

# Distributed Message Service

## User Guide

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# 1 Permissions Management

## 1.1 Creating a User and Granting DMS Permissions

This chapter describes how to use [IAM](#) to implement fine-grained permissions control for your DMS resources. With IAM, you can:

- Create IAM users for employees based on your enterprise's organizational structure. Each IAM user will have their own security credentials for accessing DMS resources.
- Grant only the permissions required for users to perform a specific task.
- Entrust a HUAWEI CLOUD account or cloud service to perform efficient O&M on your DMS resources.

If your HUAWEI CLOUD account does not require individual IAM users, skip this section.

This section describes the procedure for granting permissions (see [Figure 1-1](#)).

### Prerequisites

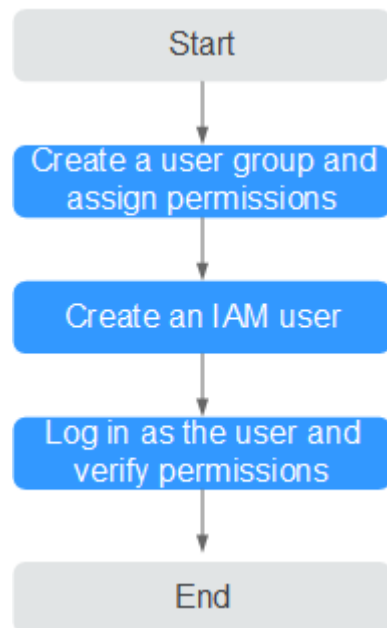
Learn about the role (see [Table 1-1](#)) supported by ECS For the permissions of other services, see [Permissions Policies](#).

**Table 1-1** DMS system-defined role

Role Name	Description	Operation
DMS Administrator	Administrator permissions for DMS.	Create queues, create consumer groups, and create and retrieve messages.

## Process Flow

**Figure 1-1** Process of granting DMS permissions



1. **Create a user group and assign permissions** to it.  
Create a user group on the IAM console, and attach the **DMS Administrator** role to the group.
2. **Create an IAM user**.  
Create a user on the IAM console and add the user to the group created in **1**.
3. **Log in** and verify permissions.  
Log in to the DMS console by using the created user, and verify that the user has the administrator permissions for DMS.

# 2 Managing Queues and Messages

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## 2.1 Getting Started


### 2.1.1 Creating a Queue

#### Scenario

The first task in using DMS is to create one or more queues.

#### Procedure

**Step 1** Log in to the management console.

**Step 2** Click  in the upper left corner of the management console and select a region.

 **NOTE**

Select the same region as your application service.

**Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.

**Step 4** In the navigation pane, choose **Queue Manager**.

**Step 5** Click **Create Queue**.

The remaining number of queues that can be created is displayed above the **Delete** button. By default, a maximum of 30 queues can be created under a project. To create more than the default number of queues, contact customer service to increase your quota.

**Step 6** Specify parameters listed in [Table 2-1](#).

**Table 2-1** Parameter description

Parameter	Description
Name	<p>Unique name of a queue.</p> <p>When you create a queue, a default queue name is generated, which you can change if required. A queue name is 1 to 64 characters long. Only letters, digits, underscores (_), and hyphens (-) are allowed.</p> <p>The queue name cannot be modified after creation of the queue.</p>
Type	<p><b>Standard queue</b> or <b>Advanced queue</b></p>
Mode	<p>When the queue type is standard, the queue mode can be:</p> <ul style="list-style-type: none"> <li>• <b>Partition-level FIFO:</b> Messages may be retrieved out of sequence, but the concurrency is higher.</li> <li>• <b>Global FIFO:</b> Messages are retrieved in the order they were sent.</li> </ul> <p>When the queue type is <b>Advanced queue</b>, the queue mode can be:</p> <ul style="list-style-type: none"> <li>• <b>High throughput:</b> All message replicas are flushed to disk asynchronously. Select this mode when high message delivery performance is required.</li> <li>• <b>High reliability:</b> All message replicas are flushed to disk synchronously. Select this mode when high message delivery reliability is required.</li> </ul>
Dead Letter Queue	<p>This parameter is displayed only if the <b>Queue Type</b> is set to <b>Standard queue</b>.</p> <p>An indicator of whether to enable dead letter queue, which accommodates messages that cannot be correctly retrieved.</p> <p>If a message fails to be retrieved for a preset number of times, it will be sent to the dead letter queue and retained for 72 hours. You can then retrieve the message from the dead letter queue.</p> <p>Messages in the dead letter queue are specific to individual consumer groups, and consumer groups cannot retrieve each other's dead letter messages.</p> <p>Dead letter messages from global FIFO queues are sent to the dead letter queue in the FIFO order.</p> <p>By default, <b>Dead Letter Queue</b> is disabled.</p>
Message Retention Period (h)	<p>This parameter is available only for advanced queues.</p> <p>The number of hours for which messages will be preserved in an advanced queue. Messages older than that period will be deleted. Deleted messages are not retrievable to consumer groups.</p> <p>Value range: integers from 1 to 72</p> <p>Default value: <b>72</b></p>

Parameter	Description
Maximum Retrievals	This parameter is displayed only if <b>Dead Letter Queue</b> is enabled. The maximum number of times a message can be retrieved before it is sent to the dead letter queue. Value range: 1 to 100 Default value: <b>3</b>
Description (optional)	The description is 0 to 160 characters long and cannot contain angle brackets (< and >).

**Step 7** Click **OK**.

After the queue is created, you can click the name of a queue to view queue details.

----End

## 2.1.2 Creating a Consumer Group

### Scenario

A consumer group must be created in order to retrieve messages. A maximum of three consumer groups can be created in each queue.


Messages in a queue are retrievable to all consumer groups created in that queue.

### Prerequisites

A queue has been created.

### Procedure

**Step 1** Log in to the management console.

**Step 2** Click  in the upper left corner of the management console and select a region.

 **NOTE**

Select the same region as your application service.

**Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.

**Step 4** In the navigation pane, choose **Queue Manager**.

**Step 5** Open the **Create Consumer Group** dialog box using either of the methods:

- Method 1  
In the queue list, choose **More > Create Consumer Group** in the same row as the queue for which you want to create a consumer group.
- Method 2

- a. Click the name of a queue for which you want to create a consumer group.
- b. On the queue details page, click the **Consumer Groups** tab.
- c. Click **Create Consumer Group**.

**Step 6** Specify **Consumer Group Name**.

A default consumer group name is generated, which you can change if required. A consumer group name is 1 to 32 characters long. Only letters, digits, underscores (\_), and hyphens (-) are allowed. Consumer group names must be unique within their queue.

**Step 7** Click **OK**.

----End

## 2.1.3 Creating a Message

### Scenario

Messages can be sent to a chosen queue.

The size of each message, including the message body and attributes, cannot exceed 512 KB. The body includes the message content and a few bytes of additional JSON information.


If the Kafka SDK is used to create messages, the maximum size of a single message is 10 MB. If the DMS console is used to create messages, the maximum size of a single message is 512 KB.

### Prerequisites

A queue has been created.

### Procedure

**Step 1** Log in to the management console.

**Step 2** Click  in the upper left corner of the management console and select a region.

 **NOTE**

Select the same region as your application service.

**Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.

**Step 4** In the navigation pane, choose Queue Manager.

**Step 5** Open the **Create Message** dialog box using either of the methods:

- Method 1  
In the queue list, click **Create Message** in the same row as the queue to which messages will be sent.
- Method 2

- a. Click the name of the queue to which messages will be sent.
- b. Click **Create Message** in the upper right corner of the queue details page.

**Step 6** Specify parameters as shown in [Table 2-2](#).

If you want to add message labels, specify **Message Labels**.

If you want to add attributes, specify **Name** and **Value**, and then click **Add**.

**Table 2-2** Parameter description

Parameter	Description
Message Body	Body of the message to be sent. When using the DMS console to send messages, characters that are reserved in the JSON format will be escaped in the message body content. For example, "it's not you, it's me" would be escaped to \"it's not you, it's me\".
Delay Message Delivery	An indicator of whether message delivery delay is enabled. Delivery of messages added to this queue in DMS will be delayed for the chosen amount of time. This feature is supported only by standard queues and not by advanced queues.
Delivery Delay	Amount of time to delay delivery of all messages added to this queue. Options: <b>1 minute, 5 minutes, 30 minutes, 1 hour, and 1 day</b> Default value: <b>5 minutes</b>
Message Labels (optional)	When using DMS, you can use labels to filter the messages you want to retrieve from the chosen queue. A message label is 1 to 64 characters long. Only letters, digits, hyphens (-), and underscores (_) are allowed. Each message has a maximum of three labels. This feature is supported only by standard queues and not by advanced queues.

Parameter	Description
Message Attributes	<p>Attribute of a message, which is composed of the name and value in the key-value format. Attributes are not part of the message body but are sent and retrieved along with it.</p> <p>Attribute names are mandatory and must be unique in the same message.</p> <p>If you enter attribute names or values on the DMS console, spaces are allowed in attribute names and values, but not before and after them. For example, in DMS, " ab c " is converted to "ab c".</p> <p><b>NOTE</b> If you use APIs to access DMS, spaces are allowed in, before, and after attribute names and values.</p> <p>Message attributes are supplementary to the message body and can be sent and retrieved along with it. You can specify multiple message attributes, as long as the size of the message remains within 512 KB.</p> <p>This feature is supported only by standard queues and not by advanced queues.</p>

Successfully added attributes will be displayed in the list. To delete an attribute, click **Delete** in the same row as the attribute.

**Step 7** Click **OK**.

In the queue list, the value of **Messages** for the chosen queue will increment by one.

In the consumer group list of the chosen queue, the value of **Messages Available** for those consumer groups will also increment by one if consumer groups exist for the queue.

----End

## 2.1.4 Retrieving Messages

### Scenario

Messages can be retrieved from a queue.

### Prerequisites


A queue has been created. The queue has at least one consumer group and at least one message.

#### NOTE

Messages are retained in a queue for at least 72 hours and are deleted after expiry. You can specify the retention period of messages in advanced queues. The value range is 1 to 72 hours.

## Procedure

**Step 1** Log in to the management console.

**Step 2** Click  in the upper left corner of the management console and select a region.

 **NOTE**

Select the same region as your application service.

**Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.

**Step 4** In the navigation pane, choose **Queue Manager**.

**Step 5** Open the **Retrieve Message** dialog box using either of the methods:

- Method 1  
In the queue list, choose **More > Retrieve Message** in the same row as the queue from which messages will be retrieved.
- Method 2
  - a. Click the name of the queue from which messages will be retrieved.
  - b. Click the **Consumer Groups** tab.
  - c. In the consumer group list, click **Retrieve Message** in the same row as the consumer group who will retrieve messages from the chosen queue.

**Step 6** Specify parameters as shown in [Table 2-3](#).

**Table 2-3** Parameter description

Parameter	Description
Consumer Group Name	Name of a consumer group. If you open the <b>Retrieve Message</b> dialog box by choosing <b>More &gt; Retrieve Message</b> in the queue list, the <b>Consumer Group Name</b> parameter is by default set to the name of the first consumer group in the chosen queue. If you open the <b>Retrieve Message</b> dialog box by clicking <b>Retrieve Message</b> in the consumer group list, the <b>Consumer Group Name</b> parameter is by default set to the name of the chosen consumer group.
Queue Polling Interval	Interval at which DMS polls the queue for messages. The value can be: <b>3s</b> , <b>5s</b> , <b>10s</b> , or <b>30s</b> . Default value: <b>3s</b>

Parameter	Description
Message Type	<p>Type of messages to be retrieved.</p> <p>Options:</p> <ul style="list-style-type: none"> <li>• <b>Normal</b> Only normal messages are retrieved from the chosen queue.</li> <li>• <b>Dead letter</b> Only dead letter messages generated for the chosen consumer group are retrieved from the chosen queue.</li> </ul> <p>Default value: <b>Normal</b></p> <p><b>NOTE</b> If the dead letter queue function is disabled in <a href="#">Creating a Queue</a>, only normal messages are retrieved.</p>
Max. Message Count	<p>Maximum number of messages to be retrieved in a single polling cycle.</p> <p>The value can be <b>5</b> or <b>10</b>.</p> <p>Default value: <b>5</b></p>
Message Labels	<p>Messages can be filtered by labels. Only messages with the chosen labels are retrieved from the chosen queue.</p> <ol style="list-style-type: none"> <li>1. If this parameter is not set, the filtering is not performed by default.</li> <li>2. When "Only retrieve messages containing all entered labels." is selected, only messages that match all labels are retrieved.</li> <li>3. If it is not selected, messages that match any one label are retrieved.</li> </ol> <p>This feature is supported only by standard queues and not by advanced queues.</p>

After you click the **Start** button, the console polls the queue at regular intervals for 5 minutes, even if there are messages in the queue. After 5 minutes, the polling stops automatically. To stop polling before then, click **Stop** and the polling will stop after the current cycle of polling completes.

If you close the **Retrieve Message** dialog box or change the **Consumer Group Name**, **Max. Message Count**, or **Queue Polling Interval** while messages are being retrieved, the message retrieval will stop after the current cycle of polling completes.

Retrieved messages are displayed in the list. To view details such as the message body, message size, ID, attribute count, and attributes, click **More Details** in the same row as the chosen message. Message retrieval will not be interrupted when you are viewing details.

 NOTE

- Messages can be retrieved only once by each consumer group. Data about messages retrieved by the current consumer group is lost after the **Retrieve Message** dialog box is closed or another consumer group is selected to retrieve messages. However, the messages can still be retrieved by other consumer groups.
- Messages from one queue are stored in different partitions to enable simultaneous retrieval of multiple messages by one consumer group. Each retrieval request can target messages in only one partition, preventing cross-partition management and access from adversely impacting performance. If the message queue contains only a few messages and messages are distributed over partitions, the number of messages in a single partition may be less than the number of messages you specified to be retrieved in a single polling cycle. This means that each polling cycle will return fewer messages than expected. However, all messages in the queue will be retrieved after multiple cycles.
- Once a consumer group specifies a message label, the consumer group must use the label for all subsequent retrievals. If a consumer group changes a label during the next retrieval, the next retrieval will fail and the messages that fail to be retrieved cannot be retrieved again unless the consumer group resets the retrieval start position.

**Table 2-4** Parameters in the Messages Retrieved list

Parameter	Description
Message Body (Condensed)	Content of the message body. Content of messages in advanced queues is encoded with Base64.
ID	Handler of the message.
Body Size	Size of the message body.
Operation	Clicking <b>More Details</b> in the <b>Operation</b> column displays the complete message body, complete message ID, and complete message attributes of the message retrieved.  The <b>Operation</b> column is not displayed if the message is retrieved from an advanced queue.

----End

## 2.2 Viewing Details of a Queue



### Scenario

View details of a chosen queue, such as basic information, the total number of messages, the number of retrievable messages, the number of messages available in the dead letter queue, and consumer groups of the queue.

### Prerequisites

A queue has been created.

## Procedure

- Step 1** Log in to the management console.
- Step 2** Click  in the upper left corner of the management console and select a region.
-  **NOTE**
- Select the same region as your application service.
- Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.
- Step 4** In the navigation pane, choose **Queue Manager**.
- Step 5** Click the name of a queue for which you want to view details.
- End

## 2.3 Deleting Queues

### Scenario

Delete a queue.



**CAUTION**



Deleted messages cannot be recovered. Exercise caution when deleting queues.

---

### Prerequisites

A queue has been created.

## Procedure

- Step 1** Log in to the management console.
- Step 2** Click  in the upper left corner of the management console and select a region.
-  **NOTE**
- Select the same region as your application service.
- Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.
- Step 4** In the navigation pane, choose **Queue Manager**.
- Step 5** Select the boxes next to the queues that will be deleted. Click **Delete**.
- Step 6** Click **OK**.
- End

## 2.4 Deleting a Consumer Group

### Scenario

Deleting a consumer group does not impact normal messages in a queue. Normal messages still exist in the queue and can still be retrieved by other consumer groups.


Dead letter messages are specific to consumer groups. If a consumer group is deleted, the dead letter messages of the consumer group are also deleted, regardless of whether they have been retrieved. Deleted dead letter messages can no longer be retrieved.

### Prerequisites

A consumer group has been created.

### Procedure

**Step 1** Log in to the management console.

**Step 2** Click  in the upper left corner of the management console and select a region.

 **NOTE**

Select the same region as your application service.

**Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.

**Step 4** In the navigation pane, choose **Queue Manager**.

**Step 5** Click the name of a queue for which you want to delete a consumer group.

**Step 6** Choose **Delete Consumer Group** in the same row as the consumer group you want to delete.

**Step 7** Click **OK**.

----End

## 2.5 Resetting Message Retrieval Start Position

### Scenario

Reset the message retrieval start position if you want to skip certain messages that are never retrieved, or retrieve certain messages again, or retrieve only the messages later than a certain point in time regardless of whether these messages have been retrieved.

You can start message retrieval:

- From the beginning of the chosen queue

All messages in the queue are retrieved again, regardless of whether they have been retrieved.

- From the end of the chosen queue

All messages in the queue are skipped. Only the messages right after the new retrieval start position will be retrieved.

- From a specified point in time

Only the messages in the queue that are later than a specified point time are retrieved.

 **NOTE**


After the retrieval start position is reset, messages ahead of the new retrieval start position will be flagged as retrieved messages, regardless of whether they have been retrieved.

## Prerequisites

A queue has been created. The queue has at least one consumer group and the consumer group has retrieved messages.

## Procedure

**Step 1** Log in to the management console.

**Step 2** Click  in the upper left corner of the management console and select a region.

 **NOTE**

Select the same region as your application service.

**Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.

**Step 4** In the navigation pane, choose **Queue Manager**.

**Step 5** Click the name of a queue for which you want to reset the message retrieval start position.

**Step 6** On the queue details page, click the **Consumer Groups** tab.

**Step 7** In the consumer group list, choose **More > Reset Retrieval Start Position** in the same row as the consumer group for which you want to reset the message retrieval start position.

**Step 8** Specify **Start Message Retrieval** and **Force Reset** parameters. Click **OK**.

**Table 2-5** Parameter description

Parameter	Description
Start Message Retrieval	<ul style="list-style-type: none"> <li>• <b>From beginning of queue</b> The consumer group starts retrieving messages from the beginning of the queue.</li> <li>• <b>From a specified point in time</b> The consumer group starts retrieving messages from a specified point in time.</li> <li>• <b>From end of queue</b> The consumer group starts retrieving messages from the end of the queue. This means that the consumer group retrieves the messages newly sent into the queue.</li> </ul> <p>Default value: <b>From beginning of queue</b></p>
Start Point	The message retrieval start time must fall within the message retention period (up to 72 hours). This parameter is mandatory only if <b>Start Message Retrieval</b> is set to <b>From a Specified Point in Time</b> .
Force Reset	<p>Disable</p> <p>If messages are currently being retrieved, the reset will fail.</p> <p>Enable</p> <p>The retrieval start position will be reset even if messages are currently being retrieved. This may cause the message retrieval in progress to fail.</p> <p>By default, this parameter is disabled.</p>

----End


## 2.6 Managing Queue Policies

### Scenario

Configure queue policies if multiple users or services need to access the same message queue.

### Procedure

**Step 1** Log in to the management console.

**Step 2** Click  in the upper left corner of the management console and select a region.

 **NOTE**

Select the same region as your application service.

**Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.

- Step 4** In the navigation pane, choose **Queue Manager**.
- Step 5** Click the name of a queue for which you want to add a queue policy.
- Step 6** On the queue details page, click the **Policy Management** tab.
- Step 7** On the **Policy Management** tab page, click **Create Queue Policy**.
- Step 8** Specify parameters as shown in [Table 2-6](#).

**Table 2-6** Queue policy parameters

Parameter	Description
Queue Name	Name of the queue to which the new policy will be applied.
Effect	<ul style="list-style-type: none"> <li>• <b>Allow</b></li> <li>• <b>Deny</b></li> </ul> The default permission is <b>Allow</b> .
Policy Type	<ul style="list-style-type: none"> <li>• <b>User-based</b></li> <li>• <b>Service-based</b></li> </ul> The default policy type is <b>User-based</b> .
Users	This parameter is configurable if <b>Policy Type</b> is <b>User-based</b> . <ul style="list-style-type: none"> <li>• <b>All users</b></li> <li>• <b>Specified users:</b> The user list can be any of the following three or any comma-separated combination of the following three: domain IDs, domain names, and Uniform Resource Names (URNs). URN is a unique resource ID in the format of urn:csp:service:region_id:domain_id:resourcetype:resource or urn:csp:service:region_id:domain_id:resource. Fields:                             <ul style="list-style-type: none"> <li>- <b>csp:</b> cloud service provider</li> <li>- <b>service:</b> abbreviation of a service name, for example, SMN</li> <li>- <b>region_id:</b> region ID for example, cn-north-1</li> <li>- <b>domain_id:</b> domain ID</li> <li>- <b>resourcetype:</b> resource type</li> <li>- <b>resource:</b> resource name, for example, <b>Topic_test</b></li> </ul>                             URN example: urn:csp:smn:cn-north-1:e23bf08ebb924730b452426c60849564:user:Topic_test                         </li> </ul> By default, <b>All users</b> is selected.
Services	Service authorized to access DMS if <b>Policy Type</b> is <b>Service-based</b> . The following services can be selected: <ul style="list-style-type: none"> <li>• FunctionGraph</li> <li>• SMN</li> </ul>

Parameter	Description
Actions	<p>Actions on the chosen queue.</p> <ul style="list-style-type: none"> <li>• DMS:GetQueue</li> <li>• DMS:CreateGroup</li> <li>• DMS:GetGroups</li> <li>• DMS&gt;DeleteGroup</li> <li>• DMS:ProduceMessages</li> <li>• DMS:ConsumeMessages</li> </ul>

----End

## 2.7 Querying Messages

### Scenario

Query messages by message ID or queue for troubleshooting.

- If the body size of a message is greater than 3 KB, you can download the message after the query.
- Only messages in the current queue can be queried. Messages cannot be queried across queues.
- When querying messages by queue, you can query messages only within the persistent storage time range.

**Table 2-7** Query mode comparison


Query Mode	Query Criteria	Query Type	Description
Query by message ID	Message's ID	Exact query	Based on a message ID, you can exactly locate the corresponding message to obtain its attributes.
Query by queue	Queue +time range	Range query	Based on a queue and time range, you can obtain all the messages meeting the query criteria in batches. In this case, multiple messages are queried, causing difficulties in matching.

### Prerequisites

A queue has been created. The queue has at least one message.

## Procedure

**Step 1** Log in to the management console.

**Step 2** Click  in the upper left corner of the management console and select a region.

 **NOTE**

Select the same region as your application service.

**Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.

**Step 4** In the navigation pane, choose **Queue Manager**.

**Step 5** Click the name of a queue for which you want to query the messages.

**Step 6** On the queue details page, click the **Message Query** tab.

**Step 7** Query messages in either of the following ways:

- Click **Query by Message ID**. Enter a message ID in the search box and press **Enter**. The queried message body and attributes are displayed.

 **NOTE**

When querying messages by message ID, you can only query messages in the chosen queue. Otherwise, the query fails and an error message is displayed, indicating that the specified message ID is invalid.

**Table 2-8** Parameter description

Parameter	Description
ID	Message ID.
Queue ID	Queue ID.
Message Body	Message body.
Message Attributes	List of attributes.
Message Tags	Message label.
Message Size	Message size.
Created	Date and time when a message was created.
Operation	This parameter is displayed only when the body size of a message is greater than 3 KB. After the query, you can download the message, which will be automatically saved as a .txt file.

- Click **Query by Queue**. Specify the time range for query, and press **Enter**. You can set the time range to 72 hours at most.

In the **Operation** column, click **View Details** to view the complete message bodies, IDs, and attributes.

**Table 2-9** Parameter description

Parameter	Description
ID	Message ID.
Message Body	Message body.
Message Attributes	List of attributes.
Message Tags	Message label.
Message Size	Message size.
Created	Date and time when a message was created.
Operation	If the body size of a message is greater than 3 KB, you can download the message after the query. The downloaded message will be automatically saved as a .txt file.

----End

## 2.8 Viewing the Retrieval Status

### Scenario

View the retrieval status, including the number of consumer instances, number of messages accumulated in the queue, retrieval model, retrieval rate, and consumer instance details.


Only the retrieval status of standard queues can be queried.

### Prerequisites

A queue and a consumer group have been created.

### Procedure

**Step 1** Log in to the management console.

**Step 2** Click  in the upper left corner of the management console and select a region.

 **NOTE**

Select the same region as your application service.

- Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.
- Step 4** In the navigation pane, choose **Queue Manager**.
- Step 5** Click the name of a queue for which you want to view the retrieval status.
- Step 6** On the queue details page, click the **Consumer Groups** tab.
- Step 7** Choose **More > View Retrieval Status** in the same row as the chosen consumer group.

 **NOTE**

This feature is supported only by standard queues and not by advanced queues.

- Step 8** [Table 2-10](#) and [Table 2-11](#) describe the retrieval status parameters.

**Table 2-10** Retrieval status parameters

Parameter	Description
Consumer Group Name	Name of a consumer group.
Consumer Instances	Total number of consumer instances of a consumer group.
Messages Available	Number of consumable messages of a consumer group.
Total Retrieval TPS	Total retrieval rate of a consumer group.
Retrieval Model	Currently, only the multicast model is supported.

**Table 2-11** Client parameters

Parameter	Description
Consumer Instance ID	ID of a consumer instance.
IP Address	IP address of a client.
Retrieval TPS	Retrieval rate of a consumer instance.
Language	Development language of a client.
Version	Version of the development language of a client.

----End

# 3 Monitoring

---

## 3.1 DMS Metrics

### Function

This section describes DMS metrics reported to Cloud Eye as well as their namespace and dimensions. You can use the Cloud Eye console or [APIs](#) to query the DMS metrics and alarms.

For more information about the namespace and dimensions, see the "Querying Monitoring Data" section in the *Cloud Eye API Reference*.

#### NOTE

This section describes only the metrics of standard and advanced DMS queues. For details about the metrics of Kafka and RabbitMQ instances, see [Kafka Metrics](#) and [RabbitMQ Metrics](#).

### Namespace

SYS.DMS

## Standard Queue Metrics

**Table 3-1** Standard queue metrics

Metric ID	Metric	Description	Value Range	Monitored Objects and Dimensions	Monitoring Period (Raw Data)
queue_d_messages	Queue d Messages	<p>The current number of messages in a queue.</p> <p>Messages older than 72 hours will be deleted from a queue and deleted messages are not counted into the metric.</p> <p>Dead letter messages are specific to consumer groups and stored in dead letter queues. Therefore, generation and expiry of dead letter messages do not affect the metric.</p> <p>Unit: Count</p>	$\geq 0$	<p>Monitored object: DMS</p> <p>Dimension: queue_instance_id</p>	1 minute
message_size	Message Size	<p>Total size of messages sent to a queue during the previous one minute.</p> <p>This metric gives you an overview of the message load flowing into a queue.</p> <p>Unit: byte</p>	$\geq 0$	<p>Monitored object: DMS</p> <p>Dimension: queue_instance_id</p>	1 minute
request_count	Request Count	<p>The total number of requests sent to a queue during the previous one minute.</p> <p>Unit: Count</p>	$\geq 0$	<p>Monitored object: DMS</p> <p>Dimension: queue_instance_id</p>	1 minute

**Table 3-2** Metrics of consumer groups in standard queues

Metric ID	Metric	Description	Value Range	Monitored Objects and Dimensions	Monitoring Period (Raw Data)
dead_avail_messages	Accumulated Messages	<p>The current number of messages that are not retrieved by a consumer group.</p> <p>Messages older than 72 hours will be deleted from a queue. Deleted messages can no longer be retrieved by a consumer group and therefore are not included in the count.</p> <p>Dead letter messages are flagged as retrieved messages and therefore are not included in the count.</p> <p>Unit: Count</p>	$\geq 0$	<p>Monitored object: DMS</p> <p>Dimension: group_instance_id</p>	1 minute
consumed_messages	Retrieved Messages	<p>The accumulated number of messages retrieved by a consumer group.</p> <p>The count is accumulated since a consumer group is created.</p> <p>Dead letter messages are counted into the metric because dead letter messages are flagged as retrieved messages.</p> <p>Unit: Count</p>	$\geq 0$	<p>Monitored object: DMS</p> <p>Dimension: group_instance_id</p>	1 minute

Metric ID	Metric	Description	Value Range	Monitored Objects and Dimensions	Monitoring Period (Raw Data)
skipped_messages	Skipped Messages	<p>Accumulated number of messages that have been deleted and never retrieved.</p> <p>The count is accumulated since a consumer group is created.</p> <p>Messages are stored for at least 72 hours. Messages older than 72 hours will be deleted from the queue. Deleted messages can no longer be retrieved by a consumer group.</p> <p>Unit: Count</p>	$\geq 0$	<p>Monitored object: DMS</p> <p>Dimension: group_instance_id</p>	1 minute
dead_available_messages	Available Dead Letter Messages	<p>The current number of dead letter messages that are not retrieved by a consumer group.</p> <p>Messages older than 72 hours will be deleted from a queue. Deleted messages can no longer be retrieved by a consumer group and therefore are not included in the count.</p> <p>Unit: Count</p>	$\geq 0$	<p>Monitored object: DMS</p> <p>Dimension: group_instance_id</p>	1 minute
dead_his_messages	Historical Dead Letter Messages	<p>The accumulated number of dead letter messages generated for a consumer group since the consumer group is created. The count of historical dead letter messages includes the retrieved dead letter messages, remaining dead letter messages, and expired dead letter messages.</p> <p>Unit: Count</p>	$\geq 0$	<p>Monitored object: DMS</p> <p>Dimension: group_instance_id</p>	1 minute

## Advanced Queue Metrics

**Table 3-3** Advanced queue metrics

Metric ID	Metric	Description	Value Range	Monitored Objects and Dimensions	Monitoring Period (Raw Data)
queue_d_messages	Queue d Messages	<p>The current number of messages in a queue.</p> <p>Messages older than 72 hours will be deleted from a queue and deleted messages are not counted into the metric.</p> <p>Dead letter messages are specific to consumer groups and stored in dead letter queues. Therefore, generation and expiry of dead letter messages do not affect the metric.</p> <p>Unit: Count</p>	$\geq 0$	<p>Monitored object: DMS</p> <p>Dimension: queue_instance_id</p>	1 minute
message_size	Message Size	<p>Total size of messages sent to a queue during the previous one minute</p> <p>This metric gives you an overview of the message load flowing into a queue.</p> <p>Unit: byte</p>	$\geq 0$	<p>Monitored object: DMS</p> <p>Dimension: queue_instance_id</p>	1 minute
request_count	Request Count	<p>The total number of requests sent to a queue during the previous one minute.</p> <p>Unit: Count</p>	$\geq 0$	<p>Monitored object: DMS</p> <p>Dimension: queue_instance_id</p>	1 minute

**Table 3-4** Metrics of consumer groups in advanced queues

Metric ID	Metric	Description	Value Range	Monitored Objects and Dimensions	Monitoring Period (Raw Data)
dead_availability_messages	Accumulated Messages	<p>The current number of messages that are not retrieved by a consumer group.</p> <p>Messages older than 72 hours will be deleted from a queue. Deleted messages can no longer be retrieved by a consumer group and therefore are not included in the count.</p> <p>Dead letter messages are flagged as retrieved messages and therefore are not included in the count.</p> <p>Unit: Count</p>	≥ 0	<p>Monitored object: DMS</p> <p>Dimension: group_instance_id</p>	1 minute

## Dimensions

Key	Description
queue_instance_id	Queue ID
group_instance_id	Consumer group ID

## 3.2 Setting DMS Alarm Rules

### Scenario

Setting DMS alarm rules enables you to be informed of the running status of your DMS services at any time by customizing the monitored objects and notification policies.

This section describes how to set DMS alarm rules, including alarm rule names, monitored objects, metrics, alarm thresholds, monitoring intervals, and notifications.

## Prerequisites

- To set alarm rules for queues, ensure that you have available queues.

## Procedure

The following describes how to configure an alarm rule for the **Accumulated Messages (dead\_avail\_messages)** metric of a consumer group.

**Step 1** Log in to the management console.

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

**Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.

**Step 4** In the navigation pane, choose **Queue Manager**.

**Step 5** Click a queue name. On the queue details page that is displayed, click **More > View Metric** in the same row as a consumer group.

You are redirected to the Cloud Eye console page displaying metrics of the selected consumer group.

**Step 6** Locate the **Accumulated Messages** metric. Hover over the metric and click  to create an alarm rule for the metric.

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

**Step 7** Specify the alarm details.

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

For example, an alarm can be triggered and notifications can be sent every five minutes if the average number of accumulated messages exceeds the preset value for two consecutive periods and no actions are taken to handle the exception. Set these parameters based on your requirements.

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

### NOTE

For more information about creating alarm rules, see [Creating an Alarm Rule](#).

----End

## 3.3 Viewing Metrics

### Scenario


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

## Prerequisites

At least one queue has been created. The queue has at least one consumer group and at least one available message.

## Procedure

**Step 1** Log in to the management console.

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

 **NOTE**

Select the same region as your application service.

**Step 3** Click **Service List**, and choose **Application > Distributed Message Service** to open the DMS console.

**Step 4** Perform the following steps to view the metrics.

- To view the metrics of a standard queue or an advanced queue:
  - a. In the navigation pane, choose **Queue Manager**.
  - b. In the same row as the queue for which you want to view the metrics, choose **More > View Metric**.

On the Cloud Eye console, view the queue metrics. Metric data is reported to Cloud Eye every minute.

- To view the metrics of a consumer group:
  - a. In the navigation pane, choose **Queue Manager**.
  - b. Click the name of a queue for which you want to view the metrics.
  - c. In the same row as the consumer group for which you want to view the metrics, choose **More > View Metric**.

On the Cloud Eye console, view the consumer group metrics. Metric data is reported to Cloud Eye every minute.

----End

# 4 Auditing

## 4.1 Operations Supported by CTS

With CTS, you can record operations associated with DMS for querying, auditing, and backtracking operations.

**Table 4-1** DMS operations that can be recorded by CTS

Operation	Resource Type	Trace Name
Creating a queue	queue	createQueue
Deleting a queue	queue	deleteQueue
Adding a queue tag	tag	createQueueTag
Deleting a queue tag	tag	deleteQueueTag
Creating a consumer group	group	createGroup
Deleting a consumer group	group	deleteGroup
Creating a resource access control policy	queue	create resource access policy
Updating a resource access control policy	queue	update resource access policy
Deleting a resource access control policy	queue	delete resource access policy


## 4.2 Viewing Traces on the CTS Console

### Scenario

This section describes how to view operation records for the last 7 days on the CTS console.

### Procedure

**Step 1** Log in to the management console.

**Step 2** Click  in the upper left corner of the management console and select a region.

 **NOTE**


Select the same region as your application service.

**Step 3** Click **Service List**, and choose **Management & Deployment > Cloud Trace Service**.







**Step 4** In the navigation pane, choose **Trace List**.

**Step 5** On the **Trace List** page, query traces based on a combination of the following querying dimensions:

- **Trace Source:** Select **DMS**.
- **Resource Type:** Select **group**, or **queue**.
- **Search By:** Select an option from the drop-down list.  
When you select **Trace name**, you also need to select a specific trace name.  
When you select **Resource ID**, you also need to select a specific resource ID.  
When you select **Resource name**, you also need to select a specific resource name.
- **Operator:** Select a specific operator (a user other than tenant).
- **Trace Status:** Available options include **All trace statuses**, **Normal**, **Warning**, and **Incident**. You can only select one of them.
- **Start time and end time:** You can specify the time period to query traces.

**Step 6** Click  on the left of a trace to expand its details, as shown in [Figure 4-1](#).

**Figure 4-1** Expanding trace details

Trace Name	Resource Type	Trace So...	Resource ID 	Resource Name 	Trace Status 	Operator 	Operation Time	Operation
▼ createGroup	group	DMS	g-e631ec6d-b9...	group-175443...	 normal		04/17/2018 08:34:51 GMT+0...	<a href="#">View Trace</a>

**Step 7** Click **View Trace** in the **Operation** column. In the displayed **View Trace** dialog box, the trace structure details are displayed, as shown in [Figure 4-2](#).

Figure 4-2 Viewing a trace

## View Trace

```
{
  "time": "04/17/2018 08:34:51 GMT+08:00",
  "user": {
    "domain": {
      "name": "██████████",
      "id": "12066b40dddc4eaf87fe596e0b6637b0"
    },
    "name": "██████████",
    "id": "5e5068d771f240ac87eb802df32cbe40"
  },
  "service_type": "DMS",
  "resource_type": "group",
  "resource_name": "group-1754438890",
  "resource_id": "g-e631ec6d-b9fb-4845-89ec-7ca2823cc6e3",
  "source_ip": "██████████",
  "trace_name": "createGroup",
  "trace_type": "ConsoleAction",
  "request": {
    "groups": [
      {
        "name": "group-1754438890"
      }
    ]
  }
}
```

----End

# 5 Change History

Date	Description
2020-02-14	Removed description about Kafka and RabbitMQ premium instances.
2019-05-30	This issue is the fifteenth official release. <ul style="list-style-type: none"> <li>• Added description about DMS permissions management in <a href="#">Creating a User and Granting DMS Permissions</a>.</li> </ul>
2019-01-04	Removed the ActiveMQ queue type.
2018-10-29	This issue is the thirteenth official release. <ul style="list-style-type: none"> <li>• Revised description in the previous issue.</li> </ul>
2018-06-15	This issue is the twelfth official release. <ul style="list-style-type: none"> <li>• Added seven FAQs.</li> </ul>
2018-05-14	This issue is the eleventh official release. <ul style="list-style-type: none"> <li>• Added the message query function.</li> <li>• Added the function of viewing the retrieval status.</li> </ul>
2018-04-20	This issue is the tenth official release. <ul style="list-style-type: none"> <li>• Added chapters <a href="#">DMS Metrics</a> and <a href="#">Auditing</a>.</li> </ul>
2018-03-15	This issue is the ninth official release. <ul style="list-style-type: none"> <li>• Added the ActiveMQ queue type.</li> <li>• Added the <b>Delay Message Delivery</b> function to messages in normal and FIFO queues.</li> <li>• Revised description in the previous issue.</li> </ul>
2018-01-15	This issue is the eighth official release. <ul style="list-style-type: none"> <li>• Told users that the retention period of messages in a Kafka queue is user configurable.</li> <li>• Revised description in the previous issue.</li> </ul>

Date	Description
2017-12-18	This issue is the seventh official release. <ul style="list-style-type: none"> <li>Revised description in the previous issue.</li> </ul>
2017-10-16	This issue is the sixth official release. <ul style="list-style-type: none"> <li>Added description of message labels.</li> <li>Added description of Kafka queues.</li> <li>Added section <a href="#">Managing Queue Policies</a>.</li> </ul>
2017-08-17	This issue is the fifth official release. <ul style="list-style-type: none"> <li>In section <a href="#">Creating a Queue</a>, added the <b>Dead Letter Queue</b> parameter.</li> <li>In section <a href="#">Retrieving Messages</a>, add the <b>Message Type</b> parameter.</li> <li>Added section <a href="#">Resetting Message Retrieval Start Position</a>.</li> </ul>
2017-05-31	This issue is the fourth official release. <ul style="list-style-type: none"> <li>Added five Cloud Eye monitoring metrics.</li> <li>Added the Queue Type parameter.</li> </ul>
2017-04-21	This issue is the third official release.
2017-02-13	This issue is the second official release.
2016-08-25	This issue is the first official release.