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Alibaba Cloud

Elastic Compute Service

Migration Service

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Document conventions

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

Table of Contents

1.Migrate servers

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

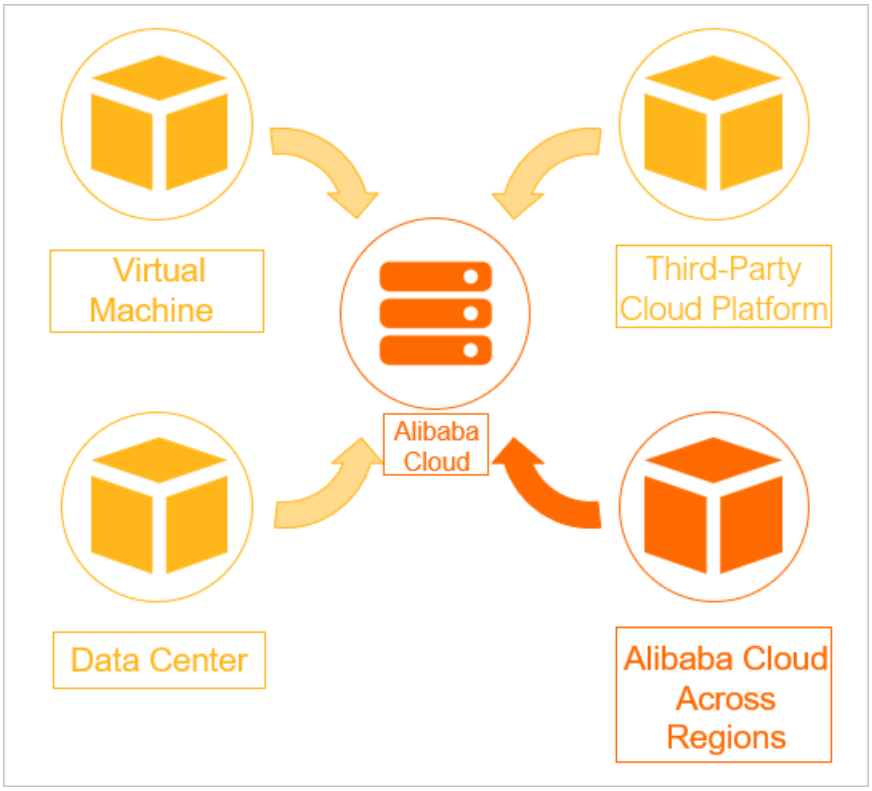
Overview

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

Benefits

SMC has the following benefits:

- Migration from diverse platforms and environments
  - SMC allows you to migrate source servers that run various versions of Windows and Linux operating systems. For more information, see Limits.
  - SMC allows you to migrate data from servers in data centers, on-premises virtual machines (VMs), or third-party cloud platforms to Alibaba Cloud. Supported VMs include VMware, VirtualBox, Xen, KVM, and Hyper-V. Third-party cloud platforms can be Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), Tencent Cloud, UCloud, China Telecom e-Cloud, and QingCloud.



- Independence from the underlying environments of source servers
  - SMC supports the following types of migration: physical-to-cloud (P2C), virtual-to-cloud (V2C), and cloud-to-cloud (C2C).
  - SMC supports multiple types of file systems and disks.

- Migration without service interruption

  During migration, you do not need to stop services that run on the source servers.

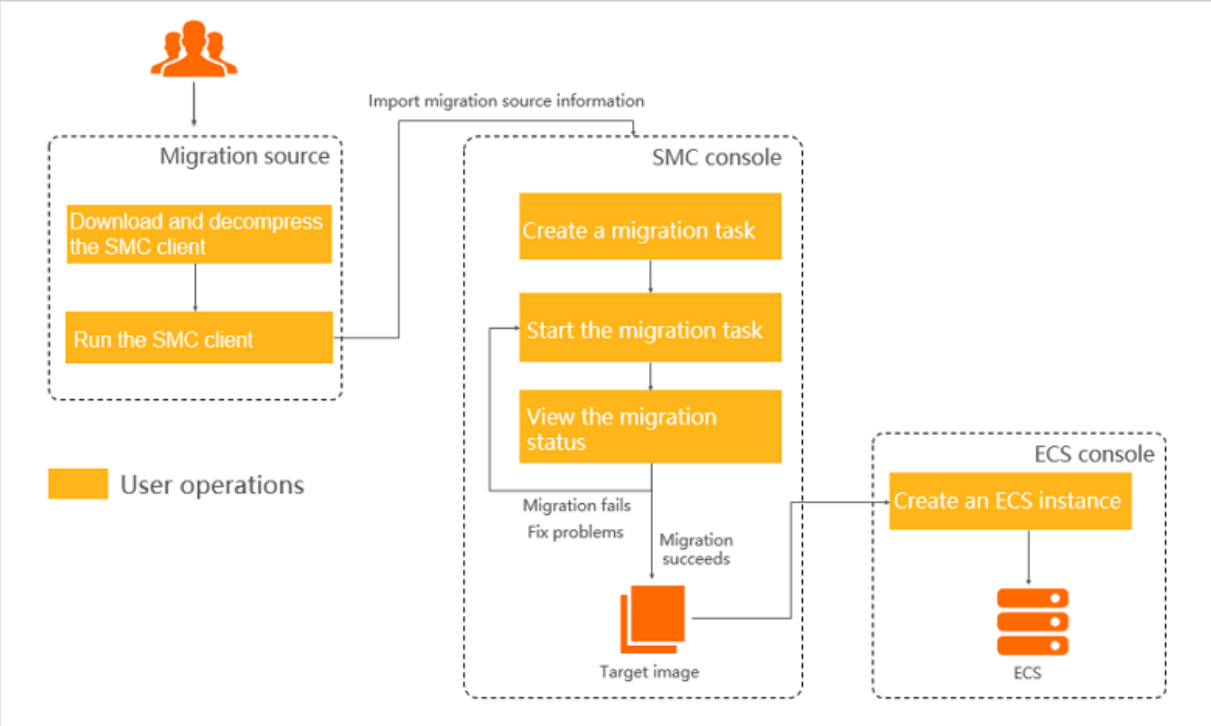
- Simple, lightweight, and flexible configuration
  - SMC provides a lightweight client that does not require installation.
  - SMC provides multiple migration methods. You can select a method based on your needs.
  - After you start a migration task, SMC manages the entire migration progress.

- Secure data transmission
  - By default, SMS uses 2048-bit RSA keys to encrypt data during data transmission.
  - SMS allows you to migrate servers over the private network such as VPN gateway and physical connections provided by Alibaba Cloud Express Connect.

Migration process

SMC consists of a client and a console. You must import the information of a source server to the console by using the client. This step connects the source server to your Alibaba Cloud account. Then, you must create a migration task in the console for the source server and start the migration task to migrate the source server to Alibaba Cloud. For more information, see Migration process.

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



Best practices

This section describes the best practices for migrating servers from different sources to Alibaba Cloud. For more information, see Migrate servers to Alibaba Cloud.

References

- SMC provides free expert support for your cloud migration. For more information, see Contact us.
- For information about how to use SMC API, see API operations.

- For information about how to use SMC SDK, see SDK overview.
- If you want to migrate only databases, we recommend that you use Alibaba Cloud Data Transmission Service (DTS). For more information, see Data migration.

2.Databases in ECS instances

2.1. Migrate data between user-created databases on ECS instances

Data Transmission Service (DTS) is an Alibaba Cloud data service that supports data exchange between multiple data sources, such as Relational Database Management System (RDBMS), NoSQL, and Online Analytical Processing (OLAP) databases. This topic describes how to configure a migration task with DTS to migrate data between databases on ECS instances. A MySQL database is used in the examples.

Prerequisites

- The MySQL listener port is enabled in security groups of the destination instance. The default listener port of the MySQL database is 3306.
- Non-root accounts are created on the source and destination instances.

  For example, you can run the following command to create an account with its username as *dts* and password as *123456* for the MySQL database:

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

Context

DTS supports data migration between homogeneous and heterogeneous data sources. It also supports ETL features such as data mapping at three levels (databases, tables, and columns) and data filtering. You can use DTS for zero-downtime data migration. During data migration, the source database continues to provide services normally, minimizing the impact of data migration on your business. For more information about the database types supported by DTS, see Data migration.

Procedure

1. Log on to the DTS console.
2. In the left-side navigation pane, click **Data Migration**.
3. Select the region where the ECS instance is located and click **Create Migration Task**.
4. Configure the migration task.
   i. Configure a task name.

      You can use the default name or customize a name.

ii. Configure the source database.

Parameter	Description
Instance Type	The user-created database on the ECS instance.
Instance Region	The region in which the source ECS instance is located.
ECS Instance ID	The ID of the source ECS instance. DTS supports ECS instances of the classic network and VPC types.
Database Type	The type of the user-created database on the source ECS instance. The database type is MySQL in this example.
Port Number	The listener port number of the MySQL database.
Database Account	The non-root account to access the MySQL database on the source ECS instance. **Note** The account must be a non-root account. Otherwise, an error will occur when you test connectivity.
Database Password	The password of the non-root account.

iii. Click **Test Connectivity** in the lower-right corner of the **Source Database** section. If **Test Passed** is returned, the connection to the source database is normal.

iv. Configure the destination database.

Parameter	Description
Instance Type	The user-created database on the ECS instance.
Instance Region	The region in which the destination ECS instance is located.
ECS Instance ID	The ID of the destination instance. DTS supports ECS instances of the classic network and VPC types.
Database Type	The database type is the same as that of the user-created database on the source instance. The database type is MySQL in this example.
Port Number	The listener port number of the MySQL database.
Database Account	The non-root account to access the MySQL database on the destination ECS instance. **Note** The account must be a non-root account. Otherwise, an error will occur when you test connectivity.
Database Password	The password of the non-root account.

v. Click **Test Connectivity** in the lower-right corner of the **Destination Database** section. If **Test Passed** is returned, the connection to the source database is normal.

vi. Click **Set Whitelist and Next**.

5. Configure migration types and objects.

i. Configure migration types.

- To perform zero-downtime data migration, select Schema Migration, Full Data Migration, and Incremental Data Migration.
- To perform full data migration, select both Schema Migration and Full Data Migration.

ii. Configure migration objects.

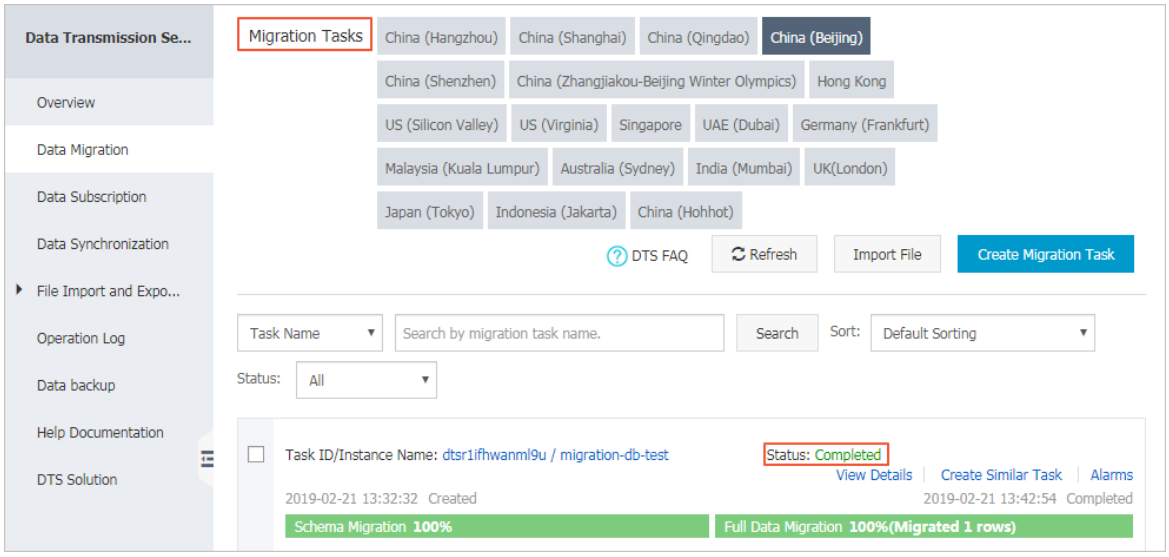
In the **Available** list, select the database objects to be migrated, such as databases, tables, or columns. Then click the **>** icon to add them to the **Selected** list.

> **Note** By default, object names will remain the same as they were in the local MySQL database after they have been migrated to a user-created MySQL database in an ECS instance. If the name of a migrated object is different in the source and destination instances, you must use the object name mapping feature provided by DTS. For more information, see Object name mapping.

6. Click **Precheck**.

Before the migration task starts, DTS checks items such as connectivity, permissions, and log formats.

If the precheck is successful, you can view the status and progress of the migration task in the **Migration Tasks** section.



Related information

- Manage user-created databases on ECS instances

2.2. Migrate a local user-created database to ECS

Data Transmission Service (DTS) is an Alibaba Cloud data service that supports data exchange between multiple data sources, such as Relational Database Management System (RDBMS), NoSQL, and Online Analytical Processing (OLAP) databases. This topic describes how to configure migration tasks with DTS to migrate a local user-created database to an ECS instance. A MySQL database is used in the examples.

Prerequisites

- An ECS instance is created. For more information, see Create an instance by using the wizard.
- The listener port of the MySQL database is enabled in security groups of the instance. The default listener port of the MySQL database is 3306.
- The MySQL database is installed on the instance.
- A non-root account to access the MySQL database is created.

  You can run the following command to create an account with its username as *dts* and password as *123456* for the MySQL database:

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

- A non-root account to access the local MySQL database is created.

Context

DTS supports data migration between homogeneous and heterogeneous data sources. It also supports ETL features such as data mapping at three levels (databases, tables, and columns) and data filtering. You can use DTS for zero-downtime data migration. During data migration, the source database continues to provide services normally, minimizing the impact of data migration on your business. For more information about the database types supported by DTS, see Data migration.

Procedure

1. Log on to the DTS console.
2. In the left-side navigation pane, click **Data Migration**.
3. Select the region where the ECS instance is located and click **Create Migration Task**.
4. Configure a migration task.
   i. Configure a task name.

      You can use the default name or customize a name.

ii. Configure the source database.

DTS supports user-created databases that are accessible through the Internet, VPN Gateway, Express Connect, or Smart Access Gateway (SAG). In this topic, the user-created database is accessed over the Internet. For information about migration solutions for other types of databases, see DTS documentation.

Parameter	Description
Instance Type	The user-created database with a public IP address.
Instance Region	The region where the local database resides.
Database Type	The type of the local database. The database type is MySQL in this example.
Hostname or IP Address	The hostname or IP address of the host where the local database resides.
Port Number	The listener port number of the MySQL database.
Database Account	The non-root account to access the MySQL database. **Note** The account must be a non-root account. Otherwise, an error will occur when you test connectivity.
Database Password	The password of the non-root account.

iii. Click **Test Connectivity** in the lower-right corner of the **Source Database** section.
If **Test Passed** is returned, the connection to the source database is normal.

iv. Configure the destination database.

Parameter	Description
Instance Type	The user-created database on the ECS instance.
Instance Region	The region where the ECS instance resides.
ECS Instance ID	The ID of the ECS instance. DTS supports ECS instances of the classic network and VPC types.
Database Type	The database type is the same as that of the local user-created database. The database type is MySQL in this example.
Port Number	The listener port number of the MySQL database.
Database Account	The non-root account to access the MySQL database on the destination ECS instance. **Note** The account must be a non-root account. Otherwise, an error will occur when you test connectivity.
Database Password	The password of the non-root account.

v. Click **Test Connectivity** in the lower-right corner of the **Destination Database** section. If **Test Passed** is returned, the connection to the source database is normal.

vi. Click **Set Whitelist and Next**.

5. Configure migration types and objects.

i. Configure migration types.

- To perform zero-downtime data migration, select Schema Migration, Full Data Migration, and Incremental Data Migration.
- To perform full data migration, select both Schema Migration and Full Data Migration.

ii. Configure migration objects.

In the **Available** list, select the database objects to be migrated, such as databases, tables, or columns. Then click the **>** icon to add them to the **Selected** list.

Note By default, object names will remain the same as they were in the local MySQL database after they have been migrated to a user-created MySQL database in an ECS instance. If the name of a migrated object is different in the source and destination instances, you must use the object name mapping feature provided by DTS. For more information, see Object name mapping.

6. Click **Precheck**.

Before the migration task starts, DTS checks items such as connectivity, permissions, and log formats.

If the precheck is successful, you can view the status and progress of the migration task in the **Migration Tasks** section.