migration templates for quick configuration. You can use these templates to quickly configure the migration settings, such as **Network**, **Migration Rate Limit**, **Continuous Synchronization**, **Region**, and **Project**.

Procedure

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

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

Figure 3-1 Templates
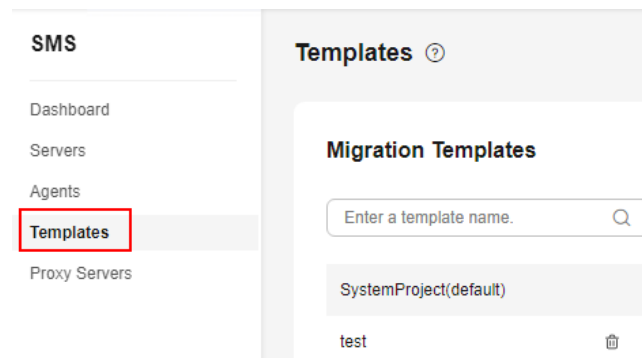
Step 3 In the upper right corner of the **Migration Templates** area, click **Create Migration Template**. In the displayed **Create Migration Template** dialog box, enter a name and description, and click **OK**.

Figure 3-2 Specifying the template name

📖 **NOTE**

> A template name cannot be changed after the template is created.

Step 4 In the **Migration Templates** area, on the left, click the name of the created template.

In the **Migration Templates** area, on the right, click ✎ next to **Parameter Settings** to configure template parameters.

Figure 3-3 Parameter Settings

Table 3-1 describes the parameters.

Table 3-1 Parameters

Parameter	Option	Description
Region	N/A	Consider your service requirements when selecting a region.
Project	N/A	You can select a project only after a region is selected.

Parameter	Option	Description
Migration Method	Block-level	• Migration and synchronization are performed by block. • For Windows servers, SMS only supports block-level migration.
	File-level	Migration and synchronization are performed by file. This method is inefficient, but the compatibility is excellent.
Network	Public	An EIP must be bound to the target server. **Public** is the default value.
	Private	You need to create a Direct Connect or VPN connection between the source and the VPC subnet you are migrating to. If the source and target servers are in the same VPC, select **Private**.
Migration Rate Limit	N/A	You can configure the rate limits based on the source bandwidth and service requirements. If you do not want to limit the migration rate, set this parameter to **0**.
Continuous Synchronization	No	After the full replication is complete, SMS will automatically launch the target server without synchronizing incremental data. To synchronize incremental data, you will need to click **Sync** in the **Operation** column.

Parameter	Option	Description
	Yes	After the full replication is complete, the migration will enter the continuous synchronization stage. During this stage, incremental data will be periodically synchronized from the source server to the target server, and you will be unable to use the target server since it has not been launched yet. To finish this stage, you will need to click **Launch Target** in the **Operation** column.
Target Server	Use existing	You need to select an existing server based on the recommended target server specifications when you configure the target server.
	Create during migration	You need to set parameters such as the VPC, subnet, and security group as required when you configure the target server.
Start Target Upon Launch	No	The target server will be stopped after the migration is complete.
	Yes	The target server will be started after the migration is complete.
Measure Network Performance	No	Network performance will not be measured.

Parameter	Option	Description
	Yes	Before the full migration starts, the packet loss rate, network jitter, network latency, bandwidth, memory usage, and CPU usage will be measured. For details, see **How Do I Measure the Network Performance Before the Migration?**

Step 5 Click **OK**.

Step 6 (Optional) Click the name of the created template, and click **Set as Default Template** to set it as the default template.

Figure 3-4 Set as Default Template
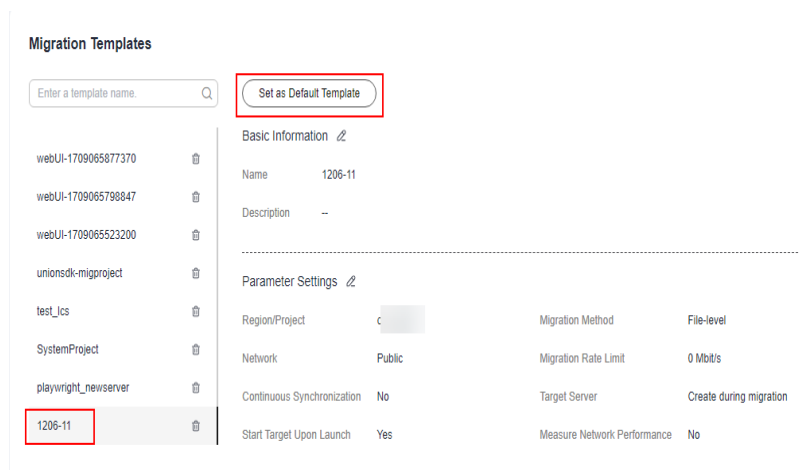
----**End**

3.2 Modifying a Migration Template

Scenarios

You can modify a migration template that does not meet your requirements.

Procedure

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

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

Figure 3-5 Templates
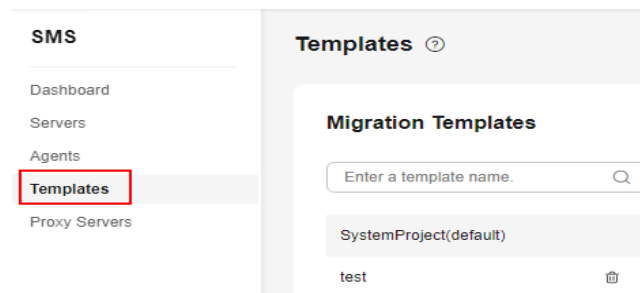
Step 3 In the **Migration Templates** area, on the left, click the name of the template you want to modify.

In the **Migration Templates** area, on the right, click ✎ next to **Basic Information** and **Parameter Settings** to modify the template description and parameters.

Figure 3-6 Modifying template parameters
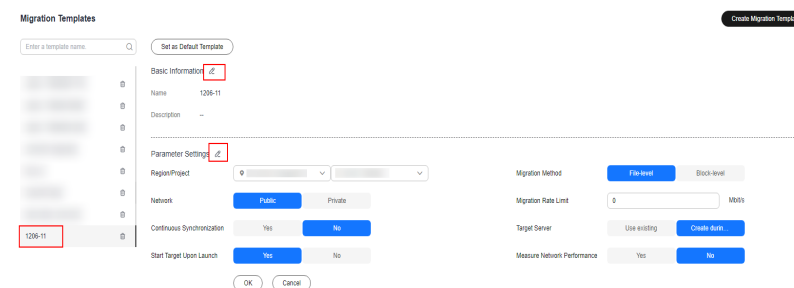
Step 4 Click **OK**.

----End

3.3 Deleting a Migration Template

Scenarios

You can delete a migration template that is no longer needed.

Procedure

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

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

Figure 3-7 Templates
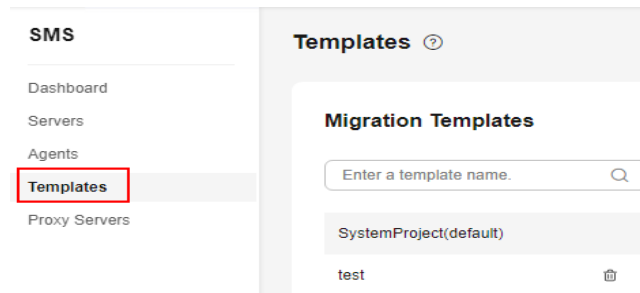
Step 3 In the **Migration Templates** area, on the left, click next to the name of the template you want to delete.
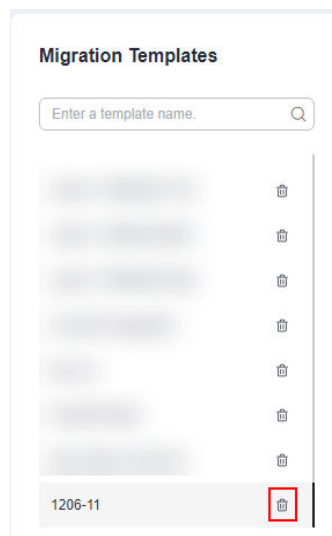
Step 4 In the displayed **Delete Migration Template** dialog box, click **OK**.

----End

3.4 Creating a Server Template

Scenarios

SMS allows you to create server templates for quick configuration. You can use these templates to quickly configure target server settings, such as **VPC**, **Subnet**, and **Security Group**.

Procedure

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

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

Figure 3-8 Templates
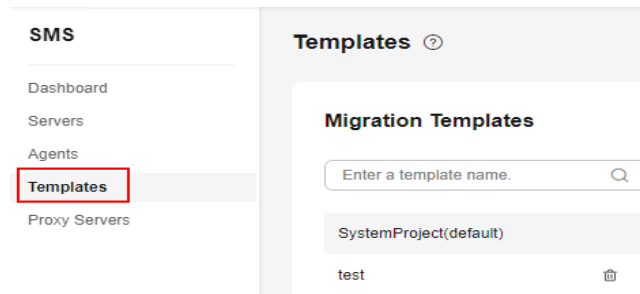
Step 3 In the upper right corner of the **Server Templates** area, click **Create Server Template**.

Figure 3-9 Create Server Template
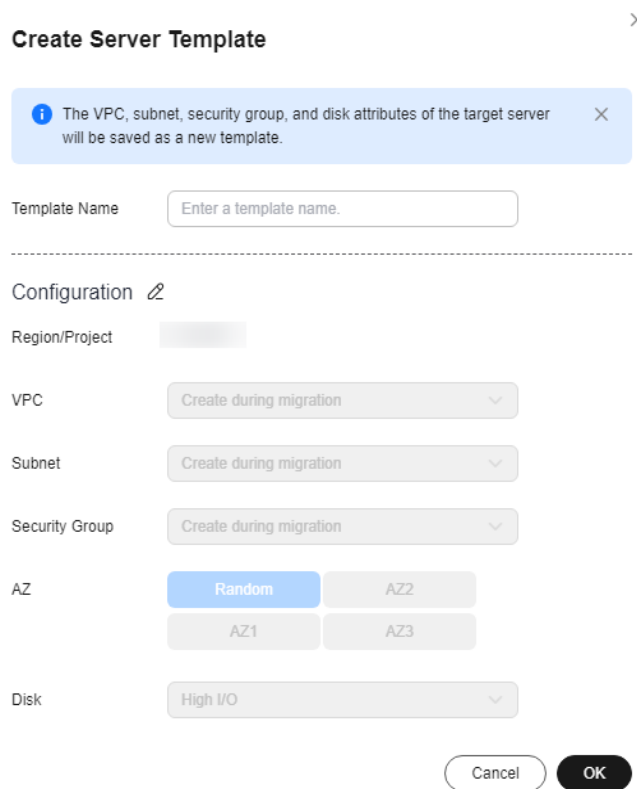
Step 4 Enter a template name, click ✎ next to **Configuration**, and set parameters listed in **Table 3-2**.

Table 3-2 Parameters

Parameter	Description
Region	● Select a region where you want to provision a target server. ● By default, the region is the one set in the default migration template, but you can change it as needed.

Parameter	Description
Project	● Select a project in the region from the drop-down list. ● You can select a project only after a region is selected.
VPC	If you select **Create during migration**, SMS will create a VPC when you use this template to configure a target server. ● If the source IP address is 192.168.*X.X*, SMS will create a VPC and a subnet that both belong to network range 192.168.0.0/16. ● If the source IP address is 172.16.*X.X*, SMS will create a VPC and a subnet that both belong to network range 172.16.0.0/12. ● If the source IP address is 10.*X.X*, SMS will create a VPC and a subnet that both belong to network range 10.0.0.0/8.
Subnet	● If you select **Create during migration**, SMS will recommend a subnet when you use this template to configure a target server. ● The subnet is in the same network segment as the VPC.

Security Group	● If you select **Create during migration**, SMS will create a security group and enable the required ports when you use this template to configure a target server.
	● Windows: ports 8899, 8900, and 22
	● Linux: port 22 for a file-level migration and ports 8900 and 22 for a block-level migration
	CAUTION
	  – For security purposes, you are advised to open these ports only to the source server.
	  – The firewall of the target server must allow traffic to these ports.

AZ	The parameter is set to **Random** by default. You can also select another AZ.

Parameter	Description
Disk Type	The value can be **Common I/O**, **High I/O**, or **Ultra-high I/O**.

Step 5 Click **OK**.

----End

Related Operations

You can perform the following operations on a created server template.

Operation	Description
Modifying a server template	1. Locate the server template and click **Modify** in the **Operation** column. 2. In the displayed **Modify Server Template** dialog box, modify the parameters and click **OK**.
Deleting a server template	1. Locate the server template and click **Delete** in the **Operation** column. 2. In the displayed **Delete** dialog box, click **OK**.

4 Viewing CTS Traces

4.1 SMS Operations Supported by CTS

Table 4-1 SMS operations recorded by CTS

Operation	Resource Type	Trace Name
Adding a source	sourceServer	addSource
Deleting a source	sourceServer	removeSource
Updating a source name	sourceServer	updateSourceName
Creating a task	addTask	addTask
Deleting a task	deleteTask	deleteTask
Starting a task	updateTask	task-start
Stopping a task	updateTask	task-stop
Synchronizing a task	updateTask	task-sync
Updating the task progress	updateTaskProgress	updateTaskProgress
Saving a template	addTemplate	addTemplate
Modifying a template	updateTemplate	update
Deleting a template	deleteTemplate	deleteTemplate
Deleting templates in batches	deleteTemplates	deleteTemplates
Response results of operations	TaskCommand	processCommandResult

4.2 Querying Real-Time Traces

Scenarios

After you enable CTS and the management tracker is created, CTS starts recording operations on cloud resources. After a data tracker is created, the system starts recording operations on data in OBS buckets. CTS stores operation records generated in the last seven days.

This section describes how to query and export operation records of the last seven days on the CTS console.

- **Viewing Real-Time Traces in the Trace List**

Viewing Real-Time Traces in the Trace List

1. Log in to the management console.

2. Click ≡ in the upper left corner and choose **Management & Deployment** > **Cloud Trace Service**. The CTS console is displayed.

3. Choose **Trace List** in the navigation pane on the left.

4. Set filters to search for your desired traces, as shown in **Figure 4-1**. The following filters are available:

   Figure 4-1 Filters
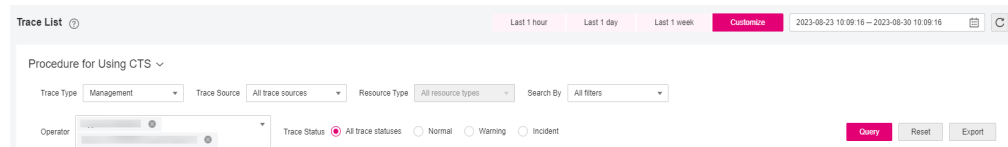
   - **Trace Type**, **Trace Source**, **Resource Type**, and **Search By**: Select a filter from the drop-down list.

     - If you select **Resource ID** for **Search By**, specify a resource ID.

     - If you select **Trace name** for **Search By**, specify a trace name.

     - If you select **Resource name** for **Search By**, specify a resource name.

   - **Operator**: Select a user.

   - **Trace Status**: Select **All trace statuses**, **Normal**, **Warning**, or **Incident**.

   - Time range: You can query traces generated during any time range in the last seven days.

   - Click **Export** to export all traces in the query result as a CSV file. The file can contain up to 5000 records.

5. Click **Query**.

6. On the **Trace List** page, you can also export and refresh the trace list.

   - Click **Export** to export all traces in the query result as a CSV file. The file can contain up to 5000 records.

- Click ⟳ to view the latest information about traces.

7. Click ⌄ on the left of a trace to expand its details.

Trace Name	Resource Type	Trace Source	Resource ID ⑦	Resource Name...	Trace Status ⑦	Operator ⑦	Operation Time	Operation
⌃ createDockerConfig	dockerlogincmd	SWR	–	dockerlogincmd	⊘ normal		Nov 16, 2023 10:54:04 GMT+08:00	View Trace

```
request
trace_id
code            200
trace_name      createDockerConfig
resource_type   dockerlogincmd
trace_rating    normal
api_version
message         createDockerConfig, Method: POST Url=/v2/manage/utils/secret, Reason:
source_ip
domain_id
trace_type      ApiCall
```

Trace Name	Resour...	Trac...	Resource ID ⑦	Resource Name...	Trace Stat...	Operator ⑦	Operation Time	Operat...
⌃ login	user	IAM	3c...7...	f...	⊘ normal		Nov 25, 2022 15...	View Trace

```
trace_id        c:                          :3
code            302
trace_name      login
resource_type   user
trace_rating    normal
message         {"login":{"user_type":"domain owner","login_protect":{"status":"off"}}}
source_ip
trace_type      ConsoleAction
service_type    IAM
event_type      global
project_id
resource_id     3
tracker_name    system
time            Nov 25, 2022 15:35:44 GMT+08:00
resource_name
user            {"domain":{"name":"           "},"id":"4                    "},"name":"t            ","id":"3
                00e2"}
record_time     Nov 25, 2022 15:35:44 GMT+08:00
```

8. Click **View Trace** in the **Operation** column. The trace details are displayed.

View Trace   ✕

{
    "request": "",
    "trace_id": "   ",
    "code": "200",
    "trace_name": "createDockerConfig",
    "resource_type": "dockerlogincmd",
    "trace_rating": "normal",
    "api_version": "",
    "message": "createDockerConfig, Method: POST Url=/v2/manage/utils/secret, Reason:",
    "source_ip": "   ",
    "domain_id": "   ",
    "trace_type": "ApiCall",
    "service_type": "SWR",
    "event_type": "system",
    "project_id": "   ",
    "response": "",
    "resource_id": "",
    "tracker_name": "system",
    "time": "Nov 16, 2023 10:54:04 GMT+08:00",
    "resource_name": "dockerlogincmd",
    "user": {
        "domain": {
            "name": "   ",
            "id": "   "
```

9. For details about key fields in the trace structure, see section "Trace References" > "Trace Structure" and section "Trace References" > "Example Traces" in the *CTS User Guide*.

# 5 Change History

| Released On | What's New |
| --- | --- |
| 2023-09-30 | This issue is the first official release. |