

**Data Replication Service**

# **Data Subscription**

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# 1 Creating a Data Subscription Task

## Supported Databases

Table 1-1 Database information

DB Engine	Data Type
RDS for MySQL Version 5.6 and 5.7	<ul style="list-style-type: none"><li>• Data update</li><li>• Structure update</li></ul>

### NOTE

A subscription task has many subscription object and operation constraints. You are advised to use data synchronization [from MySQL to Kafka](#) with higher performance and stability for data subscription.

- For details about the differences between data subscription and synchronization from MySQL to Kafka, see [What Are Differences Between Data Subscription and Synchronization from MySQL to Kafka?](#)
- For more synchronization scenarios to Kafka, see [Synchronization Overview](#).

## Precautions

You can create a subscription task to obtain the data change information of key services in the database. This type of information is often required by downstream services. Data subscription helps cache incremental data and provides a unified SDK interface for downstream applications to subscribe to and consume the incremental data.

To create a data subscription task successfully, you need implement the following two steps:

1. Create a data subscription task on the DRS console.
2. Use the SDK API of DRS to access the data subscription channel and subscribe to and consume incremental data.

The following describes constraints on data subscription tasks. Before using DRS, you need to ensure that the source and destination databases meet the following constraints.

**Table 1-2** Precautions

Type	Restrictions
Restrictions on subscription objects	<ul style="list-style-type: none"><li>• Only RDS for MySQL DB instances are supported.</li><li>• Currently, data subscription objects support only tables.</li><li>• The <b>binlog_row_image</b> format of binlogs must be set to <b>full</b>.</li><li>• MySQL supports only the MyISAM and InnoDB storage engines.</li><li>• MySQL supports only the LATIN1, GBK, UTF8, UTF8MB4, and BINARY character sets.</li><li>• Subscription data is provided by transaction. Only the scenario where the data volume of a single transaction is less than 10 MB is supported.</li><li>• During data subscription, do not upgrade the source MySQL database across major versions. Otherwise, data may become inconsistent or the subscription task may fail (data, table structures, and keywords may cause compatibility changes after a cross-version upgrade). You are advised to create a subscription task again if the source MySQL database is upgraded across major versions.</li></ul>

Type	Restrictions
Precautions	<ul style="list-style-type: none"> <li>● During data subscription, deleting subscription objects is not allowed.</li> <li>● A subscription task can be subscribed to and consumed by only one downstream SDK. If multiple downstream SDKs need to subscribe to the same RDS DB instance, you can create multiple subscription channels. The RDS DB instances subscribed by these subscription tasks have the same instance ID.</li> <li>● A downstream SDK cannot subscribe to and consume multiple subscription tasks.</li> <li>● Currently, the VPC network is supported, but the container network in a VPC is not supported.</li> <li>● If a DRS subscription task fails due to a source database exception or network interruption, resume the subscription task on the <b>Data Subscription</b> page. For details, see <a href="#">Resuming a Subscription Task</a>.</li> <li>● A subscription task has many subscription objects and operation constraints. You are advised to use the synchronization <a href="#">from MySQL to Kafka</a> with higher performance and stability for data subscription. For details about the differences between data subscription and synchronization from MySQL to Kafka, see <a href="#">What Are Differences Between Data Subscription and Synchronization from MySQL to Kafka?</a></li> <li>● After you select <b>Structure update</b> and <b>Data update</b>, DRS displays the DDL and DCL update operations of the entire instance (not the selected database) without filtering. If necessary, you can use the SDK to filter the required data.</li> </ul>

## Prerequisites

- [You have logged in to the DRS console.](#)
- Your account balance is greater than or equal to \$0 USD.
- For details about the supported database types and versions, see [Supported Databases](#).
- If a subaccount is used to create a DRS task, ensure that an agency has been added. For details about how to create an agency, see [Agency Management](#).

## Procedure

This section describes how to create a data subscription task on the DRS console.

The following uses MySQL as an example to describe how to create a subscription task. To configure subscription tasks of other DB engines, you can refer to the following procedures.

**Step 1** On the **Data Subscription Management** page, click **Create Subscription Task**.

**Step 2** On the **Select Subscription Source** page, specify **Region**, **Task Name**, **Description**, and subscription source details, and click **Next**.

**Figure 1-1** Subscription task information

**Table 1-3** Task and recipient description

Parameter	Description
Region	The region where your service is running. You can change the region. To reduce latency and improve access speed, select the region closest to your services.
Project	The project corresponds to the current region and can be changed.
Task Name	The task name must start with a letter and consist of 4 to 50 characters. It can contain only letters, digits, hyphens (-), and underscores (_).
Description	The description consists of a maximum of 256 characters and cannot contain special characters !=<>'&"\

**Figure 1-2** Subscription source information

**Table 1-4** Subscription source information

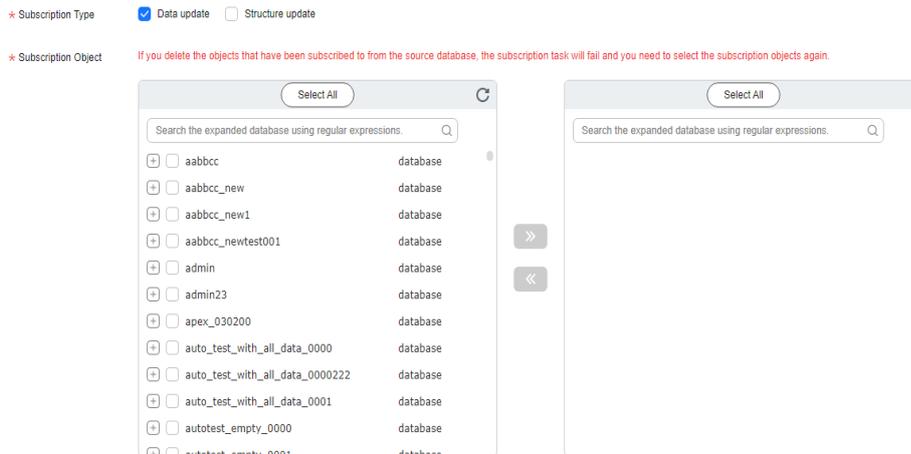
Parameter	Description
Instance Type	Select <b>RDS DB instance</b> .
Source DB Engine	Select <b>MySQL</b> .
RDS DB instance	Select an RDS DB instance you have created.
Enterprise Project	<p>An enterprise project you would like to use to centrally manage your cloud resources and members. Select an enterprise project from the drop-down list. The default project is <b>default</b>.</p> <p>For more information about enterprise projects, see <a href="#">Enterprise Management User Guide</a>.</p> <p>To customize an enterprise project, click <b>Enterprise</b> in the upper right corner of the console. The <b>Enterprise Project Management Service</b> page is displayed. For details, see <a href="#">Creating an Enterprise Project</a> in <i>Enterprise Management User Guide</i>.</p>
Tags	<p>This setting is optional. You can use tags to manage subscription tasks. Each task can have up to 20 tags.</p> <p>If your organization has configured tag policies for DRS, add tags to tasks based on the policies. If a tag does not comply with the policies, task creation may fail. Contact your organization administrator to learn more about tag policies.</p> <p>After a task is created, you can view its tag details on the <b>Tags</b> tab. For details, see <a href="#">Tag Management</a>.</p>

 **NOTE**

If a task fails to be created, DRS retains the task for three days by default. After three days, the task automatically stops.

**Step 3** On the **Select Subscription Object** page, wait until the instance is successfully created, select the data subscription object, and click **Next**.

**Figure 1-3** Subscription objects



**Table 1-5** Subscription objects

Parameter	Description
Subscription Type	Subscription types include data update and structure update. <ul style="list-style-type: none"> <li>• <b>Data update</b> Subscribes to the Incremental updates of the selected data.</li> <li>• <b>Structure update</b> Subscribes to the structure creation, deletion, and modification of all objects in an instance, SDK is needed to filter the required data.</li> </ul>
Subscription Object	Currently, data subscription objects support only tables. You can select a subscription object based on your service requirements. If the source database is changed, click  in the upper right corner before selecting migration objects to ensure that the objects to be selected are from the changed source database. You can also search for subscription objects to quickly select the required objects.

**Step 4** On the **Confirm Task** page, specify **Send Notifications** and **SMN Topic**, confirm that the configured information is correct, select the check box before the agreement, and click **Submit**.

**Figure 1-4** Task startup settings



**Table 1-6** Task startup settings

Parameter	Description
Send Notifications	This parameter is optional. After enabled, select an SMN topic. If the status or latency metric of the data subscription task is abnormal, DRS will send a notification.
SMN Topic	This parameter is available only after you enable Send Notifications and create a topic on the SMN console and add a subscriber. For details, see <a href="#">Simple Message Notification User Guide</a> .
Synchronization delay threshold	A synchronization delay indicates a time difference (in seconds) of synchronization between the source and destination database. If the synchronization delay exceeds the threshold you specify, DRS will send alarms to the specified recipients. The value ranges from 0 to 3,600. To avoid repeated alarms caused by the fluctuation of delay, an alarm is sent only after the delay has exceeded the threshold for six minutes. <b>NOTE</b> <ul style="list-style-type: none"><li>• Before setting the delay threshold, enable <b>Send Notifications</b>.</li><li>• If the delay threshold is set to 0, no notifications will be sent to the recipient.</li></ul>

**Step 5** After the task is submitted, view and manage it on the **Data Subscription Management** page.

- You can view the task status. For more information about task status, see [Task Statuses](#).
- You can click  in the upper-right corner to view the latest task status.
- By default, DRS retains a task in the **Configuration** state for three days. After three days, DRS automatically deletes background resources, but the task status remains unchanged. When you reconfigure the task, DRS applies for resources again.
- By default, DRS retains a task in the **Abnormal** state for 14 days. After 14 days, DRS automatically deletes background resources, but the task status remains unchanged. When you reconfigure the task, DRS applies for resources again.

 **NOTE**

After a subscription task is created, you can use an SDK to subscribe to incremental data in the subscription task in real time. For details about the operations and precautions, see [SDK Usage Instructions](#).

----End

# 2 SDK APIs

## 2.1 Introduction to SDK APIs

SDK defines multiple types of class objects. This section describes the API definitions of these class objects.

- SubscribeContext

**Table 2-1** SubscribeContext

Function Name	Description
setDomainName(String domainName)	Specifies the username. The IAM username for creating required subscription tasks.
setUserId(String userId)	Specifies the user ID. You can obtain the user ID from <b>My Credential</b> on the management console.
setPassword(String password)	Specifies the user password. The password corresponding to the IAM user or member account.
setIp(String ip)	Specifies the IP address of the subscription instance. Set this parameter to the IP address located on the <b>Basic Information</b> page of the target subscription task.

- ClusterClient

**Table 2-2** ClusterClient

Function Name	Description
void addClusterListener(ClusterListener var1)	Adds downstream listeners. A listener can subscribe to incremental data only after being added to ClusterClient.  The <b>ClusterListener arg0</b> parameter is an object of the <b>ClusterListener arg0</b> class.
void start()	Starts the SDK client to subscribe to incremental data.
void stop()	Stop subscribing to incremental data.

- ClusterListener

**Table 2-3** ClusterListener

Function Name	Description
void notify(List<ClusterMessage> var1)	Defines the consumption of incremental data. When receiving data, the SDK informs ClusterListener of consuming data using <b>notify</b> . For example, the consumption mode in <a href="#">SDK Template</a> indicates the subscription data displayed on the screen.  The input parameter type of this function is List <ClusterMessage> in which <b>ClusterMessage</b> is the structure object of the subscription data storage. For details, see <a href="#">Table 2-4</a> .

- ClusterMessage  
Each **ClusterMessage** stores the data records of an RDS transaction, and each record is stored using **Record**.

**Table 2-4** ClusterMessage

Function Name	Description
Record getRecord()	Obtains a change record from <b>ClusterMessage</b> . The change record indicates each record in the RDS binlog file, such as begin, commit, update, and insert.

- Record  
**Record** indicates each record in the RDS binlog file, such as begin, commit, and update.

**Table 2-5** Record

Function Name	Description
String getAttribute(final String key)	Obtains the main attribute values in <b>Record</b> . If the input parameter is an attribute name, the value of this attribute is returned.  <b>Table 2-6</b> lists the attribute names and values that can be obtained by invoking this function.
Type getOpt()	Obtains the statement type of a record, including insert, delete, update, replace, ddl, begin, commit, and heartbeat.
String getCheckpoint()	Obtains the checkpoint of the change record in the binlog. The returned value is in the following format: <b>binlog_offset@binlog_fid</b> .  <b>binlog_offset</b> indicates the offset of the change record in the binlog file, and <b>binlog_fid</b> indicates the numeric suffix of the binlog file. For example, if the binlog file name is <b>mysql-bin.00092</b> , the value of <b>binlog_fid</b> is <b>92</b> .
int getFieldCount()	Obtains the number of <b>Fields</b> in the change record.
List <Field> getFieldList()	The data type of the returned value of this function is <b>List &lt;Field&gt;</b> .  List <Field> contains the definitions of all fields of the change record and the image values before and after the change. For details about the definition of <b>Field</b> , see <b>Table 2-7</b> .

**Table 2-6** Attribute information

key	Description
record_id	Specifies the record ID. The ID number does not ascend during the subscription process.
instance	Specifies the DB instance connection address of the record. The format is <b>ip:port</b> .
source_type	Specifies the DB engine type of the record. The current DB engine is MySQL.
source_category	Specifies the record type. The current value is <b>full_recorded</b> .
timestamp	Specifies the time when the record is written to the binlog. It is also the time when the SQL statement is executed in RDS.

key	Description
checkpoint	Specifies the binlog file checkpoint of the record. The format is <b>:file_offset@file_name</b> . The parameter <b>file_name</b> , indicate the numeric suffix of the binlog file.
record_type	Specifies the operation type of the record. The values include: <b>insert, update, delete, replace, ddl, begin, commit, and heartbeat</b> .
db	Specifies the database name updated in the record.
table_name	Specifies the table name updated in the record.
record_recording	Specifies the record code.
seqno	Specifies the data point. It is used to specify a data point of a DRS task.
fragno	Specifies a reserved field. In the earlier version, this field is used to determine whether a transaction shard is used. In this version, this field is meaningless.
isLastFrag	Specifies a reserved field. In the earlier version, this field is used to determine whether the record is the last record of a transaction. In this version, this field is meaningless.

- Field

The **Field** class defines the attributes of each field, such as the code, type, field name, field value, and whether the field is a primary key. [Table 2-7](#) describes the API of each Field class.

**Table 2-7** Field

Function Name	Description
String getEncoding()	Obtains the encoding format of the field value.
String getFieldname()	Obtains the name of this field.
Type getType()	Obtains the data type of the field. For details, see the field type definition.
ByteString getValue()	Obtains the value of this field. The returned type is <b>ByteString</b> . If the value is <b>null</b> , <b>NULL</b> is returned.
Boolean isPrimary()	Checks whether the field is the primary key column of the table. If yes, <b>True</b> is returned. Otherwise, <b>False</b> is returned.

## 2.2 SDK Usage Instructions

The data subscription function caches data changes of key services in the database and provides a unified SDK API for downstream services to subscribe to, obtain, and consume.

Before using the SDK, create a data subscription task on the DRS console. For details, see [Creating a Data Subscription Task](#).

After a subscription task is created, you can use an SDK to subscribe to incremental data in the subscription task in real time. The following lists the constraints:

1. DRS only provides SDK JAVA version. For details, see [SDK Download Address](#).
2. One subscription channel can be consumed by only one SDK. If multiple SDKs are connected to one data subscription channel, only one SDK process can obtain the data change information. If multiple downstream SDKs must subscribe to the same RDS instance, you need to create a data subscription task for each SDK.
3. A downstream SDK cannot subscribe to and consume multiple subscription tasks.
4. After data subscription is successful, new data can be retained for a maximum of three days if the data is not consumed in time.

---

### NOTICE

The SDK JAVA version provided by DRS supports the development environment of JDK 1.6 or later. JDK 1.8 is recommended.

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### Network Type

Currently, only VPCs are supported.

### SDK Working Principles

Data consumption and message confirmation are two asynchronous threads started based on the transaction sequence. The two threads are independent of each other and comply with the causal sequence. The received messages invoke the notify function registered by users in sequence. The SDK ensures that each message is pushed only once.

### Importing SDK JAR Package

The SDK JAR package can be directly imported only through the library. Currently, the Maven central repository is not supported.

```
<dependency>  
<groupId>com.huawei.hwclouds</groupId>  
<artifactId>drs-subscribe-sdk</artifactId>  
<version>1.0</version>  
</dependency>
```

## Configuring Parameters

During data subscription, some parameters affect the speed and interval for obtaining data.

Before starting the SDK, you can set the following parameters in the **subscribe.properties** configuration file as required:

```
#Initial delay for obtaining the subscription data
MESSAGE_DELAY_TIME = 1500000
#Interval for obtaining the subscription data
MESSAGE_PERIOD_TIME = 2000000
#Notify the user that the initial delay of the subscription data arrives
NOTIFY_DELAY_TIME = 2000
#Notify the user of the subscription data interval
NOTIFY_PERIOD_TIME = 1000
#Initial delay of the ACK messages from the server
ACK_DELAY_TIME = 3000
#Interval between the ACK messages from the server
ACK_PERIOD_TIME = 5000
```

### NOTE

- The preceding parameter values are set by default. You can also customize parameter values based on the site requirements.
- The unit of the time mentioned above is microsecond.

## Confirmation Mechanism

The SDK uses the automatic batch confirmation mechanism. The client program does not need to invoke the confirmation function and can be confirmed repeatedly.

For example: the client receives five batches of messages, and the server only confirms the first, the second, and the fifth batch, respectively. Messages are confirmed in sequence. Therefore, it indicates that the client has consumed all messages in the first to fifth batch. If the client program is suspended, the consumption checkpoint starts from the fifth batch.

## SDK Template

```
import com.huawei.hwclouds.drs.context.SubscribeContext;
import com.huawei.hwclouds.drs.message.ClusterMessage;
import com.huawei.hwclouds.drs.subscribe.ClusterListener;
import com.huawei.hwclouds.drs.subscribe.DefaultSubscribeClient;
import com.huawei.hwclouds.drs.subscribe.SubscribeClient;
import java.util.List;
public class MainClass {
public static void main(String[] args) throws Exception {
SubscribeContext context = new SubscribeContext();
//There will be security risks if the username and password used for authentication are directly
written into code. Store the username and password in ciphertext in the configuration file or
environment variables.
//In this example, the username and password are stored in the environment variables. Before
running this example, set environment variables EXAMPLE_USERNAME_ENV and
EXAMPLE_PASSWORD_ENV based on site requirements.
//Set a Username of the current cloud account.
String username = System.getenv("EXAMPLE_USERNAME_ENV");
context.setDomainName(username);
//Set the Password of the current cloud account.
```

```
String userpassword = System.getenv("EXAMPLE_PASSWORD_ENV");
context.setPassword(userpassword);
//Set the IP address of the subscription instance on the Data Subscription Management page.
context.setIp("SubscribeChannelIp");
context.setUserId("userId");
SubscribeClient client =
DefaultSubscribeClient.getSubscribeClient(context);
ClusterListener clusterListener = new ClusterListener() {
@Override
//Client consumption behavior defined in notify
public void notify(List<ClusterMessage> var1) throws Exception {
for (ClusterMessage message : var1) {
System.out.println("Message is " + message.toString());
}
}
public void onException(Exception e) {
e.printStackTrace();
}
};
client.addClusterListener(clusterListener);
client.start();
}
```

## 2.3 SDK Download Address

Table 2-8 SDK download address

Release Date	SDK Download Address	sha256	Description
2019-01-19	<a href="#">drs-subscribe-sdk-1.0-jar-with-dependencies.jar</a>	7da3dd1504da32fb46ab704943d1c0f5872e1d9e394f897ebd86add903295153	This issue is the first official release.

# 3 Task Management

---

## 3.1 Viewing Task Details

This section describes how to view details about a subscription task, including information about the task and subscription source.

### Prerequisites

You have logged in to the DRS console.

### Procedure

 **NOTE**

In the task list, only tasks created by the current login user are displayed. Tasks created by different users of the same tenant are not displayed.

**Step 1** On the **Data Subscription Management** page, click the target subscription task name in the **Name/ID** column.

**Step 2** On the displayed **Basic Information** tab, view details about the subscription task.

You can view information about the task, subscription instance, and subscription source.

----End

## 3.2 Modifying Task Information

After a subscription task is created, you can edit task information to identify different tasks.

The following task information can be edited:

- Task name
- Description
- SMN topic

## Prerequisites

You have logged in to the DRS console.

## Procedure

**Step 1** On the **Data Subscription Management** page, click the target subscription task.

**Step 2** On the **Basic Information** page, click  next to the information to modify.

- To submit the change, click .
- To cancel the change, click .

**Table 3-1** Subscription task information

Task Information	Description
Task Name	The task name must start with a letter and consist of 4 to 50 characters. It can contain only letters, digits, hyphens (-), and underscores (_).
Description	The description consists of a maximum of 256 characters and cannot contain special characters !=<>'&"
SMN topic	You can apply for a topic on the SMN console and add a subscription. For details, see <a href="#">Simple Message Notification User Guide</a> .

**Step 3** View the change result on the **Basic Information** tab.

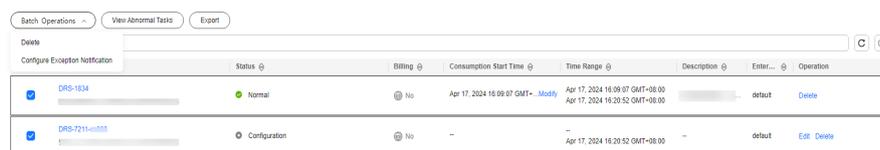
----End

## Configuring Exception Notifications

**Step 1** On the **Data Subscription Management** page, select the task to be configured.

**Step 2** Click **Batch Operations** in the upper left corner and choose **Configure Exception Notification**.

**Figure 3-1** Batch Operations



**Step 3** In the displayed dialog box, enter the configuration information and click **Yes** to submit the configuration task.

----End

## 3.3 Editing a Subscription Task

This section describes how to modify configuration information of a subscription task, including information about the source and destination databases. For subscription tasks in the following statuses, you can edit and submit the tasks again.

- Configuration

### Prerequisites

You have logged in to the DRS console.

### Procedure

- Step 1** In the task list on the **Data Subscription Management** page, locate the target task and click **Edit** in the **Operation** column.
- Step 2** On the **Select Subscription Object** page, enter the required information about the objects to be modified and click **Next**.
- Step 3** On the **Confirm Task** page, specify **Send Notifications** and **SMN Topic**, confirm that the configured information is correct, select the check box before the agreement, and click **Submit**.

Figure 3-2 Task startup settings

The screenshot shows three settings for task startup:

- Send Notifications:** A toggle switch is turned on (blue).
- SMN Topic:** A dropdown menu is open, showing a selection box.
- Delay Threshold (s):** A toggle switch is turned on (blue), followed by an input field. A note below it states: "Delay threshold range: 0 to 3,600s. If the delay threshold is set to 0, no notification is sent to the recipient."

Table 3-2 Task startup settings

Parameter	Description
Send Notifications	This parameter is optional. After enabled, select an SMN topic. If the status or latency metric of the data subscription task is abnormal, DRS will send a notification.
SMN Topic	This parameter is available only after you enable Send Notifications and create a topic on the SMN console and add a subscriber. For details, see <a href="#">Simple Message Notification User Guide</a> .

Parameter	Description
Synchronization delay threshold	<p>A synchronization delay indicates a time difference (in seconds) of synchronization between the source and destination database. If the synchronization delay exceeds the threshold you specify, DRS will send alarms to the specified recipients. The value ranges from 0 to 3,600. To avoid repeated alarms caused by the fluctuation of delay, an alarm is sent only after the delay has exceeded the threshold for six minutes.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• Before setting the delay threshold, enable <b>Send Notifications</b>.</li> <li>• If the delay threshold is set to 0, no notifications will be sent to the recipient.</li> </ul>

**Step 4** After the task is submitted, view and manage it on the **Data Subscription Management** page.

- You can view the task status. For details, see [Task Statuses](#).
- You can click  in the upper-right corner to view the latest task status.

 **NOTE**

After a subscription task is created, you can use an SDK to subscribe to incremental data in the subscription task in real time. For details, see [SDK Usage Instructions](#).

----End

## 3.4 Viewing Subscription Information

DRS allows you to view incremental subscription information (excluding view and stored procedure data) in a specified time range on the DRS console.

This section describes how to view the subscription information online and the meaning of each field in the data record.

### Prerequisites

- You have logged in to the DRS console.
- You have created a subscription task.

### Procedure

**Step 1** On the **Data Subscription Management** page, view the time range of a subscription task.

**Figure 3-3** Task list

Task NameID	Status	Billing	Consumption Start Time	Time Range	Description	Enter...	Operation
DRS-1834	Starting	No	Apr 17, 2024 16:09:07 GMT+...	Apr 17, 2024 16:09:07 GMT+08:00 Apr 17, 2024 16:10:40 GMT+08:00		default	Delete
DRS-1834	Configuration	No	-	Apr 17, 2024 16:10:40 GMT+08:00		default	Edit Delete

**Step 2** Select a specified subscription task and click the task name. The **Basic Information** page is displayed.

**Step 3** Choose **Subscription Information**.

By default, incremental subscription information of the last 5 minutes is displayed in the current list. To view the subscription information in a specified time range, you can select the time range in the upper right corner on the page, and the time range must be within the subscription task time range.

**Figure 3-4** Viewing subscription information

Subscription task time range: Aug 21, 2023 14:21:52 GMT+08:00–Aug 22, 2023 12:22:38 GMT+08:00

Service ID	Database Name	Table Name	Statement Type	Binlog Position	Time	Operation
17010000103306	test	t1	INSERT	371@2300	Aug 22, 2023 12:15:58 GMT+08:00	<a href="#">View Subscription Data</a>
17010000103306	test	t1	INSERT	654@2300	Aug 22, 2023 12:17:09 GMT+08:00	<a href="#">View Subscription Data</a>

The data format of subscription information is the internal data format of the DRS service. [Table 3-3](#) describes the fields in the data record.

**Table 3-3** Field description

Field	Description
Service ID	IP address and port of the RDS instance
Database Name	Name of the database where the statement is executed
Table Name	Name of the table where the statement is executed
Statement Type	The statement types are as follows: UPDATE, DELETE, INSERT, REPLACE, BEGIN, COMMIT, DDL and DML.
Binlog Position	Location of the change record in the binlog file. The format is <b>binlog_file_offset@binlog_file_id</b> . <b>binlog_file_id</b> indicates the suffix of the binlog file name, and <b>binlog_file_offset</b> indicates the offset of the binlog record in the binlog file.
Time	Time when the change record is written to the binlog file

To view details about a specified table in a specified database, click **View Subscription Data**.

**Figure 3-5** Field description

View Subscription Data ×

Field Name	Type	Code	Original Value	New Value
id1	INT32	utf8		3
id2	INT32	utf8		3
id3	INT32	utf8		3
id4	INT32	utf8		3
id5	INT32	utf8		3
id6	INT32	utf8		3

For details, see [Table 3-4](#).

**Table 3-4** Field description

Field	Description
Field Name	Name of each field corresponding to the change record
Type	Data type of each field corresponding to the change record
Code	Character set code corresponding to the change record
Original Value	The value of each field before the change There is no original value for the insert operation.
New Value	The value of each field after the change There is no original value for the delete operation.

 **NOTE**

- The update operation has both the original and new values.
- If the operation type is DDL, only the field name, type, code, original value, and new value are available.

----End

## 3.5 Modifying Consumption Start Time

DRS allows you to modify the consumption start time at any time. The consumption start time must be within the subscription task time range. Once the consumption start time is modified, the incremental data obtained by the downstream SDK starts from the modified consumption start time.

This section describes how to modify the consumption start time on the DRS management console.

## Constraints

- A data subscription task has been started and is in the **normal** state.
- Currently, the consumption point can be modified on the DRS management console only and cannot be specified in SDK.
- The selected consumption start time must be within the time range of the subscription task.

## Procedure

**Step 1** Stop the SDK consumption process.

Before modifying a consumption start time, ensure that all SDK downstream business processes connected to the subscription channel are stopped.

**Step 2** On the **Data Subscription Management** page, locate the target subscription task and click **Modify** in the **Consumption Start time** column.

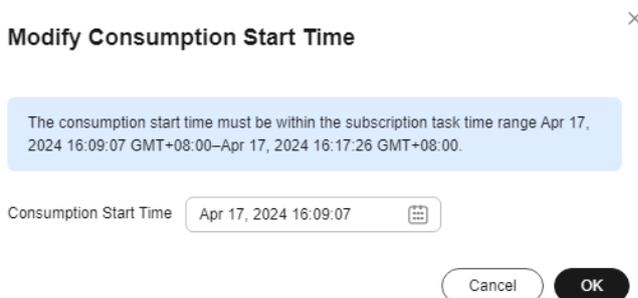
**Figure 3-6** Modifying the consumption start time



Task Name/ID	Status	Billing	Consumption Start Time	Time Range	Description	Enter...	Operation
DRS-1334	Normal	No	Apr 17, 2024 16:09:07 GMT+08:00	Apr 17, 2024 16:09:07 GMT+08:00 - Apr 17, 2024 16:13:41 GMT+08:00		default	Delete

**Step 3** In the displayed dialog box, set the consumption start time and click **OK**.

**Figure 3-7** Modifying the consumption start time



**Modify Consumption Start Time** ×

The consumption start time must be within the subscription task time range Apr 17, 2024 16:09:07 GMT+08:00-Apr 17, 2024 16:17:26 GMT+08:00.

Consumption Start Time

### NOTE

The selected consumption start time must be within the time range of the subscription task.

**Step 4** Restart the SDK consumption process.

After the consumption start time is modified, restart the local SDK consumption process. Then, the SDK starts to subscribe to incremental data from the modified consumption start time.

----End

## 3.6 Resuming a Subscription Task

A fault may occur during the data subscription. After the fault is rectified, you can resume the subscription task.

### Prerequisites

You have logged in to the DRS console.

### Procedure

In the task list on the **Data Subscription Management** page, locate the target task and click **Resume** in the **Operation** column.

## 3.7 Resetting a Subscription Task

During the data subscription, if a subscription task fails due to uncertain causes, the system will resume the task several times. However, the task may fail to be recovered in some scenarios. To continue the data subscription from the current time, DRS allows you to reset the task without reconfiguring the task.

### Constraints

After a task is reset and started, the start time of the task is the current time instead of the task creation time.

### Procedure

- Step 1** In the task list on the **Data Subscription Management** page, locate the target task and click **Reset** in the **Operation** column.
- Step 2** In the displayed **Reset Task** dialog box, confirm the task information and click **Yes** to submit the subscription task again.

----End

## 3.8 Deleting a Subscription Task

The task will no longer be displayed in the task list after being deleted. Exercise caution when performing this operation.

### Prerequisites

You have logged in to the DRS console.

### Deleting a Task

- Step 1** In the task list on the **Data Subscription Management** page, locate the target task and click **Delete** in the **Operation** column.

**Step 2** Click **Yes** to submit the deletion task.

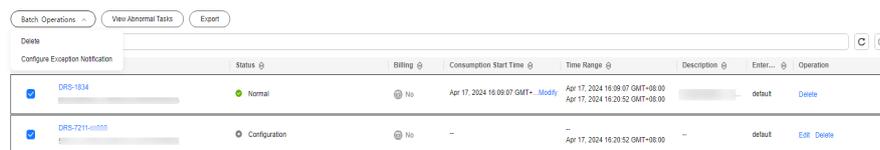
----End

## Deleting Tasks

**Step 1** On the **Data Subscription Management** page, select the tasks to be deleted.

**Step 2** Click **Batch Operations** in the upper left corner and choose **Delete**.

**Figure 3-8** Batch Operations



**Step 3** In the displayed dialog box, confirm the task information and click **Yes**.

----End

## 3.9 Task Statuses

Data subscription statuses indicate different subscription tasks.

**Table 3-5** lists data subscription task statuses and descriptions.

**Table 3-5** Data subscription task statuses

Status	Description
Creating	A subscription instance is being created for DRS.
Creation failed	A subscription task fails to be created.
Configuration	The subscription instance is successfully created, but the subscription task is not started. You can continue to configure the task.
Frozen	Instances are frozen when the account balance is less than or equal to \$0.
Starting	A subscription task is starting.
Start failed	A data subscription task fails to be started.
Normal	A data subscription task has been created.
Abnormal	A data subscription task fails to be created.
Fault rectification	A subscription instance is faulty and the system automatically restores the subscription task.

 **NOTE**

- If a task fails to be created, DRS retains the task for three days by default. After three days, the task automatically stops.
- By default, DRS retains a task in the **Configuration** state for three days. After three days, DRS automatically deletes background resources, but the task status remains unchanged. When you reconfigure the task, DRS applies for resources again.
- By default, DRS retains a task in the **Abnormal** state for 14 days. After 14 days, DRS automatically deletes background resources, but the task status remains unchanged. When you reconfigure the task, DRS applies for resources again.
- Deleted subscription tasks are not displayed in the status list.

# 4 Tag Management

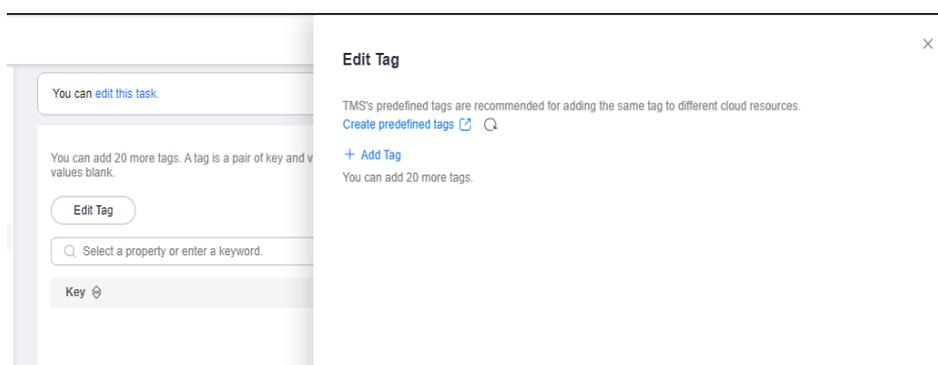
## Scenarios

Tag Management Service (TMS) enables you to use tags on the management console to manage resources. TMS works with other cloud services to manage tags. TMS manages tags globally, and other cloud services manage their own tags. If you have to manage a large number of tasks, you can use different tags to identify and search for tasks.

- You are advised to set predefined tags on the TMS console.
- A tag consists of a key and value. You can add only one value for each key.
- Each DB instance can have up to 20 tags.

## Adding a Tag

- Step 1** On the **Data Subscription Management** page, click the target subscription task name in the **Task Name/ID** column.
- Step 2** In the navigation pane on the left, choose **Tags**.
- Step 3** On the **Tags** page, click **Edit Tag**. In the displayed dialog box, click **Add Tag**, enter a tag key and value, and click **OK**.



- When you enter a tag key and value, the system automatically displays all tags (including predefined tags and resource tags) associated with all DB instances except the current one.

- The tag key cannot be empty and must be unique. It cannot start or end with a space or start with **\_sys\_**. It can contain 1 to 128 characters, including letters, digits, spaces, and special characters **\_:=+@**
- The tag value can be empty. It cannot start or end with a space and can contain 0 to 255 characters, including letters, digits, spaces, and special characters **\_:=+@**

**Step 4** View and manage the tag on the **Tags** page.

----End

## Editing a Tag

**Step 1** On the **Data Subscription Management** page, click the target subscription task name in the **Task Name/ID** column.

**Step 2** In the navigation pane on the left, choose **Tags**.

**Step 3** On the **Tags** page, click **Add/Edit Tags**. In the displayed dialog box, modify the tag and click **OK**.

----End

## Delete a Tag

**Step 1** On the **Data Subscription Management** page, click the target subscription task name in the **Task Name/ID** column.

**Step 2** In the navigation pane on the left, choose **Tags**.

**Step 3** On the **Tags** page, locate the tag to be deleted and click **Delete** in the **Operation** column. In the displayed dialog box, click **Yes**.

**Step 4** After the tag is deleted, it will no longer be displayed on the **Tags** page.

----End