

Distributed Message Service for RocketMQ

Getting Started

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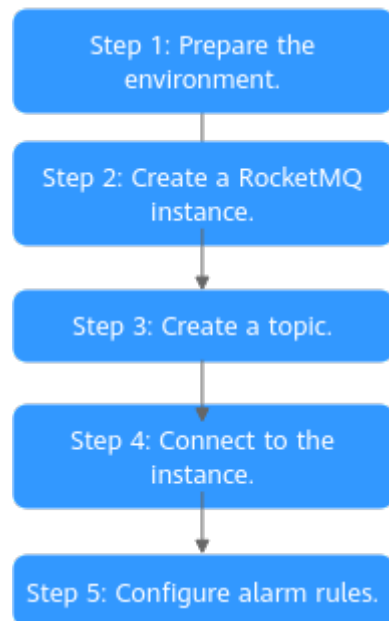
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1 Introduction

This document takes the example of creating and connecting to a RocketMQ instance with SSL enabled to get you quickly started with Distributed Message Service (DMS) for RocketMQ.

Procedure

Figure 1-1 Procedure for using DMS for RocketMQ



1. **Prepare the environment.**
A RocketMQ instance runs in a Virtual Private Cloud (VPC). Before creating an instance, ensure that a VPC is available.
2. **Create a RocketMQ instance.**
You can select the specification and quantity and enable SSL when creating a RocketMQ instance. Enabling SSL secures data transmission with encryption.
3. **Create a topic.**

After an instance is created, create a topic for sending and receiving messages.

4. **Connect to the instance.**

On the client, connect to the instance and use commands to create and retrieve messages.

5. **Configure alarm rules.**

Configure alarm rules for the RocketMQ instance to monitor the service running status.

 **NOTE**

For the basic concepts of RocketMQ, see [RocketMQ Concepts](#).

2 Step 1: Prepare the Environment

VPC

A VPC provides an isolated virtual network for your RocketMQ instances. You can configure and manage the network as required.

Step 1 Before creating a RocketMQ instance, ensure that a VPC and a subnet are available.

For details, see [Creating a VPC](#). If you already have an available VPC and subnet, you do not need to create new ones.

Note the following when creating a VPC and subnet:

- The VPC and the RocketMQ instance must be in the same region.
- Use the default settings when creating a VPC and subnet.

Step 2 Before creating a RocketMQ instance, ensure that a security group is available.

For details, see [Creating a Security Group](#). If you already have an available security group, you do not need to create a new one.

To use DMS for RocketMQ, add the security group rules described in [Table 2-1](#). You can also add other rules based on site requirements.

Table 2-1 Security group rules

Direction	Protocol	Port	Source	Description
Inbound	TCP	8100	0.0.0.0/0	The port is used for intra-VPC access to metadata nodes.
Inbound	TCP	10100-10199	0.0.0.0/0	The port is used for accessing service nodes.


 NOTE

After a security group is created, it has a default inbound rule that allows communication among ECSs within the security group and a default outbound rule that allows all outbound traffic. If you access your RocketMQ instance within a VPC, you do not need to add the rules described in [Table 2-1](#).

----End

ECS

Before connecting to a RocketMQ instance, ensure that you have purchased an ECS, installed the JDK, and configured environment variables. The following takes a Linux ECS as an example. For more information about how to install JDK and configure the environment variables for a Windows ECS, please search the Internet.

Step 1 Log in to the management console, click  in the upper left corner, click **Elastic Cloud Server** under **Computing**, and then create an ECS.

For details, see [Purchasing an ECS](#). If you already have an available ECS, skip this step.

Step 2 Log in to the ECS.

Step 3 Install JDK or JRE, and add the following contents to **.bash_profile** in the home directory to configure the environment variables **JAVA_HOME** and **PATH**: In this command, **/opt/java/jdk1.8.0_151** is the JDK installation path. Change it to the path where you install JDK or JRE.

```
export JAVA_HOME=/opt/java/jdk1.8.0_151
export PATH=$JAVA_HOME/bin:$PATH
```

Run the **source .bash_profile** command for the modification to take effect.

 NOTE

Use Oracle JDK instead of ECS's default JDK (for example, OpenJDK), because ECS's default JDK may not be suitable for the sample project. Obtain Oracle JDK 1.8.111 or later from [Oracle's official website](#).

----End

3 Step 2: Create a RocketMQ Instance

This section takes the example of creating a RocketMQ v4.8.0 instance with SSL enabled in the AP-Singapore region to describe how to create a RocketMQ instance on the console.

Prerequisites

Before creating a RocketMQ instance, ensure that a VPC and a security group are available. If no VPC or security group is available, create them by referring to [Step 1: Prepare the Environment](#).

Procedure

- Step 1** Go to the [Buy Instance page](#).
- Step 2** Set **Billing Mode** to **Pay-per-use**.
- Step 3** Select a region closest to your application to reduce latency and accelerate access.
- Step 4** Select a project from the drop-down list.
- Step 5** Select one AZ or at least three AZs.
- Step 6** Specify the **Instance Name** and the **Enterprise Project**.
- Step 7** Set the instance information. For details, see [Table 3-1](#).

Table 3-1 Setting instance information

Parameter	Description
Specifications	Select Default .
Version	Select 4.8.0 . Fixed once the instance is created. Use the same version as your client.
Architecture	Select Cluster .
CPU Architecture	Select x86 .

Parameter	Description
Broker Flavor	Select rocketmq.4u8g.cluster .
Brokers	Enter 1 .
Storage Space per Broker	Select Ultra-high I/O and enter 300 GB. Total storage space of an instance = Storage space per broker × Number of brokers

Step 8 Configure the instance network. For details, see [Table 3-2](#).

Table 3-2 Configuring instance network

Parameter	Description
VPC	Select the created VPC and subnet. After the RocketMQ instance is created, its VPC and subnet cannot be changed.
Security Group	Select the created security group.
SSL	Enable it.
ACL	Enable it.

Step 9 Click **Advanced Settings**. For more information, see [Table 3-3](#).

Table 3-3 Advanced settings

Parameter	Description
Public Access	Do not enable it.
Tags	Skip it.
Description	Skip it.

Step 10 Click **Buy**.

Step 11 Confirm the instance information and submit the request.

Step 12 Return to the instance list and check whether the RocketMQ instance has been created.

It takes 3 to 15 minutes to create an instance. During this period, the instance status is **Creating**.

- If the instance is created successfully, its status changes to **Running**.
- If the instance is in the **Creation failed** state, delete it. Then create a new one. If the instance creation fails again, contact customer service.

----End

4 Step 3: Create a Topic

A topic is the basic unit for sending and receiving messages. After creating a RocketMQ instance, you must manually create topics before creating and retrieving messages.

Prerequisites

You have [created a RocketMQ instance](#).

Procedure

- Step 1** Log in to the [DMS for RocketMQ console](#) console.
- Step 2** Click a RocketMQ instance to go to the instance details page.
- Step 3** In the navigation pane, choose **Topics**.
- Step 4** Click **Create Topic**.
- Step 5** Configure the topic name and other parameters by referring to [Table 4-1](#).

Table 4-1 Topic parameters

Parameter	Description
Topic Name	Name of the topic. The topic name must be unique. Otherwise, the topic cannot be created. Once the topic is created, you cannot modify its name. NOTE A percent (%) or vertical bar () contained in a topic name will be converted to an underscore (_) by Cloud Eye. For example, if a topic name is test%01 , it will be displayed as test_01 on Cloud Eye.
Permission	Topic permission, which can be publish/subscribe , publish , or subscribe .

Parameter	Description
Brokers	Specify the broker to create the topic on, and the number of queues in the topic. If the instance is deployed on multiple brokers, click Add to add more brokers and set the number of queues in the topic.

Step 6 Click **OK**.

----End

5 Step 4: Connect to a RocketMQ Instance to Create and Retrieve Messages

This section describes how to use TCP to connect to a RocketMQ instance with SSL in CLI mode.

Prerequisites

- A RocketMQ instance has been created following the instructions in [Step 2: Create a RocketMQ Instance](#), and the instance addresses have been recorded.
- [Security group rules](#) have been configured.
- [A topic has been created](#) and you have obtained the topic name.
- An ECS has been created. For intra-VPC access, ensure that its VPC, subnet, and security group configurations are the same as those of the RocketMQ instance.
- You have installed the JDK and configured the environment variables. For details, see [Step 1: Prepare the Environment](#).

Accessing the Instance with CLI

Step 1 Download the **rocketmq-tutorial** software package.

```
wget https://dms-demos.obs.cn-north-1.myhuaweicloud.com/rocketmq-tutorial.zip
```

Step 2 Decompress the **rocketmq-tutorial** package.

```
unzip rocketmq-tutorial.zip
```

Step 3 Go to the **rocketmq-tutorial/bin** directory.

```
cd rocketmq-tutorial/bin
```

Step 4 Create normal messages using the sample project.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin sendMessage -n "${Connection addresses}" -t ${Topic name} -p "hello rocketmq"
```

Parameter description:

- **Connection addresses:** the RocketMQ instance address.
- **Topic name:** name of the topic created for the RocketMQ instance

In the following example, **100.xxx.xxx.89:8200;100.xxx.xxx.144:8200** are the connection addresses to the RocketMQ instance, and **topic-test** is the topic name.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin sendMessage -n "100.xxx.xxx.89:8200;100.xxx.xxx.144:8200" -t topic-test -p "hello rocketmq"
```

Press **Ctrl+C** to exit.

Step 5 Retrieve normal messages using the sample project.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin consumeMessage -n "${Connection addresses}" -t ${Topic name}
```

Parameter description:

- **Connection addresses:** the RocketMQ instance address.
- **Topic name:** name of the topic created for the RocketMQ instance

In the following example, **100.xxx.xxx.89:8200;100.xxx.xxx.144:8200** are the connection addresses to the RocketMQ instance, and **topic-test** is the topic name.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin consumeMessage -n "100.xxx.xxx.89:8200;100.xxx.xxx.144:8200" -t topic-test
```

To stop consuming messages, press **Ctrl+C** to exit.

Step 6 Create messages with traces using the sample project.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin sendMessage -n "${Connection addresses}" -t ${Topic name} -p "hello rocketmq" -m true
```

Parameter description:

- **Connection addresses:** the RocketMQ instance address.
- **Topic name:** name of the topic created for the RocketMQ instance

In the following example, **100.xxx.xxx.89:8200;100.xxx.xxx.144:8200** are the connection addresses to the RocketMQ instance, and **topic-test** is the topic name.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin sendMessage -n "100.xxx.xxx.89:8200;100.xxx.xxx.144:8200" -t topic-test -p "hello rocketmq" -m true
```

Press **Ctrl+C** to exit.

Step 7 Retrieve messages and send the message traces using the sample project.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin consumeMessage -n "${Connection addresses}" -t ${Topic name} -m true
```

Parameter description:

- **Connection addresses:** the RocketMQ instance address.
- **Topic name:** name of the topic created for the RocketMQ instance

In the following example, **100.xxx.xxx.89:8200;100.xxx.xxx.144:8200** are the connection addresses to the RocketMQ instance, and **topic-test** is the topic name.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin consumeMessage -n "100.xxx.xxx.89:8200;100.xxx.xxx.144:8200" -t topic-test -m true
```

Press **Ctrl+C** to exit.

----End

6 Step 5: Configure Alarm Rules

This section describes the alarm policies of some metrics and how to configure them. In actual services, you are advised to configure alarm rules for metrics based on the following alarm policies.

 **NOTE**

Approach Upper Limit in the following table indicates whether the threshold is close to the upper limit of the performance supported by current resources. If the threshold is close to the upper limit and usage continues to rise, services may be abnormal.


Table 6-1 RocketMQ instance metrics to configure alarm rules for

Metric Name	Normal Range	Alarm Policy	Approach Upper Limit	Metric Description and Alarm Handling Suggestions
Disk Capacity Usage	0-100	Alarm threshold: Raw data > 85 Number of consecutive periods: 3 Alarm severity: Critical	Yes	Metric description: disk usage of the RocketMQ VM. Unit: % Handling suggestion: If an alarm is generated for this metric, the current instance specifications are insufficient to carry services. The storage space needs to be expanded. For details, see Modifying Specifications .

Metric Name	Normal Range	Alarm Policy	Approach Upper Limit	Metric Description and Alarm Handling Suggestions
Average Load per CPU Core	0-2	Alarm threshold: Raw data > 1.5 Number of consecutive periods: 3 Alarm severity: Major	Yes	Metric description: average load of each CPU core of the RocketMQ VM. Handling suggestion: If an alarm is generated for this metric, perform the following operations: 1. Add brokers. For details, see Modifying Specifications . 2. Redeploy existing topics to the new brokers. For details, see Modifying Topic Parameters .
Memory Usage	0-100	Alarm threshold: Raw data > 85 Number of consecutive periods: 3 Alarm severity: Critical	Yes	Metric description: memory usage of the RocketMQ VM. Unit: % Handling suggestion: If an alarm is generated for this metric, perform the following operations: 1. Add brokers. For details, see Modifying Specifications . 2. Redeploy existing topics to the new brokers. For details, see Modifying Topic Parameters .


Procedure

Step 1 Log in to the console.


Step 2 Click  in the upper left corner to select a region.

 **NOTE**

Select the same region as your application service.

Step 3 Click  and choose **Application > Distributed Message Service (for RocketMQ)** to open the console of DMS for RocketMQ.

Step 4 Click **View Metric** next to the RocketMQ instance name to go to the instance monitoring page of the Cloud Eye console.

Step 5 Hover the mouse pointer over a metric and click  to create an alarm rule for the metric.

The **Create Alarm Rule** page is displayed.

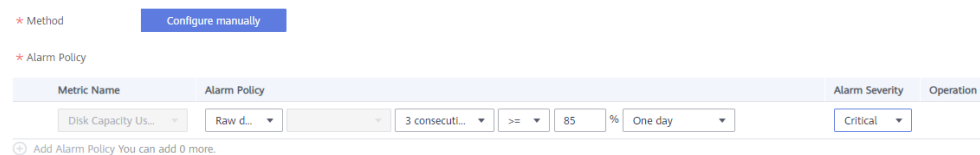
Step 6 Specify the alarm rule details.

For details about how to create alarm rules, see [Creating an Alarm Rule](#).

1. Enter the alarm name and description.
2. Specify the alarm policy and alarm severity.

As shown in the following figure, if the original disk capacity usage exceeds 85% for three consecutive periods, an alarm is generated. If the alarm is not handled on time, an alarm notification is sent.

Figure 6-1 Setting the alarm policy and alarm severity



* Method Configure manually

* Alarm Policy

Metric Name	Alarm Policy	Alarm Severity	Operation
Disk Capacity Us...	Raw d... 3 consecuti... >= 85 %	Critical	One day

⊕ Add Alarm Policy You can add 0 more.

3. Set the alarm notification configurations. If you enable **Alarm Notification**, set the validity period, notification object, and trigger condition.
4. Click **Create**.

----End

7 Common Practices

You can use the common practices provided by DMS for RocketMQ to meet your service requirements.

Table 7-1 Common practices

Practice	Description
Migrating RocketMQ Services	Migrate RocketMQ services from other vendors or your self-built RocketMQ to Huawei Cloud DMS for RocketMQ.
Migrating RabbitMQ Metadata	Migrate RabbitMQ metadata to your DMS RocketMQ instance.