Distributed Message Service for RocketMQ

User Guide

Issue 01

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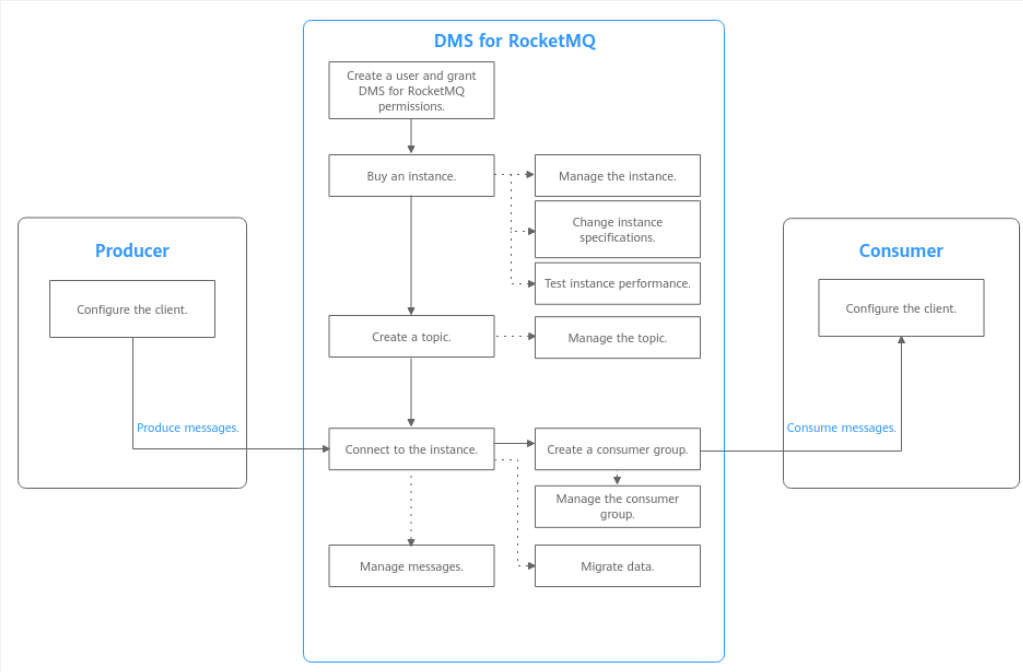
1 Process of Using RocketMQ

Distributed Message Service (DMS) for RocketMQ is message-oriented middleware that delivers low latency, high flexibility, high throughput, dynamic expansion, easy management, and abundant messaging functions. Users can purchase RocketMQ instances. Producer clients can access RocketMQ instances for message production. The produced messages are stored in topics of RocketMQ instances. Consumer clients can subscribe to topics to consume messages.

The following figure shows the process of using a RocketMQ instance to produce and consume messages.

Figure 1-1 Process of using RocketMQ



1. **Creating a User and Granting DMS for RocketMQ Permissions**

   Create IAM users and grant them only the DMS for RocketMQ permissions required to perform a given task based on their job responsibilities.

2. **Buying a RocketMQ Instance**

RocketMQ instances are physically isolated and exclusively occupied by each tenant.

3. **Creating a RocketMQ Topic**

   Create a topic for storing messages so that producers can produce messages and consumers can subscribe to messages.

4. **Accessing an Instance**

   The client connects to RocketMQ instances over a private or public network, and produces and consumes messages.

2 Creating a User and Granting DMS for RocketMQ Permissions

This section describes how to use **Identity and Access Management (IAM)** for fine-grained permissions control for your Distributed Message Service (DMS) for RocketMQ resources. With IAM, you can:

- Create IAM users for personnel based on your enterprise's organizational structure. Each IAM user has their own identity credentials for accessing DMS for RocketMQ resources.
- Grant users only the permissions required to perform a given task based on their job responsibilities.
- Entrust a HUAWEI ID or a cloud service to perform efficient O&M on your DMS for RocketMQ resources.

If your HUAWEI ID meets your permissions requirements, you can skip this section.

This section describes the procedure for granting permissions (see **Figure 2-1**).

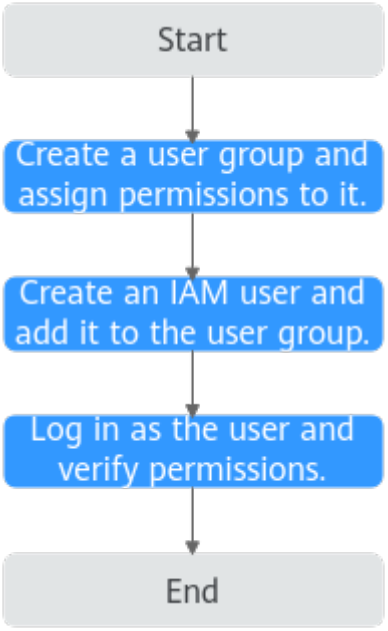
Prerequisites

Learn about the permissions (see **Permissions Management**) supported by DMS for RocketMQ and choose policies or roles according to your requirements. For the system policies of other services, see **System Permissions**.

DMS for RocketMQ permissions policies are based on DMS. Therefore, when assigning permissions, select DMS permissions policies.

Process Flow

Figure 2-1 Process for granting DMS for RocketMQ permissions



1. On the IAM console, **create a user group and grant it permissions**.

   DMS ReadOnlyAccess is used as an example.
2. **Create an IAM user and add it to the created user group**.
3. **Log in as the IAM user** and verify permissions.

   In the authorized region, perform the following operations:
   - Choose **Service List** > **Distributed Message Service (for RocketMQ)**. Then click **Buy Instance** on the console of DMS for RocketMQ. If a message appears indicating that you have insufficient permissions to perform the operation, the **DMS ReadOnlyAccess** policy is in effect.
   - Choose **Service List** > **Elastic Volume Service**. If a message appears indicating that you have insufficient permissions to access the service, the **DMS ReadOnlyAccess** policy is in effect.

Example Custom Policies

Custom policies can be created to supplement the system-defined policies of DMS for RocketMQ. For the actions that can be added for custom policies, see **Permissions Policies and Supported Actions**.

You can create custom policies in either of the following ways:

- Visual editor: Select cloud services, actions, resources, and request conditions. This does not require knowledge of policy syntax.
- JSON: Create a JSON policy or edit an existing one.

For details, see **Creating a Custom Policy**. This section lists examples of common DMS for RocketMQ custom policies.

- Example 1: Grant permission to delete and restart instances.

```
{
   "Version": "1.1",
   "Statement": [
      {
         "Effect": "Allow",
         "Action": [
            "dms:instance:modifyStatus",
            "dms:instance:delete"
         ]
      }
   ]
}
```

- Example 2: Grant permission to deny instance deletion.

  A policy with only "Deny" permissions must be used together with other policies. If the permissions granted to an IAM user contain both "Allow" and "Deny", the "Deny" permissions take precedence over the "Allow" permissions.

  Assume that you want to grant the permissions of the **DMS FullAccess** policy to a user but want to prevent them from deleting instances. You can create a custom policy for denying instance deletion, and attach this policy together with the **DMS FullAccess** policy to the user. As an explicit deny in any policy overrides any allows, the user can perform all operations on DMS for RocketMQ excepting deleting instances.

  Example policy denying instance deletion:

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Effect": "Deny",
            "Action": [
                "dms:instance:delete"
            ]
        }
    ]
}
```

DMS for RocketMQ Request Conditions

Request conditions are useful in determining when a custom policy is in effect. A request condition consists of condition keys and operators. Condition keys are either global or service-level and are used in the Condition element of a policy statement. **Global condition keys** (starting with **g:**) are available for operations of all services, while service-specific condition keys (starting with a service name such as **dms:**) are available only for operations of specific services. An operator must be used together with a condition key to form a complete condition statement.

DMS for RocketMQ has a group of predefined condition keys that can be used in IAM. For example, to define an "Allow" permission, use the condition key dms:ssl to filter instances by SSL configurations. The following table lists the DMS for RocketMQ predefined condition keys.

Table 2-1 Predefined condition keys of DMS for RocketMQ

Condition Key	Operator	Description
dms:publicIP	Bool	Whether public access is enabled

Condition Key	Operator	Description
dms:ssl	Bool	Whether SSL is enabled

3 Buying a RocketMQ Instance

RocketMQ instances are physically isolated and exclusively occupied by each tenant. You can customize specifications and storage space of a RocketMQ instance as required.

Preparing Required Resources

Before purchasing a RocketMQ instance, prepare the required resources, including a virtual private cloud (VPC), subnet, and security group with proper rules. Each RocketMQ instance is deployed in a VPC and bound to a specific subnet and security group, which provide an isolated virtual network environment and allow you to easily configure and manage security protection policies.

Table 3-1 lists the resources required by a RocketMQ instance.

Table 3-1 RocketMQ resources

Resource	Requirement	Operations
VPC and subnet	Configure the VPC and subnet for RocketMQ instances as required. You can use the current account's existing VPC and subnet or create new ones. Note the following when creating a VPC and a subnet: • The VPC and the RocketMQ instance must be in the same region. • Use the default settings when creating a VPC and subnet.	For details on how to create a VPC and subnet, see **Creating a VPC**. If you need to create and use a new subnet in an existing VPC, see **Creating a Subnet for the VPC**.

Resource	Requirement	Operations
Security group	Different RocketMQ instances can use the same security group or different security groups. To use RocketMQ instances, add the security group rules described in **Table 3-2** or **Table 3-3**. You can also add other rules as required. After a security group is created, its default inbound rule allows communication among ECSs within the security group and its default outbound rule allows all outbound traffic. In this case, you can access a RocketMQ instance within a VPC, and do not need to add rules according to **Table 3-2** or **Table 3-3**.	For details on how to create a security group, see **Creating a Security Group**. For details on how to add rules to a security group, see **Adding a Security Group Rule**.
EIP	This parameter is required to enable public access. Note the following when creating EIPs: • The EIPs must be created in the same region as the RocketMQ instance. • **The RocketMQ console cannot identify IPv6 EIPs.**	For details about how to create an EIP, see **Assigning an EIP**.

Table 3-2 Security group rules (RocketMQ 4.8.0)

Direction	Protocol	Port	Source	Description
Inbound	TCP	8100	IP address or IP address group of the RocketMQ client	The port is used for private network access to metadata nodes using TCP.
Inbound	TCP	8200		The port is used for public network access to metadata nodes using TCP.
Inbound	TCP	10100–10199		The port is used for private access to service nodes using TCP.

Direction	Protocol	Port	Source	Description
Inbound	TCP	10101–10199		The port is used for public access to service nodes using TCP.

Table 3-3 Security group rules (RocketMQ 5.x)

Direction	Protocol	Port	Source	Description
Inbound	TCP	8100	IP address or IP address group of the RocketMQ client	The port is used for private network access to instances using TCP.
Inbound	TCP	8200		The port is used for public network access to instances using TCP.
Inbound	TCP	8080		The port is used for private network access to instances using gRPC.
Inbound	TCP	8081		The port is used for public network access to instances using gRPC.
Inbound	TCP	10100		The port is used for private access to service nodes using TCP.
Inbound	TCP	10101		The port is used for public access to service nodes using TCP.

Buying a RocketMQ Instance

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

Step 2 Select **Billing Mode**.

- **Yearly/Monthly**: To create an instance, determine how long you would like to use it and it will be billed at the current price immediately.
- **Pay-per-use**: To create an instance, there is no need to specify a subscription because the instance will be billed based on usage duration.

Step 3 Select a **Region**.

DMS for RocketMQ instances in different regions cannot communicate with each other over an intranet. Select a nearest location for low latency and fast access.

Step 4 Select a **Project**.

Projects isolate compute, storage, and network resources across geographical regions. For each region, a preset project is available.

Step 5 Select an **AZ**.

An AZ is a physical region where resources use independent power supply and networks. AZs are physically isolated but interconnected through an internal network.

Select AZs as prompted based on the instance version.

Step 6 Enter an **Instance Name**.

You can customize a name that complies with the rules: 4–64 characters; starts with a letter; can contain only letters, digits, hyphens (-), and underscores (_).

Step 7 Select an **Enterprise Project**.

This parameter is for enterprise users. An enterprise project manages cloud resources. The enterprise project management service unifies cloud resources in projects, and resources and members in a project. The default project is **default**.

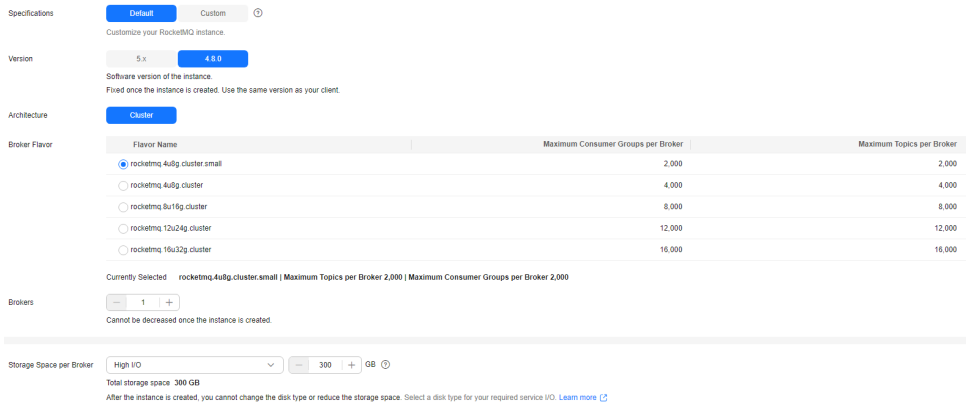
Step 8 Configure the following instance parameters:

- **Retain Default for Specifications. If you select 4.8.0, specify the flavor, broker quantity, and broker storage space as required.**
  - **Architecture**: Only **Cluster** is available.
  - **Broker Flavor**: Select the required flavor.
  - **Brokers**: Select the required number of brokers.
  - **Storage Space per Broker**: Specify the disk type and storage space of each broker.

    The disk type can be high I/O or ultra-high I/O. For details on how to select a disk type, see **Disk Types and Disk Performance** and **Does the Disk Type Affect the RocketMQ Instance Performance?**.

    High I/O disks are recommended for RocketMQ instances in test environments. Ultra-high I/O disks are recommended for RocketMQ instances in production environments.

Figure 3-1 Default Specifications (v4.8.0)



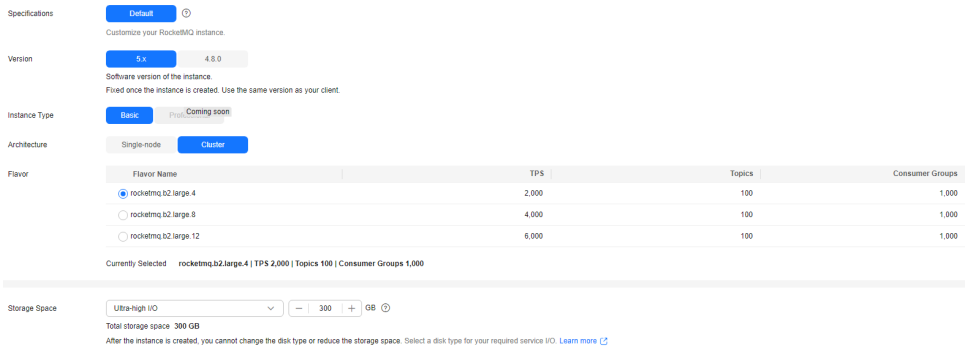
- **Retain Default for Specifications. If you select 5.x, specify the flavor and storage space as required.**

- **Instance Type**: **Basic** are available.
- **Architecture**: Select **Single-node** or **Cluster**.
  - **Single-node** deployment does not support high availability. The single-node architecture of the basic edition can only be used for testing.
  - **Cluster** deployment supports high availability and anti-affinity.
- **Flavor**: Select the required flavor.
- **Storage Space**: Disk type and total storage space of the instance.

  The disk type can be high I/O or ultra-high I/O. For details on how to select a disk type, see **Disk Types and Disk Performance** and **Does the Disk Type Affect the RocketMQ Instance Performance?**.

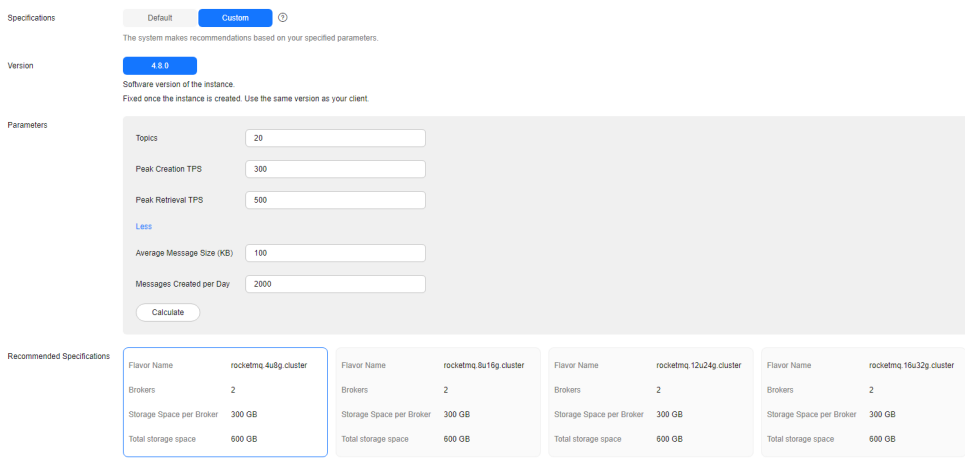
  High I/O disks are recommended for RocketMQ instances in test environments. Ultra-high I/O disks are recommended for RocketMQ instances in production environments.

Figure 3-2 Default Specifications (v5.x)



- **If you select Custom (available only in v4.8.0), the system calculates the number of brokers and broker storage space for different flavors based on your specified number of topics, peak creation TPS, peak retrieval TPS, average message size, and number of messages created every day. You can select one of the recommended flavors as required.**

Figure 3-3 Specification calculation



Step 9 Configure the instance network parameters.

1. Select the created VPC and subnet from the **VPC** drop-down list.

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

   After the RocketMQ instance is created, its VPC and subnet cannot be changed.

2. Select a security group.

   A security group is a set of rules for accessing a RocketMQ instance.

Step 10 Configure SSL.

- SSL: Ciphertext access with high security, but lower performance.
- PLAINTEXT: Plaintext access with high performance, but lower security.
- PERMISSIVE: Both ciphertext and plaintext access, depending on the client.

The SSL setting can be changed after the instance is created. Select a transmission mode as required.

Step 11 Configure ACL.

After ACL is enabled, the permissions for each user are exclusive.

Step 12 Select the required duration.

This parameter is displayed only if the billing mode is yearly/monthly.

Step 13 Click **More Settings** to configure more parameters.

- Configure **Public Access**.

  Public access is disabled by default. You can enable or disable it as required. After public access is enabled, configure an IPv4 EIP for the RocketMQ instance.

- Specify tags.

  Tags are used to identify cloud resources. When you have many cloud resources of the same type, you can use tags to classify cloud resources by dimension (for example, usage, owner, or environment).

  – If you have created predefined tags, select a predefined pair of tag key and value. To view or create predefined tags, click **View predefined tags** on the right. You will then be directed to the TMS console.

  – You can also create new tags by entering **Tag key** and **Tag value**.

  Up to 20 tags can be added to each RocketMQ instance. For details about the requirements on tags, see **Configuring Tags for a RocketMQ Instance**.

- Enter a description of the instance.

Step 14 Click **Buy**.

Step 15 Confirm the instance information, and read and agree to the *HUAWEI CLOUD Customer Agreement*. If you have selected the yearly/monthly billing mode, click **Pay Now** and make the payment as prompted. If you have selected the pay-per-use mode, click **Submit**.

Step 16 Return to the instance list and check whether the 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 an instance fails to be created, view it in the **Instance Creation Failures** area, and delete it by referring to **Deleting a RocketMQ Instance** and then create a new one. If the instance creation fails again, contact customer service.

----End

4 Configuring a Topic

4.1 Creating a RocketMQ Topic

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

Prerequisites

A RocketMQ instance has been purchased.

Creating a Topic

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Topics**.

Step 6 Click **Create Topic**.

Step 7 Configure the topic name and other parameters by referring to **Table 4-1** or **Table 4-2**.

Figure 4-1 Creating a topic (RocketMQ 4.8.0)

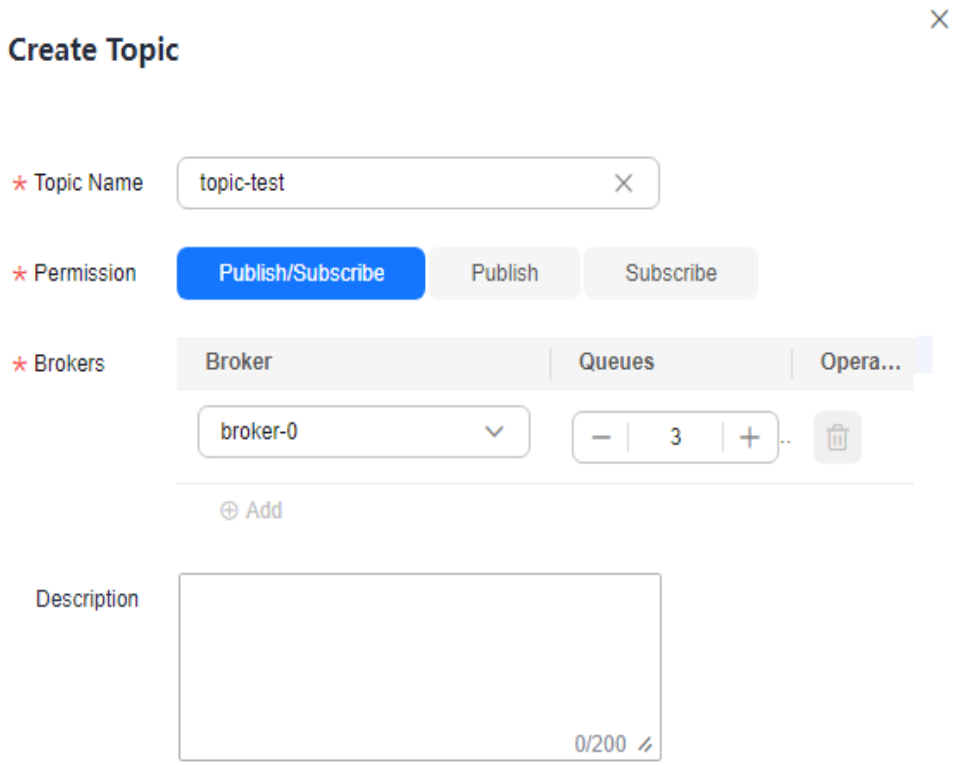


Figure 4-2 Creating a topic (RocketMQ 5.x)

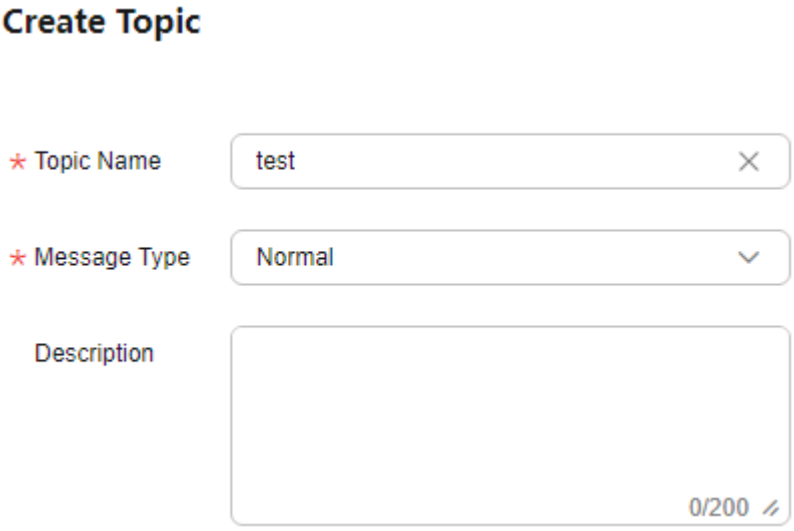


Table 4-1 Topic parameters (RocketMQ 4.8.0)

Parameter	Description
Topic Name	Name of the topic. A topic name must meet the following requirements: • Contains 3 to 64 characters. • Contains only letters, digits, percent signs (%), vertical bars (|), hyphens (-), and underscores (_). • Cannot start with **rmq_sys_**. • Cannot be the same as the following strings: – TBW102 – SCHEDULE_TOPIC_XXXX – BenchmarkTest – RMQ_SYS_TRANS_HALF_TOPIC – RMQ_SYS_TRACE_TOPIC – RMQ_SYS_TRANS_OP_HALF_TOPIC – TRANS_CHECK_MAX_TIME_TOPIC – SELF_TEST_TOPIC – OFFSET_MOVED_EVENT The topic name must be unique. Otherwise, the topic cannot be created. Once the topic is created, you cannot modify its name. 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**.
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.
Description	Topic description. The value contains 0 to 200 characters.

Table 4-2 Topic parameters (RocketMQ 5.x)

Parameter	Description
Topic Name	Name of the topic. A topic name must meet the following requirements: • Contains 3 to 64 characters. • Contains only letters, digits, percent signs (%), vertical bars (|), hyphens (-), and underscores (_). • Cannot start with **rmq_sys_**. • Cannot be the same as the following strings: – TBW102 – SCHEDULE_TOPIC_XXXX – BenchmarkTest – RMQ_SYS_TRANS_HALF_TOPIC – RMQ_SYS_TRACE_TOPIC – RMQ_SYS_TRANS_OP_HALF_TOPIC – TRANS_CHECK_MAX_TIME_TOPIC – SELF_TEST_TOPIC – OFFSET_MOVED_EVENT The topic name must be unique. Otherwise, the topic cannot be created. Once the topic is created, you cannot modify its name. 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.
Message Type	Options: **Normal**, **Ordered**, **Scheduled**, and **Transactional**. • Normal messages: Messages that do not have any features of scheduled messages, ordered messages, or transactional messages. • Scheduled messages: Messages that are delivered to consumers only after a specific period after being sent from producers to DMS for RocketMQ. • Ordered messages: Messages that are consumed in the exact order that they are produced. • Transactional messages: Messages that achieve eventual consistency, delivering distributed transaction processing similar to X/Open XA.
Description	Topic description. The value contains 0 to 200 characters.

Step 8 Click **OK**.

----End

4.2 Managing Topics

4.2.1 Viewing RocketMQ Topic Details

After a topic is created, you can query its configuration and status on the console.

Prerequisites

- A RocketMQ instance has been purchased.
- A topic has been created.

Viewing Topic Details

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Topics**.

Step 6 Click the desired topic name to go to the topic details page.

- RocketMQ 4.8.0: The upper part of the topic details page shows the topic name, the number of brokers, read queues, write queues, permissions, and description. The lower part of the topic details page shows the queue status on each broker, topic's consumption status, and authorization.
- RocketMQ 5.x: The upper part of the topic details page shows the topic name, message type, and description. The lower part of the topic details page shows the total number of messages, deleted messages, topic's consumption status, and authorization.

Figure 4-3 Topic details (RocketMQ 4.8.0)

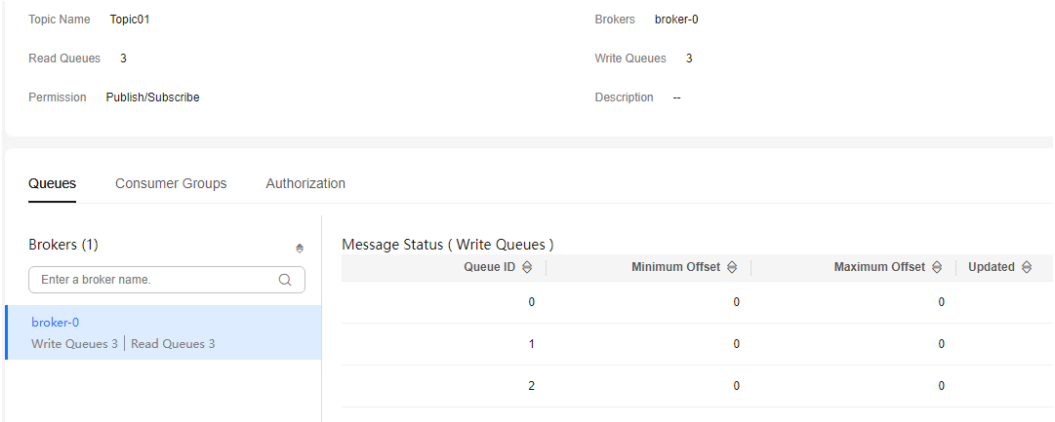
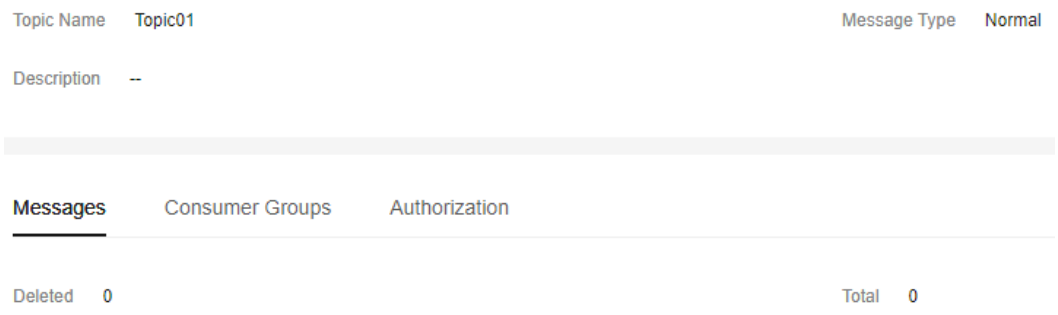


Figure 4-4 Topic details (RocketMQ 5.x)



----End

4.2.2 Modifying RocketMQ Topic Configurations

The topic permissions, brokers, and description can be modified for RocketMQ 4.8.0. The description can be modified for RocketMQ 5.x.

Prerequisites

- A RocketMQ instance has been purchased.
- A topic has been created.

Modifying Topic Information

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Topics**.

Step 6 Modify topic parameters in either of the following ways:

- In the row containing the desired topic, click **Edit**.
- Click a topic to go to the topic details page and then click **Edit** in the upper right corner.

Step 7 Modify topic parameters by referring to **Table 4-3**.

Table 4-3 Topic parameters

Parameter	Description
Permission	Available for RocketMQ 4.8.0. Topic permission, which can be **publish/subscribe**, **publish**, or **subscribe**.
Brokers	Available for RocketMQ 4.8.0. Change the number of read queues or write queues. • Read queues: total number of available queues in the topic for reading data. • Write queues: total number of available queues in the topic for writing data. If an existing topic is not associated with all brokers during creation, click **Add** to distribute the topic to more brokers and set the number of read queues and write queues.
Description	Topic description 0–200 characters

Step 8 Click **OK**.

----End

4.2.3 Deleting a RocketMQ Topic

If a topic is no longer used, you can delete it to release resources by referring to this section.

Topics can be deleted only when the instance is in the **Running** state.

Prerequisites

- A RocketMQ instance has been purchased.
- A topic has been created.

Deleting a Topic

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Topics**.

Step 6 Delete topics in any of the following ways:

- In the row containing the topic to be deleted, click **Delete**.
- Click a topic to go to the topic details page and then click **Delete** in the upper right corner.
- To delete multiple topics at a time, select the topics, and click **Delete Topic** above the topic list.

NOTICE

Exercise caution when deleting topics because data will be lost.

Step 7 Click **OK**.

----End

5 Accessing an Instance

5.1 Configuring RocketMQ Network Connections

5.1.1 RocketMQ Network Connection Conditions

A client can connect to a RocketMQ instance over a public or private network. Notes before using a private network:

- By default, a client and a RocketMQ instance are interconnected when they are deployed in a VPC.
- If they are not, you need to interconnect them because of isolation among VPCs.

Table 5-1 lists how a client can connect to a RocketMQ instance.

Table 5-1 Connection modes

Mode	How To Do	Reference
Public access	Enable public access on the RocketMQ console and configure elastic IPs (EIPs). The client can connect to the RocketMQ instance through EIPs.	Configuring Public Access for a RocketMQ Instance
Private access	A client and a RocketMQ instance are interconnected when they are deployed in a VPC.	-
	When a client and a RocketMQ instance are deployed in different VPCs of the same region, interconnect two VPCs using a VPC peering connection.	VPC Peering Connection

Before connecting a client to a RocketMQ instance, allow accesses for the following security groups.

NOTE

After a security group is created, its default inbound rule allows communication among within the security group and its default outbound rule allows all outbound traffic. In this case, you can access a RocketMQ instance within a VPC, and do not need to add rules according to **Table 5-2**.

Table 5-2 Security group rules (RocketMQ 4.8.0)

Direction	Protocol	Port	Source	Description
Inbound	TCP	8100	IP address or IP address group of the RocketMQ client	The port is used for private network access to metadata nodes using TCP.
Inbound	TCP	8200		The port is used for public network access to metadata nodes using TCP.
Inbound	TCP	10100–10199		The port is used for private access to service nodes using TCP.
Inbound	TCP	10101–10199		The port is used for public access to service nodes using TCP.

Table 5-3 Security group rules (RocketMQ 5.x)

Direction	Protocol	Port	Source	Description
Inbound	TCP	8100	IP address or IP address group of the RocketMQ client	The port is used for private network access to instances using TCP.
Inbound	TCP	8200		The port is used for public network access to instances using TCP.
Inbound	TCP	8080		The port is used for private network access to instances using gRPC.
Inbound	TCP	8081		The port is used for public network access to instances using gRPC.
Inbound	TCP	10100		The port is used for private access to service nodes using TCP.

Direction	Protocol	Port	Source	Description
Inbound	TCP	10101		The port is used for public access to service nodes using TCP.

5.1.2 Configuring Public Access for a RocketMQ Instance

To access a RocketMQ instance over a public network, enable public access and configure EIPs for the instance. If you no longer need public access to the instance, disable it.

Notes and Constraints

Only IPv4 EIPs can be bound to RocketMQ instances.

Prerequisite

You can change the public access setting only when the RocketMQ instance is in the **Running** state.

Enabling Public Access

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 Click next to **Public Access**.

Step 6 Click , in the **Elastic IP Address** area, select IP addresses as prompted, and click .

If no EIP exists in the **Elastic IP Address** drop-down list box, or the EIPs are insufficient, click **Create Elastic IP** to create an EIP on the page that is displayed.

After the EIP is created, return to the RocketMQ console, click next to **Elastic IP Address**, and select the new EIP from the drop-down list.

Figure 5-1 Enabling public access

After public access is enabled, **Instance Address (Public Network)** is displayed for a v4.8.0 RocketMQ instance , and **Instance Address (Public Network)** (TCP) and **gRPC Connection Address (Public Network)** (gRPC) are displayed for a v5.x RocketMQ instance.

Figure 5-2 Public network connection addresses (RocketMQ 4.8.0)

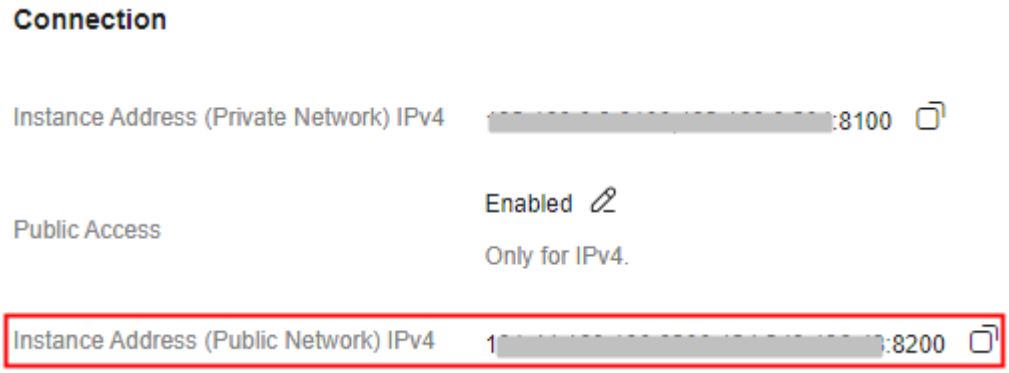
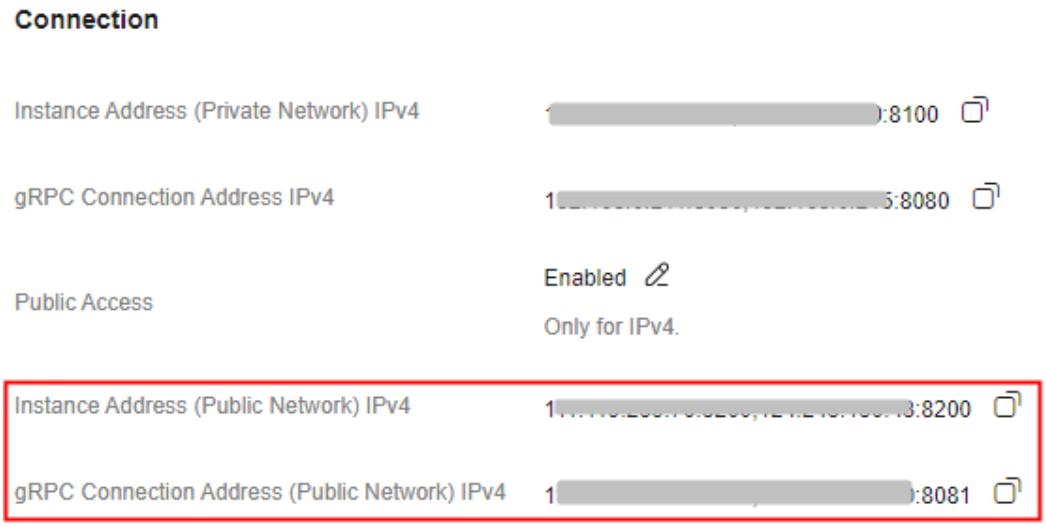


Figure 5-3 Public network connection addresses (RocketMQ 5.x)



After public access is enabled, modify security group rules before attempting to access the RocketMQ instance.

Table 5-4 Security group rules (RocketMQ 4.8.0)

Direction	Protocol	Port	Source	Description
Inbound	TCP	8200	IP address or IP address group of the RocketMQ client	The port is used for public network access to metadata nodes using TCP.
Inbound	TCP	10101-10199		The port is used for public access to service nodes using TCP.

Table 5-5 Security group rules (RocketMQ 5.x)

Direction	Protocol	Port	Source	Description
Inbound	TCP	8200	IP address or IP address group of the RocketMQ client	The port is used for public network access to instances using TCP.
Inbound	TCP	8081		The port is used for public network access to instances using gRPC.
Inbound	TCP	10101		The port is used for public access to service nodes using TCP.

----End

Disabling Public Access

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 Click next to **Public Access**.

Step 6 Click  and then ✓ to disable public access.

After public access is disabled, modify security group rules before attempting to access the RocketMQ instance over a private network.

Table 5-6 Security group rules (RocketMQ 4.8.0)

Direction	Protocol	Port	Source	Description
Inbound	TCP	8100	IP address or IP address group of the RocketMQ client	The port is used for private network access to metadata nodes using TCP.
Inbound	TCP	10100–10199		The port is used for private access to service nodes using TCP.

Table 5-7 Security group rules (RocketMQ 5.x)

Direction	Protocol	Port	Source	Description
Inbound	TCP	8100	IP address or IP address group of the RocketMQ client	The port is used for private network access to instances using TCP.
Inbound	TCP	8080		The port is used for private network access to instances using gRPC.
Inbound	TCP	10100		The port is used for private access to service nodes using TCP.

----End

5.2 Configuring RocketMQ Access Control

5.2.1 Enabling RocketMQ ACL

RocketMQ instances support precise identification of producers and consumers through ACL (Access Control List)-based permission management. When ACL is enabled, message production and consumption require authentication.

Notes and Constraints

Enabling ACL will disconnect clients without authentication configuration.

Prerequisite

A RocketMQ instance has been purchased.

Enabling RocketMQ ACL

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the **Connection** area, click next to **ACL** to enable ACL.

When ACL is enabled, **Users** is displayed in the navigation pane. You can configure ACL users by referring to **Configuring RocketMQ ACL Users**.

----End

5.2.2 Configuring RocketMQ ACL Users

To produce and consume messages to RocketMQ instances with ACL enabled, add ACL users. You can create multiple users and assign different topic and consumer group permissions to them.

Prerequisites

- A RocketMQ instance has been purchased.
- **ACL** has been enabled.

Creating a User

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 In the navigation pane, choose **Users**.

Step 5 Click **Create User**.

Step 6 Configure the user's name and other parameters by referring to **Table 5-8**.

Table 5-8 User parameters

Parameter	Description
Name	Name of the user. A username must meet the following requirements: • Contains 7 to 64 characters. • Only letters, digits, hyphens (-), and underscores (_) are allowed. The value must start with a letter. • The name must be unique. The name cannot be changed after the user is created.
IP Whitelist	Users from whitelisted IP addresses have publish/subscribe permissions for all topics and consumer groups, and their secret keys will not be verified. The IP whitelist can be set to specific IP addresses or network segments. • Use commas (,) to separate multiple IP addresses, for example, **192.168.1.2,192.168.2.3**. • IP network segment, for example, **192.*.*.***.
Administrator	A user configured as the administrator will have publish/subscribe permissions for all topics and consumer groups. Unavailable for v5.x basic edition.
Default Topic Permissions	Specifies the default topic permission of a user. Options: • **None**: The topic is disabled. • **Publish**: Users can only send messages to the topic. • **Subscribe**: Users can only consume messages from the topic. • **Publish/Subscribe**: Users can send messages to or consume them from the topic. The default permissions will be overwritten by the permissions configured for specific topics, if any. For example, if **Default Topic Permissions** is set to **Subscribe**, but a topic is configured with the **Publish/Subscribe** permissions, the topic's actual permissions will be **Publish/Subscribe**. Unavailable for v5.x basic edition.

Parameter	Description
Default Consumer Group Permissions	Specifies the default consumer group permission of a user. Options: • **None**: the consumer group is disabled. • **Subscribe**: The consumer group is enabled. The default permissions will be overwritten by the permissions configured for specific consumer groups, if any. For example, if a consumer group is configured with the **None** permissions, the user will not have permissions for the consumer group, even if **Default Consumer Group Permissions** is set to **Subscribe**. Unavailable for v5.x basic edition.
Secret Key	The user's secret key. The key setting rules are as follows: • Contains 8 to 32 characters. • Cannot start with "-", contains at least three types of the following characters: uppercase letters, lowercase letters, digits, and special characters `~!@#$%^&*()-_=+|[{}];:'",<.>/? • Cannot be the username or the username spelled backwards.

Step 7 Click **OK**.

----End

(Optional) Assigning Topic or Consumer Group Permissions to a User

Users are created with default topic and consumer group permissions. To modify the default permissions, reset them here. By default, the administrator has all permissions.

Unavailable for v5.x basic edition.

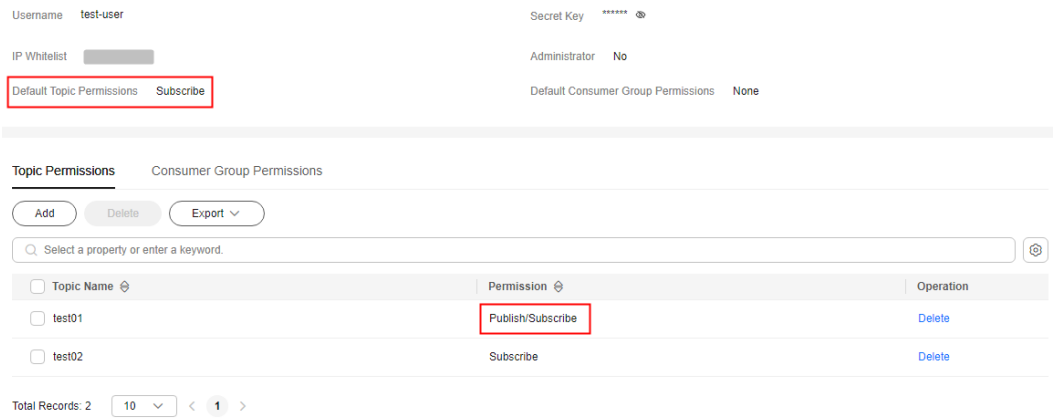
Step 1 Click a user to go to the user details page.

Step 2 On the **Topic Permissions** or **Consumer Group Permissions** tab page, click **Add**.

Step 3 Select desired topics or consumer groups, select the required permissions, and click **OK**.

These permissions overwrite the default permissions. For example, in **Figure 5-4**, users finally have publish/subscribe permissions for topic **test01**.

Figure 5-4 User details page



NOTE

The following operations can also be performed on the **Topic Permissions** or **Consumer Group Permissions** tab page.

- Exporting the topic or consumer group list: Choose **Export** > **Export all data to an XLSX file** or **Export** > **Export selected data to an XLSX file**.
- Deleting topics or consumer groups in either of the following ways:
  - In the row containing the topic or consumer group to be deleted, click **Delete**.
  - Select the topics or consumer groups to be deleted and click **Delete** in the upper left corner.

----End

Accessing the Server as a User

After ACL is enabled for an instance, user authentication information must be added to both the producer and consumer configurations. For details, see the following instructions:

- Java
- Go
- Python

Modifying User Information

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Users**.

Step 6 In the row containing the desired user, click **Edit**.

Step 7 Modify the user information as required.

Usernames cannot be changed. For other parameters, see **Table 5-8**.

Step 8 Click **OK**.

----End

Exporting Users

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Users**.

Step 6 Export the user list in either of the following ways:

- Select the desired users and choose **Export** > **Export selected data to an XLSX file** to export specified users.
- Choose **Export** > **Export all data to an XLSX file** to export all users.

----End

Deleting a User

Deleting a user will remove its authorization relationship and disconnect it from the instance.

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Users**.

Step 6 In the row containing the desired user, click **Delete**.

Step 7 Click **OK**.

----End

5.3 Accessing RocketMQ on a Client (Without SSL)

This section describes how to use TCP to connect to a RocketMQ instance without SSL in CLI mode on Linux.

Setting **SSL** to **PLAINTEXT** or **PERMISSIVE** (plaintext transmission) during instance creation or in the basic instance information disables SSL.

Prerequisites

- A RocketMQ instance has been created and you have obtained the connection addresses for intra-VPC access or public network access. For private access, use port 8100. For public access, use port 8200.
- The network between the client and the RocketMQ instance has been established. For details about network requirements, see **RocketMQ Network Connection Conditions**.
- **Security group rules** have been configured.
- **A topic** has been created.
- **JDK v1.8.111 or later** has been installed on the client server, and related environment variables have been configured.

Accessing the Instance with CLI

Step 1 Log in to the client server.

Step 2 Download the **rocketmq-tutorial** software package.

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

Step 3 Decompress the **rocketmq-tutorial** package.

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

Step 4 (Optional) If ACL is enabled for the RocketMQ instance, authentication is required when you run the **mqadmin** command.

Switch to the directory where the decompressed software package is stored and add the following content to the **conf/tools.yml** file:

```
accessKey:*******
secretKey:*******
```

accessKey and **secretKey** are the username and secret key set on the **Users** page of the console. For details, see **Creating a User**.

Step 5 Go to the **rocketmq-tutorial/bin** directory.

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

Step 6 Produce normal messages using the sample project.

```
sh mqadmin sendMessage -n "${Connection addresses}" -t ${Topic name} -p "hello rocketmq"
```

Parameter description:

- **Connection addresses**: the **Instance Address** for private network access or **Instance Address (Public Network)** for public network access

- **Topic name**: name of the topic created for the RocketMQ instance

In the following example, **11.xxx.xxx.89:8200;11.xxx.xxx.144:8200** are the metadata connection addresses for public network access to the RocketMQ instance, and **topic-test** is the topic name.

```
sh mqadmin sendMessage -n "11.xxx.xxx.89:8200;11.xxx.xxx.144:8200" -t topic-test -p "hello rocketmq"
```

Press **Ctrl**+**C** to exit.

Step 7 Consume normal messages using the sample project.

```
sh mqadmin consumeMessage -n "${Connection addresses}" -t ${Topic name}
```

Parameter description:

- **Connection addresses**: the **Instance Address** for private network access or **Instance Address (Public Network)** for public network access
- **Topic name**: name of the topic created for the RocketMQ instance

In the following example, **11.xxx.xxx.89:8200;11.xxx.xxx.144:8200** are the metadata connection addresses for public network access to the RocketMQ instance, and **topic-test** is the topic name.

```
sh mqadmin consumeMessage -n "11.xxx.xxx.89:8200;11.xxx.xxx.144:8200" -t topic-test
```

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

Step 8 Create messages with traces using the sample project.

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

Parameter description:

- **Connection addresses**: the **Instance Address** for private network access or **Instance Address (Public Network)** for public network access
- **Topic name**: name of the topic created for the RocketMQ instance

In the following example, **11.xxx.xxx.89:8200;11.xxx.xxx.144:8200** are the metadata connection addresses for public network access to the RocketMQ instance, and **topic-test** is the topic name.

```
sh mqadmin sendMessage -n "11.xxx.xxx.89:8200;11.xxx.xxx.144:8200" -t topic-test -p "hello rocketmq" -m true
```

Press **Ctrl**+**C** to exit.

Step 9 Retrieve messages and send the message traces using the sample project.

```
sh mqadmin consumeMessage -n "${Connection addresses}" -t ${Topic name} -m true
```

Parameter description:

- **Connection addresses**: the **Instance Address** for private network access or **Instance Address (Public Network)** for public network access
- **Topic name**: name of the topic created for the RocketMQ instance

In the following example, **11.xxx.xxx.89:8200;11.xxx.xxx.144:8200** are the metadata connection addresses for public network access to the RocketMQ instance, and **topic-test** is the topic name.

```
sh mqadmin consumeMessage -n "11.xxx.xxx.89:8200;11.xxx.xxx.144:8200" -t topic-test -m true
```


Press **Ctrl**+**C** to exit.

----End

5.4 Accessing RocketMQ on a Client (With SSL)

If SSL is enabled, data will be encrypted before transmission for enhanced security. This section describes how to use TCP to connect to a RocketMQ instance with SSL in CLI mode on Linux.

Setting **SSL** to **SSL** or **PERMISSIVE** (ciphertext transmission) during instance creation or in the basic instance information enables SSL.

Prerequisites

- A RocketMQ instance has been created and you have obtained the connection addresses for intra-VPC access or public network access. For private access, use port 8100. For public access, use port 8200.
- The network between the client and the RocketMQ instance has been established. For details about network requirements, see **RocketMQ Network Connection Conditions**.
- **Security group rules** have been configured.
- **A topic** has been created.
- **JDK v1.8.111 or later** has been installed on the client server, and related environment variables have been configured.

Accessing the Instance with CLI

Step 1 Log in to the client server.

Step 2 Download the **rocketmq-tutorial** software package.

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

Step 3 Decompress the **rocketmq-tutorial** package.

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

Step 4 (Optional) If ACL is enabled for the RocketMQ instance, authentication is required when you run the **mqadmin** command.

Switch to the directory where the decompressed software package is stored and add the following content to the **conf/tools.yml** file:

```
accessKey:*******
secretKey:*******
```

accessKey and **secretKey** are the username and secret key set on the **Users** page of the console. For details, see **Creating a User**.

Step 5 Go to the **rocketmq-tutorial/bin** directory.

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

Step 6 Produce 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 **Instance Address** for private network access or **Instance Address (Public Network)** for public network access
- **Topic name**: name of the topic created for the RocketMQ instance

In the following example, **11.xxx.xxx.89:8200;11.xxx.xxx.144:8200** are the metadata connection addresses for public network access to the RocketMQ instance, and **topic-test** is the topic name.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin sendMessage -n "11.xxx.xxx.89:8200;11.xxx.xxx.144:8200" -t topic-test -p "hello rocketmq"
```

Press **Ctrl**+**C** to exit.

Step 7 Consume 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 **Instance Address** for private network access or **Instance Address (Public Network)** for public network access
- **Topic name**: name of the topic created for the RocketMQ instance

In the following example, **11.xxx.xxx.89:8200;11.xxx.xxx.144:8200** are the metadata connection addresses for public network access to the RocketMQ instance, and **topic-test** is the topic name.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin consumeMessage -n "11.xxx.xxx.89:8200;11.xxx.xxx.144:8200" -t topic-test
```

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

Step 8 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 **Instance Address** for private network access or **Instance Address (Public Network)** for public network access
- **Topic name**: name of the topic created for the RocketMQ instance

In the following example, **11.xxx.xxx.89:8200;11.xxx.xxx.144:8200** are the metadata connection addresses for public network access to the RocketMQ instance, and **topic-test** is the topic name.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin sendMessage -n "11.xxx.xxx.89:8200;11.xxx.xxx.144:8200" -t topic-test -p "hello rocketmq" -m true
```

Press **Ctrl**+**C** to exit.

Step 9 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 **Instance Address** for private network access or **Instance Address (Public Network)** for public network access
- **Topic name**: name of the topic created for the RocketMQ instance

In the following example, **11.xxx.xxx.89:8200;11.xxx.xxx.144:8200** are the metadata connection addresses for public network access to the RocketMQ instance, and **topic-test** is the topic name.

```
JAVA_OPT=-Dtls.enable=true sh mqadmin consumeMessage -n "11.xxx.xxx.89:8200;11.xxx.xxx.144:8200" -t topic-test -m true
```

Press **Ctrl**+**C** to exit.

----End

5.5 Accessing RocketMQ on the Console

This section describes how to produce a specified message for a RocketMQ instance to verify service logic.

Prerequisites

- A RocketMQ instance is in the **Running** state.
- A topic has been **created** and has the publish permission.

Accessing RocketMQ on the Console to Produce Messages

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Topics**.

Step 6 Click **Produce Message** in the row containing the desired topic. The **Produce Message** dialog box is displayed.

Step 7 Enter the message body, key, and tag (**Message Key** and **Message Tag** are optional) and click **OK**.

- **Message Body**: The message content. The value can contain a maximum of 2000 characters.
- (Optional) **Message Key**: The value can contain a maximum of 128 characters. If there are spaces, this will be parsed as multiple keys, and cannot be filtered by **Message Key** in specific message queries.
- (Optional) **Message Tag**: used as message categories in a topic, and used in produced messages. The value can contain a maximum of 128 characters.

When "Message sent." is displayed in the upper right corner, the message is sent successfully. You can view the message on the **Message Query** page.

----End

6 Managing Messages

6.1 Viewing RocketMQ Messages

This section describes how to view the content of a message and check whether the message is successfully created or retrieved.

On the DMS for RocketMQ console, you can query messages by topic, message ID, or message key.

- By topic: All messages of a specified topic within a specified period will be queried. This is range query and may find a large number of messages.
- By message ID: The message with the specified message ID in the specified topic will be queried. This is exact search and can quickly find a specific message.
- By message key: The message with the specified message key in the specified topic will be queried. This is exact search and can quickly find a specific message.

Message Deletion Mechanism

Regardless of whether they have been consumed, RocketMQ messages are retained for 48 hours and the upper limit is 720 hours by default. For details about how to modify the retention period, see **Changing RocketMQ Message Retention Period**. RocketMQ messages are stored in CommitLog files. Each CommitLog file is 1 GB. When a CommitLog file is full, a new CommitLog file is generated. Message deletion in RocketMQ means to delete the CommitLog files, instead of individual messages. CommitLog files are written in sequence. A CommitLog file expires when the last message written in it expires. CommitLog files are deleted in the following scenarios:

- Expired files are cleared at 04:00 every day. Earlier instances that do not have a time zone are cleared at 12:00 every day.
- Expired files are deleted immediately when the disk usage reaches 70% (for v4.8.0) or 75% (for v5.x).
- The earliest files are deleted, regardless of whether they have expired, when the disk usage reaches 85%.

Prerequisites

- A RocketMQ instance and topics have been created.
- To query messages by message ID, you need the name of the topic to which the message belongs and the message ID.

  Message ID is the **MsgId** returned after the message is produced, for example, the content returned in **Step 6**. Message IDs can be recorded in topic queries.
- To query messages by message key, you need the name of the topic to which the message belongs and the message key.

  Message Key is the message key configured in **Step 7**. Message keys can be recorded in topic queries.

Querying the Message Content

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Message Query**.

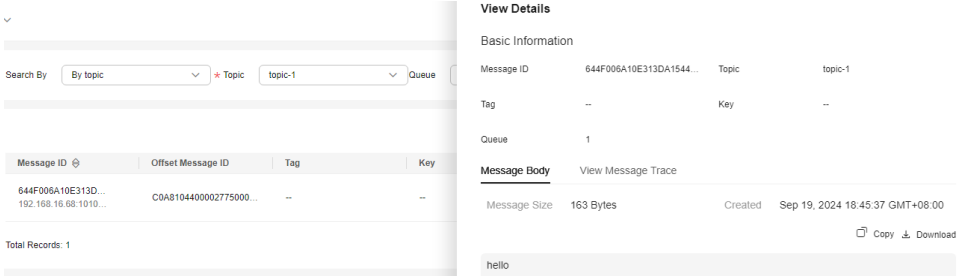
Step 6 Query messages in either of the following ways:

- By topic: Select the topic to be queried from the **Topic** drop-down list and the queue to the queried from the **Queue** drop-down list (only for RocketMQ 4.8.0). For **Stored**, select a time period.
- By message ID: Select the name of the topic to be queried from the **Topic** drop-down list, enter the ID of the message to be queried, and click **Search**.
- By message key: Select the name of the topic to be queried from the **Topic** drop-down list, enter the key of the message to be queried, and click **Search**.

Step 7 In the row that contains the desired message, click **View Details** to view the message content.

The message details include the message size, message creation time, and message content.

Figure 6-1 Viewing message details



- If the message body is greater than 4096 bytes, some content may not be displayed on the console. In this case, click **Download** to view the message body in the downloaded JSON file.
- Click **Copy** to copy the message content.

----End

6.2 Changing RocketMQ Message Retention Period

Message retention period is a period that messages in a topic are retained for. Consumers must retrieve messages before this period ends. Otherwise, the messages will be deleted and can no longer be retrieved.

The retention period of normal messages and dead letter messages is controlled by and changes with the message retention period.

After creating an instance, you can modify its message retention period based on service requirements. Changing the retention period does not restart the instance. The default message retention period is 48 hours.

Prerequisite

A RocketMQ instance has been purchased.

Changing RocketMQ Message Retention Period

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 Click next to **Message Retention**.

Enter an integer in the range from 1 to 720.

Step 6 Click . The modification result is displayed in the upper right corner of the page.

----End

6.3 Enabling and Querying RocketMQ Message Tracing

Complete link information aggregated by time and location of each related node during the process when a message is sent from the producer to the consumer for consumption. Message tracing shows the complete messaging link including the source, RocketMQ server, and target, which is easy for locating faults.

The following procedures describe how to enable and query message tracing in Java, Go, and Spring.

Prerequisites

- Transactional message tracing is supported only if the producer Java client is v4.9.0 or later. If your client is earlier than v4.9.0, upgrade it to a later version.
- For RocketMQ instances with SSL enabled, message tracing is supported only when the producer and consumer Java clients are v4.9.2 or later. If the version does not meet the requirement, upgrade it first.

Enabling RocketMQ Message Tracing (Java)

Do as follows to enable message tracing on clients:

- Enabling message tracing on a producer client (**tracing messages other than transactional messages**)

  Set **enableMsgTrace** of the constructor to **true**. For example:

  ```
  DefaultMQProducer producer = new DefaultMQProducer("ProducerGroupName", true);
  ```

- Enabling message tracing on a producer client (**tracing transactional messages**)

  Set **enableMsgTrace** of the constructor to **true**. For example:

  ```
  TransactionMQProducer producer = new TransactionMQProducer(null, "ProducerGroupName", null, true, null);
  ```

- Enabling message tracing on a consumer

  Set **enableMsgTrace** of the constructor to **true**. For example:

  ```
  DefaultMQPushConsumer consumer = new DefaultMQPushConsumer("ConsumerGroupName", true);
  ```

Enabling RocketMQ Message Tracing (Go)

Do as follows to enable message tracing on clients:

Step 1 Run the following command to check whether Go has been installed:

```
go version
```

If the following information is displayed, Go has been installed.

```
[root@ecs-test sarama]# go version
go version go1.16.5 linux/amd64
```

If Go is not installed, **download** and install it.

Step 2 Go to the **bin** directory where the **Go** script is in.

Step 3 Run the **touch go.mod** command to create a **go.mod** file and add the following code to it to add the dependency:

```
module rocketmq-example-go

go 1.13

require (
    github.com/apache/rocketmq-client-go/v2 v2.1.0
)
```

Step 4 Enable message tracing on the producer. Replace the information in bold with the actual values.


```
package main

import (
    "context"
    "fmt"
    "os"
    "time"

    "github.com/apache/rocketmq-client-go/v2"
    "github.com/apache/rocketmq-client-go/v2/primitive"
    "github.com/apache/rocketmq-client-go/v2/producer"
)

func main() {
    namesrvs := []string{"192.168.0.1:8100"}
    traceCfg := &primitive.TraceConfig{
        Access:   primitive.Local,
        Resolver: primitive.NewPassthroughResolver(namesrvs),
    }

    p, _ := rocketmq.NewProducer(
        producer.WithNsResolver(primitive.NewPassthroughResolver([]string{"192.168.0.1:8100"})),
        producer.WithRetry(2),
        producer.WithTrace(traceCfg))   // To enable message tracing, add this line.
    err := p.Start()
    if err != nil {
        fmt.Printf("start producer error: %s", err.Error())
        os.Exit(1)
    }
    res, err := p.SendSync(context.Background(), primitive.NewMessage("topic1",
        []byte("Hello RocketMQ Go Client!")))

    if err != nil {
        fmt.Printf("send message error: %s\n", err)
    } else {
        fmt.Printf("send message success: result=%s\n", res.String())
    }

    time.Sleep(10 * time.Second)

    err = p.Shutdown()
    if err != nil {
        fmt.Printf("shutdown producer error: %s", err.Error())
    }
}
```

Step 5 Enable message tracing on the consumer. Replace the information in bold with the actual values.

```
package main

import (
    "context"
    "fmt"
    "os"
    "time"

    "github.com/apache/rocketmq-client-go/v2"
    "github.com/apache/rocketmq-client-go/v2/consumer"
    "github.com/apache/rocketmq-client-go/v2/primitive"
)

func main() {
    namesrvs := []string{"192.168.0.1:8100"}
    traceCfg := &primitive.TraceConfig{
        Access:   primitive.Local,
        Resolver: primitive.NewPassthroughResolver(namesrvs),
    }

    c, _ := rocketmq.NewPushConsumer(
```

```
        consumer.WithGroupName("testGroup"),
        consumer.WithNsResolver(primitive.NewPassthroughResolver([]string{"192.168.0.1:8100"})),
        consumer.WithTrace(traceCfg),   // To enable message tracing, add this line.
    )
    err := c.Subscribe("TopicTest", consumer.MessageSelector{}, func(ctx context.Context,
        msgs ...*primitive.MessageExt) (consumer.ConsumeResult, error) {
        fmt.Printf("subscribe callback: %v \n", msgs)
        return consumer.ConsumeSuccess, nil
    })
    if err != nil {
        fmt.Println(err.Error())
    }
    // Note: start after subscribe
    err = c.Start()
    if err != nil {
        fmt.Println(err.Error())
        os.Exit(-1)

    }
    time.Sleep(time.Hour)
    err = c.Shutdown()
    if err != nil {
        fmt.Printf("shutdown Consumer error: %s", err.Error())
    }
}
```

----End

Enabling RocketMQ Message Tracing (Spring)

Do as follows to enable message tracing on clients:

- For producers

  Add the following line in the **application.properties** configuration file:

  ```
  rocketmq.producer.enable-msg-trace=true
  ```

- For consumers

  Set parameter **enableMsgTrace** to **true**. For example:

  ```
  @Service
  @RocketMQMessageListener(
      topic = "test-topic-1",
      consumerGroup = "my-consumer_test-topic-1",
      enableMsgTrace = true
  )
  public class MyConsumer implements RocketMQListener<String> {
      ...
  }
  ```

  Replace the information in bold with the actual values.

For details, see **Message Tracing**.

CAUTION

The default value of parameter **accessChannel** is **LOACL**. Use the default value.

Viewing the Message Trace

Step 1 Log in to the console.

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

> **NOTE**
>
> Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Message Query**.

Step 6 Query messages in either of the following ways:

- By topic: Select the topic to be queried from the **Topic** drop-down list and the queue to the queried from the **Queue** drop-down list (only for RocketMQ 4.8.0). For **Stored**, select a time period.
- By message ID: Select the name of the topic to be queried from the **Topic** drop-down list, enter the ID of the message to be queried, and click **Search**.
- By message key: Select the name of the topic to be queried from the **Topic** drop-down list, enter the key of the message to be queried, and click **Search**.

Step 7 Locate the row containing the message to be queried. Click **Message Trace**.

Step 8 View the message trace to check whether the message is successfully produced or consumed.

Table 6-1 describes message trace parameters.

Table 6-1 Message trace parameters

Parameter	Description
Producer status	A producer can be in one of the following states: • **Sent**: The message is sent successfully, and the server has successfully stored the message. • **Committed**: The message can be retrieved by consumers. • **Rollback**: The message will be discarded and cannot be retrieved by consumers. • **Unknown**: The status of the message cannot be determined. After a period of time, the server initiates a check request to the producer.
Creation duration	Time taken to send the message by the producer. Unit: millisecond
Producer address	IP address of the producer.

Parameter	Description
Consumer status	A consumer can be in one of the following states: • Retrieved • Retrieval timed out • Abnormal retrieval • NULL returned • Retrieval failed
Retrieved	Time when the message is retrieved. The time format is *YYYY/MM/DD hh:mm:ss*.
Retrieval duration	Time taken to retrieve the message by the consumer. Unit: millisecond
Consumer address	IP address of the consumer.

----End

6.4 Verifying RocketMQ Message Consumption

Consumption verification is to resend messages to a specified online client to verify that the consumer can receive messages. Consumption verification causes repeated message consumption.

Prerequisites

- Consumption can be verified only when an instance is in the **Running** state.
- Ensure that the client for which consumption is to be verified is online and the consumer has subscribed to the topic whose message is to be resent.

Verifying RocketMQ Message Consumption

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Message Query**.

Step 6 Set search criteria on the top of the page.

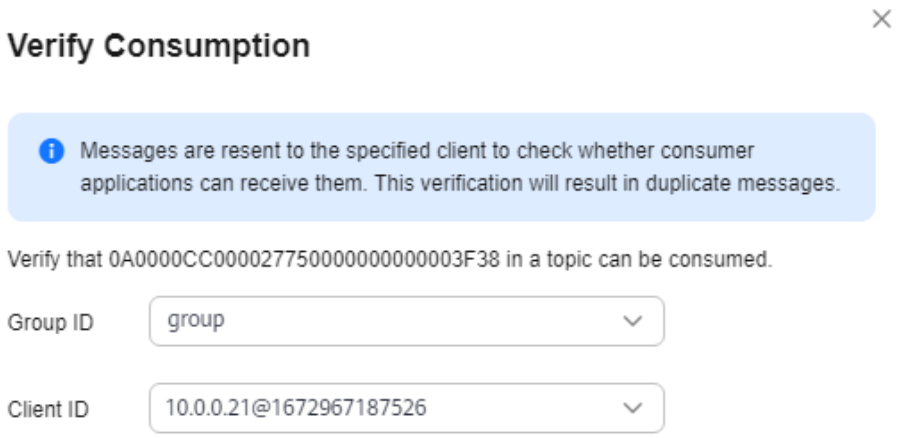
Step 7 In the row that contains the message to be resent, click **Verify Consumption**. The **Verify Consumption** dialog box is displayed.

Step 8 Set parameters by referring to **Table 6-2**.

Table 6-2 Consumption verification parameters

Parameter	Description
Group ID	Name of the consumer group for which consumption is to be verified.
Client ID	ID of the client for which consumption is to be verified.

Figure 6-2 Verifying consumption



Step 9 Click **OK**.

After the message is successfully resent, "Verified" is displayed on the top of the **Verify Consumption** dialog box. The client should have received the resent message.

Consumption verification causes repeated message consumption.

----End

6.5 Managing RocketMQ Dead Letters

Dead letter queues store messages that cannot be correctly retrieved.

If a message fails to be retrieved, the system will retry sending it. After the maximum number of retries (which is 16 by default and configurable in **Creating a RocketMQ Consumer Group**) is reached and the message retrieval still fails, the message becomes a dead letter message and is delivered to the dead letter queue that corresponds to the consumer.

Dead letter messages:

- Cannot be retrieved.
- By default, dead letter messages are retained for 48 hours before being deleted automatically. To change the retention period, see **Changing RocketMQ Message Retention Period**.

This section describes how to query, export, and resend dead letter messages.

On the DMS for RocketMQ console, you can query dead letter messages by group, message ID, and message key.

- By group: All dead letter messages of a specified consumer group within a specified period will be queried. This is range query and may find a large number of dead letter messages.
- By message ID: The message with the specified message ID in the specified consumer group will be queried. This is exact search and can quickly find a specific dead letter message.
- By message key: The message with the specified message key in the specified consumer group will be queried. This is exact search and can quickly find a specific dead letter message.

Prerequisites

- A RocketMQ instance and consumer groups have been created.
- To query messages by message ID, you need the name of the consumer group to which the message belongs and the message ID.

  Message ID is the **MsgId** returned after the message is produced, for example, the content returned in **Step 6**. Message IDs can be recorded in topic queries.
- To query messages by message key, you need the name of the consumer group to which the message belongs and the message key.

  Message Key is the message key configured in **Step 7**. Message keys can be recorded in topic queries.

Querying Dead Letter Messages

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Dead Letter Queues**.

Step 6 Query dead letter messages in either of the following ways:

- By group: Select the name of the consumer group to be queried from the **Group** drop-down list. For **Stored**, select a time period.
- By message ID: Select the name of the consumer group to be queried from the **Group** drop-down list, enter the message ID of the dead letter message to be queried, and click **Search**.

- By message key: Select the name of the consumer group to be queried from the **Group** drop-down list, enter the message key of the dead letter message to be queried, and click **Search**.

----End

Exporting Dead Letter Messages

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Dead Letter Queues**.

Step 6 Click **Export Message** in the row containing the desired message.

The message will be exported in JSON format.

NOTE

To export multiple dead letter messages at a time, select them and click **Export Message** above the message list.

Table 6-3 describes the fields of an exported message.

Table 6-3 Message fields

Parameter	Description
msg_id	Message ID.
instance_id	Instance ID.
topic	Topic name.
store_timestamp	Time when the message is stored.
born_timestamp	Time when the message is generated.
reconsume_times	Number of retry times.
body	Message body.
body_crc	Message body verification.
store_size	Storage size.

Parameter	Description
property_list	Message attribute list. • **name**: attribute name. • **value**: attribute value.
born_host	IP address of the host that generates the message.
store_host	IP address of the host that stores the message.
queue_id	Queue ID.
queue_offset	Offset in the queue.

----End

Resending a Dead Letter Message

Dead letter messages cannot be retrieved by consumers. Locate and rectify the fault, and then resend dead letter messages on the console.

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Dead Letter Queues**.

Step 6 Resend dead letter messages in either of the following ways:

- In the row containing the dead letter message to be resent, click **Resend**.
- Select multiple dead letter messages to be resent and click **Resend**.

NOTICE

After a dead letter message is successfully resent, it still exists in the dead letter queue and will not be deleted. To avoid repeated retrieval, do not resend messages repeatedly.

----End

7 Managing Consumer Groups

7.1 Creating a RocketMQ Consumer Group

A consumer group is a group of consumers with the same behavior and is used to manage and maintain message retrieval. A consumer can manage a type of messages using a consumer group.

At least one RocketMQ consumer group is automatically created.

Prerequisites

A RocketMQ instance has been purchased.

Creating a RocketMQ Consumer Group

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Consumer Groups**.

Step 6 Click **Create Consumer Group**.

Step 7 Configure the consumer group name and other parameters by referring to **Table 7-1**.

Table 7-1 Consumer group parameters

Parameter	Description
Consumer Group Name	Name of the consumer group. A consumer group must meet the following requirements: • Contains 3 to 64 characters. • Contains only letters, digits, percent signs (%), vertical bars (|), hyphens (-), and underscores (_). Once the consumer group is created, you cannot modify its name.
Brokers	This parameter is mandatory when the RocketMQ instance version is 4.8.0. Select one or multiple brokers to create consumer groups as required. The consumer groups are automatically created. Once the consumer group is created, you cannot modify its brokers.
Maximum Retries	Maximum number of retry attempts allowed for normal messages. Value range: 1–16 For ordered retrievals, this limit can be configured by using the **setMaxReconsumeTimes** method.
Broadcast	Indicates whether messages are broadcast. If this option is enabled, each message is retrieved by all consumers in the consumer group. If this option is disabled, each message is retrieved by only one consumer in the consumer group.
Orderly	This parameter is mandatory when the RocketMQ instance version is 5.x. If this option is enabled, consumers consume messages in sequence. Orderly consumption ensures sequential consumption by message sending. In this case, earlier messages are consumed before later messages
Description	Description of the consumer group. 0–200 characters

Step 8 Click **OK**.

View **Consumption Model** on the consumer group list page once a consumer group is created.

- CLUSTERING: cluster consumption mode. RocketMQ consumes any message by any consumer in the consumer group.
- BROADCASTING: broadcast consumption mode. RocketMQ pushes each message to all consumers in the consumer group to ensure that the message is consumed by each consumer.

Consumption Model is **--** when the consumer group is offline.

----End

7.2 Viewing RocketMQ Consumer Group Details

After a consumer group is created, you can query its configuration and status on the console.

Prerequisite

A consumer group has been created.

Viewing RocketMQ Consumer Group Details

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Consumer Groups**.

Step 6 Click the desired consumer group to go to the consumer group details page.

In the upper part of the page, you can view the consumer group name, brokers (for RocketMQ 4.8.0 only), the maximum number of retries, the description, the orderly consumption (for RocketMQ 5.x only), and whether messages are broadcast.

In the lower part of the page, you can view the consumer group information, all topics subscribed by the consumer group, the authentication information, and the subscription relationships.

----End

7.3 Viewing RocketMQ Consumer Connection Addresses

The consumer connection addresses are the message consumption client addresses. The connection addresses of a connected client can be viewed on the console.

Notes and Constraints

A consumer's connection addresses can be viewed only when the consumer is connected to a RocketMQ instance.

Prerequisites

- A consumer group has been created and there are consumers in the group.
- A topic has been created.

Viewing RocketMQ Consumer Connection Addresses

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

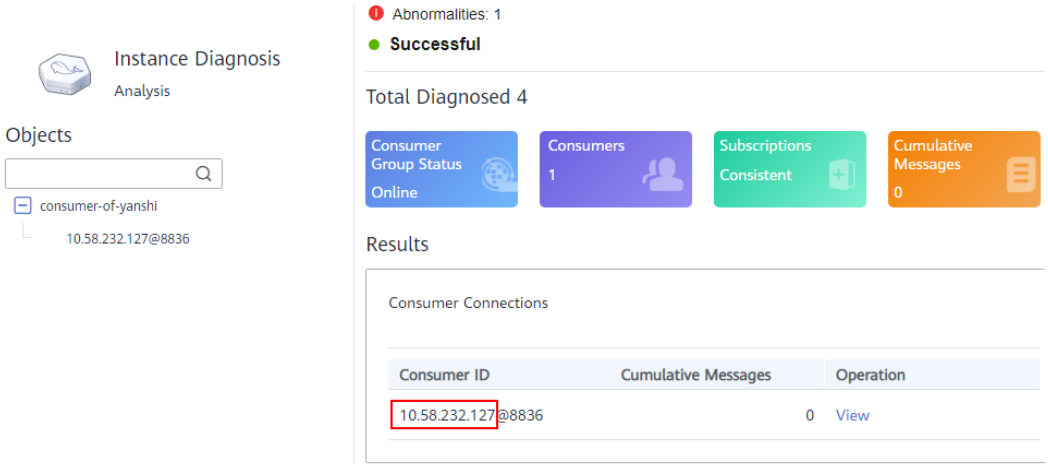
Step 5 In the navigation pane on the left, choose **Instance Diagnosis**.

Step 6 For **Consumer Group**, select the group whose consumer connection address you want to view. Then click **Start Diagnosis**.

Step 7 Locate the row containing the desired diagnosis record, and click **View**.

Step 8 In the **Results** area, view the consumer connection address.

Figure 7-1 Consumer connection addresses



----End

7.4 Modifying RocketMQ Consumer Group Configurations

After creating a consumer group, you can modify its configuration as required.

Prerequisite

A consumer group has been created.

Modifying RocketMQ Consumer Group Configurations

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Consumer Groups**.

Step 6 Modify consumer group parameters in either of the following ways:

- In the row containing the consumer group whose parameters you want to modify, click **Edit**.
- Click a consumer group and then click **Edit** in the upper right corner of the consumer group details page.

Step 7 Modify consumer group parameters by referring to Table 7-2.

Table 7-2 Consumer group parameters

Parameter	Description
Maximum Retries	Maximum number of times that messages are resent upon retrieval failures. Value range: 1–16
Broadcast	Indicates whether messages are broadcast. If this option is enabled, each message is retrieved by all consumers in the consumer group. If this option is disabled, each message is retrieved by only one consumer in the consumer group.
Orderly	This parameter is mandatory when the RocketMQ instance version is 5.x. If this option is enabled, consumers consume messages in sequence. Orderly consumption ensures sequential consumption by message sending. In this case, earlier messages are consumed before later messages
Description	Description of the consumer group. 0–200 characters

Step 8 Click **OK**.

----End

7.5 Resetting the RocketMQ Consumption Offset

Resetting the consumption offset modifies the consumer position. Consumers consume messages from the modified positions.

NOTICE

Messages may be retrieved more than once after the offset is reset. Exercise caution when performing this operation.

Prerequisites

- **A consumer group** has been created and there are consumers in the group.
- **A topic** has been created.

Procedure

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Consumer Groups**.

Step 6 In the row containing the desired consumer group, click **Reset Consumer Offset**.

Step 7 Set parameters by referring to **Table 7-3**.

Table 7-3 Parameters for resetting the consumer offset

Parameter	Description
Topic Name	Select the topic whose consumer offset is to be reset.

Parameter	Description
Time	Select a time point. After the reset is complete, retrieval starts from this time point. • **Custom**: Message consumption restarts from the customized time. • **Earliest**: Message consumption starts from the earliest time. • **Latest**: Message consumption starts from the latest time. The messages before this time will not be consumed.

Step 8 Click **OK**.

Step 9 Click **Yes** in the confirmation dialog box. The consumer offset is reset.

----End

7.6 Deleting a RocketMQ Consumer Group

If a consumer group is no longer used, delete it by referring to this section.

Prerequisite

A consumer group has been created.

Procedure

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Consumer Groups**.

Step 6 Delete consumer groups in any of the following ways:

- In the row containing the desired consumer group, click **Delete**.
- Click a consumer group to go to the consumer group details page and then click **Delete** in the upper right corner.
- To delete multiple consumer groups at a time, select the consumer groups, and click **Delete Consumer Group** above the consumer group list.

Step 7 Click **OK**.

----End

8 Managing Instances

8.1 Viewing and Modifying Basic Information of a RocketMQ Instance

This section describes how to view the details, and modify the basic information of a RocketMQ instance on the console.

After creating a RocketMQ instance, you can modify some configurations of it as required, including the instance name, description, and security group.

Prerequisite

A RocketMQ instance has been purchased.

Viewing Basic Information of a RocketMQ Instance

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Search for a RocketMQ instance by specifying the filters. Current filters include the status, name, version, instance type, specification, used/available storage space, billing mode, AZ, enterprise project, and tag. For RocketMQ instance statuses, see **Table 8-1**.

Table 8-1 RocketMQ instance status description

Status	Description
Creating	The instance is being created.
Running	The instance is running properly. Only instances in the **Running** state can provide services.
Faulty	The instance is not running properly.
Starting	The status between **Frozen** and **Running**.
Restarting	The instance is being restarted.
Changing	The public access configurations or instance specifications are being modified.
Change failed	The public access configurations or instance specifications failed to be modified.
Frozen	The instance is frozen.
Freezing	The status between **Running** and **Frozen**.
Upgrading	The instance is being upgraded.
Rolling back	The instance is being rolled back.

Step 5 Click a RocketMQ instance name to go to the instance details page.

Parameters for connecting to an instance are listed in **Table 8-2** and **Table 8-3**. For details about other parameters, see the **Basic Information** tab page of the instance on the console.

Table 8-2 Connection information (DMS for RocketMQ 4.8.0)

Parameter	Description
Instance Address (Private Network)	Address for connecting to the instance when public access is disabled.
Public Access	Indicates whether public access is enabled. Click  to enable or disable public access.
Instance Address (Public Network)	This parameter is displayed only when public access is enabled. Address for connecting to the instance when public access is enabled.
SSL	SSL status of the instance, can be changed as required.

Parameter	Description
ACL	ACL status of the instance. Click  to enable ACL. When ACL is enabled, message production and consumption require authentication.

Table 8-3 Connection information (DMS for RocketMQ 5.x)

Parameter	Description
Instance Address (Private Network)	Address for connecting to the instance over TCP when public access is disabled.
gRPC Connection Address	Address for connecting to the instance over gRPC when public access is disabled.
Public Access	Indicates whether public access is enabled. Click  to enable or disable public access.
Instance Address (Public Network)	This parameter is displayed only when public access is enabled. Address for connecting to the instance over TCP when public access is enabled.
gRPC Connection Address (Public Network)	This parameter is displayed only when public access is enabled. Address for connecting to the instance over gRPC when public access is enabled.
SSL	SSL status of the instance, can be changed as required.
ACL	ACL status of the instance. Click  to enable ACL. When ACL is enabled, message production and consumption require authentication.

----End

Modifying Basic Information of a RocketMQ Instance

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance name to go to the instance details page.

Step 5 Modify the following parameters if needed:

- Instance Name
- Enterprise Project
- Description
- Public Access (For details, see **Configuring Public Access for a RocketMQ Instance**.)
- Security Group
- SSL (For details, see **Configuring SSL of a RocketMQ Instance**.)
- ACL
- Message aging time (To change the configuration, see **Changing RocketMQ Message Retention Period**.)

After the parameters are modified, view the result in the following ways:

- After you change **Instance Name**, **Description**, **Public Access**, **ACL**, **Message Retention**, **Enterprise Project**, and **Security Group**, the result is displayed in the upper right corner.
- If **SSL** has been modified, go to the **Background Tasks** page to view the task progress and result.

----End

8.2 Viewing Background Tasks of a RocketMQ Instance

After you initiate certain instance operations listed in **Table 8-4**, a background task will start for each operation. On the console, you can view the background task status and clear task information by deleting task records.

Table 8-4 Backend task list

Task Name	Description
Creating an Instance	Creates a RocketMQ instance.
Changing SSL setting	Changes the SSL configuration.
Enable public access	Enables **Public Access**.
Disable public access	Disable **Public Access**.
Modify Specifications	• Expands the storage space. • Adds brokers. • Increases the broker flavor.

Task Name	Description
Deleting ConsumerGroup in Batches	Deletes multiple consumer groups in batches.
Deleting Topics in Batches	Deletes multiple topics in batches.
Configure message tracing	Message tracing is changed.
Restart Broker	Restarts brokers.
Metadata Migration	Migrates metadata.

Prerequisite

A RocketMQ instance has been purchased.

Procedure

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the **Basic Information** page.

Step 5 In the navigation pane, choose **Background Tasks**.

Step 6 On the **Background Tasks** or **Scheduled Tasks** tab page, specify a time range in the upper left corner. The background or scheduled tasks started in that time range will be displayed.

On the **Background Tasks** page, you can also do as follows:

- Query specific RocketMQ instances by filtering. Current filters include the task name, username, status, and other information.
- Click **Delete**. In the displayed **Delete Task** dialog box, click **OK** to clear the task information.

  Select tasks and click **Delete** in the upper right corner to delete them in batches.

  The deletion is allowed when the task is in the **Successful** or **Failed** state.

----End

8.3 Configuring Tags for a RocketMQ Instance

Tags facilitate RocketMQ instance identification and management.

You can add tags to a RocketMQ instance when creating the instance or add tags on the **Tags** tab page of the created instance. Up to 20 tags can be added to an instance. Tags can be deleted.

A tag consists of a tag key and a tag value. **Table 8-5** lists the tag key and value requirements.

Table 8-5 Tag key and value requirements

Parameter	Requirement
Tag key	• Cannot be left blank. • Must be unique for the same instance. • Can contain 1 to 128 characters. • Can contain letters, digits, spaces, and special characters _.:=+-@ • Cannot start or end with a space. • Cannot start with _**sys**_.
Tag value	• Can contain 0 to 255 characters. • Can contain letters, digits, spaces, and special characters _.:/=+-@ • Cannot start or end with a space in instance creation.

Prerequisite

A RocketMQ instance has been purchased.

Adding and Deleting Tags

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click an instance name to go to the instance details page.

Step 5 In the navigation pane on the left, choose **Tags**.

View the tags of the instance.

Step 6 Perform the following operations as required:

- Add a tag
  a. Click **Create/Edit Tag**.
  b. Enter a tag key and a tag value, and click **Add**.
     If you have predefined tags, select a predefined pair of tag key and value, and click **Add**.
  c. Click **OK**.
- Delete a tag
  Delete a tag using either of the following methods:
  – In the row containing the tag to be deleted, click **Delete**. Click **OK**.
  – Click **Create/Edit Tag**. In the dialog box that is displayed, click ✕ next to the tag to be deleted and click **OK**.
    You cannot delete up to 20 tags in this way.
  – To delete tags in batches, select the tags and click **Delete** in the upper left corner. Click **OK**.

----End

8.4 Exporting RocketMQ Instances

You can export a list of instances on the RocketMQ console.

Prerequisite

A RocketMQ instance has been purchased.

Procedure

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Export the instance list in either of the following ways:

- Select the desired instances and choose **Export** > **Export selected data to an XLSX file** to export specified instances.
- Choose **Export** > **Export all data to an XLSX file** to export all instances.

----End

8.5 Diagnosing a RocketMQ Instance

You can diagnose an instance to quickly locate faults when message consumption is slow or fails.

Prerequisites

- **A consumer group has been created**, and there are consumers in the group.
- **A topic** has been created.

Procedure

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane on the left, choose **Instance Diagnosis**.

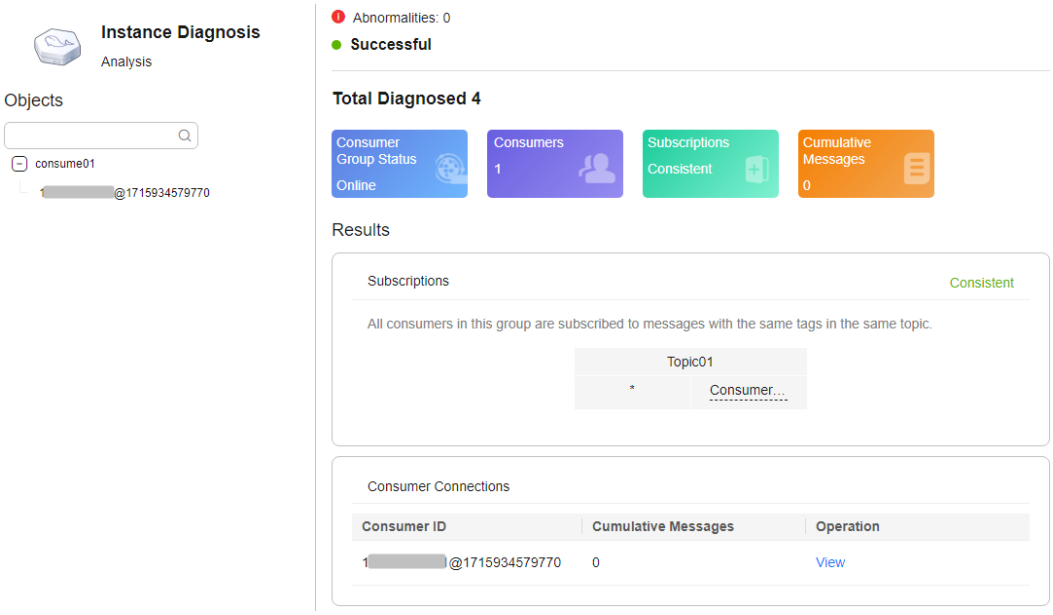
Step 6 Select a consumer group and click **Start Diagnose**.

After the diagnosis is complete, a diagnosis record is displayed in the **Diagnosis Reports** area.

Step 7 Click **View** to view the diagnosis result.

The result contains the active status, number of consumers, subscription consistency, and message accumulation.

Figure 8-1 Diagnosis result



NOTE

If the consumer group is not online, the diagnosis is successful, but one abnormality is displayed.

----End

Exporting Diagnosis Records

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Instance Diagnosis**.

Step 6 Export instance diagnosis records in either of the following ways:

- Select the desired records and choose **Export** > **Export selected data to an XLSX file**.
- Choose **Export** > **Export all data to an XLSX file** to export all the records.

----End

Deleting Diagnosis Records

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane on the left, choose **Instance Diagnosis**.

Step 6 Use either of the following methods to delete diagnosis records:

- In the row containing the record you want to delete, click **Delete**.
- Select multiple records you want to delete and click **Delete** above the record list.

Step 7 In the confirmation dialog box, click **Yes**.

----End

8.6 Restarting Brokers of a RocketMQ Instance

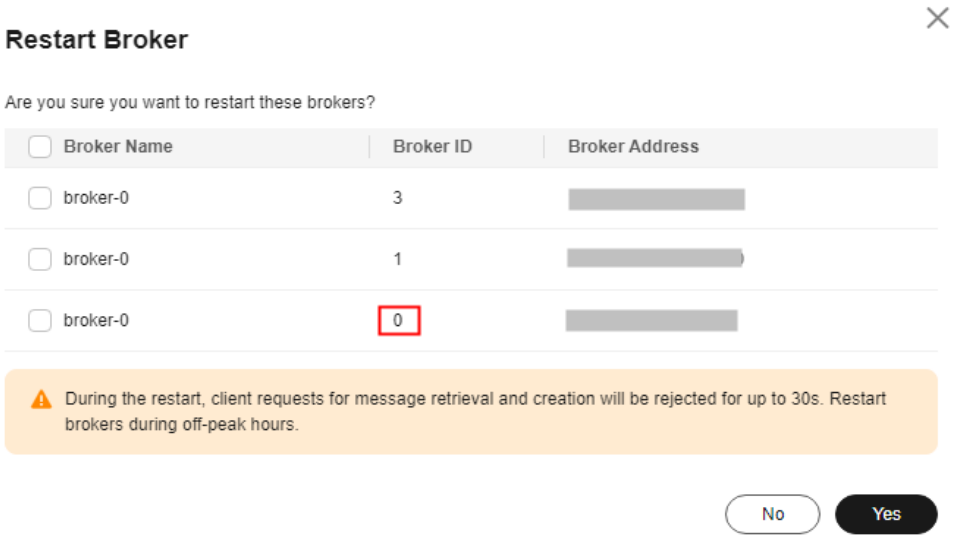
Restart one or more brokers of a RocketMQ instance at a time on the DMS for RocketMQ console.

During the restart, client requests for message retrieval and creation will be rejected for up to 30s. Restart brokers during off-peak hours. Restarting slave brokers does not affect services.

How do I know which broker is the master?

Each broker has one master node and two standby nodes. For example, to purchase one broker, two brokers will be created. Three brokers are deployed in raft mode with broker IDs 1, 2, and 3. When one broker becomes the master, its broker ID is 0. In this case, the broker whose ID is 0 is the master one.

Figure 8-2 Restarting brokers



Notes and Constraints

Available only for RocketMQ 4.8.0 and not for 5.x.

Prerequisite

The RocketMQ instance must be running.

Procedure

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 In the row containing the desired RocketMQ instance, click **Restart Broker**.

Step 5 Select the brokers to be restarted and click **Yes**.

It takes 3 to 15 minutes to restart the brokers.

----End

8.7 Deleting a RocketMQ Instance

For pay-per-use RocketMQ instances, you can delete one or more of them in batches on the console. For a yearly/monthly RocketMQ instance, if you no longer need it, choose **More** > **Unsubscribe** in the **Operation** column. RocketMQ instances will be automatically deleted upon unsubscription.

NOTICE

After a RocketMQ instance is deleted, the instance data will be deleted without backup.

Prerequisites

The RocketMQ instance is pay-per-use and is in the **Running**, **Faulty**, or **Frozen** state.

Deleting a RocketMQ Instance

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Delete pay-per-use instances in either of the following ways:

- In the row containing the RocketMQ instance to be deleted, choose **More** > **Delete**.
- Click a RocketMQ instance to go to the instance details page. In the upper right corner, choose **More** > **Delete**.
- To delete multiple instances at a time, select the instances, and click **Delete** above the instance list.

NOTE

RocketMQ instances in the **Creating**, **Restarting**, or **Resizing** state cannot be deleted.

Step 5 In the **Delete Instance** dialog box, enter **DELETE** and click **OK**.

It takes 1 to 60 seconds to delete a RocketMQ instance.

----End

Deleting a RocketMQ Instance That Failed to Be Created

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Delete RocketMQ instances that failed to be created in either of the following ways:

- Select one or more RocketMQ instances and click **Delete** in the upper left corner.
- In the row containing the RocketMQ instance to be deleted, click **Delete**.

Step 5 In the **Delete Instance** dialog box, enter **DELETE** and click **OK**.

----End

8.8 Configuring SSL of a RocketMQ Instance

Scenario

You can access a RocketMQ instance in plaintext or ciphertext. This section describes how to change the access mode on the console.

RocketMQ instances support the following access modes:

- SSL: Ciphertext access with high security, but lower performance.
- PLAINTEXT: Plaintext access with high performance, but lower security.
- PERMISSIVE: Both ciphertext and plaintext access, depending on the client.

Operation Impact

Table 8-6 lists the impact of changing the access mode.

PERMISSIVE is unavailable for some existing RocketMQ instances. For details, see the console.

Table 8-6 Impact of changing the access mode

Server Access Mode Change	Impact
PLAINTEXT > SSL	• Existing instances will restart and services will be interrupted. Change the access mode on the client. • New instances will not be restarted but services will be interrupted. Change the access mode on the client.
SSL > PLAINTEXT	
PLAINTEXT > PERMISSIVE	Instances will not be restarted and services will not be interrupted.
SSL > PERMISSIVE	

Server Access Mode Change	Impact
PERMISSIVE > PLAINTEXT	• If data is transmitted in plaintext on the client, instances will not be restarted and services will not be interrupted after the access mode is changed on the server. • If data is transmitted in ciphertext on the client, instances will not be restarted but services will be interrupted after the access mode is changed on the server. Change the access mode on the client.
PERMISSIVE > SSL	• If data is transmitted in ciphertext on the client, instances will not be restarted and services will not be interrupted after the access mode is changed on the server. • If data is transmitted in plaintext on the client, instances will not be restarted but services will be interrupted after the access mode is changed on the server. Change the access mode on the client.

Prerequisite

You can change the access mode of a RocketMQ instance only when the instance is in the **Running** state.

Procedure

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance name to go to the instance details page.

Step 5 In the **Connection** area, specify **SSL** option. The **Confirm** dialog box is displayed.

Step 6 Click **OK**. The **Background Tasks** page is displayed.

If the SSL change task is in the **Successful** state, the instance access mode is changed successfully.

----End

9 Modifying RocketMQ Specifications

After creating a RocketMQ instance, you can increase its specifications. **Table 9-1** lists available modification options for RocketMQ 4.8.0. **Table 9-2** lists available modification options for RocketMQ 5.x.

Table 9-1 Specification modification options (RocketMQ 4.8.0)

Modified Object	Increase	Decrease
Broker quantity	√	×
Storage space	√	×
Broker flavor	√	×

After creating a RocketMQ 5.x instance, you can increase its specifications. **Table 9-2** lists available modification options.

Table 9-2 Specification modification options (RocketMQ 5.x)

Modified Object	Increase	Decrease
Storage space (single-node)	√	×
Instance flavor (single-node)	×	×
Storage space (cluster)	√	×
Instance flavor (cluster)	√	√

Constraints

- You can expand the storage space 20 times.

- When brokers are added, the storage space is proportionally expanded based on the current disk space. For example, assume that the original number of brokers of an instance is 1 and the disk size of each broker is 300 GB. If the broker quantity changes to 2 and the disk size of each broker is still 300 GB, the total disk size becomes 600 GB.
- **rocketmq.4u8g.cluster.small** does not support broker flavor increase.

Prerequisites

A RocketMQ instance has been created and is in the **Running** state.

Procedure

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Modify the instance specifications in either of the following ways:

- Locate the row containing the desired instance, choose **More** > **Modify Specifications**.
- Click a RocketMQ instance to go to the instance details page. In the upper right corner, choose **More** > **Modify Specifications**.

Step 5 Configure the broker expansion as required.

- RocketMQ 4.8.0: Specify the required storage space, broker quantity, or broker flavor.
  - Expand the storage space.

    For **Change By**, select **Storage**. For **Storage Space per Broker**, specify a new storage space, and click **Next**. Confirm the configurations and click **Submit**.

    View the new storage space (Storage space per broker x Number of brokers) in the **Used/Available Storage Space (GB)** column in the instance list.

    NOTE

    - Storage space expansion does not affect services.
    - Available storage space = Actual storage space – Storage space for storing logs – Disk formatting loss

      For example, if the storage space is expanded to 700 GB, the storage space for storing logs is 100 GB, and the disk formatting loss is 7 GB, then the available storage space after capacity expansion will be 593 GB.
  - Add brokers.

    For **Change By**, select **Brokers**. Then, enter the number of brokers and click **Next**. Confirm the configurations and click **Submit**.

View the number of brokers in the **Flavor** column in the instance list.

- **Before adding brokers, ensure that the network segments allowed in the security group and the instance ports allowed externally are available. The allowed network segments are the subnet segments of the instance. The allowed port range is 10100–(10100 + 3 × Broker quantity - 1).**
- **If public access is enabled and EIPs are configured for the instance, configure EIPs for the new brokers.**

  NOTE

  Adding brokers does not affect the original brokers or services.

– Increase the broker flavor.

For **Change By**, select **Broker Flavor**. Then, select a new flavor and click **Next**. Confirm the configurations and click **Submit**.

View the broker flavor in the **Flavor** column of the instance list.

Increasing the broker flavor will interrupt the instance for about one minute. If the production TPS is high during the change, the change may fail. Increase the broker quantity first if needed.

- RocketMQ 5.x: Specify the required storage space or instance flavor.
  – Expand the storage space.

  For **Modify By**, select **Storage**. For **Storage**, specify a new storage space, and click **Next**. Confirm the configurations and click **Submit**.

  View the new storage space in the **Used/Available Storage Space (GB)** column in the instance list.

  NOTE

  - Storage space expansion does not affect services.
  - Available storage space = Actual storage space – Storage space for storing logs – Disk formatting loss

    For example, if the storage space is expanded to 700 GB, the storage space for storing logs is 100 GB, and the disk formatting loss is 7 GB, then the available storage space after capacity expansion will be 593 GB.

  – Increase the instance flavor.

  For **Modify By**, select **Flavor**. Then, select a new flavor and click **Next**. Confirm the configurations and click **Submit**.

  View the new flavor in the **Flavor** column of the instance list.

  Before scaling the instance, ensure that the subnet segments are allowed in the security group.

----End

10 Migrating Metadata

10.1 RocketMQ Metadata Migration Overview

RocketMQ metadata contains topics and consumer groups excluding message production or consumption records. To use the original topics and consumer groups, migrate their metadata to a specified RocketMQ instance, without the need of manual creation.

RocketMQ service migration involves the following scenarios:

- Migrating RocketMQ instance metadata from others, which includes:
  - Metadata of others' RocketMQ
  - Metadata of self-hosted RocketMQ instance
  - Metadata of another cloud RocketMQ instance
- Migrating RocketMQ instance metadata from RabbitMQ

10.2 Migrating RocketMQ Instance Metadata from Others

Migrate metadata from others' RocketMQ to DMS for RocketMQ.

You can use one of the following migration methods as required:

- **Method 1: Run the mqadmin Command to Export the Source Instance Metadata and Then Create a Migration Task in DMS for RocketMQ**: Run the **mqadmin** command to export the source instance metadata and then create a migration task in DMS for RocketMQ.
- **Method 2: Export the Source Topics and Consumer Groups and Import Them to DMS for RocketMQ Using Scripts**: Export the source topics and consumer groups (when the **mqadmin** command cannot be used to export metadata) and import them to DMS for RocketMQ using scripts.

NOTICE

When metadata is imported to topics and consumer groups, they are created on all brokers. In v4.8.0, the maximum topics that can be imported through migration is the maximum topics per broker. For example, a rocketmq.4u8g.cluster instance has two brokers and the maximum topics per broker is 4000, then at most 4000 instance topics can be imported through migration.

Prerequisites

- A RocketMQ instance has been purchased.
- A Linux host is available, **JDK v1.8.111 or later** has been installed on the host, and related environment variables have been configured. For details, see **Getting Started with RocketMQ to Produce and Consume Messages**.
- A network environment is prepared.

  A RocketMQ instance can be accessed within a VPC or over a public network. For public network access, the producer and consumer must have public access permissions. Configure the security group as follows.

Table 10-1 Security group rules (RocketMQ 4.8.0)

Direction	Protocol	Port	Source	Description
Inbound	TCP	8200	IP address or IP address group of the RocketMQ client	The port is used for public network access to metadata nodes using TCP.
Inbound	TCP	10101-10199		The port is used for public access to service nodes using TCP.

Table 10-2 Security group rules (RocketMQ 5.x)

Direction	Protocol	Port	Source	Description
Inbound	TCP	8200	IP address or IP address group of the RocketMQ client	The port is used for public network access to instances using TCP.
Inbound	TCP	8081		The port is used for public network access to instances using gRPC.
Inbound	TCP	10101		The port is used for public access to service nodes using TCP.

Method 1: Run the mqadmin Command to Export the Source Instance Metadata and Then Create a Migration Task in DMS for RocketMQ

Metadata of others', self-hosted, or another DMS for RocketMQ instance

Step 1 Log in to the prepared Linux host and download the RocketMQ software package.

```
wget https://archive.apache.org/dist/rocketmq/4.9.8/rocketmq-all-4.9.8-bin-release.zip
```

Step 2 Decompress the software package.

```
unzip rocketmq-all-4.9.8-bin-release.zip
```

Step 3 (Optional) If **ACL** is enabled for the RocketMQ instance, authentication is required when you run the **mqadmin** command.

Switch to the directory where the decompressed software package is stored and add the following content to the **conf/tools.yml** file:

```
accessKey:*******
secretKey:*******
```

accessKey and **secretKey** are the username and secret key set on the **Users** page of the console. For details, see **Creating a User**.

Step 4 Go to the directory where the decompressed software package is stored and run the following command to query the cluster name:

```
sh ./bin/mqadmin clusterList -n {nameserver address and port number}
```

For example, if the nameserver address and port number are **192.168.0.65:8100**, run the following command:

```
sh ./bin/mqadmin clusterList -n 192.168.0.65:8100
```

Step 5 Run the following command to export metadata:

- If SSL is disabled, run the following command:

  ```
  sh ./bin/mqadmin exportMetadata -n {nameserver address and port number} -c {RocketMQ cluster name} -f {Path for storing the exported metadata file}
  ```

  For example, if the nameserver address and port number are **192.168.0.65:8100**, the RocketMQ cluster name is **DmsCluster**, and the path for storing exported metadata files is **/tmp/rocketmq/export**, run the following command:

  ```
  sh ./bin/mqadmin exportMetadata -n 192.168.0.65:8100 -c DmsCluster -f /tmp/rocketmq/export
  ```

- If SSL is enabled, run the following command:

  ```
  JAVA_OPT=-Dtls.enable=true sh ./bin/mqadmin exportMetadata -n {nameserver address and port number} -c {RocketMQ cluster name} -f {path for storing the exported metadata file}
  ```

  For example, if the nameserver address and port number are **192.168.0.65:8100**, the RocketMQ cluster name is **DmsCluster**, and the path for storing exported metadata files is **/tmp/rocketmq/export**, run the following command:

  ```
  JAVA_OPT=-Dtls.enable=true sh ./bin/mqadmin exportMetadata -n 192.168.0.65:8100 -c DmsCluster -f /tmp/rocketmq/export
  ```

----End

Migrate metadata on the console.

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the instance details page.

Step 5 In the navigation pane, choose **Metadata Migration**.

Step 6 Click **Create Migration Task**.

Step 7 Configure the migration task by referring to **Table 10-3**.

Table 10-3 Migration task parameters

Parameter	Description
Task Type	Select **From self-built RocketMQ to cloud.**
Task Name	Unique name of the migration task. A task name must meet the following requirements: • Contains 4 to 64 characters. • Contains only letters, digits, hyphens (-), and underscores (_), and must start with a letter.
Overwrite	• If this option is enabled, configurations in the metadata file with the same name as the uploaded file will be modified. Assume that Topic01 on the source instance has three read queues, and Topic01 on the DMS instance has two read queues. If **Overwrite** is enabled, Topic01 on the DMS instance will have three read queues after migration. • If this option is disabled, migration of the metadata file with the same name as the uploaded file will fail. Assume that the source instance has Topic01 and Topic02, and the DMS instance has Topic01 and Topic03. If **Overwrite** is disabled, migration of the source Topic01 will fail.
Metadata	See **Step 5**.

Step 8 Click **OK**.

After the migration is complete, view **Task Status** in the migration task list.

- If **Task Status** is **Complete**, all metadata has been successfully migrated.
- If **Task Status** is **Failed**, some or all metadata fails to be migrated. Click the migration task name to go to the migration task details page. In the **Migration Result** area, view the name of the topic or consumer group that

fails to be migrated, the failure cause, and the solution. After the fault is rectified, perform the following steps.

Step 9 Migrate the production service to the RocketMQ instance.

Change the metadata connection address on the production client to the metadata connection address of the RocketMQ instance and then restart the production service. New messages will be sent to the RocketMQ instance.

Step 10 Migrate the consumption service to the RocketMQ instance.

After all messages in the consumer group are consumed, change the metadata connection address of the consumer client to the metadata connection address of the RocketMQ instance. New messages will be consumed from the RocketMQ instance.

Step 11 If there are multiple source RocketMQ instances, migrate services from them one by one by referring to **Step 1** to **Step 10**.

----End

Method 2: Export the Source Topics and Consumer Groups and Import Them to DMS for RocketMQ Using Scripts

Metadata of others', self-hosted, or another DMS for RocketMQ instance

Step 1 Log in to the console of another vendor and export the lists of source topics and consumer groups.

Step 2 Create the **topics.txt** and **groups.txt** files and add the source topic list and consumer group list to the files respectively. Each line contains a topic or consumer group name. For example:

```
topic-01
topic-02
...
topic-n
```

CAUTION

The **groups.txt** file cannot contain blank lines (for example, a newline character at the end of a consumer group name). Otherwise, consumer groups with empty names will be created when the lists are imported to the RocketMQ instance.

----End

Import the source topics and consumer groups to DMS for RocketMQ using the following script:

Step 1 Log in to the prepared Linux host and download the RocketMQ software package.

```
wget https://archive.apache.org/dist/rocketmq/4.9.8/rocketmq-all-4.9.8-bin-release.zip
```

Step 2 Decompress the software package.

```
unzip rocketmq-all-4.9.8-bin-release.zip
```

Step 3 (Optional) If **ACL** is enabled for the RocketMQ instance, authentication is required when you run the **mqadmin** command.

Switch to the directory where the decompressed software package is stored and add the following content to the **conf/tools.yml** file:

```
accessKey:*******
secretKey:*******
```

accessKey and **secretKey** are the username and secret key set on the **Users** page of the console.

Step 4 Go to the **bin** directory of the decompressed software package and upload **topics.txt** and **groups.txt** to this directory.

Step 5 Run the following script to import the source topics and consumer groups to DMS for RocketMQ:

```
#!/bin/bash

# Read groups from groups.txt file
groups=()
while read -r group; do
  groups+=("$group")
done < "groups.txt"

# Read topics from topic.txt file
topics=()
while read -r topic; do
  topics+=("$topic")
done < "topics.txt"

# Add topics
for topic in "${topics[@]}"; do
  echo "Adding topic: $topic"
  sh mqadmin updateTopic -n <namesrvIp:8100> -c DmsCluster -t "$topic"
done

# Add consumer groups
for group in "${groups[@]}"; do
  echo "Adding consumer group: $group"
  sh mqadmin updateSubGroup -n <namesrvIp:8100> -c DmsCluster -g "$group"
done
```

namesrvIp:8100 indicates the address of the RocketMQ instance.

Step 6 Log in to the console.

Step 7 Click in the upper left corner to select a region.

NOTE

Select the region where your RocketMQ instance is located.

Step 8 Click and choose **Application** > **Distributed Message Service for RocketMQ** to open the console of DMS for RocketMQ.

Step 9 Click a RocketMQ instance name to go to the instance details page.

Step 10 In the navigation pane, choose **Metadata Migration**.

Step 11 Click the task name to go to the task details page. **Migration Result** shows whether the topic and consumer group list are imported.

Step 12 Migrate the production service to the RocketMQ instance.

Change the metadata connection address on the production client to the metadata connection address of the RocketMQ instance and then restart the production service. New messages will be sent to the RocketMQ instance.

Step 13 Migrate the consumption service to the RocketMQ instance.

After all messages in the consumer group are consumed, change the metadata connection address of the consumer client to the metadata connection address of the RocketMQ instance. New messages will be consumed from the RocketMQ instance.

Step 14 If there are multiple source RocketMQ instances, migrate services from them one by one by referring to **Step 1** to **Step 10**.

----End

10.3 Migrating RabbitMQ Metadata to a RocketMQ Instance

On the console, you can migrate RabbitMQ metadata to your DMS RocketMQ instance.

Prerequisites

- A RocketMQ instance has been purchased.
- **RabbitMQ plug-ins** have been enabled.
- A RabbitMQ 3.7.17/3.8.35 instance has been purchased.

Step 1: Obtain RabbitMQ Metadata

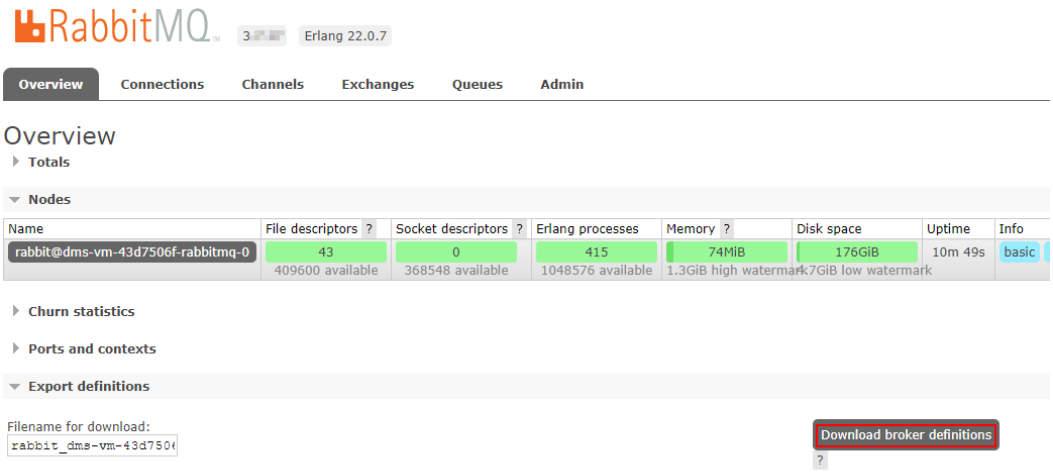
Step 1 Enter **http://***IP address of your RabbitMQ***:15672/** in the address box of the browser to access the open-source RabbitMQ console.

Step 2 On the login page, enter the username and password, and click **Login**.

The default username and password are the ones configured in RabbitMQ instance purchase.

Step 3 On the **Overview** tab page, click **Download broker definitions** to export the metadata.

Figure 10-1 Exporting metadata



----End

Step 2: Migrate Metadata on the Console

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance to go to the details page.

Step 5 In the navigation pane, choose **Metadata Migration**.

Step 6 Click **Create Migration Task**.

Step 7 Configure the migration task by referring to **Table 10-4**.

Table 10-4 Migration task parameters

Parameter	Description
Task Type	Select **From RabbitMQ to RocketMQ**.
Task Name	Unique name of the migration task. A task name must meet the following requirements: • Contains 4 to 64 characters. • Contains only letters, digits, hyphens (-), and underscores (_), and must start with a letter.

Parameter	Description
Overwrite	• If this option is enabled, configurations in the metadata file with the same name as the uploaded file will be modified. Assume that Topic01 on the source instance has three read queues, and Topic01 on the DMS instance has two read queues. If **Overwrite** is enabled, Topic01 on the DMS instance will have three read queues after migration. • If this option is disabled, migration of the metadata file with the same name as the uploaded file will fail. Assume that the source instance has Topic01 and Topic02, and the DMS instance has Topic01 and Topic03. If **Overwrite** is disabled, migration of the source Topic01 will fail.
Metadata	Upload the **RabbitMQ metadata**.

Step 8 Click **OK**.

After the migration is complete, view **Task Status** in the migration task list.

- If **Task Status** is **Complete**, all metadata has been successfully migrated.
- If **Task Status** is **Failed**, some or all metadata fails to be migrated.

  Click the migration task name to go to the migration task details page. In the **Migration Result** area, view the name of the topic or consumer group that fails to be migrated, the failure cause, and the solution.

----End

11 Viewing Monitoring Metrics and Configuring Alarms

11.1 Viewing RocketMQ Monitoring Metrics

Cloud Eye monitors RocketMQ instance metrics in real time. You can view these metrics on the console.

Prerequisites

A RocketMQ instance has been purchased.

Viewing RocketMQ Metrics

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 Click a RocketMQ instance name to go to the instance details page.

Step 5 Choose **Monitoring** in the navigation pane.

Step 6 View monitoring data by the instance, brokers, topics, consumer groups, and dead letter queues.

Step 7 (Optional) Click **View details** on the **By Instance**, **By Broker**, **By Topic**, **By Consumer Group**, or **By Dead Letter Queue** tab page to go to the Cloud Eye console.

On the instance list page, you can also click **View Metric** in the row containing the desired instance to go to the Cloud Eye console.

On the Cloud Eye console, you can select metrics and rearrange their order.

For example, if you only need to view the **Created Messages** and **Retrieved Messages** metrics on the **By Broker** tab page, do as follows:

1. On the **By Broker** tab page, click **Select Metric**.
2. Select **Created Messages** and **Retrieved Messages**, and click **OK**.
3. Drag and drop the selected metrics to desired locations to rearrange the order.

----End

11.2 DMS for RocketMQ Metrics

Introduction

This section describes the metrics that DMS for RocketMQ reports to Cloud Eye. You can view metrics and alarms by using the DMS for RocketMQ console.

Namespace

SYS.DMS

Instance Metrics

Table 11-1 Instance metrics

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
instance_produce_msg	Created Messages	Number of messages received by the instance per minute Unit: count	> 0	RocketMQ instance	1 minute
instance_consume_msg	Retrieved Messages	Number of messages retrieved from the instance per minute Unit: count	> 0	RocketMQ instance	1 minute
current_topics	Topics	Number of topics in the instance Unit: count	≥ 0	RocketMQ instance	1 minute

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
current_queues	Queues	Number of queues in the instance Unit: count	≥ 0	RocketMQ instance	1 minute
instance_accumulation	Accumulated Messages	Total number of messages accumulated in all consumer groups of the instance Unit: count	≥ 0	RocketMQ instance	1 minute
instance_produce_scheduled_msg	Scheduled Messages Created	Number of scheduled messages received by the instance per minute Unit: count	≥ 0	RocketMQ instance	1 minute
instance_retention_period	Instance Message Retention Period	Message retention period of the instance Unit: ms	≥ 0	RocketMQ instance	1 minute
instance_disk_usage	Instance Disk Usage	Disk usage of the instance Unit: %	≥ 0	RocketMQ instance	1 minute
instance_produce_rate	Instance Creation Rate	Creation rate of the instance Unit: count/s	≥ 0	RocketMQ instance	1 minute
instance_consume_rate	Instance Retrieval Rate	Retrieval rate of the instance Unit: count/s	≥ 0	RocketMQ instance	1 minute

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
instance_produce_rate_for_ratelimit	Converted Production TPS	Production TPS converted by message size and type, for rate limiting Unit: count/s **NOTE** Available only for RocketMQ 5.x instances.	≥ 0	RocketMQ instance	1 minute
instance_consume_rate_for_ratelimit	Converted Consumption TPS	Consumption TPS converted by message size and type, for rate limiting Unit: count/s **NOTE** Available only for RocketMQ 5.x instances.	≥ 0	RocketMQ instance	1 minute
instance_produce_ratelimit_percentage	Proportion of Production TPS	Proportion of production TPS limit that is converted Unit: % **NOTE** Available only for RocketMQ 5.x instances.	≥ 0	RocketMQ instance	1 minute
instance_consume_ratelimit_percentage	Proportion of Consumption TPS	Proportion of consumption TPS limit that is converted Unit: % **NOTE** Available only for RocketMQ 5.x instances.	≥ 0	RocketMQ instance	1 minute

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
instance_produce_ratelimit_times	Production Rate Limits	Number of production rate limit occurrences in one minute Unit: count **NOTE** Available only for RocketMQ 5.x instances.	≥ 0	RocketMQ instance	1 minute
instance_consume_ratelimit_times	Consumption Rate Limits	Number of consumption rate limit occurrences in one minute Unit: count **NOTE** Available only for RocketMQ 5.x instances.	≥ 0	RocketMQ instance	1 minute

Broker Metrics

Available for RocketMQ 4.8.0 instances.

Table 11-2 Broker metrics

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
broker_produce_msg	Created Messages	Number of messages received by the broker per minute Unit: count	> 0	RocketMQ instance broker	1 minute
broker_consume_msg	Retrieved Messages	Number of messages retrieved from the broker per minute Unit: count	> 0	RocketMQ instance broker	1 minute

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
broker_produce_rate	Message Creation Rate	Number of messages received by the broker per second Unit: count/s	> 0	RocketMQ instance broker	1 minute
broker_consume_rate	Message Retrieval Rate	Number of messages retrieved from the broker per second Unit: count/s	> 0	RocketMQ instance broker	1 minute
broker_total_bytes_in_rate	Inbound Traffic	Inbound traffic to the broker per second Unit: byte/s	> 0	RocketMQ instance broker	1 minute
broker_total_bytes_out_rate	Outbound Traffic	Outbound traffic from the broker per second Unit: byte/s	> 0	RocketMQ instance broker	1 minute
broker_cpu_core_load	Average Load per CPU Core	Average load of each CPU core in the broker VM	> 0	RocketMQ instance broker	1 minute
broker_disk_usage	Disk Capacity Usage	Disk usage of the broker VM Unit: %	0–100	RocketMQ instance broker	1 minute
broker_memory_usage	Memory Usage	Memory usage of the broker VM Unit: %	0–100	RocketMQ instance broker	1 minute
broker_alive	Broker Status	Indicates whether the broker is alive.	**1**: alive **0**: not alive	RocketMQ instance broker	1 minute

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
broker_connections	Connections	Number of connections used by the VM Unit: count	≥ 0	RocketMQ instance broker	1 minute
broker_cpu_usage	CPU Usage	CPU usage on the VM Unit: %	≥ 0	RocketMQ instance broker	1 minute
broker_disk_read_await	Average Disk Read Time	Average time for each disk I/O read Unit: ms	≥ 0	RocketMQ instance broker	1 minute
broker_disk_write_await	Average Disk Write Time	Average time for each disk I/O write Unit: ms	≥ 0	RocketMQ instance broker	1 minute
broker_produce_p99	Message Creation Processing (99th Percentile)	The 99th percentile of time taken to process all creation requests, in ascending order Unit: ms	≥ 0	RocketMQ instance broker	1 minute
broker_produce_p999	Message Creation Processing (99.9th Percentile)	The 99.9th percentile of time taken to process all creation requests, in ascending order Unit: ms	≥ 0	RocketMQ instance broker	1 minute
broker_retention_period	Message Retention Period	How long ago the earliest message was saved on the broker Unit: hour	≥ 0	RocketMQ instance broker	1 minute

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
broker_produce_success_rate	Creation Success Rate	Percentage of creations that were successfully requested on the broker Unit: %	≥ 0	RocketMQ instance broker	1 minute
broker_produce_scheduled_msg	Scheduled Messages Created per Minute	Number of scheduled messages created on the broker per minute Unit: count	≥ 0	RocketMQ instance broker	1 minute
broker_disk_read_rate	Disk Read Speed	Read traffic on the disk Unit: byte/s	≥ 0	RocketMQ instance broker	1 minute
broker_disk_write_rate	Disk Write Speed	Write traffic on the disk Unit: byte/s	≥ 0	RocketMQ instance broker	1 minute

Topic Metrics

Table 11-3 Topic metrics

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
topic_produce_msg	Created Messages	Number of messages received by the topic per minute Unit: count	> 0	RocketMQ instance queue	1 minute

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
topic_consume_msg	Retrieved Messages	Number of messages retrieved from the topic per minute Unit: count	> 0	RocketMQ instance queue	1 minute
topic_produce_rate	Message Creation Rate	Number of messages received by the topic per second Unit: count/s	> 0	RocketMQ instance queue	1 minute
topic_consume_rate	Message Retrieval Rate	Number of messages retrieved from the topic per second Unit: count/s	> 0	RocketMQ instance queue	1 minute
topic_bytes_in_rate	Message Creation	Message creation traffic of the topic Unit: byte/s	≥ 0	RocketMQ instance queue	1 minute
topic_bytes_out_rate	Message Retrieval	Message retrieval traffic of the topic Unit: byte/s	≥ 0	RocketMQ instance queue	1 minute

Consumer Group Metrics

Table 11-4 Consumer group metrics

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
group_consume_msg	Retrieved Messages	Number of messages retrieved by the consumer group per minute Unit: count **NOTE** This metric is available only when **Topic** is set to **All topics** on the **By Consumer Group** tab page.	> 0	Consumer group of a RocketMQ instance	1 minute
group_accumulation	Available Messages	Number of messages accumulated in the consumer group Unit: count **NOTE** This metric is available only when **Topic** is set to **All topics** on the **By Consumer Group** tab page.	> 0	Consumer group of a RocketMQ instance	1 minute

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
group_topic_consume_msg	Retrieved Messages	Number of messages in the specified topic that are retrieved by the consumer group per minute Unit: count **NOTE** This metric is available only when **Topic** is set to a specified topic on the **By Consumer Group** tab page.	> 0	Consumer group of a RocketMQ instance	1 minute
group_topic_consume_rate	Message Retrieval Rate	Number of messages in the specified topic that are retrieved by the consumer group per second Unit: count/s **NOTE** This metric is available only when **Topic** is set to a specified topic on the **By Consumer Group** tab page.	> 0	Consumer group of a RocketMQ instance	1 minute

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
group_topic_accumulation	Available Messages	Number of messages in a specific topic Unit: count **NOTE** This metric is available only when **Topic** is set to a specified topic on the **By Consumer Group** tab page.	> 0	Consumer group of a RocketMQ instance	1 minute

Dead Letter Queue Metrics

Table 11-5 Dead letter queue metrics

Metric ID	Metric Name	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
dlq_accumulation	Messages in the Dead Letter Queue	Number of messages in the dead letter queue Unit: count	≥ 0	Dead letter queue of a RocketMQ instance	1 minute

Dimensions

Key	Value
reliablemq_instance_id	RocketMQ instance
reliablemq_topics	RocketMQ instance queue
reliablemq_groups	Consumer group of a RocketMQ instance
reliablemq_groups_topics	Consumer group of a RocketMQ instance queue
reliablemq_dlq_topics	Dead letter queue of a RocketMQ instance

11.3 Configuring RocketMQ Alarms

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 11-6 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 by referring to **Modifying Specifications**.
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 by referring to **Modifying Specifications**. 2. Redeploy existing topics to the new brokers by referring to **Modifying RocketMQ Topic Configurations**.

Metric Name	Normal Range	Alarm Policy	Approach Upper Limit	Metric Description and Alarm Handling Suggestions
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 by referring to **Modifying Specifications**. 2. Redeploy existing topics to the new brokers by referring to **Modifying RocketMQ Topic Configurations**.

Configuring RocketMQ Alarms

Step 1 Log in to the console.

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

NOTE

Select the region where your RocketMQ instance is located.

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

Step 4 In the row containing the desired instance, click **View Metric**.

You are redirected to the metric monitoring page on 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, an alarm is generated if **Raw data** of disk capacity usage exceeds 85% for three consecutive periods. If the alarm is not handled on time, it will notify.

Figure 11-1 Setting the alarm policy and alarm severity

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

----End

12 Viewing RocketMQ Audit Logs

Cloud Trace Service (CTS) records DMS for RocketMQ operations. You can query, audit, and backtrack them later.

Prerequisite

CTS has been enabled.

DMS for RocketMQ Operations Supported by CTS

Table 12-1 DMS for RocketMQ operations that can be recorded by CTS

Operation	Resource Type	Trace Name
Successfully creating a topic	reliability	RocketMQ_Topic_CreationSuccess
Failing to create a topic	reliability	RocketMQ_Topic_CreationFailure
Successfully modifying a topic	reliability	RocketMQ_Topic_ModifySuccess
Failing to modify a topic	reliability	RocketMQ_Topic_ModifyFailure
Successfully deleting a topic	reliability	RocketMQ_Topic_DeletionSuccess
Failing to delete a topic	reliability	RocketMQ_Topic_DeletionFailure
Successfully deleting topics in batches	reliability	RocketMQ_Batch_Topic_DeletionSuccess
Failing to delete topics in batches	reliability	RocketMQ_Batch_Topic_DeletionFailure
Successfully modifying topics in batches	reliability	RocketMQ_Batch_Topic_ModifySuccess

Operation	Resource Type	Trace Name
Failing to modify topics in batches	reliability	RocketMQ_Batch_Topic_ModifyFailure
Successfully creating a consumer group	reliability	RocketMQ_Create_GroupSuccess
Failing to create a consumer group	reliability	RocketMQ_Create_GroupFailure
Successfully editing a consumer group	reliability	RocketMQ_Group_ModifySuccess
Failing to edit a consumer group	reliability	RocketMQ_Group_ModifyFailure
Successfully deleting a consumer group	reliability	RocketMQ_Group_DeletionSuccess
Failing to delete a consumer group	reliability	RocketMQ_Group_DeletionFailure
Successfully deleting consumer groups in batches	reliability	RocketMQ_Batch_Group_DeletionSuccess
Failing to delete consumer groups in batches	reliability	RocketMQ_Batch_Group_DeletionFailure
Successfully editing consumer groups in batches	reliability	RocketMQ_Batch_Group_ModifySuccess
Failing to edit consumer groups in batches	reliability	RocketMQ_Batch_Group_ModifyFailure
Successfully restarting an instance node	reliability	restartInstanceBrokerSuccess
Failing to restart an instance node	reliability	restartInstanceBrokerFailure
Successfully deleting a background task	reliability	deleteDMSBackendJobSuccess
Failing to delete a background task	reliability	deleteDMSBackendJobFailure
Successfully creating an order for creating an instance	reliability	createDMSInstanceOrderSuccess

Operation	Resource Type	Trace Name
Failing to create an order for creating an instance	reliability	createDMSInstanceOrderFailure
Successfully submitting a request to modify an instance order	reliability	modifyDMSInstanceOrderSuccess
Failing to submit a request to modify an instance order	reliability	modifyDMSInstanceOrderFailure
Successfully submitting a request to scale up an instance	reliability	extendDMSInstanceSuccess
Failing to submit a request to scale up an instance	reliability	extendDMSInstanceFailure
Successfully deleting an instance that failed to be created	reliability	deleteDMSCreateFailureInstancesSuccess
Failing to delete an instance that failed to be created	reliability	deleteDMSCreateFailureInstancesFailure
Successfully submitting a request to delete multiple instances at a time	reliability	batchDeleteDMSInstanceSuccess
Failing to submit a request to delete multiple instances at a time	reliability	batchDeleteDMSInstanceFailure
Successfully submitting a request to modify instance information	reliability	modifyDMSInstanceInfoSuccess
Failing to submit a request to modify instance information	reliability	modifyDMSInstanceInfoFailure
Deleting multiple instance tasks at a time	reliability	batchDeleteDMSInstanceTask

Operation	Resource Type	Trace Name
Successfully unfreezing an instance	reliability	unfreezeDMSInstanceTaskSuccess
Failing to unfreeze an instance	reliability	unfreezeDMSInstanceTaskFailure
Successfully freezing an instance	reliability	freezeDMSInstanceTaskSuccess
Failing to freeze an instance	reliability	freezeDMSInstanceTaskFailure
Successfully deleting an instance	reliability	deleteDMSInstanceTaskSuccess
Failing to delete an instance	reliability	deleteDMSInstanceTaskFailure
Successfully creating an instance	reliability	createDMSInstanceTaskSuccess
Failing to create an instance	reliability	createDMSInstanceTaskFailure
Successfully scaling up an instance	reliability	extendDMSInstanceTaskSuccess
Failing to scale up an instance	reliability	extendDMSInstanceTaskFailure
Successfully modifying instance information	reliability	modifyDMSInstanceInfoTaskSuccess
Failing to modify instance information	reliability	modifyDMSInstanceInfoTaskFailure

Viewing Audit Logs

See **Querying Real-Time Traces**.

