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ApsaraDB for RDS

Notices

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Document conventions

Style	Description	Example
Danger	A danger notice indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	Danger: Resetting will result in the loss of user configuration data.
Warning	A warning notice indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	Warning: Restarting will cause business interruption. About 10 minutes are required to restart an instance.
Notice	A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.	Notice: If the weight is set to 0, the server no longer receives new requests.
Note	A note indicates supplemental instructions, best practices, tips, and other content.	Note: You can use Ctrl + A to select all files.
>	Closing angle brackets are used to indicate a multi-level menu cascade.	Click **Settings**> **Network**> **Set network type**.
Bold	Bold formatting is used for buttons , menus, page names, and other UI elements.	Click **OK**.
`Courier font`	Courier font is used for commands	Run the `cd /d C:/window` command to enter the Windows system folder.
Italic	Italic formatting is used for parameters and variables.	`bae log list --instanceid` *Instance_ID*
[] or [a|b]	This format is used for an optional value, where only one item can be selected.	`ipconfig [-all|-t]`
{} or {a|b}	This format is used for a required value, where only one item can be selected.	`switch {active|stand}`

Table of Contents

1.[Notice] Snapshot backups charged for ApsaraDB RDS for PostgreSQL instances with standard or enhanced SSDs

Starting from September 20, 2020, snapshot backups will be charged based on the pay-as-you-go billing method. In addition, promotional discounts will be issued based on a predefined schedule. This applies to ApsaraDB RDS for PostgreSQL instances with standard or enhanced SSDs.

Effective date

September 20, 2020

Billing

You are charged at an hourly rate for snapshot backups based on the pay-as-you-go billing method. For more information, see Pricing of Snapshot Backups for ApsaraDB RDS for PostgreSQL Instances.

Promotional discounts

- If your RDS instance uses standard or enhanced SSDs, you are offered a free quota for backup storage. The free quota is equal to 200% of the purchased storage capacity.
- The price of backup storage used for snapshot backups is about 75% lower when standard or enhanced SSDs are used than when local SSDs are used.

References

- Back up an ApsaraDB RDS for PostgreSQL instance
- View the free quota for backup storage of an ApsaraDB RDS for PostgreSQL instance

2.[Notice] Migration of ApsaraDB for RDS instances

Alibaba Cloud upgrades the hardware and networks in some of its ApsaraDB for RDS data centers to increase performance and stability. You can migrate your RDS instance to another zone by using the ApsaraDB for RDS console as instructed below.

Deadline

We recommend that you complete the migration of your RDS instance by January 24, 2020.

> **Note** If you cannot complete the migration before this deadline, your business still can operate uninterrupted. For more information, see FAQ.

Application scope

If your RDS instance meets the following requirements, we recommend that you migrate it during off-peak hours at the earliest opportunity:

- It runs one of the following database engine versions and RDS editions:
  - MySQL 8.0 (with local SSDs)
  - MySQL 5.7 (with local SSDs)
  - MySQL 5.6
  - MySQL 5.5
  - SQL Server 2008 R2
  - PostgreSQL 10 High-availability Edition (with local SSDs)
  - PostgreSQL 9.4
  - PPAS
- It resides in one of the following source zones.

> **Note** The following table lists source zones and their recommended destination zones. The hardware and networks in the recommended destination zones offer better performance and stability to your RDS instance.

Source zone	Recommended destination zone
Zone C in China (Hangzhou)	Zone I in China (Hangzhou)
Zone D in China (Hangzhou)	Zone I in China (Hangzhou)
Zone B+Zone C in China (Hangzhou)	Zone H+Zone I in China (Hangzhou)
Zone B in China (Beijing)	Zone H in China (Beijing)

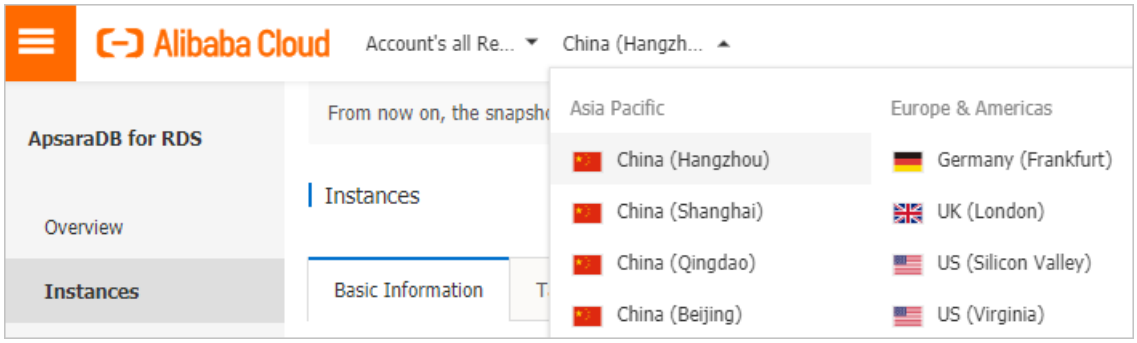
> **Note** Multi-zone deployment indicates that the primary and secondary instances reside in different zones to provide zone-level disaster tolerance.

Impact

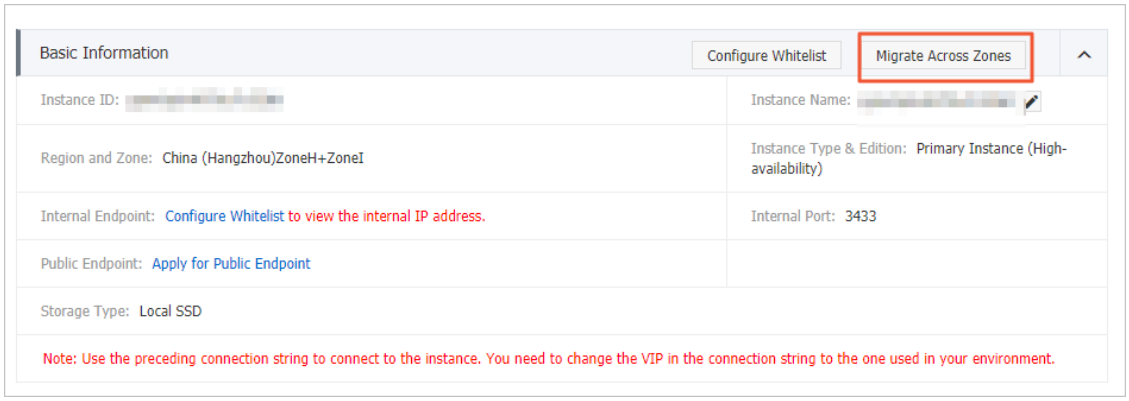
- There will be a brief 30-second disconnection during the migration. Make sure that your application is configured to reconnect to the primary instance after it is disconnected.
- After you change the VPC and VSwitch of your RDS instance, its virtual IP addresses (VIPs) also change. We recommend that you use an endpoint to connect your application and RDS instance. For more information, see Configure endpoints for an RDS for MySQL instance.
- The VIP changes temporarily interrupt the connection with Alibaba Cloud DRDS. You must update the endpoint information of your RDS instance in the DRDS console immediately after you change its VPC and VSwitch.
- The VIP changes temporarily interrupt the connections with Alibaba Cloud Data Management Service (DMS) and Data Transmission Service (DTS). The connections are automatically restored to normal.
- After the migration, data can only be read from the original RDS instance. However, your application still may connect to the original RDS instance by using the connection information cached in the domain name server (DNS). You must clear the cache on the DNS immediately after the migration is complete.

Procedure

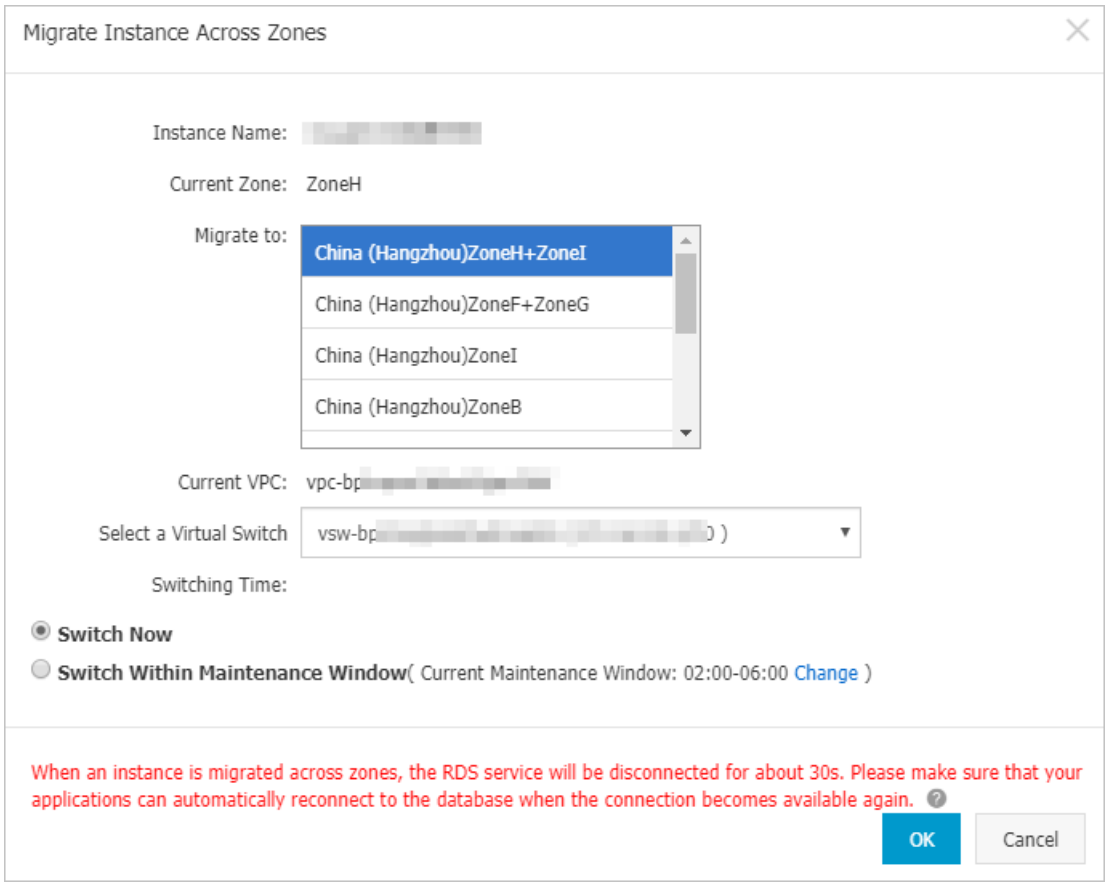
1. Log on to the ApsaraDB for RDS console.
2. In the upper-left corner of the page, select the region where the target RDS instance resides.



3. Find the target RDS instance and click its ID.
4. Click **Migrate Across Zones**.

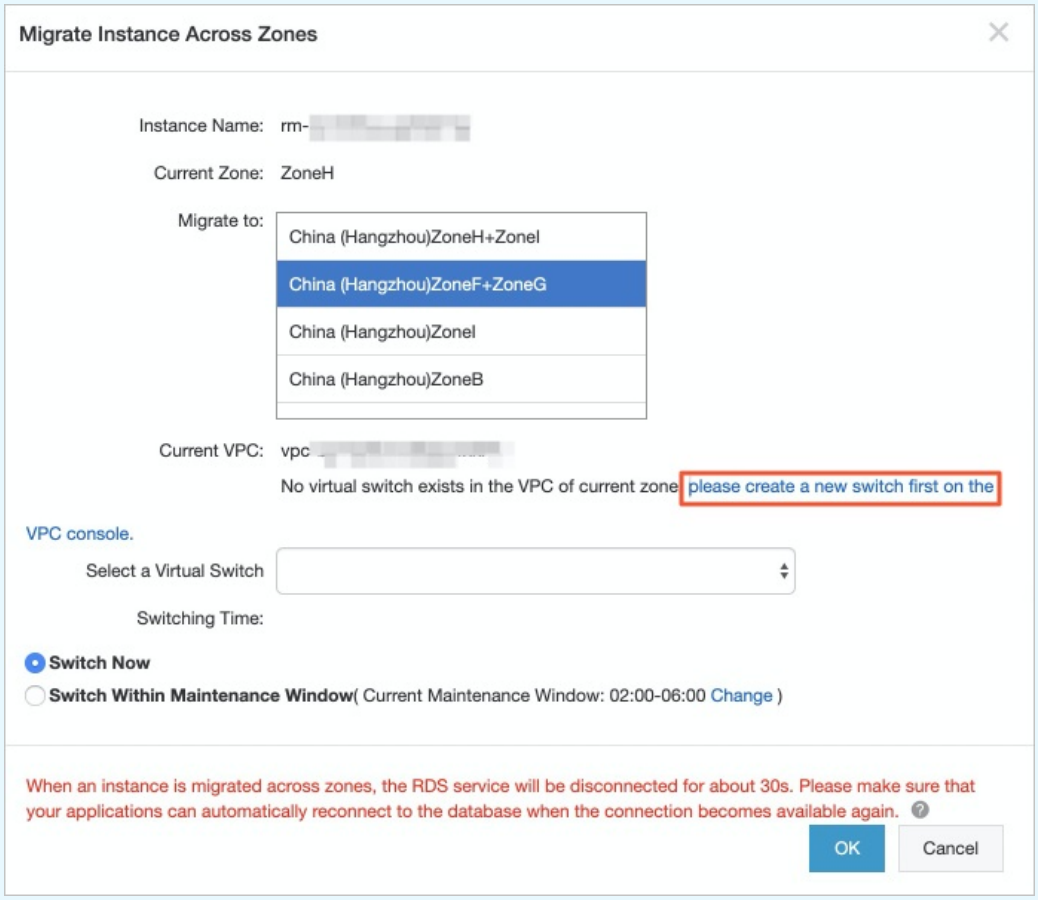


5. In the dialog box that appears, specify the destination zone, VSwitch, and switching time, and then click **OK**.



Note If your RDS instance resides in a VPC:

- You cannot change its VPC.
- Make sure that a VSwitch is created in the destination zone. If no VSwitches are created, click **please create a new switch first on the VPC console**. In the VPC console, create a VSwitch and make sure that you select a recommended destination zone.



FAQ

- **What happens if I do not migrate my RDS instance?**

  Your business remains available even if you do not migrate your RDS instance. However, for better performance and stability, we recommend that you migrate your RDS instance to a recommended destination zone.

- **If I cannot migrate my RDS instance by January 24, 2020, do I need to migrate it later?**

  Yes, you still need to migrate your RDS instance if you cannot migrate it now. If your RDS instance resides in Zone B in China (Beijing), Zone C in China (Hangzhou), or Zone D in China (Hangzhou) that requires hardware and network upgrades, Alibaba Cloud notifies you of the current O&M events. You can schedule your migration plan based on these events by using the ApsaraDB for RDS console. There will be a brief 30-second disconnection during the migration. Make sure that your application is configured to reconnect to the primary instance after it is disconnected. For more information, see Impact.

- **After I migrate my RDS instance, do I need to migrate its peer ECS instance that resides in the**

same zone?

According to the overall cross-zone migration plan of Alibaba Cloud, you must migrate both your RDS instance and its peer ECS instance from the same zone. For more information about how to migrate an ECS instance across zones, visit Alibaba Cloud physical server migration and upgrade notice.

- Do I have to migrate my RDS instance to a recommended destination zone from the preceding table?

  No, you can migrate your RDS instance to another zone not specified in the table.

- Can I migrate my RDS instance back to its source zone after the upgrade is complete?

  Yes, you can migrate your RDS instance back to its source zone after the upgrade is complete.

- Why am I unable to select the source zone of my RDS instance when I create a VSwitch?

  The **source zone** of your RDS instance receives hardware and network upgrades. Therefore, you cannot create a VSwitch in it. When you create a VSwitch, select a **recommended destination zone**.

3.[Notice] Supplementary service agreement for RDS SQL Server 2008 R2

Alibaba Cloud will stop providing security updates for RDS SQL Server 2008 R2 instances purchased on and after July 9, 2019.

Causes

Microsoft will end its support for SQL Server 2008 and 2008 R2 on July 9, 2019. This means that regular security updates will no longer be provided. However, you will be able to purchase up to three years of Extended Security Updates from Microsoft. Microsoft will offer Extended Security Updates for purchase on July 9, 2019, which includes Security Updates and Bulletins rated "critical."

Effective time

July 9, 2019

Existing RDS SQL Server 2008 R2 instances

We recommend that you upgrade your instances to SQL Server 2012 or 2016. For more information, see Upgrade a local SSD-based instance from SQL Server 2008 R2 to SQL Server 2012 or 2016.

New RDS SQL Server 2008 R2 instances

Microsoft will offer up to three years of Extended Security Updates for purchase. We recommend that you use other RDS SQL Server versions. If you still choose to purchase RDS SQL Server 2008 R2 instances, you hereby acknowledge that Alibaba Cloud will not provide security updates for the related instances.

> **Note** You can purchase Extended Security Updates (for three years from July 9, 2019) offered by Microsoft, and submit a ticket to Alibaba Cloud to install the updates.

4.[Notice] The storage engine was switched from TokuDB to InnoDB

ApsaraDB RDS MySQL has terminated its support for the TokuDB engine since August 1, 2019. This topic describes how to switch the storage engine from TokuDB to InnoDB.

Background information

Percona no longer provides support for TokuDB, leading to bugs that cannot be fixed and can cause business losses in extreme cases. Because of this, ApsaraDB RDS MySQL has terminated its support for the TokuDB engine since August 1, 2019. Direct engine switching will block DML operations and affect concurrency. Therefore, we recommend that you evaluate your business as soon as possible and use one of the following solutions to switch your storage engine:

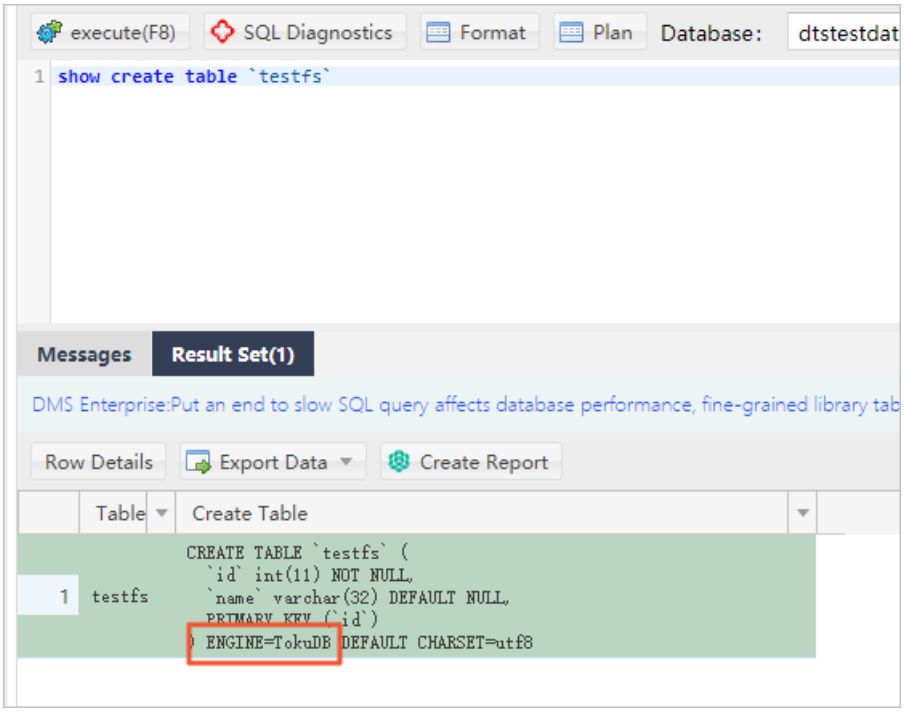
TokuDB go-offline date

August 1, 2019

Application scope

Instances that use the TokuDB storage engine

> **Note** You can use the `show engines;` command to view the current default engine of an instance, or use the `Show create table <table name>;` command to view the storage engine of a table.



Precautions

- After the storage engine is switched, space usage increases. The space to be reserved is approximately twice the capacity of TokuDB tables during parallel operations. Pay attention

to the space usage during operations.

- After the storage engine is switched, CPU usage decreases but IOPS increases when the same data volume is read. This is because data pages are not compressed.
- During full database migration, the endpoint needs to be switched. Perform this operation during off-peak hours.
- If the database version is changed during full database migration, we recommend that you test the compatibility in advance.

Solution recommendations

- If the table size in an instance is less than 100 MB, and short-term blocking is acceptable, you can use solution 1 to lock tables for a short period of time and avoid various tool configuration processes.
- If the table size in an instance is larger than 5 GB, we recommend that you use solution 2 or 3.
- If all tables in an instance need to be migrated to the InnoDB engine, we recommend that you use solution 3 or 4.
- After all tables are migrated to the InnoDB engine, set the **default_storage_engine** parameter to **InnoDB**.

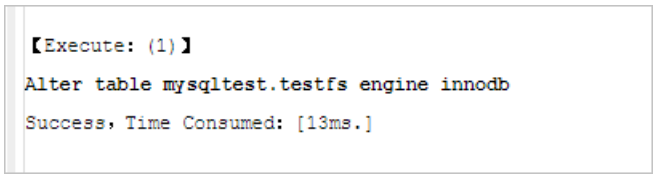
Solution 1

This solution migrates tables to InnoDB in the most straightforward way. However, DML operations may be blocked during the entire process and it takes a long time to migrate large tables.

Procedure

1. Log on to an RDS MySQL instance through DMS.
2. In the top navigation bar, choose **SQL Operations > SQL Window**.
3. Run the following command:

```
Alter table test.testfs engine innodb
```



Solution 2

This solution uses a third-party tool to migrate tables. Many third-party tools, such as pt-osc developed by Percona and gh-ost developed by Github, support online DDL. gh-ost is used here as an example to describe the migration process. For more information, see gh-ost.

Principle

The principle of how gh-ost migrates a table is as follows: gh-ost creates a temporary table that has the same schema as the original table and incrementally copies data from the original table to the temporary table. After all data is copied to the temporary table, gh-ost reads binary logs through a simulated slave process and synchronizes table changes from the original table to the temporary table in real time. Finally, gh-ost renames the tables to complete the cutover during off-peak hours. This solution puts a heavy load on the I/O performance during initial full data synchronization. However, you can modify parameters to limit I/O.

- Advantages: gh-ost gives you greater control over the synchronization process.
- Disadvantages: Each table needs to be synchronized using commands. If a large number of tables exist, the operations are cumbersome.

Parameters

Parameter	Description
--initially-drop-old-table	Checks and deletes an existing table.
--initially-drop-ghost-table	Checks and deletes an existing ghost table.
--aliyun-rds	Executes table migration on ApsaraDB for RDS.
--assume-rbr	Sets gh-ost to read binary logs in Row Based Replication (RBR) format.
--allow-on-master	Runs gh-ost on the primary database.
--assume-master-host	Specifies the endpoint of the primary database.
--user	Specifies the name of the database account.
--password	Specifies the database password.
--host	Specifies the endpoint of the database, which must be the same as that of the primary database.
--database	Specifies the name of the database.
--table	Specifies the name of the ghost table.
--alter	Alters the ghost table.
--chunk-size	Specifies the number of rows submitted by batch.
--postpone-cut-over-flag-file	Specifies the file used to postpone the cutover process. If you delete the file at a specified time, tables will be swapped immediately.
--panic-flag-file	Specifies the file used to stop the ghost process. After this file is generated, the ghost process stops immediately.
--serve-socket-file	Receives interactive commands.
--execute	Directly executes table migration and swapping.

Prerequisites

- gh-ost is installed on your local host or ECS instance.
- The IP address of the local host or ECS instance is added to the IP address whitelist of your ApsaraDB for RDS instance.

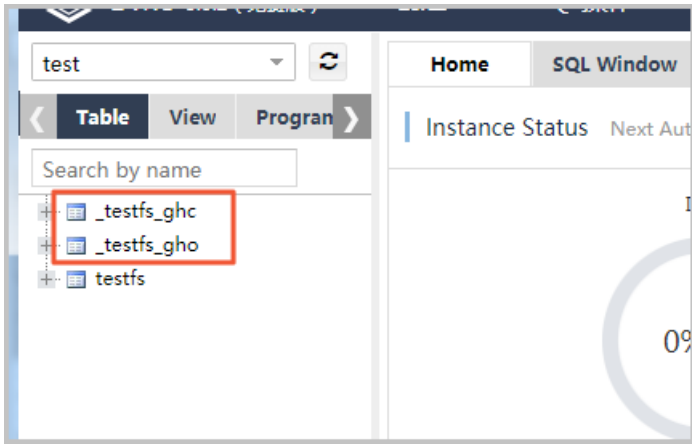
Procedure

1. Run the following command on the local host or ECS instance to perform a cutover and wait until the cutover is completed:

```
gh-ost --user="test01" --password="Test123456" --host="rm-bpxxxxx.mysql.rds.aliyuncs.com"  --database="test" --table="testfs"  --alter="engine=innodb" --initially-drop-old-table --initially-drop-ghost-table --aliyun-rds --assume-rbr --allow-on-master --assume-master-host="rm-bpxxxxx.mysql.rds.aliyuncs.com" --chunk-size=500 --postpone-cut-over-flag-file="/tmp/ghostpost.postpone" --panic-flag-file="/tmp/stop.flag" --serve-socket-file="/tmp/ghost.sock" --execute
```

```
2019/06/13 17:22:51 binlogsyncer.go:79: [info] create BinlogSyncer with config {999
2019/06/13 17:22:51 binlogsyncer.go:246: [info] begin to sync binlog from position
2019/06/13 17:22:51 binlogsyncer.go:139: [info] register slave for master server rm
2019/06/13 17:22:51 binlogsyncer.go:573: [info] rotate to (mysql-bin.000014, 241268
# Migrating `test`.`testfs`; Ghost table is `test`.`_testfs_gho`
# Migrating [redacted]rds.aliyuncs.com:3306; inspecting [redacted]
# Migration started at Thu Jun 13 17:22:50 +0800 2019
# chunk-size: 500; max-lag-millis: 1500ms; dml-batch-size: 10; max-load: ; critical
# throttle-additional-flag-file: /tmp/gh-ost.throttle
# postpone-cut-over-flag-file: /tmp/ghostpost.postpone [set]
# panic-flag-file: /tmp/stop.flag
# Serving on unix socket: /tmp/ghost.sock
Copy: 0/100000 0.0%; Applied: 0; Backlog: 0/1000; Time: 0s(total), 0s(copy); stream
Copy: 0/100000 0.0%; Applied: 0; Backlog: 0/1000; Time: 1s(total), 1s(copy); stream
Copy: 1500/100000 1.5%; Applied: 0; Backlog: 0/1000; Time: 2s(total), 2s(copy); str
Copy: 3000/100000 3.0%; Applied: 0; Backlog: 0/1000; Time: 3s(total), 3s(copy); str
Copy: 5500/100000 5.5%; Applied: 0; Backlog: 0/1000; Time: 4s(total), 4s(copy); str
Copy: 7500/100000 7.5%; Applied: 0; Backlog: 0/1000; Time: 5s(total), 5s(copy); str
Copy: 9000/100000 9.0%; Applied: 0; Backlog: 0/1000; Time: 6s(total), 6s(copy); str
Copy: 10500/100000 10.5%; Applied: 0; Backlog: 0/1000; Time: 7s(total), 7s(copy); s
Copy: 13500/100000 13.5%; Applied: 0; Backlog: 0/1000; Time: 8s(total), 8s(copy); s
Copy: 15500/100000 15.5%; Applied: 0; Backlog: 0/1000; Time: 9s(total), 9s(copy); s
Copy: 17500/100000 17.5%; Applied: 0; Backlog: 0/1000; Time: 10s(total), 10s(copy);
```

2. Log on to an RDS MySQL instance through DMS.
3. In the left side, temporary tables ending with _ gho and _ ghc are displayed.



4. Run the `rm/tmp/ghostpost.postpone` command to start table swapping. The results are as follows:

```
Copy: 100000/100000 100.0%; Applied: 0; Backlog: 0/1000; Time: 9m0s(total), 56s(copy); streamer: mysql-bin.000015:520562237;
Copy: 100000/100000 100.0%; Applied: 0; Backlog: 0/1000; Time: 9m30s(total), 56s(copy); streamer: mysql-bin.000015:520674422;
# Migrating `test`.`testfs`; Ghost table is `test`.`_testfs_gho`
# Migrating [redacted] mysql.rds.aliyuncs.com:3306; inspecting [redacted] mysql.rds.aliyuncs.com:3306
# Migration started at Thu Jun 13 17:22:50 +0800 2019
# chunk-size: 500; max-lag-millis: 1500ms; dml-batch-size: 10; max-load: ; critical-load: ; nice-ratio: 0.000000
# throttle-additional-flag-file: /tmp/gh-ost.throttle
# postpone-cut-over-flag-file: /tmp/ghostpost.postpone
# panic-flag-file: /tmp/stop.flag
# Serving on unix socket: /tmp/ghost.sock
Copy: 100000/100000 100.0%; Applied: 0; Backlog: 0/1000; Time: 9m31s(total), 56s(copy); streamer: mysql-bin.000015:520681377;
2019/06/13 17:32:23 binlogsyncer.go:107: [info] syncer is closing...
2019/06/13 17:32:23 binlogstreamer.go:47: [error] close sync with err: sync is been closing...
2019/06/13 17:32:23 binlogsyncer.go:122: [info] syncer is closed
```

> **Note** Ignore the displayed error. The cutover has been completed.

5. Check the tables and verify the data.

> **Note** Verify that the data is correct and then delete the _ del table.

```
【Execute: (1)】
Alter table mysqltest.testfs engine innodb
Success, Time Consumed: [13ms.]
```

Solution 3

This solution uses Alibaba Cloud Data Transmission Service (DTS) to synchronize data from an original table to a temporary table in real time, and then locks the original table and renames the tables during off-peak hours. This solution can migrate a large number of tables simultaneously.

Procedure

1. Log on to an RDS MySQL instance through DMS.
2. In the top navigation bar, choose **SQL Operations > SQL Window**.
3. Run the following command to create a temporary table:

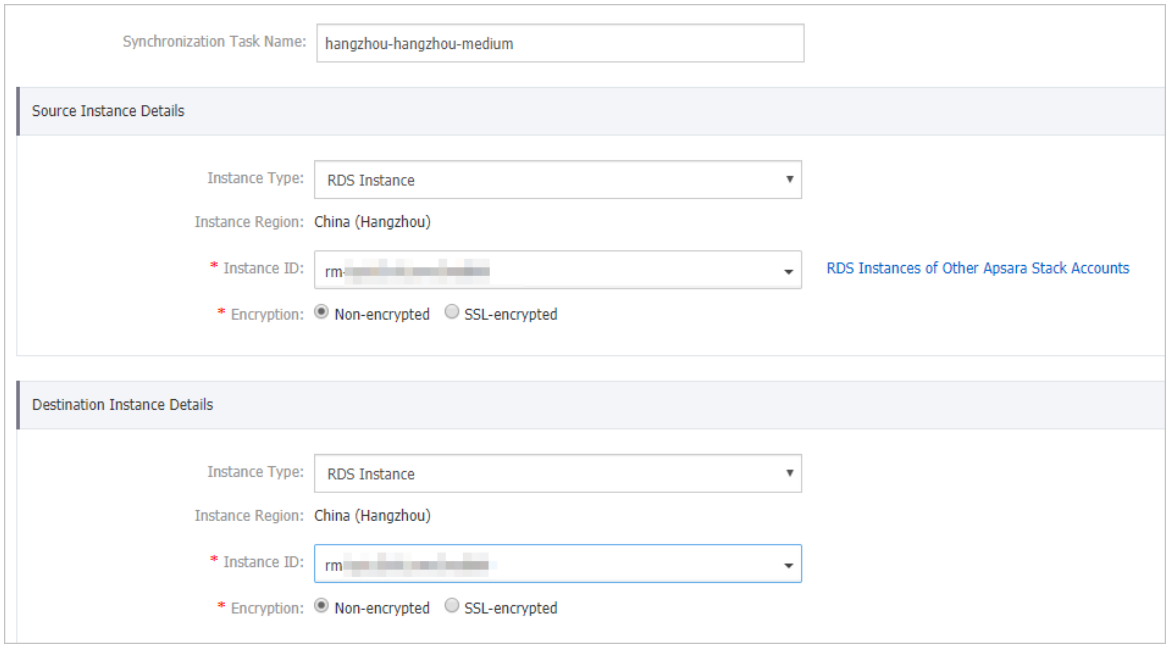
```
CREATE TABLE `testfs_tmp` (
 `id` int(11) NOT NULL AUTO_INCREMENT,
 `vc` varchar(8000) DEFAULT NULL,
 PRIMARY KEY (`id`)
) ENGINE=innodb  DEFAULT CHARSET=utf8
```

4. Purchase DTS instances.

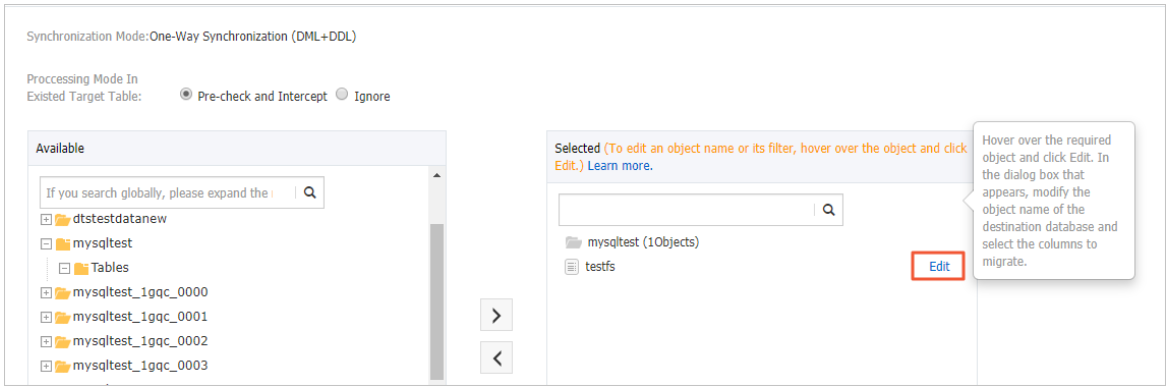
> **Note** DTS instances are charged. For more information, see Data Transmission Service Pricing.

5. In the left-side navigation pane of the DTS console, click **Data Synchronization**.
6. Find the purchased DTS instance and click **Configure Synchronization Channel** in the Actions column.
7. Configure the following parameters.

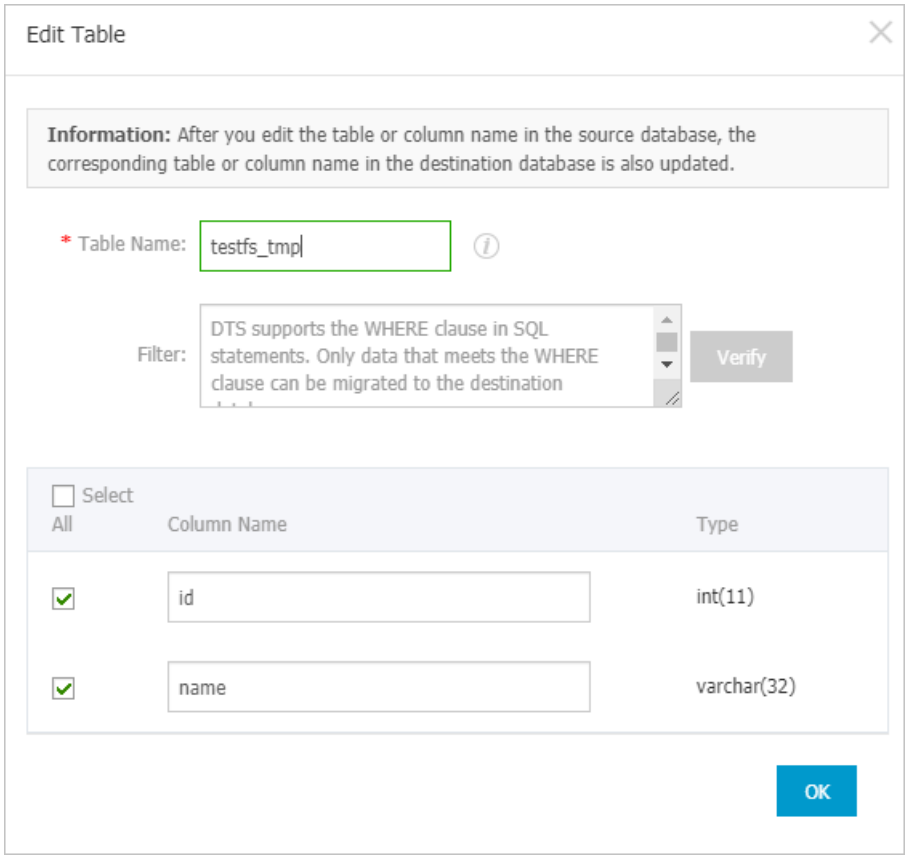
Category	Parameter	Description
Source Instance Details	Instance Type	Select **RDS Instance**.
	Instance ID	Select the RDS instance for which you want to switch the storage engine.
	Encryption	Select **Non-encrypted** or **SSL-encrypted**. To select **SSL-encrypted**, you must enable SSL Encryption. Enabling SSL Encryption will significantly increase CPU consumption.
Destination Instance Details	Instance Type	Select **RDS Instance**.
	Instance ID	Select the RDS instance for which you want to switch the storage engine.
	Encryption	Select **Non-encrypted** or **SSL-encrypted**. To select **SSL-encrypted**, you must enable SSL Encryption. Enabling SSL Encryption will significantly increase CPU consumption.



8. Click **Set Whitelist and Next**.
9. Wait until synchronization accounts are created. Then, click **Next**.
10. Move the testfs table on the left to the right and click **Edit**.

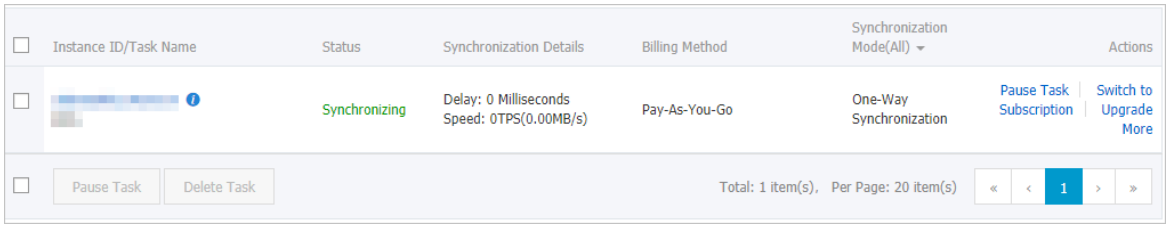


11. Set **Database Name** to testfs_tmp, and click **OK**.



12. Click **Next**.
13. Select **Initial Full Data Synchronization** and click **Precheck**.

14. Wait until the precheck is completed, and click **Close**.
15. The wait time for data synchronization is 0 ms.



16. Run the command to rename tables in the SQL window of DMS:

```
rename table `testfs` to `testfs_del`,`testfs_tmp` to `testfs`;
```

> **Note**
>
> - After the cutover, DTS will report an synchronization error, which can be ignored.
> - To avoid additional charges, release the DTS instance as soon as you have verified the data.

Solution 4

This solution uses DTS to synchronize data from a database instance to a new instance. This solution applies to instances that require instance upgrade or can accept a relatively long service downtime.

Procedure

1. Export all schema scripts from the source instance, and delete or modify the engine part in the scripts.

   > **Note** For example, change `create table t1(id int,name varchar(10)) engine=tokudb;` to `create table t1(id int,name varchar(10)) engine=innodb;` .

2. Create an RDS instance, and use the modified scripts to create databases and tables.
3. Use DTS to migrate data from the source instance to a new instance. For more information, see Create a real-time synchronization task between RDS instances.

   > **Note** During synchronization initialization, select only **Initial Full Data Synchronization**.

4. After confirming that there are no synchronization delays, switch the application connection address to the endpoint of the new instance.

5.[Notice] The feature of restoring individual databases or tables has been released in Singapore since February 19

Alibaba Cloud has released the feature of restoring individual databases or tables for ApsaraDB RDS MySQL instances in Singapore since February 19, 2019.

> **Note** For details about the restoration of individual databases in an ApsaraDB RDS SQL Server instance, see Restore the data of an ApsaraDB RDS SQL Server instance.

Release date

February 19, 2019

Supported region

Singapore

Application scope

ApsaraDB RDS MySQL 5.6 High-availability Edition

Released feature

Restoration of data of individual databases or tables

Precautions

- Individual databases or tables can be restored based on the xbstream package. Therefore, backup files are converted from the tar format to the xbstream format. If your business involves the backup file format, you must update your applications to be compatible with the new backup file format before February 19.
- The OSS storage space occupied by backup files will increase due to the change in backup file format. Pay attention to the space used for backup. If the total size of backup files exceeds the quota, additional fees will be incurred. We recommend that you schedule the backup cycle appropriately to meet your business needs while making proper use of the backup space.
- After the feature goes online, you must submit a ticket to activate the feature before you can restore individual databases or tables.

FAQ

How do I know if my backup files have been converted?

A: You can download backup files in the console to view the format. If the files are in the xbstream format, the conversion has been completed.

6.[Notice] Instance restoration in overwriting mode was disabled on February 25

Restoring ApsaraDB for RDS instances in overwriting mode is a high-risk operation and data cannot be restored once a misoperation occurs. To address this problem, Alibaba Cloud has disabled instance restoration in overwriting mode and the corresponding RestoreDBInstance operation since February 25, 2019.

Go-offline date

February 25, 2019

Application scope

- ApsaraDB RDS MySQL 5.5
- ApsaraDB RDS MySQL 5.6 High-availability Edition
- ApsaraDB RDS MySQL 5.7 High-availability Edition (based on local SSDs)
- ApsaraDB RDS SQL Server 2008 R2

> **Note** ApsaraDB RDS SQL Server 2012, 2016, and 2017 cannot restore instances in overwriting mode and thus are not included in the application scope.

Canceled feature

Restoration of ApsaraDB for RDS instances in overwriting mode

> **Note** During restoration of instances in overwriting mode, the backup data overwrites the data of the primary instance, and the data generated after the creation of the backup data is lost. This poses a high risk of data security.

Impact

Instance restoration in overwriting mode and the corresponding RestoreDBInstance operation are no longer supported.

Recommendations

We recommend that you use the Restore Database (Previously Clone Database) function to restore a database instance.

- Restore the data of an ApsaraDB RDS for MySQL instance
- Restore the data of an ApsaraDB RDS for SQL Server instance

We sincerely apologize for any inconvenience this may cause. If you have any questions, please submit a ticket to contact after-sales service.

7.[Important] RDS network link upgrade

To ensure stability and high performance, we recommend that you upgrade the network connection mode of your ApsaraDB for RDS instance from the safe mode (database proxy mode) to the high-performance mode (standard mode).

Potential risks of not performing the upgrade

If you do not perform the upgrade, network jitter may occur when you attempt to access resources. This causes interruptions to your business. To ensure stability, we recommend that you perform the upgrade as soon as possible.

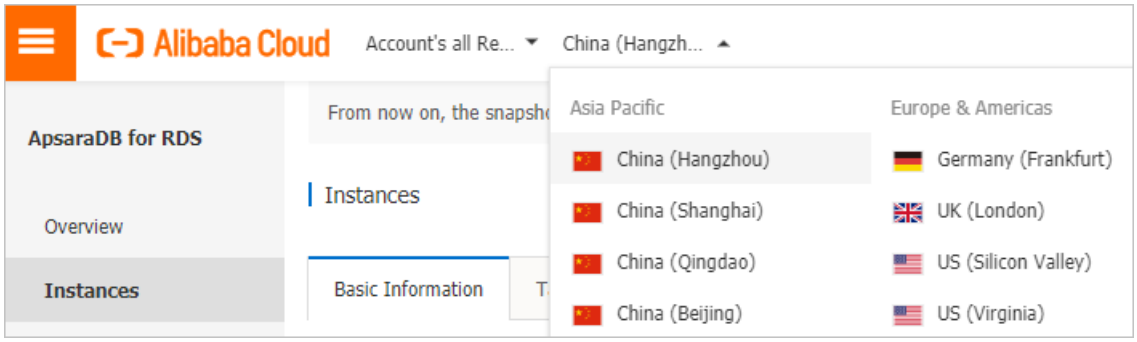
Benefits of the upgrade

- Your RDS instance is more stable.
- The average response time decreases by 20%, and the performance of your RDS instance increases.

Instances that need to be upgraded

You must upgrade the network connection modes of all your RDS instances that run MySQL, PostgreSQL, PPAS, or HybridDB for PostgreSQL engines in safe mode (database proxy mode) with read/write splitting disabled. To check whether an RDS instance is in safe mode, follow these steps:

1. Log on to the ApsaraDB for RDS console.
2. In the top navigation bar, select the region where the target RDS instance resides.



3. Find the target RDS instance and click its ID.
4. In the left-side navigation pane, click Database Connection. In the Database Connection section of the Instance Connection tab, check the setting of **Database Proxy (Safe Mode)**.
   - If the mode is **Disabled**, you do not need to upgrade the network connection mode of the RDS instance.
   - If the mode is **Enabled**, you must upgrade the network connection mode of the RDS instance.

> Note
>
> - If the RDS instance runs MySQL with read/write splitting enabled, see Upgrade an ApsaraDB RDS for MySQL instance from shared proxy to dedicated proxy.
> - If the RDS instance is a primary instance to which read-only instances are attached, you only need to upgrade the network connection mode of the RDS instance. The system automatically upgrades the network connection modes of the read-only instances.

Impacts of the upgrade

- While you perform the upgrade, there may be a 30-second brief disconnection. Make sure that your application is configured to automatically reconnect to your RDS instance.
- In database proxy mode, the multi-statement function is enabled at the protocol layer by default. If the multi-statement function is disabled after the upgrade and you execute multiple SQL statements, the system reports SQL statement execution errors. We recommend that you check and add connection parameters before the upgrade. For example, add the allowMultiQueries parameter in the JDBC API as follows:

```
dbc:mysql:///test? allowMultiQueries=true
```

Method 1 to perform the upgrade

1. Navigate to the **Database Connection** page in the ApsaraDB for RDS console and click **Switch Access Mode**.
2. In the dialog box that appears, click **Confirm** to disable the database proxy mode.
3. Verify that your database services are properly running.

> Note Do not skip this step.

Method 2 to perform the upgrade

> Note This method is suitable only for some RDS instances.

1. Navigate to the **Database Proxy** page in the ApsaraDB for RDS console and click the slider next to **Database Proxy (Safe Mode)**.
2. In the dialog box that appears, click **Confirm** to disable the database proxy mode.
3. Verify that your database services are properly running.

> Note Do not skip this step.

FAQ

1. How do I determine whether I need to upgrade the network connection mode of my RDS instance?

   For more information, see the "Instances that need to be upgrade" section.

2. Why am I unable to upgrade the network connection mode of my RDS instance?

   If read/write splitting is enabled, you cannot upgrade the network connection mode of your RDS instance. An upgrade solution is under development for RDS instances that have read/write splitting enabled.

3. Which configuration data do I need to modify on my application after the upgrade?

   While you upgrade the network connection mode, there may be a 30-second brief disconnection. You must configure your application to automatically reconnect to your RDS instance. If no automatic reconnection mechanism is configured, you may need to manually restart services. After the upgrade, the endpoints and IP addresses of your RDS instance remain unchanged. You do not need to update this information on your application.

4. Can I switch the network connection mode of my RDS instance to the safe mode (database proxy mode)?

   Yes, you can switch the network connection mode of your RDS instance to the safe mode (database proxy mode). However, you do not need to do so. The safe mode is suitable for communication over both the Internet and an internal network. These types of communication are also supported by the high-performance mode (standard mode).

5. If my RDS instance is attached with read-only instances, do I need to upgrade the network connection mode of each read-only instance separately?

   No, you only need to upgrade the network connection of your RDS instance. The system automatically upgrades the network connection modes of the attached read-only instances.