RDS for MySQL

Getting Started

Issue 01

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HUAWEI CLOUD COMPUTING TECHNOLOGIES CO., LTD.

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1 (Recommended) Buying an RDS for MySQL Instance and Connecting to It Through DAS

Data Admin Service (DAS) enables you to connect to and manage DB instances with ease on a web-based console. The permission required for connecting to DB instances through DAS has been enabled for you by default. Using DAS to connect to your DB instance is recommended, which is more secure and convenient.

This section describes how to buy an RDS for MySQL instance and how to connect to the instance through DAS.

Operation Process

Process	Description
Preparations	Sign up for a HUAWEI ID, enable Huawei Cloud services, make sure you have a valid payment method configured, create IAM users, and grant them specific RDS permissions.
Step 1: Buy an RDS for MySQL DB Instance	Select required basic settings and additional options and buy an RDS for MySQL DB instance.
Step 2: Connect to the RDS for MySQL Instance	Connect to the RDS for MySQL instance through DAS.

Preparations

1. **Sign up for a HUAWEI ID and enable Huawei Cloud services**.
2. For fine-grained permissions management on Huawei Cloud resources, use Identity and Access Management (IAM) to create a user and user group and grant the user specific operation permissions. For details, see **Creating a User and Granting Permissions**.

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Procedure

Step 1: Buy an RDS for MySQL DB Instance

1. Go to the **Buy DB Instance** page.
2. On the **Quick Config** page, set basic parameters.

   NOTE

   Only mandatory parameters are provided on the **Quick Config** page. If the available parameters do not match your workloads, try **Custom Config**.

   The following parameter settings are only for reference. Tailor your settings to your workloads.

Figure 1-1 Basic Settings

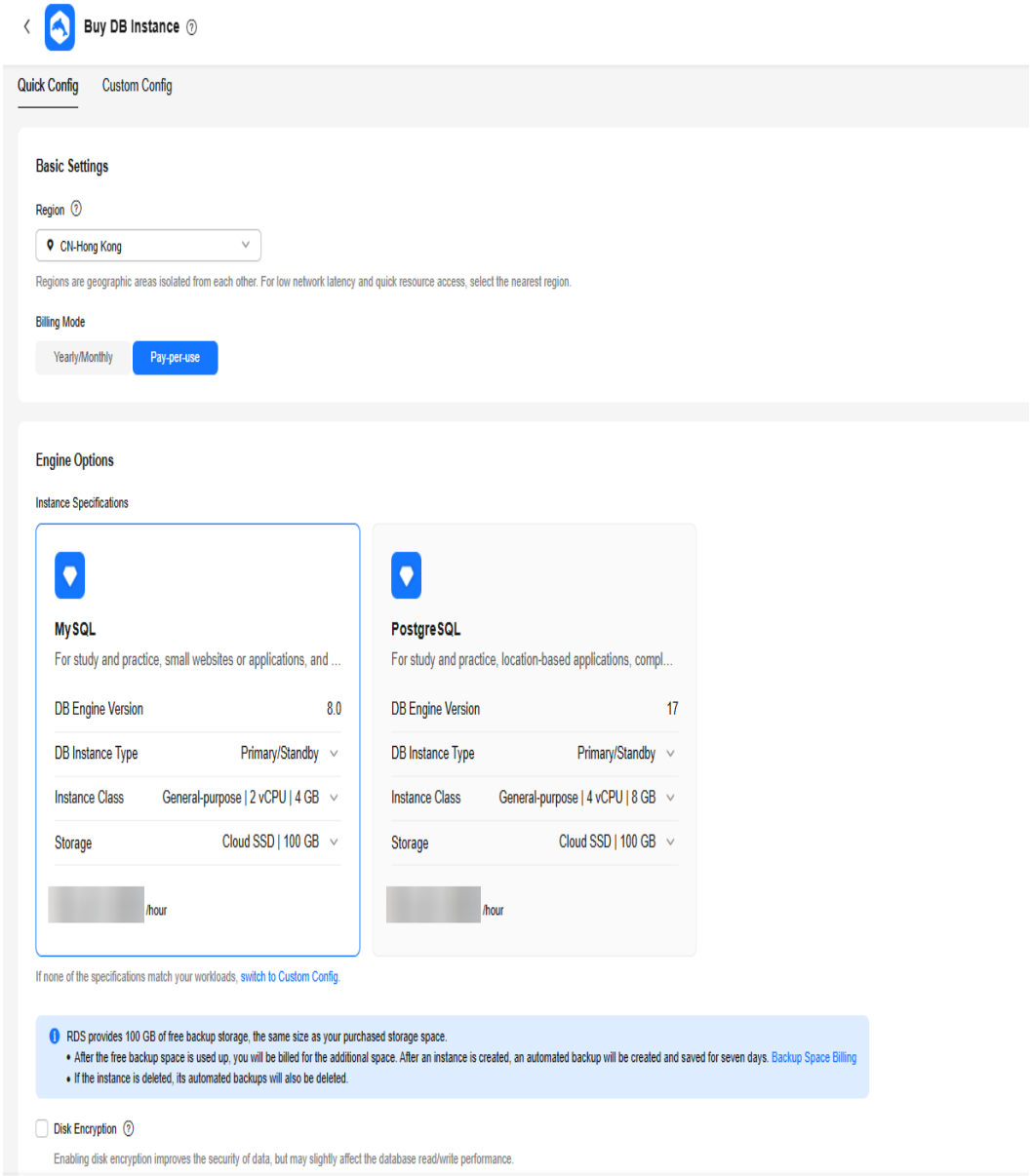

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Table 1-1 Basic Settings

Parameter	Example Value	Description
Billing Mode	Pay-per-use	The billing mode of an instance. • **Yearly/Monthly**: A prepaid billing mode in which you pay for resources before using it. Bills are settled based on the subscription period. The longer the subscription, the bigger the discount. This mode is a good option for long-term, stable services. • **Pay-per-use**: A postpaid billing mode. You pay as you go and just pay for what you use. The DB instance usage is calculated by the second but billed every hour. This mode allows you to adjust resource usage easily. You neither need to prepare for resources in advance, nor end up with excessive or insufficient preset resources.
Region	CN-Hong Kong	The region where your resources are located. Products in different regions cannot communicate with each other through a private network. After a DB instance is created, the region cannot be changed. Therefore, exercise caution when selecting a region.
DB Engine Version	8.0	The database version.
DB Instance Type	Primary/ Standby	The architecture type of an instance. **Primary/Standby**: An HA architecture. In a primary/standby pair, each instance has the same instance class. When a primary instance is being created, a standby instance is provisioned along with it to provide data redundancy. The standby instance is invisible to you after being created.
Instance Class	General-purpose | 2 vCPU | 4 GB	The vCPUs and memory of an instance.
Storage	Cloud SSD | 100 GB	The storage space of an instance. It contains the system overhead required for inodes, reserved blocks, and database operation.

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Parameter	Example Value	Description
Disk Encryption	Disable	Enabling disk encryption enhances data security but reduces the database's read and write performance by 5%. If a shared KMS key is used, the corresponding CTS events are **createdatakey** and **decrydatakey**. Only the key owner can receive the events.

3. Set parameters for **Additional Options**.

Figure 1-2 Additional Options

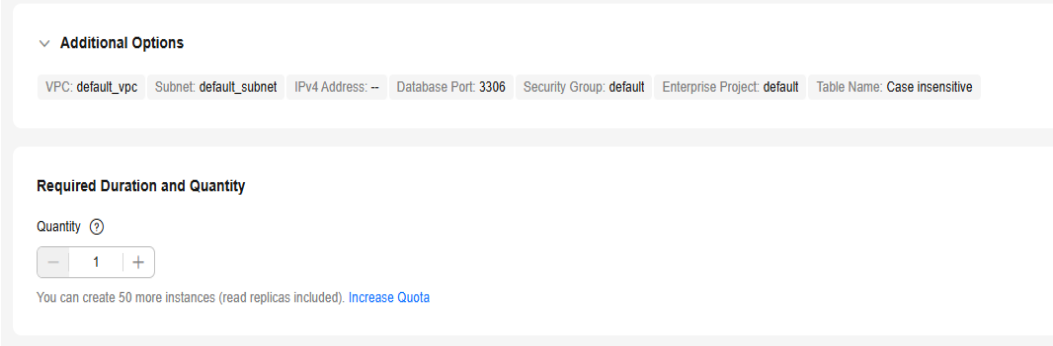

Table 1-2 Additional Options

Parameter	Example Value	Description
VPC	default_vpc	The virtual network in which your instance is located. A VPC can isolate networks for different workloads. If no VPC is available, click **Create VPC**. After a VPC is created, click . For details, see **Creating a VPC with a Subnet**.
Subnet	default_subnet	A subnet provides dedicated network resources that are logically isolated from other networks for network security.
Security Group	default	It can enhance security by controlling access to RDS for MySQL from other services.
Enterprise Project	default	If your account has been associated with an enterprise project, select the target project from the **Enterprise Project** drop-down list. For more information about enterprise projects, see ***Enterprise Management User Guide***.

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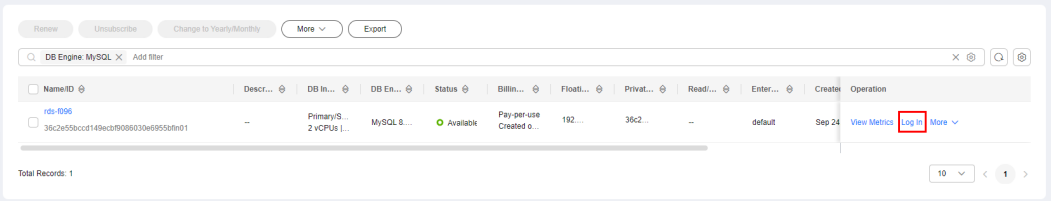
Parameter	Example Value	Description
Table Name	Case insensitive	Whether table names are case sensitive. Restoration may fail if the case sensitivity settings of table names on the source and target instances are different. The case sensitivity of table names for created RDS for MySQL 8.0 instances cannot be changed.
Quantity	1	The number of instances to be created in a batch.

4. Click **Buy**.
5. Check the purchased DB instance.

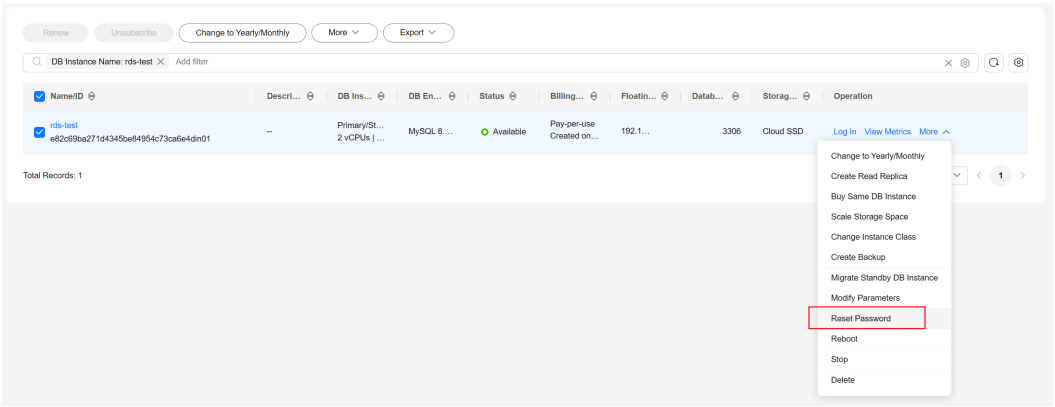
Figure 1-3 Instance successfully purchased



Step 2: Connect to the RDS for MySQL Instance

Step 1 Since no password is configured in **Step 1: Buy an RDS for MySQL DB Instance**, you need to reset the password before connecting to the instance. In the instance list, choose **More** > **Reset Password**.

Figure 1-4 Instance list



Step 2 Enter a new password, confirm the password, and click **OK**.

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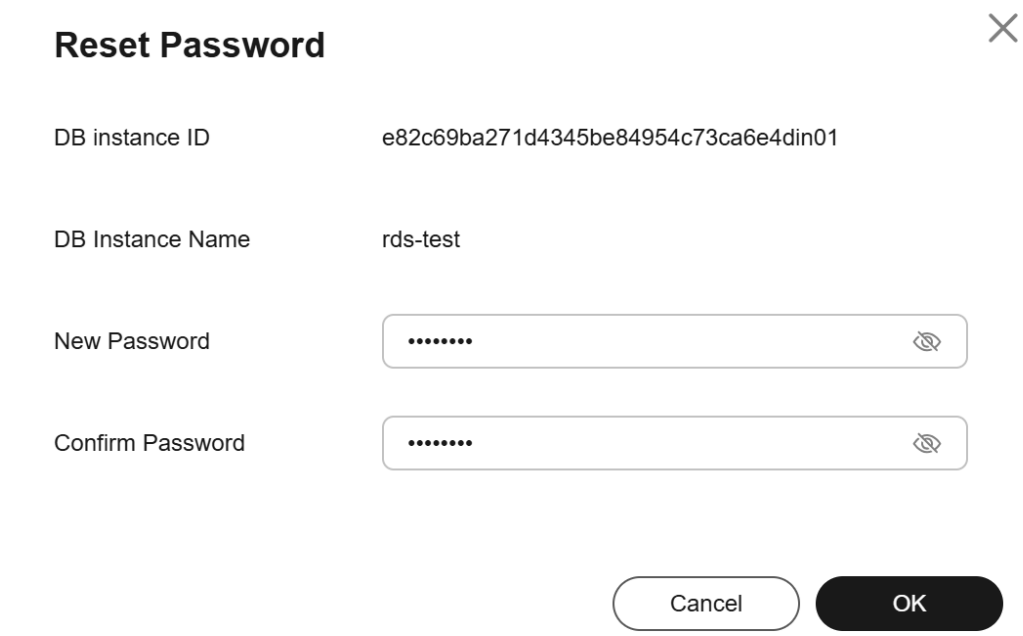
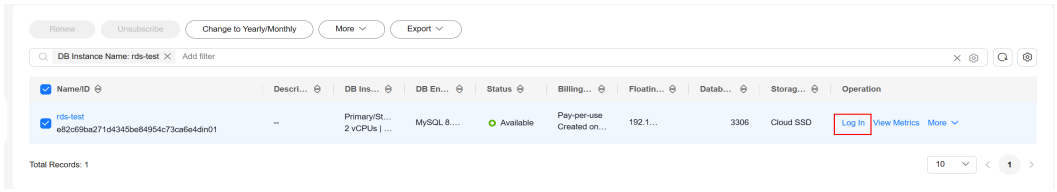
Figure 1-5 Resetting a password



Step 3 Click **Log In** in the **Operation** column.

Figure 1-6 Instance list



Step 4 Enter the required information and click **Log In**.

- **Login Username**: Enter **root**.
- **Password**: Enter the password you specified in **Step 2**.

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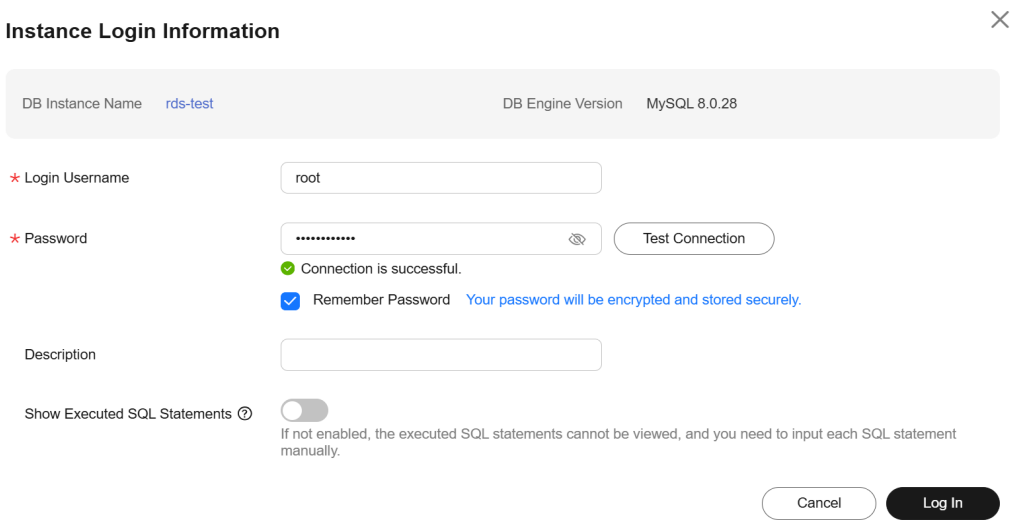
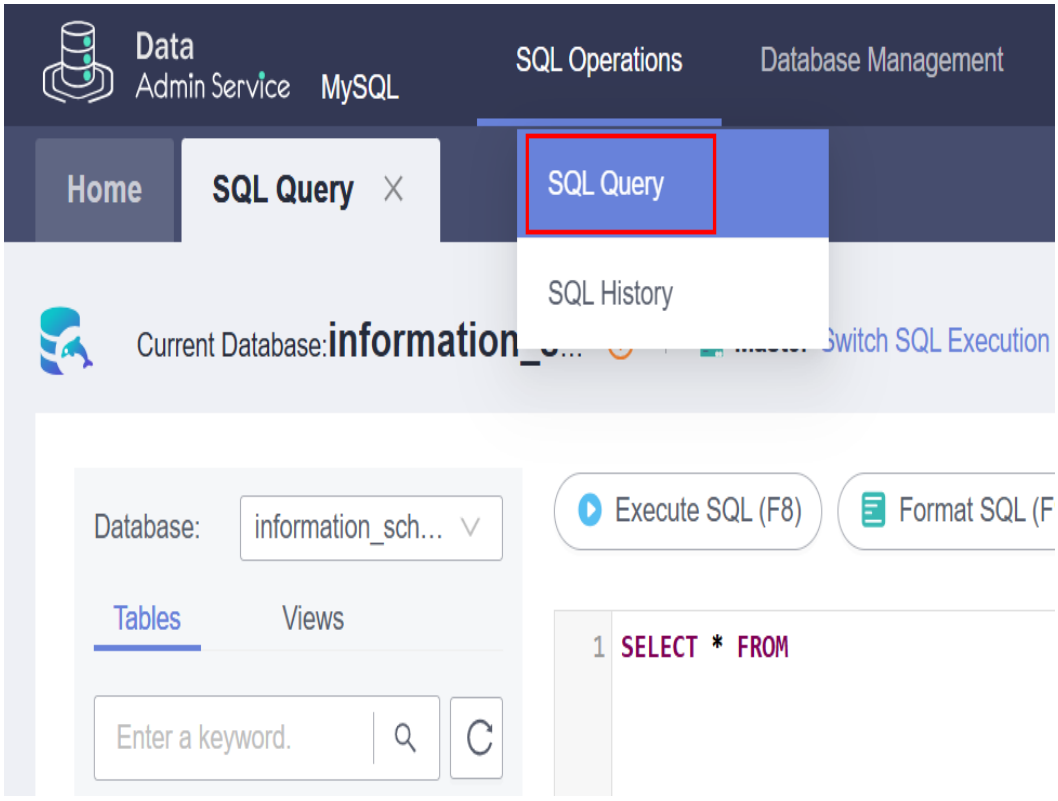
Figure 1-7 Logging in to an instance



Step 5 Choose **SQL Operations** > **SQL Query**.

Figure 1-8 SQL Query



Step 6 Query databases.

```
show databases;
```

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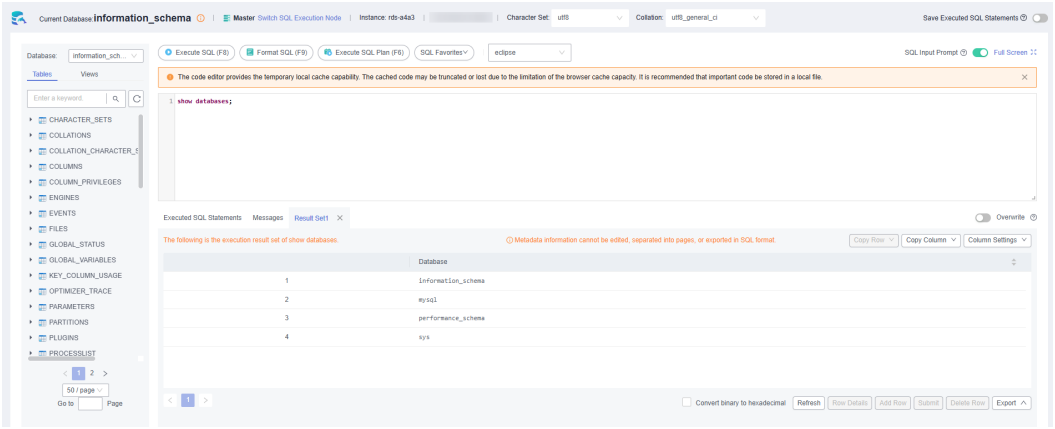
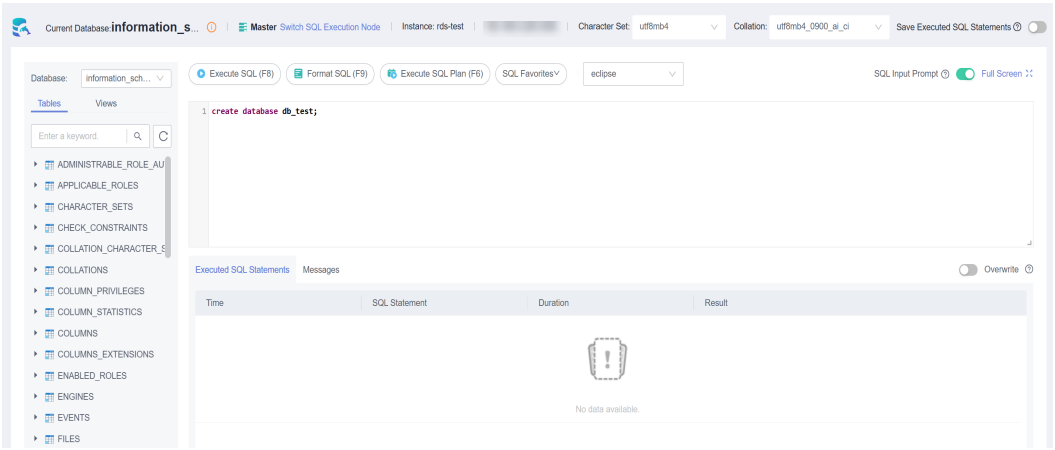
Figure 1-9 Querying databases



Step 7 Create a database, for example, **db_test**.

```
create database db_test;
```

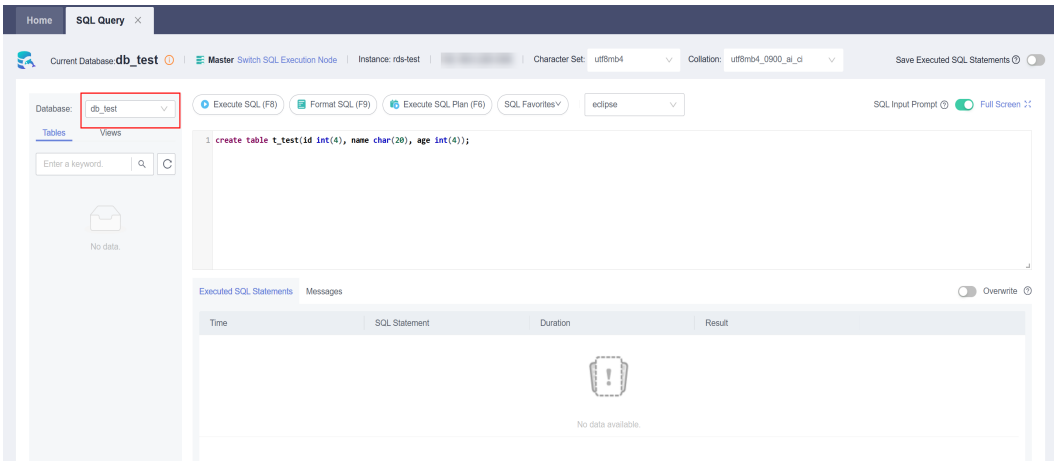
Figure 1-10 Creating a database



Step 8 Switch to the **db_test** database and create a table named **t_test**.

```
create table t_test(id int(4), name char(20), age int(4));
```

Figure 1-11 Creating a table



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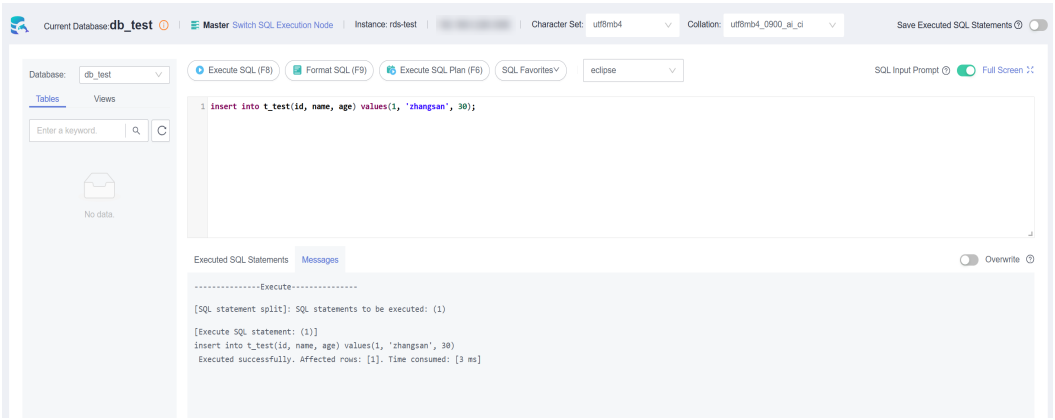
Step 9 Insert one data record to the table.

```
insert into t_test(id, name, age) values(1, 'zhangsan', 30);
```

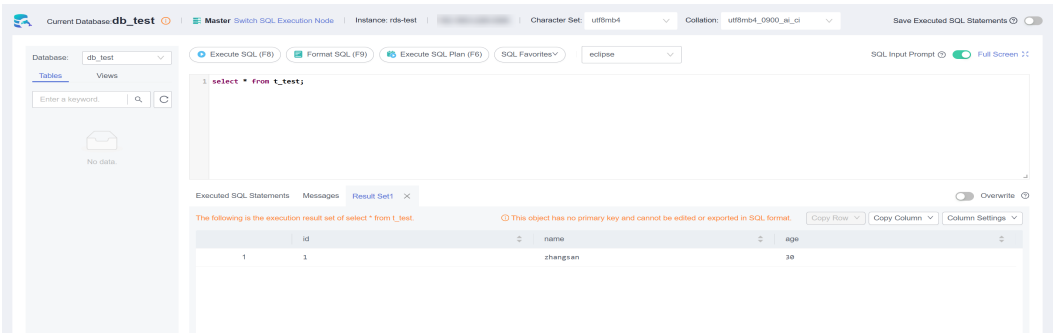
Figure 1-12 Inserting data



Step 10 Query table data.

```
select * from t_test;
```

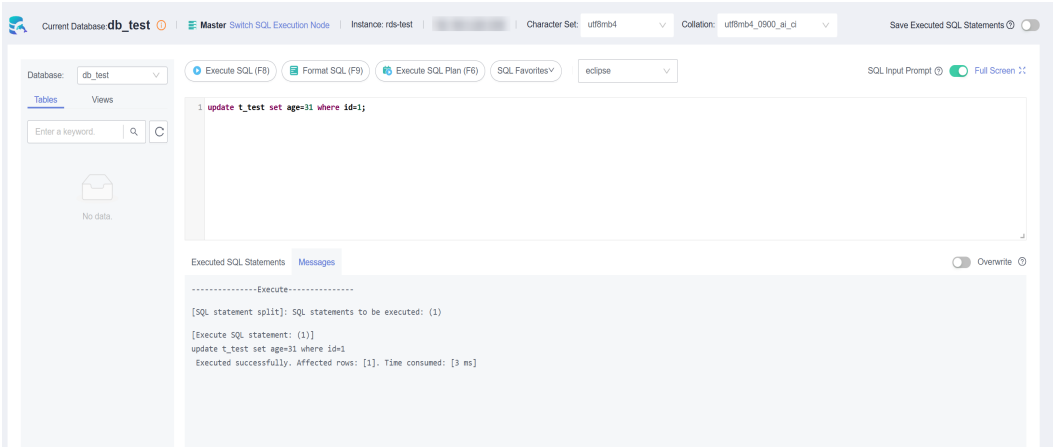
Figure 1-13 Querying data



Step 11 Update the value of **age** for the data record whose **id** is **1** in the table.

```
update t_test set age=31 where id=1;
```

Figure 1-14 Updating data



Step 12 Query the updated table data.

```
select * from t_test where id=1;
```

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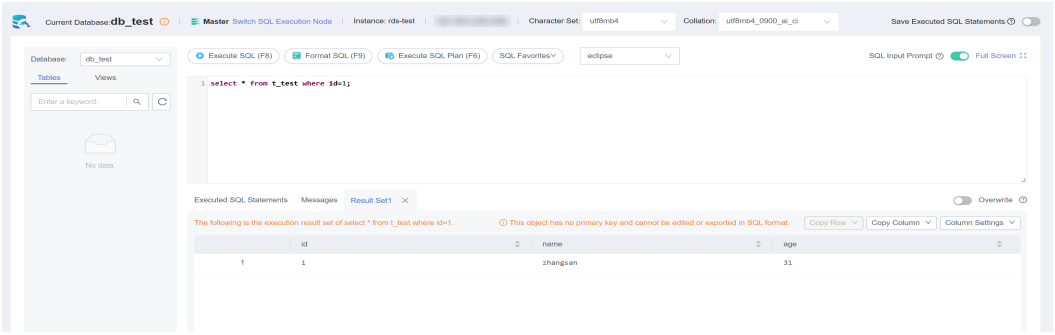
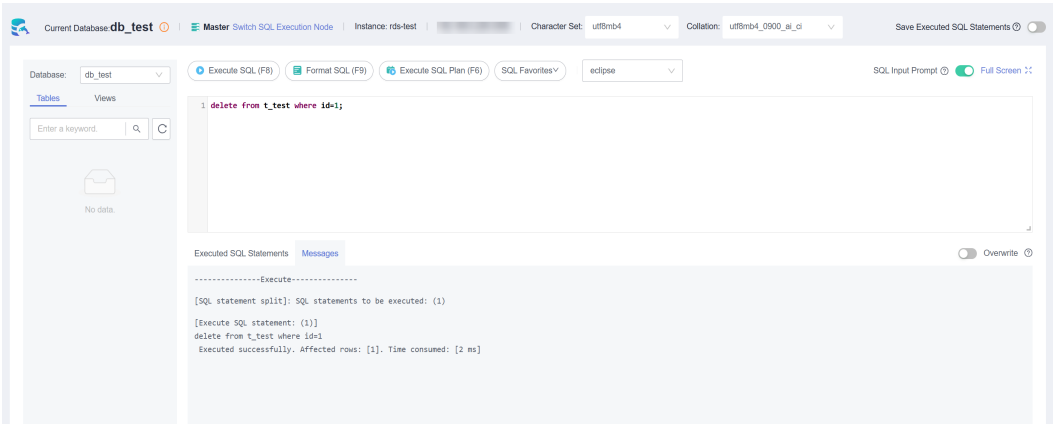
Figure 1-15 Querying updated data



Step 13 Delete the data record whose **id** is **1** from the table.

```
delete from t_test where id=1;
```

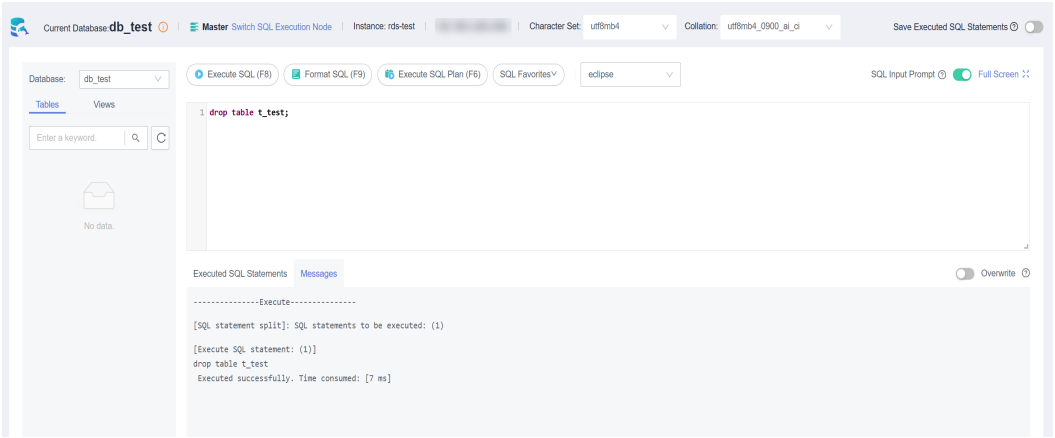
Figure 1-16 Deleting table data



Step 14 Delete the table structure.

```
drop table t_test;
```

Figure 1-17 Deleting table structure



Step 15 Delete the database.

```
drop database db_test;
```

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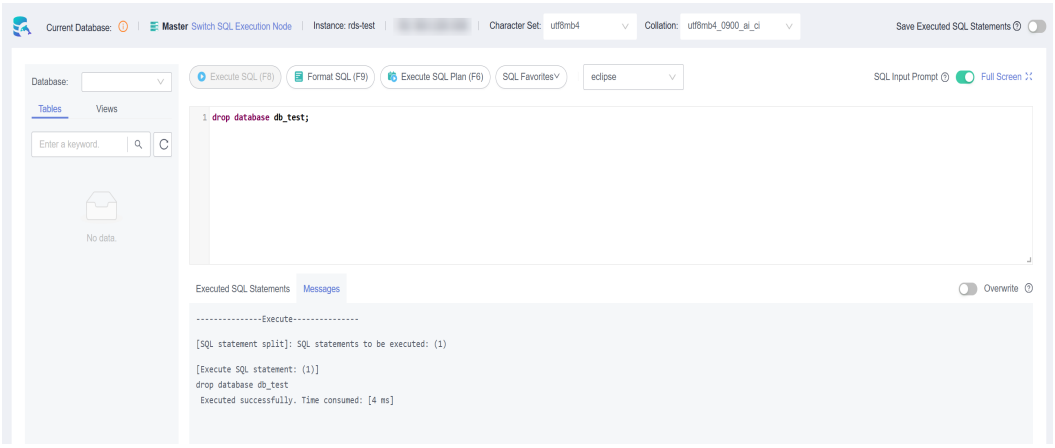
Figure 1-18 Deleting a database



----End

FAQ

What Can I Do If the DAS Console Is Not Displayed After I Click Log In in the Operation Column of an Instance on the Instances Page?

Set your browser to allow pop-ups and try again.

What Should I Do If I Can't Connect to My DB Instance Due to Insufficient Permissions?

1. Error message: You do not have the required permission. The policy does not allow action das:connections:xxx.

   Error cause: Your account does not have the DAS FullAccess permission.

   Solution: Add the DAS FullAccess permission by referring to **Creating a User and Granting Permissions**.
2. Error message: You do not have the permission to perform this operation. Contact your administrator to request the required permission.

   Error cause: Your account does not have the DAS FullAccess permission.

   Solution: Add the DAS FullAccess permission by referring to **Creating a User and Granting Permissions**.
3. Error message: Your current account only has the read-only permission and cannot perform this operation. To ensure that you can use DAS smoothly, add the DAS Administrator permission.

   Error cause: Your account does not have the DAS FullAccess permission.

   Solution: Add the DAS FullAccess permission by referring to **Creating a User and Granting Permissions**.

What Should I Do If I Fail to Connect to My DB Instance Using DAS?

1. Error message: **Access denied for user 'user_name'@'100.xxx.xx.xx' (using password: YES).**

   a. Error cause: The username or password of the RDS instance is incorrect.

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Solution: Check whether the username and password are correct. If you are not sure, log in to the RDS console to reset the password.

NOTICE

Changing the password may affect services.

If the username and password are correct, log in to the database using a client or CLI and run **select * from mysql.user where user = 'user_name'** to view the account. If **100.%** (an IP address starting with **100**) is assigned to a user, only the user can connect to the database through DAS. **user_name @%** and **user_name @100.%** are different users with independent passwords and permissions. Enter the password of **user_name @100.%**.

b. Error cause: The IP address of the DAS server is not in the whitelist of the login user.

Solution: Log in to the database using the client or CLI tool, and create a user account that can be used to access the database through DAS.

```
create user 'user_name'@'100.%' identified by 'password';
grant select on *.* to 'user_name'@'100.%';
```

NOTE

- Ensure that the IP address of the DAS server is in a CIDR block starting with 100. Add the IP address to the whitelist of the login user.
- Grant permissions to user **user_name@100.%** based on service requirements.

c. Error cause: The SSL function is not enabled on the server.

Solution: Run the following statement to check whether the user is an SSL user. If yes, enable SSL on the RDS instance details page. The user is an SSL user if the **ssl_type** field has a value.

```
select user, host, ssl_type from mysql.user where user = 'user_name';
```

2. Error message: **Trying to connect with ssl, but ssl not enabled in the server.**

Error cause: The SSL function is not enabled on the server.

Solution: Run the following statement to check whether the user is an SSL user. If yes, enable SSL on the RDS instance details page. The user is an SSL user if the **ssl_type** field has a value.

```
select user, host, ssl_type from mysql.user where user = 'user_name';
```

3. Error message: **Client does not support authentication protocol requested by server.** plugin type was = 'sha256_password'.

a. Error cause: DAS does not allow you to connect to the database whose password is encrypted with SHA-256.

Solution: Execute the following SQL statements to change the password encryption method to mysql_native_password.

```
alter user 'user_name'@'%' identified with mysql_native_password by 'password';
```

b. Error cause: For MySQL 8.0, the IP address of the DAS server is not in the whitelist of the user.

Solution: Log in to the database using the client or CLI tool, and create a user that can be used to access the database through DAS.

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4. Error message: **Communications link failure The last packet sent successfully to the server was 0 milliseconds ago. The driver has not received any packets from the server.**

   Error cause: The network between the DAS server and the target instance is disconnected.

   Solution: **Submit a service ticket** to contact customer service.

5. Error message: **Instance connect timeout, please login again.**

   Error cause: The connection to the DAS server timed out.

   Solution: **Submit a service ticket** to contact customer service.

6. Error information: **RSA public key is not available client side (option serverRsaPublicKeyFile not set).**

   Error cause: The identity authentication mode of the database user has high requirements on password security. The password transmitted over the network during user authentication must be encrypted.

   - For an SSL connection, the SSL certificate and key pair are used during the TSL handshake to securely establish a symmetric key. This symmetric key is then used to encrypt the password and data.
   - For a non-SSL connection, the client uses the RSA public key of the MySQL server to encrypt the user password, and the server uses the RSA private key to decrypt and verify the password. This protects the password against snooping during network transmission.

   Solution: Enable SSL for the instance or change the identity authentication mode of the database user.

Follow-up Operations

After logging in to the DB instance, you can create or migrate databases.

- **Creating a MySQL Database Using the Console**
- **Creating a MySQL Database Using an API**
- **Managing MySQL Databases Using DAS**
- **Migrating Data to RDS for MySQL**

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2 Buying an RDS for MySQL Instance and Connecting to It Using a MySQL Client

After buying a DB instance, you can connect to it using a Linux ECS with a MySQL client installed over a private network. This section describes how to access a DB instance from an ECS using a standard MySQL client.

This section introduces how to connect to a DB instance with SSL disabled. To connect to a DB instance with SSL enabled, see **Using MySQL CLI to Connect to an Instance Through a Private Network**.

Operation Process

Process	Description
Preparations	Sign up for a HUAWEI ID, enable Huawei Cloud services, make sure you have a valid payment method configured, create IAM users, and grant them specific RDS permissions.
Step 1: Buy an RDS for MySQL DB Instance	Select required basic settings and additional options and buy an RDS for MySQL DB instance.
Step 2: Buy an ECS	If you want to connect to a DB instance using a MySQL client, you need to prepare a server, install the MySQL client on the server, and run the connection command. Purchase a Linux ECS that is in the same region and VPC as your DB instance. If you have purchased a Windows ECS, you can connect to the DB instance using MySQL-Front. For details, see **Buying an RDS for MySQL Instance and Connecting to It Using MySQL-Front**.
Step 3: Test Connectivity and Install a MySQL Client	Test the network connectivity between the ECS and the floating IP address and port of the DB instance, and install a MySQL client on the ECS.

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Process	Description
Step 4: Connect to the DB Instance Using a CLI (Non-SSL Connection)	Use a command-line interface (CLI) to connect to the DB instance using the floating IP address and port.

Preparations

1. **Sign up for a HUAWEI ID and enable Huawei Cloud services**.
2. For fine-grained permissions management on Huawei Cloud resources, use Identity and Access Management (IAM) to create a user and user group and grant the user specific operation permissions. For details, see **Creating a User and Granting Permissions**.

Procedure

Step 1: Buy an RDS for MySQL DB Instance

1. Go to the **Buy DB Instance** page.
2. On the **Quick Config** page, set basic parameters.

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Figure 2-1 Basic Settings

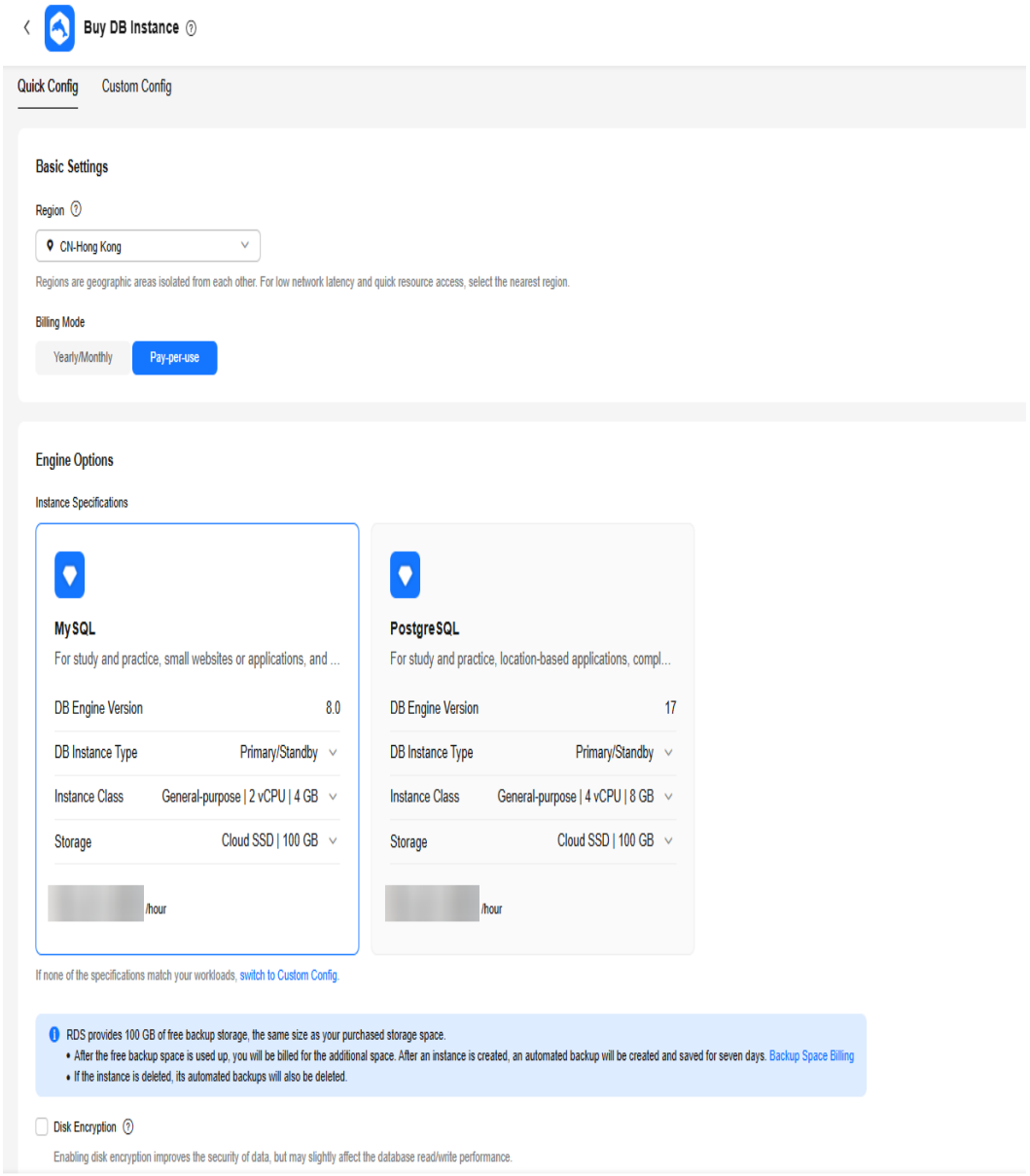

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Table 2-1 Basic Settings

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Region	CN-Hong Kong	The region where your resources are located. Products in different regions cannot communicate with each other through a private network. After a DB instance is created, the region cannot be changed. Therefore, exercise caution when selecting a region.
DB Engine Version	8.0	The database version.
DB Instance Type	Primary/ Standby	The architecture type of an instance. **Primary/Standby**: An HA architecture. In a primary/standby pair, each instance has the same instance class. When a primary instance is being created, a standby instance is provisioned along with it to provide data redundancy. The standby instance is invisible to you after being created.
Instance Class	General-purpose | 2 vCPU | 4 GB	The vCPUs and memory of an instance.
Storage	Cloud SSD | 100 GB	The storage space of an instance. It contains the system overhead required for inodes, reserved blocks, and database operation.

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Parameter	Example Value	Description
Disk Encryption	Disable	Enabling disk encryption enhances data security but reduces the database's read and write performance by 5%. If a shared KMS key is used, the corresponding CTS events are **createdatakey** and **decrydatakey**. Only the key owner can receive the events.

3. Set parameters for **Additional Options**.

Figure 2-2 Additional Options

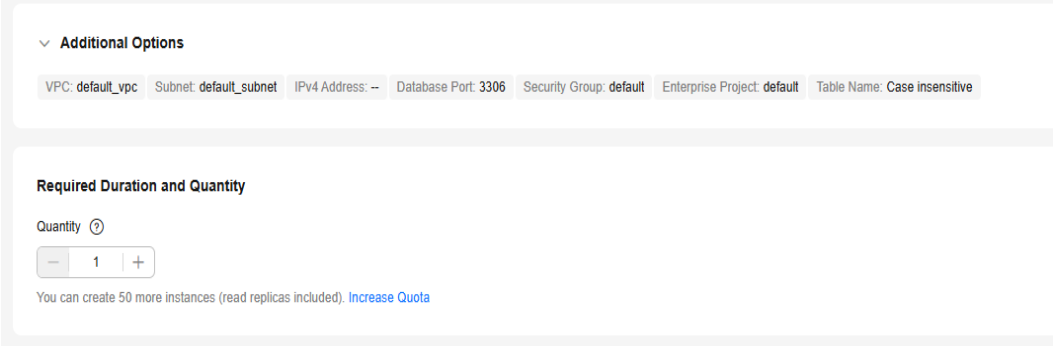

Table 2-2 Additional Options

Parameter	Example Value	Description
VPC	default_vpc	The virtual network in which your instance is located. A VPC can isolate networks for different workloads. If no VPC is available, click **Create VPC**. After a VPC is created, click . For details, see **Creating a VPC with a Subnet**.
Subnet	default_subnet	A subnet provides dedicated network resources that are logically isolated from other networks for network security.
Security Group	default	It can enhance security by controlling access to RDS for MySQL from other services.
Enterprise Project	default	If your account has been associated with an enterprise project, select the target project from the **Enterprise Project** drop-down list. For more information about enterprise projects, see ***Enterprise Management User Guide***.

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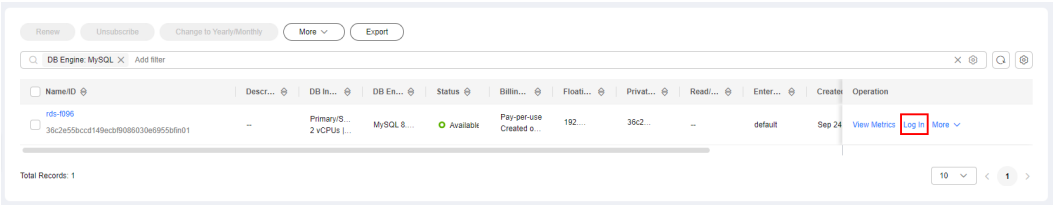
Parameter	Example Value	Description
Table Name	Case insensitive	Whether table names are case sensitive. Restoration may fail if the case sensitivity settings of table names on the source and target instances are different. The case sensitivity of table names for created RDS for MySQL 8.0 instances cannot be changed.
Quantity	1	The number of instances to be created in a batch.

4. Click **Buy**.
5. Check the purchased DB instance.

Figure 2-3 Instance successfully purchased



Step 2: Buy an ECS

1. Go to the **Elastic Cloud Server console**.
2. Check whether there is a Linux ECS.
   - If yes, go to **3**.

     NOTICE

     If the ECS image is CentOS, CentOS 7.4 64bit must be used.

   - If no, purchase an ECS and select Linux (for example, CentOS 7.4 64bit) as its OS.

     To download a MySQL client to the ECS, bind an EIP to the ECS. The ECS must be in the same region, VPC, and security group as the RDS for MySQL DB instance for mutual communications.

     For details about how to purchase a Linux ECS, see **Purchasing a Custom ECS** in *Elastic Cloud Server User Guide*.
   - If there is only a Windows ECS, you can use MySQL-Front to connect to the DB instance. For details, see **Buying an RDS for MySQL Instance and Connecting to It Using MySQL-Front**.

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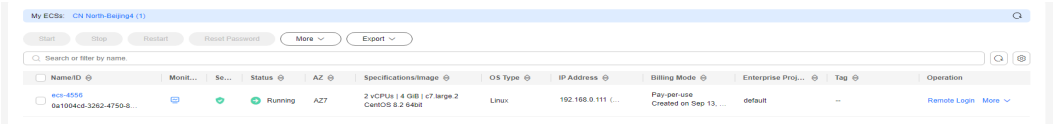
Figure 2-4 ECS



3. Check whether the ECS and RDS for MySQL instance are in the same region and VPC.

Figure 2-5 ECS information

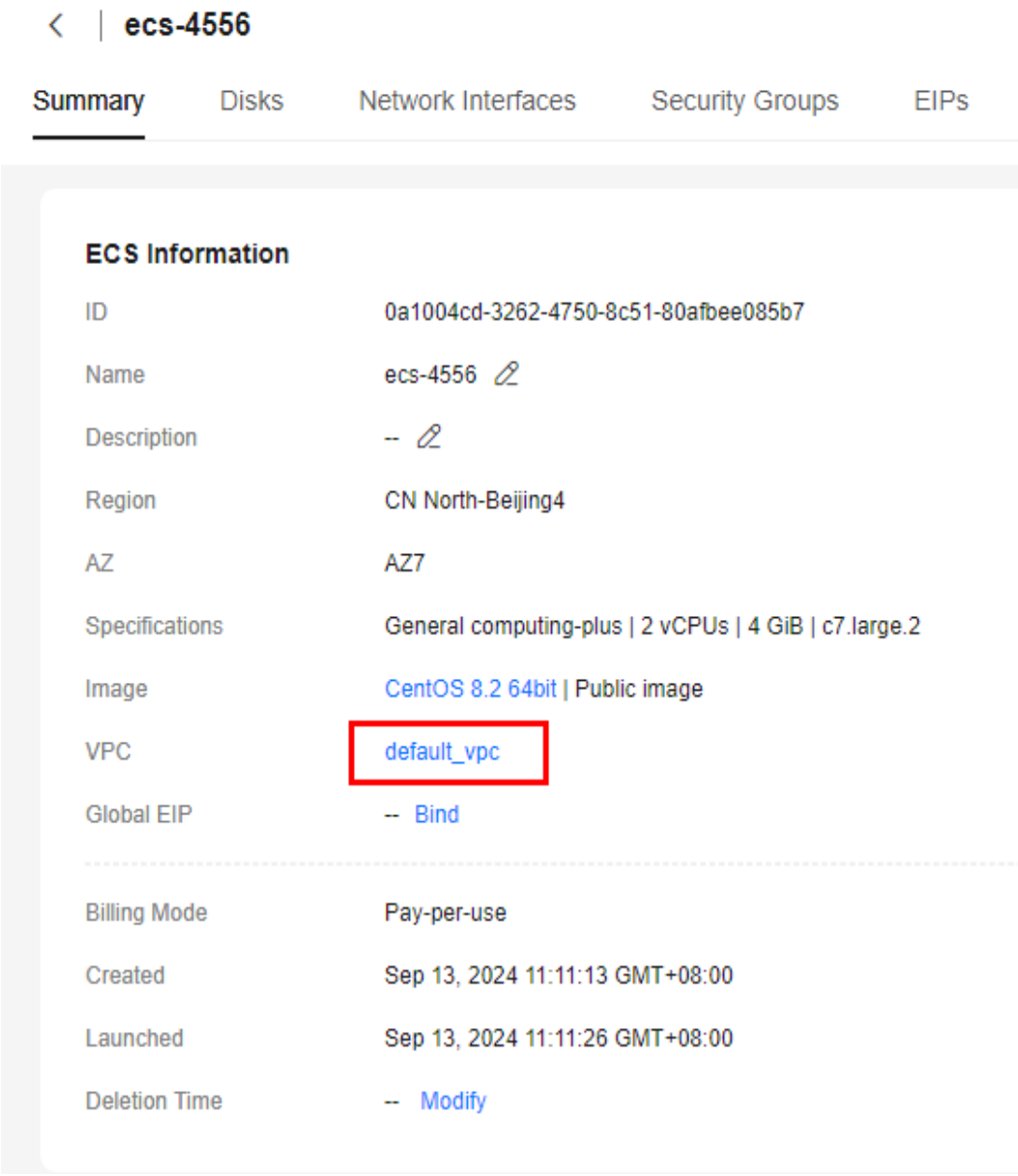


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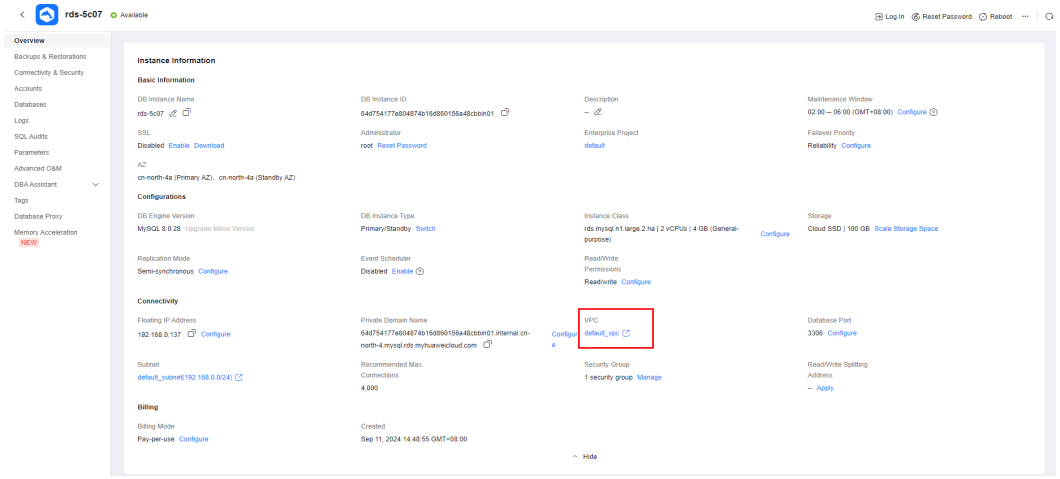
Figure 2-6 Overview

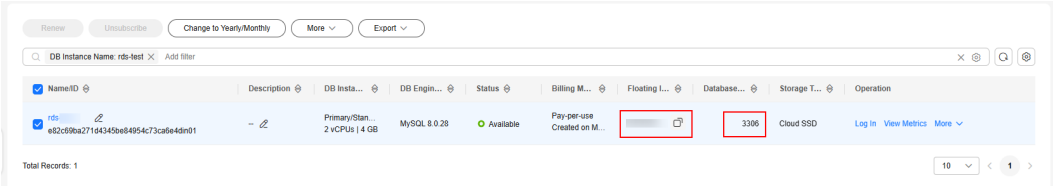


- If they are not in the same region, purchase another ECS. The ECS and DB instance in different regions cannot communicate with each other. To reduce network latency, deploy your DB instance in the region nearest to your workloads.
- If the ECS and DB instance are in different VPCs, change the VPC of the ECS to that of the DB instance. For details, see **Changing a VPC**.

Step 3: Test Connectivity and Install a MySQL Client

1. Log in to the ECS. For details, see **Logging In to a Linux ECS Using VNC** in the *Elastic Cloud Server User Guide*.
2. On the **Instances** page of the RDS console, check the floating IP address and database port of the DB instance.

Figure 2-7 Connection information



3. After logging in to the ECS, check whether the floating IP address and database port obtained in **2** can be connected.

```
curl -kv Floating_IP_address:Port
```

Example:

```
curl -kv 192.168.0.4:3306
```

- If yes, network connectivity is normal. Go to **4**.

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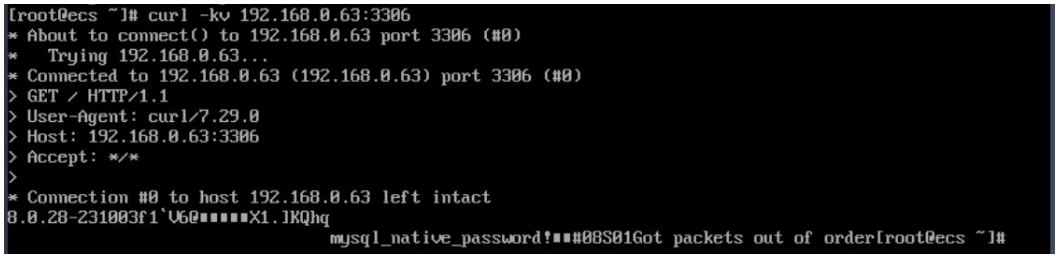
Figure 2-8 Normal network connectivity

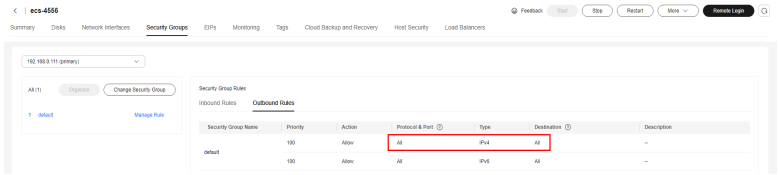


- If no, check the security group rules.

  - Check the outbound rules of the ECS security group. By default, all outgoing network traffic is allowed.

    If not all outgoing traffic is allowed, add an outbound rule for the floating IP address and port of the DB instance.

    Figure 2-9 ECS security group

  - If in the security group of the DB instance, there is no inbound rule allowing the access from the private IP address and port of the ECS, add an inbound rule for the private IP address and port of the ECS. For details, see **Configuring a Security Group Rule**.

4. Download the MySQL client installation package for Linux to the ECS.
   - **MySQL 8.0**:
     ```
     wget https://dev.mysql.com/get/mysql-community-client-8.0.28-1.el6.x86_64.rpm
     ```
   - **MySQL 5.7**:
     ```
     wget https://dev.mysql.com/get/mysql-community-client-5.7.38-1.el6.x86_64.rpm
     ```

   NOTE

   A MySQL client running a version later than that of the DB instance is recommended.

5. Install the MySQL client.
   - MySQL 8.0:
     ```
     rpm -ivh --nodeps mysql-community-client-8.0.28-1.el6.x86_64.rpm
     ```

     Figure 2-10 Installing a client

   - MySQL 5.7:
     ```
     rpm -ivh --nodeps mysql-community-client-5.7.38-1.el6.x86_64.rpm
     ```

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NOTE

- If any conflicts occur during the installation, add the **replacefiles** parameter to the command and install the client again.
  ```
  rpm -ivh --replacefiles mysql-community-client-8.0.28-1.el6.x86_64.rpm
  ```
- If a message is displayed prompting you to install a dependent package during the installation, add the **nodeps** parameter to the command and install the client again.
  ```
  rpm -ivh --nodeps mysql-community-client-8.0.28-1.el6.x86_64.rpm
  ```

Step 4: Connect to the DB Instance Using a CLI (Non-SSL Connection)

1. Run the following command on the ECS to connect to the DB instance:
   ```
   mysql -h <host> -P <port> -u <userName> -p
   ```
   Example:
   ```
   mysql -h 192.168.6.144 -P 3306 -u root -p
   ```

   Table 2-3 Parameter description

Parameter	Example Value	Description
<host>	192.168.6.144	Floating IP address obtained in 2.
<port>	3306	Database port obtained in 2. The default value is 3306.
<userName>	root	Administrator account **root**.

2. Enter the password of the database account if the following information is displayed:
   ```
   Enter password:
   ```

   Figure 2-11 Connection successful

   ```
   [root@ecs-e5d6-test ~]# mysql -h          -P 3306 -u root -p
   Enter password:
   Welcome to the MySQL monitor.  Commands end with ; or \g.
   Your MySQL connection id is 108609
   Server version:         MySQL Community Server - (GPL)

   Copyright (c) 2000, 2021, Oracle and/or its affiliates.

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   affiliates. Other names may be trademarks of their respective
   owners.

   Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

   mysql>
   ```

3. Create a database, for example, **db_test**.
   ```
   create database db_test;
   ```

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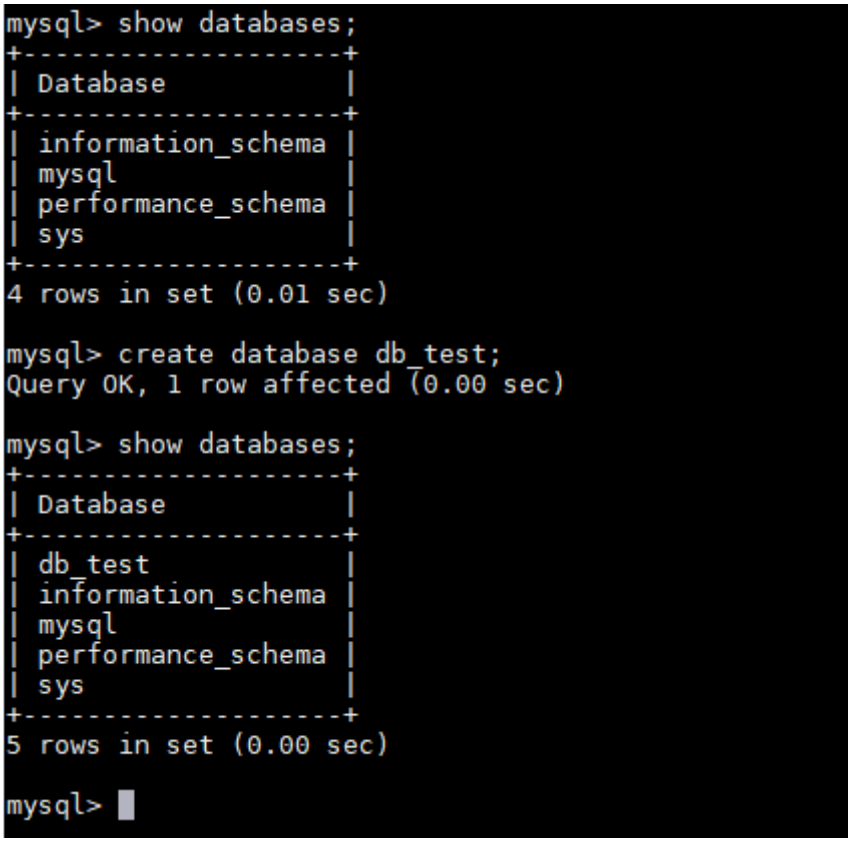
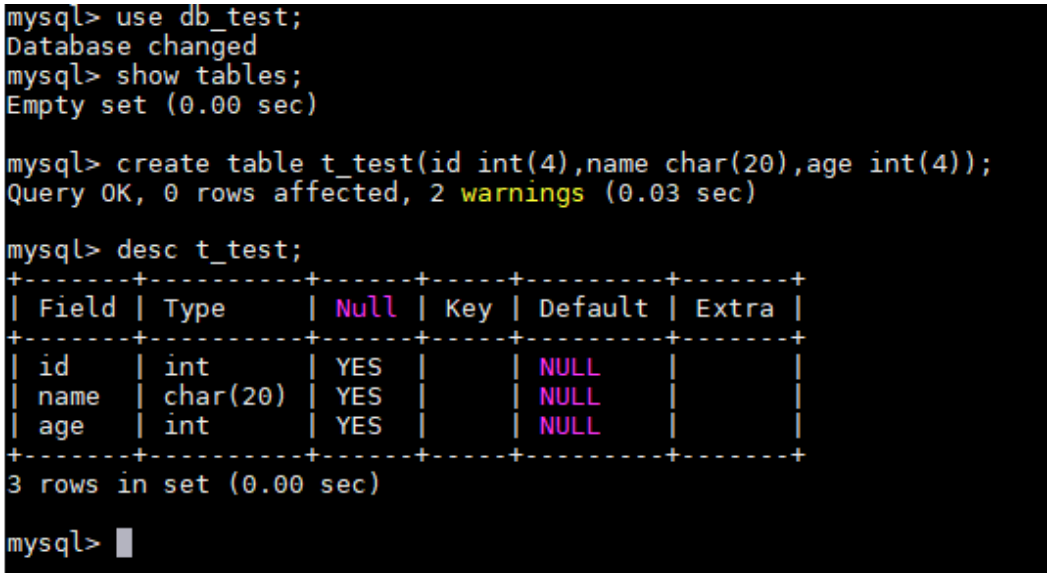
Figure 2-12 Creating a database



4. Create a table, for example, **t_test**.

```
create table t_test(id int(4), name char(20), age int(4));
```

Figure 2-13 Creating a table



5. Insert one data record to the table.

```
insert into t_test(id, name, age) values(1, 'zhangsan', 30);
```

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Figure 2-14 Inserting data

```
mysql> insert into t_test(id, name, age) values(1, 'zhangsan', 30);
Query OK, 1 row affected (0.01 sec)
```

6. Query table data.

```
select * from t_test;
```

Figure 2-15 Querying data

```
mysql> select * from t_test;
+------+----------+------+
| id   | name     | age  |
+------+----------+------+
|    1 | zhangsan |   30 |
+------+----------+------+
1 row in set (0.01 sec)

mysql>
```

7. Update the value of **age** for the data record whose **id** is **1** in the table.

```
update t_test set age=31 where id=1;
```

Figure 2-16 Updating data

```
mysql> update t_test set age=31 where id=1;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

8. Query the updated table data.

```
select * from t_test where id=1;
```

Figure 2-17 Querying updated data

```
mysql> select * from t_test where id=1;
+------+----------+------+
| id   | name     | age  |
+------+----------+------+
|    1 | zhangsan |   31 |
+------+----------+------+
1 row in set (0.00 sec)

mysql>
```

9. Delete the data record whose **id** is **1** from the table.

```
delete from t_test where id=1;
```

Figure 2-18 Deleting table data

```
mysql> delete from t_test where id=1;
Query OK, 1 row affected (0.01 sec)

mysql> select * from t_test;
Empty set (0.00 sec)

mysql>
```

10. Delete the table structure.

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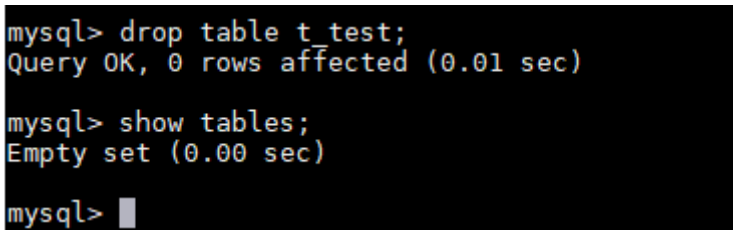
```
drop table t_test;
```

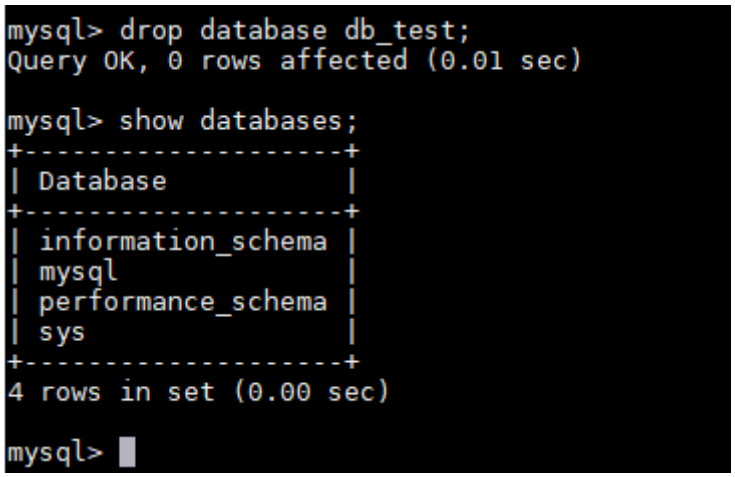
Figure 2-19 Deleting table structure



11. Delete the database.

```
drop database db_test;
```

Figure 2-20 Deleting a database



FAQ

What Should I Do If I Forget My Password?

On the **Instances** page, locate the target DB instance, choose **More** > **Reset Password** in the **Operation** column, and set a new password.

Common Connection Error Messages

- [Warning] Access denied for user 'username'@'yourIp' (using password: NO)

  If this error message is displayed when you attempt to connect to an RDS for MySQL instance, check whether the username or password is correct.
- [Warning] Access denied for user 'username'@'yourIp' (using password: YES)

  If this error message is displayed when you attempt to connect to an RDS for MySQL instance, check whether the username or password is correct.
- ERROR 2013: Lost connection to MySQL server during query

  If the values of **wait_timeout** and **interactive_timeout** are too small, the RDS for MySQL client will automatically stop connections that timed out. For details, see **RDS for MySQL Client Automatically Disconnected from a DB Instance**.
- ERROR 1045 (28000): Access denied for user 'root'@'192.168.0.30' (using password: YES)

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Check whether the password is correct, whether the ECS has the permission to connect to the DB instance, and whether the RDS for MySQL client can ping the DB instance's floating IP address. For details, see **RDS for MySQL DB Instance Inaccessible**.

- ERROR 1226 (42000): User 'test' has exceeded the 'max_user_connections' resource (current value:10)

  Check whether the number of connections to the DB instance is limited. For details, see **RDS for MySQL DB Instance Inaccessible**.

- ERROR 1129 (HY000): Host '192.168.0.111' is blocked because of many connection errors; unblock with 'mysqladmin flush-hosts'

  Check whether the number of failed connection attempts (not caused by incorrect passwords) of the RDS for MySQL client exceeds the value of **max_connection_errors**. For details, see **RDS for MySQL DB Instance Inaccessible**.

For more solutions to connection failures, see **What Should I Do If I Can't Connect to My RDS DB Instance?**

Follow-up Operations

After logging in to the DB instance, you can create or migrate databases.

- **Creating a MySQL Database Using the Console**
- **Creating a MySQL Database Using an API**
- **Managing MySQL Databases Using DAS**
- **Migrating Data to RDS for MySQL**

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3 Buying an RDS for MySQL Instance and Connecting to It Using MySQL-Front

After buying a DB instance, you can connect to it using a Windows ECS with MySQL-Front installed over a private network.

MySQL-Front is a Windows front end for MySQL databases. It allows you to interact with MySQL databases through a GUI. For example, you can connect to a database, run SQL commands, and manage tables and records.

Operation Process

Process	Description
Preparations	Sign up for a HUAWEI ID, enable Huawei Cloud services, make sure you have a valid payment method configured, create IAM users, and grant them specific RDS permissions.
Step 1: Buy an RDS for MySQL DB Instance	Select required basic settings and additional options and buy an RDS for MySQL DB instance.
Step 2: Buy an ECS	If you want to use MySQL-Front to connect to a DB instance, you need to prepare a server, install MySQL-Front on the server, and log in to the instance. Purchase a Windows ECS that is in the same region and VPC as your DB instance. If you have purchased a Linux ECS, you can connect to the DB instance using a MySQL client. For details, see **Buying an RDS for MySQL Instance and Connecting to It Using a MySQL Client**.
Step 3: Test Connectivity and Install MySQL-Front	Test the network connectivity between the ECS and the floating IP address and port of the DB instance, and install MySQL-Front on the ECS.

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Process	Description
Step 4: Connect to the DB Instance Using MySQL-Front	Use MySQL-Front to connect to the DB instance using the floating IP address and port.

Preparations

1. **Sign up for a HUAWEI ID and enable Huawei Cloud services**.
2. For fine-grained permissions management on Huawei Cloud resources, use Identity and Access Management (IAM) to create a user and user group and grant the user specific operation permissions. For details, see **Creating a User and Granting Permissions**.

Procedure

Step 1: Buy an RDS for MySQL DB Instance

1. Go to the **Buy DB Instance** page.
2. On the **Quick Config** page, set basic parameters.

   NOTE

   Only mandatory parameters are provided on the **Quick Config** page. If the available parameters do not match your workloads, try **Custom Config**.

   The following parameter settings are only for reference. Tailor your settings to your workloads.

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Figure 3-1 Basic Settings

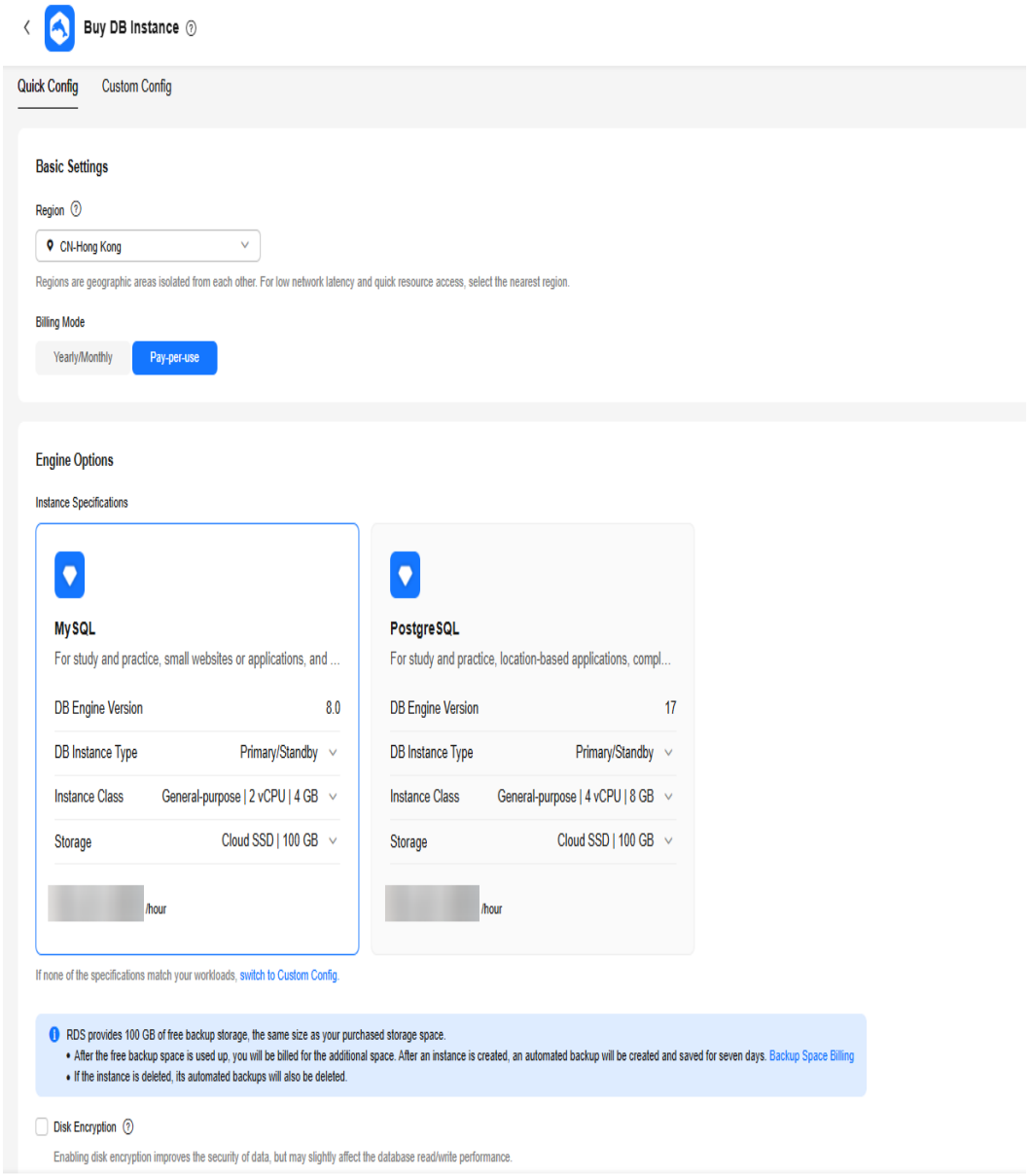

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Table 3-1 Basic Settings

Parameter	Example Value	Description
Billing Mode	Pay-per-use	The billing mode of an instance. • **Yearly/Monthly**: A prepaid billing mode in which you pay for resources before using it. Bills are settled based on the subscription period. The longer the subscription, the bigger the discount. This mode is a good option for long-term, stable services. • **Pay-per-use**: A postpaid billing mode. You pay as you go and just pay for what you use. The DB instance usage is calculated by the second but billed every hour. This mode allows you to adjust resource usage easily. You neither need to prepare for resources in advance, nor end up with excessive or insufficient preset resources.
Region	CN-Hong Kong	The region where your resources are located. Products in different regions cannot communicate with each other through a private network. After a DB instance is created, the region cannot be changed. Therefore, exercise caution when selecting a region.
DB Engine Version	8.0	The database version.
DB Instance Type	Primary/ Standby	The architecture type of an instance. **Primary/Standby**: An HA architecture. In a primary/standby pair, each instance has the same instance class. When a primary instance is being created, a standby instance is provisioned along with it to provide data redundancy. The standby instance is invisible to you after being created.
Instance Class	General-purpose | 2 vCPU | 4 GB	The vCPUs and memory of an instance.
Storage	Cloud SSD | 100 GB	The storage space of an instance. It contains the system overhead required for inodes, reserved blocks, and database operation.

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Parameter	Example Value	Description
Disk Encryption	Disable	Enabling disk encryption enhances data security but reduces the database's read and write performance by 5%. If a shared KMS key is used, the corresponding CTS events are **createdatakey** and **decrydatakey**. Only the key owner can receive the events.

3. Set parameters for **Additional Options**.

Figure 3-2 Additional Options

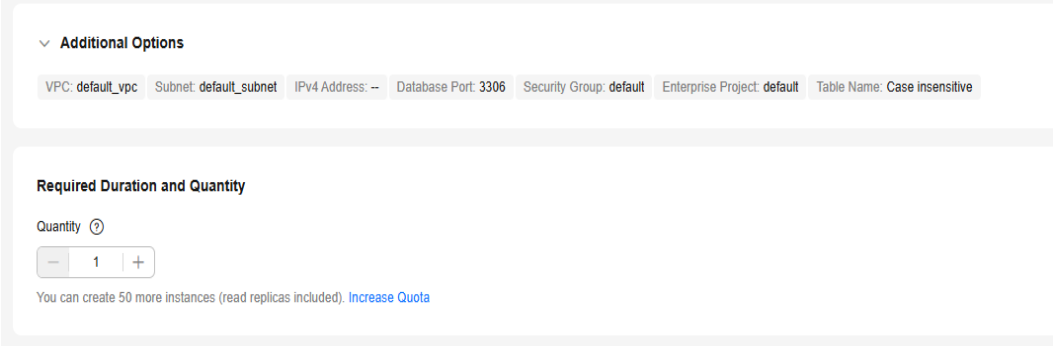

Table 3-2 Additional Options

Parameter	Example Value	Description
VPC	default_vpc	The virtual network in which your instance is located. A VPC can isolate networks for different workloads. If no VPC is available, click **Create VPC**. After a VPC is created, click . For details, see **Creating a VPC with a Subnet**.
Subnet	default_subnet	A subnet provides dedicated network resources that are logically isolated from other networks for network security.
Security Group	default	It can enhance security by controlling access to RDS for MySQL from other services.
Enterprise Project	default	If your account has been associated with an enterprise project, select the target project from the **Enterprise Project** drop-down list. For more information about enterprise projects, see ***Enterprise Management User Guide***.

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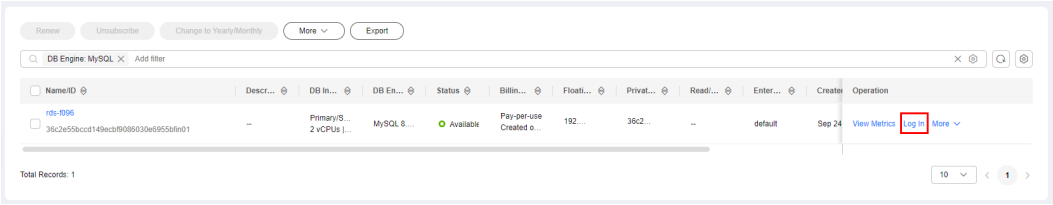
Parameter	Example Value	Description
Table Name	Case insensitive	Whether table names are case sensitive. Restoration may fail if the case sensitivity settings of table names on the source and target instances are different. The case sensitivity of table names for created RDS for MySQL 8.0 instances cannot be changed.
Quantity	1	The number of instances to be created in a batch.

4. Click **Buy**.
5. Check the purchased DB instance.

Figure 3-3 Instance successfully purchased



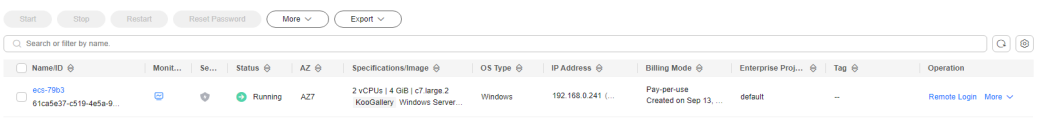
Step 2: Buy an ECS

1. Go to the **Elastic Cloud Server console**.
2. Check whether there is a Windows ECS.
   - If yes, go to **3**.
   - If no, purchase an ECS and select Windows as its OS.

     To download MySQL-Front to the ECS, bind an EIP to the ECS. The ECS must be in the same region, VPC, and security group as the RDS for MySQL DB instance for mutual communications.

     For details about how to purchase a Windows ECS, see **Purchasing a Custom ECS** in *Elastic Cloud Server User Guide*.
   - If there is only a Linux ECS, you can use a MySQL client to connect to the DB instance. For details, see **Buying an RDS for MySQL Instance and Connecting to It Using a MySQL Client**.

Figure 3-4 ECS



3. Check whether the ECS and RDS for MySQL instance are in the same region and VPC.

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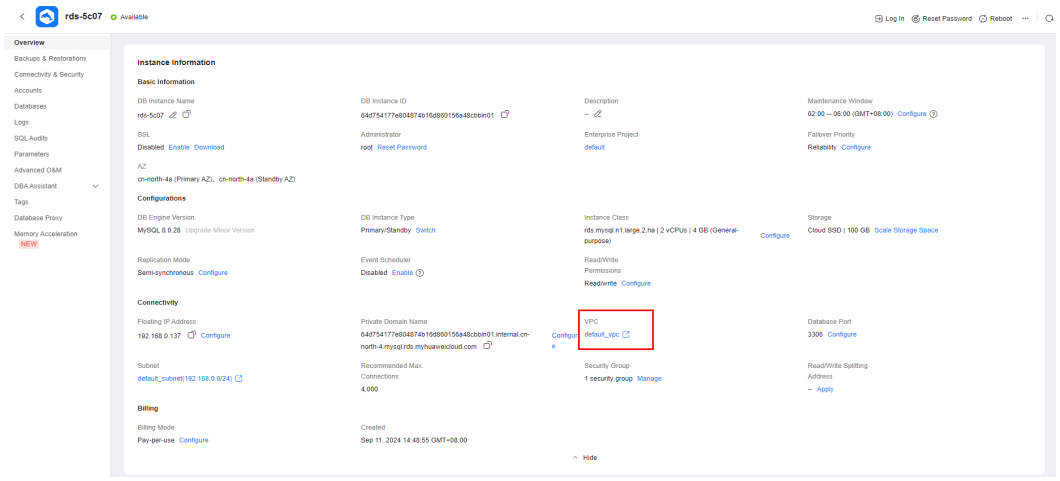
Figure 3-5 Overview

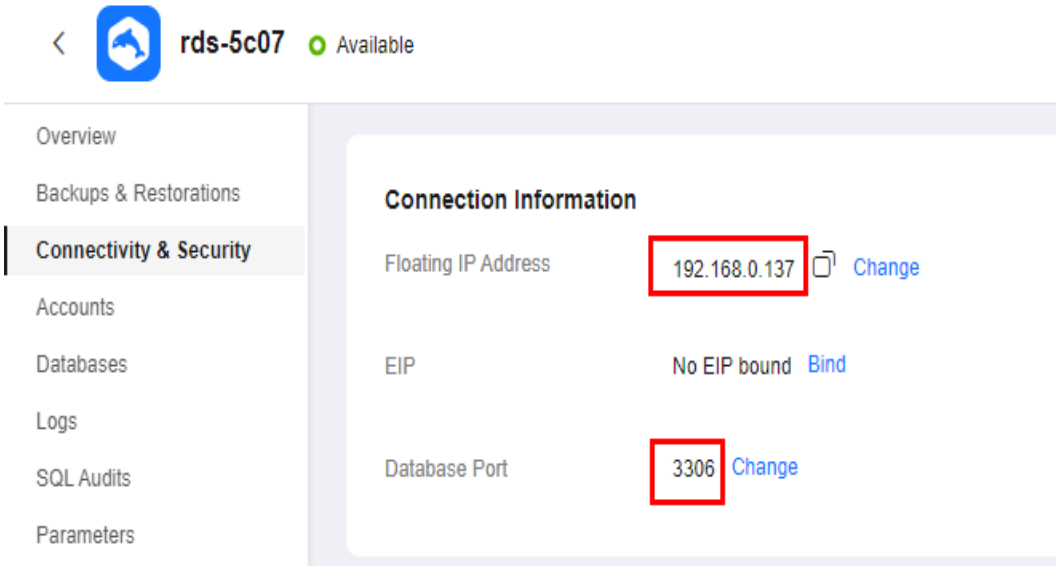


- If they are not in the same region, purchase another ECS. The ECS and DB instance in different regions cannot communicate with each other. To reduce network latency, deploy your DB instance in the region nearest to your workloads.
- If the ECS and DB instance are in different VPCs, change the VPC of the ECS to that of the DB instance. For details, see **Changing a VPC**.

Step 3: Test Connectivity and Install MySQL-Front

1. Log in to the ECS. For details, see **Login Using VNC** in the *Elastic Cloud Server User Guide*.
2. On the **Instances** page of the RDS console, click the DB instance name.
3. Choose **Connectivity & Security** from the navigation pane. In the **Connection Information** area, obtain the floating IP address and database port of the DB instance.

Figure 3-6 Connection information



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4. Open the cmd window on the ECS and check whether the floating IP address and database port of the DB instance can be connected.

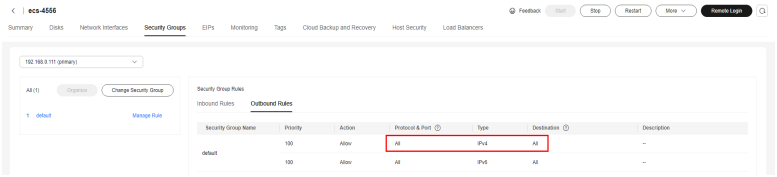
   telnet *192.168.0.137 3306*

   - If yes, network connectivity is normal.
   - If no, check the security group rules.

     - Check the outbound rules of the ECS security group. By default, all outgoing network traffic is allowed.

       If not, add an outbound rule for the floating IP address and port of the DB instance.

       Figure 3-7 ECS security group

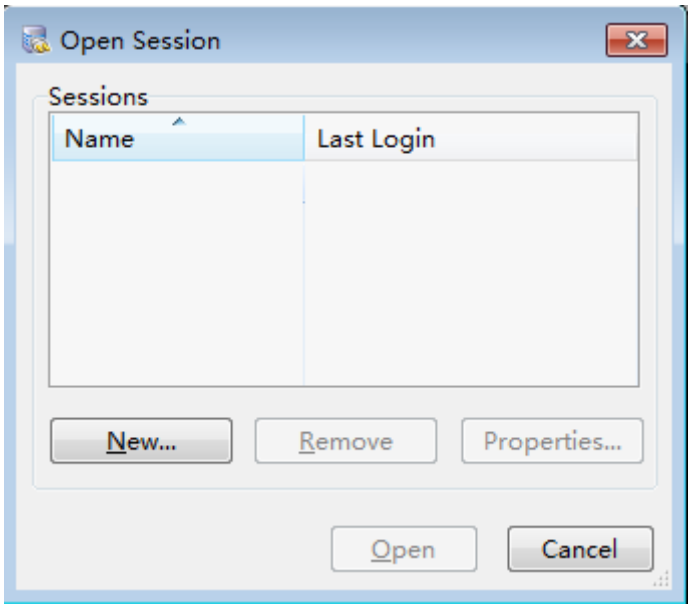
     - If in the security group of the DB instance, there is no inbound rule allowing the access from the private IP address and port of the ECS, add an inbound rule for the private IP address and port of the ECS. For details, see **Configuring a Security Group Rule**.

5. Open a browser, and download and install the MySQL-Front tool on the ECS (version 5.4 is used as an example).

Step 4: Connect to the DB Instance Using MySQL-Front

1. Start MySQL-Front.
2. In the displayed dialog box, click **New**.

   Figure 3-8 Connection management

3. Enter the information of the DB instance to be connected and click **Ok**.

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Figure 3-9 Adding an account

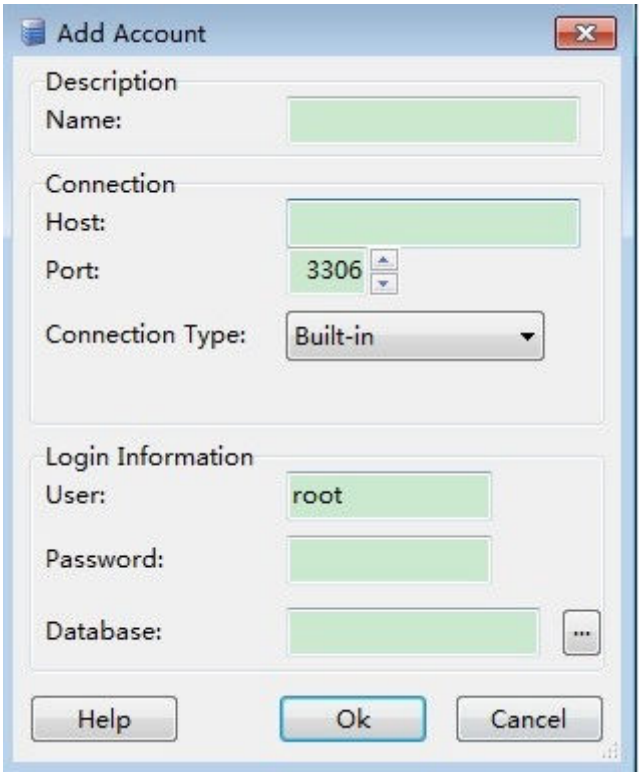

Table 3-3 Parameter description

Parameter	Example Value	Description
Name	192.168.0.137	Name of the database connection task. If you do not specify this parameter, it will be the same as that configured for **Host** by default.
Host	192.168.0.137	Floating IP address obtained in **3**.
Port	3306	Database port obtained in **3**. The default value is 3306.
User	root	Name of the user who will access the DB instance. The default user is **root**.
Password	-	Password of the account for accessing the DB instance.

4. In the displayed window, select the connection that you have created in **3** and click **Open**. If the connection information is correct, the DB instance will be connected.

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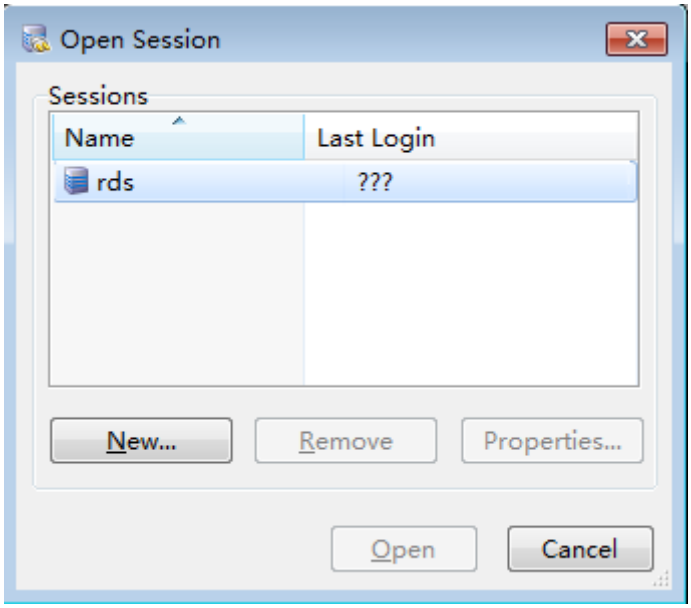
Figure 3-10 Opening a session



FAQ

What Should I Do If I Forget My Password?

On the **Instances** page, locate the target DB instance, choose **More** > **Reset Password** in the **Operation** column, and set a new password.

Common Connection Error Messages

- [Warning] Access denied for user 'username'@'yourIp' (using password: NO)

  If this error message is displayed when you attempt to connect to an RDS for MySQL instance, check whether the username or password is correct.

- [Warning] Access denied for user 'username'@'yourIp' (using password: YES)

  If this error message is displayed when you attempt to connect to an RDS for MySQL instance, check whether the username or password is correct.

- ERROR 2013: Lost connection to MySQL server during query

  If the values of **wait_timeout** and **interactive_timeout** are too small, the RDS for MySQL client will automatically stop connections that timed out. For details, see **RDS for MySQL Client Automatically Disconnected from a DB Instance**.

- ERROR 1045 (28000): Access denied for user 'root'@'192.168.0.30' (using password: YES)

  Check whether the password is correct, whether the ECS has the permission to connect to the DB instance, and whether the RDS for MySQL client can ping the DB instance's floating IP address. For details, see **RDS for MySQL DB Instance Inaccessible**.

- ERROR 1226 (42000): User 'test' has exceeded the 'max_user_connections' resource (current value:10)

  Check whether the number of connections to the DB instance is limited. For details, see **RDS for MySQL DB Instance Inaccessible**.

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- ERROR 1129 (HY000): Host '192.168.0.111' is blocked because of many connection errors; unblock with 'mysqladmin flush-hosts'

  Check whether the number of failed connection attempts (not caused by incorrect passwords) of the RDS for MySQL client exceeds the value of **max_connection_errors**. For details, see **RDS for MySQL DB Instance Inaccessible**.

For more solutions to connection failures, see **What Should I Do If I Can't Connect to My RDS DB Instance?**

Follow-up Operations

After logging in to the DB instance, you can create or migrate your databases.

- **Creating a MySQL Database Using the Console**
- **Creating a Database Using an API**
- **Managing Databases Using DAS**
- **Migrating Data to RDS for MySQL**

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4 Getting Started with RDS for MySQL Common Practices

After purchasing and connecting to a DB instance, you can view common practices to better use RDS for MySQL.

Table 4-1 Common practices

Practice		Description
Suggestions on using RDS for MySQL	**Instance Usage Suggestions**	This practice provides suggestions on using RDS for MySQL in terms of DB instances, database connection, reliability and availability, backup and restoration, SQL audit, routine O&M, and security.
	Database Usage Suggestions	This practice provides suggestions on database naming, database design, field design, index design, and SQL statement development.
Website setup	**Using RDS for MySQL to Set Up WordPress**	This practice describes how to set up WordPress in a LAMP environment using Huawei Cloud Virtual Private Cloud (VPC), Elastic Cloud Server (ECS), and RDS for MySQL.
	Using RDS for MySQL to Set Up Discuz!	This practice describes how to set up Discuz! in a LAMP environment using Huawei Cloud VPC, ECS, and RDS for MySQL.
Data migration	**Migrating Data to RDS for MySQL Using mysqldump**	This practice describes how to use mysqldump to copy data from the source to an RDS for MySQL DB instance.

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Practice		Description
	From RDS for MySQL to RDS for MySQL	This practice describes how to use Data Replication Service (DRS) to migrate table, database, or instance data of the source to an RDS for MySQL DB instance.
	Migrating Data to RDS for MySQL Using the Export and Import Functions of DAS	This practice describes how to use Data Admin Service (DAS) to export data from the source and then import the data to an RDS for MySQL DB instance.
	From RDS for MySQL to RDS for MySQL	This practice describes how to use DRS to synchronize data from the source to an RDS for MySQL DB instance.
	• Configuring Remote Single-Active DR for an RDS for MySQL Instance Using DRS • From RDS for MySQL to RDS for MySQL (Dual-Active DR)	This practice describes how to use DRS to synchronize data from the source to a DR RDS for MySQL instance.
	From DDM to RDS for MySQL	This practice describes how to use DRS to synchronize data from a DDM instance to an RDS for MySQL DB instance.
	From GaussDB Distributed to RDS for MySQL	This practice describes how to use DRS to synchronize data from a GaussDB distributed instance to an RDS for MySQL DB instance.
	From GaussDB Primary/Standby to RDS for MySQL	This practice describes how to use DRS to synchronize data from a GaussDB primary/standby instance to an RDS for MySQL DB instance.
	From TaurusDB to RDS for MySQL	This practice describes how to use DRS to synchronize data from a TaurusDB instance to an RDS for MySQL DB instance.
	Migrating Data from Self-Managed MySQL Databases to RDS for MySQL	This practice describes how to use DRS to migrate data from a self-managed MySQL database to an RDS for MySQL DB instance.

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Practice		Description
	From Self-Managed MySQL to RDS for MySQL	This practice describes how to use DRS to synchronize data from a self-managed MySQL database to an RDS for MySQL DB instance.
	• From Self-Managed MySQL to RDS for MySQL (Single-Active DR) • From Self-Managed MySQL to RDS for MySQL (Dual-Active DR)	This practice describes how to use DRS to synchronize data from a self-managed MySQL database to a DR RDS for MySQL instance.
	From Oracle to RDS for MySQL	This practice describes how to use DRS to synchronize data from a self-managed Oracle database to an RDS for MySQL DB instance.
	Migrating MySQL Databases from Other Clouds to RDS for MySQL	This practice describes how to use DRS to migrate MySQL databases from other clouds to RDS for MySQL.
	From MySQL on Other Clouds to RDS for MySQL	This practice describes how to use DRS to synchronize MySQL databases from other clouds to RDS for MySQL.
	• From MySQL on Other Clouds to RDS for MySQL (Single-Active DR) • From MySQL on Other Clouds to RDS for MySQL (Dual-Active DR)	This practice describes how to use DRS to synchronize MySQL databases from other clouds to DR RDS for MySQL instances.
Data backup	Configuring an Intra-Region Backup Policy	This practice describes how RDS for MySQL automatically creates backups for a DB instance during a backup window and saves the backups based on the configured retention period.
	Creating a Manual Backup	This practice describes how to create manual backups for a DB instance. These backups can be used to restore data for improved reliability.

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Practice		Description
	Configuring a Cross-Region Backup Policy	This practice describes how to store backups of a DB instance in another region for disaster recovery. If the DB instance fails, the backups in another region can be used to restore the data to a new DB instance.
Data restoration	**Restoring from Full Backups to RDS for MySQL Instances**	This practice describes how to use an automated or manual backup to restore a DB instance to how it was when the backup was created. The restoration is at the instance level.
	Restoring a DB Instance to a Point in Time	This practice describes how to use an automated backup to restore instance data to a specified point in time.
	Restoring Databases or Tables to a Point in Time	This practice describes how to use an automated backup to restore databases or tables to a specified point in time.

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