

Distributed Database Middleware

Getting Started

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1 Buying a DDM Instance and Connecting to a Schema Using DAS

Data Admin Service (DAS) is a one-stop management platform that allows you to manage Huawei Cloud databases on a web console. It offers database development, O&M, and intelligent diagnosis, making it easy to use and maintain databases.

This section describes how to buy DDM instances and RDS for MySQL instances, create a DDM account and associate it with RDS for MySQL instances, and connect to a DDM schema using DAS.

Step 1: Buy a DDM Instance

- Step 1** Go to the [Buy DDM Instance](#) page.
- Step 2** On the displayed page, configure the required parameters and click **Next**.
- Step 3** Perform subsequent operations based on the billing mode you select:
- If you select **Pay-per-use**, click **Submit**.
 - If you select **Yearly/Monthly**, click **Pay Now**.
- Step 4** View the purchased instance.

Figure 1-1 Instance successfully purchased



Instance Name	Status	Billing Mode	Version	Connection Address	Created	Enterprise Project	Operation
ddm-4ff	Running	Pay-per-Use Created on Jul 11...	3.1.0.7		Jul 11, 2024 17:15:27 GMT+08:00	default	Create Schema Log In More

----End

Step 2: Buy an RDS for MySQL DB Instance

- Step 1** Go to the [Buy DB Instance](#) page.
- Step 2** Configure the instance information and click **Next**.

CAUTION

- A DDM instance can be associated with RDS for MySQL instances of versions 5.7 and 8.0.
- The RDS for MySQL instance must be in the same VPC and subnet as your DDM instance. If they are not in the same subnet, configure routes to ensure network connectivity.
- Specifications of associated RDS for MySQL instances should be greater than that of the DDM instance. Otherwise the performance will be affected.

Figure 1-2 Network configurations

VPC [View In-use IP Addresses \(Addresses available: 249\)](#)

The VPC an RDS instance is deployed in cannot be changed later. ECSs in different VPCs cannot communicate with each other by default. If you want to create a VPC, go to the [VPC console](#).
An EIP is required if you want to access DB instances through a public network. [View EIP](#)

Database Port

The database port of read replicas (if any) is the same as that of the primary DB instance.

Security Group [View Security Group](#)

Ensure that port 3306 of the security group allows traffic from your server IP address to the DB instance.
Security Group Rules [Add Inbound Rule](#)

Step 3 Confirm the configurations and click **Submit**. Wait 1 to 3 minutes for the RDS instance to be created.

Step 4 View the purchased RDS instance.

----End

Step 3: Create a DDM Account and Associate It with an RDS for MySQL Instance

Step 1 [Log in to the DDM console](#).

Step 2 In the instance list, locate the required DDM instance and click its name.

Step 3 In the navigation pane, choose **Accounts**.

Step 4 On the displayed page, click **Create Account**.

Step 5 In the dialog box that is displayed, configure the account information and click **OK**.

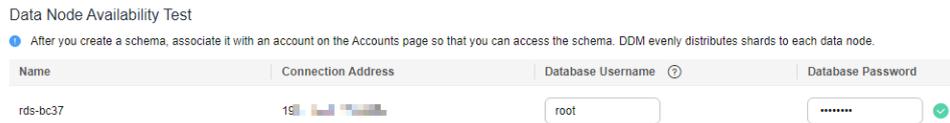
The value of the password validity period must be an integer ranging from 0 to 65535, in days. If the value is **0**, the password never expires. If this parameter is not set, the password will always be valid.

Step 6 On the **Instances** page, locate the required DDM instance and click **Create Schema** in the **Operation** column.

Step 7 On the **Create Schema** page, set required parameters and click **Next**.

Step 8 On the displayed page, enter a database account with the required permissions and click **Test Availability**.

Figure 1-3 Testing availability of data nodes



Step 9 After the test is successful, click **Finish**.

Step 10 View the associated RDS for MySQL instance.

Figure 1-4 DB instance successfully associated



----End

Step 4: Use DAS to Connect to a DDM Schema

Step 1 [Log in to the DDM console](#).

Step 2 On the **Instances** page, locate the destination instance, and click **Log In** in the **Operation** column.

The instance login page of the DAS console is displayed.

Step 3 On the displayed page, enter username and password of the DDM account.

Step 4 Click **Test Connection** and select **Remember Password**.

Step 5 Ensure that all settings are correct and click **Log In**.

----End

2 Buying a DDM Instance and Connecting to a Schema Using a Linux System

This example illustrates how to purchase a DDM schema and connect to it from a Linux ECS over a private network.

Step 1: Buy a DDM Instance

- Step 1** Go to the [Buy DDM Instance](#) page.
- Step 2** On the displayed page, configure the required parameters and click **Next**.
- Step 3** Perform subsequent operations based on the billing mode you select:
- If you select **Pay-per-use**, click **Submit**.
 - If you select **Yearly/Monthly**, click **Pay Now**.
- Step 4** View the purchased instance.

Figure 2-1 Instance successfully purchased

Instance Name	Status	Billing Mode	Version	Connection Address	Created	Enterprise Project	Operation
ddm-4ff	Running	Pay-per-Use Created on Jul 11,...	3.1.0.7		Jul 11, 2024 17:15:27 GMT+08:00	default	Create Schema Log In More

----End

Step 2: Buy an RDS for MySQL DB Instance

- Step 1** Go to the [Buy DB Instance](#) page.
- Step 2** Configure the instance information and click **Next**.

CAUTION

- A DDM instance can be associated with RDS for MySQL instances of versions 5.7 and 8.0.
- The RDS for MySQL instance must be in the same VPC and subnet as your DDM instance. If they are not in the same subnet, configure routes to ensure network connectivity.
- Specifications of associated RDS for MySQL instances should be greater than that of the DDM instance. Otherwise the performance will be affected.

Figure 2-2 Network configurations

VPC [View In-use IP Addresses \(Addresses available: 249\)](#)

The VPC an RDS instance is deployed in cannot be changed later. ECSs in different VPCs cannot communicate with each other by default. If you want to create a VPC, go to the [VPC console](#).
An EIP is required if you want to access DB instances through a public network. [View EIP](#)

Database Port

The database port of read replicas (if any) is the same as that of the primary DB instance.

Security Group [View Security Group](#)

Ensure that port 3306 of the security group allows traffic from your server IP address to the DB instance.
Security Group Rules [Add Inbound Rule](#)

Step 3 Confirm the configurations and click **Submit**. Wait 1 to 3 minutes for the RDS instance to be created.

Step 4 View the purchased RDS instance.

----End

Step 3: Create a DDM Account and Associate It with an RDS for MySQL Instance

Step 1 [Log in to the DDM console](#).

Step 2 In the instance list, locate the required DDM instance and click its name.

Step 3 In the navigation pane, choose **Accounts**.

Step 4 On the displayed page, click **Create Account**.

Step 5 In the dialog box that is displayed, configure the account information and click **OK**.

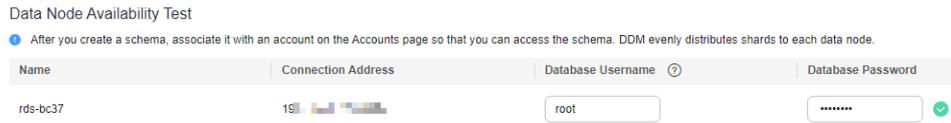
The value of the password validity period must be an integer ranging from 0 to 65535, in days. If the value is **0**, the password never expires. If this parameter is not set, the password will always be valid.

Step 6 On the **Instances** page, locate the required DDM instance and click **Create Schema** in the **Operation** column.

Step 7 On the **Create Schema** page, set required parameters and click **Next**.

Step 8 On the displayed page, enter a database account with the required permissions and click **Test Availability**.

Figure 2-3 Testing availability of data nodes



Step 9 After the test is successful, click **Finish**.

Step 10 View the associated RDS for MySQL instance.

Figure 2-4 DB instance successfully associated



----End

Step 2: Buy an ECS

Step 1 Go to the **Buy ECS** page.

Step 2 Configure basic settings and click **Next: Configure Network**. Keep the region and AZ of the ECS the same as those of the DDM instance to be connected.

An image is an ECS template that contains an OS and applications. In this example, a Linux public image is selected, which is provided by Huawei Cloud by default.

Figure 2-5 Basic settings

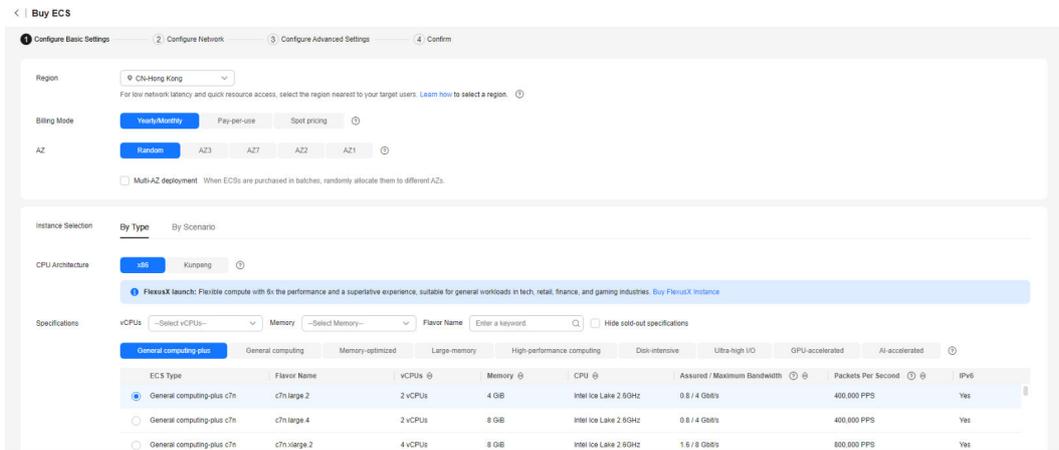
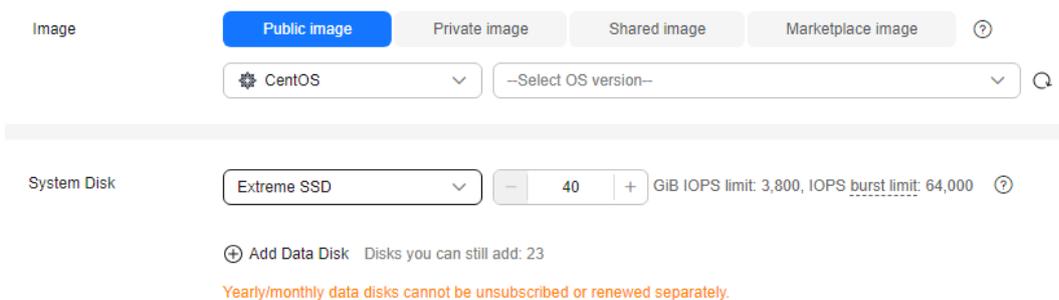


Figure 2-6 Selecting an image



Step 3 Configure the ECS network and click **Next: Configure Advanced Settings**.

To download a MySQL client to the ECS, bind an EIP to the ECS. The ECS must be in the same VPC as the DDM instance for mutual communications.

Figure 2-7 Network configuration

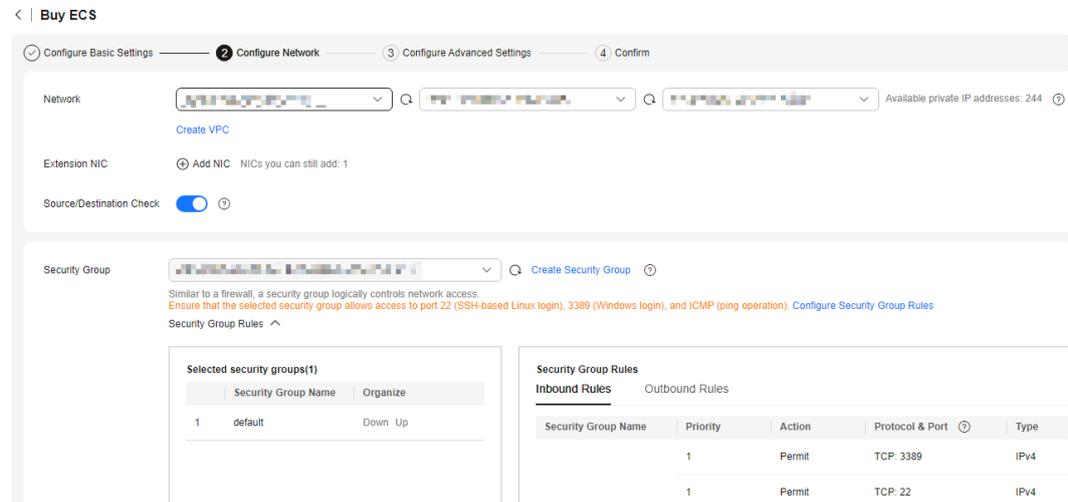
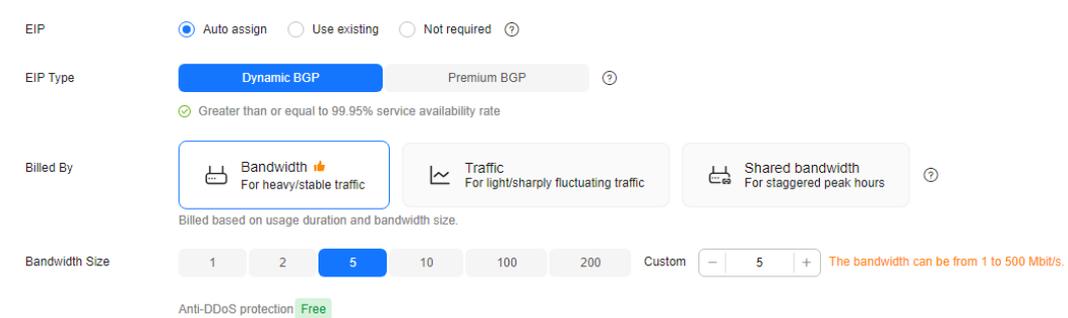


Figure 2-8 Selecting an EIP



Step 4 Configure a password for the ECS and click **Next: Confirm**.

Figure 2-9 Advanced settings

< | Buy ECS

Configure Basic Settings
 Configure Network
 3 Configure Advanced Settings
 4 Confirm

ECS Name: Allow duplicate name

If multiple ECSs are created at the same time, the system automatically adds a hyphen followed by a four-digit incremental ecs-0010 already exists, the name of the first new ECS will be ecs-0011.

Description:

0/85 ↕

Login Mode: **Key pair** | Password | Set password later ⓘ

The private key will be required for logging in to the ECS and for reinstalling or changing the OS. Keep it secure.

Key Pair:

Cloud Backup and Recovery: To use CBR, you need to purchase a backup vault. A vault is a container that stores backups for servers.

Recovery: **Create new** | Use existing | Not required ⓘ

Vault Name:

Capacity: 80

Step 5 Confirm the configurations and click **Submit**.

Figure 2-10 Confirming the configurations

Configure Basic Settings
 Configure Network
 Configure Advanced Settings
 4 Confirm

Note: You have opted not to set a password for logging in to the ECS. You can set the password after the ECS has been created.

Configuration	Basic ⓘ		Region	CN-Hong Kong	AZ	Random		
	Billing Mode	Yearly/Monthly		Image		CentOS 8.2 64bit	Host Security	HSS basic edition (free)
	Specifications	General computing-plus c7n.large.2 2 vCPUs 4 GiB		System Disk		Extreme SSD, 40 GiB		
Network	Network ⓘ		Security Group	Dynamic BGP Billed By: Bandwidth Bandwidth: 5 Mbits	Source/Destination Check	Enable		
	VPC			Primary NIC				
	EIP							
Advanced	Advanced ⓘ		Login Mode	Set password later	Cloud Eye	Monitoring details		
	ECS Name			Backup Policy		defaultPolicy Enabled Automatically perform weekly full backups ...	ECS Group	--
	Cloud Backup Vault							

Launch Template: ⓘ

Enterprise Project: ⓘ

Required Duration: **1** | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 months | 1 year

Auto-renew [Billing rules and Renewal duration](#)

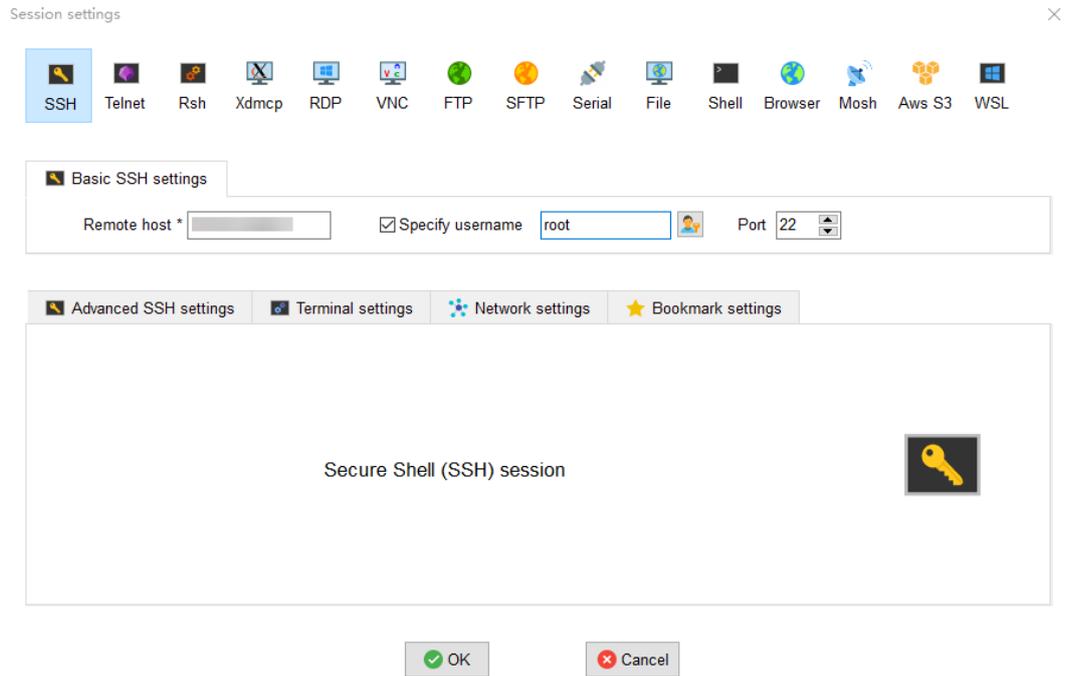
Step 6 View the purchased ECS.

----End

Step 5: Connect to a DDM Schema

Step 1 Use a Linux remote connection tool (for example, MobaXterm) to log in to the ECS. Enter the EIP bound to the ECS for **Remote host**.

Figure 2-11 Creating a session



Step 2 Enter the password set when buying the ECS.

Figure 2-12 Entering the password

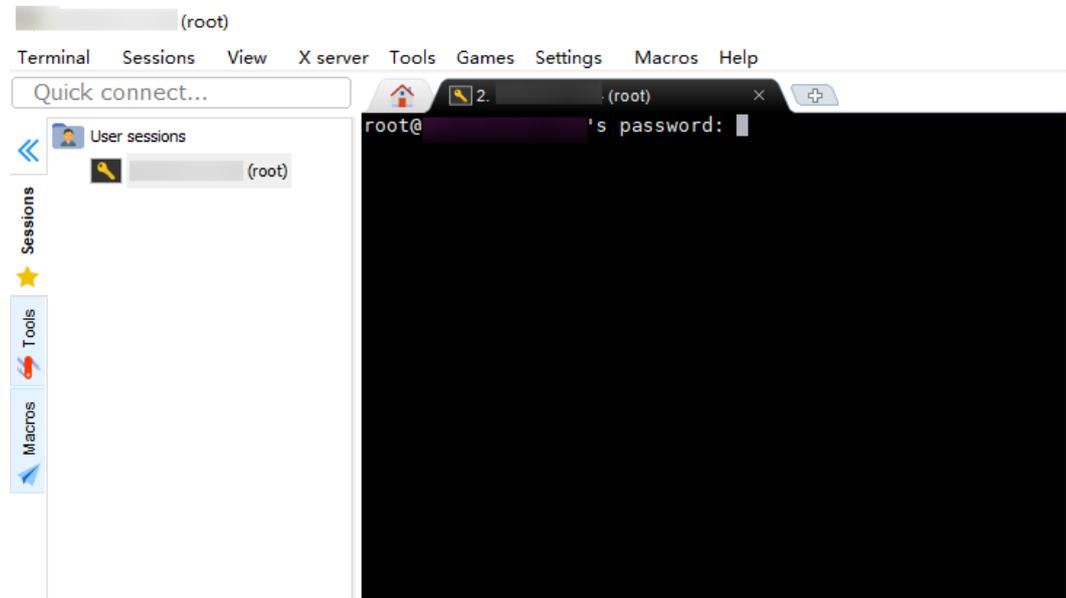
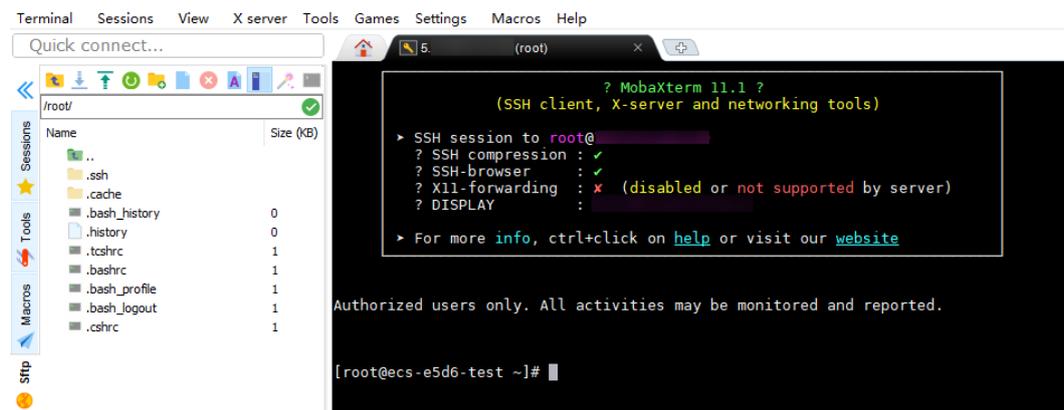


Figure 2-13 Successful login



Step 3 Download the [mysql-community-client-8.0.26-1.el6.x86_64.rpm](#) client installation package by selecting the required product version and operating system.

Figure 2-14 Selecting a version

Product Version:

Operating System:

OS Version:

Figure 2-15 Downloading the client package

Red Hat Enterprise Linux 6 / Oracle Linux 6 (x86, 32-bit), RPM Package Client Utilities <small>(mysql-community-client-8.0.26-1.el6.i686.rpm)</small>	Jul 1, 2021	56.3M	Download
Red Hat Enterprise Linux 6 / Oracle Linux 6 (x86, 64-bit), RPM Package Client Utilities mysql-community-client-8.0.26-1.el6.x86_64.rpm	Jul 1, 2021	54.8M	Download
Red Hat Enterprise Linux 6 / Oracle Linux 6 (x86, 32-bit), RPM Package Client Plugins <small>(mysql-community-client-plugins-8.0.26-1.el6.i686.rpm)</small>	Jul 1, 2021	5.3M	Download

Step 4 Upload the client installation package to the ECS.

Figure 2-16 Uploading the client package

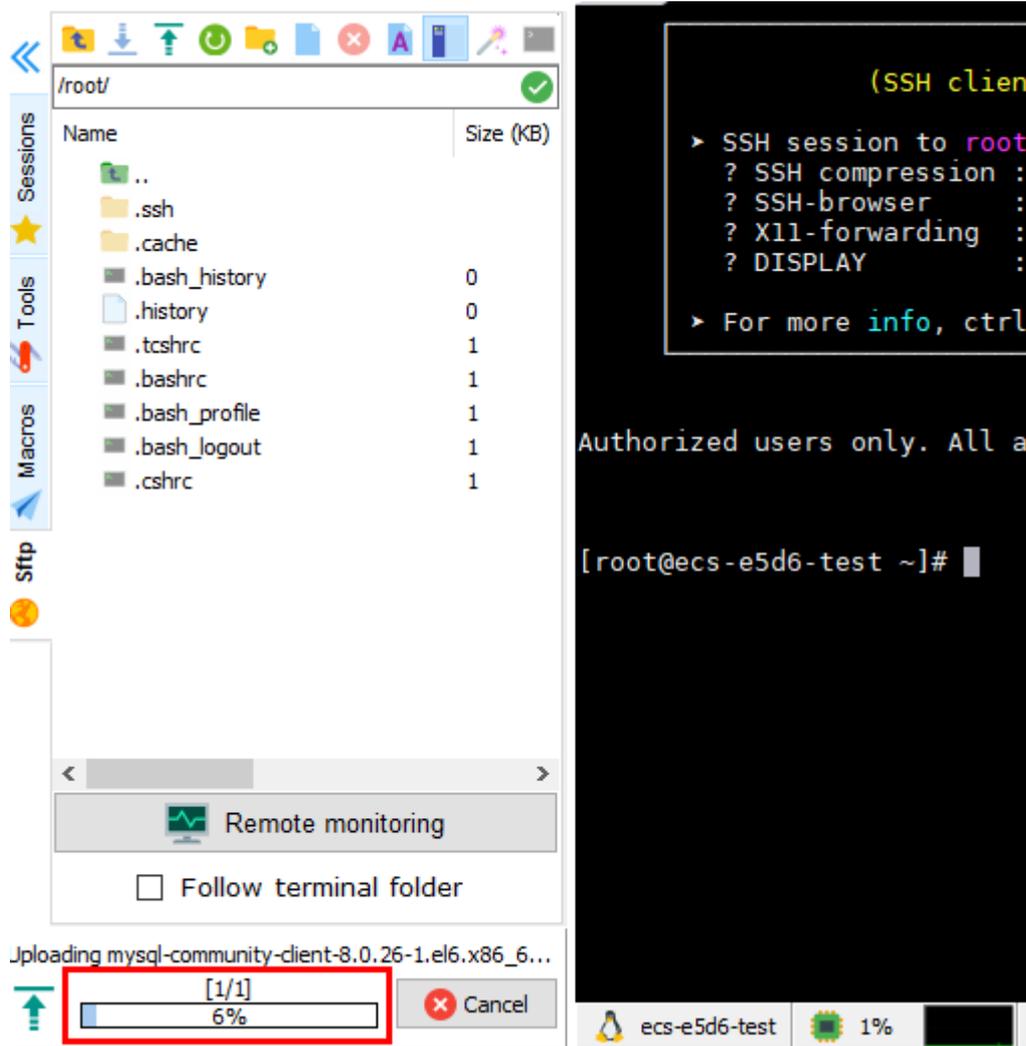
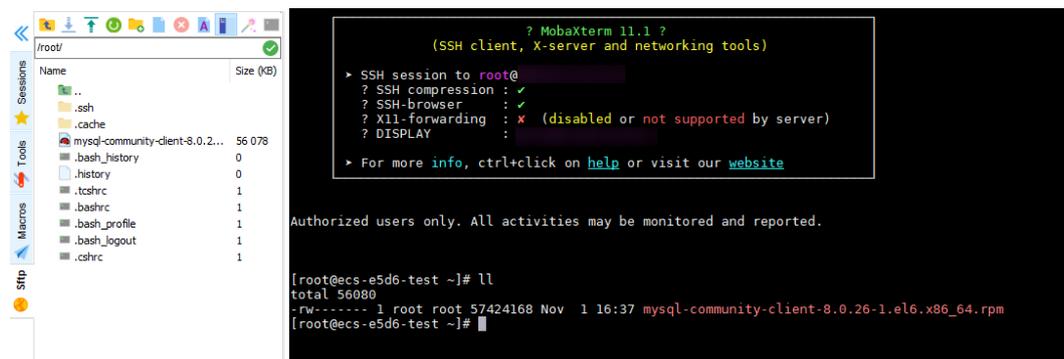


Figure 2-17 Package uploaded



Step 5 Install the client.

```
rpm -ivh --nodeps mysql-community-client-8.0.26-1.el6.x86_64.rpm
```

Figure 2-18 Installing a client

```
Authorized users only. All activities may be monitored and reported.

[root@ecs-e5d6-test ~]# ll
total 56080
-rw----- 1 root root 57424168 Nov  1 16:37 mysql-community-client-8.0.26-1.el6.x86_64.rpm
[root@ecs-e5d6-test ~]# rpm -ivh --nodeps mysql-community-client-8.0.26-1.el6.x86_64.rpm
warning: mysql-community-client-8.0.26-1.el6.x86_64.rpm: Header V3 DSA/SHA256 Signature, key ID 5072e1f5: NOKEY
Verifying...                               ##### [100%]
Preparing...                               ##### [100%]
Updating / installing...
 1:mysql-community-client-8.0.26-1.e##### [100%]
[root@ecs-e5d6-test ~]#
```

Step 6 Run the following command to connect to the DDM schema. *IP* is the private IP address of the DDM instance.

```
mysql -h <IP> -u <userName> -P 5066 -p
```

Example:

```
mysql -h 192.**.* -u root -P 5066 -p
```

Figure 2-19 Connection successful

```
[root@ecs-5b19 bin]# mysql -h 192.168.1.100 -u root -P 5066 -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 1477632
Server version: 5.6.29 DDM

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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.
```

----End

3 Buying a DDM Instance and Connecting to a Schema Using a Windows System

You can connect to your DDM schema using a Windows ECS installed with a database client (for example, MySQL-Front) over a private network.

Step 1: Buy a DDM Instance

- Step 1** Go to the [Buy DDM Instance](#) page.
- Step 2** On the displayed page, configure the required parameters and click **Next**.
- Step 3** Perform subsequent operations based on the billing mode you select:
- If you select **Pay-per-use**, click **Submit**.
 - If you select **Yearly/Monthly**, click **Pay Now**.
- Step 4** View the purchased instance.

Figure 3-1 Instance successfully purchased



Instance Name	Status	Billing Mode	Version	Connection Address	Created	Enterprise Project	Operation
ddm-4ff	Running	Pay-per-Use Created on Jul 11...	3.1.0.7		Jul 11, 2024 17:15:27 GMT+08:00	default	Create Schema Log In More

----End

Step 2: Buy an RDS for MySQL DB Instance

- Step 1** Go to the [Buy DB Instance](#) page.
- Step 2** Configure the instance information and click **Next**.

CAUTION

- A DDM instance can be associated with RDS for MySQL instances of versions 5.7 and 8.0.
- The RDS for MySQL instance must be in the same VPC and subnet as your DDM instance. If they are not in the same subnet, configure routes to ensure network connectivity.
- Specifications of associated RDS for MySQL instances should be greater than that of the DDM instance. Otherwise the performance will be affected.

Figure 3-2 Network configurations

The screenshot shows a configuration page for an RDS instance. It includes three main sections: VPC, Database Port, and Security Group. The VPC section has a dropdown menu and a search icon, with a note that the VPC cannot be changed later. The Database Port section has a text input field set to 'Default port: 3306' and a note that read replicas use the same port. The Security Group section has a dropdown menu and a search icon, with a note to ensure port 3306 is open for traffic from the server IP.

Step 3 Confirm the configurations and click **Submit**. Wait 1 to 3 minutes for the RDS instance to be created.

Step 4 View the purchased RDS instance.

----End

Step 3: Create a DDM Account and Associate It with an RDS for MySQL Instance

Step 1 [Log in to the DDM console](#).

Step 2 In the instance list, locate the required DDM instance and click its name.

Step 3 In the navigation pane, choose **Accounts**.

Step 4 On the displayed page, click **Create Account**.

Step 5 In the dialog box that is displayed, configure the account information and click **OK**.

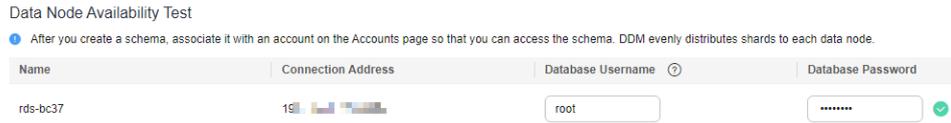
The value of the password validity period must be an integer ranging from 0 to 65535, in days. If the value is **0**, the password never expires. If this parameter is not set, the password will always be valid.

Step 6 On the **Instances** page, locate the required DDM instance and click **Create Schema** in the **Operation** column.

Step 7 On the **Create Schema** page, set required parameters and click **Next**.

Step 8 On the displayed page, enter a database account with the required permissions and click **Test Availability**.

Figure 3-3 Testing availability of data nodes



Step 9 After the test is successful, click **Finish**.

Step 10 View the associated RDS for MySQL instance.

Figure 3-4 DB instance successfully associated



----End

Step 2: Buy an ECS

Step 1 Go to the [Buy ECS](#) page.

Step 2 Configure basic settings and click **Next: Configure Network**. Keep the region and AZ of the ECS the same as those of the DDS instance to be connected.

An image is an ECS template that contains an OS and applications. In this example, the Windows OS image is from the Marketplace and provided by third parties.

Figure 3-5 Basic settings

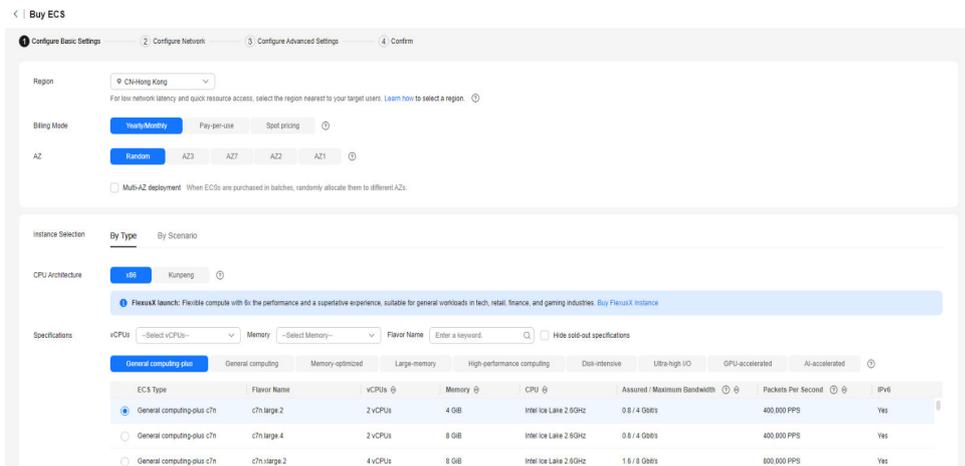


Figure 3-6 Selecting an image



Step 3 Configure the ECS network and click **Next: Configure Advanced Settings**.

To download a MySQL client to the ECS, bind an EIP to the ECS. The ECS must be in the same VPC as the DDM instance for mutual communications.

Figure 3-7 Network configuration

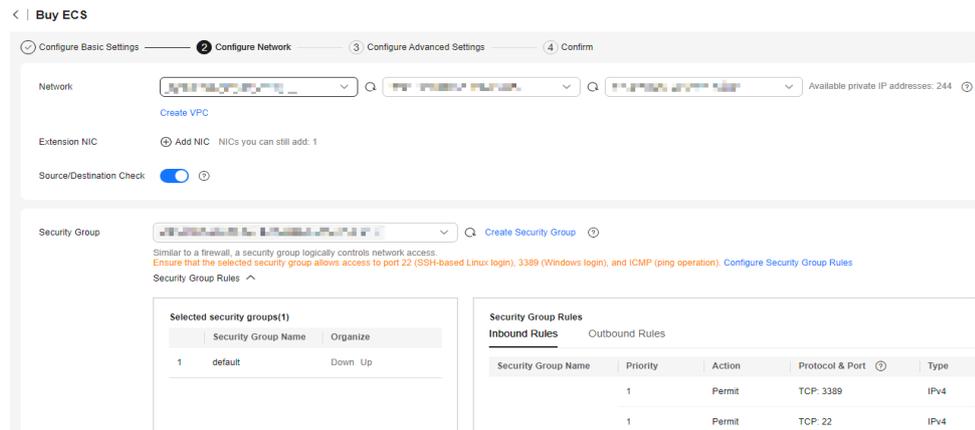
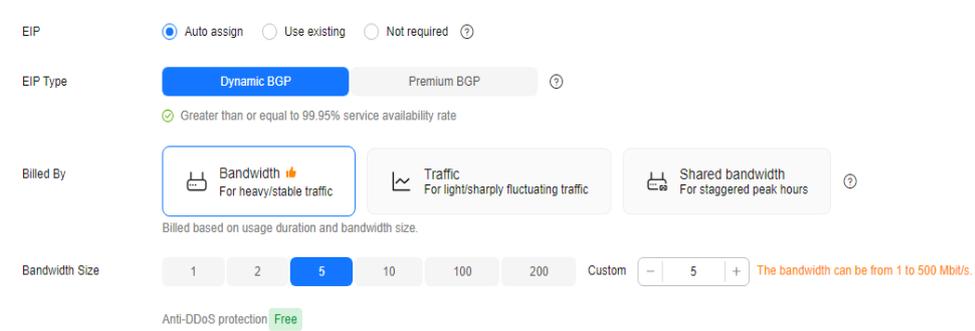


Figure 3-8 Selecting an EIP



Step 4 Configure a password for the ECS and click **Next: Confirm**.

Figure 3-9 Advanced settings

< | Buy ECS

Configure Basic Settings —
 Configure Network —
 Configure Advanced Settings —
 Confirm

ECS Name: Allow duplicate name

If multiple ECSs are created at the same time, the system automatically adds a hyphen followed by a four-digit incremental ecs-0010 already exists, the name of the first new ECS will be ecs-0011.

Description:

Login Mode: Key pair Password Set password later

The private key will be required for logging in to the ECS and for reinstalling or changing the OS. Keep it secure.

Key Pair:

Cloud Backup and Recovery: To use CBR, you need to purchase a backup vault. A vault is a container that stores backups for servers.

Recovery:

Vault Name:

Capacity:

Step 5 Confirm the configurations and click **Submit**.

Figure 3-10 Confirming the configurations

Configure Basic Settings —
 Configure Network —
 Configure Advanced Settings —
 Confirm

Configuration: **Basic**

Billing Mode	Payper-use	Region	Hong-Kong	AZ	AZ2
Specifications	General computing s2.large.2 2 vCPUs 4 GB	Image	Windows Server 2016 Standard 64bit English	System Disk	High I/O,40 GB
Data Disk	1 disks High I/O, 100 GB				

Configuration: **Network**

VPC	vpc-	Security Group	default	Primary NIC	subnet-
EIP	Dynamic BGP Billed By: Bandwidth Bandwidth: 10 Mbit/s				

Configuration: **Advanced**

ECS Name	ecs-d155	Login Mode	Key pair	Key Pair	KeyPair-d590
ECS Group	-				

Quantity: You can create 19 more ECSs. [Learn how to increase quotas.](#)

Agreement: I have read and agree to the [Service Level Agreement](#) and [Huawei Image Disclaimer](#).

Step 6 View the purchased ECS.

Step 7 Check whether the ECS and RDS for MySQL instance are in the same region and VPC.

- If yes, go to **Step 5: Connect to a DDM Schema**.
- If they are not in the same region, buy another instance. 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](#).

----End

Step 5: Connect to a DDM Schema

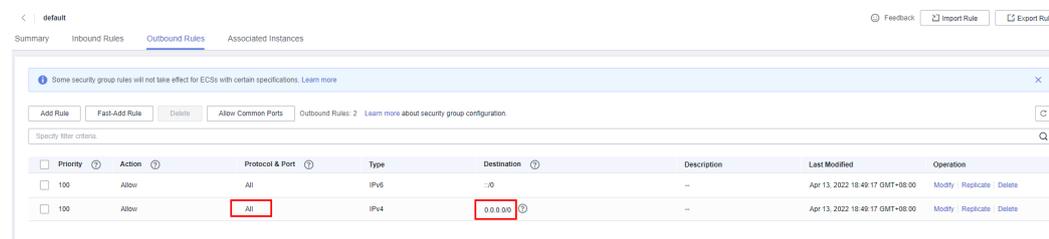
Step 1 Test connectivity and install MySQL-Front.

1. Log in to the ECS. For details, see [Login Using VNC](#) in the *Elastic Cloud Server User Guide*.
2. In the instance list, click the name of the target instance to go to the **Basic Information** page.
3. In the **Network Information** area, obtain the private IP address and DDM service port.
4. Open the cmd window on the ECS and check whether the floating IP address and database port of the DDM instance can be connected.

```
telnet 192.*.*5066
```

- If yes, network connectivity is normal.
- If no, check the security group rules.
 - If in the security group of the ECS, there is no outbound rule with **Destination** set to **0.0.0.0/0** and **Protocol & Port** set to **All**, add an outbound rule for the floating IP address and port of the DDM instance.

Figure 3-11 ECS security group

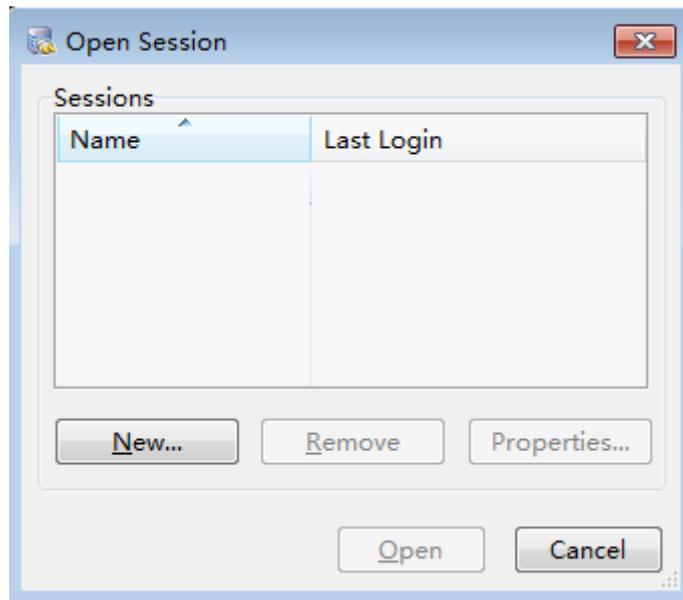


- If in the security group of the DDM instance, there is no inbound rule allowing the access from the private IP address and port of the ECS, add an inbound rule for the private IP address and port of the ECS.
5. Open a browser, and download and install the MySQL-Front tool on the ECS (version 5.4 is used as an example).

Step 2 Use MySQL-Front to connect to the DDM schema.

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

Figure 3-12 Connection management



3. Enter the information of the DDM schema to be connected and click **Ok**.

Figure 3-13 Adding an account

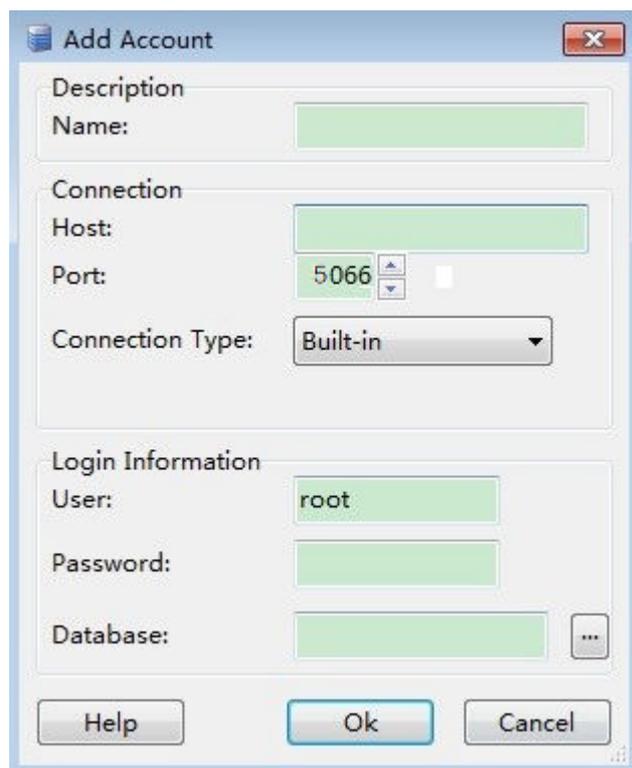


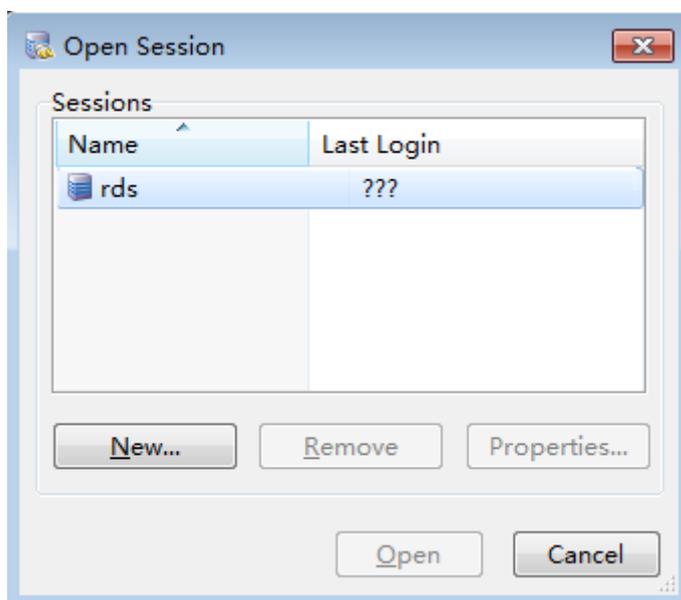
Table 3-1 Description

Parameter	Description
Name	Database connection task name. If you do not set this parameter, it will be the same as Host by default.

Parameter	Description
Host	Private IP address of the DDM schema.
Port	Port of the DDM schema. Set this parameter to 5066 .
User	Username used for accessing the DDM instance. The default user is root .
Password	Password of the user who will access the DDM instance.

- In the displayed window, select the connection that you have created in [Step 2.3](#) and click **Open**. If the connection information is correct, the DDM instance is successfully connected.

Figure 3-14 Opening a session



----End

4 Common Practices

After a schema is created and connected to a DDM instance, you can use common practices provided by DDM as needed.

Table 4-1 Common practices

Scenario	Practice	Description
SQL Syntax	SQL Standards	This practice describes SQL standards used in DDM.
	DDL	This practice describes common DDL operations in DDM, including creating a database, creating a table, and altering a table.
	DML	This practice describes common DML operations in DDM, such as INSERT, REPLACE, DELETE, UPDATE and SELECT.
Shard Configuration	How Does DDM Perform Sharding?	This practice describes how sharding works and how to configure shards.
Database and Table Sharding	Sharding Database and Table Data of an RDS for MySQL Instance	This practice describes how to shard database and table data of an existing RDS for MySQL instance using DDM.

Scenario	Practice	Description
Data Migration	Migrating Data from an On-Premises MySQL Instance to DDM	You are using an on-premises RDS for MySQL instance and want to use DDM to store data in a distributed manner. This practice describes how to migrate data from an on-premise MySQL instance to DDM.
	Migrating Data from a Third-Party Cloud MySQL Instance to DDM	You are using a third-party MySQL instance and want to use Huawei Cloud DDM for distributed data storage. This practice describes how to migrate data from a third-party cloud MySQL instance to DDM.
	Migrating Data from a Self-Built MySQL Instance to DDM	You have built a MySQL instance on an ECS and want to migrate your data from the instance to DDM for distributed data storage. This practice describes how to migrate data from a self-built MySQL instance to DDM.
	Migrating Data from Huawei Cloud RDS for MySQL to DDM	This practice describes how to migrate data from Huawei Cloud RDS for MySQL to DDM.
	Exporting Data from a DDM Instance	This practice describes how to export DDM instance data to a SQL text file.
	Migrating Data from Heterogeneous Databases to DDM	This practice describes how to migrate data from a heterogeneous database such as Oracle, PostgreSQL, and SQL Server to DDM.
	Migrating an Entire RDS Database to DDM	This practice describes how to migrate an entire RDS instance to an unsharded schema of a DDM instance.
	Migrating an Entire MyCat Database to DDM	This practice describes how to migrate an entire MyCat database to DDM.

Scenario	Practice	Description
Backups and Restorations	Automated Backup	DDM instances cannot be backed up manually. The system backs up them from 02:00 to 03:00 GMT+08:00 every day.
	Restoring data to a new instance	Restoring data to a new instance restores your DDM instance and its data nodes (RDS for MySQL instances). Before the restoration, you need to prepare a new DDM instance and as many new RDS for MySQL instances as there are data nodes.
	Restoring Metadata	Restoring Metadata mainly restores the metadata of your DDM instance to a new DDM instance. It starts after a point-in-time recovery for the associated data nodes is complete.