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# Document conventions

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

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1 Migrate servers

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

Overview

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

Benefits

SMC has the following benefits:

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

- No dependency on the underlying environments of source servers
  - SMC supports physical-to-cloud (P2C), virtual-to-cloud (V2C), and cloud-to-cloud (C2C) migration.
  - SMC supports diverse file systems and disk types.
- Migration without downtime
  During data migration, you do not need to stop services that run on the source servers.
- Easy-to-use, lightweight, and flexible configuration
  - The SMC client is lightweight and free of installation.
  - SMC provides various migration solutions and supports on-demand configuration.
  - After migration tasks are started, the migration process is automatically managed.
- Secure and stable migration with a high success rate
  - SMC supports whitelist-based verification, transmission channel encryption, and resumable transmission. SMC features high security and stability.
  - SMC has a high migration success rate because it provides high compatibility with the specifications of Alibaba Cloud server systems.
Migration process

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

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

References

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

2.1 Migrate a database between two ECS instances

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

Prerequisites

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

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

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

Procedure

1. Log on to the DTS console.
2. In the left-side navigation pane, select Data Migration.
3. Select the region of the target ECS instance, and click Create Migration Task.
4. Configure a migration task.
   
a) Specify a task name.
   
   You can use the default name or specify one.
   
b) Configure the source database.
   
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instance Type</td>
<td>The database in the ECS instance.</td>
</tr>
<tr>
<td>Instance Region</td>
<td>The region to which the source ECS instance belongs.</td>
</tr>
<tr>
<td>ECS Instance ID</td>
<td>The ID of the source ECS instance. DTS supports ECS instances in classic networks or VPCs.</td>
</tr>
<tr>
<td>Database Engine</td>
<td>The type of the database in the source ECS instance, MySQL in this example.</td>
</tr>
<tr>
<td>Port</td>
<td>The port on which the MySQL server listens.</td>
</tr>
<tr>
<td>Database Account</td>
<td>The non-root account for accessing the MySQL database in the source ECS instance.</td>
</tr>
</tbody>
</table>
   
   **Note:**
   The database account cannot be a root account. Otherwise, errors will occur during the connection test.
   
   Database Password  The password for the non-root account.
   
c) Click **Test the Connection** in the lower right corner of the **Source Database** area.
   
   If the result **Test Passed** is returned, the source database has connected.
   
d) Configure the target database.
   
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instance Type</td>
<td>The database in the ECS instance.</td>
</tr>
<tr>
<td>Instance Region</td>
<td>The region to which the target ECS instance belongs.</td>
</tr>
<tr>
<td>ECS Instance ID</td>
<td>The ID of the target ECS instance. DTS supports ECS instances in classic networks or VPCs.</td>
</tr>
<tr>
<td>Database Engine</td>
<td>The same as the database in the source ECS instance, MySQL in this example.</td>
</tr>
<tr>
<td>Port</td>
<td>The port on which the MySQL server listens.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Value</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Database Account</td>
<td>The non-root account for accessing the MySQL database in the target ECS instance.</td>
</tr>
<tr>
<td></td>
<td>Note: The database account cannot be a root account. Otherwise, errors will occur during the connection test.</td>
</tr>
<tr>
<td>Database Password</td>
<td>The password for the non-root account.</td>
</tr>
</tbody>
</table>

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

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

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

5. Configure the migration type and migration object.

   a) Configure the migration type.

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

      • Full data migration: Select Structure migration + Full data migration.

   b) Configure the migration object.

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

      **Note:**

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

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

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

2.2 Migrate a local database to ECS

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

**Prerequisites**

- Create an ECS instance. For more information, see #unique_16.
- In the security group of the ECS instance, allow inbound access to the port on which the MySQL server listens. The default MySQL port is 3306.
- Install the MySQL server on the ECS instance.
- Create a non-root account for the MySQL database on the ECS instance.
  
  For example, you can run the following command to create an account for the MySQL database, with the name as dts and the password as 123456.

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

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

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

Procedure

1. Log on to the DTS console.
2. In the left-side navigation pane, select Data Migration.
3. Select the target region, and click Create Migration Task.
4. Configure a migration task.
   a) Specify a task name. You can use the default name or specify one.
   b) Configure the source database.

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instance Type</td>
<td>The database with a public IP address.</td>
</tr>
<tr>
<td>Instance Region</td>
<td>The region to which the database belongs.</td>
</tr>
<tr>
<td>Database Engine</td>
<td>The type of the local database, MySQL in this example.</td>
</tr>
<tr>
<td>Host Name or IP Address</td>
<td>The host name or IP address of the server where the database exists.</td>
</tr>
<tr>
<td>Port</td>
<td>The port number on which the MySQL server listens.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Database Account</td>
<td>The non-root account for accessing the local MySQL database.</td>
</tr>
</tbody>
</table>
|                 | **Note:**
|                 | The database account cannot be a root account. Otherwise, errors will occur during connection tests. |
| Database Password| The password for the non-root account.                                        |

c) Click **Test the Connection** in the lower right corner of the **Source Database** area.
   
   If the result **Test Passed** is returned, the source database has connected.

d) Configure the target database.

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

e) Click **Test the Connection** in the lower right corner of the **Target Database** area.
   
   If the result **Test Passed** is returned, the target database has connected.

f) Click **Authorize Whitelist and Enter into Next Step.**
5. Configure the migration type and migration object.

a) Configure the migration type.

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

b) Configure the migration object.

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

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

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

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

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