Data Replication Service

Backup Migration

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Contents

1 Migration Overview

It often becomes necessary to hide the real IP address of your database for the sake of security. Migrating data through direct connections is an option, but costly. DRS supports backup migration, which allows you to export data from your source database for backup and upload the backup files to OBS. Then, you can restore the backup files to the destination database to complete the migration. Using this method, data migration can be realized without exposing your source databases.

You can use backup migration when you want to migrate on-premises databases to the cloud.

Without connecting to your sources, DRS can help you complete data migration.

Figure 1-1 Backup migration process
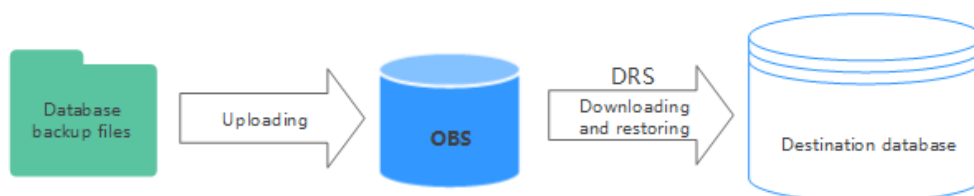
Supported Database Types

Table 1-1 lists the source database and destination database types supported by DRS in backup migration.

Table 1-1 Migration schemes

Backup File	Destination DB	Documentation
Full backup file of RDS Microsoft SQL Server	RDS for Microsoft SQL Server	**Creating an RDS Backup Migration Task**
Backup files o f on-premises and other cloud Microsoft SQL Server		**Creating a Backup Using OBS Buckets**

2 Creating an RDS Backup Migration Task

Supported Source and Destination Databases

Table 2-1 Supported databases

Backup File	Destination DB
RDS Microsoft SQL Server full backup file versions: ● Microsoft SQL Server 2008 ● Microsoft SQL Server 2012 ● Microsoft SQL Server 2014 ● Microsoft SQL Server 2016 ● Microsoft SQL Server 2017 ● Microsoft SQL Server 2019	RDS for Microsoft SQL Server ● Microsoft SQL Server 2008 ● Microsoft SQL Server 2012 ● Microsoft SQL Server 2014 ● Microsoft SQL Server 2016 ● Microsoft SQL Server 2017 ● Microsoft SQL Server 2019

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 DB types and versions, see **Supported Databases**.
- If a subaccount is used to create a DRS task, ensure that an agency has been added. To create an agency, see **Agency Management**.

Before Backing Up File

Learn the backup migration constraints before starting a migration task.

Table 2-2 Before Backing Up File

Scenario	Preparations
RDS full backup files	The source Microsoft SQL Server DB instance has full backups. If there are no full backups, create a full backup for the DB instance. For details, see "Creating a Manual Backup" in *Relational Database Service User Guide*.

Precautions

This section describes constraints on backup migrations of Microsoft SQL Server databases.

Table 2-3 Precautions

Type	Restrictions
Database permissions	Before creating a backup migration task, ensure that the account has the permission to operate the RDS service.
Backup database names	● Backup database names are case-insensitive, must be unique, and cannot be any of the following: – msdb – master – model – tempdb – rdsadmin – resource
New database name	● The new database name must be unique and cannot be any of the following (case-insensitive): – msdb – master – model – tempdb – rdsadmin – resource ● The new database name contains 1 to 128 characters, including letters, digits, underscores (_), and hyphens (-).
Backup file sources	● RDS full backups: Backup files are manually or automatically created for RDS DB instances.

Type	Restrictions
Precautions	• The available disk space of the destination database is at least 1.5 times the total data size of the backup database. • Backup database name is case-sensitive and must be the same as the database name in the backup file. • The database backup file from a database of later version cannot be restored on the instance database of an earlier version (for example, restored from version 2017 to 2016). • The restoration from Enterprise Edition to Standard Edition to Web Edition may fail. That depends on whether the features of the later version are enabled. • During a migration, if **Overwrite Data** is set to **Yes**, high availability of the destination database is disabled by default. After the migration is complete, high availability is restored automatically. • During a migration, stop writing transactions to the destination database. • If a primary/standby switchover of the destination database is performed, the backup migration fails. In this case, the migration task cannot be restored.

Procedure

This section describes how to create an RDS full backup migration task. You can use the full backups of Microsoft SQL Server DB instances in the cloud to migrate data.

Step 1 On the **Backup Migration Management** page, click **Create Migration Task**.

Step 2 On the **Select Backup** page, specify information about the task and backup files. Then, click **Next**.

Figure 2-1 Task information

Table 2-4 Task information

Parameter	Description
Task Name	The task name consists of 4 to 50 characters, starts with a letter, and can contain only letters (case-insensitive), digits, hyphens (-), and underscores (_).
Description	The description consists of a maximum of 256 characters and cannot contain special characters !=<>'&"\

Figure 2-2 Backup file information
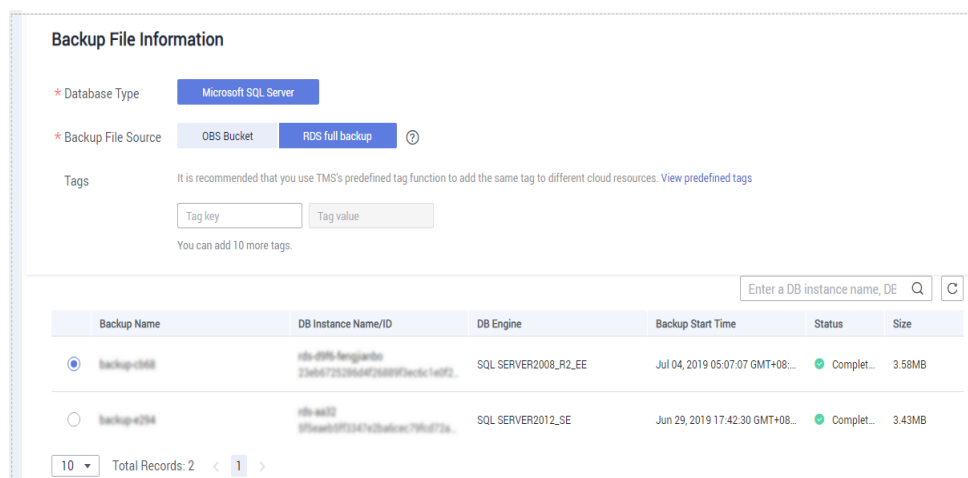
Table 2-5 Backup file information

Parameter	Description
Database Type	Select **Microsoft SQL Server**.
Backup File Source	Select **RDS full backup**. **NOTE** Select a backup file whose status is **Completed**.
Enterprise Project	If the DB instance has been associated with an enterprise project, select the target project from the **Enterprise Project** drop-down list. You can also go to the ProjectMan console to create a project. For details about how to create a project, see the *ProjectMan User Guide*.
Tags	● Tags a task. This configuration is optional. Adding tags helps you better identify and manage your tasks. Each task can have up to 10 tags. ● After a task is created, you can view its tag details on the **Tags** tab. For details, see **Tag Management**.

Step 3 On the **Select Destination** page, specify database information and click **Next**.

Figure 2-3 Database information

Database Information

Destination RDS DB Instance Name	rds-sqlserver2016std-target [Select Destination RDS DB Instance]

☐ I understand restoring databases to the destination instance will overwrite the instance data or create new databases, and the databases in the destination database are unavailable during the restoration. I also understand that only an existing instance that has the same or a later version, and whose storage space is greater than or equal to that of the source instance can be selected.

Backup Database Name

☐	Backup Database Name	New Database Name
☐	sbtest5	sbtest5
☐	db1-new	db1-new
☐	db2	db2
☐	db1	db1
☐	sbtest123	sbtest123
☐	sbtest	sbtest

Table 2-6 Database information

Parameter	Description
Destination RDS DB Instance Name	Select a destination RDS DB instance. If no RDS DB instance is available, you can create one.
Backup Database Name	After you select the destination RDS DB instance, all databases to be restored are automatically displayed. You can select databases to be restored as required and rename them. ● **Backup Database Name**: Name of the database to be restored. ● **New Database Name**: The backup database name must consist of 1 to 64 characters. It can contain only uppercase letters, lowercase letters, digits, hyphens (-), and underscores (_). If the name is not specified, the original database name is used. **NOTE** ● The backup database can be renamed. A maximum of 100 backup databases can be created. ● The new database name cannot be the same as the name of any other database in the source.

Step 4 On the **Confirm Task** page, check configuration details, read and agree to the agreement, and click **Next**.

📖 **NOTE**

If the SQL Server source contains non-clustered index tables, the index information of non-clustered index tables will become invalid after the SQL Server backups are restored to a new database. For the best performance, rebuild the indexes after the backup migration. In addition, the backup files store only database-level information. If the SQL Server source contains some instance-level configurations, such as login, permission, DBlink, and job, migrate these configurations by referring to **Manual Configuration**.

Step 5 In the task list on the **Backup Migration Management** page, check whether the task is in the **Restoring** status. If the migration is successful, the task status becomes **Successful**.

----End

3 Creating a Backup Using OBS Buckets

Supported Source and Destination Databases

Table 3-1 Supported databases

Backup File	Destination DB
On-premises and other cloud's Microsoft SQL Server backup file versions: ● Microsoft SQL Server 2000 ● Microsoft SQL Server 2005 ● Microsoft SQL Server 2008 ● Microsoft SQL Server 2012 ● Microsoft SQL Server 2014 ● Microsoft SQL Server 2016 ● Microsoft SQL Server 2017 ● Microsoft SQL Server 2019	RDS for Microsoft SQL Server ● Microsoft SQL Server 2008 ● Microsoft SQL Server 2012 ● Microsoft SQL Server 2014 ● Microsoft SQL Server 2016 ● Microsoft SQL Server 2017 ● Microsoft SQL Server 2019

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 DB types and versions, see **Supported Databases**.
- If a subaccount is used to create a DRS task, ensure that an agency has been added. To create an agency, see **Agency Management**.

Before Backing Up File

Learn the backup migration constraints before starting a migration task.

Table 3-2 Before Backing Up File

Scenario	Preparations
OBS bucket	• An OBS bucket is available. If there is no OBS bucket, create one. For detailed operations, see "Creating a Bucket" in the *Object Storage Service Console Operation Guide*. • Database backup files have been uploaded to the OBS bucket. If there are no backup files in the OBS bucket, upload local backup files to it and ensure that the backup file name format is correct. For details about how to upload backup files, see "Uploading a File or Folder" in *Object Storage Service Console Operation Guide*. • OBS Browser has been installed for uploading multiple files in batches or large files greater than 50 MB in size. For detailed operations, see the *Introduction to OBS Browser*. **NOTE** • Currently, KMS encryption is not available when you upload backup files to an OBS bucket. • When you upload backup files to an OBS bucket, select **Standard** for **Storage Class**. Otherwise, the migration will fail. • If the number of data records in a bucket exceeds 500, data overflow may occur. As a result, some data cannot be displayed. You can use an independent standard bucket with the public-read permission. • You are advised to store backup files in independent OBS buckets in the same region as the destination DB instance.

Precautions

This section describes constraints on backup migrations of Microsoft SQL Server databases.

Table 3-3 Precautions

Type	Restrictions
Database permissions	Before creating a backup migration task, ensure that the current account has the OBS and bucket permissions.

Type	Restrictions
Backup database names	- Backup database names are case-insensitive, must be unique, and cannot be any of the following: - msdb - master - model - tempdb - rdsadmin - resource - The name of the OBS bucket contains 1 to 256 characters, including letters, digits, underscores (_), and hyphens (-).
New database name	- The new database name must be unique and cannot be any of the following (case-insensitive): - msdb - master - model - tempdb - rdsadmin - resource - The new database name contains 1 to 128 characters, including letters, digits, underscores (_), and hyphens (-).
Local backup files	- The suffix of the backup file to be uploaded to an OBS bucket must be .bak. Only .bak files can be selected in the OBS backup file list. - The backup file name contains 1 to 200 characters. - The backup file name can contain only letters, digits, hyphens (-), and underscores (_). - Backup files are classified into full backup files and log backup files.
Backup file sources	OBS buckets: store local backup files in its root directory.

Type	Restrictions
Precautions	● The OBS bucket and DB instance must be in the same region. ● The available disk space of the destination database is at least 1.5 times the total data size of the backup database. ● Backup database name is case-sensitive and must be the same as the database name in the backup file. ● The database backup file from a database of later version cannot be restored on the instance database of an earlier version (for example, restored from version 2017 to 2016). ● The restoration from Enterprise Edition to Standard Edition to Web Edition may fail. That depends on whether the features of the later version are enabled. ● During a migration, if **Overwrite Data** is set to **Yes**, high availability of the destination database is disabled by default. After the migration is complete, high availability is restored automatically. ● During a migration, stop writing transactions to the destination database. ● If a primary/standby switchover of the destination database is performed, the backup migration fails. In this case, the migration task cannot be restored.

Procedure

This section describes how to create a backup migration task using the backup stored in the OBS bucket on the DRS console.

Step 1 On the **Backup Migration Management** page, click **Create Migration Task**.

Step 2 On the **Select Backup** page, specify information about the task and backup files. Then, click **Next**.

Figure 3-1 Task information

Table 3-4 Task information

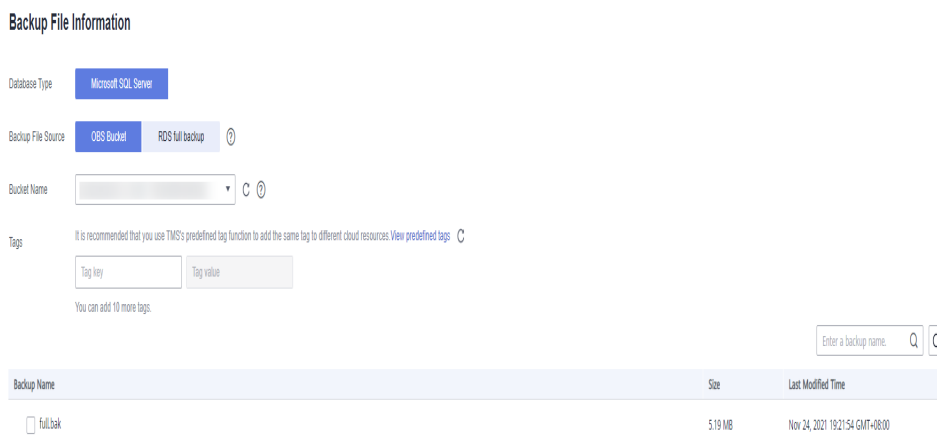| Parameter	Description
Task Name	The task name consists of 4 to 50 characters, starts with a letter, and can contain only letters (case-insensitive), digits, hyphens (-), and underscores (_).
Description	The description consists of a maximum of 256 characters and cannot contain special characters !=<>'&"\

Figure 3-2 Backup file information

Table 3-5 Backup file information

Parameter	Description
Database Type	Database type of the backup file. Select Microsoft SQL Server.
Backup File Source	Select **OBS Bucket**.
Bucket Name	Select a bucket and a backup file stored in the directory of the bucket. **NOTE** ● The backup file of the Microsoft SQL Server must be named in the .bak format in the OBS bucket directory. Multiple backup files can be selected at the same time. ● A database cannot be split into different files for upload. ● The bucket name, backup file name, or path cannot contain full-width characters.

Parameter	Description
Enterprise Project	If the DB instance has been associated with an enterprise project, select the target project from the **Enterprise Project** drop-down list. You can also go to the ProjectMan console to create a project. For details about how to create a project, see the *ProjectMan User Guide*.
Tags	● Tags a task. This configuration is optional. Adding tags helps you better identify and manage your tasks. Each task can have up to 10 tags. ● After a task is created, you can view its tag details on the **Tags** tab. For details, see **Tag Management**.

Step 3 On the **Select Destination** page, specify database information and click **Next**.

Figure 3-3 Microsoft SQL Server database information

Table 3-6 Microsoft SQL Server database information

Parameter	Description
Destination RDS DB Instance Name	Select a destination RDS DB instance. If no RDS DB instance is available, you can create one.

Parameter	Description

Backup File Format	Select **Full** or **Incremental**.
	● **Full**: indicates full backup files.
	● **Incremental**: indicates log backup files.
	NOTE
	   – Before performing an incremental restoration, you need to perform a full restoration.
	   – To migrate databases at a time, you need to stop services first and upload full backups for restoration.
	   – To ensure service continuity during a migration, perform a full backup and multiple incremental backups, and then upload the backup data to OBS for restoration.

Last Backup	A complete restoration involves restoring several incremental backup files. The destination DB instance cannot be modified while it is being restored. It will not be available until the last backup file is restored. If you select Yes and restore the instance, any incremental restoration will not be performed. You can select the last backup in the following scenarios: ● Perform a one-time full migration. ● The selected backup file is the last one to be restored.
Overwrite Data	You can determine whether to overwrite data in the destination database during the restoration if the destination DB instance contains a database with the same name as the backup database. Exercise caution when performing this operation. **NOTE** If you select this option, the destination databases with the same names as the backup databases will be overwritten. Exercise caution when performing this operation.
Perform Pre-verification	Specifies whether to perform pre-verification on the backup migration task. The default value is **Yes**. ● **Yes**: To ensure successful migration and identify potential problems in advance, verify the validity, integrity, continuity, and version compatibility of backup files before restoration. ● **No**: If pre-verification is not performed, the migration speed is faster, but you need to check the validity, integrity, continuity, and version compatibility of backup files on your own.

Parameter	Description
Restore Database	You can restore all or part of databases. All of databases are restored by default. ● **All**: Restore all databases from the backup file. You do not need to enter the name of the database to be restored. ● **Custom**: Restore specified databases from the backup file. You need to enter the names of the databases to be restored. The databases to be restored must be consistent with those for which the full or incremental backups are created.
Reset Database Name	If **Restore Database** is set to **All**, you can reset database names. If you enable **Reset Database Name**, the original database names in the backup file will be reset to new database names. Constraint: ● The backup file contains only one database. ● The backup file is a full backup file and is the last backup file. Select **Full** for **Backup File** and **Yes** for **Last Backup Type**. NOTE The database name can be reset only when **Backup Type** is set to **Full** and **Restore Database** is set to **All**.
Backup Database Name	If **Restore Database** is set to **Custom**, you need to specify **Backup Database Name**. The backup database name must be the same as that in the backup file and consist of 1 to 256 characters. It can contain only letters (case-sensitive), digits, hyphens (-), and underscores (_). DRS also allows you to create an alias for the database to be restored. ● If you choose to restore databases in full backup mode, you can set the alias of the database based on the site requirements. The alias is also stored in the destination database. ● If databases are restored in incremental backup mode, alias is not supported. NOTE The backup database can be renamed. Up to 100 backup databases can be created.

Step 4 On the **Confirm Task** page, check configuration details, read and agree to the agreement, and click **Next**.

📖 **NOTE**

> If the SQL Server source contains non-clustered index tables, the index information of non-clustered index tables will become invalid after the SQL Server backups are restored to a new database. For the best performance, rebuild the indexes after the backup migration. In addition, the backup files store only database-level information. If the SQL Server source contains some instance-level configurations, such as login, permission, DBlink, and job, migrate these configurations by referring to **Manual Configuration**.

Step 5 In the task list on the **Backup Migration Management** page, check whether the task is in the **Restoring** status. If the migration is successful, the task status becomes **Successful**.

----End

4 Task Management

4.1 Viewing Task Details

The **Basic Information** page of a backup migration task displays information about the task, backup files, and databases. This section describes how to view details about current migration task.

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 **Backup Migration Management** page, click the target migration task name in the **Task Name/ID** column.

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

You can view information about the task, backup files, and databases.

----End

4.2 Editing Migration Task Information

After a backup migration task is created, you can modify task information to identify different tasks.

The following task information can be edited:

- Task name
- Description

Prerequisites

You have logged in to the DRS console.

Procedure

Step 1 On the **Backup Migration Management** page, click the target migration task name in the **Task Name/ID** column.

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 4-1 Task information description

Task Information	Description
Task name	The task name consists of 4 to 50 characters, starts with a letter, and can contain only letters (case-insensitive), digits, hyphens (-), and underscores (_).
Description	The description consists of a maximum of 256 characters and cannot contain the following special characters: ! =<>'&"

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

----End

4.3 Viewing Migration Logs

Migration logs refer to the warning-, error-, and info-level logs generated during the migration process. This section describes how to view migration logs to locate and analyze database problems, if any.

Prerequisites

You have logged in to the DRS console.

Procedure

Step 1 On the **Backup Migration Management** page, click the target migration task name in the **Task Name/ID** column.

Step 2 On the displayed page, click **Migration Logs** to view the logs generated during the migration.

Figure 4-1 Viewing migration logs

You can view time, levels, and descriptions of the logs.

----End

4.4 Deleting a Migration Task

This section describes how to delete a migration task. Deleted tasks will no longer be displayed in the task list. 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 **Backup Migration 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 **Backup Migration Management** page, select the task to be deleted.

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

Figure 4-2 Batch Operations

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

----End

4.5 Task Statuses

Migration statuses indicate different migration phases.

Table 4-2 lists statuses and descriptions of backup migration tasks.

Table 4-2 Backup migration task statuses

Status	Description
Restoring	A backup file is being restored to the destination database.
Successful	A backup file has been restored to the destination database.
Failed	A backup file fails to be restored to the destination database.
Check failed	A backup file is unavailable.

◯ NOTE

Deleted migration tasks are not displayed in the status list.

5 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 10 tags.

Adding a Tag

Step 1 On the **Backup Migration Management** page, click the target migration task name in the **Task Name/ID** column.

Step 2 On the **Basic Information** tab, click the **Tags** tab.

Step 3 On the **Tags** tab, click **Add Tag**. In the displayed dialog box, 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 and 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 After a tag has been added, you can view and manage it on the **Tags** page.

----End

Editing a Tag

Step 1 On the **Backup Migration Management** page, click the target migration task name in the **Task Name/ID** column.

Step 2 On the **Basic Information** tab, click the **Tags** tab.

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 **Backup Migration Management** page, click the target migration task name in the **Task Name/ID** column.

Step 2 On the **Basic Information** tab, click the **Tags** tab.

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

A Change History

Released On	Description
2022-09-30	This issue is the first official release.