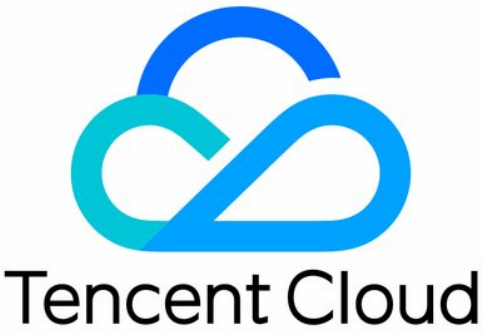
TencentDB for MySQL

Operation Guide

Product Documentation



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Operation Guide
Use Limits

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Limits on the Data Volume

TencentDB for MySQL imposes data volume restrictions on all types of MySQL instances to isolate performance issues due to limited resources. This document describes the technical impact of a single instance or table with a large data volume on MySQL.

Instance with a high data volume: The default storage engine for TencentDB is InnoDB. If the cache buffer can cache all data and index pages in the MySQL instance, the instance can support a large number of concurrent access requests. If the instance contains too much data, the cache and buffer will frequently swap data in/out, quickly hitting an IO bottleneck and reducing throughput. For example, if a TencentDB instance is designed to sustain up to 8,000 access requests per second, it can only support 700 when the data volume is twice the size of the cache and buffer.

Table with a high data volume: If a table contains too much data, MySQL will find it more difficult to manage table resources (data, indexes, etc.), reducing table processing efficiency. For example, if the size of a transaction table (InnoDB) exceeds 10 GB, the latency in update operations will soar, increasing the response time for transactions. In this case, the problem can only be solved through sharding and migration.

Note:

If the number of tables in a single instance exceeds one million, backup, monitoring, and upgrade may fail and database monitoring may be affected. Make sure that the number of tables in a single instance is below one million.

Limit on the Number of Connections

The maximum number of connections to a MySQL instance is specified with the MySQL system variable `max_connections`. When the actual number exceeds `max_connections`, no more connections can be established.

The default number of connections to TencentDB can be viewed by clicking the instance ID to enter the **Database Management** > **Parameter Settings** page in the TencentDB for MySQL console, which can be adjusted if necessary. However, more connections mean that more system resources will be consumed; if the number of connections goes beyond what the actual system load capacity allows, the system service quality will be definitely undermined.

For more information on `max_connections`, see MySQL official documentation.

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Limits on the MySQL Client Version

We recommend that you use the MySQL client and library that come with CVM to connect to TencentDB instances.

Notes on slow logs

For Linux CVM instances, you can use TencentDB's export tool to get slow query logs. For more information, see Restoring Database from Physical Backup.

For Windows CVM instances, slow query logs cannot be obtained directly at present. If you need them, submit a ticket for assistance.

Notes on the TencentDB binlog retention duration

TencentDB for MySQL binlogs can be retained for 7 (default value) to 1830 days (customizable by clicking the instance ID to enter the **Backup and Restoration** > **Auto-Backup Settings** page).

If binlogs are retained for an extended period of time or grow too fast, additional space will be required for backup, and fees will be incurred if the space exceeds the free tier of backup capacity.

Notes on the character set

TencentDB for MySQL uses the UTF8 character set by default.

Even though TencentDB supports changing the default character set, we recommend that you explicitly specify the encoding format for a table when creating it and specify the connection encoding during connection establishment. In this way, your application will be more portable.

For more information on the resources of MySQL character set, see MySQL official documentation.

You can modify the character set through SQL or in the TencentDB for MySQL console.

Modifying the character set through SQL

1. Run the following SQL statements to change the default character set for TencentDB instances:

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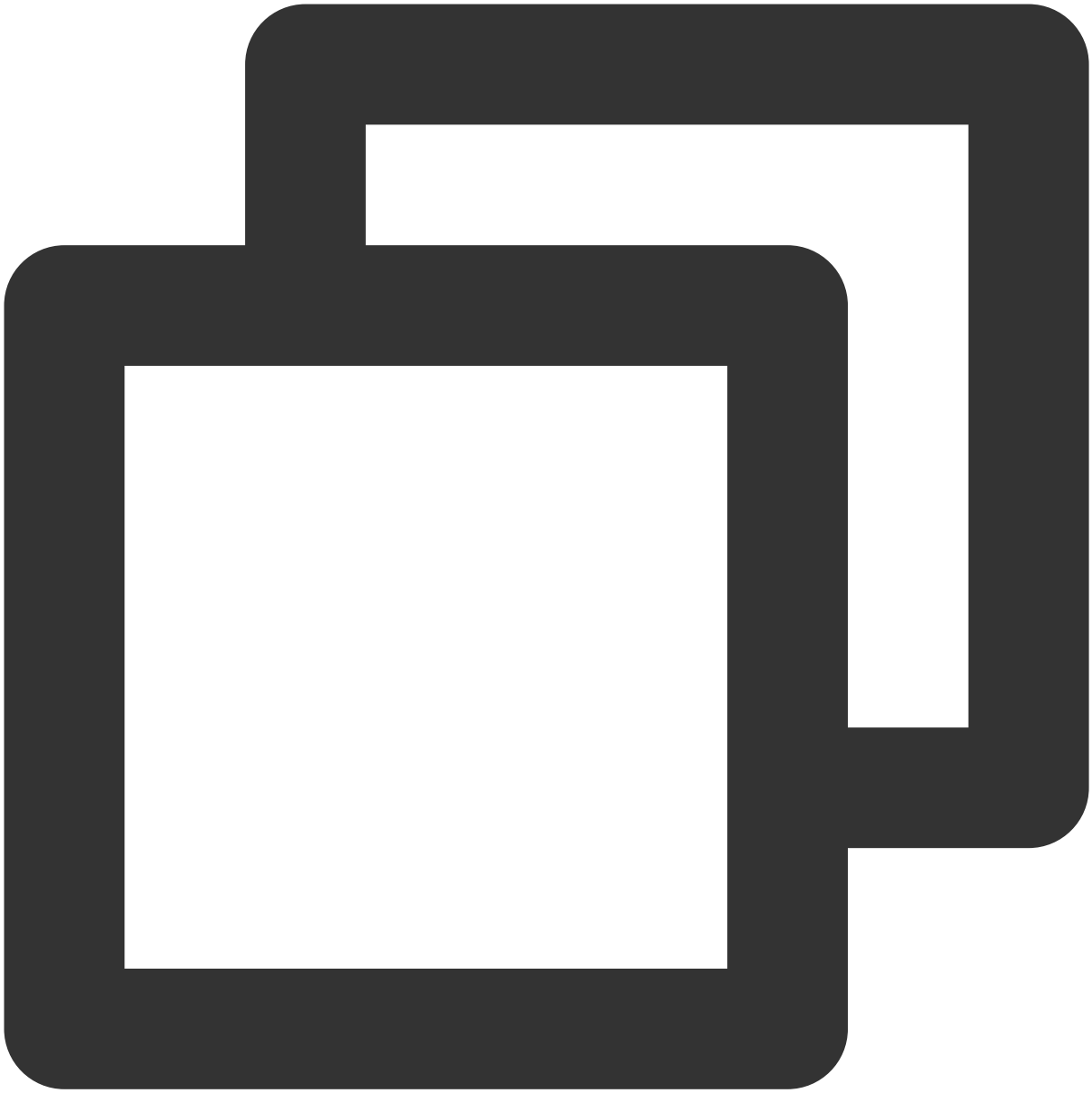

```
SET @@global.character_set_client = utf8;
SET @@global.character_set_results = utf8;
SET @@global.character_set_connection = utf8;
SET @@global.character_set_server = utf8;
```

After the statements are executed, `@@global.character_set_server` will be automatically synced to a local file for persistence in approximately 10 minutes, while the other 3 variables will not. The configured value will stay unchanged even after migration or restart.

2. Run the following statements to change the character set encoding for the current connection:

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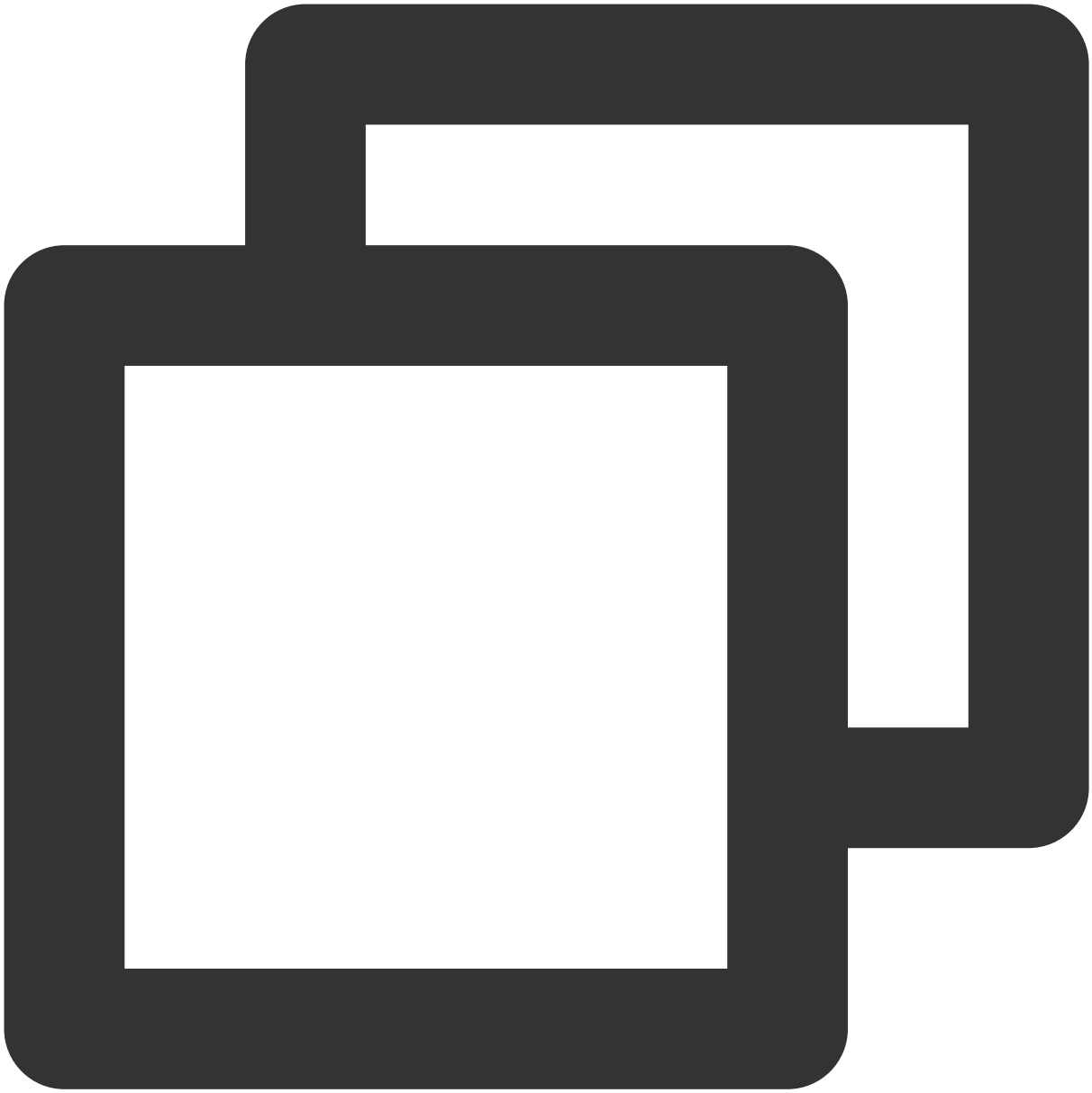

```
SET @@session.character_set_client = utf8;
SET @@session.character_set_results = utf8;
SET @@session.character_set_connection = utf8;
```

Or

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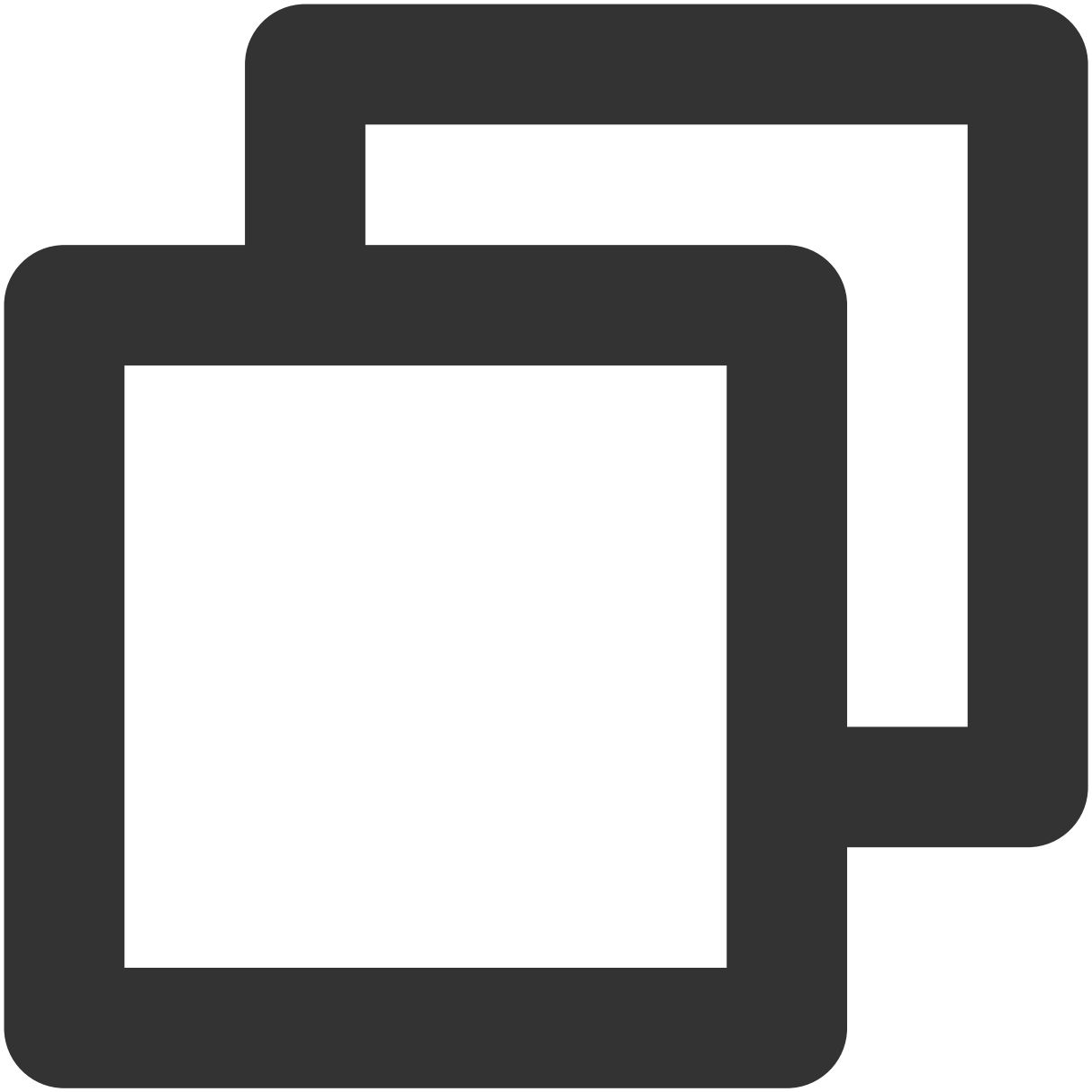

```
SET names utf8;
```

3. For PHP programs, you can configure the character set encoding for the current connection by using the following function:

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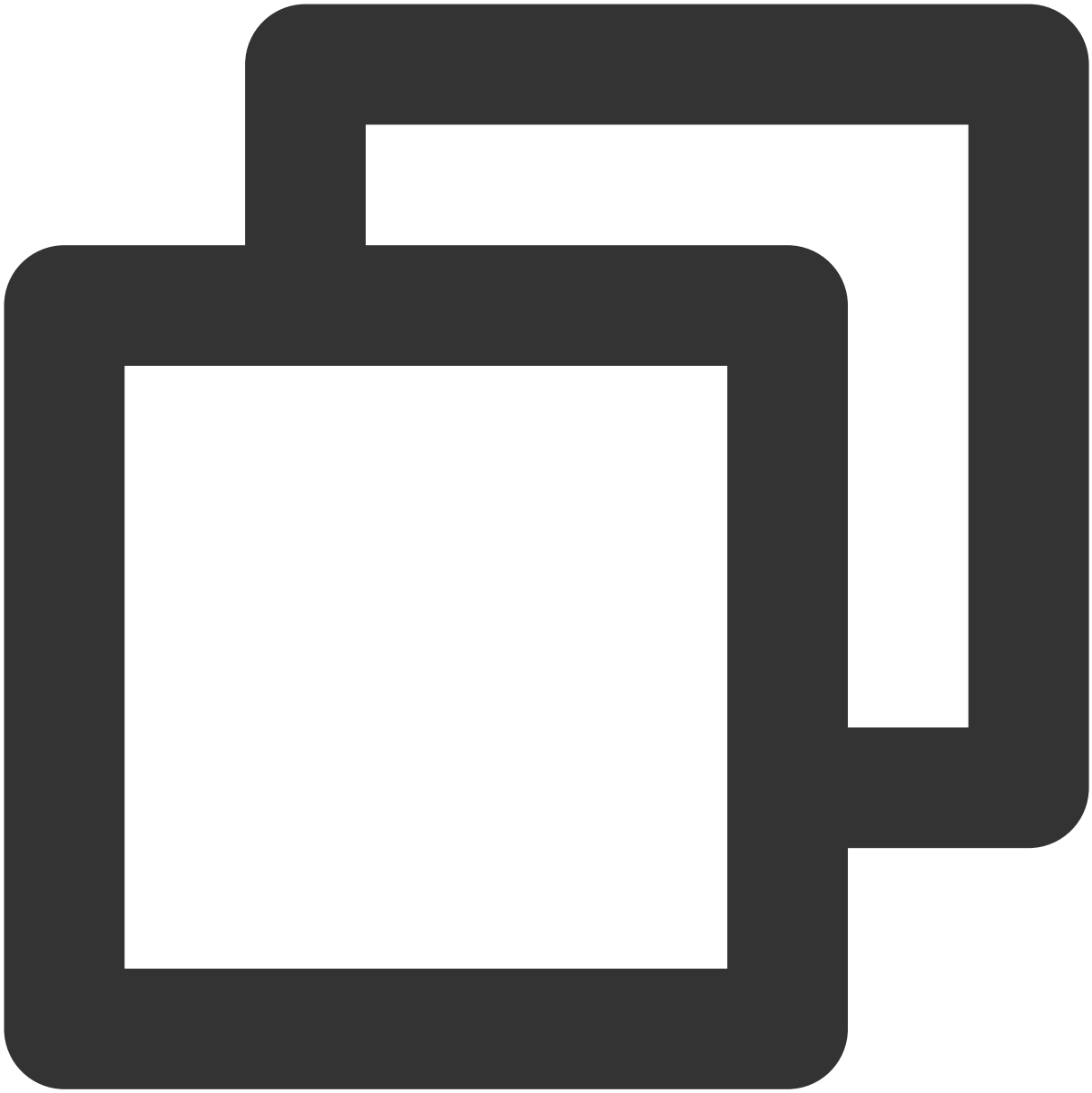

```
bool mysqli::set_charset(string charset);
```

Or

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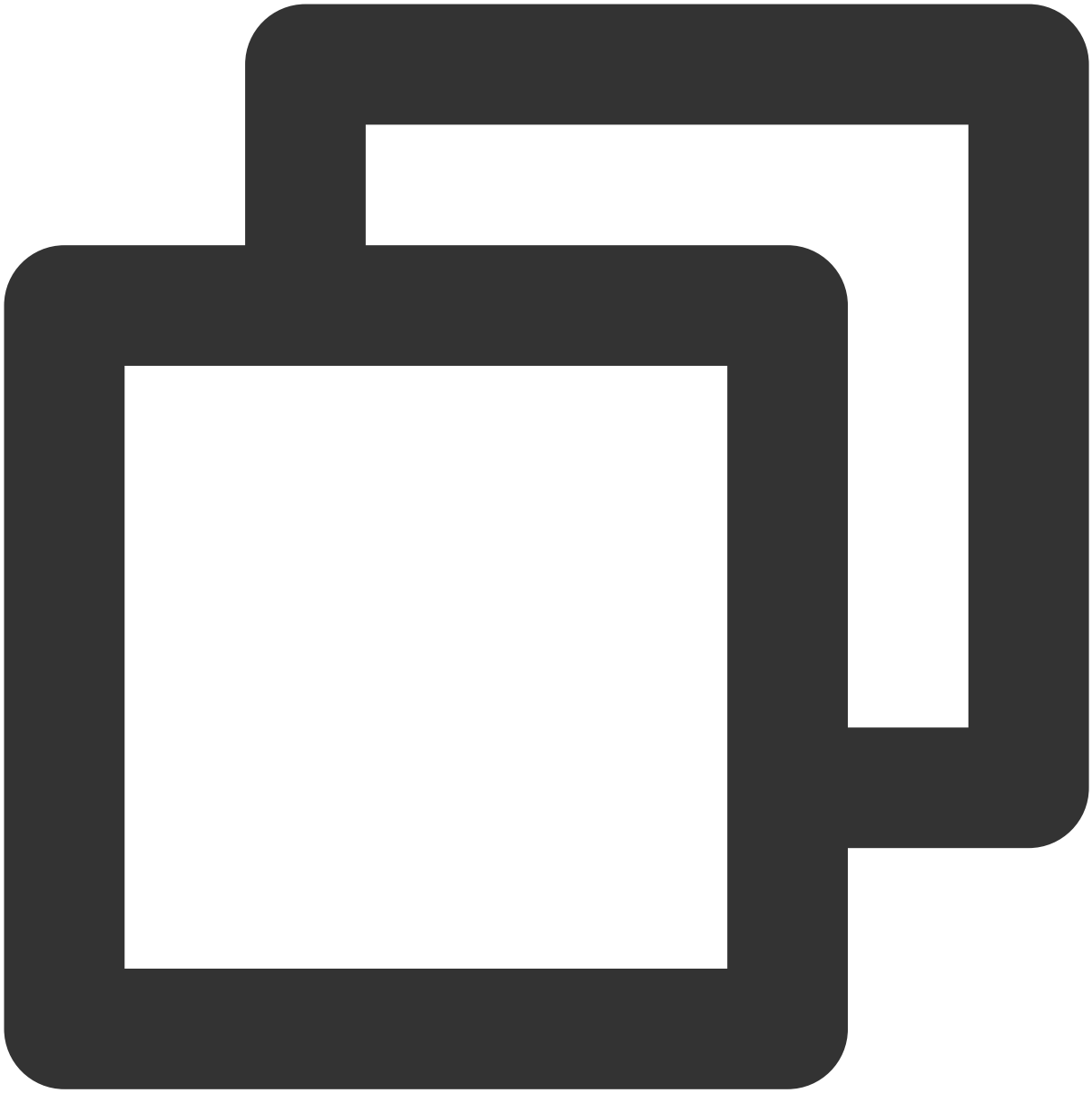

```
bool mysqli_set_charset(mysqli link, string charset);
```

4. For Java programs, you can configure the character set encoding for the current connection as shown below:

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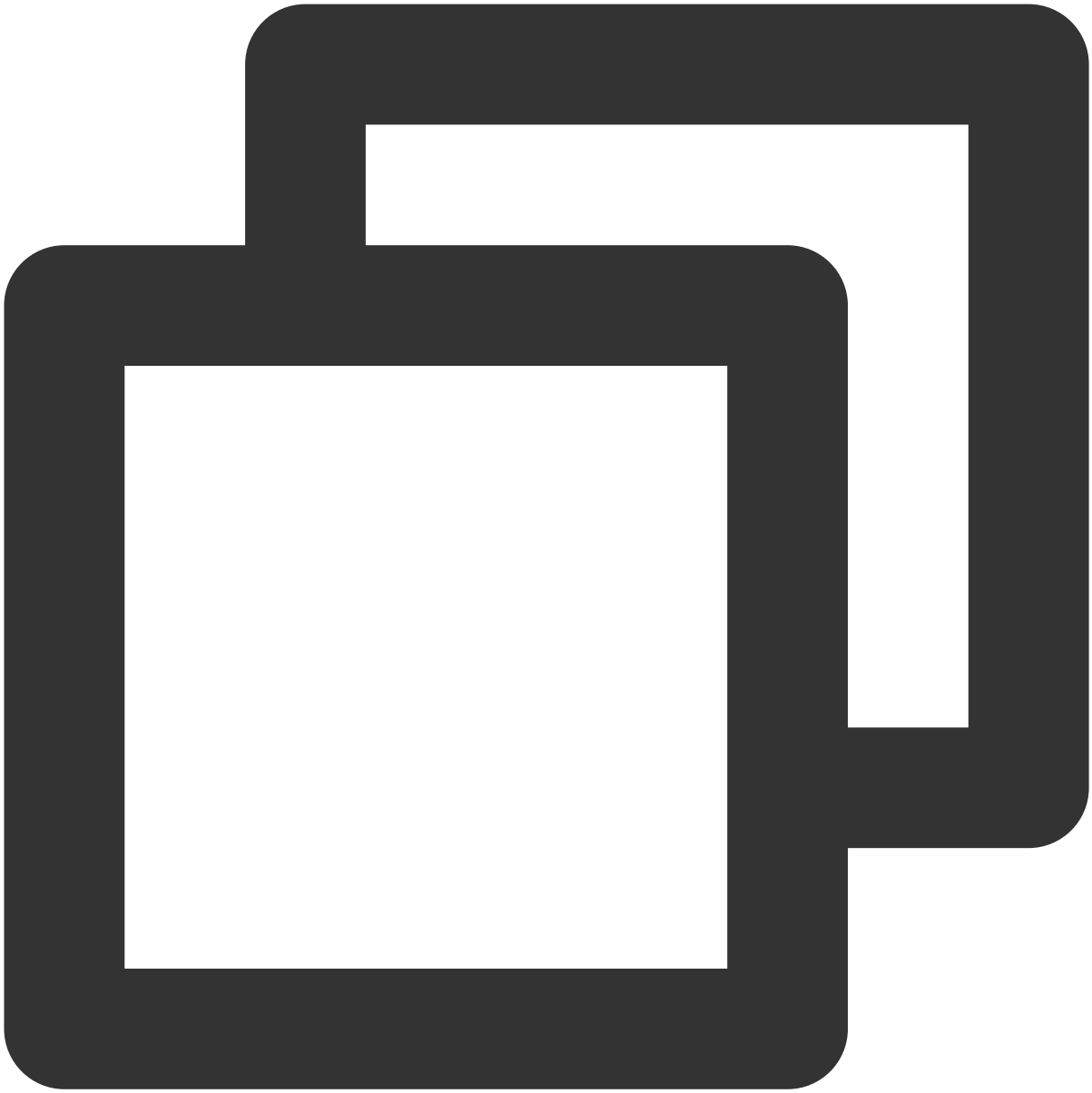

```
jdbc:mysql://localhost:3306/dbname?useUnicode=true&characterEncoding=UTF-8
```

Modifying the character set in the TencentDB for MySQL console

1. Log in to the TencentDB for MySQL console and click an instance ID in the instance list to enter the instance details page.
2. Find the character set in **Basic Info** and click the modification icon to modify it.

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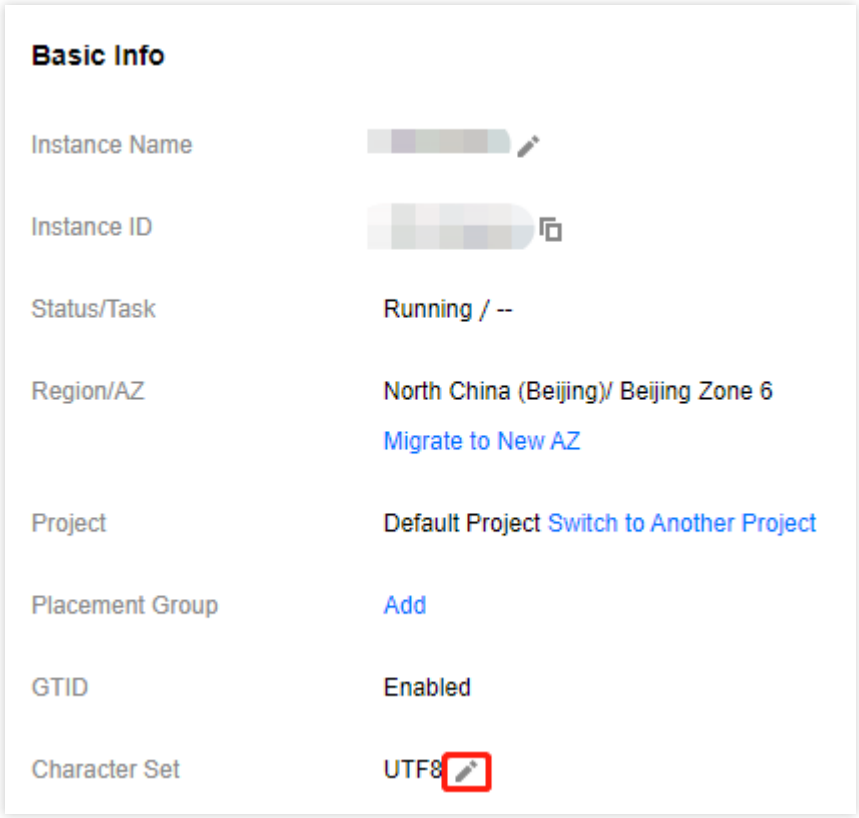
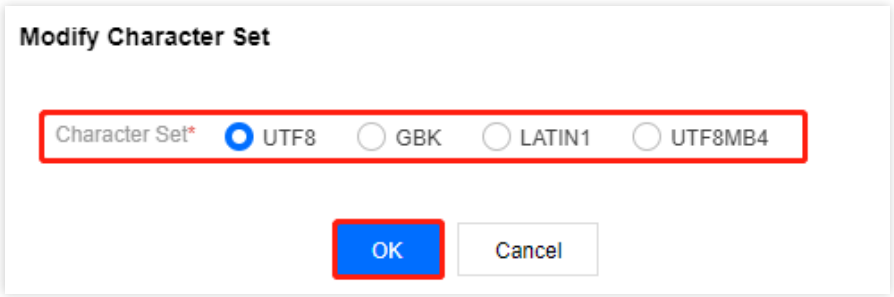


3. In the pop-up window, select a character set and click **OK**.



Limits on operations

1. Do not modify the information and permissions of the existing accounts for a MySQL instance; otherwise, some cluster services may become unavailable.
2. InnoDB is recommended for creating databases and tables, so that the instances can better support a large number of concurrent access requests.
3. Do not modify or terminate the source-replica relationship; otherwise, hot backup may fail.

Limits on the table name

Chinese table names are not supported because they may result in failures of processes such as rollback and upgrade.

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Database Account Permission

TencentDB for MySQL no longer provides the super user permission. To modify parameters that require this permission, log in to the TencentDB for MySQL console, click the instance ID to enter the **Database Management** > **Parameter Settings** page, and modify them.

Network Selection

We recommend that you use a VPC. In the VPC, you can freely define IP range segmentation, IP addresses, and routing policies. Compared with the classic network, VPC is more suitable for scenarios where custom network configurations are required. For the comparison of VPC and classic network, see Overview.

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Operation Overview

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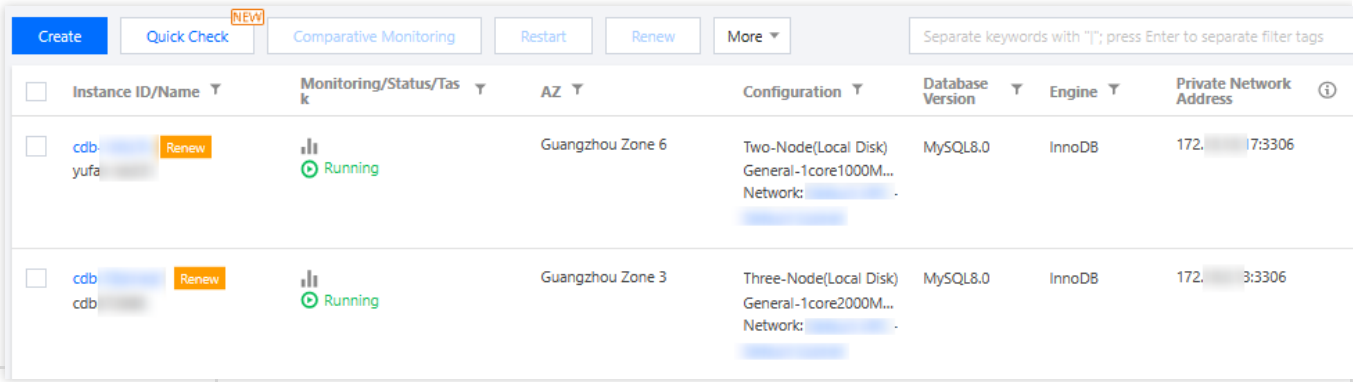
This document describes operations on the instance list and management pages in the TencentDB for MySQL console.

Instance list page

You can log in to the TencentDB for MySQL console and enter the instance list page to view instance information and manage your instances.



Feature	Description
Login	In the instance list, click **Log In** in the **Operation** column to log in to the database by using the new-gen database tool. For more information, see DMC Overview.
Management	In the instance list, click **Manage** in the **Operation** column to enter the instance management page.
Version upgrade	In the instance list, click **More** > **Upgrade Version** in the **Operation** column to upgrade the database version. For detailed conditions and instructions, see Upgrading Database Engine.
Configuration adjustment	In the instance list, click **More** > **Adjust Configurations** in the **Operation** column to adjust the configuration (i.e., scaling) of your database instance. Both instance upgrade and downgrade are supported. For more information, see Adjusting Database Instance Specification.
Pay-as-you-go to monthly subscription change	In the instance list, click **More** > **Pay-as-You-Go to Monthly Subscription** in the **Operation** column to change the billing mode of the pay-as-you-go instance.

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Tag editing	In the instance list, click **More** > **Edit Tag** in the **Operation** column to edit and manage the tags of the instance. For more information, see Editing Tags.
Termination/Return	In the instance list, click **More** > **Terminate/Return** in the **Operation** column to return the instance. For more information, see Terminating Instance.
Security group	In the instance list, click **More** > **Security Group** in the **Operation** column to configure or modify the security group of the instance. For more information, see TencentDB Security Group Management.
Renewal	Select the target instance and click **Renew** above the instance list to set manual renewal for the instance. For more information, see Renewal.
Restart	Select one or more target instances and click **Restart** above the instance list to restart them. The instance will be inaccessible during the restart, and existing connections to it will be closed. If the number of business writes and the number of dirty pages is high during the restart, the restart will fail. In this case, the instance will go back to the state before the restart and become accessible. Restart the instance during off-peak hours to ensure success and minimize the impact on your business.
Rollback	Select the target instance and click **More** > **Rollback** above the instance list to roll it back to a specified time point based on cold backup and binlog. For more information, see Rolling Back Databases.
Parameter configuration	Select one or more target instances and click **More** > **Parameter Settings** above the instance list to modify their parameter values. For more information, see Setting Instance Parameters.
Auto-renewal configuration	Select one or more target instances and click **More** > **Enable Auto-Renewal** above the instance list to set monthly auto-renewal for them. For more information, see Renewal.

Instance management page

Log in to the TencentDB for MySQL console, click the target instance ID in the instance list, or click **Manage** in the **Operation** column to enter the instance management page, where you can view its details, monitor it, and manage databases.

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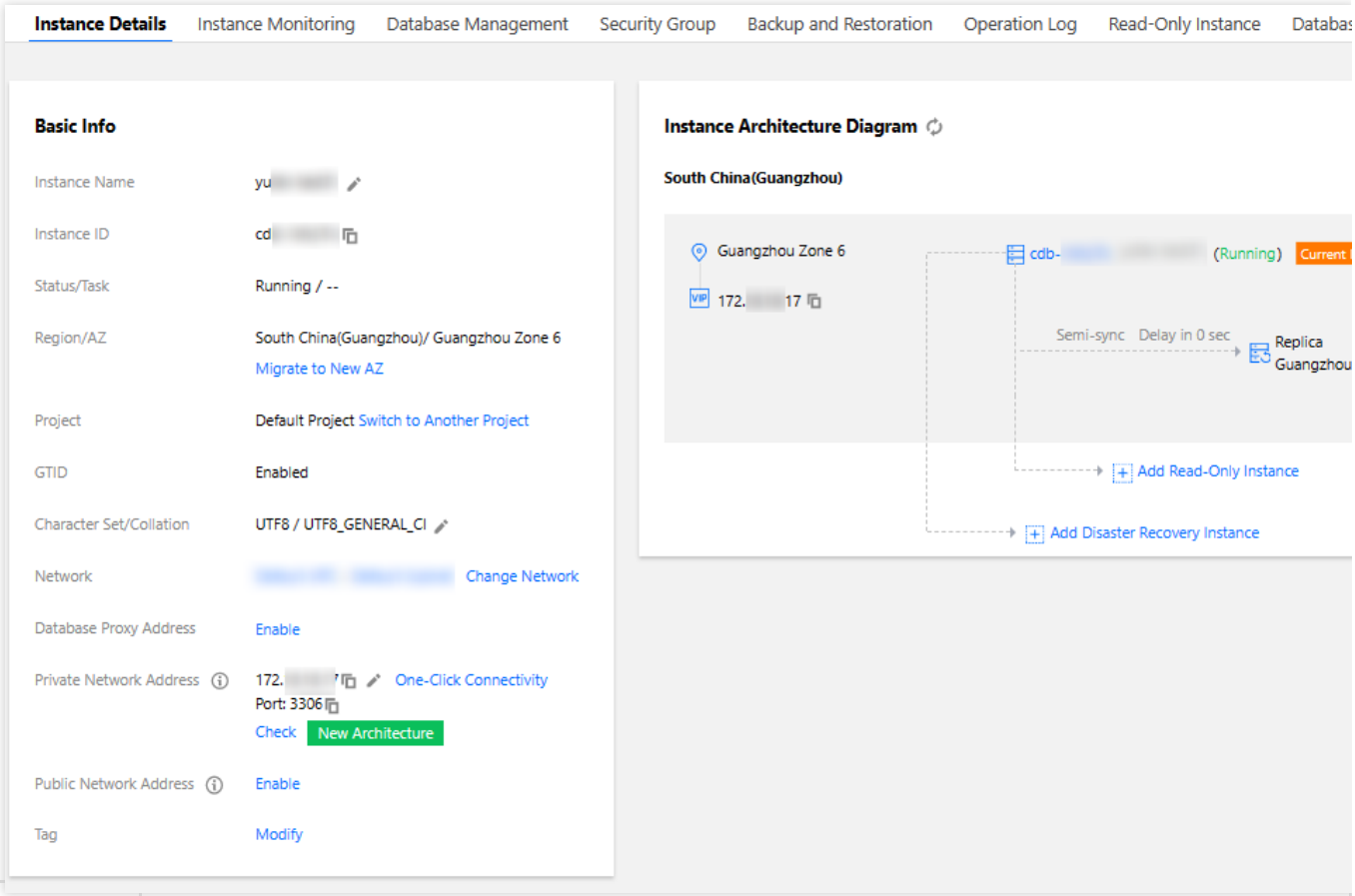

Feature	Description
Instance details	On the **Instance Details** tab, you can view and manipulate various information of the database. Click to modify the basic information of the instance, where the public network address is disabled by default. If needed, click **Enable** after **Public Network Address** to enable it.
Instance monitoring	On the **Instance Monitoring** tab, you can view the monitoring data of various core metrics of the current database in various dimensions such as access, load, query cache, table, InnoDB, and MyISAM. For more information, see Monitoring and Alarm Policies (Cloud Monitor).
Database management	**Database List** On this tab, you can import SQL files into a specified database. For more information, see Importing SQL Files. **Parameter Settings** On this tab, you can set and view the history of customizable database parameters. Click in the **Current Value** column to modify the parameter value. For more information, see Managing Parameter Templates. **Manage Account**

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	On this tab, you can manage the system's default root account, such as modifying permissions and resetting password. You can also create and delete accounts or enable the password complexity feature to enhance the database access security. For more information, see Account Management and Setting Password Complexity.
Security group	On the **Security Group** tab, you can configure security groups for your databases. For more information, see TencentDB Security Group Management.
Backup and restoration	On the **Backup and Restore** tab, you can download binlogs, perform cold backup, set automatic, manual, and cross-region backups, and enable backup encryption. For more information, see Backing up Databases, Cross-Region Backup, and Backup Encryption.
Operation log	On the **Operation Log** tab, you can view and download slow query logs, error logs, and rollback logs. For more information, see Operation Logs.
Read-only instance	Create one or more read-only instances to support read/write separation and one-primary-multiple-secondary application scenarios. For operations on two-node or three-node instances, see Creating Read-Only Instance. Cluster Edition instances support creating 1 to 5 read-only nodes. For operations, see Adding a Node for an Instance. Additionally, the Cluster Edition instances support creating 1 to 15 independent read-only instances. For operations, see Creating Read-Only Instance.
Database proxy	It is used to proxy requests when the application service accesses the database. It provides advanced features such as automatic read/write separation, connection pool, and connection persistence and boasts high availability, high performance, Ops support, and ease of use. For more information, see Database Proxy Overview.
Data security	On the **Data Security** tab, you can enable TDE for the instance, but then the instance cannot be restored from a physical backup to a self-created database on another server. You can also enable SSL encryption to transfer data in an encrypted manner and prevent it from being intercepted, tampered with, or eavesdropped. For more information, see Enabling Transparent Data Encryption and Setting SSL Encryption.
Connection check	On the **Connection Check** tab, you can check for potential connectivity and access problems and address them by using the solutions provided so as to ensure that your databases can be accessed normally. For more information, see One-Click Connectivity Checker.

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Instance Management and Maintenance
Viewing instance health status

Last updated：2023-12-27 10:15:26

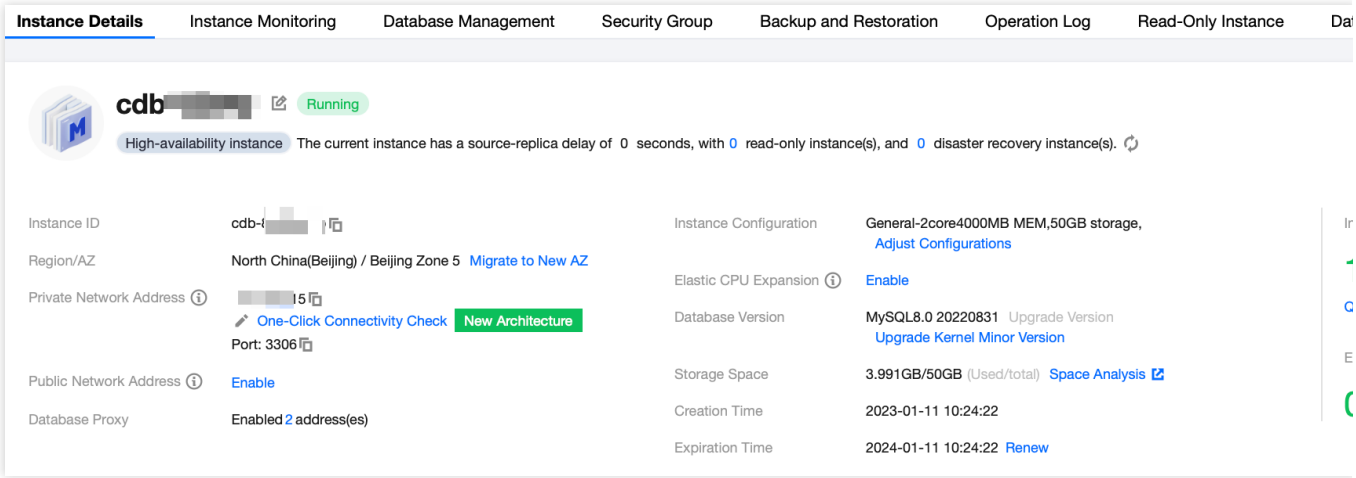
The MySQL Instance Details page now displays the health status, exception alarms, and configurations related to availability, performance, and security of the instance. This helps users detect anomalies in a timely manner, so that they can optimize system performance and security configurations, and improve the security and stability of instances. This section describes how to view the health status of the instance and related operations on the Instance Details page.

Prerequisites

You have created a MySQL instance..

Viewing Instance Health Status

1. Log in to the TencentDB for MySQL console..
2. In the instance list, click an **instance ID** or **Manage** in the **Operation** column to enter the instance details page.
3. On the right side of the page, you can view the health status of the instance, including the health status score, exception alarm items, and functional configuration deployment status.



Related Operations

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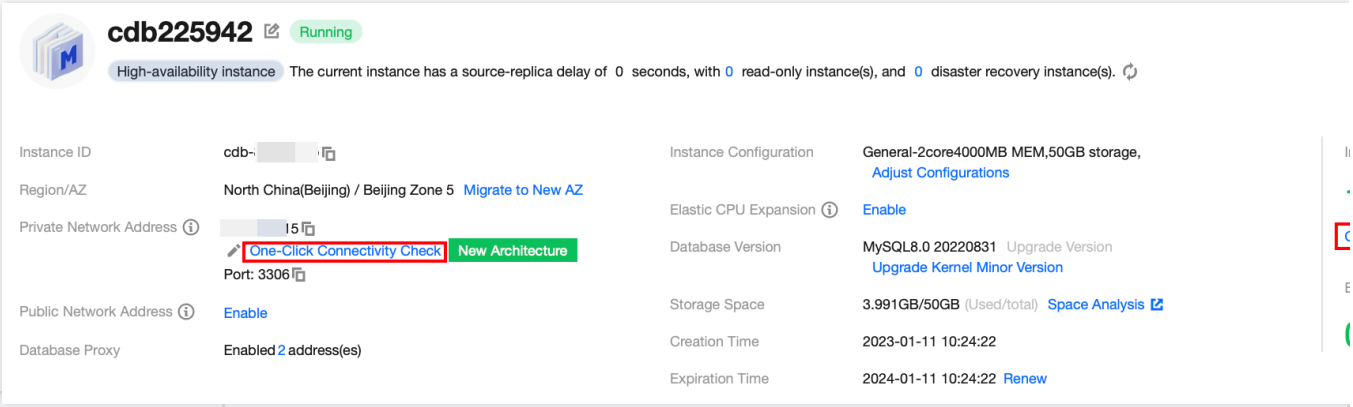

Page	Operation
Instance Details Page	One-Click Connection Check
	One-Click Diagnosis
	Viewing Alarms
	Viewing Configurations

1. One-Click Connection Check

If you cannot access a MySQL instance via either the private or public network, the One-Click Connection Check tool can help to troubleshoot the connection issues. Click the **Quick Connection Check** following the private network address to navigate to the connection check page. For subsequent operations, please refer to One-Click Connection Check Tool.

2. One-Click Diagnosis**

Under the instance health status, the current instance health score is displayed. With a perfect health score of 100, you can promptly know whether the instance is running healthily. This score can be manually refreshed.

Click the **Quick Chec**k button following the score to navigate to the DBbrain console's Exception Diagnosis page. This page offers real-time performance monitoring, health checks, failure diagnosis, and optimization suggestions for the user's instance. It enables users to see the real-time operation status of the database instance intuitively, locate newly emerged performance anomalies, and optimize the system based on the optimization suggestions.

For instructions on viewing monitoring information, diagnostic information, etc. on the exception diagnosis page, please refer to Exception Diagnosis.

3. Viewing Alarms

On the instance details page, the Exception Alarm section displays the exception alarms of the instance within the last three hours. Based on the exception alarm prompts, users can acquire detailed information about risk items of different risk levels at a certain stage of the instance. This information helps users make optimizations and adjustments accordingly. The exception alarm items are collected by the Exception Diagnosis feature of DBbrain.

Click **View Alarm**. A sidebar is displayed, listing exception alarms of different levels associated with the current instance.

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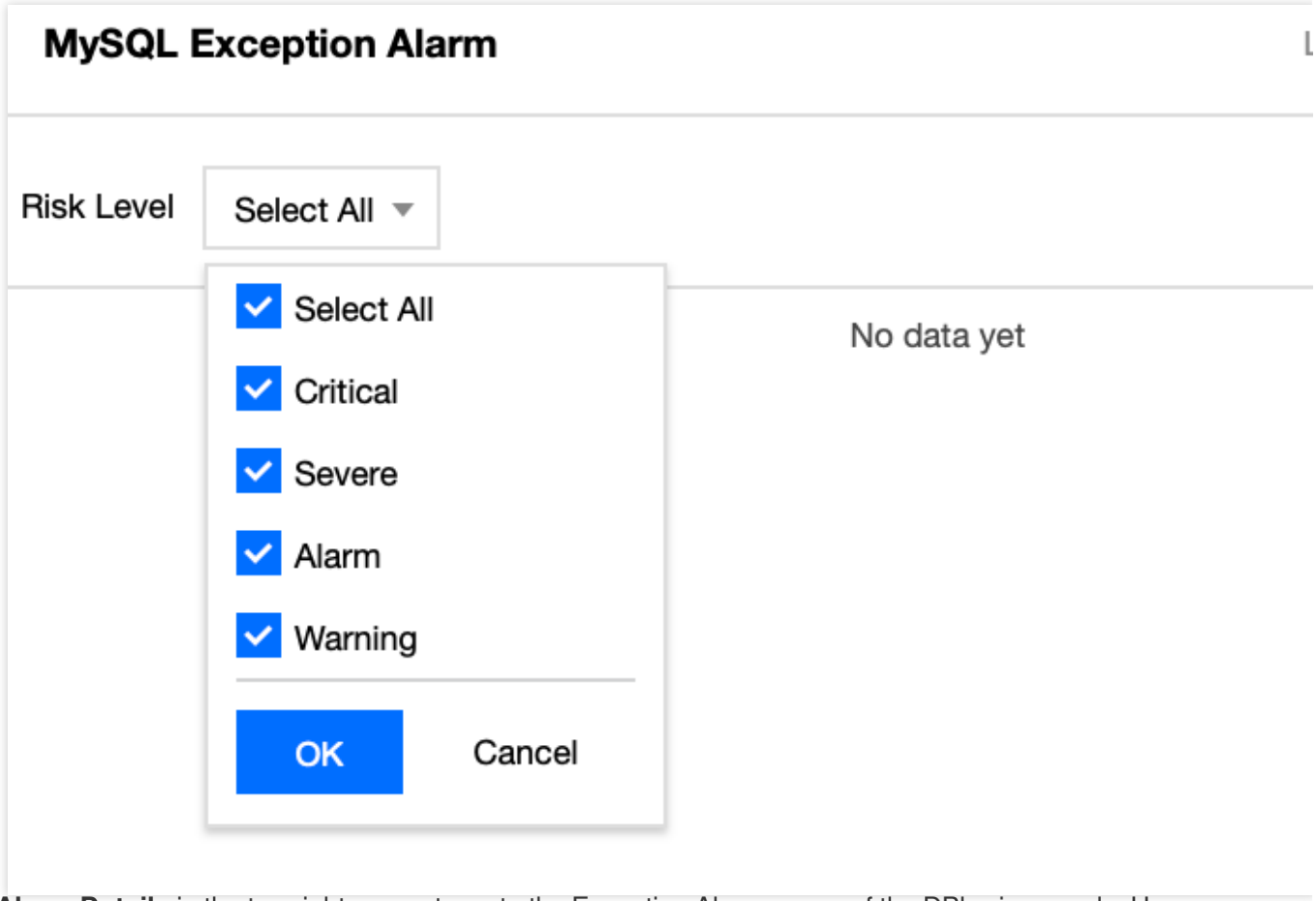
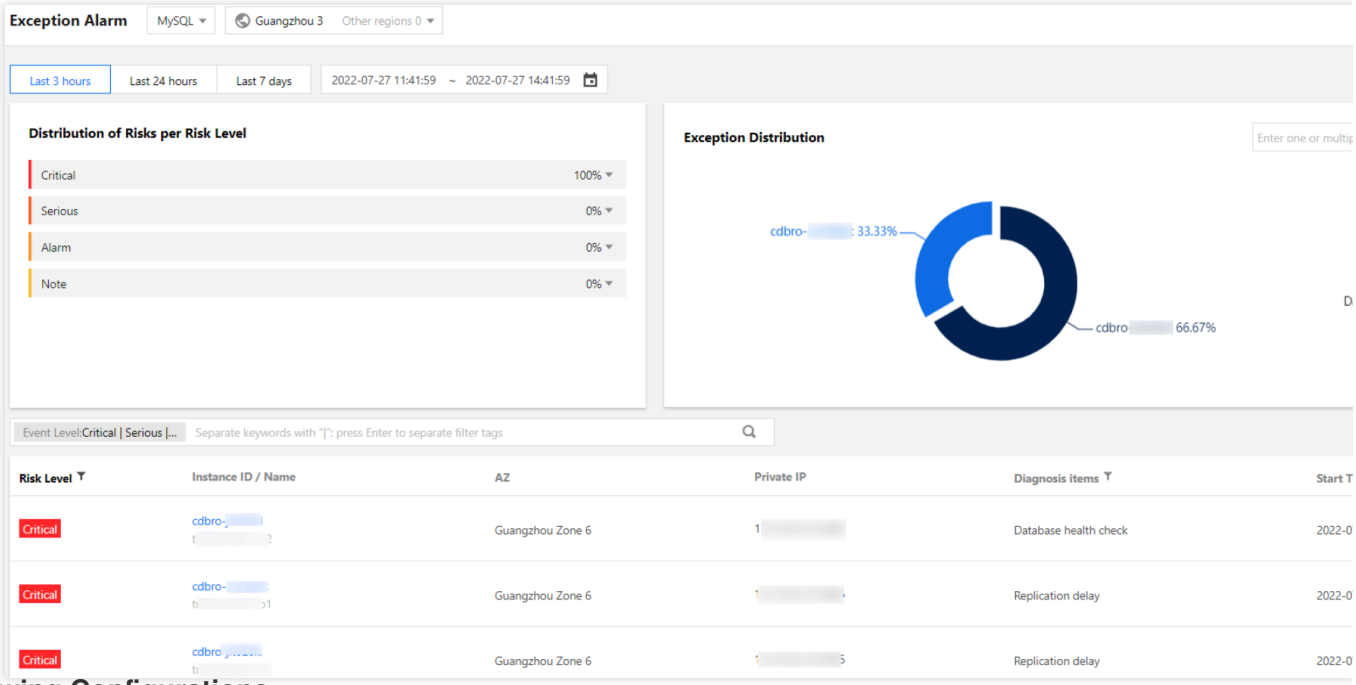


Click **Alarm Details** in the top-right corner to go to the Exception Alarms page of the DBbrain console. Here you can review details such as basic information about the alarmed instance, risk level, diagnostic items, and the duration. For details about the information and operations on the Exception Alarms page, please refer to Exception Alarms.



4. Viewing Configurations

MySQL provides users with configuration details about database functionality from three perspectives: availability, performance, and security. Users can select a category based on their actual requirements and reference the corresponding configurations.

Click **View Configuration**. A sidebar is displayed, listing detailed configuration information of the database functionality. As shown in the following table:

Availability (The configuration item description is shown based on the availability level.)

Single Point Failure

AZ-level Faults

Region-Level Failure

Highly-Availability Architecture Applying to All Scenarios

Configuration Item	Description	Configuration Level	Operation
Space	Forecasts whether the remaining space can satisfy the needs for the forthcoming 30 days.	-	Space Analysis
Momentary Disconnection Prevention	Ensures application continuity without loss during planned detrimental database instance switches and transfers, thus averting connection interruptions.	Enhanced Configuration	Enable Database Proxy View Instructions
Multi-AZ Deployment	The multi-AZ deployment feature of MySQL provides your database instance with high availability and failover support.	-	View Instructions
Multi-AZ Deployment (Database Proxy)	The Multi-AZ deployment feature of MySQL database proxy offers multi-region failover support for the proxy.	-	View Instructions
Three-Node	The three-node mode employs the backup architecture with one primary and two secondary databases, supporting strong synchronous replication method and offering financial-grade reliability and high availability.	Enhanced Configuration	View Instructions
Multiple RO Instances RO Group	A single read-only instance is subject to single point failure	Mandatory Configuration	View Instructions

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	risks, hence, it's recommended to keep at least two read-only instances within a single RO group to ensure availability.		
Multi-AZ RO Instance	Within a single RO group, RO instances can only be deployed in one AZ. To enable cross-AZ deployment, you can create multiple RO groups.	-	View Instructions
Disaster Recovery Instance	Helps users in enhancing their cross-region service continuity at a lower cost while simultaneously improving data reliability.	-	View Instructions
Cross-Region Backup	Synchronizes backup files to another region, enabling users to enhance their regulatory compliance and disaster recovery capabilities.	-	View Instructions

Configuration Item	Description	Configuration Level	Operation
Space	Forecasts whether the remaining space can satisfy the needs for the forthcoming 30 days.	-	Space Analysis
Momentary Disconnection Prevention	Ensures application continuity without loss during planned detrimental database instance switches and transfers, thus averting connection interruptions.	Enhanced Configuration	Enable Database Proxy View Instructions
Multi-AZ Deployment	MySQL's Multi-AZ deployment ensures high availability and failover support for database instances.	Mandatory Configuration	View Instructions
Multi-AZ Deployment (Database Proxy)	The Multi-AZ deployment feature of MySQL database proxy offers multi-region failover support for the proxy.	Mandatory Configuration	View Instructions

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Three-Node	Three-node instances utilize the architecture with one primary and two secondary databases, which can support a strong synchronous replication mode, and providing finance-grade reliability and high availability.	Enhanced Configuration	View Instructions
Multiple RO Instances RO Group	A single read-only instance is subject to single point failure risks, hence, it's recommended to keep at least two read-only instances within a single RO group to ensure availability.	Mandatory Configuration	View Instructions
Multi-AZ RO Instance	Within a single RO group, RO instances can only be deployed in one AZ. To enable cross-AZ deployment, you can create multiple RO groups.	Mandatory Configuration	View Instructions
Disaster Recovery Instance	Helps users in enhancing their cross-region service continuity at a lower cost while simultaneously improving data reliability.	-	View Instructions
Cross-Region Backup	Synchronizes backup files to another region, enabling users to enhance their regulatory compliance and disaster recovery capabilities.	-	View Instructions

Configuration Item	Description	Configuration Level	Operation
Space	Forecasts whether the remaining space can satisfy the needs for the forthcoming 30 days.	-	Space Analysis
Momentary Disconnection Prevention	Ensures application continuity without loss during planned detrimental database instance switches and transfers, thus averting connection interruptions.	Enhanced Configuration	Enable Database Proxy View Instructions
Multi-AZ Deployment	MySQL's Multi-AZ deployment ensures high availability and failover support for database instances.	Mandatory Configuration	View Instructions

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Multi-AZ Deployment (Database Proxy)	The Multi-AZ deployment feature of MySQL database proxy offers multi-region failover support for the proxy.	Mandatory Configuration	View Instructions
Three-Node	Three-node instances utilize the architecture with one primary and two secondary databases, which can support a strong synchronous replication mode, and providing finance-grade reliability and high availability.	Enhanced Configuration	View Instructions
Multiple RO Instances RO Group	A single read-only instance is subject to single point failure risks, hence, it's recommended to keep at least two read-only instances within a single RO group to ensure availability.	Mandatory Configuration	View Instructions
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Cross-Region Backup	Synchronizes backup files to another region, enabling users to	Enhanced Configuration	View Instructions

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	enhance their regulatory compliance and disaster recovery capabilities.		

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Disaster Recovery Instance	Helps users in enhancing their cross-region service continuity at a lower cost while simultaneously improving data reliability.	Mandatory Configuration	View Instructions
Cross-Region Backup	Synchronizes backup files to another region, enabling users to enhance their regulatory compliance and disaster recovery capabilities.	Mandatory Configuration	View Instructions

Performance

Configuration Item	Description	Operation
Parallel Query	Harnesses multiple computing kernels, significantly reducing the response time for large-scale queries.	View Instructions
Asynchronously Dropping Large Tables	The DROP TABLE operation gradually clears the original database file (.ibd) in the background, mitigating the impact on performance.	View Instructions

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Instant Column Addition	The Instant Column Addition feature enables swift column addition to large tables by solely modifying the data dictionary, minimizing the impact on system.	View Instructions
Instant Column Modification	The Instant Column Modification Feature enables swift column modification in large tables by solely modifying the data dictionary, minimizing the impact on system.	-
Read-Only Instance	Creates Read-Only instances to facilitate read/write segregation and master-replica application scenarios, thereby enhancing the database's read load capacity.	View Instructions
CPU Elastic Scaling	Once Auto CPU Elastic Scaling is activated, it effectively guarantees the stability of online operations.	View Instructions
Automatic Read/Write Separation	By configuring access strategies for Read/Write Separation through database proxy, you can achieve elastic expansion of reading capability, thereby mitigating database pressure.	View Instructions

Security

Configuration Item	Description	Operation
Security Group	Security group is a type of virtual firewall that regulates the inbound and outbound traffic at the instance level, serving as a crucial means for network security isolation.	View Instructions
SSL	SSL authentication is the verification process from the client to the cloud database server, which authenticates both the user and the server.	View Instructions
Password Complexity	Configures the password complexity to enhance the robustness of the database access passwords, safeguarding the security of your database.	View Instructions
Transparent Data Encryption (TDE)	TDE performs encryption and decryption operations transparently to the user, doing so in real-time, and meets the compliance requirements for static data encryption.	View Instructions
Latency Read-Only	By setting delay replication and initiating the recovery to a specific time during the delay period, efficient data rollback and rapid fault traceback can be achieved.	View Instructions
Backup Encryption	After the Backup Encryption feature is enabled, newly created physical backup files will be automatically encrypted for storage.	View Instructions
Download	By default, backup files can be downloaded over a public or private network.	View

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Restrictions on Backups	Restrictions can be implemented via the download configuration settings.	Instructions
Database Auditing	Records accesses to databases and execution of SQL statements, improving your database security level.	View Instructions

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Setting Instance Maintenance Time

Last updated：2024-07-22 14:33:38

Overview

Maintenance time is a very important concept for TencentDB for MySQL. To ensure the stability of your TencentDB for MySQL instance, the backend system performs maintenance operations on the instance during the maintenance period from time to time. To minimize the potential impact on your business, we recommend that you set an acceptable maintenance period for your business instance, usually during off-peak hours.
In addition, we also recommend you perform operations involving data migration during the maintenance time, such as instance specification adjustment, instance version upgrade, and instance kernel upgrade. Currently, the maintenance time can be customized for source, read-only, and disaster recovery instances.
Take the database instance specification upgrade as an example. As this operation involves data migration, after the upgrade is completed, a momentary disconnection from the database may occur. When the upgrade is initiated, you can select **During maintenance time** for **Switch Time**, so that the instance specification will be switched during the next **maintenance time** after the instance upgrade is completed. Note that when you select **During maintenance time** for **Switch Time**, the switch will not occur immediately after the database specification upgrade is completed; instead, the sync will continue till the instance goes into the next **maintenance time** when the switch will be performed. As a result, the overall time it takes to upgrade the instance may be extended.
Note:
Before maintenance is carried out for TencentDB for MySQL, notifications will be sent to the contacts configured in your Tencent Cloud account by SMS and email.
TencentDB for MySQL will perform a data consistency check within the maintenance time configured for the database instance to ensure the source-replica data consistency and reduce the risk of data exceptions after the instance switch. The database performance will drop slightly during the check; therefore, we recommend that you select a maintenance time during off-peak hours. If the current load of the database is high, the check will be initiated during the maintenance time.
Instance switch will cause a momentary disconnection from the database. Make sure that your business has a reconnection mechanism.

Directions

Setting the maintenance time

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance details page.

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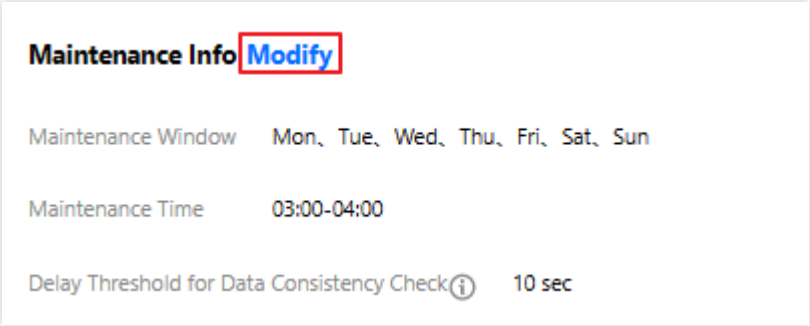
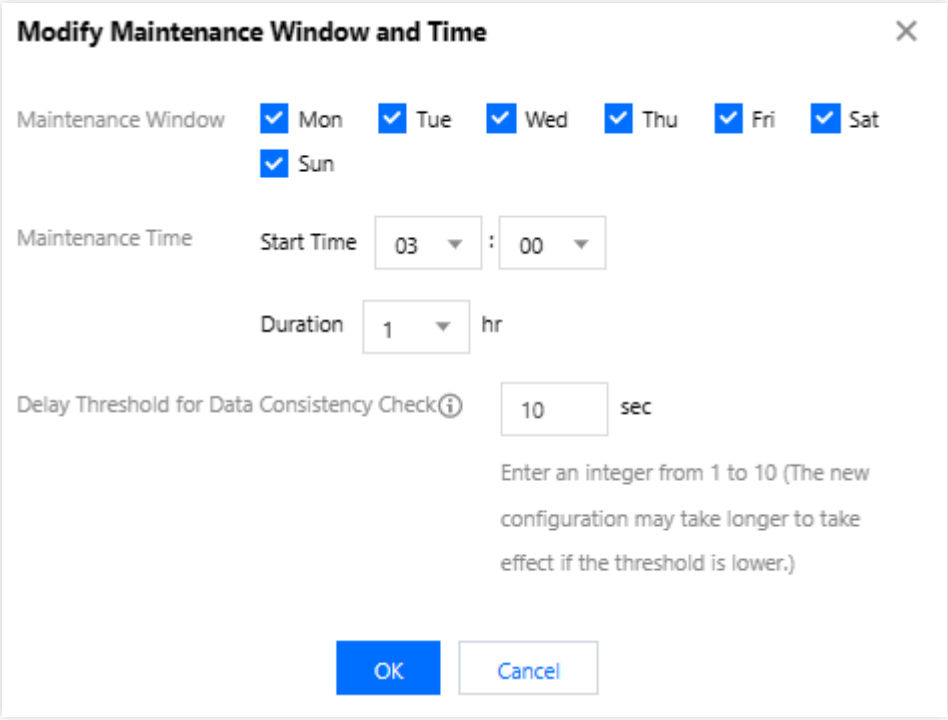
2. In the **Maintenance Info** section on the instance details page, click **Modify**.



3. In the pop-up window, select **Maintenance Window** and **Maintenance Time** and click **OK**.



Performing the switch

If a task is configured to be switched during the maintenance time, but you need to switch it urgently under special circumstances, you can click **Switch Now** in the **Operation** column.

Note:

Immediate switch is applicable to operations involving data migration such as instance specification adjustment, instance version upgrade, and instance kernel upgrade.

For version upgrade, if it is associated with multiple instances, the switch will be performed in the order from disaster recovery instance to read-only instance to source instance.

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Assigning Instance to Project

Last updated：2024-07-22 14:35:34

TencentDB for MySQL supports assigning instances to different projects for management. Notes for assignment are listed below:

Read-only instances and disaster recovery instances are the associated instances of the source instance and should be in the same project as the source instance.

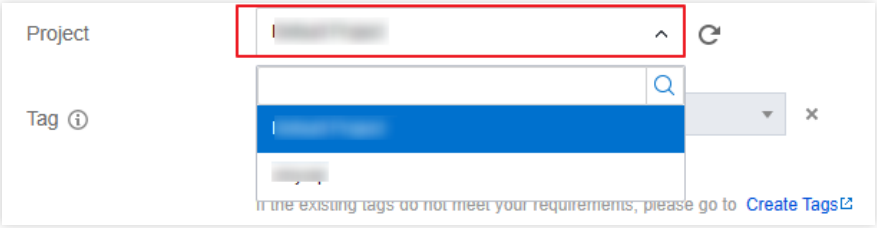
Assigning and reassigning TencentDB instances will not affect the services provided by the instances.

You need to specify a project to which a new instance belongs when purchasing it. **Default Project** will be used if you don't specify one.

Assigned instances can be reassigned to other projects through the **Assign to Project** feature.

Assigning the project on the purchase page

1. Log in to the TencentDB for MySQL purchase page.
2. When purchasing a new instance, you can directly specify the project to assign the instance to.



Modifying the project on the purchase page

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance details page.
2. Click **Switch to Another Project** after **Basic Info** > **Project**, select the target project in the pop-up window, and click **OK**.

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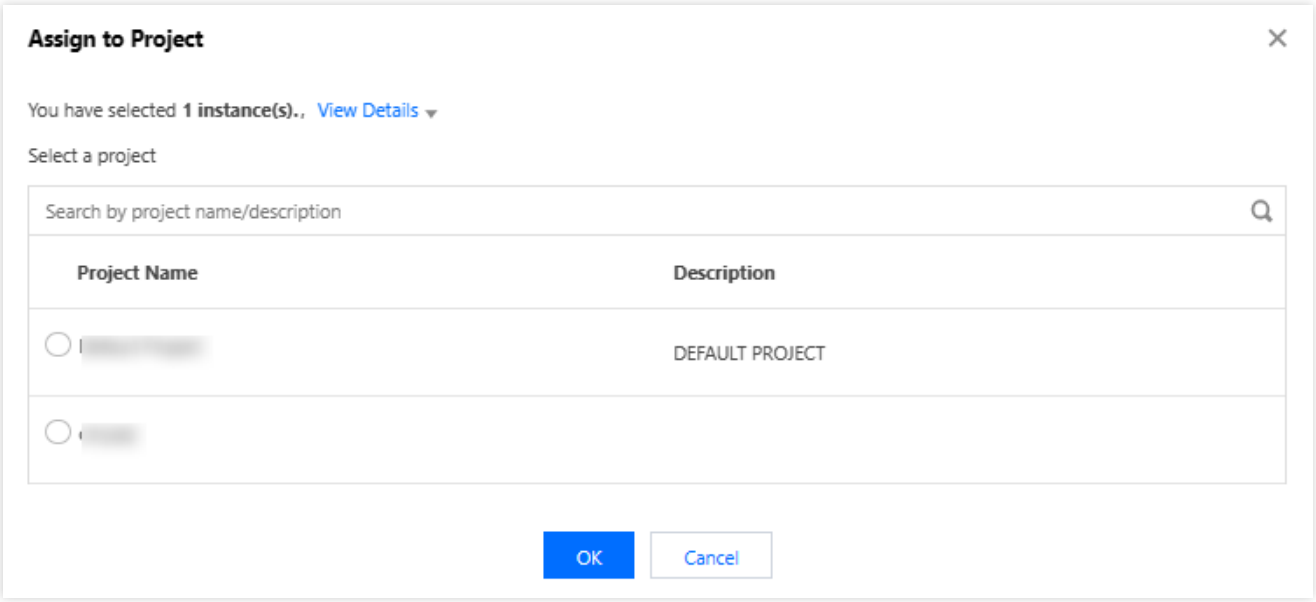

Note:

You can also batch assign multiple instances to a project by selecting them and clicking **More** > **Assign to Project** above the instance list.

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Adjusting Database Instance Specifications

Last updated：2024-06-20 10:40:54

TencentDB for MySQL supports flexible scaling that allows you to quickly adjust instance specification in the console. You can do so at any time (at the start, during rapid development, or during peak/off-peak hours), so you can get the most out of your resources and reduce unnecessary costs in real time. For more information, see Instance Adjustment Fee.

In cluster edition instances, the adjustment configuration operation also allows for adding or deleting read-only nodes, change of node availability zones, etc. Please see Adjust Instance Configuration.

Instance Disk Space Description

To ensure business continuity, upgrade your instance specifications or purchase additional disk capacity in time before disk capacity is used up.

Note:

You can view disk space on the instance details page in the MySQL console, or receive disk alarms by configuring [Alarm Policies (TCOP)(https://www.tencentcloud.com/document/product/236/8457).

When the size of the data stored on an instance exceeds its capacity limit, the instance will be locked and become read-only. You will not be able to write data to it. You will need to expand its capacity or delete some database tables in the console to unlock it.

To avoid the database from triggering the lock status repeatedly, a locked instance will be unlocked and allowed for reads and writes only when its remaining available capacity is more than 20% of its total capacity or over 50 GB.

Configuration Adjustment Description

By default, the instance configuration is adjusted in the normal mode, which requires a data migration for the adjustment to complete after you adjust the instance configuration in the console. But if the physical machine where the instance is located has sufficient remaining resources (aka local resources), you can choose the QuickChange mode. The adjustment process is as follows:

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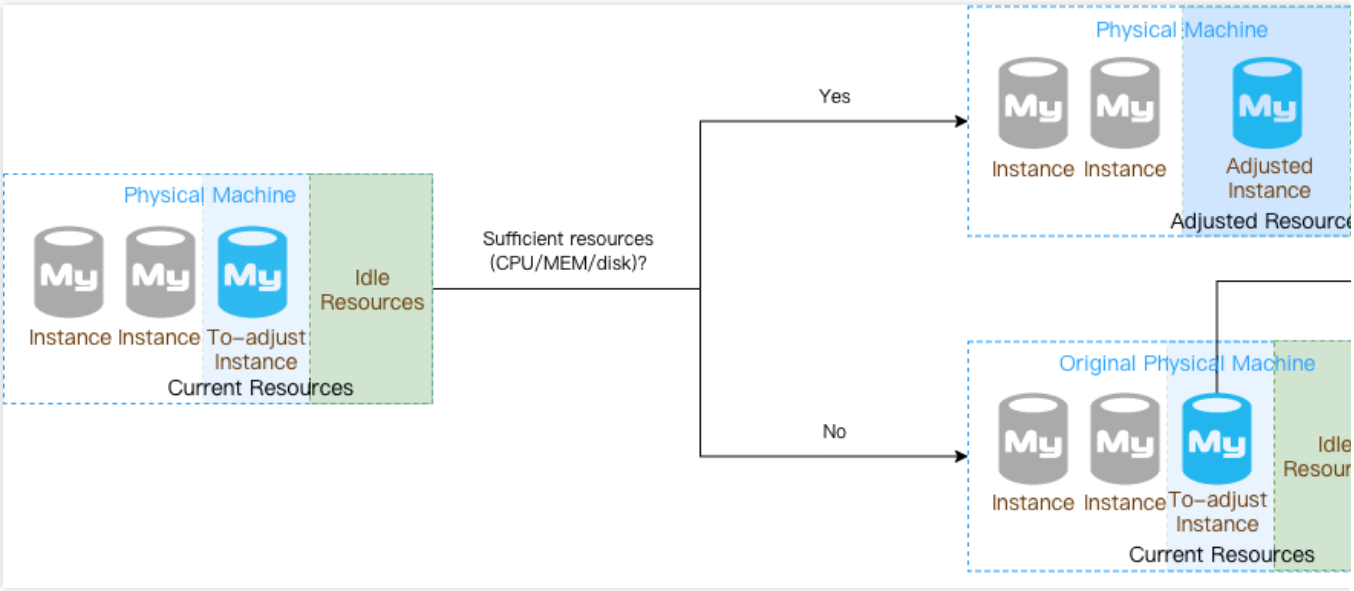


Normal mode: to adjust the instance configuration, instance data needs to be migrated from the original physical machine to a new one. Because adjustment in this mode requires data migration, comparison, and verification, the overall adjustment process will take a long time in case of a huge amount of data. Besides, an instance switch may occur after the adjustment is completed.

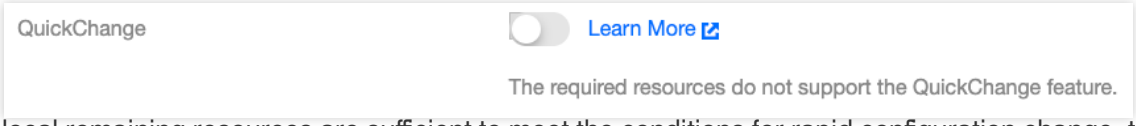
QuickChange mode: the instance configuration can be adjusted without migrating data or switching to another physical machine. As no migration preparation is needed, the overall adjustment process is much shorter.

Note:

The ability to trigger a rapid configuration change during instance configuration change is closely related to the resource availability of the host machine. Please take the activation status of the rapid configuration change switch on the actual configuration adjustment page as the criterion.

If the Rapid Allocation Switch is activated, it means that the current host resources are sufficient to support rapid configuration changes.

If the rapid configuration change switch is not activated, it means that the host machine lacks sufficient resources to perform rapid configuration change.



When local remaining resources are sufficient to meet the conditions for rapid configuration change, the rapid configuration change will be used by default. If not to use it, turn it off on the Configuration Adjustment page. (i.e. you can choose to enable or disable the "Rapid Configuration Change" button on the Configuration Adjustment Page).

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Use Limits

A read-only instance with an exclusive VIP enabled does not support QuickChange.
If a read-only instance group (RO group) enables the "Remove Delayed RO Instances" feature, read-only instances whose delay exceeds the specified threshold will be removed from the RO group until the number of remaining ones reaches the allowed minimum number. If the number of the remaining available read-only instances in an RO group is less than or equal to the allowed minimum number, none of those instances will support QuickChange.
If an RO group only has one read-only instance, the instance does not support QuickChange.
When upgrading a minor version, whether a restart is involved, the prompts on the configuration change page shall prevail.

Configuration Adjustment Rules

You can adjust the configuration of a TencentDB for MySQL instance and its associated read-only and disaster recovery instances only when they are in normal status (running) and are not executing any task.
You cannot cancel a configuration adjustment operation in progress.
The name, access IP, and access port of the instance remain unchanged after configuration adjustment.
During configuration adjustment, you should try to avoid such operations as modifying MySQL's global parameters and user password.
Data migration may be involved in configuration adjustment. During data migration, the TencentDB for MySQL instance can be accessed normally and the business will not be affected.
Instance switchover may be needed after configuration adjustment is completed (i.e., the MySQL instance may be disconnected for seconds). It is recommended that applications be configured with auto reconnection feature and that instance switchover be conducted during the instance maintenance period. For more information, see Setting Instance Maintenance Window.
Basic single-node TencentDB for MySQL instances are unavailable for about 15 minutes in the process of configuration adjustment. We recommend you adjust instance configuration during off-peak hours.

Instance Specification and Storage Table

Two-node/Three-node (local SSD disk)

Isolation Policy	CPU and Memory	Maximum IOPS	Storage Space
General	1-core 1000 MB	1200	25GB - 3000GB
	1-core 2000 MB	2000	

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	2-core 4000 MB	4000	
	4-core 8000 MB	8000	
	4-core 16000 MB	14000	25GB - 4000GB
	8-core 16000 MB	20000	
	8-core 32000 MB	28000	
	16-core 32000 MB	32000	
	16-core 64000 MB	40000	
	16-core 96000 MB	40000	
	16-core 128000 MB	40000	25GB - 8000GB
	24-core 192000 MB	60000	25GB - 6000GB
	24-core 244000 MB	60000	25GB - 8000GB
	32-core 256000 MB	80000	
	48-core 488000 MB	120000	25GB - 12000GB
	80-core 690000 MB	140000	
Dedicated	2-core 16000 MB	8000	25GB - 4000GB
	4-core 16000 MB	10000	
	4-core 24000 MB	13000	
	4-core 32000 MB	16000	
	8-core 32000 MB	32000	
	8-core 48000 MB	36000	
	8-core 64000 MB	40000	
	12-core 48000 MB	36000	25GB - 8000GB
	12-core 72000 MB	40000	
	12-core 96000 MB	48000	
	16-core 64000 MB	60000	

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	16-core 96000 MB	60000	
	16-core 128000 MB	60000	
	24-core 96000 MB	72000	
	24-core 144000 MB	76000	
	24-core 192000 MB	80000	
	32-core 128000 MB	80000	
	32-core 192000 MB	90000	
	32-core 256000 MB	100000	
	48-core 192000 MB	120000	25GB - 10000GB
	48-core 288000 MB	140000	
	48-core 384000 MB	140000	
	64-core 256000 MB	150000	
	64-core 384000 MB	150000	
	64-core 512000 MB	150000	25GB - 12000GB
	90-core 720000 MB	150000	

Note:

The storage space cap of an instance specification may vary by region as displayed on the purchase page.

Adjusting Instance Configuration in the Console

1. Log in to the TencentDB for MySQL console, locate the desired instance in the instance list, and select **More** > **Adjust Configurations** in the **Operation** column.

2. In the pop-up window, select the desired configuration and click **Submit**.

Note:

When the local resources are sufficient, you can enable the QuickChange mode by turning on the **QuickChange** toggle on the configuration adjustment page in the console.

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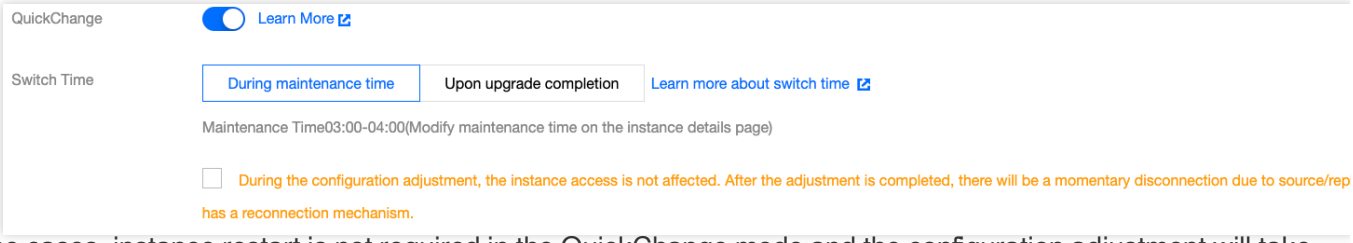
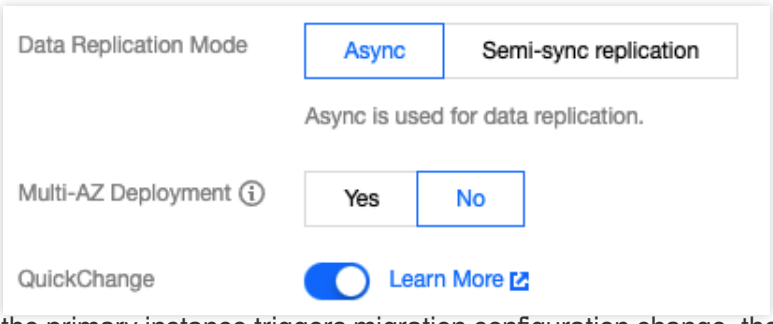
When you are only adjusting the cloud disk (storage space), which does not involve a restart, the system will provide options for the execution time if rapid configuration change is enabled.



In some cases, instance restart is not required in the QuickChange mode and the configuration adjustment will take effect immediately after you submit the request, as shown below:



When the primary instance triggers migration configuration change, the data validation sensitivity settings will be displayed, and you can set the data validation speed to high, standard, or low.

High: Suspends the data consistency comparison task when database load pressure increases, to avoid additional performance impact from the task, which will extend the duration of the data consistency comparison task.

Standard: Suspends the data consistency comparison task when the database load pressure is significant, to prevent noticeable performance impact.

Low: Perform the data consistency comparison task even when the database load pressure is significant, to shorten the duration of the task.

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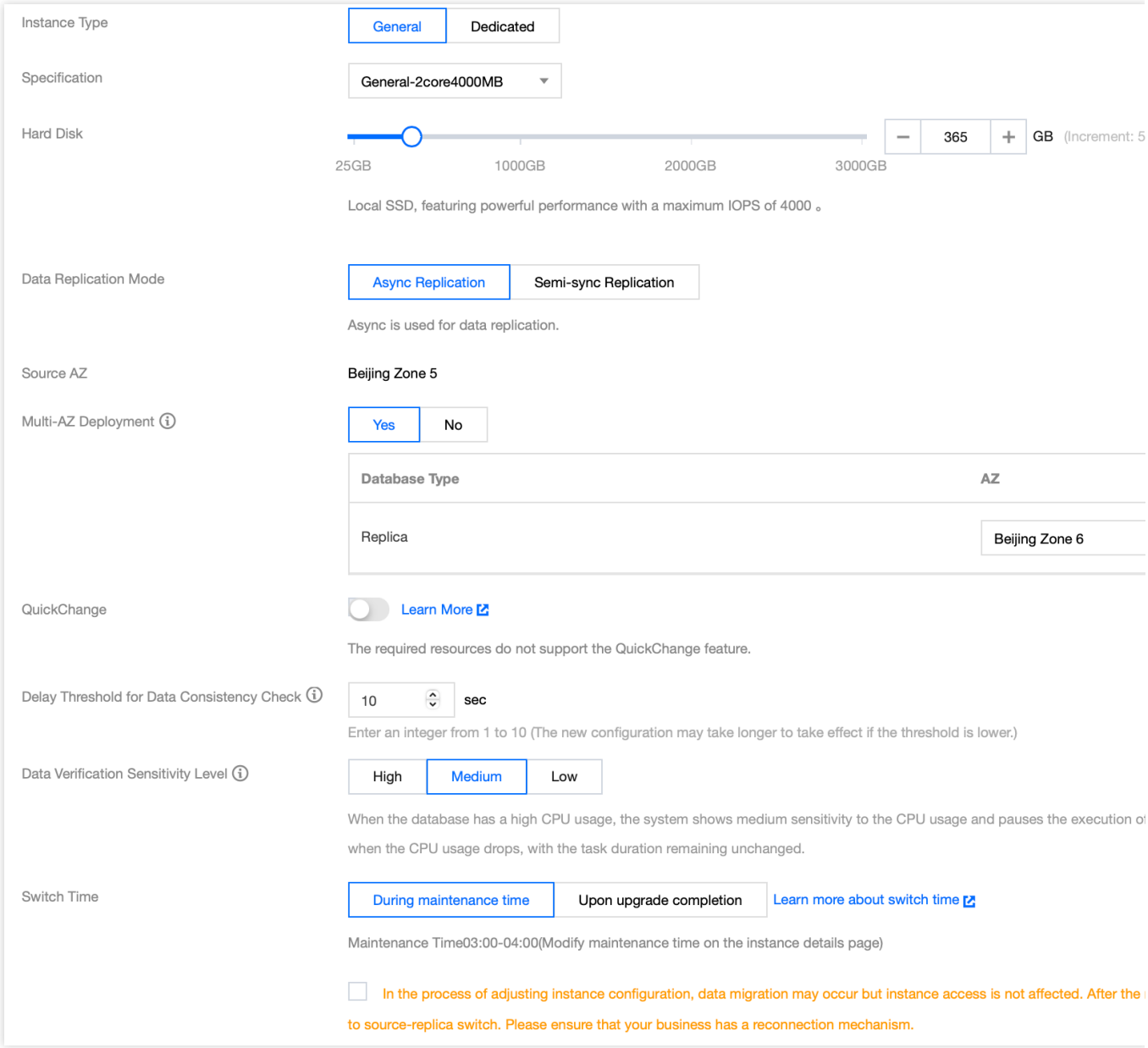

Adjusting Instance Configuration Through API

You can adjust the instance configuration using the `UpgradeDBInstance` API. For more information, see UpgradeDBInstance.

FAQs

Will there be a primary-secondary delay issue during the configuration change?

During the configuration change of the primary instance, data comparison occurs, which might lead to primary-secondary delay.

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Will instance configuration adjustment affect instances?

In the process of TencentDB for MySQL configuration adjustment, data migration may occur, and instances can still be accessed during the process. After the migration is completed, there is a switch which causes a short disconnection lasting for just seconds, ensure that your business has a reconnection mechanism.
Basic single-node TencentDB for MySQL instances are unavailable for about 15 minutes in the process of configuration adjustment. We recommend you adjust instance configuration during off-peak hours.

Why can't my instance be downgraded?

It may be because the used storage capacity has reached the maximum capacity of the hard disk. To downgrade you instance, you need to clean up data first and make sure the remaining available capacity accounts for more than 20% of the total capacity or over 50 GB.

Why is my instance in the "Waiting for switch" status for a long time after I adjust instance configuration in the console?

It may be because you select **During maintenance time** as the **Switch Time** when you adjust instance configuration in the console, so the instance will not be switched immediately after the adjustment.
To switch immediately, find the target instance in the instance list and click **Switch Now** in the **Operation** column. The switch will cause a momentary disconnection. Make sure that your business has a reconnection mechanism.

How long does it take to upgrade instance configuration?

The time it takes depends on the instance's data volume and data replication speed.
Instances can still be accessed during the upgrade, but after the upgrade is completed, there is a VIP switch which causes a short disconnection lasting for just seconds.

How do I view the progress of instance configuration adjustment?

You can view the progress in Task List in the console.

What should I do if the disk space is being used up?

If over 85% disk space is used, we recommend that you delete data no longer used or expand disk space in the console by selecting **More** > **Adjust Configurations** in the **Operation** column on the right of the instance list.

How do I know whether the QuickChange mode is supported when I adjust instance memory or disk capacity?

On the configuration adjustment page, if the QuickChange mode is supported, the **QuickChange** toggle can be turned on or off as needed; otherwise, the toggle cannot be used.

Does expanding memory or disk capacity affect the kernel minor version of the instance?

If the kernel minor version of the instance is not the latest when memory or disk capacity is expanded, it will be upgraded to the latest. In this case, enabling the QuickChange mode will cause the database to restart.

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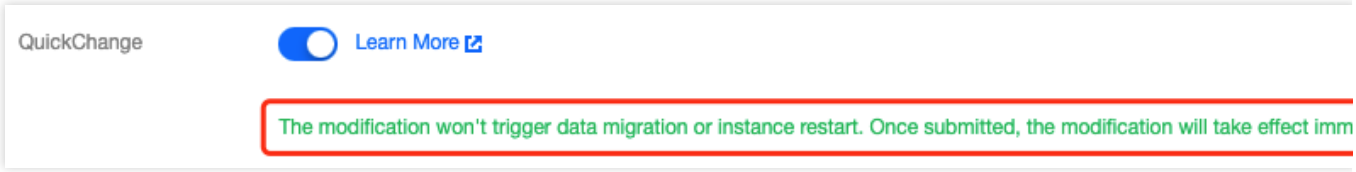
Will the instance restart if the QuickChange mode is enabled?

The instance needs to be restarted in some cases. A prompt will appear asking if you want to restart the instance on the configuration adjustment page.



Note:

If the instance is running the latest kernel minor version, it won't restart if you only adjust the disk capacity in the QuickChange mode.

How do I know whether the QuickChange mode is enabled when I upgrade instance configuration in the console?

You can check the **QuickChange** switch on the configuration adjustment page: if the switch is toggled on, the QuickChange mode is enabled; otherwise, the mode is disabled.

How do I know whether the QuickChange mode is enabled when I use APIs to adjust instance configuration?

APIs do not support QuickChange for the time being, so instance configuration can be adjusted only by migrating data if you use APIs. APIs will support QuickChange in the future.

Will database parameters be modified during database configuration adjustment?

The `innodb_buffer_pool_size` parameter will be modified according to the configuration changes.

Will database parameters be modified during database configuration adjustment in the QuickChange mode?

It is the same with the normal mode. In the QuickChange mode, some parameters will be modified according to the configuration changes.

What is the difference between QuickChange mode and normal mode?

The QuickChange mode requires no data migration, so it takes less time to adjust instance configuration.

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Change the Port Number

Last updated：2023-12-27 10:16:47

MySQL instances support modifying the port number of their private IP addresses. This document describes the steps to change the port number through the console.

Note:

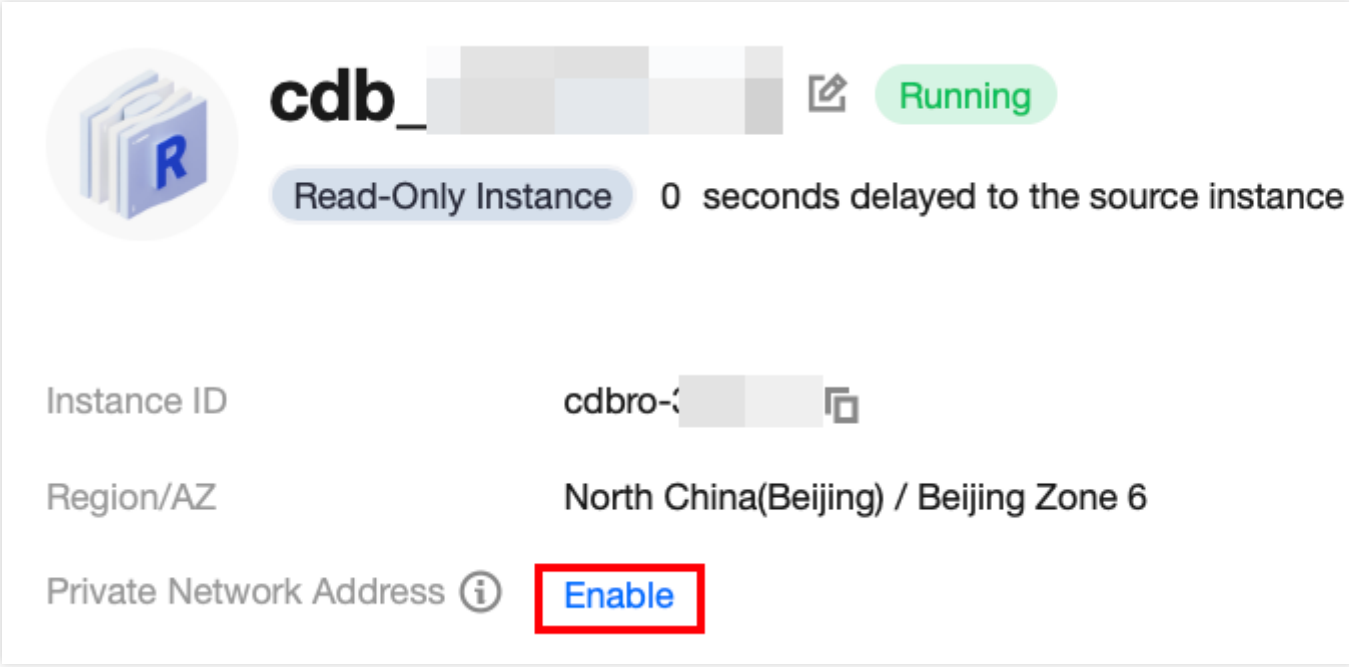
Only supports modifying the port number of private IP address of the MySQL instance; the port for public IP address is not supported.

Prerequisites

You have created a MySQL instance..

Note:

Before modifying the port for the private IP address of a read-only instance, you must verify that the private network address for the read-only instance has been enabled.



Modifying the private address port numbers of Master/Read-only Instances

1. Log in to the TencentDB for MySQL console. In the instance list, click an **instance ID** or **Manage** in the operations column to go to the instance details page.

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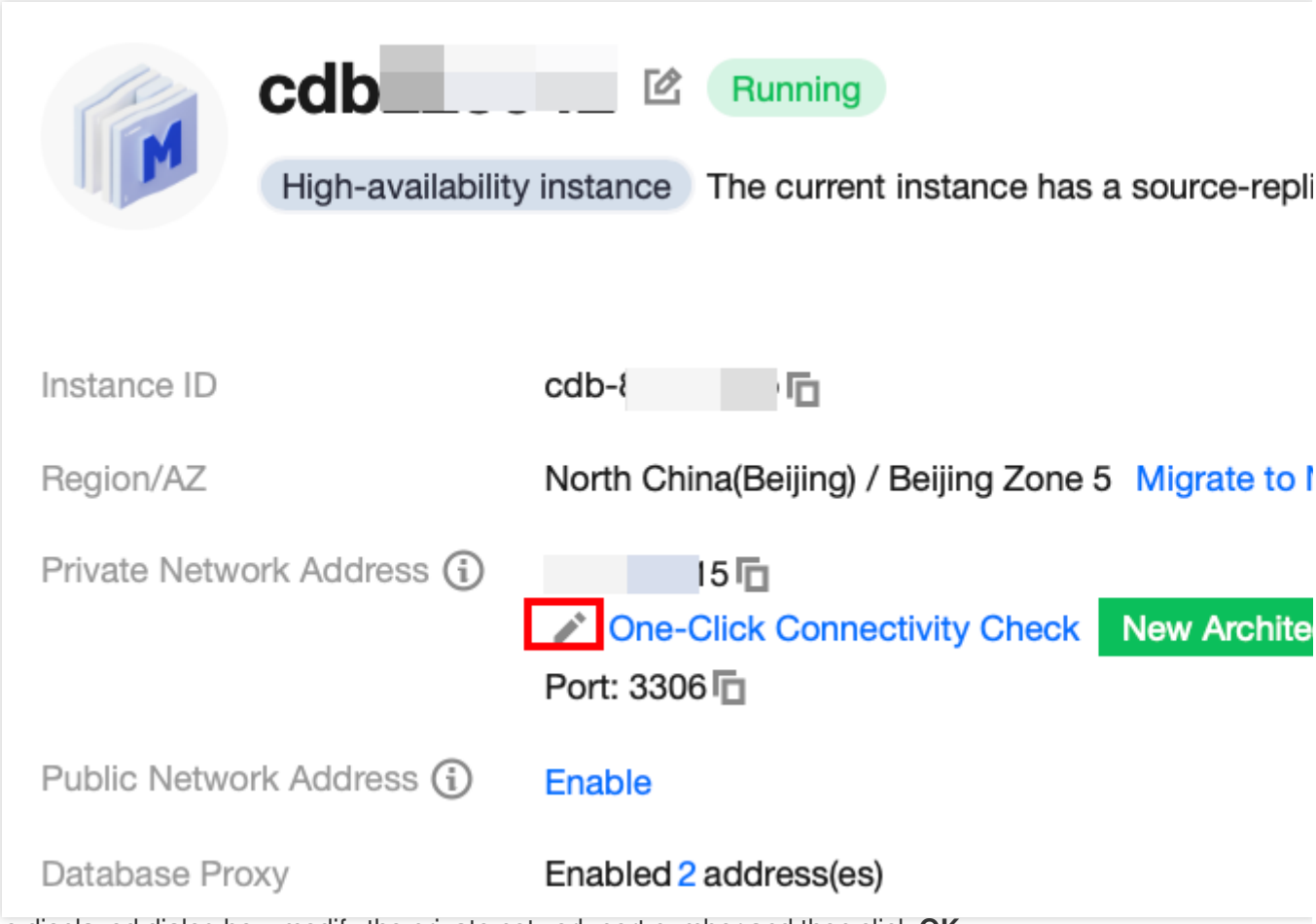
2. Click the edit icon following the private network address.



3. In the displayed dialog box, modify the private network port number and then click **OK**.

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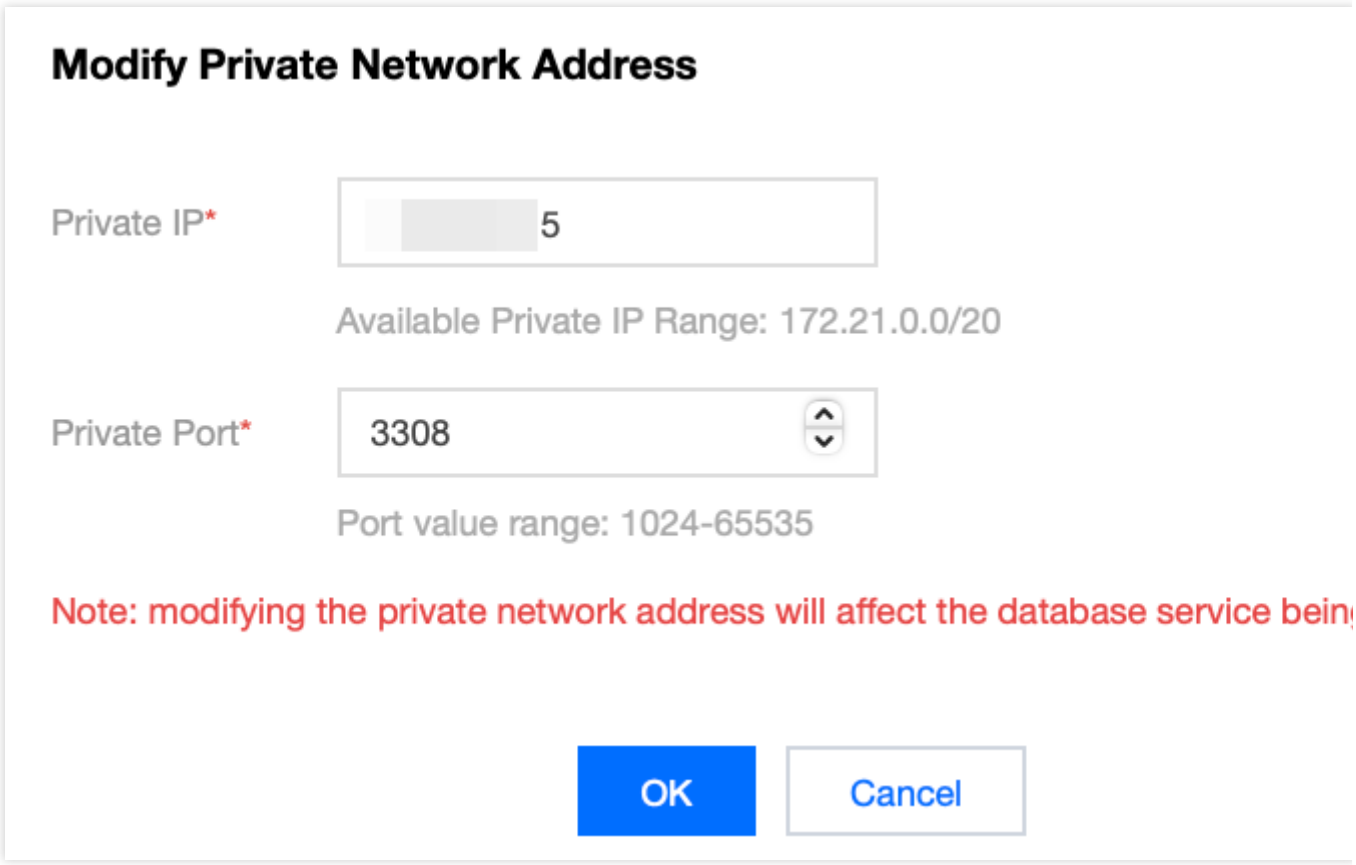
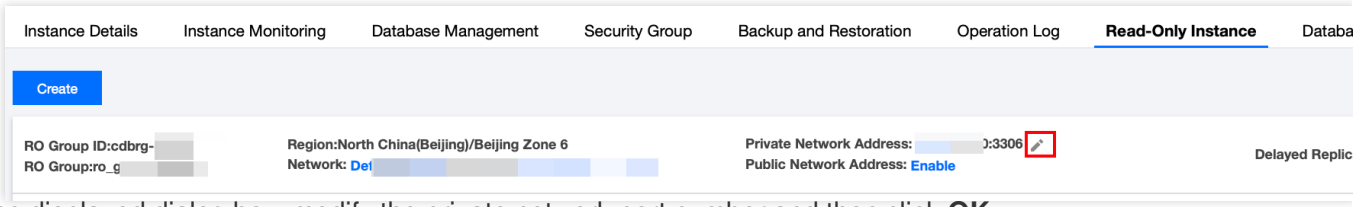


Modifying the Private Network Address Port Number of the read-only Group

1. Log in to the TencentDB for MySQL console..
2. Locate the master instance whose read-only group's private network address needs to be modified in the instance list, then click its **instance ID** or **Manage** in the operations column to access the instance details page.
3. Navigate to the read-only instance page and click the edit icon following the private network address of the read-only group.



4. In the displayed dialog box, modify the private network port number and then click **OK**.

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Migrating AZ

Last updated：2024-02-18 11:18:04

You can migrate a TencentDB for MySQL instance to another AZ in the same region. All its attributes, configurations, and connection address will stay unchanged after the migration. The time it takes to migrate the instance is subject to the instance's data volume.
For example, you can migrate to a new AZ in the following scenarios:
If you want to modify an instance's type, but the current AZ doesn't support the new instance type, you can migrate the instance to an AZ supporting the new type.
If the current AZ has no remaining resources for scaling, you can also migrate the instance to another AZ in the same region with sufficient resources to meet your business needs.

Prerequisites

The instance is running and uses the two-node or three-node architecture.
The region where the instance is located has multiple AZs to support cross-AZ migration.

Billing description

This feature is free of charge. There is no charge even for migrating an instance from a single AZ to multiple AZs.

Feature overview

AZ migration will not result in a VIP change.
The source instance is not decoupled from the read-only instances after AZ migration and can still be synced with them.
You can choose the AZ of read-only instances.
If the target instance has a task lock on the cloud platform during the DTS task, cross-AZ migration cannot be performed.
If there are ongoing DTS tasks, after AZ migration, you need to restart such tasks.
DTS export will fail if the source instance undergoes a cross-AZ migration switch during dumper export.

Impact

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The instance will be momentarily affected when its AZ is switched; therefore, make sure that your application has an automatic reconnection mechanism.

Use limits

During the migration of the availability zone, the system will check if the instance disk is overused. If the disk is overused, the migration of the availability zone cannot be carried out. It is recommended to retry after expanding the disk. If the disk space has exceeded the maximum storage limit of the current instance specification, it is recommended to retry after upgrading the instance specification configuration. For detailed specifications, disk limits, and related operations, please refer to Adjusting Database Instance Specifications.
RO instances do not support cross-regional migration.
The migration of the availability zone does not currently support enabling instances with the database proxy. Please turn off the database proxy before migrating across availability zones.
During the migration switch, access via the RO group is not possible (excluded).
Under the dual-node and triple-node architecture, the selection of the primary and secondary availability zones for migration is subject to regional and remaining resource restrictions. When migrating in the console, select the target availability zone, and the secondary availability zone option will automatically update.
RO instances in the same availability zone as the primary instance will by default migrate to the target availability zone with the primary instance. RO instances not in the same availability zone as the primary instance do not currently support the migration of availability zone operations.

Migration type

Migration Type	Applicable Scenario	Supported Instance Types
Migration from one AZ to another AZ	The AZ where the instance is located is under full load or other conditions that affect the instance performance.	Source, read-only, and disaster recovery instances
Migration from one AZ to multiple AZs	You can improve the disaster recovery capability of the instance and implement cross-data center disaster recovery. Source and replica instances are located in different AZs. Multi-AZ instances can withstand higher levels of disasters than single-AZ instances. For example, the latter can tolerate server- and rack-level failures, while the former can tolerate data center-level failures.	Source, read-only, and disaster recovery instances

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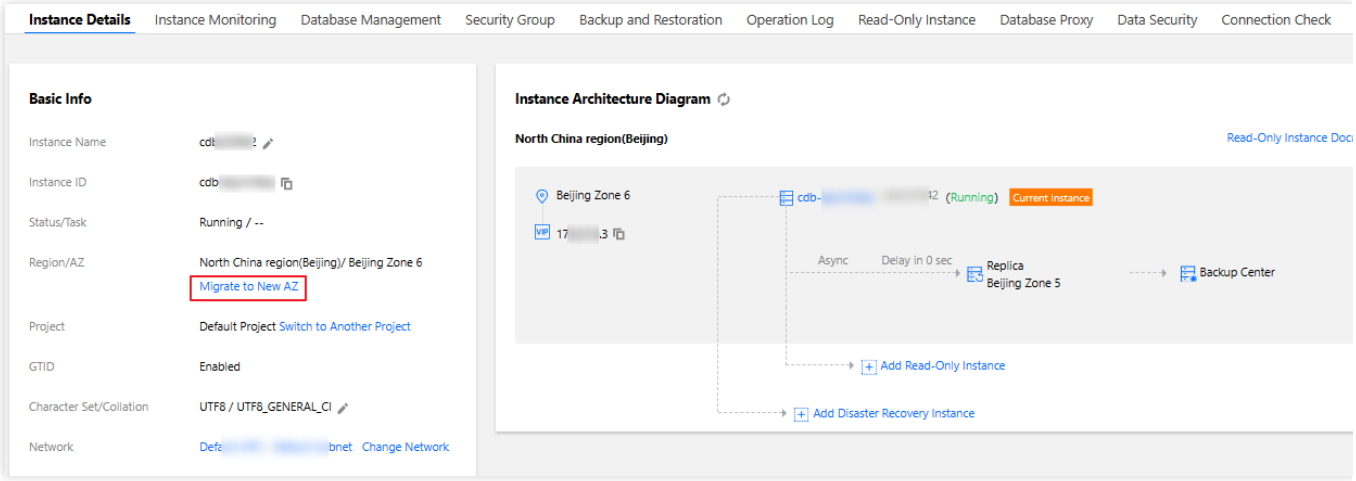
Migration from multiple AZs to one AZ	You want to meet specific feature requirements.	Source, read-only, and disaster recovery instances

Directions

1. Log in to the TencentDB for MySQL console. In the instance list, click an **instance ID** or **Manage** in the **Operation** column to enter the instance details page.
2. On the **Instance Details** page, select **Basic Info** > **Region/AZ** and click **Migrate to New AZ**, or select **Availability Info** > **Deployment Mode** and click **Modify Replica AZ**.



3. In the pop-up window, adjust the relevant configurations and click **Submit** after confirming that everything is correct.

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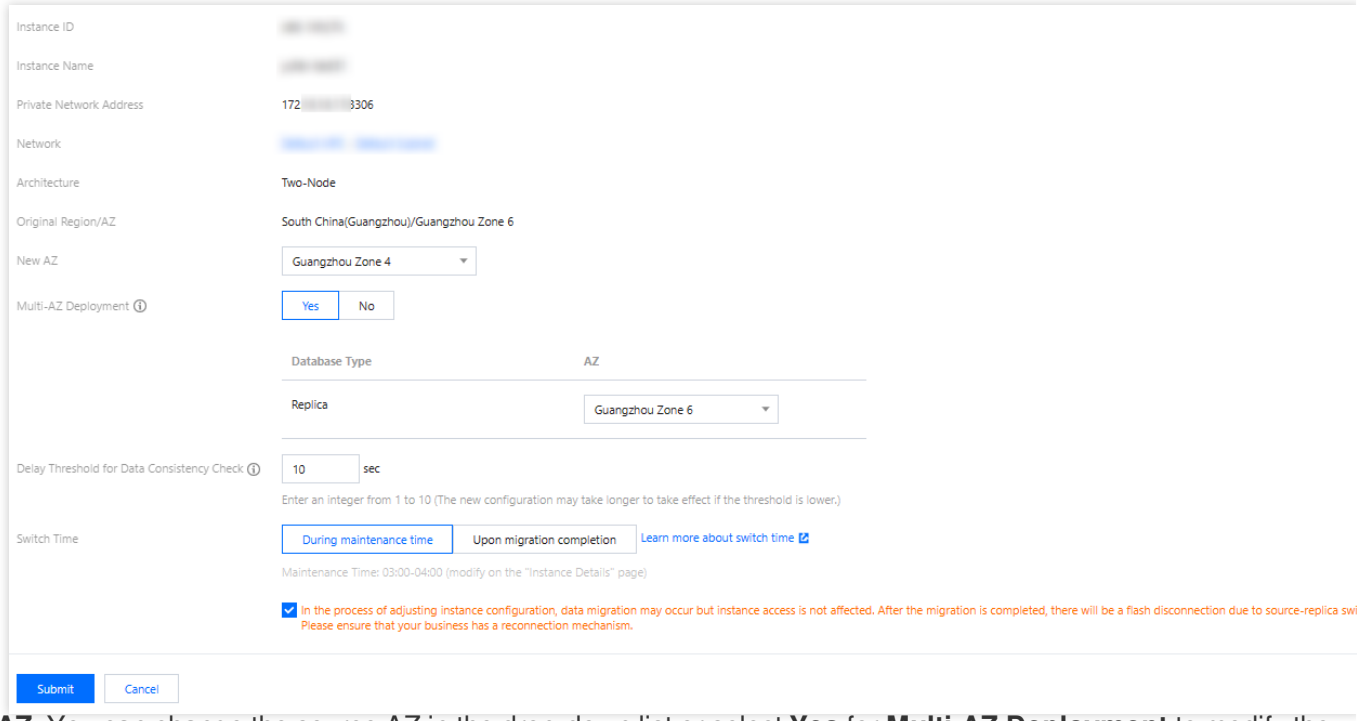

New AZ: You can change the source AZ in the drop-down list or select **Yes** for **Multi-AZ Deployment** to modify the replica AZ.

Delay Threshold for Data Consistency Check: This option is available only when you change the primary AZ. The threshold can be an integer between 1 and 10 seconds.

Note:

There may be a delay during the data consistency check. You need to set a data delay threshold. The database consistency check will be paused when the delay exceeds the set value and will be resumed when the delay drops below the threshold. If the threshold value is too small, the migration may take longer.

Switch Time: You can choose to switch during the maintenance time or upon migration completion. For more information, see Setting Instance Maintenance Time.

Same Availability Zone RO Instance Migration: (This setting only appears when the primary instance has a read-only instance in the same availability zone.) Select whether the same availability zone RO should follow the primary instance to migrate to the new availability zone.

Note：

During the process of adjusting configurations, data migration may occur within the instance. However, this will not affect the accessibility of the instance. After the migration is complete, a switch will occur, resulting in a second-level disconnection. Please ensure that your operations possess a reconnection mechanism.

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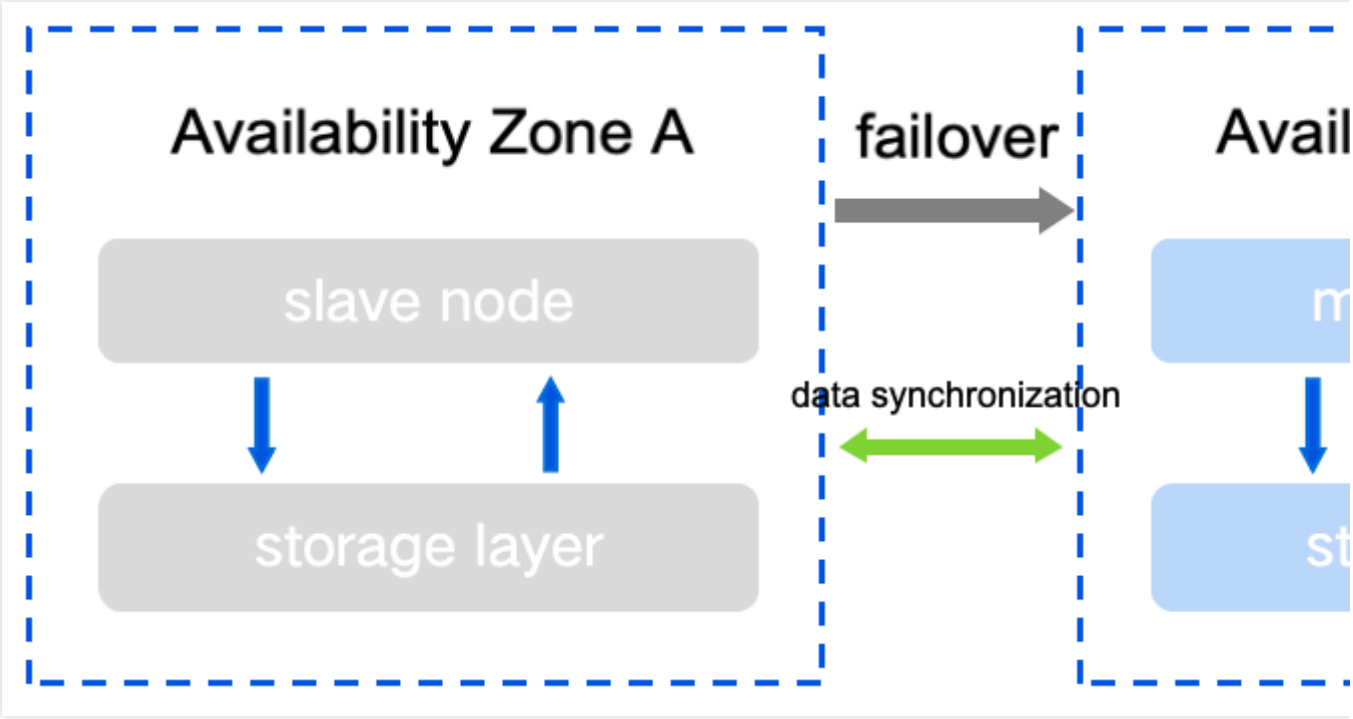
Primary/Replica Switch

Last updated：2023-12-27 10:17:46

MySQL supports the switch of primary and secondary databases. In the event of an instance failure, the system automatically promotes the secondary database to primary to ensure system availability and data integrity. In addition to automatic switch during anomalous conditions such as failures, you can also manually switch the databases via the console.

Background

In enterprise-level applications, the database often forms a critical component of the business system. Any database failure or downtime can have serious implications on business operations. To safeguard system availability and data integrity, high-availability solutions such as primary-replica replication are implemented. Primary-replica switch is a crucial technical method within the replication scheme, which enables a quick switch to the backup database when the primary database is faulty, averting business interruptions and data losses.



Prerequisites

The instance architecture is set to either two-node or three-node.
The instance is in running status, with no ongoing tasks.

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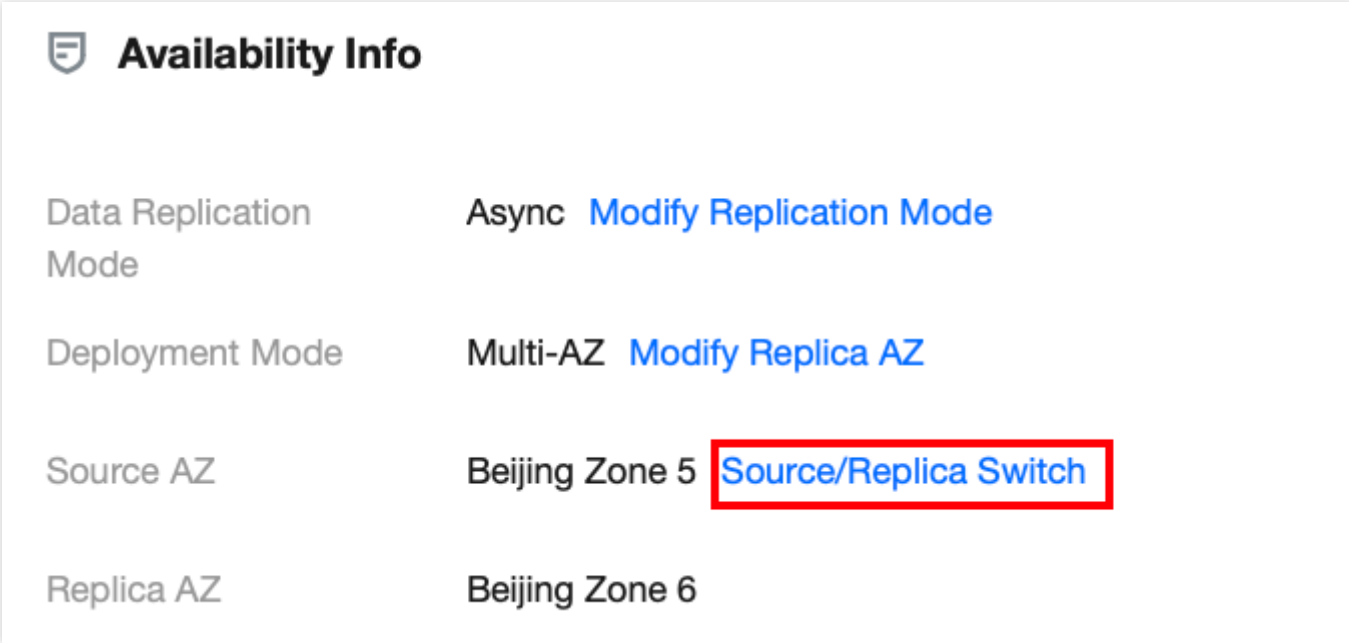
Precautions

During the primary-secondary database switch, a momentary disconnection occurs. We recommend that you perform the switch during off-peak hours and make sure that your application has a reconnection mechanism.
After the switch, the instance connection address remains the same. The original primary instance converts into a secondary instance, and the application automatically connects to the new primary instance (formerly the secondary instance).

The steps are as follows:

Note:
Automatic fallback is not supported after the primary/secondary switch, but manual fallback can be done if needed (i.e., perform another primary/secondary switch after the first one is completed).
1. Log in to the TencentDB for MySQL console. In the instance list, click an **instance ID** or **Manage** in the operation column to access the instance details page.
2. On the **Instance Details** page, click **Switch Primary/Secondary** under **Availability Info**.



3. In the pop-up window, select the switch time, check "**With the Primary/Secondary instance switch, there will be a brief disconnection; ensure that your application has a reconnection mechanism**", and click **OK**.
During Maintenance Period: When data synchronization between primary and secondary AZs has been completed, the system will switch the primary and secondary instances in the next maintenance period. During this period, the instance status shows as **Pending Primary/Secondary Switch** and operations such as configuration adjustments or instance termination cannot be performed. For operations related to setting the instance maintenance time, please see Setting Instance Maintenance Time.

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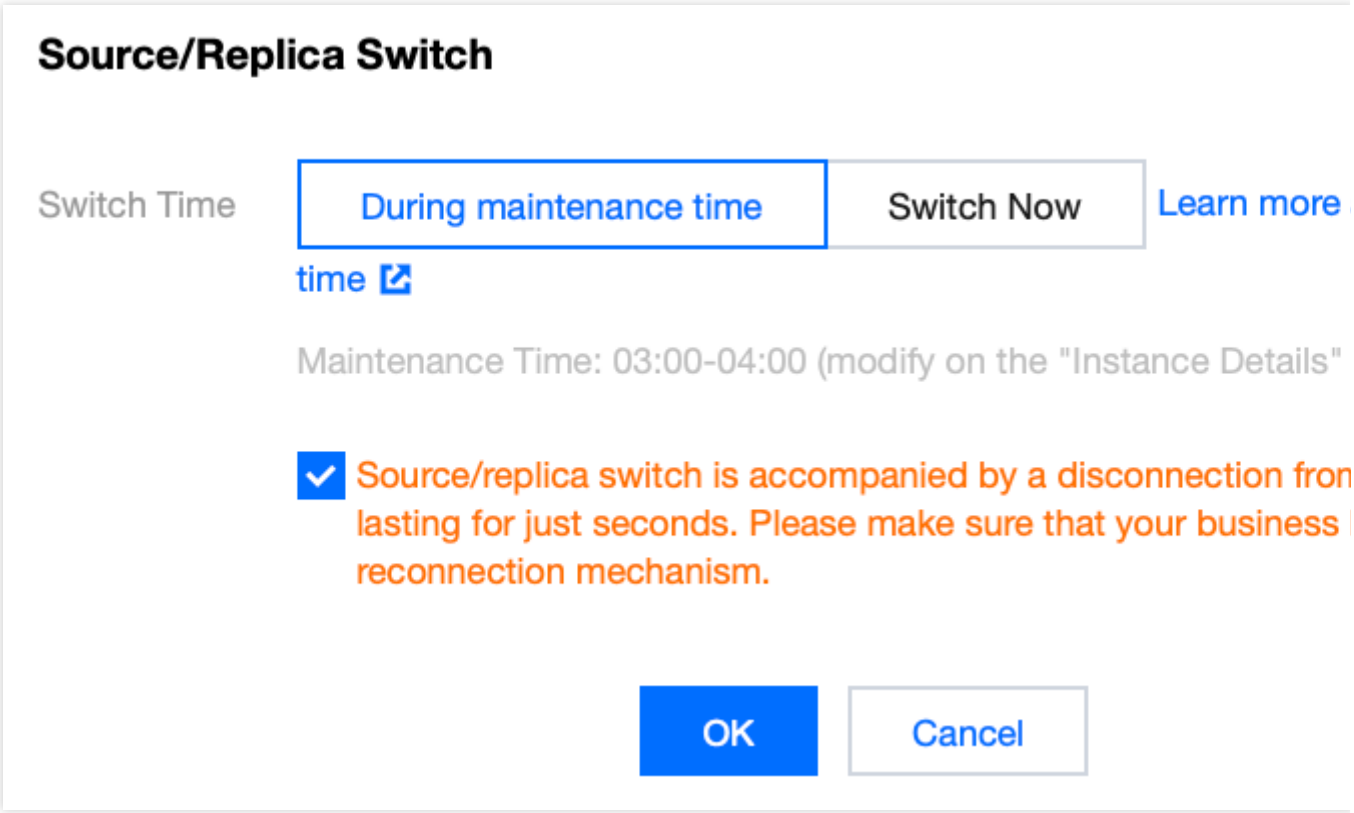
Switch Immediately: The switch will occur immediately upon the completion of data synchronization between the primary and secondary AZs.



FAQs

Will the instance address change after the primary and secondary database switch?

The instance address remains the same after the switch. The original primary instance works as a secondary, with applications automatically connecting to the new primary instance (formerly the secondary).

After a manual switch, if an instance is upgraded or expanded, will this affect or reset the information of the primary and secondary AZs?

The switch will not affect or reset the information of the primary and secondary AZs.

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Terminating Instance

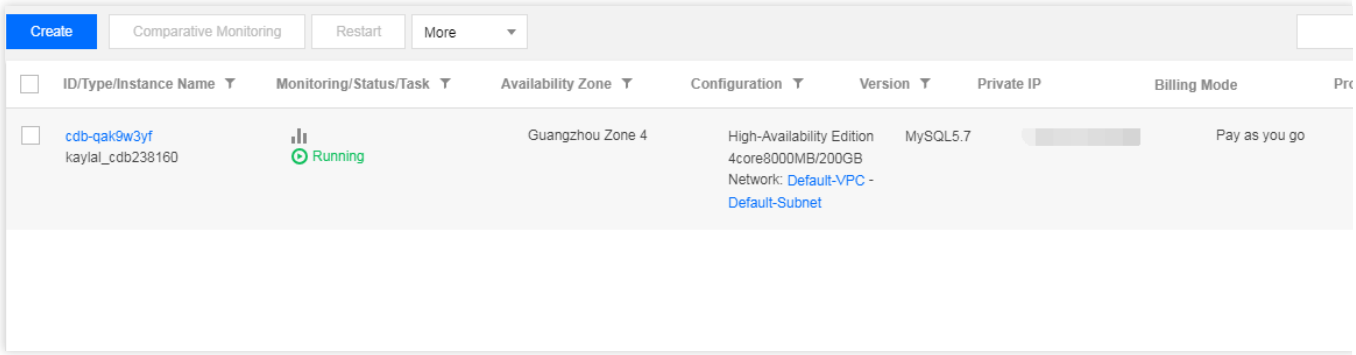
Last updated：2024-07-22 14:36:22

Overview

You can return the instances in the console based on your business needs.
After a monthly subscribed instance is returned, it will be moved to the TencentDB recycle bin and retained there for seven days. During the retention period, the instance cannot be accessed, but it can be restored after renewal.
After a pay-as-you-go instance is returned, it will be moved to the TencentDB recycle bin and retained there for 24 hours. During the retention period, the instance cannot be accessed, but it can be restored after renewal.
When an instance is returned and its status has changed to **Isolating**, it will no longer generate fees.
Note:
After the instance is terminated, its data cannot be recovered, and its backup files will also be terminated, so the data cannot be restored in the cloud. Store your backup files safely elsewhere in advance.
After an instance is terminated, its IP resources will be released simultaneously. If the instance has read-only instances or disaster recovery instances:
Read-only instances will be terminated at the same time.
Disaster recovery instances will disconnect their sync connections and be promoted to source instances automatically.

Directions

1. Log in to the TencentDB for MySQL Console, select the target instance in the instance list, and select **More** > **Terminate/Return** or **Terminate/Return & Refund** in the "Operation" column.



2. In the pop-up window, read and click **I have read and agreed to Termination Rules** and click **Terminate Now**.

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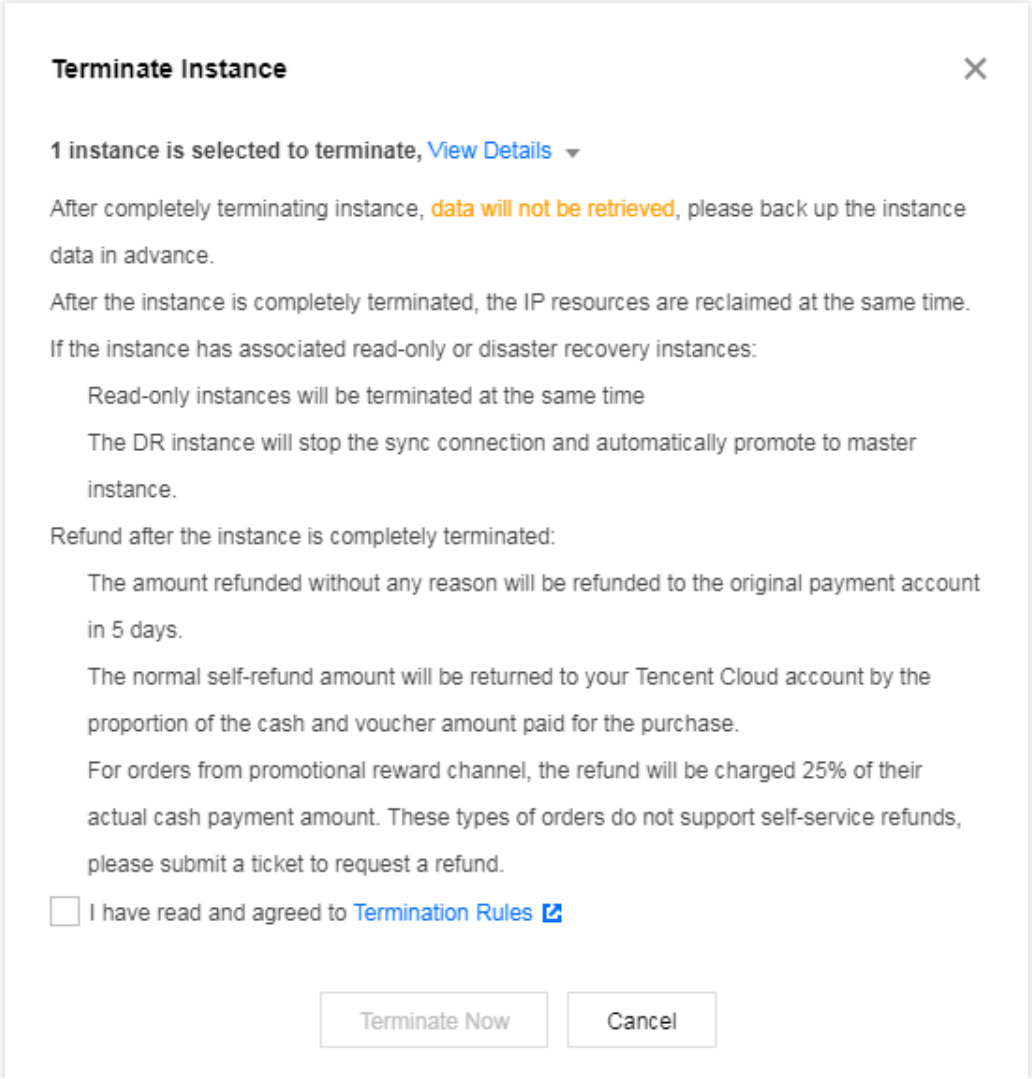

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Instance Upgrade
Upgrading the database version of MySQL 5.5 and MySQL 5.6

Last updated：2023-11-20 15:25:07

Overview

This document describes how to upgrade the TencentDB for MySQL engine in the console.
TencentDB for MySQL supports database engine upgrade on the following versions:
From MySQL 5.5 to MySQL 5.6
From MySQL 5.6 to MySQL 5.7
From MySQL 5.7 to MySQL 8.0
Note:
Database engine downgrading is not supported.
Upgrading across major versions is not supported. For example, to upgrade a TencentDB for MySQL 5.5 instance to MySQL 5.7 or later, you have to upgrade it to MySQL 5.6 first.
Currently, MySQL 5.7 cannot be upgraded to MySQL 8.0.
Single-node instances of the cloud disk edition don't support engine version upgrade.

Upgrade Rules

The `create table ... as select ...` syntax is not supported.
Source-replica sync in TencentDB for MySQL 5.6 and 5.7 is implemented based on GTID. Only InnoDB is supported by default.
MyISAM tables will be converted to InnoDB tables during upgrade from MySQL 5.5 to 5.6 if the last full backup is logical cold backup. **We recommend you complete the conversion first before upgrading.**
During upgrade, TencentDB for MySQL will clear the slow_log table. Save the logs before upgrading if necessary.
If an instance to be upgraded is associated with other instances (e.g., source or read-only instances), these instances will be upgraded together to ensure the data consistency.
TencentDB for MySQL upgrade involves data migration and generally takes a relatively long time. Your business will not be affected during the upgrade and can be accessed as per usual.
Instance switch will be required after version upgrade is completed (that is, the MySQL database may be disconnected for seconds). We recommend you use applications configured with auto reconnection feature and

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conduct the switch during the instance maintenance time. For more information, see Setting Instance Maintenance Window.

If the number of tables in a single instance exceeds one million, upgrade may fail and database monitoring may be affected. Make sure that the number of tables in a single instance is below one million.

Directions

1. Log in to the TencentDB for MySQL console, find the target instance in the instance list, and select **More** > **Upgrade Version** in the **Operation** column.

Note:

MySQL 8.0 cannot be upgraded to a later version.

2. In the pop-up window, select the target database version and click **Upgrade**.

As database upgrade involves data migration, a momentary disconnection from the MySQL database may occur after the instance upgrade is completed. You can set the switch time to **During maintenance time**, so that the switch will be initiated within the next maintenance time after the upgrade.

Note:

When you select **During maintenance time** for **Switch Time**, the switch will not occur immediately after the database specification upgrade is completed; instead, the sync will continue till the instance goes into the next **maintenance time** when the switch will be performed. As a result, the overall time it takes to upgrade the instance may be extended.

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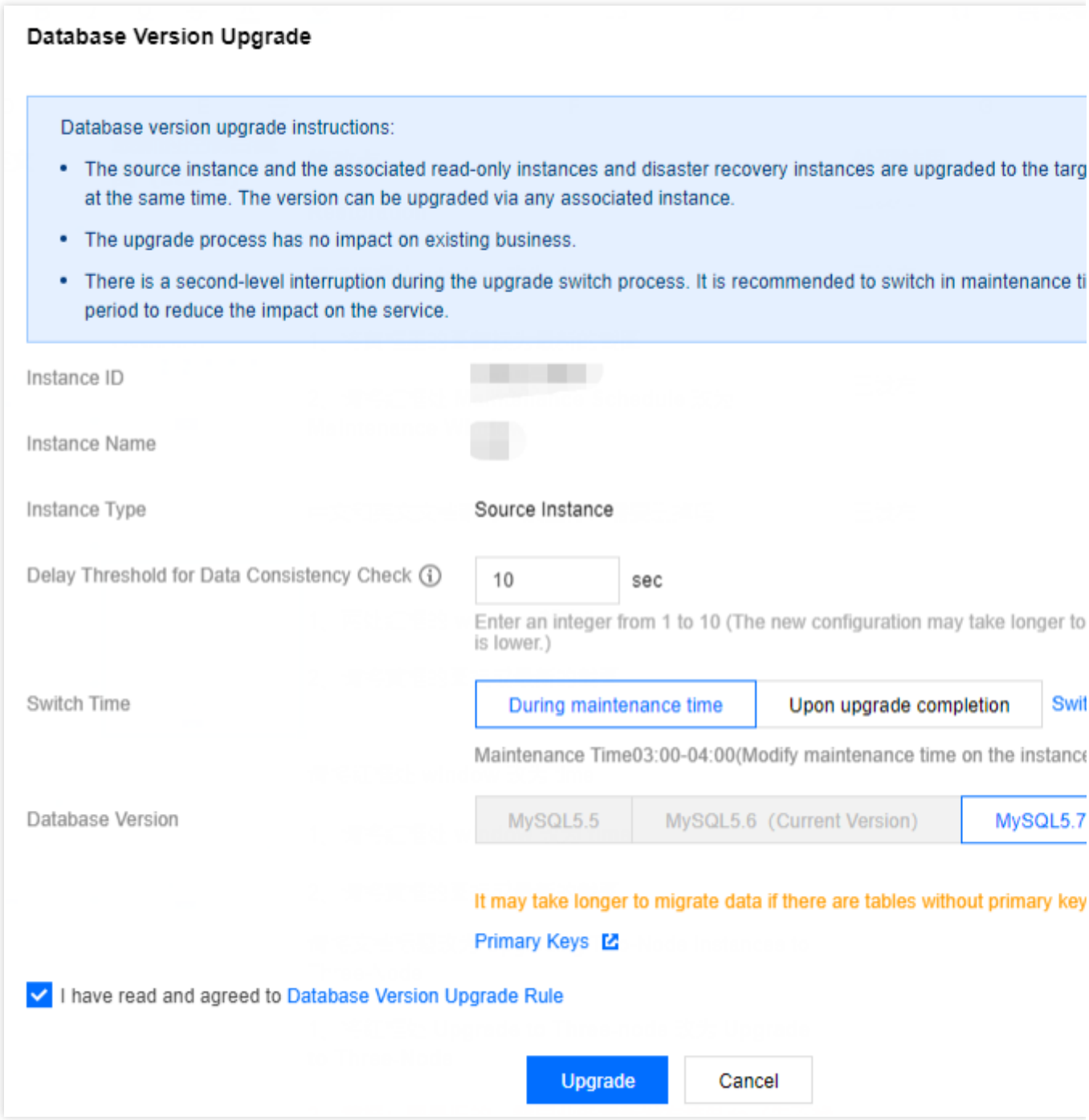

FAQs

Will TencentDB for MySQL automatically back up data before upgrade?

TencentDB for MySQL adopts the daily real-time dual-server hot backup mechanism, which supports lossless restoration of data from the last 7–1830 days based on data backup and log backup (binlog).

Can TencentDB for MySQL be downgraded from MySQL 5.7 to MySQL 5.6?

No. Database engine downgrading is not supported. To use a MySQL 5.6 instance, you need to terminate or return the existing MySQL 5.7 instance, and then purchase a MySQL 5.6 instance.

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Will there be a source-replica delay during upgrade?

Source instance upgrade requires data comparison and may cause a source-replica delay.

Will the instance switch after database engine version upgrade affect my TencentDB for MySQL instance?

The upgrade won't affect your business, but the TencentDB for MySQL instance may be disconnected for a few seconds. We recommend you configure an automatic reconnection feature for your application and conduct the switch during the instance maintenance time.

How long will it take to upgrade the database engine version of a TencentDB for MySQL instance? How do I check the upgrade progress?

The time it takes depends on the instance's data volume and the read requests to replicate data.
TencentDB for MySQL upgrade involves data migration and generally takes a relatively long time. Your business will not be affected during the upgrade and can be accessed as per usual.

Why is the instance always in the "Waiting for switch (after upgrade)" status?

It may be because you select **During maintenance time** for **Switch Time**, and the switch will be initiated within the next maintenance time after the upgrade.
To switch immediately, find the target instance in the instance list and click **Switch Now** in the **Operation** column. The switch will cause a momentary disconnection. Make sure that your business has a reconnection mechanism.

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Upgrading from MySQL 5.7 to MySQL 8.0

Last updated：2023-11-20 15:28:58

TencentDB for MySQL supports direct database version upgrade through the console. This document describes how to upgrade the CDB engine from MySQL 5.7 to MySQL 8.0 in the console.

Overview

MySQL 8.0 offers significant performance improvements and enhanced features. Its performance under high concurrency and large data volume scenarios is particularly prominent, offering greater system performance and stability.

The upgrade of the following database engine versions is supported by TencentDB for MySQL:

From MySQL 5.5 to MySQL 5.6

From MySQL 5.6 to MySQL 5.7

From MySQL 5.7 to MySQL 8.0

Note:

Single-node instances of the cloud disk edition do not support engine version upgrade.

The upgrade process has no impact on existing business.

Considerations

Feature Limits

Limit Type	Description
Instance Limits	Only two-node and three-node local disk instances support the upgrade operation from MySQL 5.7 to 8.0.
	If a master instance has multiple read-only instances, the read-only instances will be upgraded together. If a master instance has a disaster recovery instance, the disaster recovery instance must first be released before upgrading. After the upgrade is completed, a new disaster recovery instance can be recreated.
	Before initiating the database version upgrade, ensure the instance status is running, and there are no other tasks being executed or to be executed. If there are other tasks, please wait until the task is completed.
	Before upgrading, a compatibility check will be performed on the instance. The check results

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	are valid for 24 hours. If it exceeds this time, you need to recheck it. During the check, if you add a read-only instance or a disaster recovery instance, you also need to re-execute the task.
Upgrade Limits	Upgrading across major versions is not supported. For example, MySQL 5.6 cannot be directly upgraded to MySQL 8.0. You need to upgrade it to MySQL 5.7 first, and then upgrade to MySQL 8.0.
	Downgrading after upgrade is not supported. **Note:** After the upgrade is completed, backup sets of the old version cannot be used to restore the new version instance. If you need to perform cloning or rollback operations, please select the backup set or point in time generated after the instance upgrade. Backup sets of older versions can be downloaded for local restoration operations.
Database Limits	After upgrading the database instance to MySQL 8.0, the unsupported settings in the sql_mode parameter will be reset to the default values of MySQL 8.0.
	If a partition table is used in the RocksDB storage engine, upgrading to MySQL 8.0 is not supported. You need to modify it to the InnoDB engine or delete the partition table to upgrade.
	If there are tables, views, stored procedures and triggers that contain MySQL 8.0 reserved keywords in the database instance, the upgrade will fail.
	If stored procedures, triggers, views, or functions in the database contain Changes in MySQL 8.0, the upgrade will fail.
	If you are using the MyISAM or Memory engines, upgrading is not supported. Please convert to the InnoDB engine first. **Note:** If your database is already running on the InnoDB engine, but some tables are still using other engines, please use the ALTER TABLE <table name> engine=InnoDB; command to convert those tables to the InnoDB engine before upgrading.

Preparation

Please be sure to carefully compare the differences between the versions before and after the upgrade. We recommend testing syntax on a new MySQL 8.0 instance-this will help avoid issues with lower-version syntax or features not being supported after the upgrade. For more information, please refer to List of functional differences between MySQL8.0 and MySQL5.7.

We recommend that you clone the original instance for upgrade testing first, and confirm that all functions are normal before upgrading.

Before upgrading, please check whether there is a successful record of full data backup in the past week. If necessary, please perform a full data backup.

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During the database upgrade, a brief disconnection of the TencentDB for MySQL service may occur. It is suggested that you carry out the upgrade during off-peak period or ensure your application has an automatic reconnection mechanism.

Please ensure that free disk space is available before upgrading.

Before upgrading, review the Keywords and Reserved Words that you should avoid using them when creating custom functions.

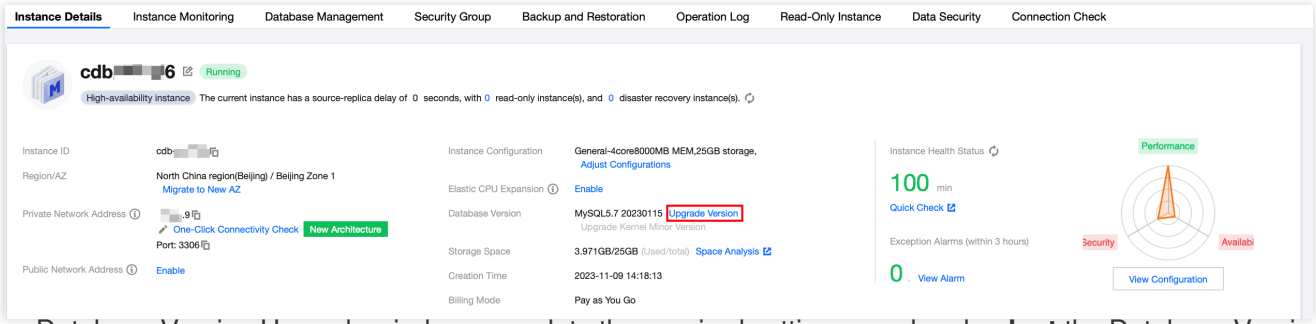
To ensure stability and performance of MySQL in the new version, after the database version has been upgraded, CDB will not support the inspection or modification of MySQL 5.7 parameters that have been deprecated in MySQL 8.0. For more information, please refer to Options and Variables Removed in MySQL 8.0. Before upgrading, it is recommended that you back up modification records of relevant parameters for subsequent operations and audits.

Directions

1. Log in to the TencentDB for MySQL console, fin the target instance in the instance list, and select **More** > **Upgrade Version** in the Operation column.

Note:

You can also click on the **Instance ID** to go to the instance details page and click **Upgrade Version** after the database version.



2. In the Database Version Upgrade window, complete the required settings, read and **select** the Database Version Upgrade Rule, then click on **Upgrade Check**.

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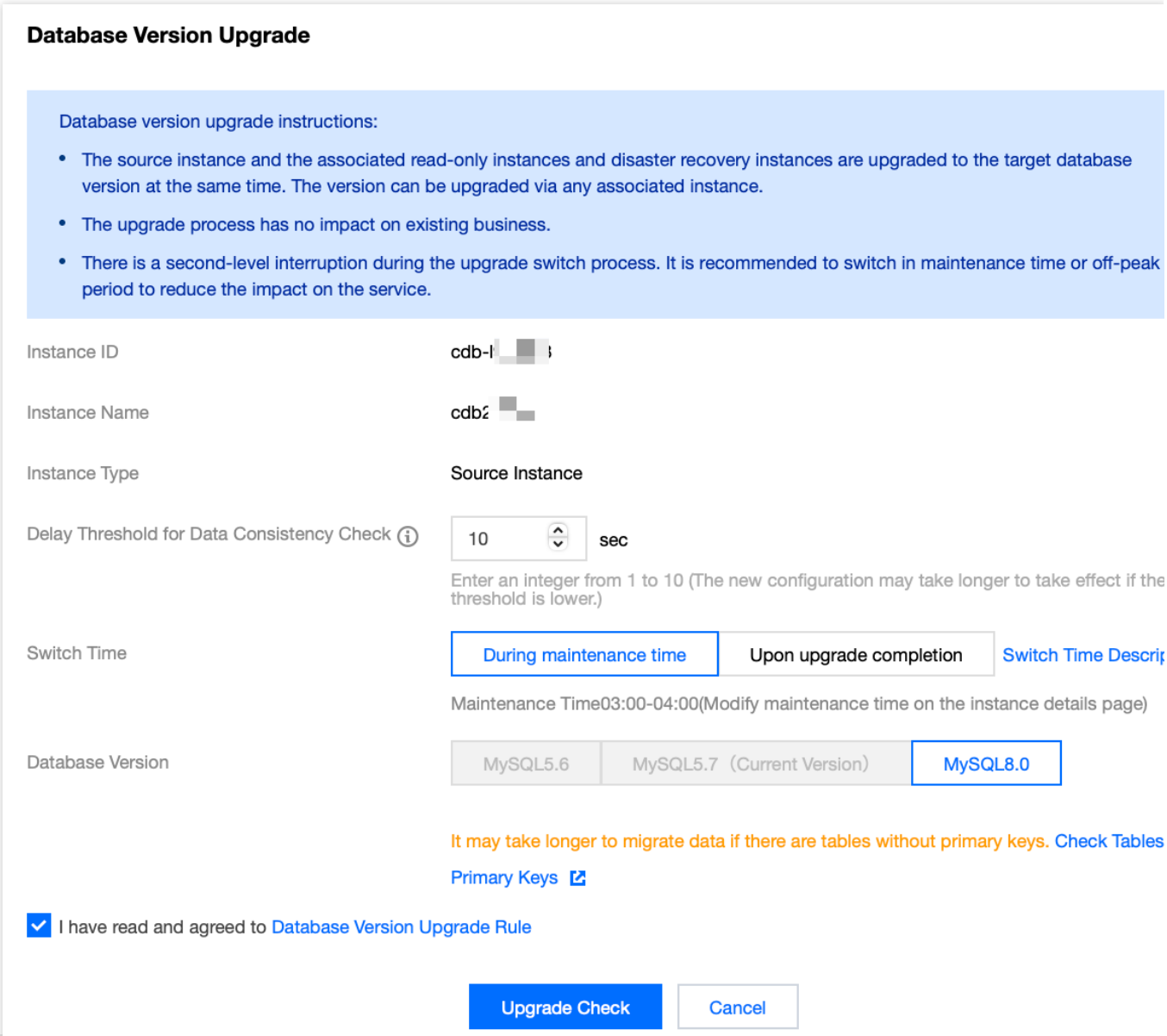

Parameter	Description
Delay Threshold for Data Consistency Check	Enter an integer from 1 to 10 (**The new configuration may take longer to take effect if the threshold is lower.**)
Switch Time	During Maintenance Time: Set the switch time to During maintenance time, so that the switch will be initiated within the next maintenance time after the upgrade. For more information, see Setting Instance Maintenance Time. Upon Upgrade Completion: Set the switch time to Upon Upgrade Completion, so that the switch will be initiated immediately after the instance data migration has been completed.
Database Version	MySQL 8.0 is selected by default.

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3. During the upgrade check process, the system will start a check task to verify whether the instance to be upgraded meets the criteria of **not having any disaster recovery instances and having parameter configurations that meet the specifications**. After the check is completed and the upgrade conditions are met, click **Upgrade**.
3.1 Verify whether there are any **disaster recovery instances** under the master instance. If master instance has a disaster recovery instance, the check will fail. You need to release the disaster recovery instance first, and recreate it once the upgrade is completed.
3.2 The system will automatically verify if the parameter configuration is up to the specified standards. If it doesn't meet the specification requirements, adjustments can be made according to the error message in the check box.
Note:
After the upgrade check task is executed successfully, please perform the upgrade within 24 hours. If it times out, check again.
4. After upgrading, return to the instance list. Select **Task List** from the left sidebar to track the progress and details of the database version upgrade task for the instance.
5. Find the Task ID of the recent database version upgrade in the task list, and you can query the task progress. By clicking on **Task Details** in its Operation column, more upgrade-related information will be displayed.
6. The database version upgrade is completed when the instance status changes from **Changing configuration** to **Running**.
Note:
If you select **During Maintenance Time** as the switch time for the upgrade, the instance status will display **Awaiting switch** if the next maintenance time has not been reached after the instance upgrade is completed. If an immediate switch is necessary, you can click **Switch Now** in the **Operation** column of the instance list. However, be aware that the switch will involve a momentary disconnection lasting for a few seconds. Please ensure that your business is equipped with a reconnection mechanism.

Appendix: MySQL 8.0 vs. MySQL 5.7

MySQL 8.0 introduces over 300 new features, including invisible indexes, descending indexes, functional indexes, common table expressions, window functions, instant column addition, implicit primary keys and more. These capabilities make development more adaptable and efficient.
MySQL 8.0 introduces improvements in performance, implementing features such as Histograms, HASH JOINS, parallel queries, and JSON columns that enhance capability. These additions have served to increase both the query performance and response time of the database, enabling it to process large-scale data and complex queries more swiftly.
MySQL 8.0 supports the caching_sha2_password authentication plugin, thus enhancing security.
MySQL 8.0 Optimizer enhances functionality.
MySQL8.0 enhances replication performance.
MySQL 8.0 supports the creation of multi-valued indexes and optimization under derived conditions.

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MySQL 8.0 supports the reading of MySQL authorization tables.
MySQL 8.0 supports resource allocation control.

FAQs

Will TencentDB for MySQL automatically back up data before upgrade?

TencentDB for MySQL adopts the daily real-time dual-server hot backup mechanism, which supports lossless restoration of data from the last 7–1830 days based on data backup and log backup (binlog).

Can TencentDB for MySQL be downgraded from MySQL 8.0 to MySQL 5.7?

No. Database engine downgrading is not supported. To use a MySQL 5.7 instance, you need to terminate or return the existing MySQL 8.0 instance, and then purchase a MySQL 5.7 instance.

Will there be a source-replica delay during upgrade?

Source instance upgrade requires data comparison and may cause a source-replica delay.

Will the instance switch after database engine version upgrade affect my TencentDB for MySQL instance?

The upgrade won't affect your business, but the TencentDB for MySQL instance may be disconnected for a few seconds. We recommend you configure an automatic reconnection feature for your application and conduct the switch during the instance maintenance time.

How long will it take to upgrade the database engine version of a TencentDB for MySQL instance? How do I check the upgrade progress?

The time it takes depends on the instance's data volume and the read requests to replicate data.
TencentDB for MySQL upgrade involves data migration and generally takes a relatively long time. Your business will not be affected during the upgrade and can be accessed as per usual.
You can monitor the progress and details of tasks in the task list. Keep an eye on the task execution progress for insight into the upgrade status.

Why is the instance always in the "Waiting for switch (after upgrade)" status?

It may be because you select **During Maintenance Time** for **Switch Time**, and the switch will be initiated within the next maintenance time after the upgrade.
To switch immediately, find the target instance in the instance list and click **Switch Now** in the **Operation** column. The switch will cause a momentary disconnection. Make sure that your business has a reconnection mechanism.

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Upgrading Kernel Minor Version

Last updated：2024-07-22 14:39:28

TencentDB for MySQL supports automatic or manual kernel minor version upgrade. Upgrading adds new features, improves performance, and fixes issues.
For details on the TencentDB for MySQL kernel minor version, see Kernel Version Release Notes.

Overview

Automatic upgrade:
Scenario 1: When a severe bug or security vulnerability occurs in TencentDB for MySQL, the system will perform database kernel minor version upgrade during the maintenance window and send upgrade notifications through the console Message Center and SMS.
Scenario 2: When a TencentDB for MySQL instance is migrated due to instance configuration upgrade/downgrade, storage capacity expansion/reduction, or database version upgrade, etc., the system will automatically upgrade the instance's kernel to the latest minor version. If the source instance has read-only instances, the system will automatically determine the source-replica sync compatibility. If the source instance is migrated, a minor version later than that of the read-only instances will not be used.
Manual upgrade:
You can also manually upgrade kernel minor version in the console.

Upgrade rules

If an instance to be upgraded is associated with other instances (e.g., source instance and read-only instances), these instances will be upgraded together to ensure data consistency.
TencentDB for MySQL upgrade involves data migration. The time it takes to migrate an instance depends on the size of the instance's data. Your business will not be affected during the upgrade and can be accessed as per usual.

Notes

Instance switch will be required after version upgrade is completed, which will cause your instance to disconnect for seconds. We recommend that you conduct the switch during the instance maintenance time. Make sure that your business has a reconnection mechanism. For more information, see Setting Instance Maintenance Window.
If the number of tables in a single instance exceeds one million, upgrade may fail and database monitoring may be affected. Make sure that the number of tables in a single instance is below one million.

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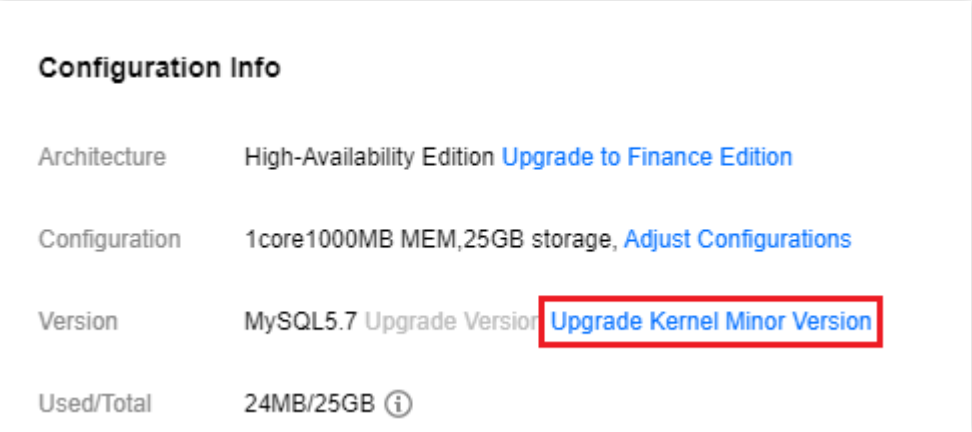
The kernel minor version cannot be downgraded once upgraded.

Directions

1. Log in to the TencentDB for MySQL console. In the instance list, click the target instance ID or **Manage** in the **Operation** column to enter the instance details page.
2. In the **Configuration Info** section, click **Upgrade Kernel Minor Version**.



3. In the pop-up window, set the configuration items and click **Upgrade**.

Delay Threshold for Data Consistency Check: This option is available only during source instance upgrade, which can be an integer between 1 and 10 seconds. There may be a delay during the data consistency check. You need to set a data delay threshold. The database consistency check will be paused when the delay exceeds the set value and will be resumed when the delay drops below the threshold. If the threshold value is too small, the migration may take longer.

Note:

As database upgrade involves data migration, a momentary disconnection from the MySQL database may occur after the upgrade is completed. We recommend that you set the switch time to **During maintenance time**, so that the switch will be initiated within the next maintenance time after the instance upgrade is completed.

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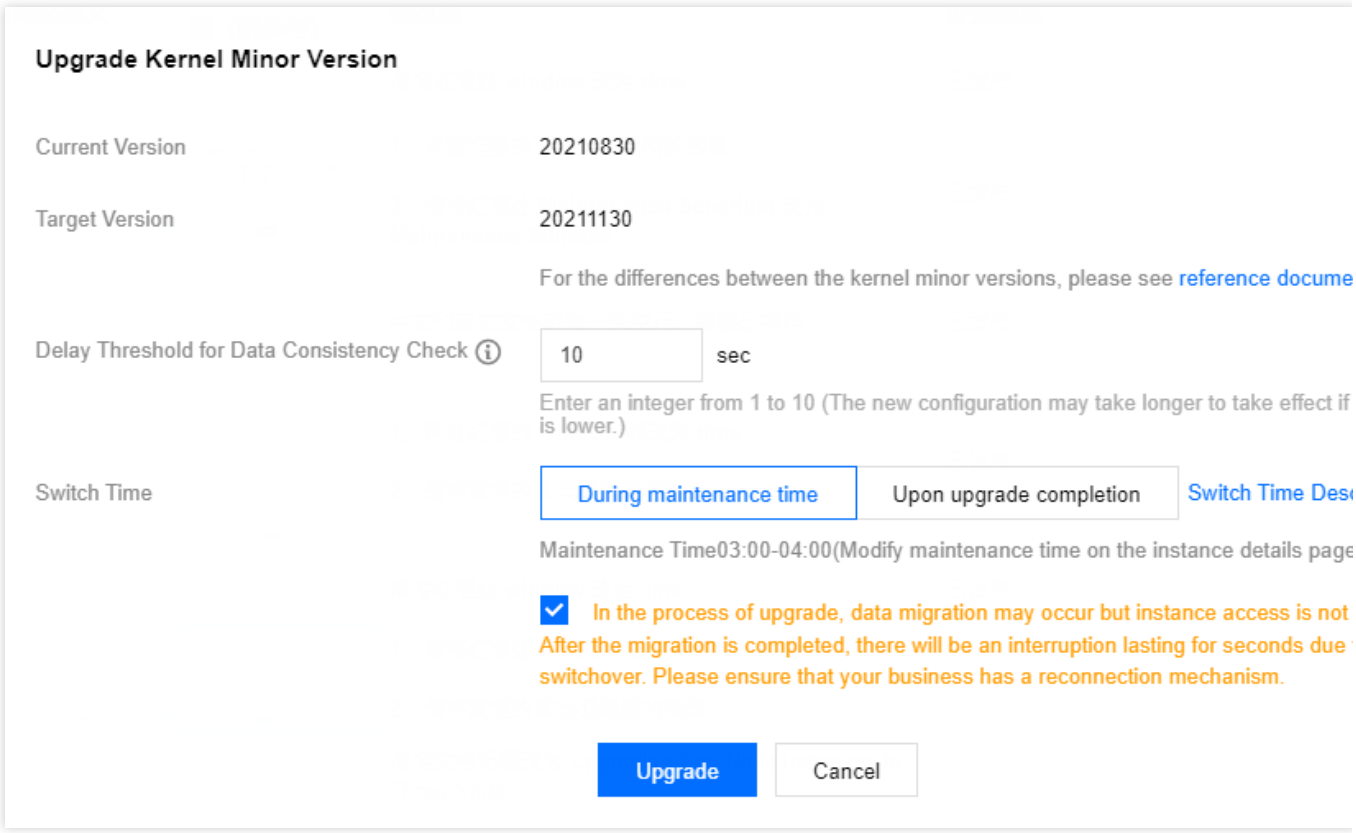

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Upgrading Two-Node Instances to Three-Node Instances

Last updated：2024-07-22 14:39:43

Overview

This document describes how to upgrade a TencentDB for MySQL instance from two-node to three-node in the console.

Note:

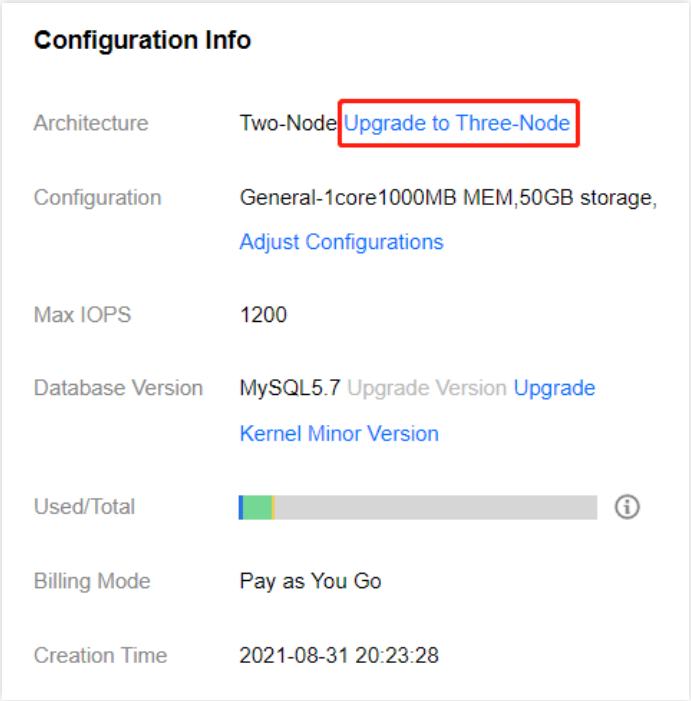
Only TencentDB for MySQL two-node instances can be upgraded to three-node.

The upgrade will not interrupt the instance service.

You can also purchase three-node instances on the purchase page.

Directions

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance details page.
2. In the **Configuration Info** section, click **Upgrade to Three-Node** next to **Architecture**.



3. In the pop-up dialog box, specify the data replication mode and availability zones and click **Submit**.

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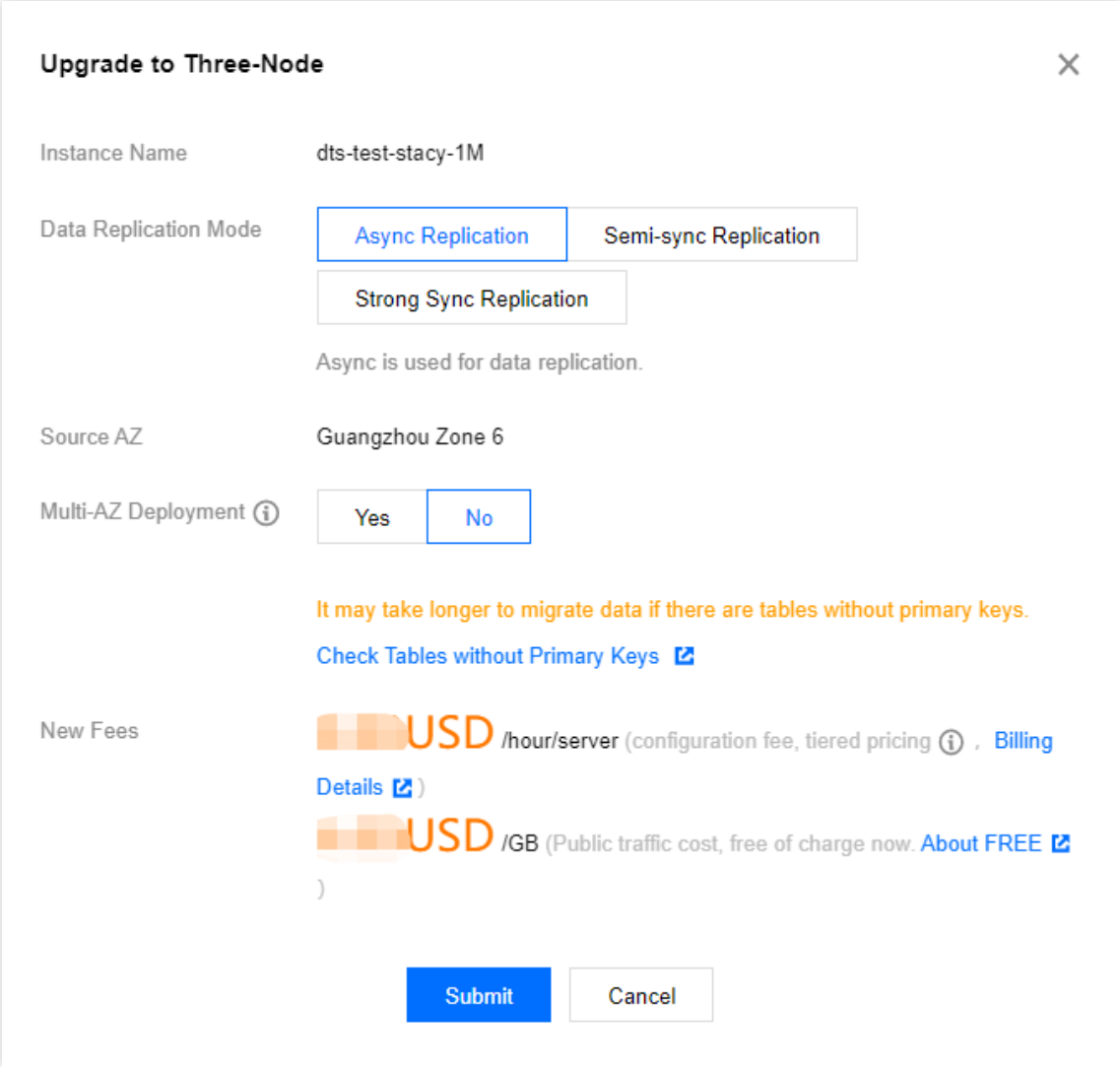
Data Replication Mode: For more information, see Database Instance Replication.
Multi-AZ Deployment: Multi-AZ deployment protects database service from being interrupted in case of database failures or availability zone failures.
For a three-node instance, its replicas can be deployed in the source AZ or different AZ. We recommend that you deploy one replica in the source AZ and another replica in a different AZ.
Currently, only some source AZs support selecting different AZs as replica AZs. You can view these source AZs and the supported replica AZs on the purchase page.



4. After the payment is completed, you will be redirected to the instance list. After the status of the instance changes from **Changing configuration** to **Running**, it can be used normally.

FAQs

How do I view the architecture information of an instance?

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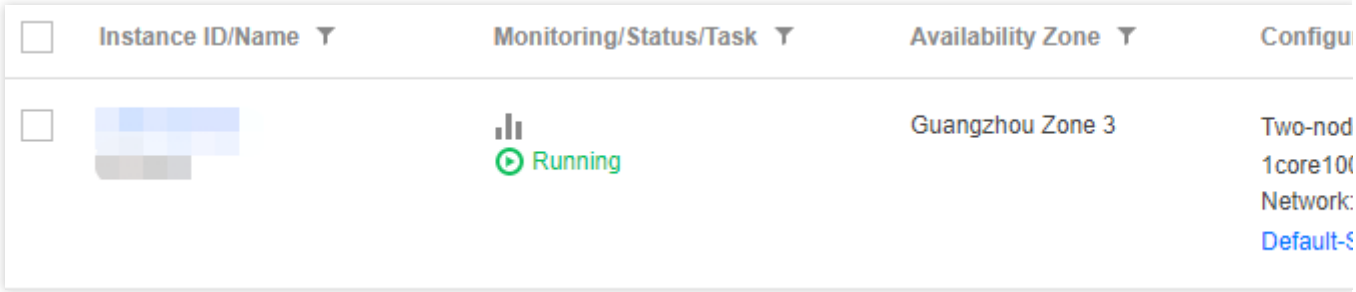
Log in to the TencentDB for MySQL console. In the instance list, view the architecture information in the **Configuration** column; or click an instance ID or **Manage** in the **Operation** column to enter the instance details page, where you can view the architecture information in the **Configuration Info** > **Architecture** section.



How do I view the source and replica AZs of an instance?

Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance details page, where you can view the source and replica AZs in the **Availability Info** section.

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CPU Elastic Expansion Overview

Last updated：2023-12-27 10:19:09

This section introduces the features related to CPU Elastic Scaling in MySQL.

Chapter Overview

CPU Elastic Scaling		Description	Document Guidance
Feature Overview		This section introduces the background, implementation process, instructions, and operation scope of the CPU Elastic Scaling feature.	INTRODUCTION
Operation	Auto Scaling	Provides guidance on how to enable, disable, and set threshold policies for the automatic CPU Elastic Scaling feature.	Configuring Auto Scaling
	Manual Scaling	Provides guidance on how to enable, disable, and set threshold policies for the manual CPU Elastic Scaling feature.	Configuring Manual Scaling
	Event Alarm	Introduces metrics related to the CPU Elastic Scaling feature and the methods to configure event alarms.	Enabling Event Alarms
Performance Test		Evaluates the performance after enabling the CPU Elastic Scaling feature by employing the performance test tool SysBench.	Performance
Billing		Introduces the billing method and unit price of the CPU Elastic Scaling feature.	Billing Description
FAQs		Updates on common issues encountered when using the CPU Elastic Scaling feature and their solutions.	FAQs

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Overview

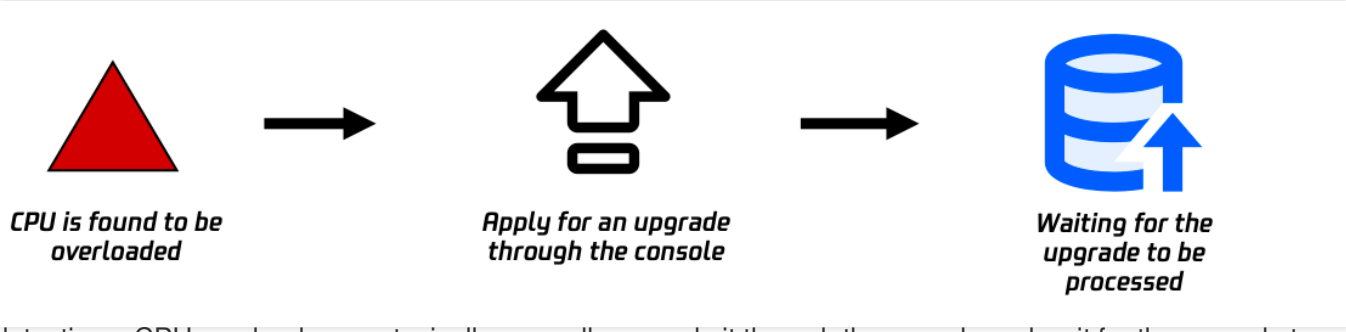
Last updated：2023-12-27 11:01:17

MySQL supports manual scaling of the current instance's CPU upper limit and automatic scaling based on set CPU average usage thresholds and observation periods. This provides better mitigation for sudden request performance pressure, accommodating peak business traffic and ensuring online business stability. This section provides a brief overview of the CPU Elastic Expansion feature.

Background

In many business scenarios, peak traffic periods or sudden traffic surges can impose tremendous pressure on server loads. The CPU utilization of the application can skyrocket, and if CPU resources are not scaled in a timely manner, it could lead to system performance degradation, increased request response time, and other issues, severely affecting user experience and satisfaction. Beyond burst traffic scenarios, situations such as low cache hit rate in the database, ineffective indexes, database deadlocks, complex database query statements, a high volume of concurrent updates, coupled with insufficient hardware configurations, can also lead to CPU overloads.

Traditional Solutions



Upon detecting a CPU overload, users typically manually upgrade it through the console and wait for the upgrade to be completed. The upgrade duration, influenced by the amount of data, is uncertain. Moreover, the upgrade process may result in transient disruptions, affecting regular operations. After the business traffic become normal after the upgrade, users need to manually apply for a downgrade through the console. Thus, the traditional solution poses challenges such as the necessity for rapid response, unpredicted time frames, risk of transient disruptions, and an extensive follow-up workload.

CPU Elastic Scaling

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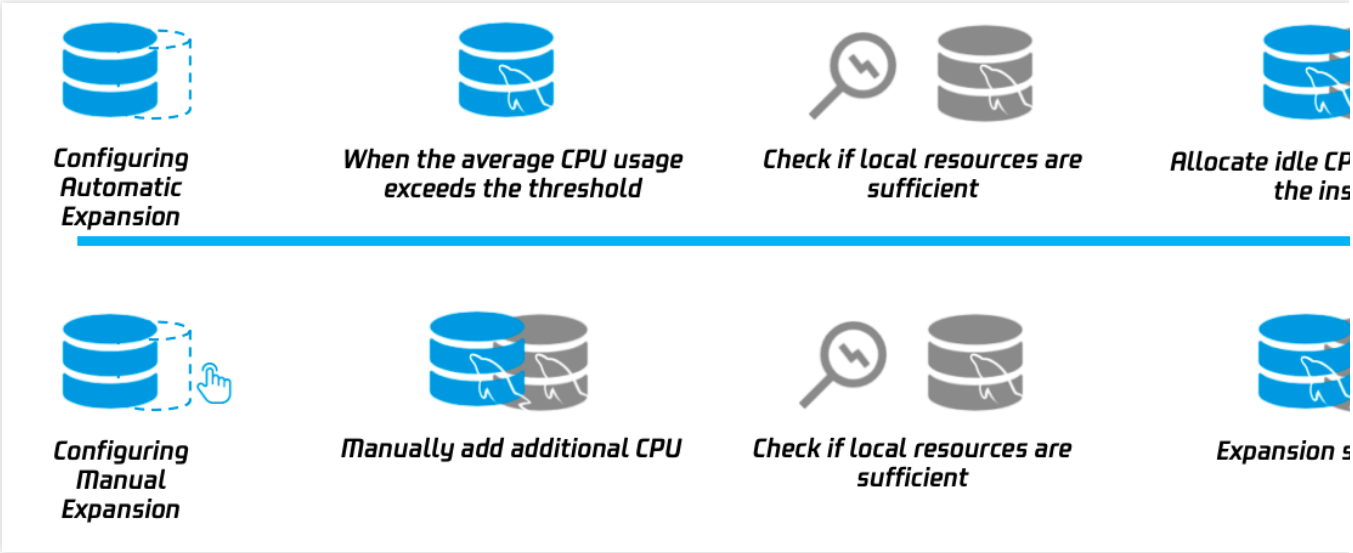

The CPU Elastic Scaling feature, underpinned by the advantages of the cloud environment, allows for the dynamic assignment of CPU resources. As the database traffic increases or CPU resource usage escalates, it can automatically allocate more CPU resources, then scale in after peak periods. Users can choose whether to enable the CPU Elastic Scaling feature via the console, and dynamically configure the database's CPU resources based on the business needs and traffic volume. Consequently, elastic scaling can be achieved to handle peak pressure, ensuring superior performance, high availability, and stability of the database instance.

Feature Type

The CPU Elastic Scaling feature can be categorized into automatic scaling and manual scaling. If automatic scaling is enabled, you need to set the thresholds for both scale-out and scale-in. For manual scaling, you need to set the number of CPU cores to be added, and manual scaling doesn't automatically scale in - it must be manually stopped.

Automatic scale-out

Auto scale-out

Upon enabling **CPU Elastic Scaling** -> **Auto Scaling**, when the average CPU utilization of the database instance within the observation window reaches the set threshold, the system will double the number of CPU cores on the basis of the original computing specification. For instance, if the original computing specification has 4 cores, it will be increased to 8 cores. Concurrently, the IOPS of the instance will also rise. For each additional core, the IOPS increases by 1,000. If the user's Tencent Cloud account balance is insufficient or there are not enough CPU resources on the host (which rarely occurs), the scaling will not proceed, and a scaling failure event will be generated later.

Note：

Only supports doubling the number of CPU cores based on the original computing specification, and no further increase is supported. For instance, after the original CPU cores are doubled to 8, it cannot be increased to 16.

Auto Scale-in

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Upon enabling **CPU Elastic Scaling** -> **Auto Scaling**, during the set observation window for auto scale-in, if the CPU utilization is below the set threshold, the system will automatically reduce both the CPU cores and IOPS to the original computing specifications.

Note：

After enabling **CPU Elastic Scaling** -> **Auto Scaling**, the system will monitor the database instance based on the most recent configuration parameters. When the instance meets the conditions for automatic scale-in, the system will automatically scale in the instance.

For details about the operations of enabling auto-scaling, disabling auto-scaling, and setting the scale-in and scale-out thresholds, see Setting Auto Scaling.

Manual scaling

Manual Scale-out

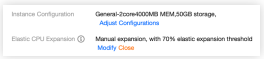
When **CPU Elastic Scaling** -> **Manual Scaling** is enabled, the instance operates according to the number of CPU cores after scale-out.

Manual Scale-in

Upon enabling **CPU Elastic Scaling** -> **Manual Scaling**, when business no longer requires additional CPU resources, users must manually disable CPU Elastic Scaling, otherwise charges will continue.

For details about the operations of enabling and disabling manual scaling, see Setting Manual Scaling.

Comparison between Automatic and Manual Scaling

Feature Type	Screenshot After Successful Feature Enabling	CPU Upper Limit	Scale-in Process	Event Alarm	Billing
Auto Scaling		Twice the original number of CPU cores	Automatically scales in according to the set scale-in threshold.	Support	Billing begins only after auto scale-out is successfully triggered, and ceases after the scale-in.
Manual Scaling		Supports 1-core unit scale-out, up to twice the original number of	Unable to automatically scale in, manual stop of scaling is required. After manual scaling	Support	Billing will continue from the enabling of manual scaling until

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		CPU cores.	is stopped, the system immediately scales in to the original CPU core count.		it is disabled.

Event Alarm Explanation

For both automatic and manual scaling out, relevant event alarms can be set and configured for notifications. The following are the event metrics and descriptions related to the CPU Elastic Scaling feature.

Scaling Type	Event Metrics	Description
Auto Scaling	CPUExpansion	Automatic CPU scale-out is successful.
	CPUExpansionFailed	Automatic CPU scale-out failed.
	CPUConstraction	Automatic CPU scale-in is successful.
Manual Scaling	CPUExpansion	Manual CPU scale-out is successful.
	CPUExpansionFailed	Manual CPU scale-out failed.
	CPUConstraction	Manual CPU scale-out is stopped.

There are two causes for automatic and manual scaling failures: insufficient balance in the Tencent Cloud account of the user or inadequate CPU resources on the host (rarely occurs).If insufficient account balance leads to a scaling failure, users can recharge their account and retry. For other causes, please submit a ticket for assistance.
For details about the steps to configure event alarms, please refer to Activating Event Alarms.

Feature Impact Overview

The CPU Elastic Scaling feature is concurrently deployed on both primary and secondary nodes on two-node and three-node instances. Therefore, if an HA switch occurs after the CPU Elastic Scaling feature is enabled, the switched-to node will also reach the scaled-out CPU specifications. After automatic scale-in or stop of manual scaling, the system will restore to the original CPU specifications.

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The feature should be separately enabled for read-only instances and disaster recovery instances, which will not simultaneously scale out. In other words, the read-only instances and disaster recovery instances attached to the primary instance will not simultaneously expand their CPU resources even after the CPU Elastic Scaling feature of the primary instance is triggered. The CPU Elastic Scaling feature must be enabled for these two types of instances separately.

Related Operations

Configuring Auto Scaling
Configuring Manual Scaling
Enabling Event Alarms

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Configuring auto scale-out

Last updated：2024-02-18 11:15:42

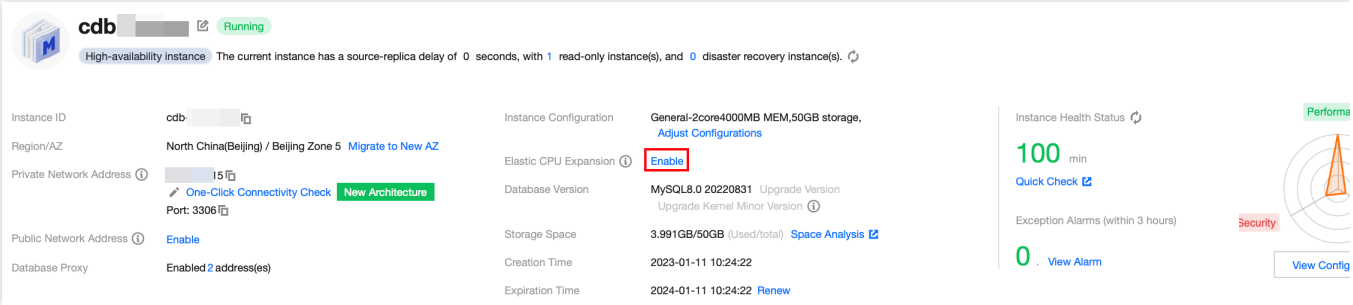
This section describes how to enable and disable automatic scaling.

Prerequisites

The instance architecture uses MySQL general two-node/three-node or single-node local disk (read-only instance).
The instance specification is equal to or less than 32 cores before the CPU Elastic Scaling feature is enabled.
Your Tencent Cloud account has sufficient balance.
Note:
For information on billing of automatic scaling, please see Billing Overview.

Enabling Automatic Scaling

1. Log in to the TencentDB for MySQL console. In the instance list, click an **instance ID** or **Manage** in the operations column to go to the instance details page.
2. On **Instance Details** -> **CPU Auto Scaling**, click **Enable**.



3. In the **CPU Auto Scaling** window, complete the following settings, and after confirming the scaling fee, click **Scale Now**.

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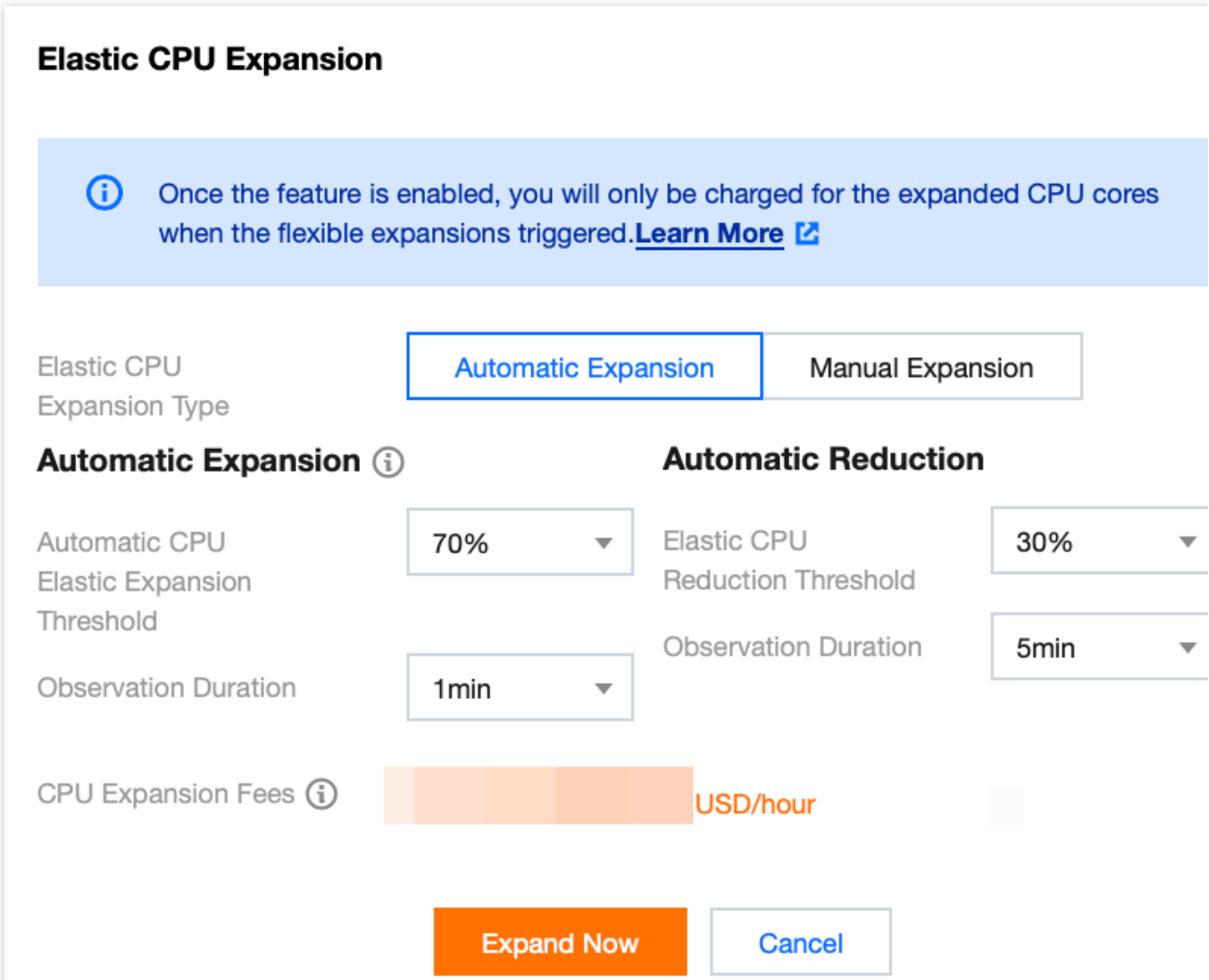

Parameter	Description
CPU Auto Scaling Type	Select Automatic Scaling.
CPU Auto Scaling Threshold	Configure the threshold for automatic elastic scale-out triggered by average CPU utilization. Available options are 40%, 50%, 60%, 70%, 80%, and 90%.
Observation Period	Set the observation period to 1 minute, 3 minutes, 5 minutes, 10 minutes, 15 minutes, or 30 minutes. Within this specified time period, the system will monitor whether the average CPU utilization of the instance reaches the set scaling threshold. If it does, automatic elastic scaling will be triggered. **Note:** To mitigate the impact of continuous intermittent peaks, there is a minimum protection period of 10 minutes during automatic scaling. This means, if the automatic scaling lasts more than 10 minutes, the costs are calculated based on the actual scaling duration. If the automatic

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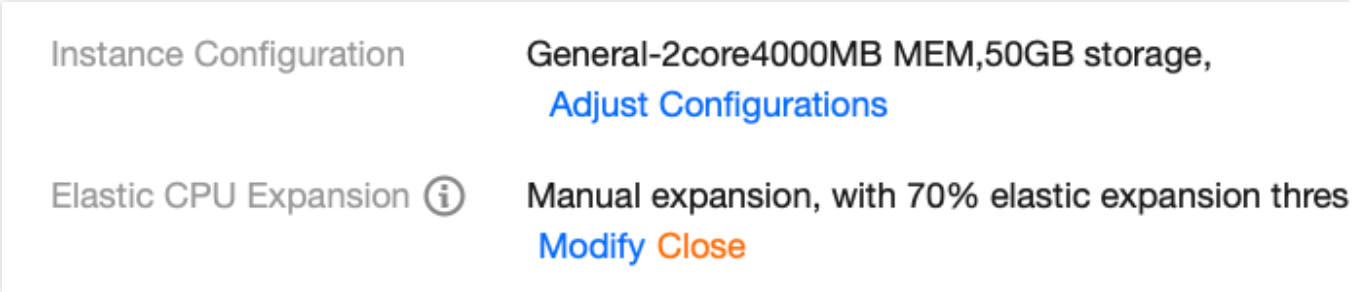
	scaling lasts for no more than 10 minutes, the costs are calculated based on a 10-minute duration.
CPU Automatic Elastic Scale-In Threshold	Configure the threshold for automatic elastic scale-in triggered by average CPU utilization. Available options are 30%, 20%, and 10%.
Observation Period	Set the observation period to 5 minutes, 10 minutes, 15 minutes, or 30 minutes. This specifies an interval during which the system monitors the average CPU utilization of the instance and determines whether it reaches the set scale-in threshold. If the threshold is reached, automatic elastic scale-in is triggered.

4. After automatic scale-out is triggered successfully, the interface will display as the following:



Note：

After automatic scaling is enabled, if you need to modify the automatic scaling policy, you can navigate to **Instance Details** -> **CPU Auto Scaling**, and click **Modify** for reconfiguration.

Disabling Automatic Scaling

Note：

The billing for automatic scaling starts from the successful triggering of the scale-out operation to the moment of scale-in. If there is no scale-out operation, no extra fees will be charged.

After automatic scaling is disabled, all expanded CPU capacity will immediately scale in to the original number of CPU cores, and no further scale-out operations will be triggered based on the scale-out threshold.

1. Log in to the TencentDB for MySQL console. In the instance list, click an **instance ID** or **Manage** in the operations column to go to the instance details page.
2. Navigate to **Instance Details** -> **CPU Auto Scaling** and then click **Disable**.
3. In the pop-up window **End CPU Scaling**, click **OK**.

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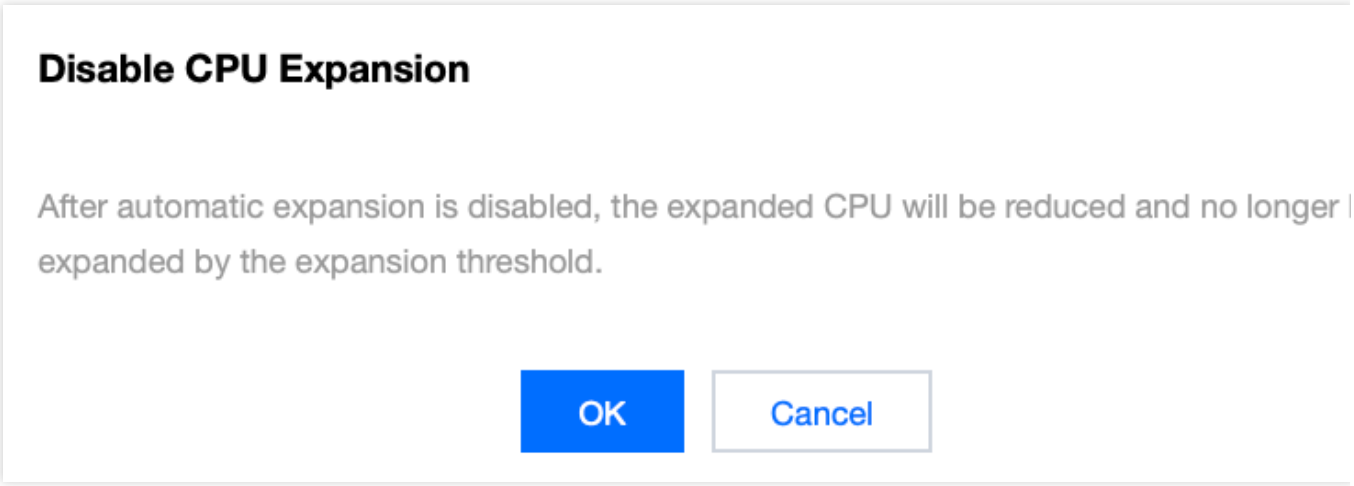

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Establishing Manual Scaling

Last updated：2023-12-27 11:02:38

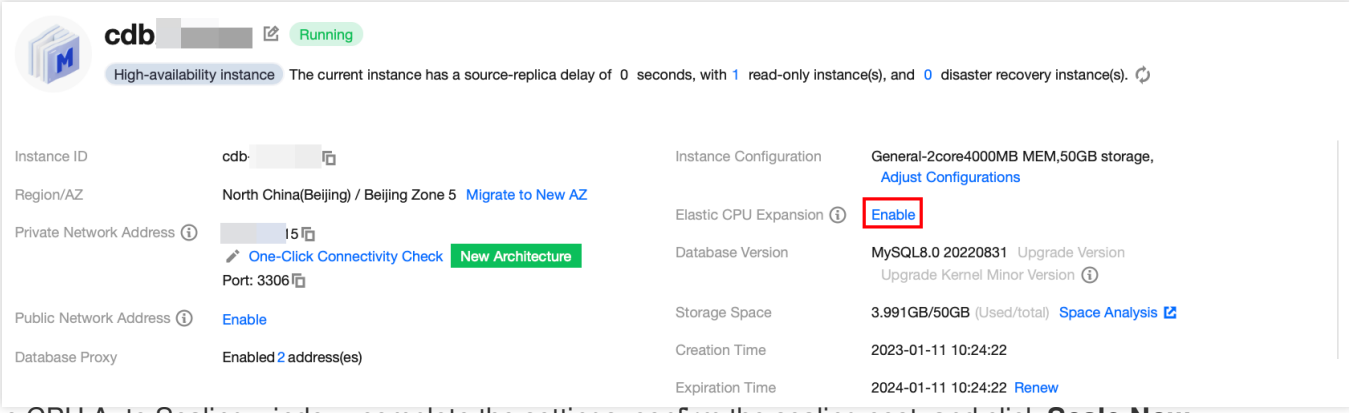
This section describes how to enable and disable manual scaling.

Prerequisites

The instance architecture uses MySQL general two-node/three-node or single-node local disk (read-only instance).
The instance specification is equal to or less than 32 cores before the CPU Elastic Scaling feature is enabled.
Your Tencent Cloud account has sufficient balance.
Note:
For details about billing of manual scaling, please see Billing Overview.

Enabling Manual Scaling

1. Log in to the TencentDB for MySQL console. In the instance list, click an **instance ID** or **Manage** in the operations column to go to the instance details page.
2. On **Instance Details** -> **CPU Auto Scaling**, click **Enable**.



3. In the CPU Auto Scaling window, complete the settings, confirm the scaling cost, and click **Scale Now**.

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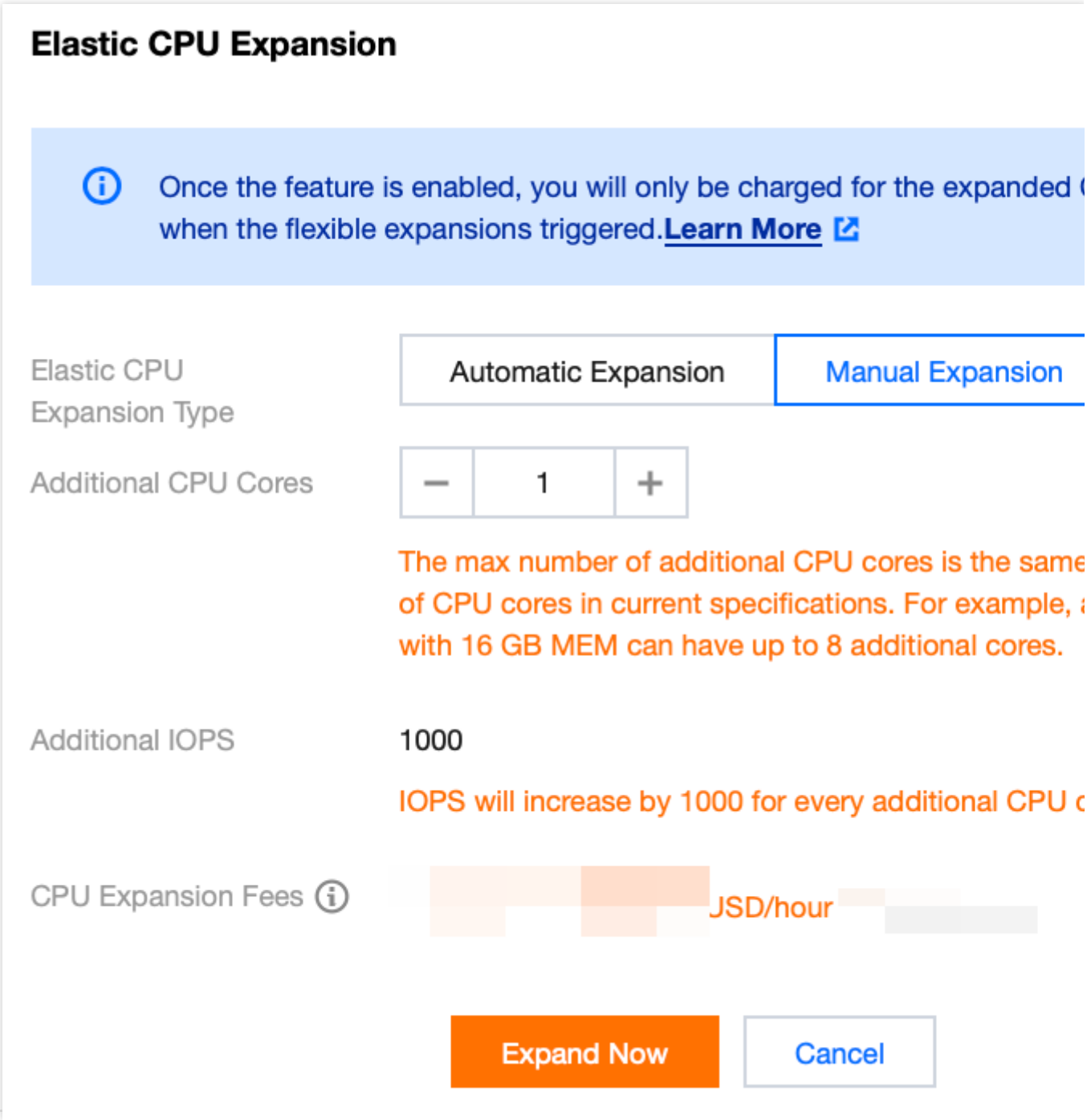

Parameter	Description
CPU Auto Scaling Type	Select Manual Scaling.
Additional CPU Cores Increase	Set the number of additional CPU cores to add manually. Scaling by 1 core is supported. The maximum number of additional CPU cores is equal to the CPU cores of the current specification. For example, the maximum number of additional CPU cores for the 8-core 16 GB specification is 8.
Additional IOPS Increase	For each single core increase in CPU, IOPS is concurrently increased by 1,000.

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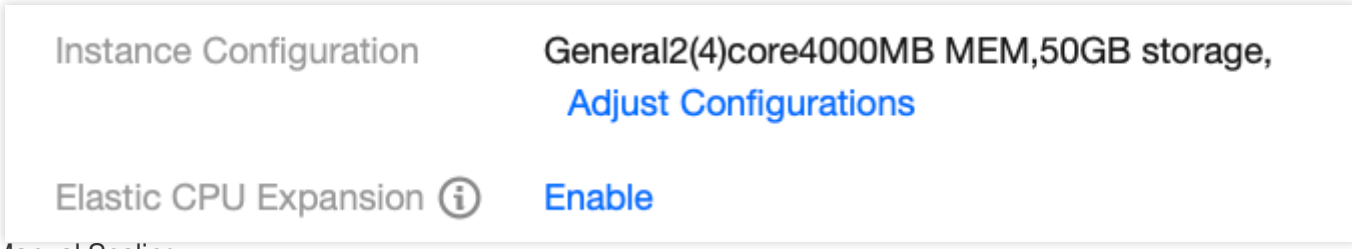
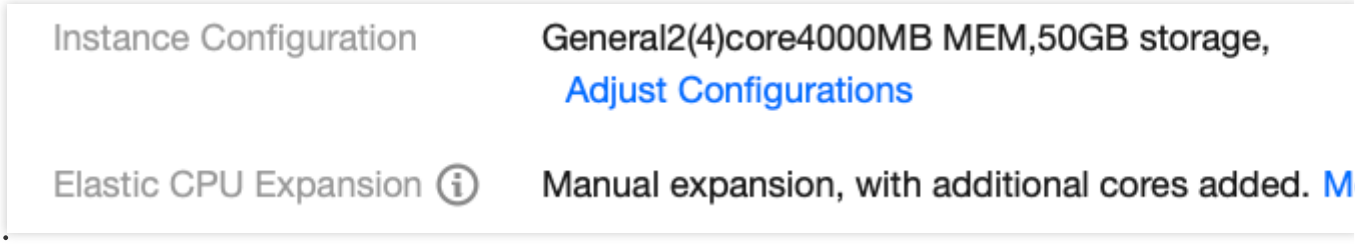
4. After manual scaling is enabled, the instance's CPU will immediately scale out according to the number of additional CPU cores. You can view the current instance's CPU on the **Instance Detail** -> **CPU Elastic Scaling** page.
Before Manual Scaling:



After Manual Scaling:



Note：
After manual scaling is enabled, if you need to modify the number of additional CPU cores, you can access **Instance Detail** -> **CPU Elastic Scaling** and click **Edit** for reconfiguration.

Disabling Manual Scaling

Note：
If manual scaling is not disabled, billing will continue.
After manual scaling is disabled, the expanded CPU will promptly restore to its original core count.
1. Log in to the TencentDB for MySQL console. In the instance list, click an **instance ID** or **Manage** in the operations column to go to the instance details page.
2. Navigate to **Instance Details** > **CPU Elastically Scalable** and click **Disable**.
3. In the pop-up window **End CPU Scaling**, click **OK**.

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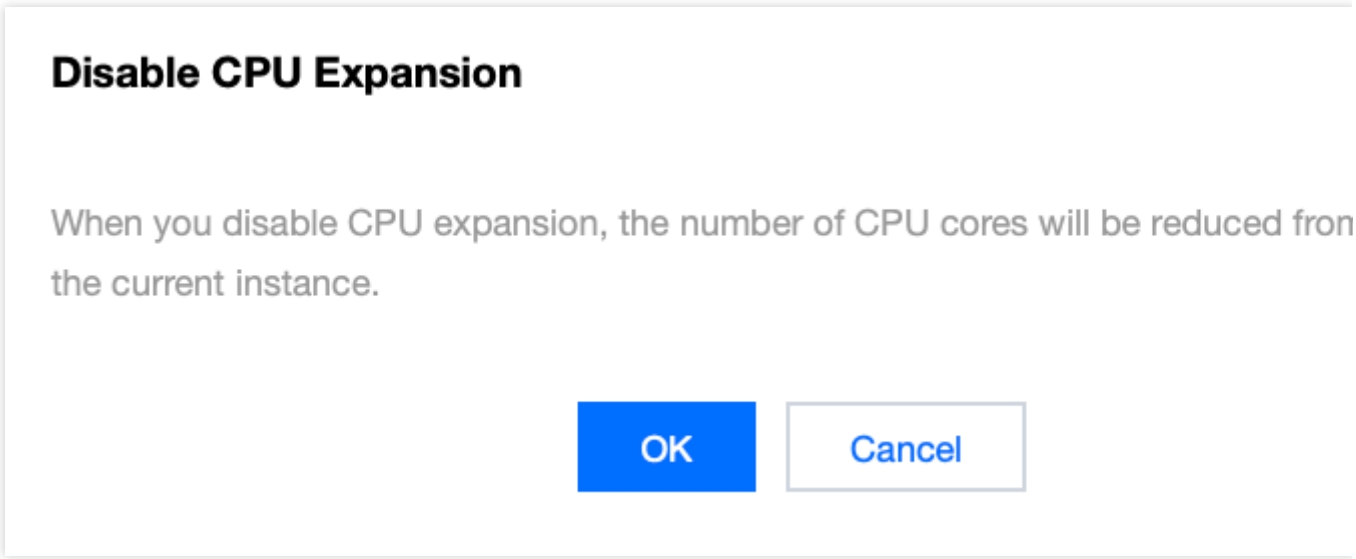

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Activating Event Alarm

Last updated：2023-12-27 10:27:01

MySQL supports the Event Alarm feature. When a user sets an event alarm related to CPU elastic scaling and configures the alarm notification, it will be triggered if detected:
Auto-scaling (triggered, failed, scale-in)
Manual scaling (enabled, failed, disabled)
Event alarms will notify users via various available methods. This section describes the process of setting event alarms related to CPU elastic scaling.

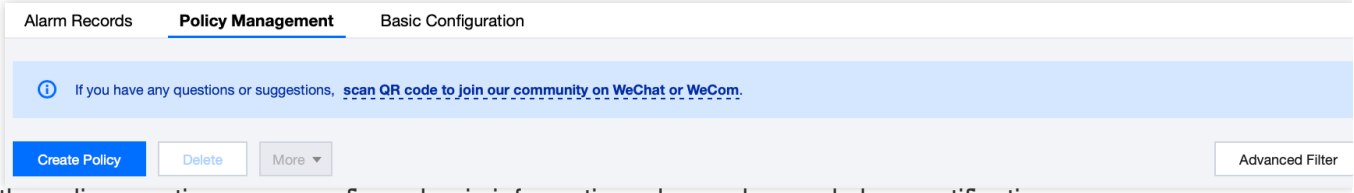
Operation Scenarios

Users can implement event alarms to trigger alarms and dispatch corresponding notifications when the relevant status changes (CPU performance scaling, CPU performance scaling failure, CPU performance scale-in) after the CPU Elastic Scaling feature is enabled in MySQL.

The steps are as follows:

Creating an Alarm Policy

1. Log in to the TCOP Console,, then navigate to the **Alarm Configuration** > **Alarm Policy** > **Policy Management** page by clicking the left sidebar.
2. In the Alarm Policy list, click **New Policy**.



3. On the policy creation page, configure basic information, alarm rules, and alarm notifications.
Policy Type: Categorized as Primary Monitoring and Secondary Monitoring, each corresponds to different types of instances.
Alarm Object: You can locate the object instance to be associated by selecting the region where the object is located or searching for the instance ID.
Trigger Conditions: Locate the event alarm, click '**Add Event**'and add the following alarm events: CPU Performance Scaling, CPU Performance Failure, and CPU Performance Scale-in.

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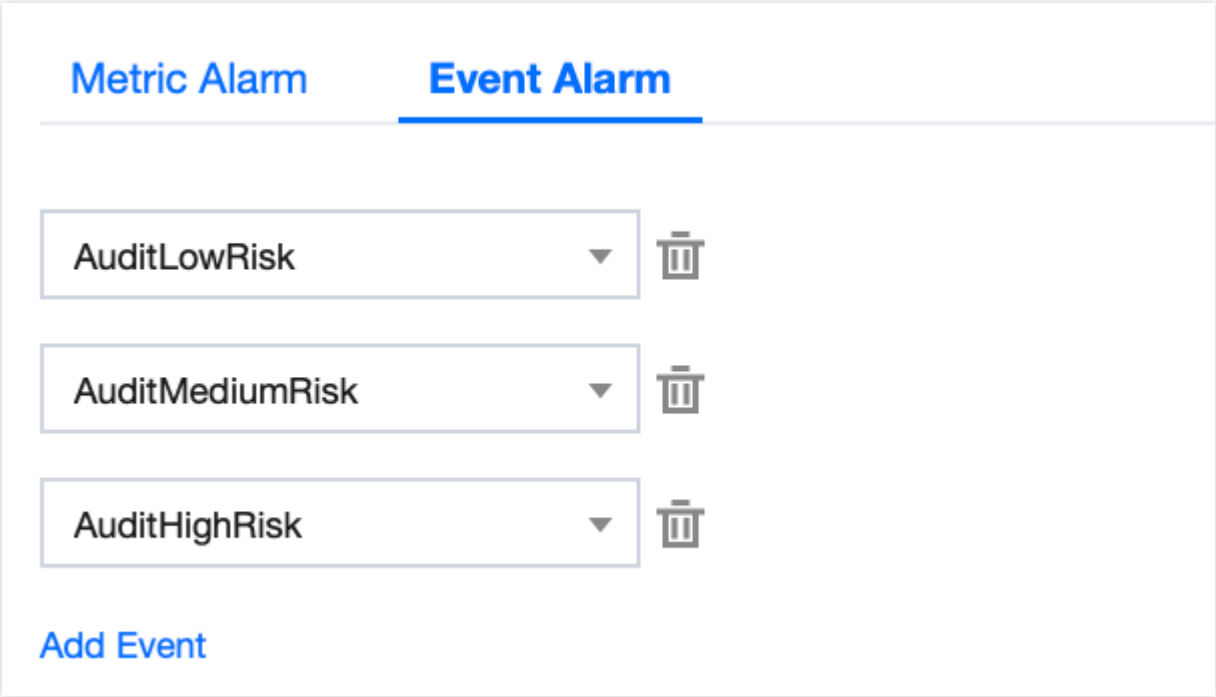

Alarm Notification: You can select a preset or customized notification template. Each alarm policy can be bound to three notification templates at most. For instructions on how to customize a notification template, see Creating Notification Template.

Select the preset template.

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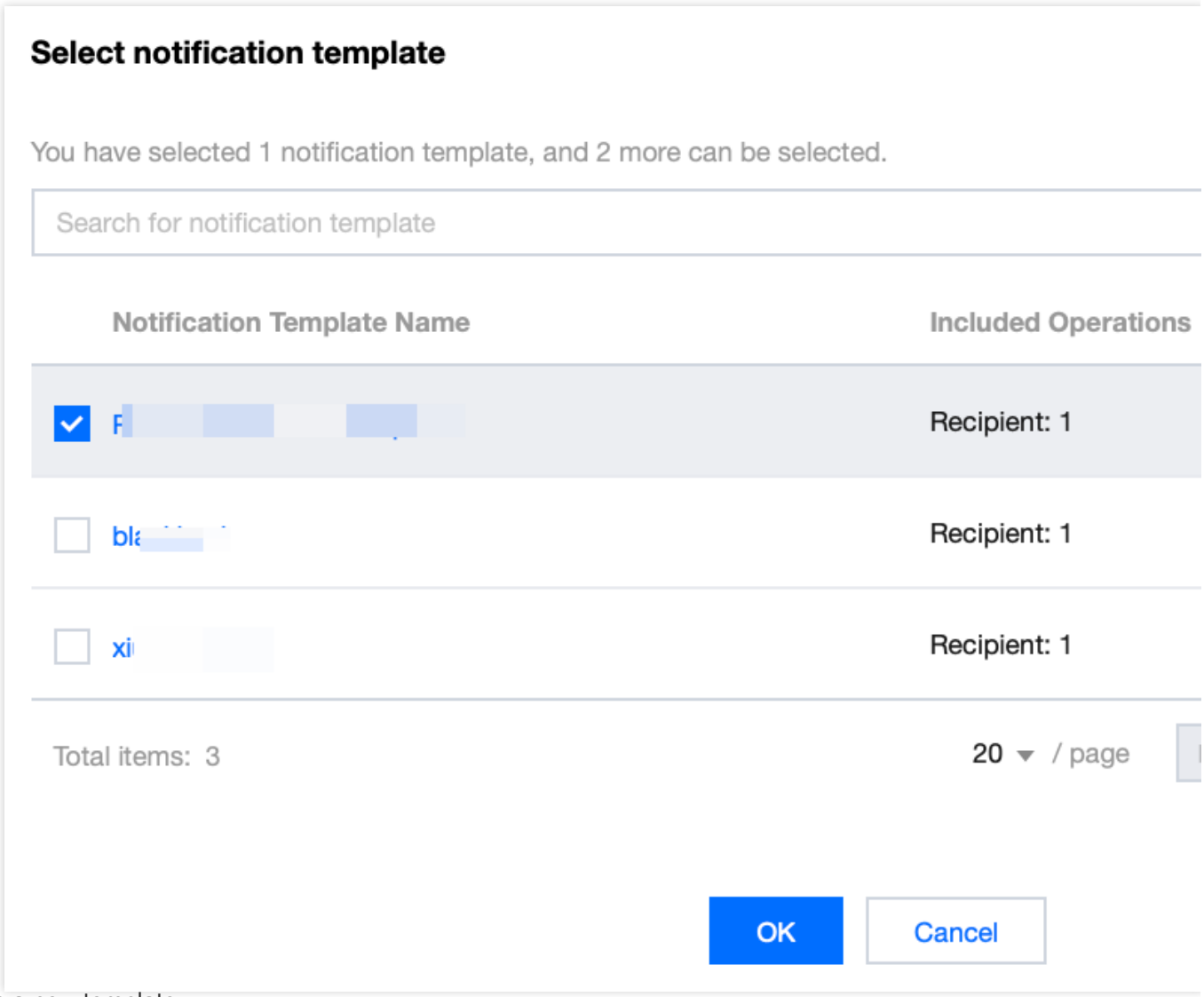
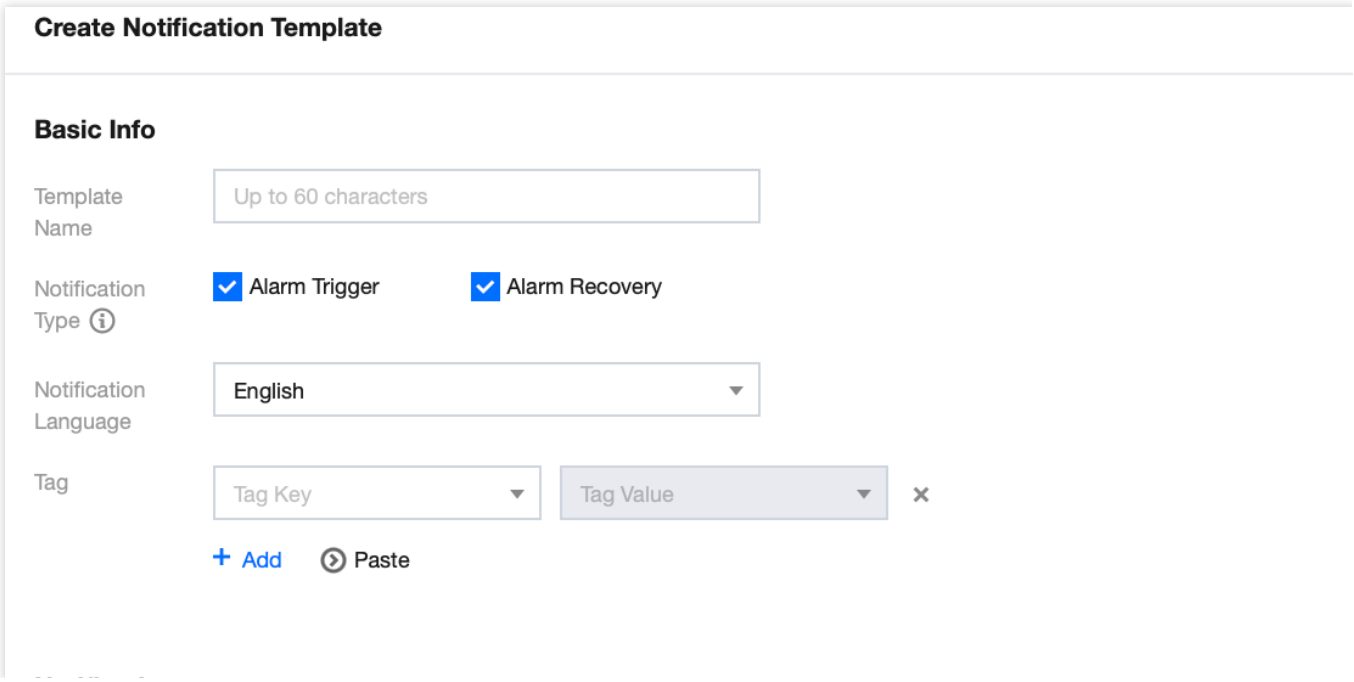


Create a new template.



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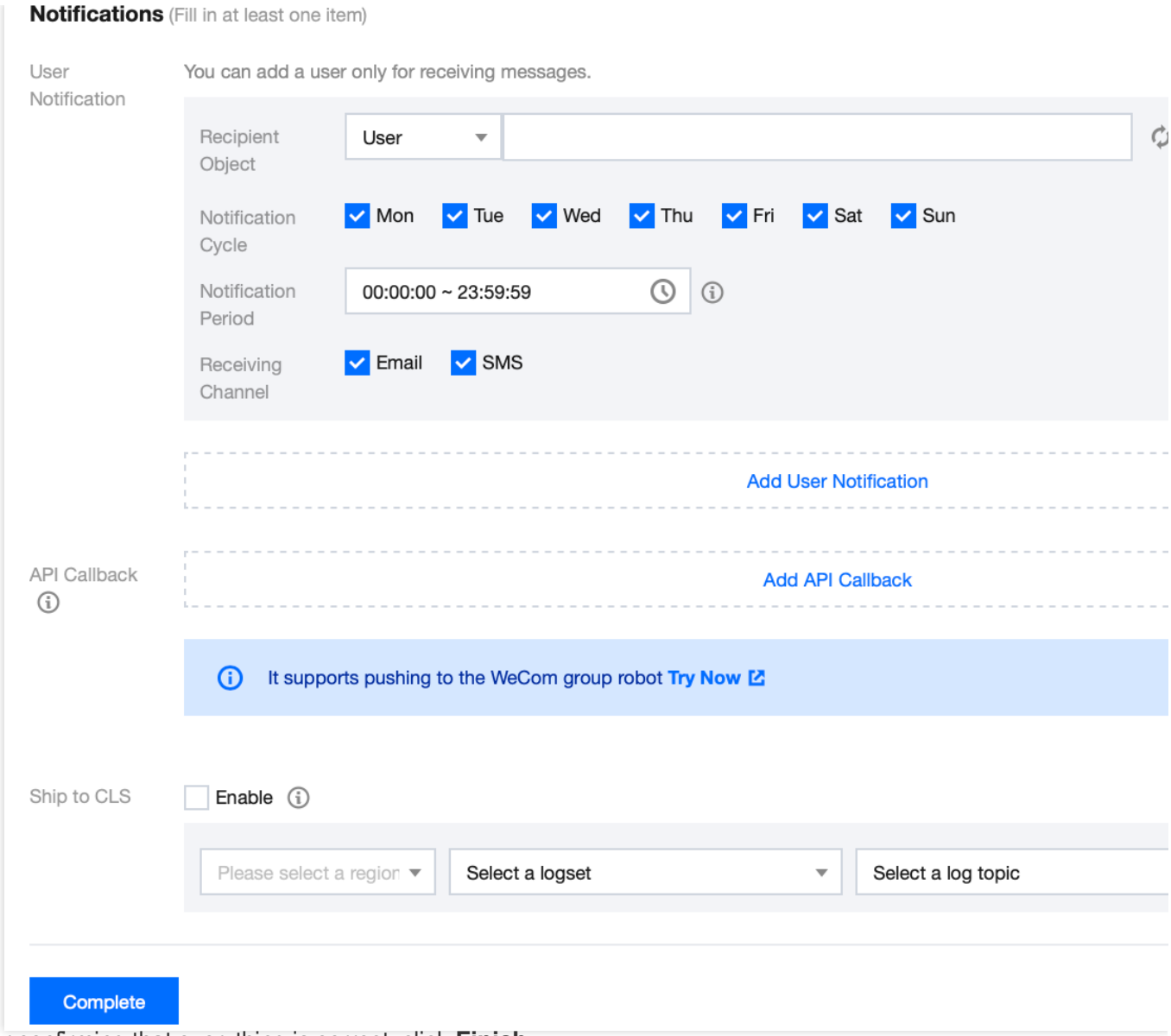

4. After confirming that everything is correct, click **Finish**.

Associating Alarm Objects

After creating an alarm policy, you can also associate it with other alarm objects (instances requiring CPU performance scaling-related alarms). An alarm will be triggered when the object meets the alarm trigger condition.

1. In the alarm policy list, click the **alarm policy name** to enter the alarm policy management page.
2. On the alarm policy management page, click **Add Object** in the **Alarm Object** column.
3. In the pop-up dialog box, select the alarm objects to be associated with, and click **OK**. The alarm objects will be associated.

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Performance Manifestation

Last updated：2023-12-27 10:27:56

This section describes how to use the performance testing tool SysBench to compare the performance after the CPU Elastic Scaling is enabled.

SysBench Tool Introduction

SysBench is a modular, cross-platform, and multi-threaded performance measurement tool that evaluates primary system parameters concerning its operational performance under heavy loads. The tool circumvents the need for complex database benchmark configurations, enabling swift understanding of database performance, even without the necessity of installing a database.

Testing Environment

Note:
The following environment is only used in the example.
Environment Utilized for MySQL Performance Testing:
Region/AZ: Beijing - Beijing Zone 7
Client: S5.8XLARGE64 (32-core 64 GB Standard S5)
Client OS: CentOS 8.2 64-bit
Network: Both the CVM and MySQL instances are under the same VPC subnet.
Tested MySQL Instance:
Three groups of instances: Beijing Zone 7, General 2-core 4 GB, two-node MySQL
Group A: NO-CPU-Expand, the CPU Elastic Scaling feature is not enabled.
Group B: AUTO-CPU-Expand, the Automatic CPU Elastic Scaling feature is enabled.
Group B:
Group C: MANUAL-CPU-Expand, the Manual CPU Elastic Scaling feature is enabled.
Group B:
Setting Parameters:
Set console parameter 'max_prepared_stmt_count' to its highest value to cope with high concurrency.

Testing Process

Step 1:

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Create a 'sbtest' database in the system, enable the Automatic CPU Elastic Scaling feature for group B, and enable the Manual CPU Elastic Scaling feature for group C.

Step 2:

Utilize Sysbench to prepare data, including 10 tables, with each table containing a data volume of 100,000.

Step 3:

Perform a Sysbench read/write test on 10 tables, with each table containing a data volume of 100,000.

Step 4:

Proceed with Sysbench to clear data and disable the Manual CPU Elastic Scaling feature for group C.

Testing Description

The Test can be affected by factors such as testing time, duration, machine used, etc. We suggest performing multiple tests.

Executed Commands:

Following the above steps, conduct the tests respectively.

Note:

Please replace the 'XXX' in the following command with the internal network address, port number, username, user password, and database name of the MySQL instance. The specific parameters are explained as follows:

host: Private network address of the tested instance

port: Port number

user: Username

password: Password corresponding to the username

time: Time

threads: Number of concurrent threads

1. Prepare data: 100,000 data volumes in each table, with 10 tables in total.

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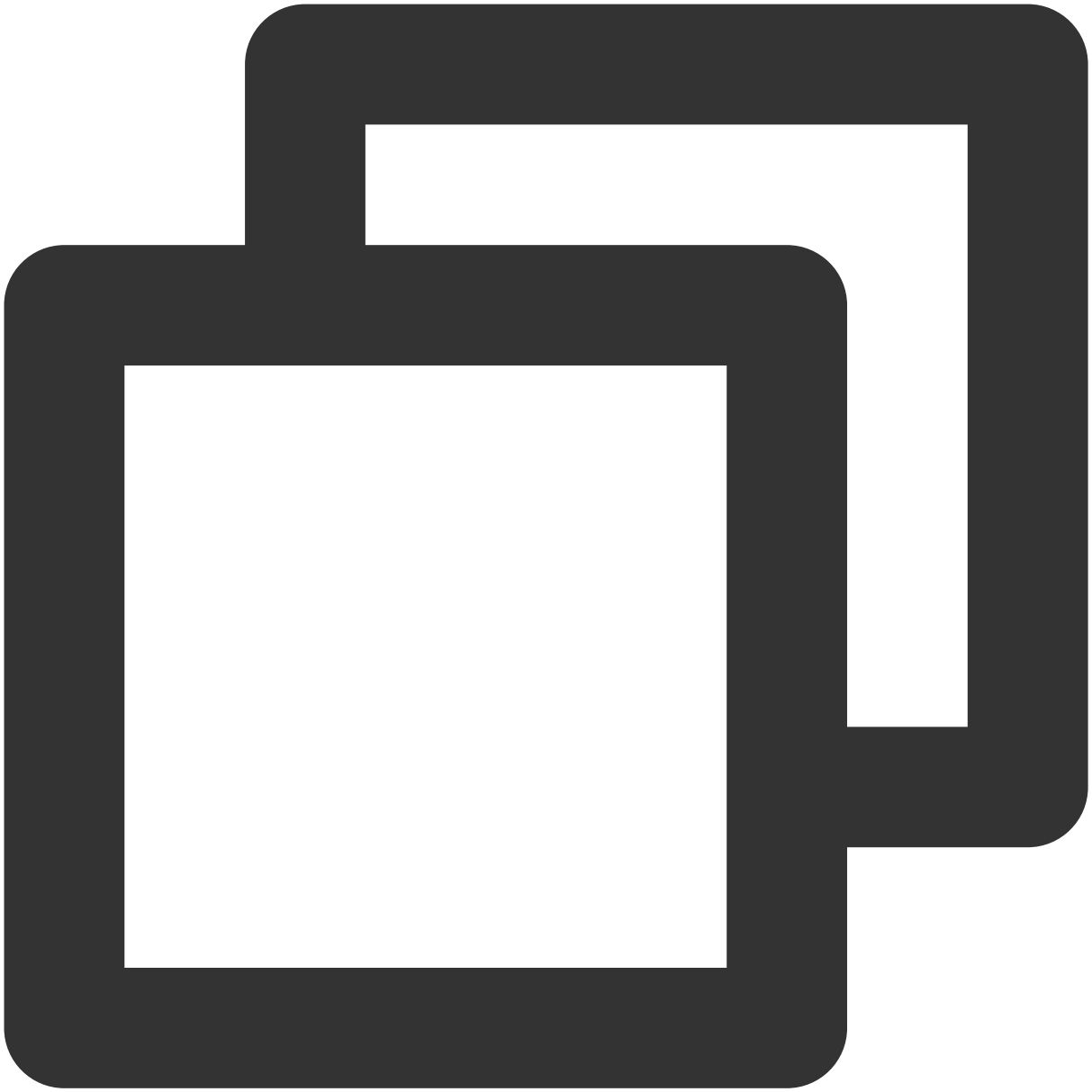

```
sysbench --db-driver=mysql --mysql-host=xxx --mysql-port=xxxx --mysql-user=xxx --my
```

2. Execute high concurrency operations on the 100,000 data volume in each table, with 10 tables in total.

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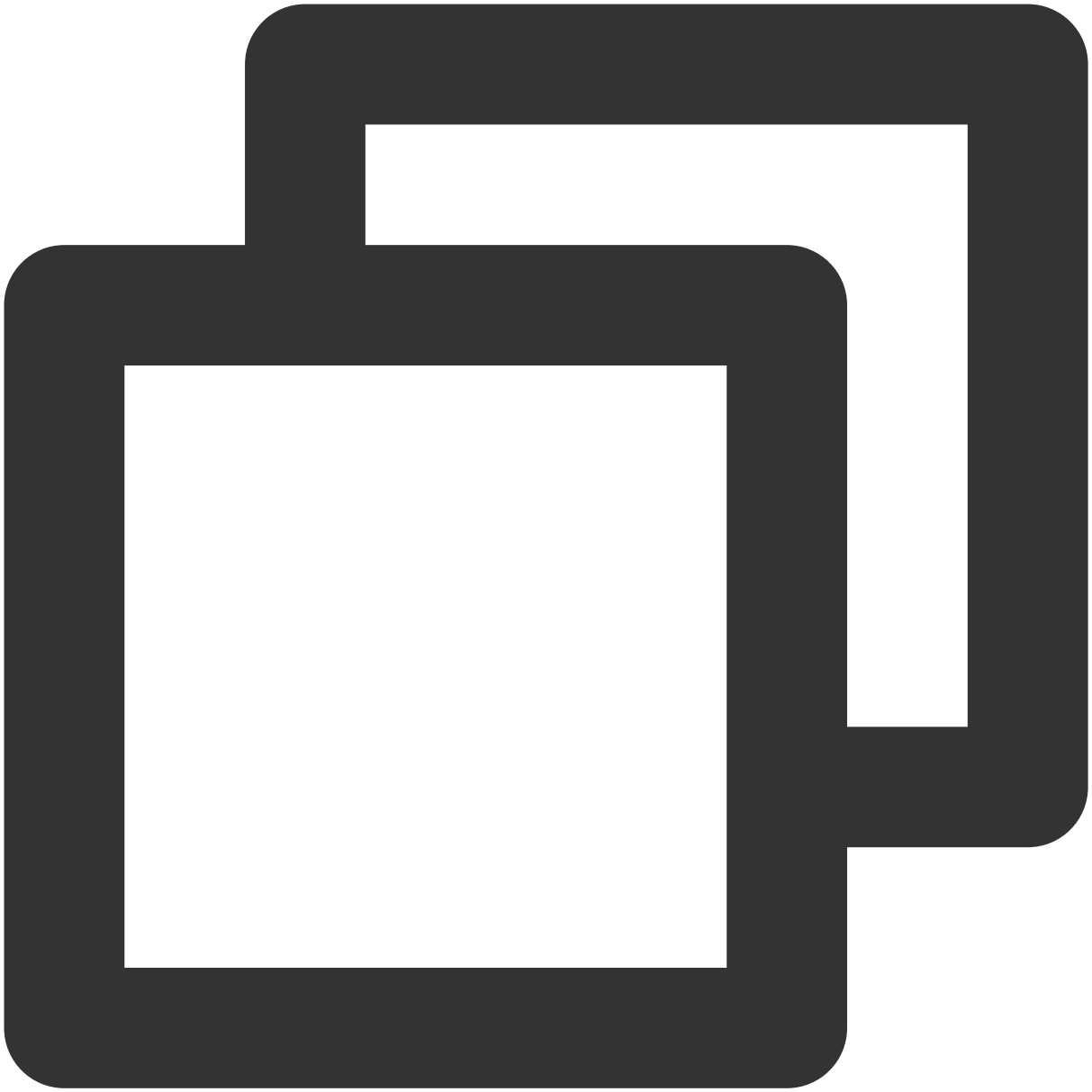

```
sysbench --db-driver=mysql --mysql-host=xxx --mysql-port=xxxx --mysql-user=xxx --my
```

3. Clear the data.

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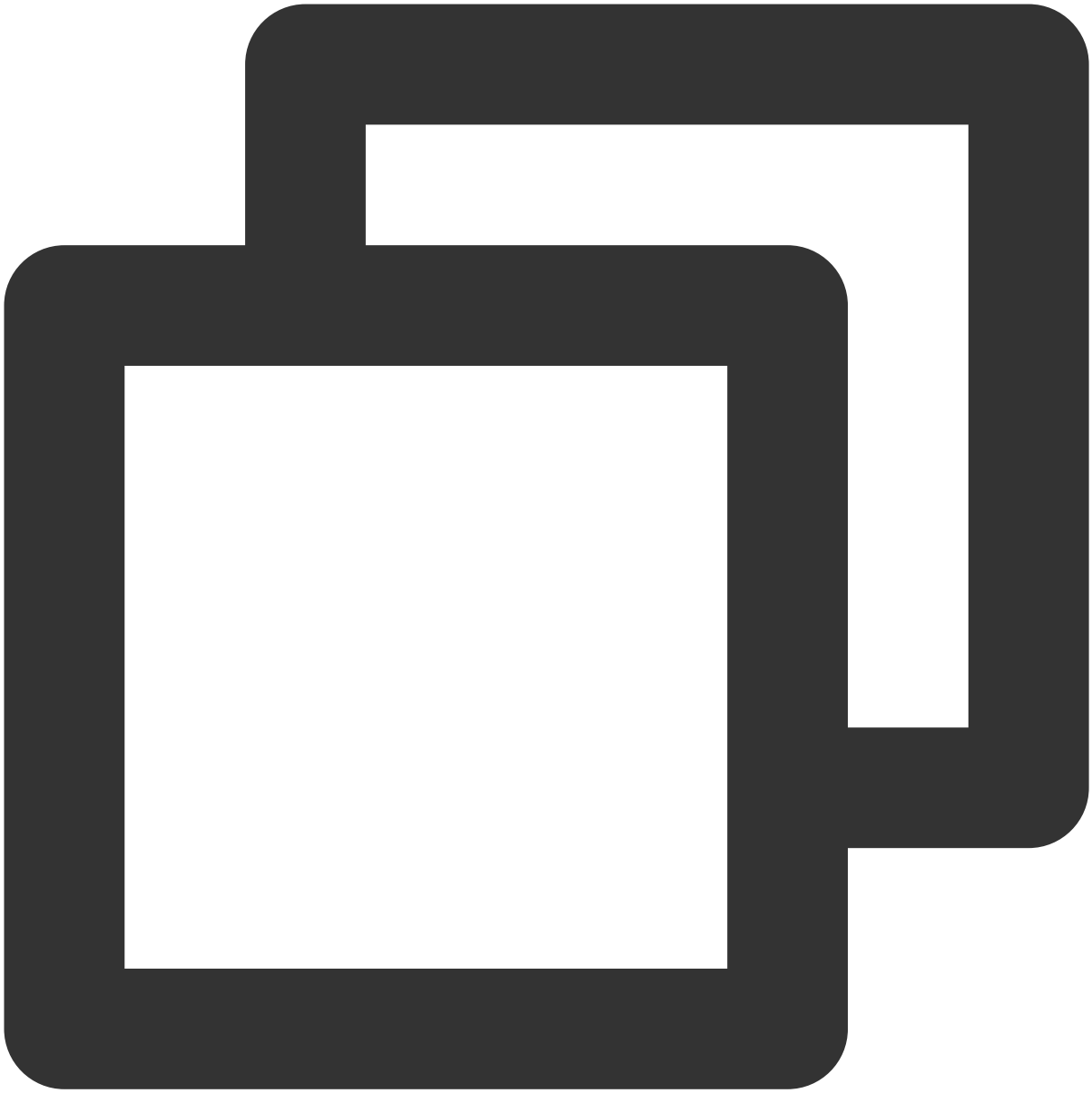

```
sysbench --db-driver=mysql --mysql-host=xxx --mysql-port=xxxx --mysql-user=xxx --my
```

Test Results

Note:

As illustrated below, in the comparative experiment results of the CPU Elastic Scaling feature of three groups of instances, we can observe:

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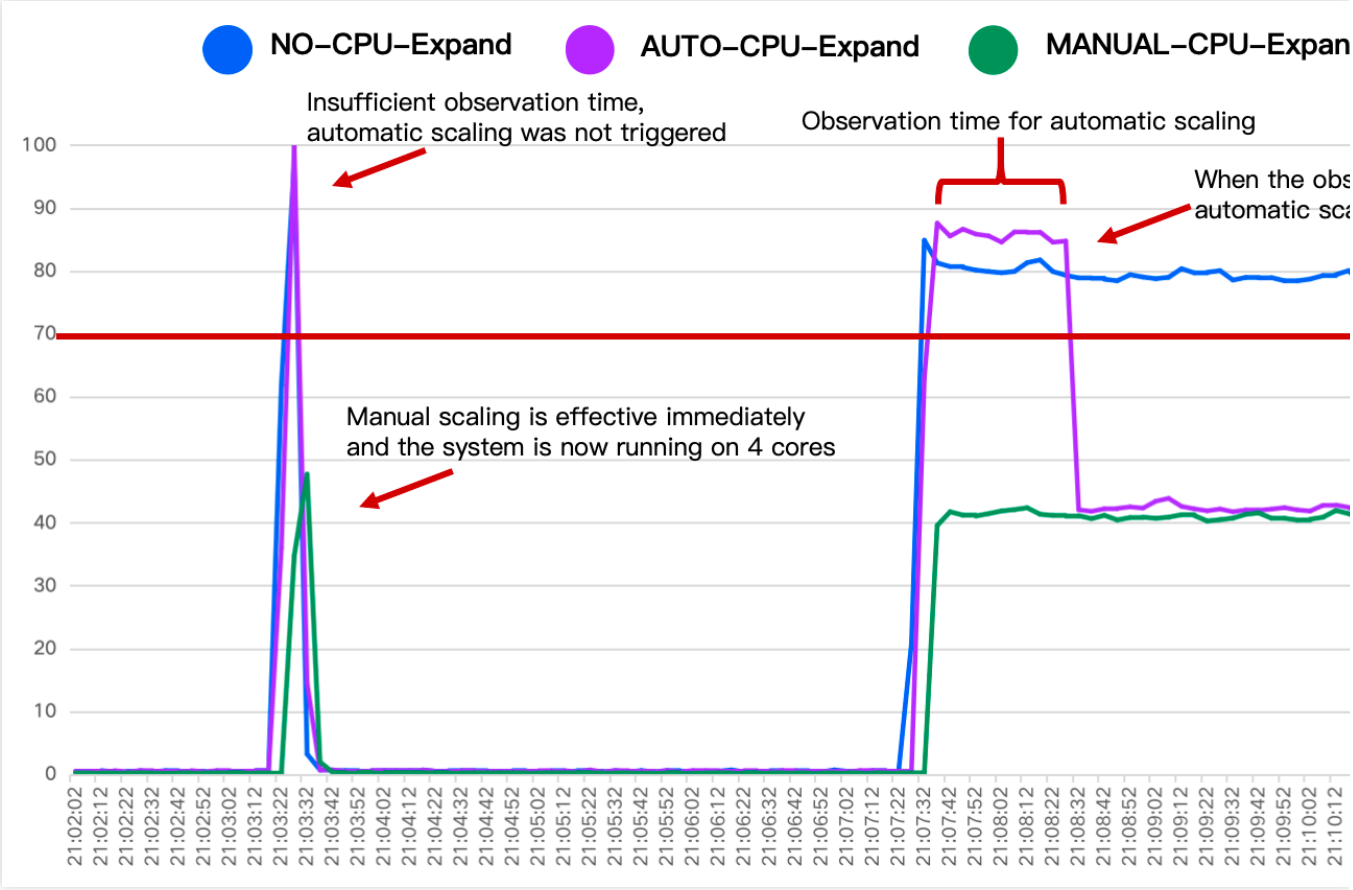
Phase One: At 21:03, data injection was initiated. The CPU usage of both NO-CPU-Expand and AUTO-CPU-Expand exceeded 70%, but the duration did not exceed 1 minute. Therefore, the AUTO-CPU-Expand group did not trigger automatic scaling, while the MANUAL-CPU-Expand group scaled out immediately upon being operated and ran with 4 cores, with the CPU usage less than 50%.
Phase Two: At 21:07, high concurrency testing was initiated. The CPU usage of the NO-CPU-Expand group was remained over 70%, the CPU usage of the AUTO-CPU-Expand group also exceeded 70%, and it triggered automatic scaling when the CPU usage remained high for 1 minute. The scaling succeeded within seconds and reduced the usage to less than 50%. The CPU usage of the MANUAL-CPU-Expand group remained below 50%.



Note:

In addition to significant changes in CPU utilization, the performance of instances that have enabled the CPU Elastic Scaling feature also changes significantly. As demonstrated in the graph below, the TPS and QPS of instances with the feature enabled are higher than those for which the feature is not enabled. It should be noted, the performance in the test is affected by factors such as the testing period, duration, machine, etc. Thus, it is recommended to perform multiple tests and compare the results.

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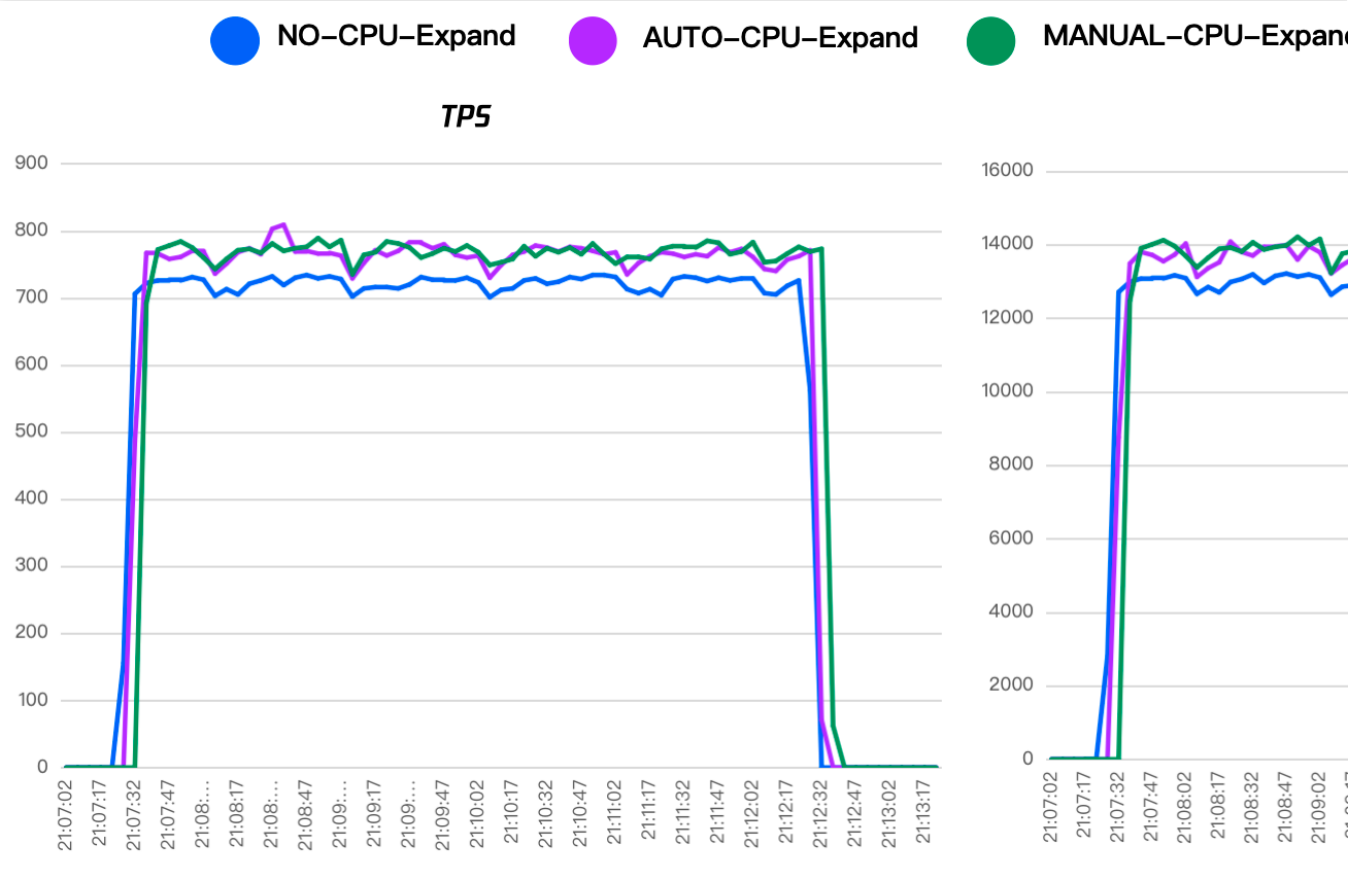

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Billing Overview

Last updated：2023-12-27 10:30:07

This section introduces the billing instructions related to the CPU Elastic Scaling feature.

Billing for Automatic Scaling

Fee Calculation

The CPU Elastic Scaling feature uses pay-as-you-go billing mode, where fees are charged on a minute basis and deducted once per hour.

Billing Formula = (Unit price x Number of added CPU cores) x Scaling duration (minutes) / 60.

Automatic Scaling Billing Example

1. Suppose a two-node instance in Guangzhou has a CPU with 4 cores. After Automatic Scaling is triggered, it is expanded to 8 cores. The scaling duration is 1 hour. Given that the unit price in Guangzhou is 0.08 USD/core/hour, the total cost would be calculated as follows: 0.08 (Unit price) x 4 (additional CPU cores) x 1 (duration of expansion) = 0.32 USD.

2. Suppose a two-node instance in Guangzhou has a CPU with 2 cores. After Automatic Scaling is triggered, it is expanded to 4 cores, with a scaling duration of 30 minutes. Considering that the unit price in Guangzhou is 0.08 USD/core/hour, the total cost would be calculated as follows: 0.08 (Unit price) x 2 (additional CPU cores) x 30/60 (scaling duration) = 0.08 USD.

Note:

Upon enabling CPU Auto Scaling: you will be billed according to the number of CPU cores added when the elastic scaling is successfully triggered. There will be no additional charges when no scaling is performed.

To mitigate the impact of persistent intermittent peaks, there is a minimum protection time of 10 minutes during auto-scaling. That is, if the auto-scaling lasts for more than 10 minutes, the cost will be calculated based on the actual scaling time. If the auto-scaling lasts no more than 10 minutes, the cost will be calculated with the duration of 10 minutes.

Manual Scaling Billing Description

Fee Calculation

The Manual CPU Elastic Scaling feature adopts the pay-as-you-go billing method, where fees charged on a minute basis and deducted once per hour.

Billing Formula = (Unit price x Number of added CPU cores) x Scaling duration (minutes)/60.

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Manual Scaling Billing Example

In Beijing, a CPU elastic scaling is manually enabled for a two-node instance with a CPU with 2 cores on 10 AM, with 2 cores added. The manual CPU elastic scaling process is then disabled at 5 PM, which means the scaling lasts for 7 hours. Given that the unit price in Beijing is 0.08 USD/core/hour, the total fee would be: 0.08 (unit price) x 2 (additional CPU cores) x 7 (scaling duration) = 1.12 USD.

Note:

Once **Manual CPU Elastic Scaling** is started, the number of CPU cores for the instance will immediately increase based on your configurations and fees will be charged synchronously until you disable manual scaling. Therefore, the system will continuously charge since manual scaling is enabled and until it is disabled. For instructions on how to disable manual scaling, please see Disabling Manual Scaling for operation to turn off manual scaling.

Unit Price per Core

Single-node Local Disk (Read-only Instance)

Two-node Instance

Three-node Instance

Region	Unit Price (USD/Core/Hour)
Chengdu, Chongqing	0.03
Guangzhou, Shanghai, Beijing, Nanjing	0.04
Hong Kong, Tokyo, Seoul, Mumbai, Bangkok	0.0495
Frankfurt, Sao Paulo	0.0365
Singapore, Jakarta, Toronto, Silicon Valley, Virginia	0.061

Region	Unit Price (USD/Core/Hour)
Chengdu, Chongqing	0.06
Guangzhou, Shanghai, Beijing, Nanjing	0.08
Hong Kong, Tokyo, Seoul, Mumbai, Bangkok	0.099
Frankfurt, Sao Paulo	0.073
Singapore, Jakarta, Toronto, Silicon Valley, Virginia	0.122

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Region	Unit Price (USD/Core/Hour)
Chengdu, Chongqing	0.09
Guangzhou, Shanghai, Beijing, Nanjing	0.12
Hong Kong, Tokyo, Seoul, Mumbai, Bangkok	0.1485
Frankfurt, Sao Paulo	0.1095
Singapore, Jakarta, Toronto, Silicon Valley, Virginia	0.183

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FAQs

Last updated：2023-12-27 10:30:48

This document gives FAQs related to the CPU Elastic Scaling feature.

Why can't I find the CPU Elastic Scaling feature in the console?

The CPU Elastic Scaling feature is only available for MySQL Universal Edition with two or three-node instances, or single-node instances with local disks (read-only instance).You can check whether your instance is single-node (cloud disk) or dedicated version, as these types currently do not support the CPU Elastic Scaling feature.

During stress testing, why does the monitoring show that the CPU utilization remains at 100% even after the feature is enabled?

CPU utilization is calculated based on the actual number of CPU cores. If the service load fully utilizes all CPU performance, performance-related metrics such as TPS, QPS, and response time of the database system should be given attention.

Why does the CPU Elastic Scaling feature fail to be enabled?

There are two possible reasons for the failure to enable the CPU elastic scaling feature:
Your Tencent Cloud account does not have a sufficient balance.
The CPU resources on the host is insufficient (rarely occurs).
Ensure sufficient balance in your Tencent Cloud account or please submit a ticket for feedback.

Why am I not notified of events when the CPU is scaled-out or scaled-in?

You can troubleshoot and handle the issue as follows.
Check whether the alarm for CPU elastic scaling events has been enabled. If not, enable it by referring to Enabling Event Alarms.
Check the notification recipient list; it is possible that no relevant users have been added. You can add the notification recipient by referring to Adding Message Recipients.

What should I do if a HA switch occurs after the CPU Elastic Scaling feature is enabled?

The CPU Elastic Scaling feature will take effect simultaneously on both the primary and secondary nodes on two-node and three-node instances. If a HA switch occurs on a two-node or three-node instance after the CPU Elastic Scaling feature takes effect, the switched node will also have the expanded CPU specification. When automatic scaling is disabled or manual scaling is stopped, it will automatically restore to the original CPU specification. Please note that for read-only instances and disaster recovery instances, the feature need to be enabled separately. That means when the CPU Elastic Scaling feature is enabled and takes effect on the primary instance, the read-only instances and

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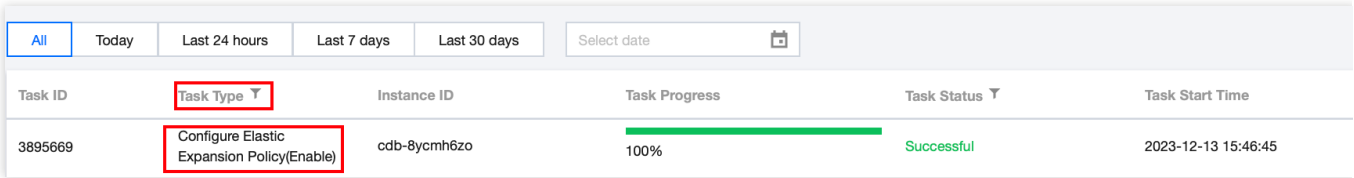
disaster recovery instances attached to this primary instance will not expand their CPU specification simultaneously. You need to enable the CPU elastic Scaling feature for them separately.

How can I query the progress and details related to CPU elastic scaling tasks?

You can query the progress and details related to CPU elastic scaling tasks through the task list, with the following steps:

1. Log in to the TencentDB for MySQL console.
2. Choose Task List on the left sidebar, select the region, click **Task Type**, choose **Configure Elastic Expansion Strategy**, and then click **OK**.
3. In the filtered task list, locate the target task to inquire about its progress. Click **Task Details** in the operation column to view detailed task information.



Why am I continuously billed after the CPU Elastic Scaling feature is enabled?

If you choose manual scaling when enabling the feature, the scaling will continue until you manually stop it. Therefore, after enabling manual scaling, please be sure to manually stop it based on your business requirements.
It is recommended to choose automatic scaling. After the configuration, the CPU specifications will be automatically and elastically scaled based on the user-configured scale-out and scale-in thresholds. Also, you will only be billed for the number of cores scaled out when the scaling is successfully triggered. No fees are charged when there is no scaling.

Within one hour after automatic scaling is enabled, it automatically scales in only 6 minutes after scaling was triggered. Why am I being charged for 10 minutes?

To mitigate the impact of continuous intermittent peaks, there is a minimum protection period of 10 minutes during automatic scaling. This means, if the automatic scaling lasts more than 10 minutes, the costs are calculated based on the actual scaling duration. If the automatic scaling lasts for no more than 10 minutes, the costs are calculated based on a 10-minute duration.

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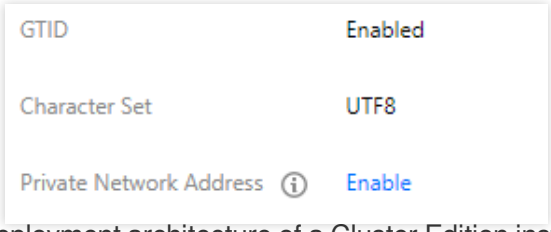
Read-Only/Disaster Recovery Instances
Creating Read-Only Instance

Last updated：2024-07-30 14:59:21

Overview

TencentDB for MySQL allows you to create one or more read-only instances, which are suitable for read/write separation and one-primary-multiple-replica application scenarios and capable of greatly enhancing the read load capacity of your database.
Database proxy is supported. After creating a read-only instance, you can purchase the database proxy service to enable the read/write separation feature. Then, you can configure the database proxy address in your application so as to automatically forward write requests to the primary instances and read requests to the read-only instances.
Note:
For read-only instance pricing, see Product Pricing.
You can now configure a custom and exclusive private network address (IP and port) for a read-only instance on the instance details page.



The deployment architecture of a Cluster Edition instance consists of 1 read-write node and up to 5 read-only nodes. If you have purchased a Cluster Edition instance, see Adding a Node for an Instance and Deleting a Node for an Instance for operations on adding or deleting read-only nodes. The Cluster Edition instance also supports adding 1 to 15 independent read-only instances. You can refer to the method described in this document for creation, and should note that the independent read-only instances cannot be switched to read-write nodes.

Concepts

Read-only group: It consists of one or more load balancing-enabled read-only instances. If there are multiple read-only instances in one read-only group, read request volume can be evenly distributed among the instances. Read-only groups provide IPs and ports for access to databases.
Read-only instance: A single-node (with no replica) instance that supports read requests. It cannot exist independently; instead, it must be in a read-only group.

Architecture

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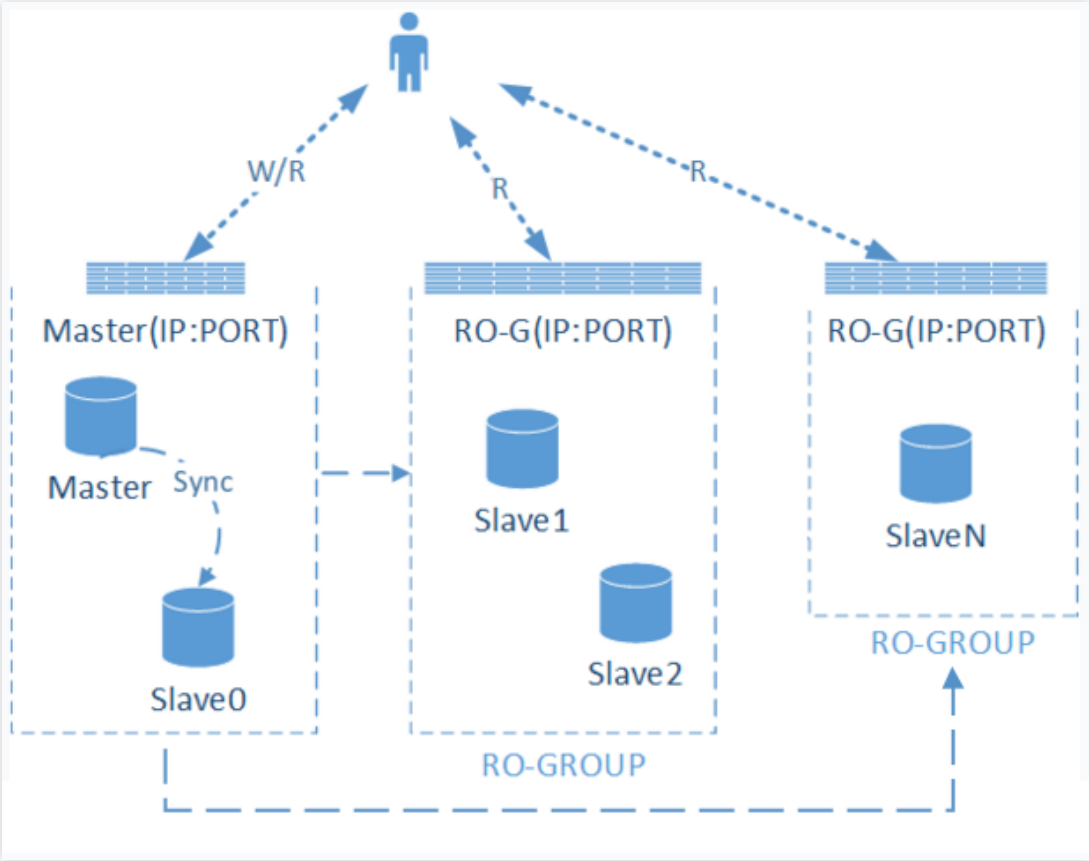
The MySQL primary-replica binlog sync feature is adopted for read-only instances, which can sync the changes in the primary instances (source database) to all read-only instances. Given the single-node architecture (without a replica) of read-only instances, repeated attempts to restore a failing read-only instance will be made. Therefore, we recommend that you choose an RO group over a read-only instance for higher availability.

Note:

If there is only one read-only instance in the read-only group, there will be risks with single points of failure, and this group will not be included in the overall availability calculation of the TencentDB for MySQL service. A single read-only instance does not provide SLA guarantee. We recommend you purchase at least two read-only instances to ensure the availability of the read-only group.



Feature limits

Read-only instances cannot be created for single-node instances of the cloud disk edition.

Read-only instances can be purchased only for **two-node or three-node or Cluster Edition primary instances on MySQL 5.6 or later with the InnoDB engine at a specification of 1 GB memory and 50 GB disk capacity or above**. If your primary instance is below this specification, upgrade it first.

The minimum specification of a read-only instance is 1 GB memory and 50 GB disk capacity, which must be equal to or greater than the storage capacity purchased for the primary instance.

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A two-node or three-node primary instance supports creating up to 5 read-only instances, and a Cluster Edition instance supports creating up to 15 read-only instances.
A primary instance can create up to 5 read-only instances.
Backup and rollback features are not supported.
Data cannot be migrated to read-only instances.
Database creation/deletion is not supported and neither is phpMyAdmin (PMA).
Operations including account creation/deletion/authorization and account name/password modification are not supported.

Use limits

There is no need to maintain accounts or databases for read-only instances, which are synchronized with those of the primary instance.
If the MySQL version is 5.6 but GTID is not enabled, you need to enable GTID in the console first before creating a read-only instance.
The operation takes a long time, and the instance will be disconnected for several seconds. We recommend that you do so during off-peak hours and add a reconnection mechanism in the programs that access the database.
Read-only instances only support the InnoDB engine.
Data inconsistency between multiple read-only instances may occur due to the delay in data sync between the read-only instances and the primary instance. You can check the delay in the console.
The specification of a read-only instance can be different from that of the primary instance, which makes it easier for you to upgrade the read-only instance based on the load. We recommend that you keep the same specifications of read-only instances in one RO group.

Directions

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to access the instance details page.
2. Click **Add Read-Only Instance** in the **Instance Architecture Diagram** section on the **Instance Details** tab (add an independent read-only instance for the Cluster Edition) or click **Create** on the **Read-Only Instance** tab.
3. On the displayed purchase page, specify the following read-only instance configurations, confirm that everything is correct, and click **Buy Now**.

Note:
If you need to unify the expiration time of the primary and read-only instances, you can set the collective expiration date in the renewal management console as instructed in Renewal Management.

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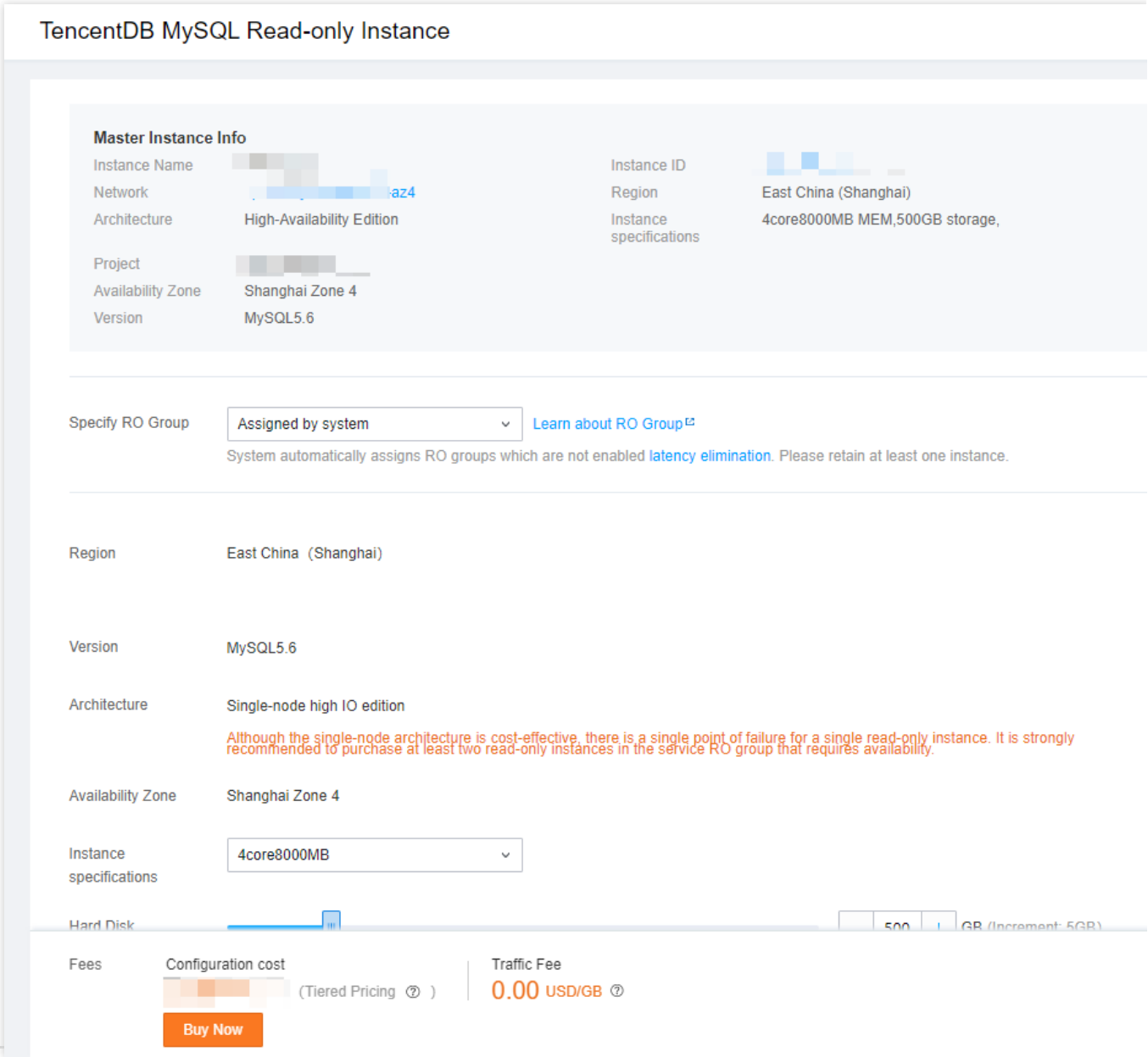
The newly added independent read-only instance for the Cluster Edition does not involve the operations related to specifying RO groups.



Parameter	Description
Specify RO Group	You can use the RO group automatically assigned by the system, create one, or select an existing one. Assigned by system: If multiple instances are purchased at a time, each of them will be assigned to an independent RO group, and their weights will be automatically assigned by the system by default. Create RO group: Create an RO group. If multiple instances are purchased at a time, all of them will be assigned to this new RO group, and their weights will be allocated by the system automatically by default. Existing RO group: Specify an existing RO group. If multiple read-only instances are purchased at a time, all of them will be assigned to the RO group. Their weights will

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	be allocated as configured in the RO group. If assignment by the system is set for the RO group, the instances will be added to the group automatically according to the purchased specifications. If custom allocation is set, their weights will be zero by default. As the same private IP is shared within an RO group, if a VPC is used, the same security group settings will be shared. If an RO group is specified, it is not possible to customize any security group when instances are purchased.
RO Group Name	You can set the name of the new RO group when creating it. The name can contain up to 60 letters, digits, hyphens, underscores, and dots.
Remove Delayed RO Instances	Select whether to enable the removal policy. If this option is enabled, you need to set **Delay Threshold** and **Least RO Instances**, and the weight of the removed instances is automatically set to 0. If a read-only instance is removed when its delay exceeds the threshold, it will become inactive, its weight will be automatically set to 0, and alarms will be sent to corresponding recipients. The instance will be put back into the RO group when its delay falls below the threshold. For more information on how to configure the read-only instance removal alarm and recipients, see Alarm Policies (TCOP). No matter whether delayed read-only instance removal is enabled, a read-only instance that is removed due to instance failure will rejoin the RO group when it is repaired.
Billing Mode	Monthly subscription and pay-as-you-go billing are supported.
AZ	When creating a new RO group, you can select the same AZ as the primary instance or a different AZ. There are no substantial differences between different AZs. If you choose a different AZ, the RO group will reside across AZs and can improve data disaster recovery, but there will be a few milliseconds of network latency.

4. After the purchase is completed, you will be redirected to the instance list. When the status of the instance changes to **Running**, it can be used normally.

FAQs

What are the rules for removing read-only instances?

After **Remove Delayed RO Instances** is enabled, the RO group will determine the removal rule based on the delay threshold and "Least RO Instances" value. If the delay of a read-only instance reaches the threshold, it will be removed and made inactive, with its weight set to 0 and an alarm sent to corresponding recipients. When its delay falls below the threshold, it will be returned to the RO group.

Delay Threshold: Set a delay threshold for a read-only instance. When the threshold is exceeded, the instance will be removed from the RO group.

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Least RO Instances: This is the minimum number of instances that should be retained in the read-only group. When there are fewer instances in the read-only group, even if an instance exceeds the delay threshold, it will not be removed.

If read-only instances are terminated or returned, how will the primary instance be affected?

The termination and return of read-only instances has no impact on the primary instance.

Why can't I select a specific AZ when creating a read-only instance?

If you can't select an AZ, it means that there are no resources in this AZ. You can choose another AZ as displayed on the actual purchase page, which will not affect your use of the read-only instance.

Can I select an AZ different from that of the primary instance when creating a read-only instance?

Yes. When creating a read-only instance, you can choose to create a new RO group for it and select an AZ different from that of the primary instance. However, if you select an existing RO group, the AZ of the new read-only instance can only be the same as that of the selected existing RO group, which may not necessarily be the same as that of the primary instance.

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Managing the RO Group of Read-Only Instance

Last updated：2024-07-22 14:52:52

Overview

TencentDB for MySQL allows you to create one or more read-only instances to form an RO group, which is suitable for read/write separation and one-source-multiple-replica application scenarios and capable of greatly enhancing the read load capacity of your database.
An RO group is a set of read-only instances sharing the same address. You can set their weights to balance the traffic load, set the policy of removing delayed read-only instances, and perform other configurations. You can deploy an RO group as needed and send the corresponding read requests to read-only instances according to certain rules. In addition, you can implement disaster recovery by configuring multiple read-only instances in the same RO group.

Prerequisites

A source instance must be created first before a read-only instance can be created. For more information, see Creating MySQL Instance.

Creating an RO group

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. Click **Add Read-Only Instance** in the **Instance Architecture Diagram** section on the **Instance Details** tab or click **Create** on the **Read-Only Instance** tab.

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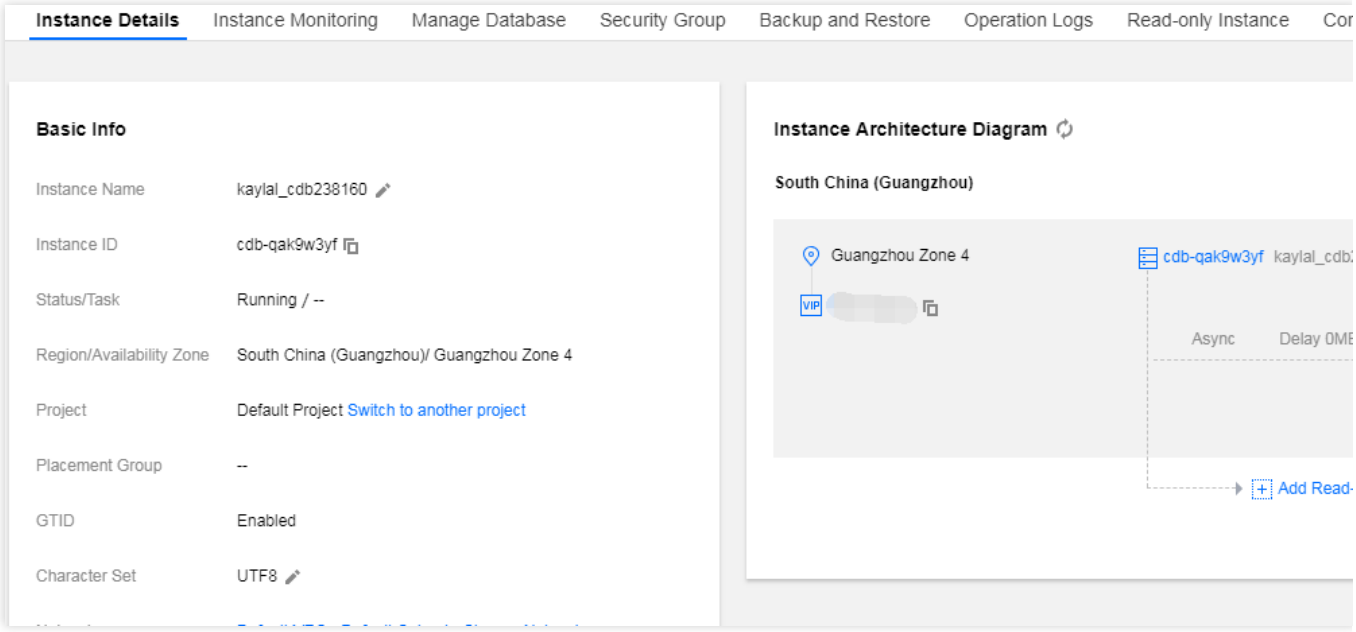

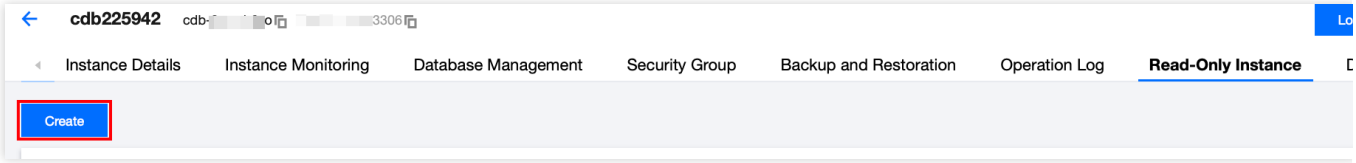

3. On the displayed purchase page, specify the following read-only instance configurations, confirm that everything is correct, and click **Buy Now**.

Specify RO Group: Select **Create RO group**. If multiple instances are purchased at a time, all of them will be assigned to this new RO group, and their weights will be automatically assigned by the system by default. - **Assign Read Weight**: It is assigned by the system.

RO Group Name: The RO group name doesn't need to be unique and can contain up to 60 letters, digits, hyphens, and underscores. - **Instance Name**: It must contain less than 60 letters, digits, or symbols (-_.).

Remove Delayed RO Instances: Select whether to enable the removal policy. If a read-only instance is removed, its weight will be automatically set to 0.

If a read-only instance is removed when its delay exceeds the threshold, it will become inactive, its weight will be automatically set to 0, and alarms will be sent to corresponding recipients. The instance will be put back into the RO group when its delay falls below the threshold. For more information on how to configure the read-only instance removal alarm and recipients, see Alarm Policies (TCOP).

No matter whether delayed read-only instance removal is enabled, a read-only instance that is removed due to instance failure will rejoin the RO group when it is repaired.

Delay Threshold: Set a delay threshold for the read-only instance. When the threshold is exceeded, the instance will be removed from the RO group.

Least RO Instances: This is the minimum number of instances that should be retained in the RO group. When there are fewer instances in the RO group, even if an instance exceeds the delay threshold, it will not be removed.

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Assign Read Weight: It is assigned by the system.
Billing Mode: Monthly subscription and pay-as-you-go billing are supported.
Region: It is the same as that of the source instance by default.
Database Version: It is the same as that of the source instance by default.
Engine: It is the same as that of the source instance by default.
Architecture: Select **Single-node**. Although the single-node architecture is cost-effective, there is a single point of failure for a single read-only instance. It is recommended to purchase at least two read-only instances in the service RO group that requires availability.
Data Replication Mode: Async replication
AZ: When creating a new RO group, you can select the same AZ as the source instance or a different AZ. There are no substantial differences between different AZs. If you choose a different AZ, the RO group will reside across AZs and can improve data disaster recovery, but there will be a few milliseconds of network latency.
For other configuration items, see Creating MySQL Instance.
4. Return to the instance list. The status of the created instance is **Delivering**. If the status changes to **Running**, the read-only instance has been successfully created.

Configuring an RO group

On the RO group configuration page, you can configure the basic information of the group such as ID, name, delayed replication, replication delay, removal policy, delay threshold, least read-only instances, and read weight.
Note:
Read-only instances in an RO group can use different specifications, and their read traffic weights can be set.
Read-only instances in the same RO group can have different expiration dates and billing modes.
Once enabled, delayed replication will take effect for all read-only instances in this RO group, but won't change their replication statuses.
The replication delay option will appear only after delayed replication is enabled.
1. Log in to the TencentDB for MySQL console. In the instance list, click a source instance ID to enter the instance management page.
2. On the instance management page, click the **Read-Only Instance** tab and click **Configure** in the **RO Group** column to enter the RO group configuration page.

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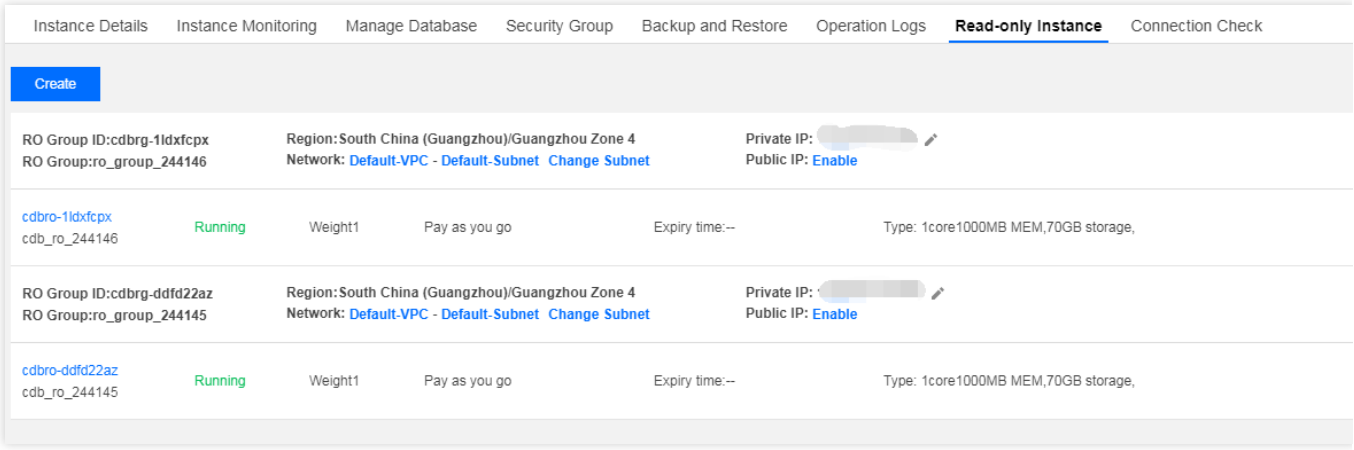

3. On the RO group configuration page, configure the RO group information and click **OK**.

You can set delayed replication and select to replay by flashbacked position or global transaction identifier (GTID) during the delay to efficiently roll back data and fix failures.

Replication Delay: You can configure the time of delayed replication between a read-only instance and its source instance. The value range is 1–259200 seconds.

Remove Delayed RO Instances: Select whether to enable the removal policy. If a read-only instance is removed, its weight will be automatically set to 0. If a read-only instance is removed when its delay exceeds the threshold, it will become inactive, alarms will be sent to corresponding recipients. For more information on how to configure the read-only instance removal alarm and recipients, see Alarm Policies (TCOP).

Delay Threshold: Set a delay threshold for the read-only instance. When the threshold is exceeded, the instance will be removed from the RO group.

Least RO Instances: This is the minimum number of instances that should be retained in the RO group. When there are fewer instances in the RO group, even if an instance exceeds the delay threshold, it will not be removed.

Assign Read Weight: The RO group supports two weight assignment methods: automatic assignment by the system and custom assignment. The weight value must be an integer between 0 and 100. Below is the list of read weights automatically set for two-node and three-node TencentDB for MySQL instances by the system:

Memory Specification (MB)	1000	2000	4000	8000	12000	16000	24000	32000	48000	6400
Weight	1	1	2	2	4	4	8	8	10	12

Rebalance:

If rebalance is disabled, modifying weight will take effect only for new loads but will not affect the read-only instances accessed by existing persistent connections or cause a momentary disconnection from the database.

If rebalancing is enabled, all connections to the database will be temporarily disconnected, and the loads of newly added connections will be balanced based on the set weights.

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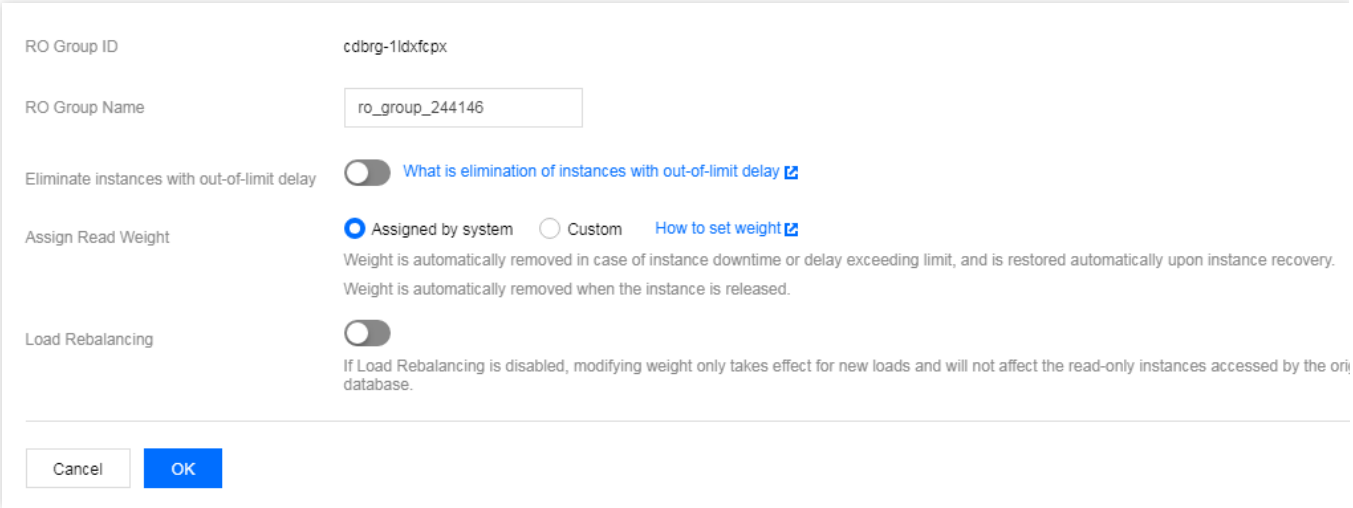


Terminating and deleting an RO group

Note:

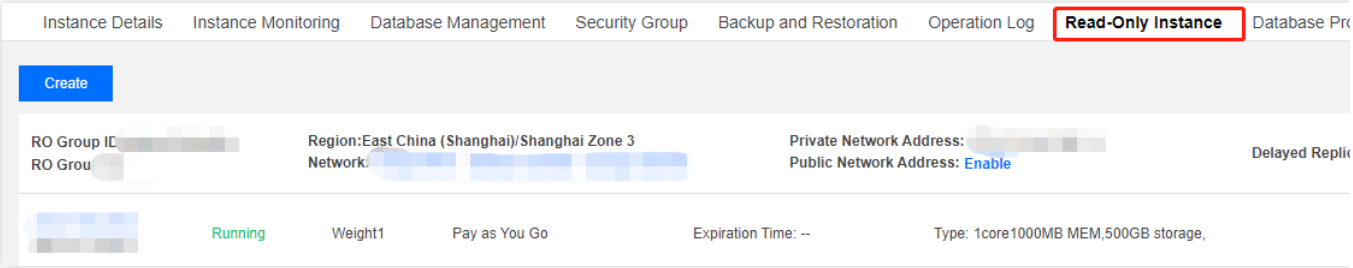
RO groups cannot be deleted manually.

An RO group will be automatically deleted when the last read-only instance in it is eliminated.

Empty RO groups cannot be retained.

1. Log in to the TencentDB for MySQL console. In the instance list, click a source instance ID to enter the instance management page.

2. On the instance management page, click the **Read-Only Instance** tab and click **Terminate/Return** or **Terminate/Return & Refund**in the **Operation** column on the right.



3. In the pop-up window, read and agree to the **Termination Rules** and click **Terminate Now**.

FAQs

Why can't I select a specific AZ when creating a read-only instance?

If you can't select an AZ, it means that there are no resources in this AZ. You can choose another AZ as displayed on the actual purchase page, which will not affect your use of the read-only instance.

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Can I select an AZ different from that of the source instance when creating a read-only instance?

Yes. When creating a read-only instance, you can choose to create a new RO group for it and select an AZ different from that of the source instance. However, if you select an existing RO group, the AZ of the new read-only instance can only be the same as that of the selected existing RO group, which may not necessarily be the same as that of the source instance.

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Managing Delayed Replication of Read-Only Instance

Last updated：2024-07-22 14:53:12

This document describes how to set delayed replication for read-only instances and enable/disable replication in the TencentDB for MySQL console. You can set delayed replication (i.e., delay between a read-only instance and its source instance) and select to replay by flashbacked position or global transaction identifier (GTID) during the delay to efficiently roll back data and fix failures.
Delayed Replication: you can enable and configure the replication delay between a read-only instance and its source instance on its RO group configuration page or management page.
Enabling/Disabling Replication: you can manually enable or disable data sync between a read-only instance and its source instance.

Delayed Replication Description

After delayed replication is enabled for a read-only instance, it will be removed from the RO group with its weight set to 0, and a removal alarm will be triggered. At this point, the traffic will not be forwarded to the removed instance if the RO VIP is used to access the RO group. What's more, the removed instance can only be accessed via the instance's VIP.
After the delayed replication is disabled for a read-only instance (the corresponding RO group has enabled delayed-replication-read-only-instance removal), the weight of this read-only instance in the RO group will be recovered only if the delay time of this instance is less than the delay threshold of the RO group. And a restoration alarm will be triggered at the same time.
During replay by flashbacked position, you cannot restart the instance, adjust its configuration, upgrade its version, or upgrade its kernel minor version.

Enabling Delayed Replication

Note:
Delayed Replication is **disabled** for a read-only instance by default. If it is enabled, the delayed replication time will be displayed.

Enabling on the read-only instance's RO group configuration page

1. Log in to the TencentDB for MySQL console. In the instance list, click a source instance ID to enter the instance management page.

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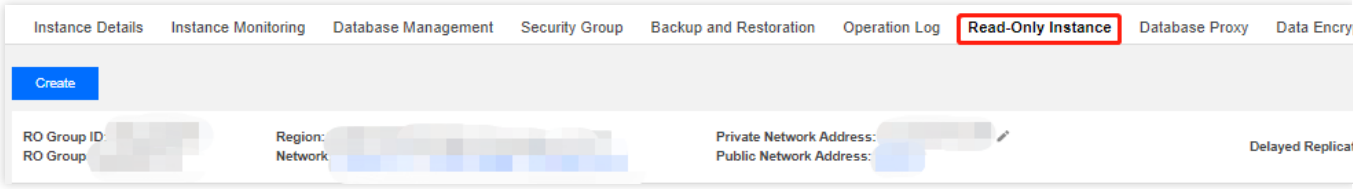
2. On the instance management page, select the **Read-Only Instance** tab, locate the desired RO group, and click **Configuration** to enter the RO group configuration page.



3. On the RO group configuration page, enable **Delayed Replication**, set the **Replication Delay**, and click **OK**.
You can set delayed replication and select to replay by flashbacked position or global transaction identifier (GTID) during the delay to efficiently roll back data and fix failures.
Replication Delay: You can configure the time of delayed replication between a read-only instance and its source instance. The value range is 1–259200 seconds.
Remove Delayed RO Instances: This option indicates whether to enable the removal policy. If a read-only instance is removed when its delay exceeds the threshold, its weight will be set to 0 automatically, and alarms will be sent (for more information on how to configure the read-only instance removal alarm and recipients, see Alarm Policies (TCOP)).
Delay Threshold: This sets a delay threshold for the read-only instance. When the threshold is exceeded, the instance will be removed from the read-only group.
Least RO Instances: This is the minimum number of instances that should be retained in the RO group. When there are fewer instances in the RO group, even if an instance exceeds the delay threshold, it will not be removed.
Assign Read Weight: The RO group supports two weight assignment methods: automatic assignment by the system and custom assignment. The weight value must be an integer between 0 and 100.
Load Rebalancing:
Modifying weight will only affect new loads if rebalancing is disabled. The operation has no impact on read-only instances accessed by existing persistent connections and does not cause momentary database disconnection.
If rebalancing is enabled, all connections to the database will be temporarily disconnected, and the loads of newly added connections will be balanced according to the set weights.

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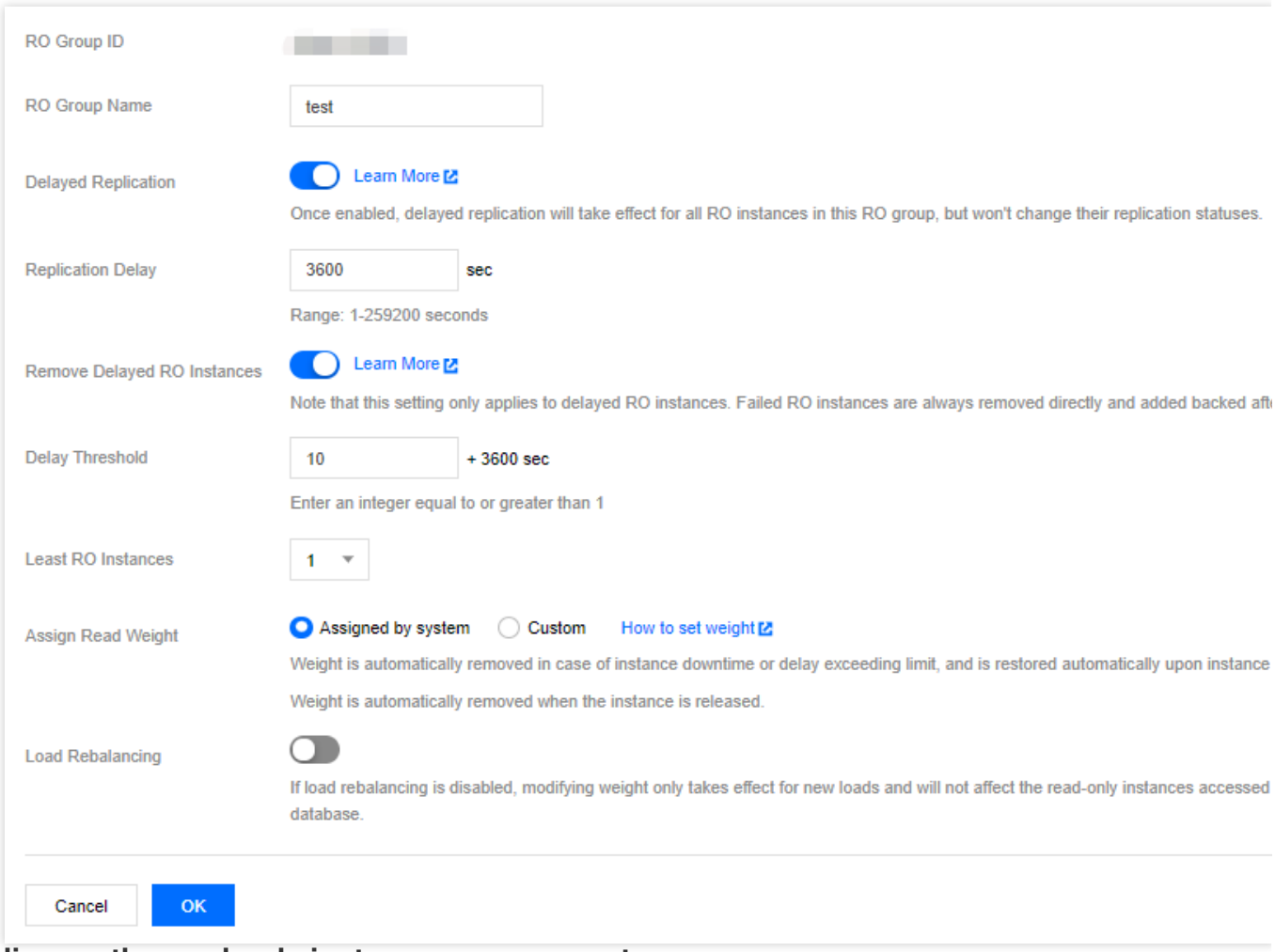

Enabling on the read-only instance management page

1. Log in to the TencentDB for MySQL console. In the instance list, click a read-only instance ID or **Manage** in the **Operation** column to access the read-only instance details page.
2. On the read-only instance details page, click **Enable** in **Deployment Info** > **Delayed Replication**.

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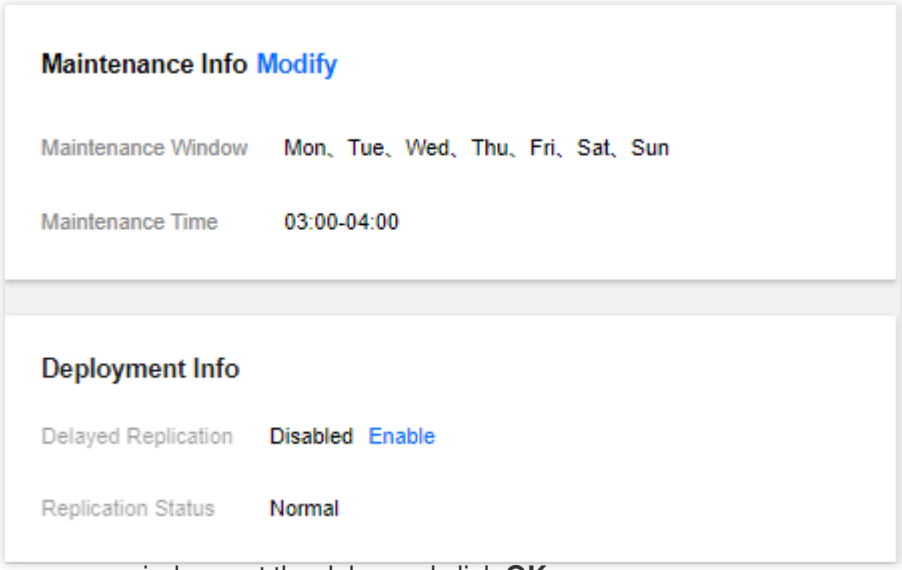
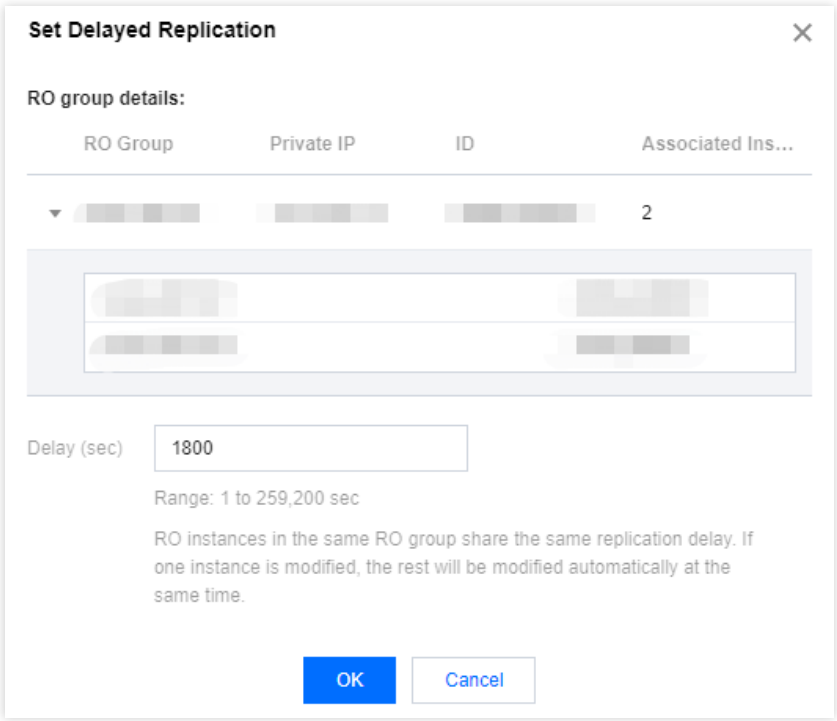


3. In the pop-up window, set the delay and click **OK**.

Note:

The delay ranges from 1 to 259,200 seconds.

Read-Only instances in the same RO group share the same replication delay. If one instance is modified, the rest will be modified automatically at the same time.



Modifying Delayed Replication

Modifying on the read-only instance's RO group configuration page

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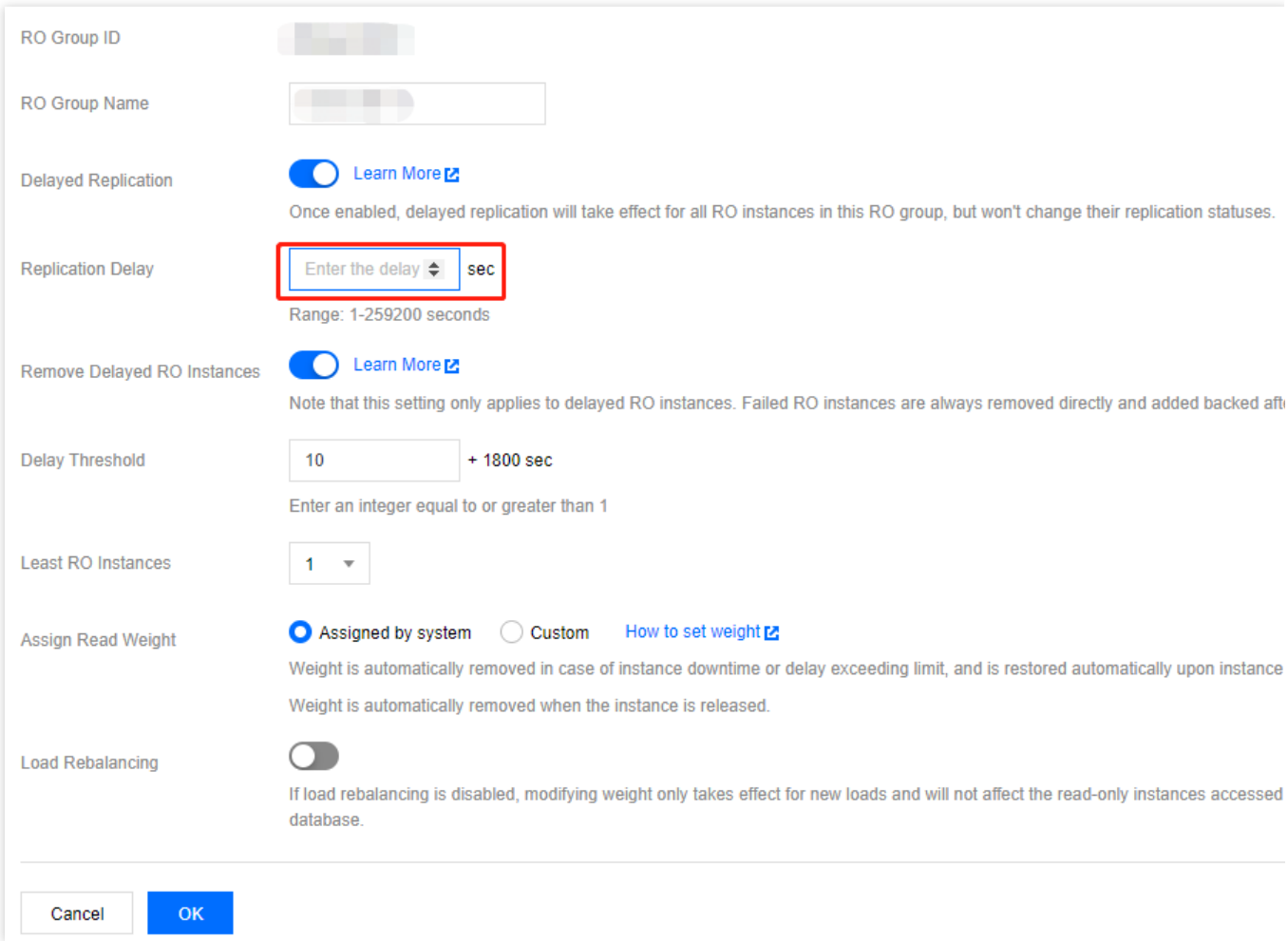
1. Log in to the TencentDB for MySQL console. In the instance list, click a source instance ID to enter the instance management page.
2. On the instance management page, select the **Read-Only Instance** tab, locate the desired RO group, and click **Configuration** to enter the RO group configuration page.
3. On the RO group configuration page, modify **Replication Delay** and click **OK**.



Modifying on the read-only instance management page

1. Log in to the TencentDB for MySQL console and click a read-only instance ID in the instance list to enter the read-only instance details page.
2. On the read-only instance details page, click **Modify** in **Deployment Info** > **Delayed Replication**.

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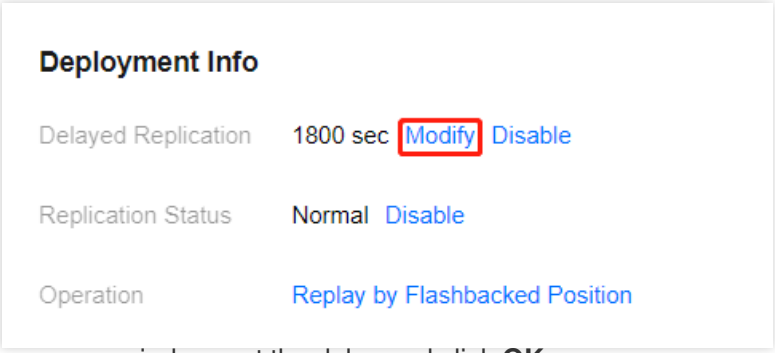

3. In the pop-up window, set the delay and click **OK**.

Disabling Delayed Replication

Disabling on the read-only instance's RO group configuration page

1. Log in to the TencentDB for MySQL console. In the instance list, click a source instance ID to enter the instance management page.
2. On the instance management page, select the **Read-Only Instance** tab, locate the desired RO group, and click **Configuration** to enter the RO group configuration page.
3. On the RO group configuration page, click **Delayed Replication** and click **OK**.

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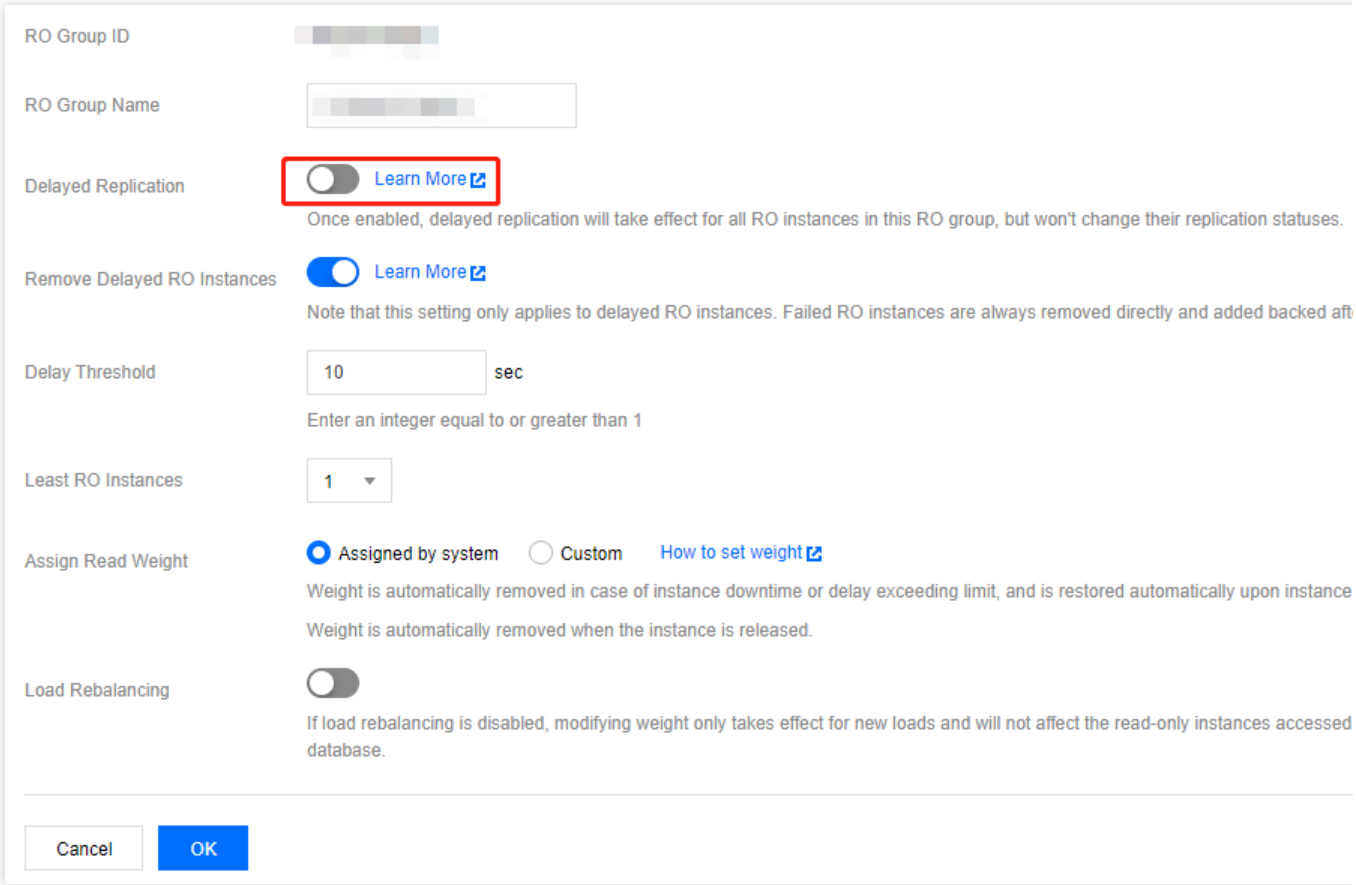
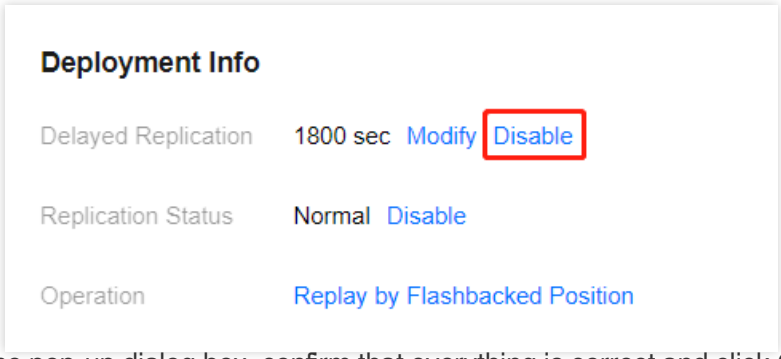


Disabling on the read-only instance management page

1. Log in to the TencentDB for MySQL console and click a read-only instance ID in the instance list to enter the read-only instance details page.
2. On the read-only instance details page, click **Disable** in **Deployment Info** > **Delayed Replication**.



3. In the pop-up dialog box, confirm that everything is correct and click **OK**.

Note:

If delayed replication is disabled, the delayed replication time will be 0 seconds, that is, real-time data sync is resumed between the read-only instance and its source instance. >

Enabling Data Replication

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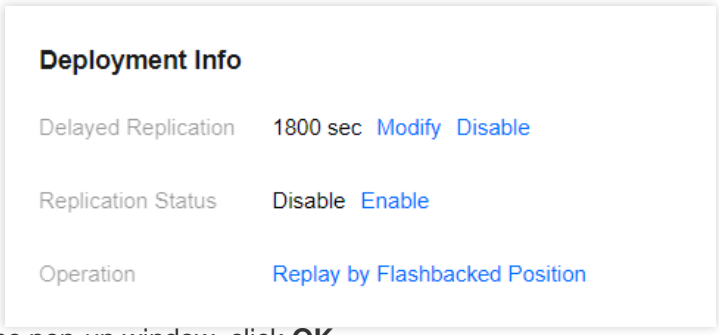
Note:

The **Replication Status** of a read-only instance is **Normal** by default. If you set delayed replication and delete data accidentally during the delayed replication time period, you can restore the read-only instance to the specified position or GTID of the binlog file to implement quick data restoration.

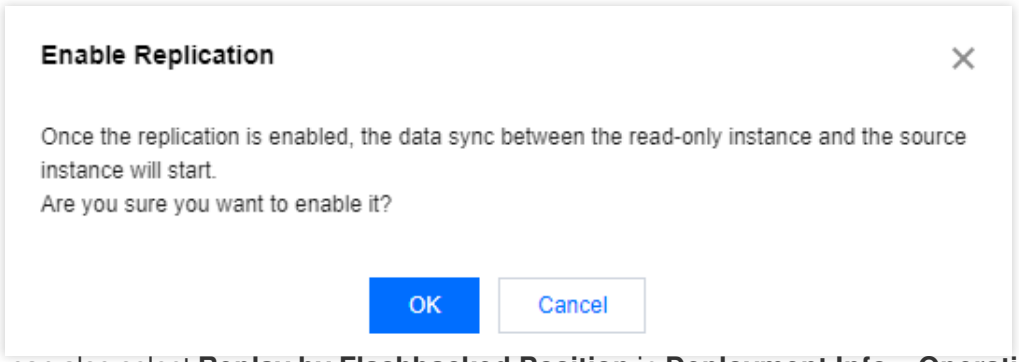
1. Log in to the TencentDB for MySQL console and click a read-only instance ID in the instance list to enter the read-only instance details page.
2. On the read-only instance details page, click **Enable** in **Deployment Info** > **Replication Status**.



3. In the pop-up window, click **OK**.

Note:

Once the replication is enabled, the data sync between the read-only instance and the source instance will resume.



4. You can also select **Replay by Flashbacked Position** in **Deployment Info** > **Operation**. Then, data can be restored to the specified time point or corresponding GTID. After the restoration, replication of the read-only instance will be disabled until the start mode is switched to **Replicate all**.

Time: You can select a time point between the replication end time and the current time of the source instance.

GTID: You can select all logs after the binlog not applied. If GTID is selected, data will be replicated until the specified GTID is reached.

The length of instance `server_uuid` is fixed at 36 bits, and the GTID must be in `server_uuid:transaction_id` format.

Note:

If the entered binlog position has already been applied on the read-only instance or is after the source instance position, replication will fail to be enabled.

When you enable replication, if there is any breakpoint in the binlog, replication will fail to be enabled.

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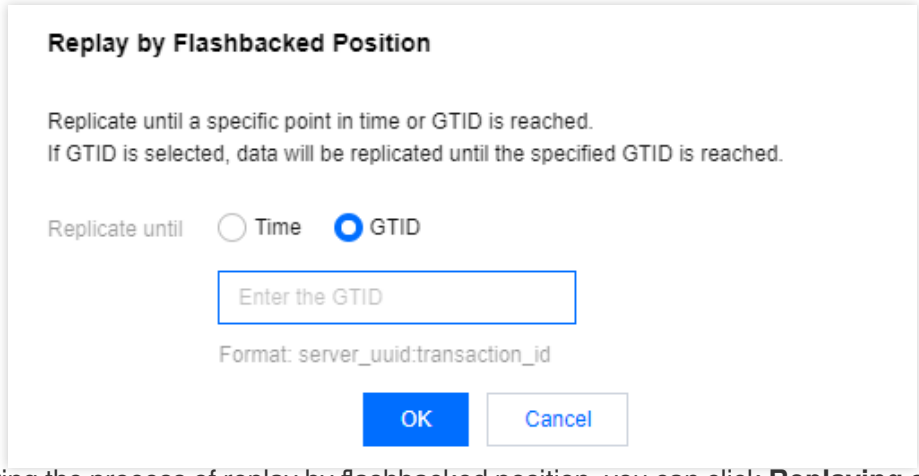
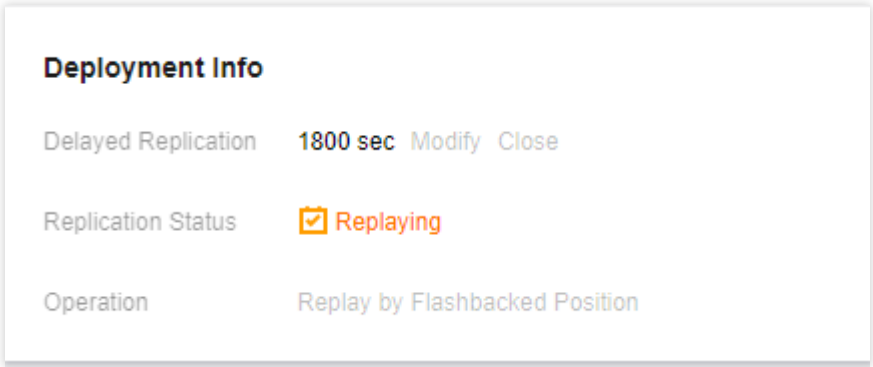
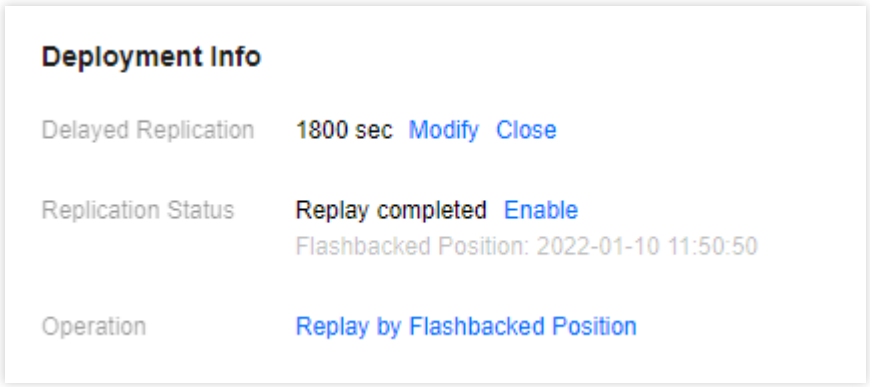
To avoid overusing the disk space of a delayed read-only instance when replication is disabled for it, the I/O thread of the read-only instance will be paused when its available disk space drops below 5 GB.



5. During the process of replay by flashbacked position, you can click **Replaying** after **Replication Status** to query and refresh the task details.



6. After the replication is completed, click **Enable** after **Replication Status**, and the read-only instance can continue to replicate.



Disabling Data Replication

Note:

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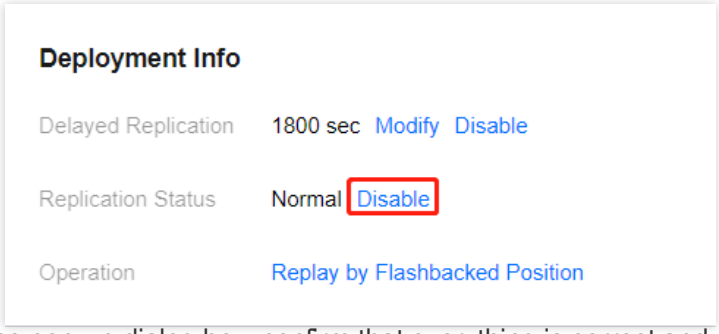
Only after delayed replication is enabled can it be disabled; otherwise, the **Disable** button is grayed out.
Once replication is disabled, I/O and SQL threads will also be ended.
1. Log in to the TencentDB for MySQL console and click a read-only instance ID in the instance list to enter the read-only instance details page.
2. On the read-only instance details page, click **Disable** in **Deployment Info** > **Replication Status**.



3. In the pop-up dialog box, confirm that everything is correct and click **OK**.

FAQs

How do I get the GTID?

We recommend you run the `flush log` command to get the binlog file to locate the position and GTID of the maloperation.

How do I view the delay?

You can view the delay between a read-only instance and its source instance on the instance details page in the console.

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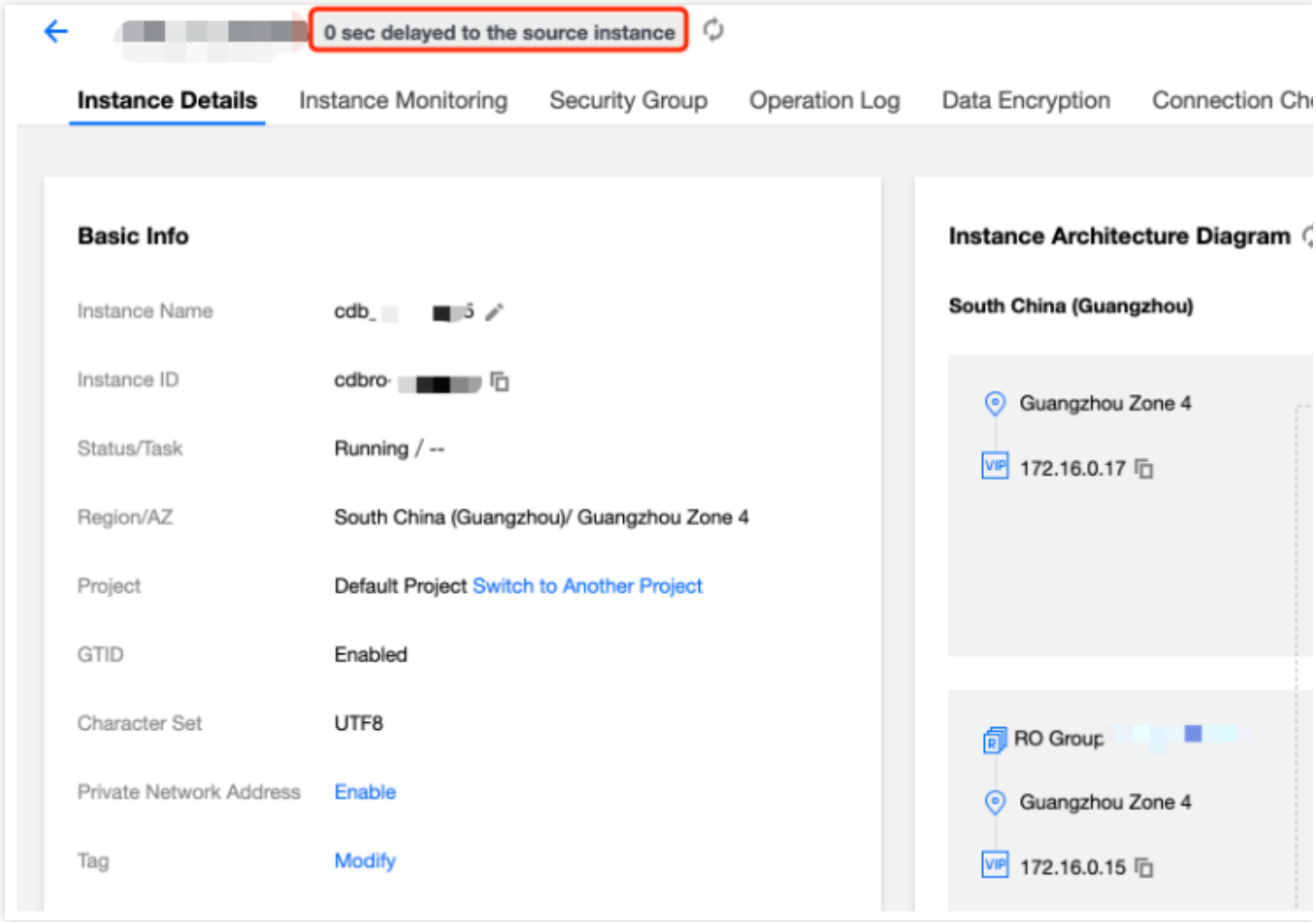

How do I view the task information of replay by flashbacked position?

You can view the task progress and details on the task list page in the console.

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Managing Disaster Recovery Instance

Last updated：2024-06-18 16:12:14

Overview

For applications with high requirements of service continuity, data reliability, and compliance, TencentDB for MySQL provides cross-region disaster recovery instances to help enhance your capability to deliver continued services at low costs and improve data reliability.

Note:

A disaster recovery instance costs the same as the source instance associated with it. For more information, see Product Pricing.

Features

With a separate database connection address, a disaster recovery instance can offer read access capability for various scenarios such as nearby access and data analysis with lower costs of device redundancy.

Its highly available source/replica architecture helps avoid single points of failure for databases.

Data is synced over a private network with lower latency and higher stability compared to public network.

The traffic of data sync over the private network is currently free of charge during the promotion period. Start date of charging for commercial purpose is subject to further notice.

How it works

If a TencentDB instance is used as a disaster recovery database, this instance will be the backup of the source instance.

When any change takes place in the source instance, the log information recording the change will be copied to the disaster recovery instance and then data sync will be implemented through log replay.

If any failure occurs in the source instance, the disaster recovery instance can be activated in seconds to provide full read/write capability.

Feature limits

Disaster recovery instances cannot be created for single-node instances of the cloud disk edition.

The primary instance can support up to 4 disaster recovery instances.

Only supports specifications of 1 GB memory, 50 GB hard disk and above, and MySQL 5.6 or later versions (MySQL 5.6 needs to submit the ticket to use this feature), and the primary instance of the InnoDB engine with high availability edition can purchase disaster recovery instances. If the primary instance is below this specification, please upgrade it first.

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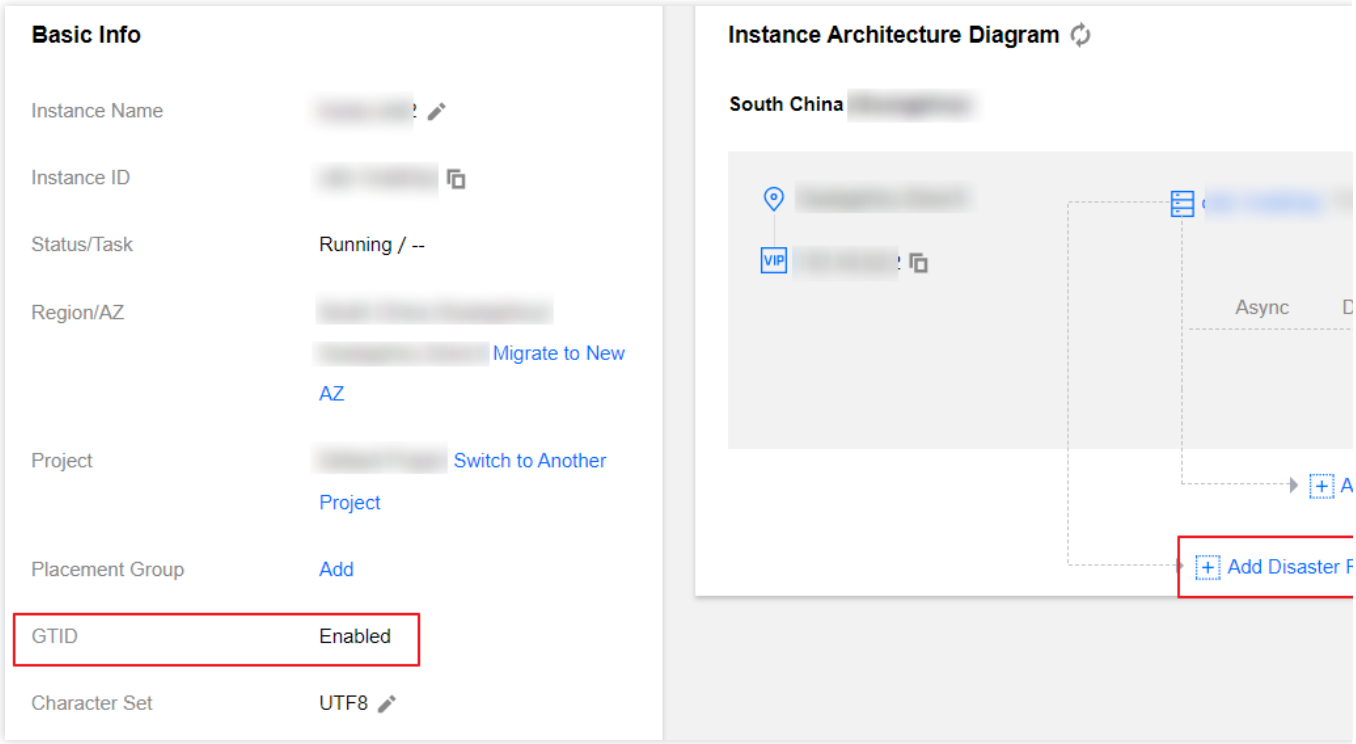
The minimum specification of a disaster recovery instance is 1 GB memory and 50 GB disk capacity and must be at least 1.1 times the storage capacity used by the source instance.
Disaster recovery instance does not support the following features: transferring project, rollback, SQL operation, changing character set, account management, changing port, data import, rollback log, and read-only instance.

Creating a disaster recovery instance

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to access the details page.
2. Make sure that the GTID feature is enabled by viewing the basic information of the instance on the **Instance Details** page. Click **Add Disaster Recovery Instance** in the instance architecture diagram to enter the disaster recovery instance purchase page.



3. On the purchase page, set basic information of the disaster recovery instance such as **Billing Mode** and **Region**.
Note:
The time required to complete the creation depends on the amount of data, and no operations can be performed on the source instance in the console during the creation. We recommend you do so at an appropriate time.
If the sync policy is **Sync Now**, the data will be synced immediately when the disaster recovery instance is created. Only the data of the entire instance can be synced. Make sure that the disk space is sufficient.
You need to ensure that the source instance is in the running state and none of configuration adjustment tasks, restart tasks, and other modification tasks are executed. Otherwise, the sync task may fail.

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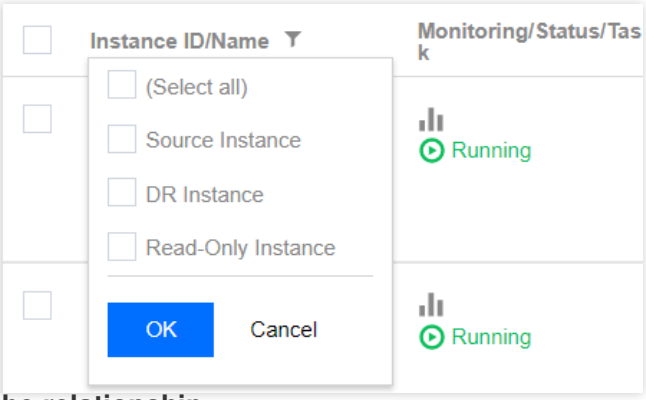
4. After confirming that everything is correct, click **Buy Now** and wait for the delivery of disaster recovery instance.
5. Return to the instance list. After the status of the instance changes to **Running**, it can be used normally.

Managing a disaster recovery instance

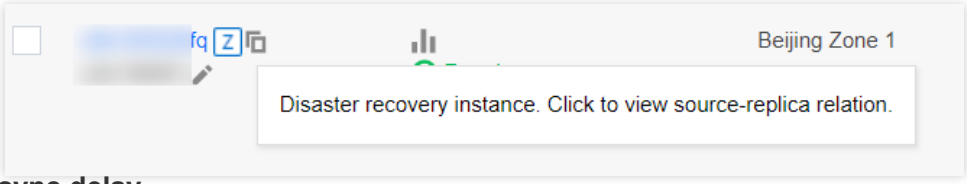
View a disaster recovery instance

A disaster recovery instance can be viewed from the region where it resides. You can use the instance list to filter out all instances in a specific region.



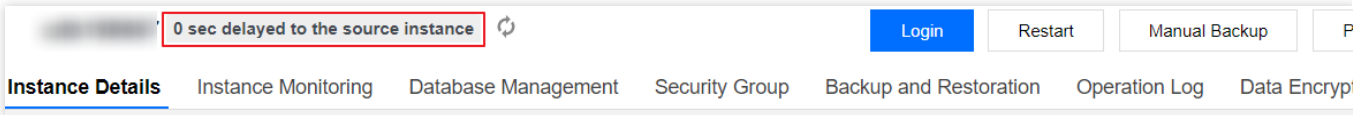
View the relationship

Click the icon on the right of a disaster recovery instance or source instance to view their relationship.



View sync delay

View the sync delay between the source instance and the disaster recovery instance at the top of the **Instance Details** page of the disaster recovery instance.



Disaster recovery instance features

A disaster recovery instance has various features, such as instance details, instance monitoring, database management, security group, and backup and restoration.

Promoting a disaster recovery instance to a source instance

You can promote a disaster recovery instance to source instance in the console as needed.

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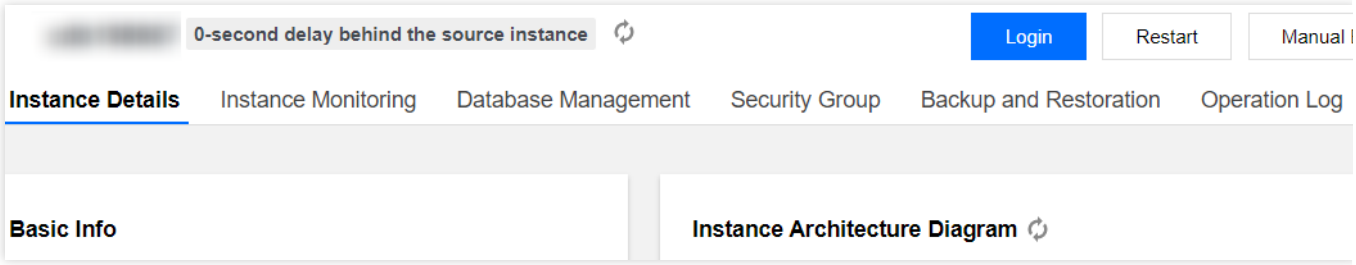
Note:

After the disaster recovery instance is promoted to source instance, it will replace the original one as the new source instance to continue your business, and its access address will change. Therefore, you need to update the new address for your business.

After the promotion, the sync link to the original source instance will be disconnected and cannot be reconnected. You must exercise caution with this operation.

1. Log in to the TencentDB for MySQL console, click the ID of the disaster recovery instance to be promoted in the instance list, and access the instance management page.
2. Click **Promote to Source Instance** in the top-right corner to promote the disaster recovery instance to source instance. After the promotion, the sync link with the original source instance will be disconnected, so that the promoted instance can get data write capability and full MySQL functionality.



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Database Proxy Overview

Last updated：2024-02-23 10:18:00

This document introduces the related features of the TencentDB for MySQL database proxy.

Document Overview

Database Proxy		Description	Documented Guidance
Overview	Database Proxy Overview	Introducing the use cases of the database proxy, along with its proxy features and more.	Database Proxy Overview
	Use Limits	Introducing the use limits for database proxy and the versions supported by various capabilities.	Use Limits
Kernel Features	Kernel Minor Version Release Notes	Introducing the viewing method and the update history of the database proxy's minor kernel version.	Kernel Minor Version Release Notes
	Upgrading Kernel Minor Version of Database Proxy	Certain features require a higher kernel version for the database proxy. In instances where it is not sufficient, you can obtain methods on how to upgrade the kernel version from this document.	Upgrading Kernel Minor Version of Database Proxy
Managing Database Proxy	Enabling Database Proxy	Introducing the prerequisites, use limits, and directions of the database proxy.	Enabling Database Proxy
	Setting Database Proxy Access Address	Introducing how to modify, add, or delete database proxy access addresses after activating the database proxy.	Setting Database Proxy Access Address
	Viewing and Modifying Access Policy	Introducing how to view and modify the access policy of the database proxy access address after activating the database proxy.	Viewing and Modifying Access Policy
	Adjusting Database Proxy Configuration	Introducing the operations involved in adjusting the proxy configuration (node specifications/quantity, availability zone) after activating the database proxy.	Adjusting Database Proxy Configuration

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	Switching Database Proxy Network	Introducing the procedure of altering the network connection address of the database proxy after activating the database proxy.	Switching Database Proxy Network
	Viewing Database Proxy Monitoring Data	Introducing how to view each database proxy node's connections, requests, CPU usage, memory usage, and more after activating the database proxy.	Viewing Database Proxy Monitoring Data
	Load Rebalancing	Introducing the manual operation of Cloud Load Balancer when there is an imbalance of load after activating the database proxy on each proxy node.	Load Rebalancing
	Disabling Database Proxy	Introducing the procedure for disabling the database proxy.	Disabling Database Proxy
Transaction Split Feature		Introducing the transaction split feature of the database proxy.	Transaction Split Feature
Momentary Disconnection Prevention Feature		Introducing the momentary disconnection prevention feature of the database proxy.	Momentary Disconnection Prevention Feature
Automatic Read/Write Separation Feature	Automatic Read/Write Separation Overview	Introducing the automatic read/write separation feature of the database proxy.	Automatic Read/Write Separation Overview
	Configuring Database Proxy Read-Write Attributes	Introducing the procedures for configuring the read/write attributes of the database proxy connection address after activating the database proxy.	Configuring Database Proxy Read-Write Attributes
Connection Pool Feature	Connection Pool Overview	Introducing the connection pool feature of database proxy.	Connection Pool Overview
	Enabling and Disabling the Connection Pool Feature	Introducing how to enable and disable the connection pool feature after activating the database proxy.	Enabling and Disabling the Connection Pool Feature
Other Features	Hint Syntax Usage	Introducing the Hint syntax usage in the database proxy.	Hint Syntax Usage

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Overview

Database Proxy Overview

Last updated：2024-07-22 14:56:11

This document describes the new version of the TencentDB for MySQL database proxy.
Database proxy is a network proxy service between the TencentDB service and the application service. It is used to proxy all requests when the application service accesses the database.
The database proxy access address is independent of the original database access address. Requests arriving at the proxy address are all relayed through the proxy cluster to access the source and replica nodes of the database.
Read/Write requests are separated, so that read requests are forwarded to read-only instances, which lowers the load of the source database. This implements high availability, high performance, and Ops support.
TencentDB for MySQL database proxy also provides advanced features such as automatic read/write separation, transaction split, connection pool, cross-AZ read-only instance mounting, and enabling multiple proxy addresses.

Billing

Currently, database proxy is in beta test free of charge.

Use cases

Businesses with low performance when there is a large number of non-persistent connections.
Businesses that use multiple read-only instances with read/write separation is implemented manually on applications, resulting in higher maintenance costs and risks.
High instance loading caused by too many connections.
High source instance load due to a large number of requests in the transaction.
Businesses that need to be assigned different loads through the access address.
Nearby access in cross-AZ deployment for reduced latency.

Read-write attribute

Each database proxy address can have its own read-write attribute.
Read/Write: Supports read/write separation to implement linear business scaling.
This attribute contains at least one source instance and one read-only instance, and write requests are sent to the

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source instance only. It supports read/write separation features such as transaction split and connection pool as well as policies such as **Remove Delayed RO Instances**, **Least RO Instances**, and **Failover**.

Read-Only: Supports read-only businesses like reports.

This attribute contains at least one read-only instance, and the source instance is not involved in routing. It supports features such as transaction split and connection pool as well as policies such as **Remove Delayed RO Instances** and **Least RO Instances**.

Features

High stability

The database proxy is deployed in the cluster architecture, with multiple nodes ensuring smooth failover.

High availability

The database proxy adopts cross-AZ deployment to improve its availability.

Strong isolation

The database proxy provides the proxy service for the current instance with independent resources. The resources of each proxy are isolated and not shared.

Ultra-high performance

Each proxy can process up to 100,000 requests per second.

Convenient and fast scaling

You can dynamically add 1–60 proxy nodes, with only 6 nodes supported during the beta test.

Comprehensive performance monitoring

Performance metrics are monitored at the second level, such as the number of read/write requests, CPU, and memory. The number of proxies can be adjusted according to the monitoring data as described in Viewing Database Proxy Monitoring Data and business planning.

Hot reload

If the source instance is switched, has configuration adjustment, or has read-only instances added or removed, the database proxy can dynamically hot load the configuration without causing network disconnections or restarts.

Automatic read/write separation

Enabling the read/write attribute of the database proxy address can effectively reduce the read load of the source instance. Read-only instances can be added to horizontally scale the database cluster and automatically implement read/write separation, which eliminates the complexity of manually separating read and write requests of the business. This is especially suitable for scenarios with a high read load.

For example, only one proxy connection address needs to be configured in the application (when **Read-Write Attribute** is set to **Read/Write Separation**), and this address will automatically implement read/write separation and send read requests to read-only instances and write requests to the source instance. Even if you add or remove read-only instances, you don't need to adjust the application settings.

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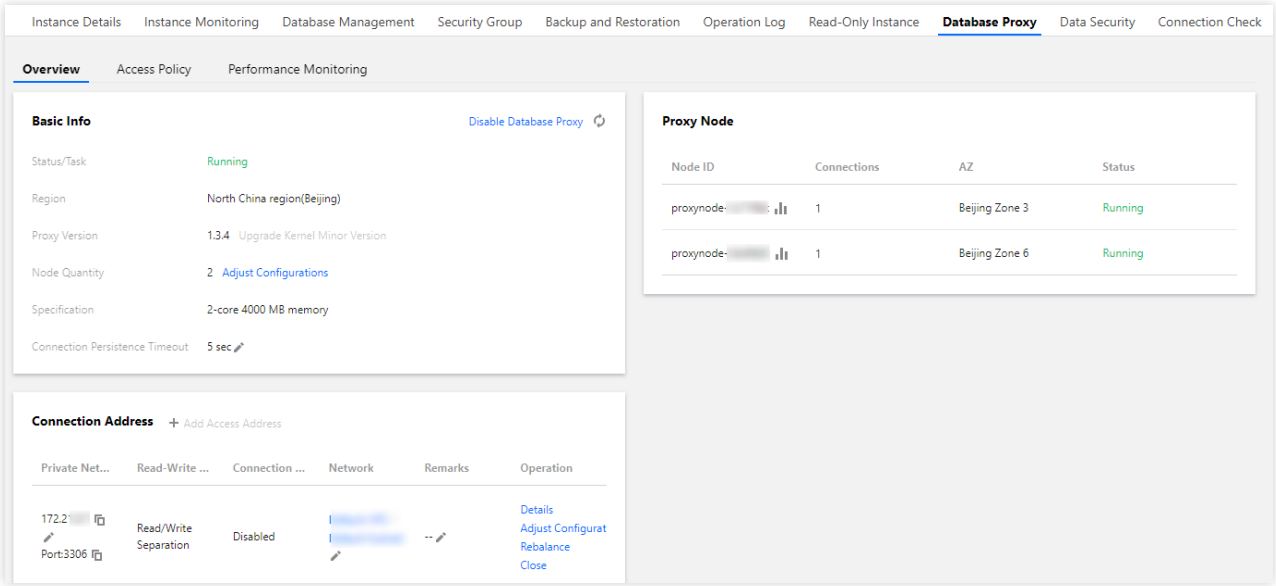
Connection pool

This feature can mitigate excessively high instance loads caused by too many connections or frequent new connections in non-persistent connection businesses.

Transaction split

This feature separates reads and writes in one transaction to different instances for execution and forwards read requests to read-only instances to reduce the load of the source instance.

Feature page



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Use Limits

Last updated：2024-07-22 14:56:35

This document describes the use limits for the TencentDB for MySQL database proxy.

When using the proxy connection address, if you don't enable transaction split, transaction requests will be routed to the source instance.

The database proxy supports cross-AZ configuration. The number of selectable AZs depends on how many AZs are available in the current region. You can select up to three AZs. If only one AZ can be selected, there is only one available AZ in the region.

You can create multiple database proxy addresses, the number of which is the same as that of proxy nodes.

When a proxy connection address is used to implement read/write separation, the consistency of non-transactional reads is not guaranteed. If your business requires read consistency, you can encapsulate it into transactions or use the hint syntax.

When a proxy connection address is used, `show processlist` will merge the results of all nodes before returning them.

For the `PREPARE` statement, the database proxy will first send `PREPARE` to all nodes. When a subsequent `EXECUTE` request comes in, it will determine the execution route according to the prepared statement type. For example, if a write statement is prepared, it will send the statement to the source database during execution, and if a non-transactional read statement is prepared, it will send the statement to a read-only instance.

After a business connection arrives at the database proxy, the proxy will connect to the source instance and all configured read-only instances. The proxy itself does not have a limit on the maximum number of connections, which is mainly subject to the maximum number of connections of the backend database instance. The smallest value of this parameter of the source and read-only instances will affect the business performance.

After the database proxy is enabled, when a read-only instance is added or restarted, only new connection requests will be routed to it. You can view the performance metrics of each proxy node through the overview or performance monitoring as described in Viewing Database Proxy Monitoring Data. If you find that the numbers of connections on the nodes are unbalanced, you can distribute the connections through rebalancing.

Versions supported for different database proxy capabilities:

Cross-AZ configuration: Proxy v1.3.1 or later.

Connection persistence timeout: Proxy v1.2.1 or later.

Connection pool: Proxy v1.2.1 or later.

Transaction split: Proxy v1.3.1 or later.

Connection address adding: Proxy v1.3.1 or later.

Note:

For more information on how to upgrade the proxy, see Upgrading Kernel Minor Version of Database Proxy.

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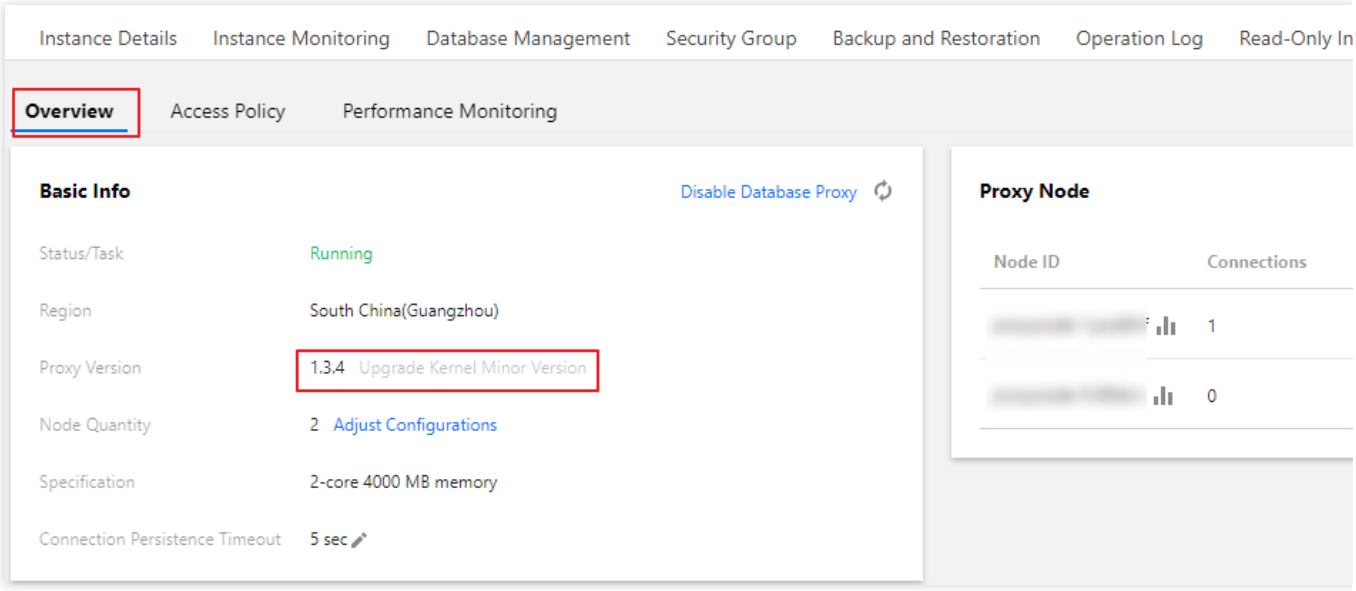
Database Proxy Kernel Features
Kernel Minor Version Release Notes

Last updated：2024-07-22 14:57:27

This document describes the kernel version updates of the TencentDB for MySQL database proxy.

Viewing the database proxy version

You can view the version in **Overview** > **Proxy Version** on the Database Proxy tab.



Version upgrade description

Note:

For more information on the kernel version updates of the TencentDB for MySQL database proxy, see Kernel Version Release Notes > Database Kernel Version Release Notes.

If the MySQL kernel version requirements are not met, you can upgrade the kernel version of your database first as instructed in Upgrading Kernel Minor Version.

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Upgrading Kernel Minor Version of Database Proxy

Last updated：2024-07-22 14:57:50

This document describes how to manually upgrade the kernel minor version of the database proxy in the console.

Prerequisite

You have enabled the database proxy. For more information, see Enabling Database Proxy.

Notes

There will be a momentary disconnection when you upgrade the kernel minor version of the database proxy. Therefore, upgrade the version during off-peak hours and make sure that your application has an automatic reconnection mechanism.
If the upgrade fails, the reason may be that the kernel minor version of the database is earlier than 20211031. You need to upgrade the kernel minor version of the database before upgrading the kernel version of the database proxy. For more information, see Upgrading Kernel Minor Version

Directions

1. Log in to the TencentDB for MySQL console. Select the region at the top and click the target instance ID to enter the instance management page.
2. On the instance management page, select the **Database Proxy** tab.
3. In **Overview** > **Basic Info** > **Proxy Version** on the **Database Proxy** tab, click **Upgrade Kernel Minor Version**.

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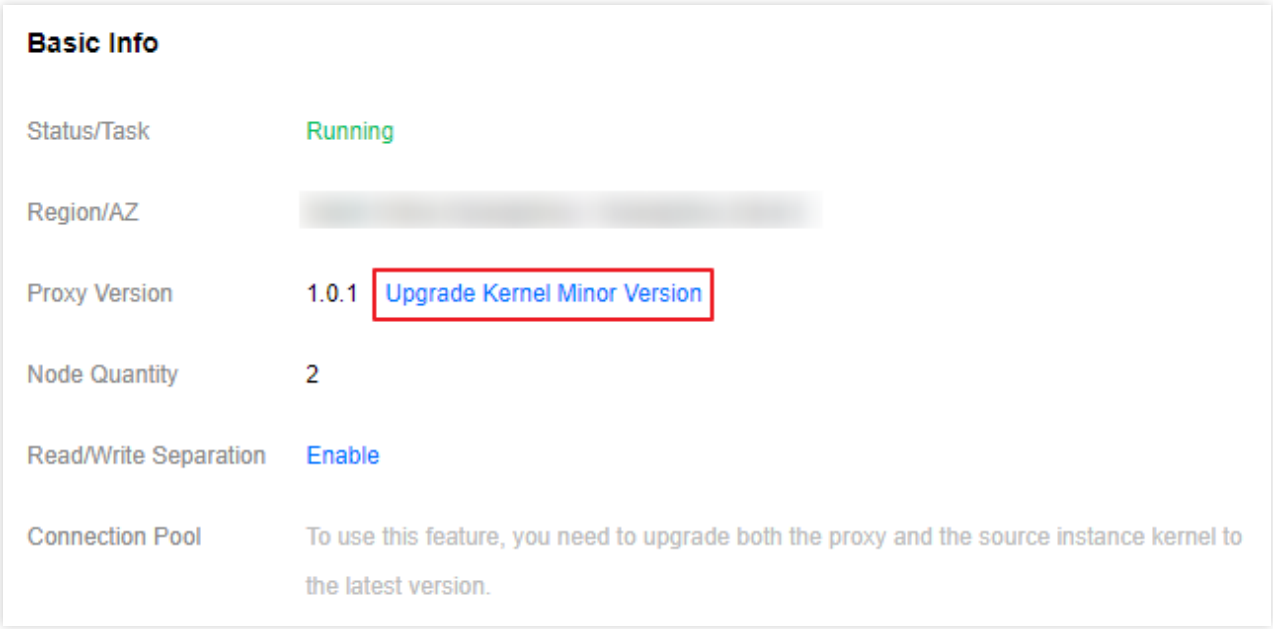

4. In the pop-up window, check the target version and select the upgrade switch time. After confirming that everything is correct, click **OK**.

Switch Time:

During maintenance time: The upgrade will be performed during the maintenance time, which can be modified on the instance details page.

Upon upgrade completion: The upgrade will be performed immediately after the upgrade operation is confirmed.

Note:

There will be a momentary disconnection during upgrade. Therefore, make sure that your business has a reconnection mechanism.

Except for abnormal nodes, all nodes are upgraded at the same time by default during the kernel minor version upgrade.

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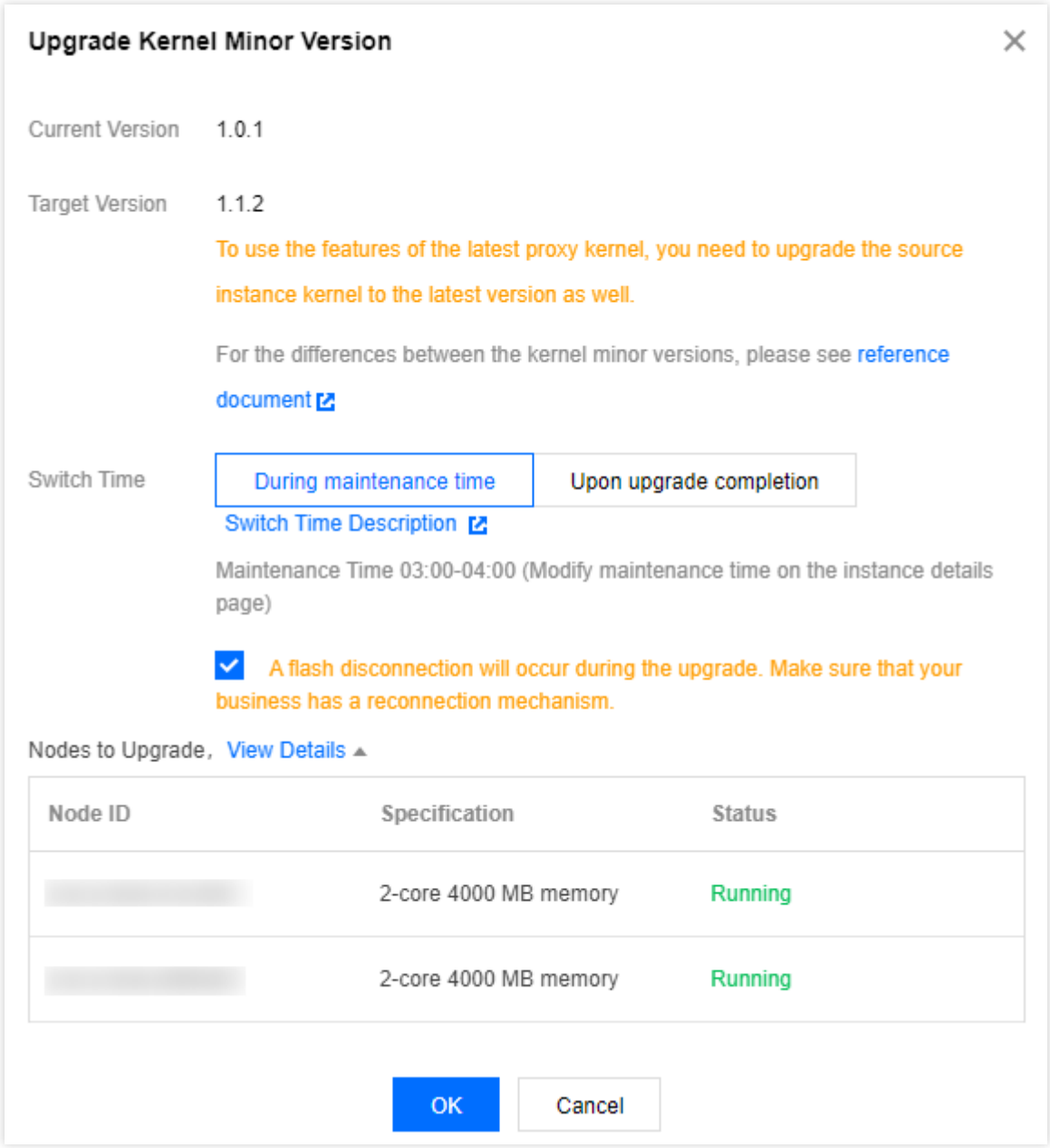

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Database Proxy Management
Enabling Database Proxy

Last updated：2023-09-13 15:50:55

This document describes how to enable database proxy in the TencentDB for MySQL console.
Database proxy is a network proxy service between the TencentDB service and the application service. It is used to proxy all requests when the application service accesses the database. It provides advanced features such as automatic read/write separation, connection pool, and connection persistence and boasts high availability, high performance, Ops support, and ease of use.

Prerequisite

The instance is running on the two-node or three-node architecture.

Note

Database proxy currently is supported in the following regions:
Beijing (except Zones 1, 2, and 4), Shanghai (except Zone 1), Guangzhou (except Zones 1 and 2), Shanghai Finance (except Zones 1 and 2), Beijing Finance, Chengdu, Chongqing, Nanjing, and Hong Kong (China) (except Zone 1).
Tokyo (except Zone 1), Bangkok (except Zone 1), Virginia (except Zone 1), Silicon Valley (except Zone 1), Mumbai (except Zone 1), Seoul (except Zone 1), and Singapore (except Zones 1 and 2).
Database proxy currently is supported on the following versions: two-node and three-node MySQL 5.7 (with kernel minor version 20211030 or later) and three-node MySQL 8.0 (with kernel minor version 20211202 or later). If you upgrade the kernel minor version of the source instance, the associated read-only and disaster recovery instances will be upgraded at the same time. For more information, see Upgrading Kernel Minor Version.

Directions

1. Log in to the TencentDB for MySQL console. In the instance list, select the source instance for which to enable database proxy and click its ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the instance management page, select the **Database Proxy** tab and click **Enable Now**.

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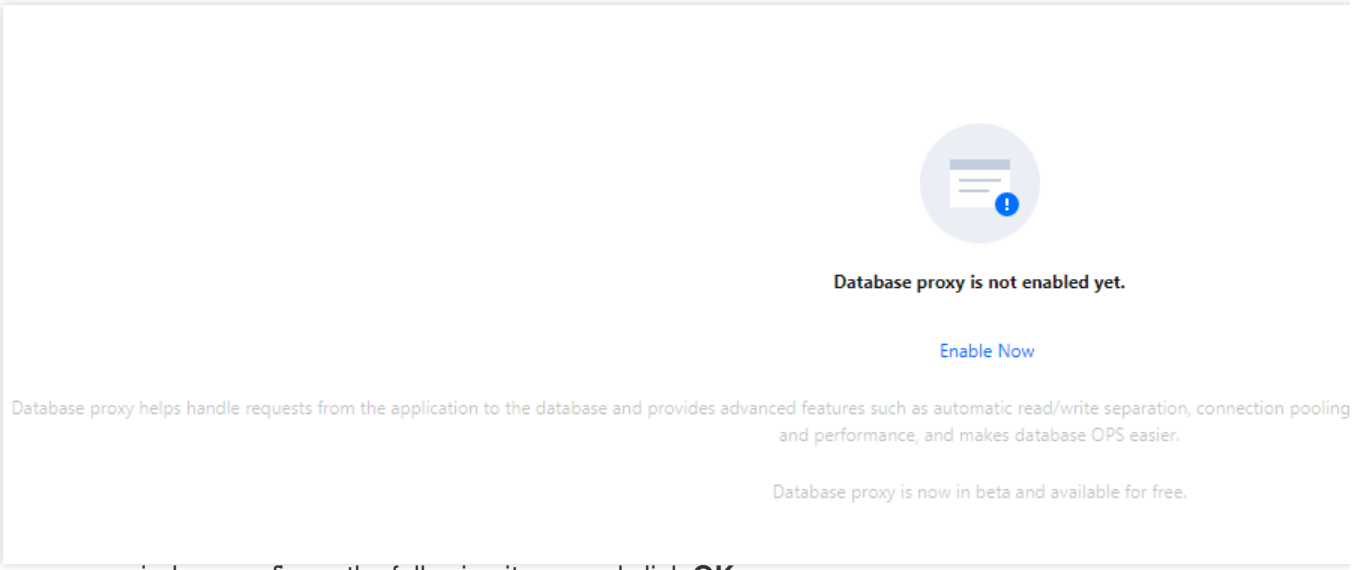

3. In the pop-up window, configure the following items and click **OK**.

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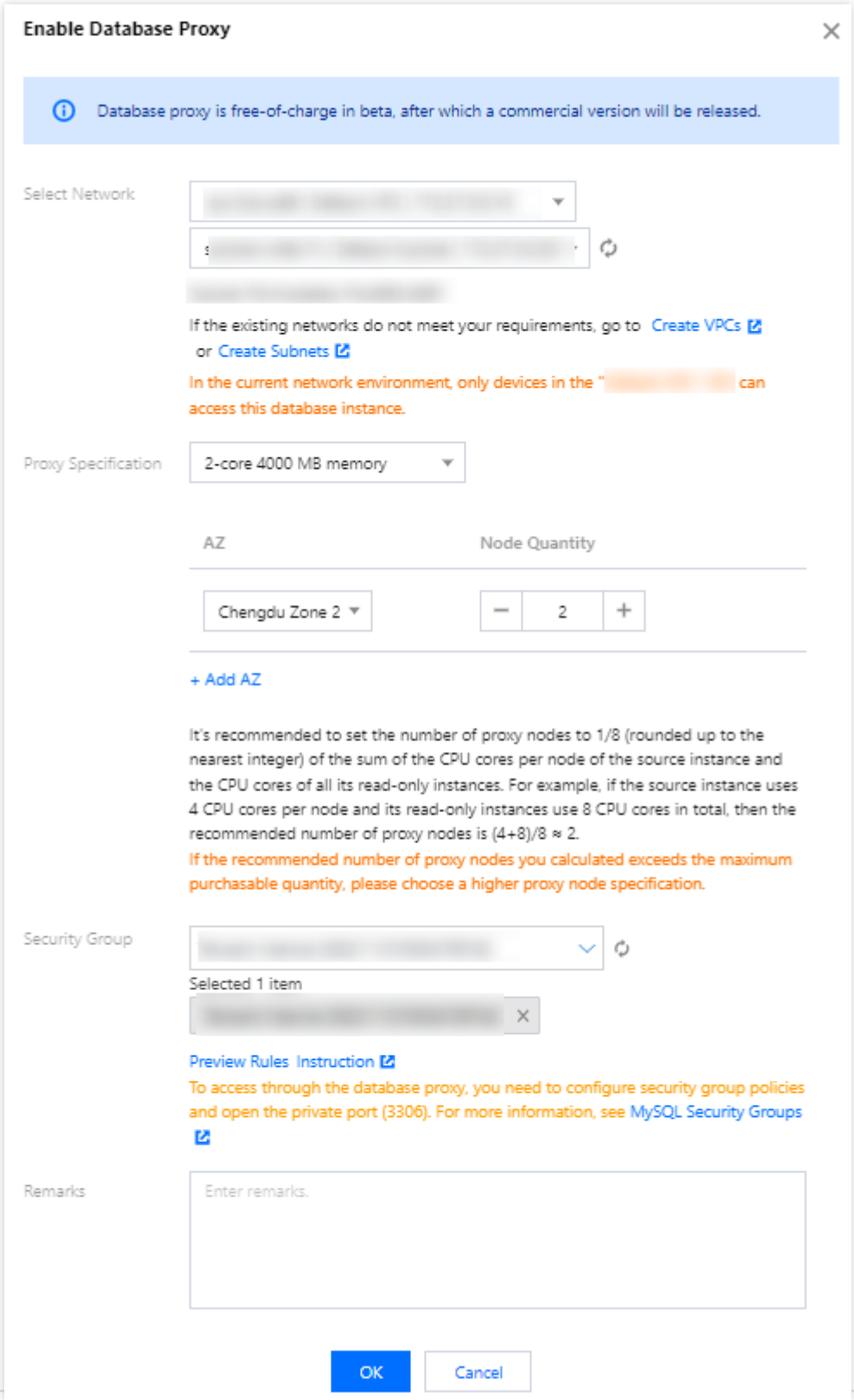

Parameter	Description
Network	Select the network of the database proxy, which can only be a VPC.
Proxy Specification	Select 2-core 4000 MB memory, 4-core 8000 MB memory, or 8-core 16000 MB memory.

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AZ and Node Quantity	1. Select the database proxy AZ. You can click **Add AZ** to add more AZs. The number of selectable AZs depends on how many AZs are available in the current region. You can select up to three AZs. 2. Select the number of nodes. We recommend that you set the quantity to 1/8 (rounded up) of the total number of CPU cores on the source and read-only instances; for example, if the source instance has 4 CPU cores, and the read-only instance has 8 CPU cores, then the recommended node quantity will be (4 + 8) / 8 ≈ 2. **Note** If the selected proxy and the source instance are not in the same AZ and you access the instance through the proxy, the write performance may be reduced. If the recommended number of proxy nodes you calculated exceeds the maximum purchasable quantity, choose a higher proxy node specification.
Security group	The security group of the source instance is selected by default. You can also select another existing security group or create a new one as needed. **Note** To access through the database proxy, you need to configure security group policies and open the private port (3306). For more information, see TencentDB Security Group Management.
Remarks	(Optional) Enter the remarks of the database proxy service to be enabled.

4. After successfully enabling the service, you can manage proxy nodes and view their basic information on the database proxy page. You can also modify the access address, network type, and remarks of the database proxy, view and adjust the connection configuration, and perform rebalance in the **Connection Address** section.

Note

You can view **Connections** in the proxy node list or view the performance monitoring data of each proxy node to check whether the numbers of connections on the nodes are unbalanced, and if so, you can distribute the connections by clicking **Rebalance**.

Rebalance will cause proxy nodes to restart, and the service will become unavailable momentarily during the restart. We recommend that you restart the service during off-peak hours. Make sure that your business has a reconnection mechanism.

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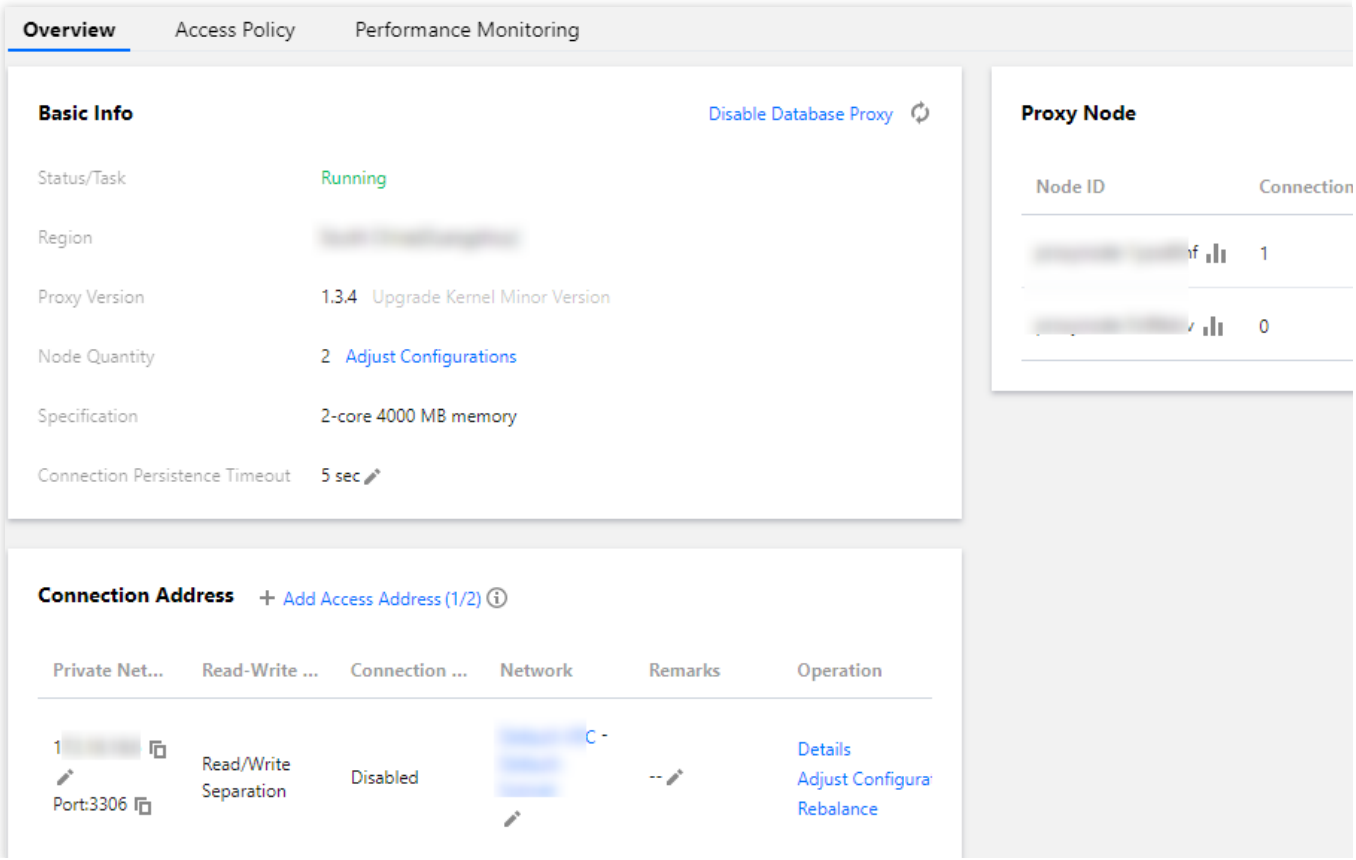

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Setting Database Proxy Access Address

Last updated：2024-07-22 15:16:55

This document describes how to set the database proxy connection address in the TencentDB for MySQL console. The database proxy connection address is independent of the original database connection address. Requests proxied at the proxy address are all relayed through the proxy cluster to the source and replica nodes of the database, so that read and write requests are separated, with reads being forwarded to read-only instances. In this way, the load of the source database is lowered.
After database proxy is enabled for TencentDB for MySQL, a database proxy connection address will be added by default, and you can also add, modify, or delete the connection address for database proxy.

Prerequisites

You have enabled the database proxy. For more information, see Enabling Database Proxy.

Modifying Database Proxy Connection Address

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column of the instance with the proxy enabled to enter the instance management page.
2. On the instance management page, select the **Database Proxy** tab and click the

icon next to **Private Network Access Address** on the **Connection Address** tab.

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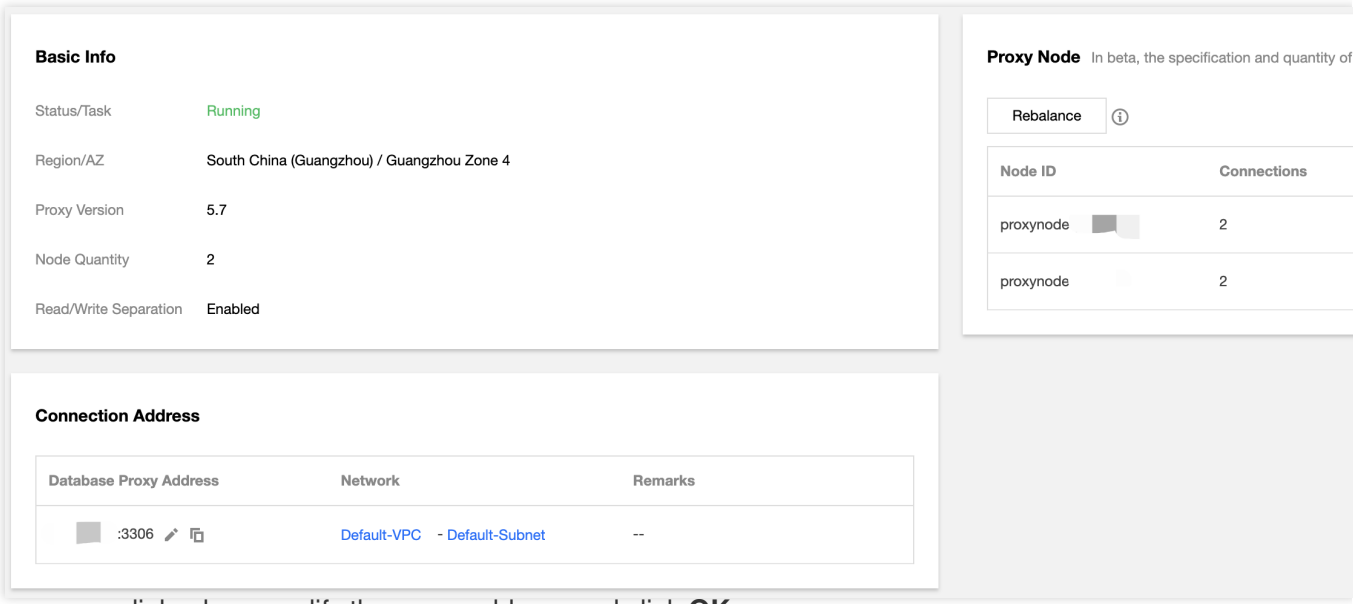
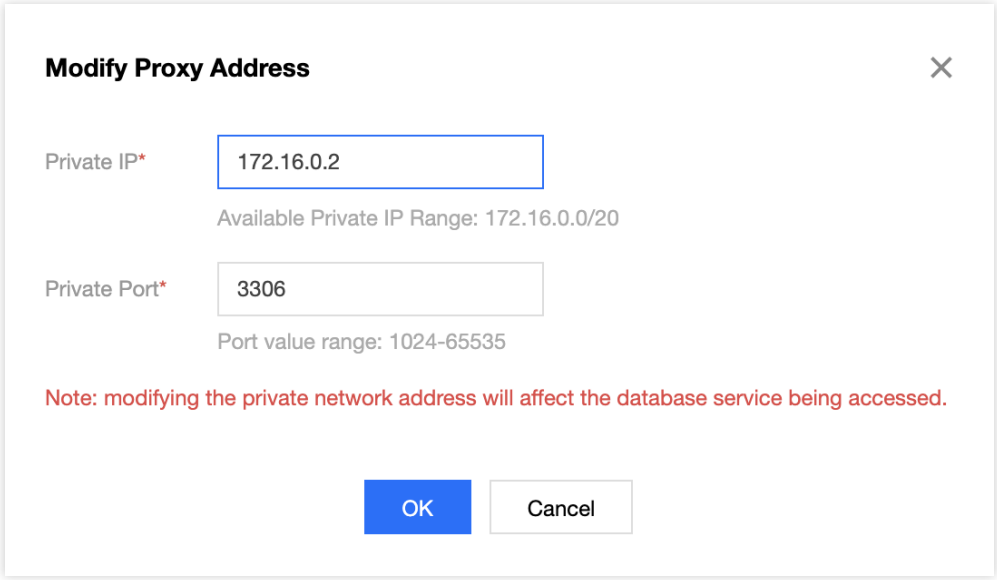


3. In the pop-up dialog box, modify the proxy address and click **OK**.

Note:

Modifying the proxy address affects the database business being accessed. We recommend you modify the address during off-peak hours. Make sure that your business has a reconnection mechanism.



Adding Database Proxy Connection Address

Note:

The number of connection addresses is the same as that of database proxy nodes.

An connection address will be created by default when the database proxy is enabled.

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column of the instance with the proxy enabled to enter the instance management page.

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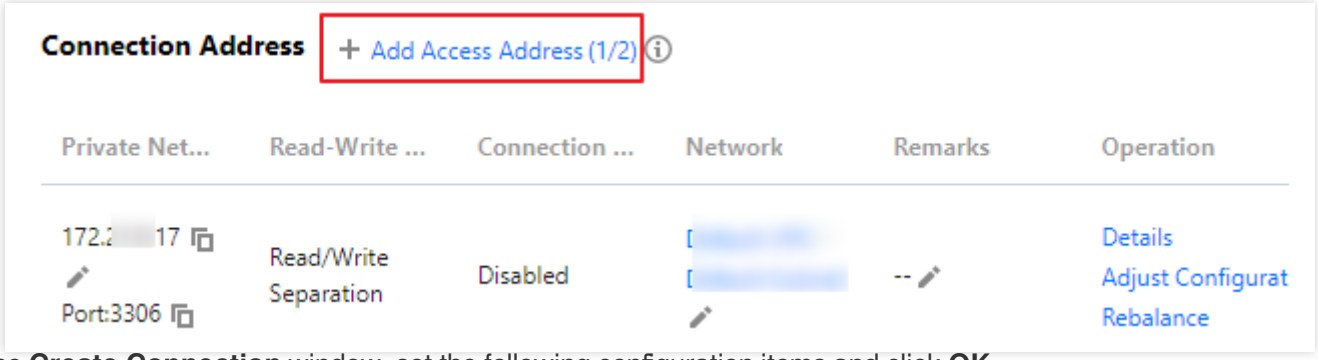
2. On the instance management page, select the **Database Proxy** tab, and click **Add Access Address** next to **Connection Address**.



3. In the **Create Connection** window, set the following configuration items and click **OK**.

Step 1. Configure a network

Parameter	Description
Network	Database proxy only supports VPC. You can choose to automatically assign or specify an address.
Security group	The security group of the source instance is selected by default. You can also select another or more existing security groups or create a new one as needed. **Note：** To access through the database proxy, you need to configure security group policies and open the private port (3306). For more information, see TencentDB Security Group Management.
Remarks	Optional. You can add remarks for the new database proxy connection address.

Step 2: Configure a policy

Parameter	Description
Read-Write Attribute	Select the read-write attribute of the proxy access address, which can be Read/Write Separation or Read-Only.
Remove Delayed RO Instances	Set the Remove Delayed RO Instances policy. After this option is enabled, you can set Delay Threshold and Least RO Instances. The system will try removing or restoring a failed read-only instance no matter whether this option is enabled. Delay Threshold: Enter an integer greater than or equal to 1 (in seconds). Least RO Instances: It is subject to the number of read-only instances owned by the source instance. If it is set to `0`, when all read-only nodes are removed, all read requests will be routed to the source instance until at least one of the removed read-only instances rejoins the database proxy to continue processing the read requests.
Connection Pool Status	The connection pool feature mainly mitigates the instance load caused by frequent new connections in non-persistent connection business scenarios. After this option is enabled,

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	you can select the supported connection pool type, which currently can only be the session-level connection pool by default.
Transaction Split	You can set whether to enable this feature. After it is enabled, reads and writes in one transaction will be separated to different instances for execution, and read requests will be forwarded to read-only instances to reduce the load of the source instance.
Assign Read Weight	You can select Assigned by system or Custom. If multiple AZs are configured when the database proxy is enabled, you can separately assign the weights of proxy nodes in different AZs.
Failover (with Read-Write Attribute being Read/Write Separation)	You can set whether to enable this feature. After it is enabled, if database proxy fails, the database proxy address will route requests to the source instance.
Apply to Newly Added RO Instances	You can set whether to enable this feature. After it is enabled, a newly purchased read-only instance will be automatically added to the database proxy. If Assign Read Weight is set to Assigned by system, newly purchased read-only instances will be assigned with the default weight based on their specification. If Assign Read Weight is set to Custom, when newly purchased read-only instances are added, their weights will be 0 by default, which can be modified by clicking Adjust Configurations in Connection Address on the Database Proxy tab.

Deleting Database Proxy Connection Address

Note:

If your database proxy has multiple connection addresses, you can delete unnecessary ones while keeping the last one.

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column of the instance with the proxy enabled to enter the instance management page.
2. On the instance management page, find the target address in **Database Proxy** > **Connection Address**, and click **Disable**.

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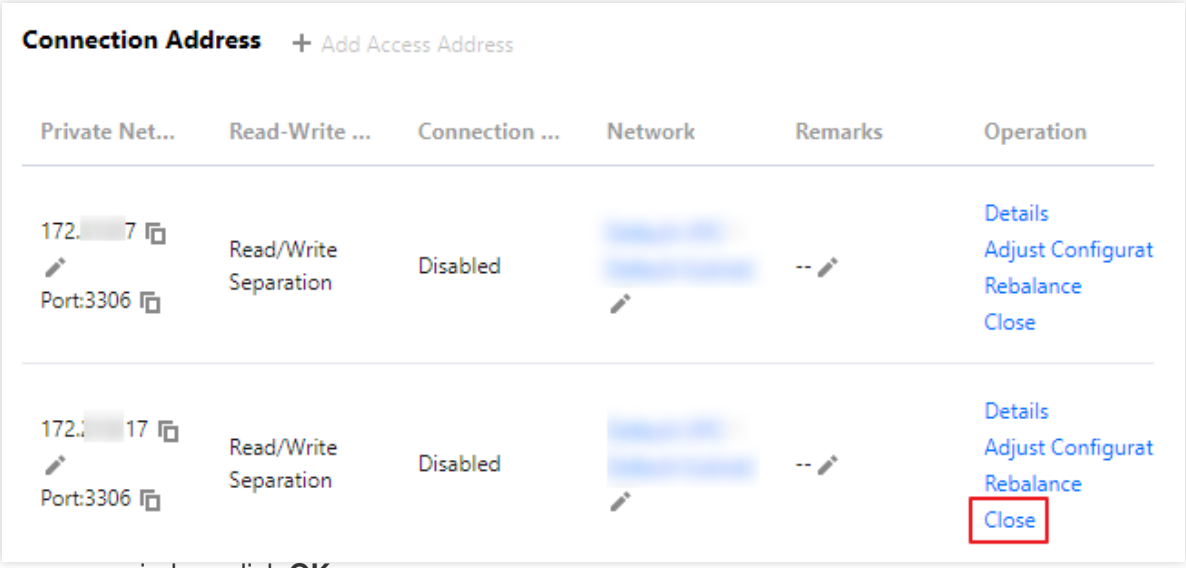

3. In the pop-up window, click **OK**.

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Viewing and Modifying Access Policy

Last updated：2024-07-22 15:17:17

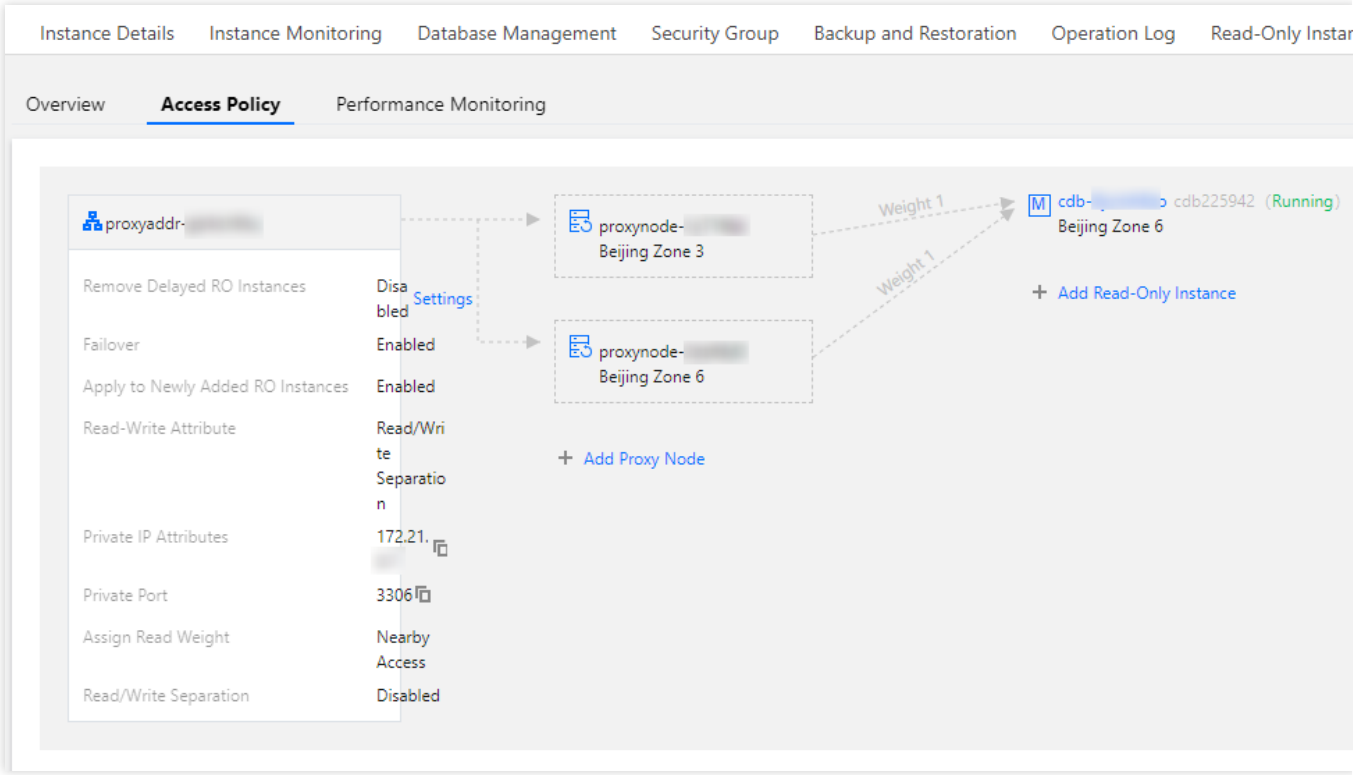
After database proxy is enabled for TencentDB for MySQL, a database proxy connection address will be added by default. You can also add connection addresses later to implement different business logics. The number of connection addresses that can be created is the same as that of database proxy nodes. You can view and modify the access policy of a connection address in the console.

Prerequisites

You have enabled the database proxy. For more information, see Enabling Database Proxy.

Viewing the access policy

1. Log in to the TencentDB for MySQL console, select the region at the top of the page, and click the ID of the target instance to enter the instance management page.
2. On the instance management page, select **Database Proxy** > **Access Policy**.



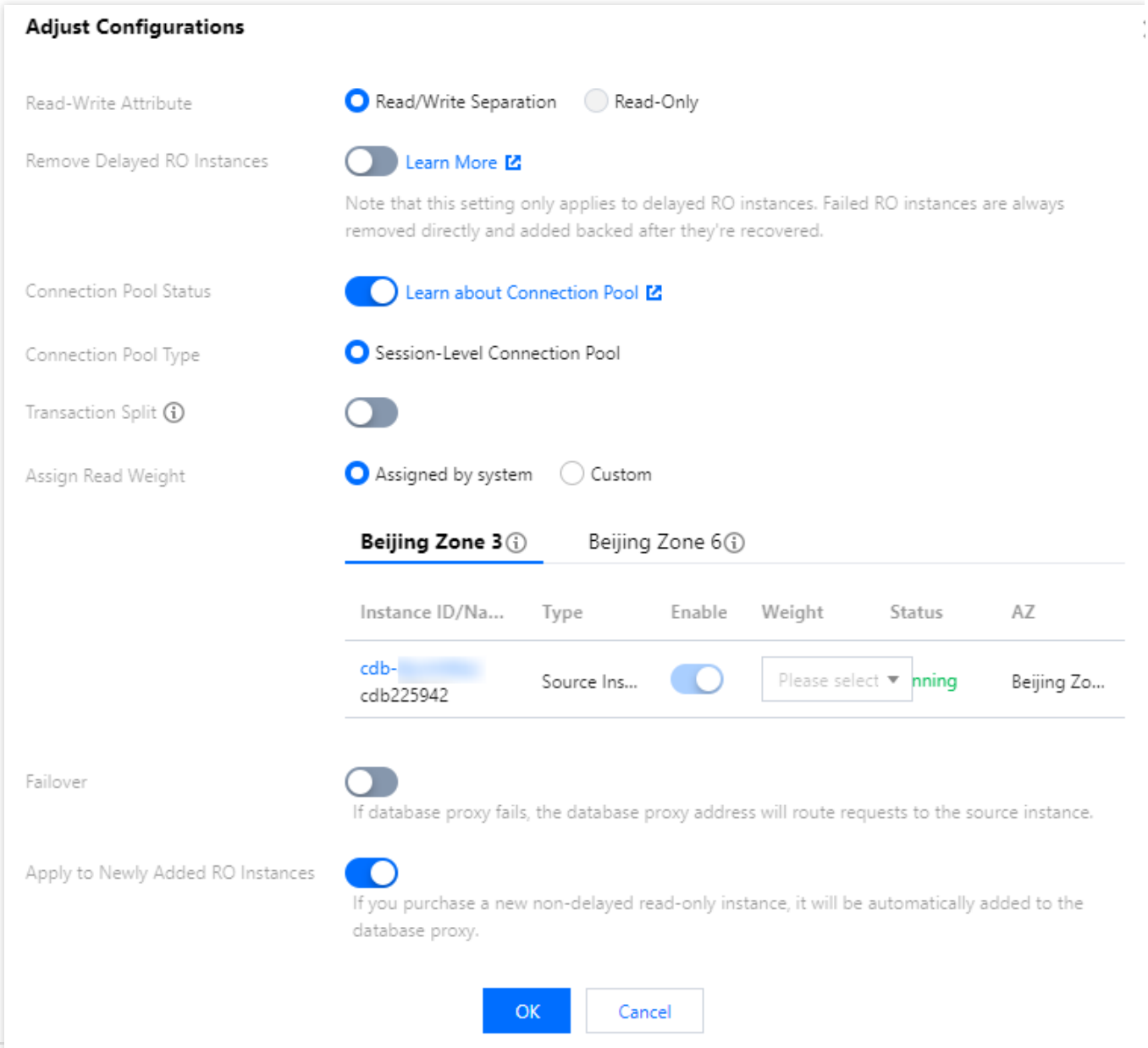
Modifying the access policy

1. Log in to the TencentDB for MySQL console, select the region at the top of the page, and click the ID of the target instance to enter the instance management page.
2. On the instance management page, select **Database Proxy** > **Access Policy**, find the target access policy, and click **Settings**.

Note:

You can also find the target access address in **Database Proxy** > **Overview** > **Connection Address**. Then, click **Adjust Configurations** in the **Operation** column.

3. In the pop-up window, modify the policy configuration and click **OK**.



Parameter	Description
Read-Write Attribute	Modify the read-write attribute of the proxy access address, which can be Read/Write Separation or Read-Only.

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Remove Delayed RO Instances	Set the Remove Delayed RO Instances policy. After this option is enabled, you can set Delay Threshold and Least RO Instances. The system will try removing or restoring a failed read-only instance no matter whether this option is enabled. Delay Threshold: Enter an integer greater than or equal to 1 (in seconds). Least RO Instances: It is subject to the number of read-only instances owned by the source instance. If it is set to `0`, when all read-only nodes are removed, all read requests will be routed to the source instance until at least one of the removed read-only instances rejoins the database proxy to continue processing the read requests.
Connection Pool Status	The connection pool feature mainly mitigates the instance load caused by frequent new connections in non-persistent connection business scenarios. After this option is enabled, you can select the supported connection pool type, which currently can only be the session-level connection pool by default.
Transaction Split	You can set whether to enable this feature. After it is enabled, reads and writes in one transaction will be separated to different instances for execution, and read requests will be forwarded to read-only instances to reduce the load of the source instance.
Assign Read Weight	You can select Assigned by system or Custom. If multiple AZs are configured when the database proxy is enabled, you can separately assign the weights of proxy nodes in different AZs.
Failover (with Read-Write Attribute being Read/Write Separation)	You can set whether to enable this feature. After it is enabled, if database proxy fails, the database proxy address will route requests to the source instance.
Apply to Newly Added RO Instances	You can set whether to enable this feature. After it is enabled, a newly purchased read-only instance will be automatically added to the database proxy. If Assign Read Weight is set to Assigned by system, newly purchased read-only instances will be assigned with the default weight based on their specification. If Assign Read Weight is set to Custom, when newly purchased read-only instances are added, their weights will be 0 by default, which can be modified by clicking Adjust Configurations in Connection Address on the Database Proxy tab.

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Adjusting Database Proxy Configuration

Last updated：2024-07-22 15:17:32

This document describes how to adjust the database proxy configuration in the console, including the proxy specification, AZ, and node quantity.

Prerequisites

You have enabled the database proxy. For more information, see Enabling Database Proxy.

Notes

The database proxy will be automatically upgraded to the latest version during configuration adjustment if its version is old.
If the selected proxy and the source instance are not in the same AZ and you access the instance through the proxy, the write performance will be reduced.
If the recommended number of proxy nodes you calculated exceeds the maximum purchasable quantity, choose a higher proxy node specification.
If resources are sufficient in the region, you can select up to three AZs and need to retain at least one AZ (the one in the first row).

Impact description

Changing different configuration items has different impacts, some of which will not cause a momentary disconnection, while some will. The specific change items and their impacts are as detailed below:

Scenario 1: Changing the proxy specification but not AZ or node quantity

Proxy Specification	AZ	Node Quantity	Load Balancing Mode	Switch Time	Impact
Upgrade or downgrade	Unchanged	Unchanged	Automatic	During maintenance time	There will be a momentary disconnection lasting seconds. Make sure that your business has a reconnection mechanism.
				Upon upgrade	

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				completion	
			Manual	During maintenance time	
				Upon upgrade completion	

Scenario 2: Changing the node quantity but not proxy specification or AZ

Proxy Specification	AZ	Node Quantity	Load Balancing Mode	Switch Time	Impact
Unchanged	Unchanged	Increased	Automatic	During maintenance time	There will be a momentary disconnection lasting seconds. Make sure that your business has a reconnection mechanism.
				Upon upgrade completion	
			Manual	-	There will be no momentary disconnections.
		Decreased	Automatic	During maintenance time	There will be a momentary disconnection lasting seconds. Make sure that your business has a reconnection mechanism.
				Upon upgrade completion	
			Manual	During maintenance time	
				Upon upgrade completion	

Scenario 3: Changing the AZ and node quantity but not proxy specification

Proxy Specification	AZ	Node Quantity	Load Balancing	Switch Time	Impact

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			Mode		
Unchanged	Increased	Increased	Automatic	During maintenance time	There will be a momentary disconnection lasting seconds. Make sure that your business has a reconnection mechanism.
				Upon upgrade completion	
			Manual	-	There will be no momentary disconnections.
		Decreased	Automatic	During maintenance time	There will be a momentary disconnection lasting seconds. Make sure that your business has a reconnection mechanism.
				Upon upgrade completion	
			Manual	During maintenance time	
				Upon upgrade completion	
	Decreased	Increased	Automatic	During maintenance time	
				Upon upgrade completion	
			Manual	During maintenance time	
				Upon upgrade completion	
		Decreased	Automatic	During maintenance time	

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				Upon upgrade completion
			Manual	During maintenance time
				Upon upgrade completion
	Changed	Increased	Automatic	During maintenance time
				Upon upgrade completion
			Manual	During maintenance time
				Upon upgrade completion
		Decreased	Automatic	During maintenance time
				Upon upgrade completion
			Manual	During maintenance time
				Upon upgrade completion

Directions

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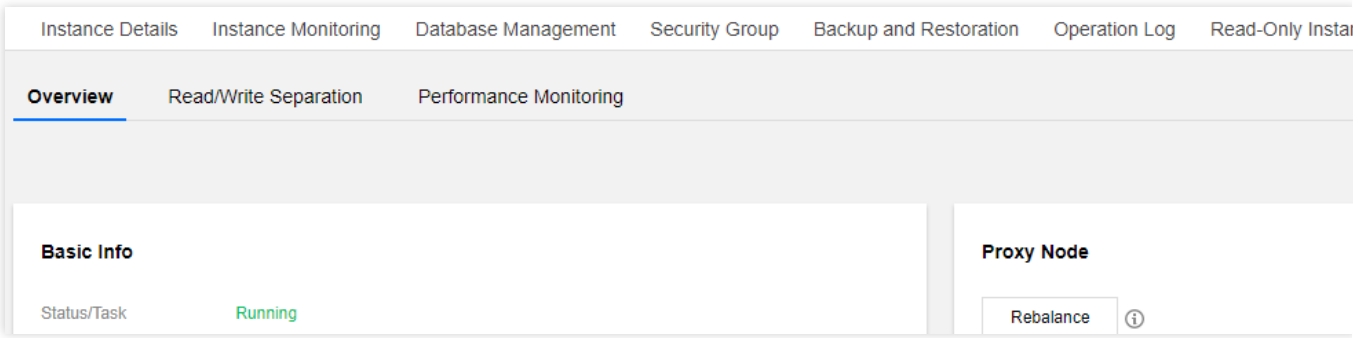
1. Log in to the TencentDB for MySQL console, select the region at the top of the page, and click the ID of the target instance to enter the instance management page.
2. On the instance management page, select the **Database Proxy** tab.
3. On the **Overview** tab on the **Database Proxy** tab, select **Basic Info** > **Node Quantity** and click **Adjust Configurations**.



4. In the pop-up window, modify the proxy specification, AZ, and node quantity of the database proxy as needed and click **OK**.

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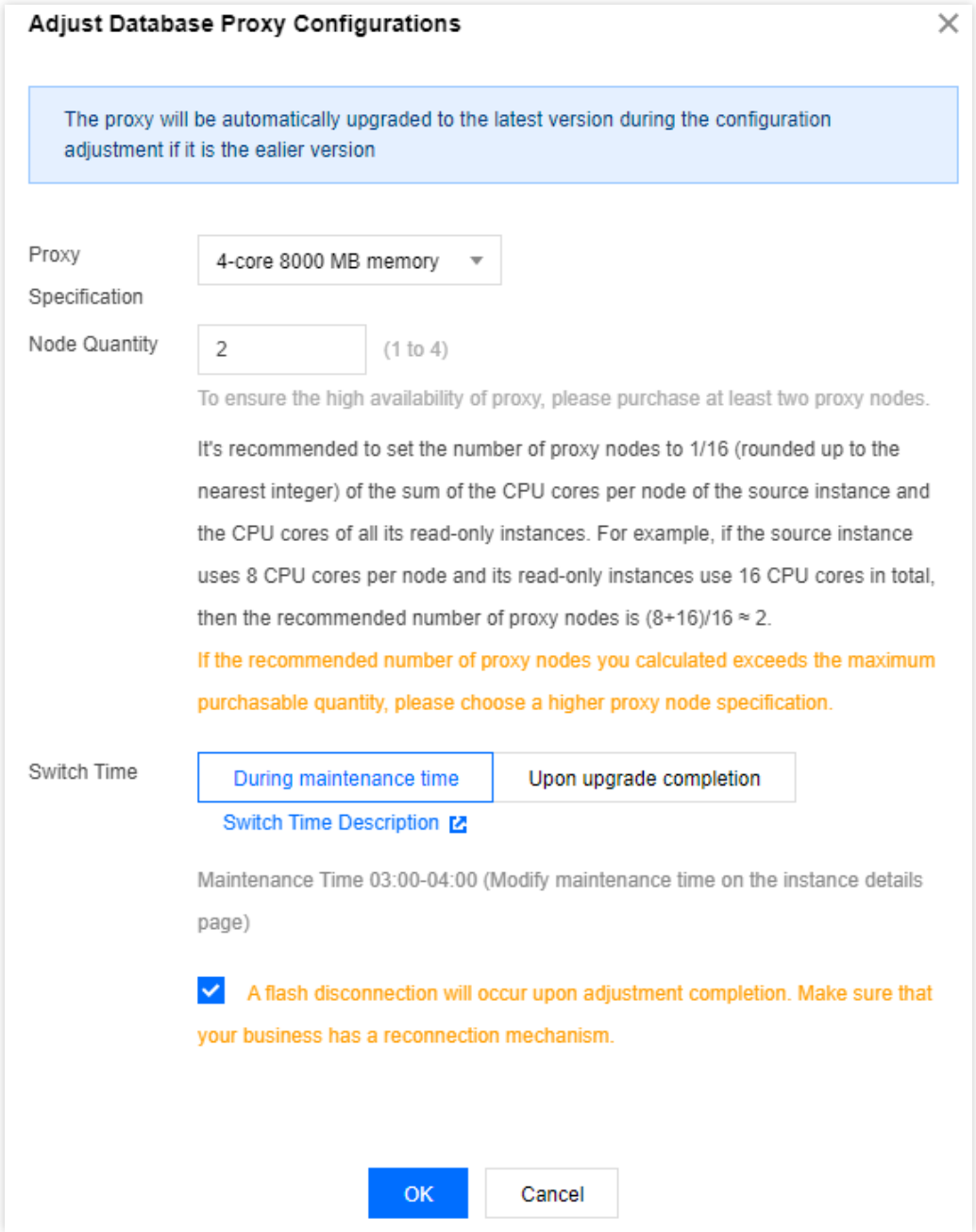

5. In **Basic Info** on the **Database Proxy** tab, after the task status changes from **Upgrading** to **Running**, the configuration adjustment is completed.

Note:

If you select **Upon upgrade completion**, after the configuration is adjusted, the system will automatically switch to the new configuration.

If you select **During maintenance time**, after the configuration is adjusted, the system will switch the configuration during the specified maintenance time period.

If you select **During maintenance time** but need to switch the configuration earlier due to your business requirements, after the configuration is adjusted, you can go to **Database Proxy** > **Overview** > **Basic Info** > **Status**/**Task** and click **Complete Now** after **Waiting for switch (after upgrade)**.

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If you select manual rebalance after the configuration adjustment, perform the operation in **Overview** > **Connection Address** on the **Database Proxy** tab after the configuration is adjusted.

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Switching Database Proxy Network

Last updated：2024-07-22 15:17:44

This document describes how to switch the database proxy network in the TencentDB for MySQL console.

Prerequisites

You have enabled the database proxy. For more information, see Enabling Database Proxy.

Notes

Switching the network may cause the change of the instance database proxy IP. The old IP will be retained for 24 hours by default and up to 168 hours. Then, it will become invalid. Therefore, modify the IP on the client promptly.
If **Valid Hours of Old IP** is set to 0 hours, the IP is released immediately after the network is changed.
You can only select a VPC in the region of the MySQL instance, but you can choose a subnet in any AZ and view its IP range.
When you add multiple access addresses for the database proxy, you can set and modify the network for each of them.

Directions

1. Log in to the TencentDB for MySQL console. Select a region on the top, and click the instance ID to enter the instance management page.
2. On the instance management page, select the **Database Proxy** tab.
3. On the **Database Proxy** tab, click

under **Overview** > **Connection Address** > **Network**.

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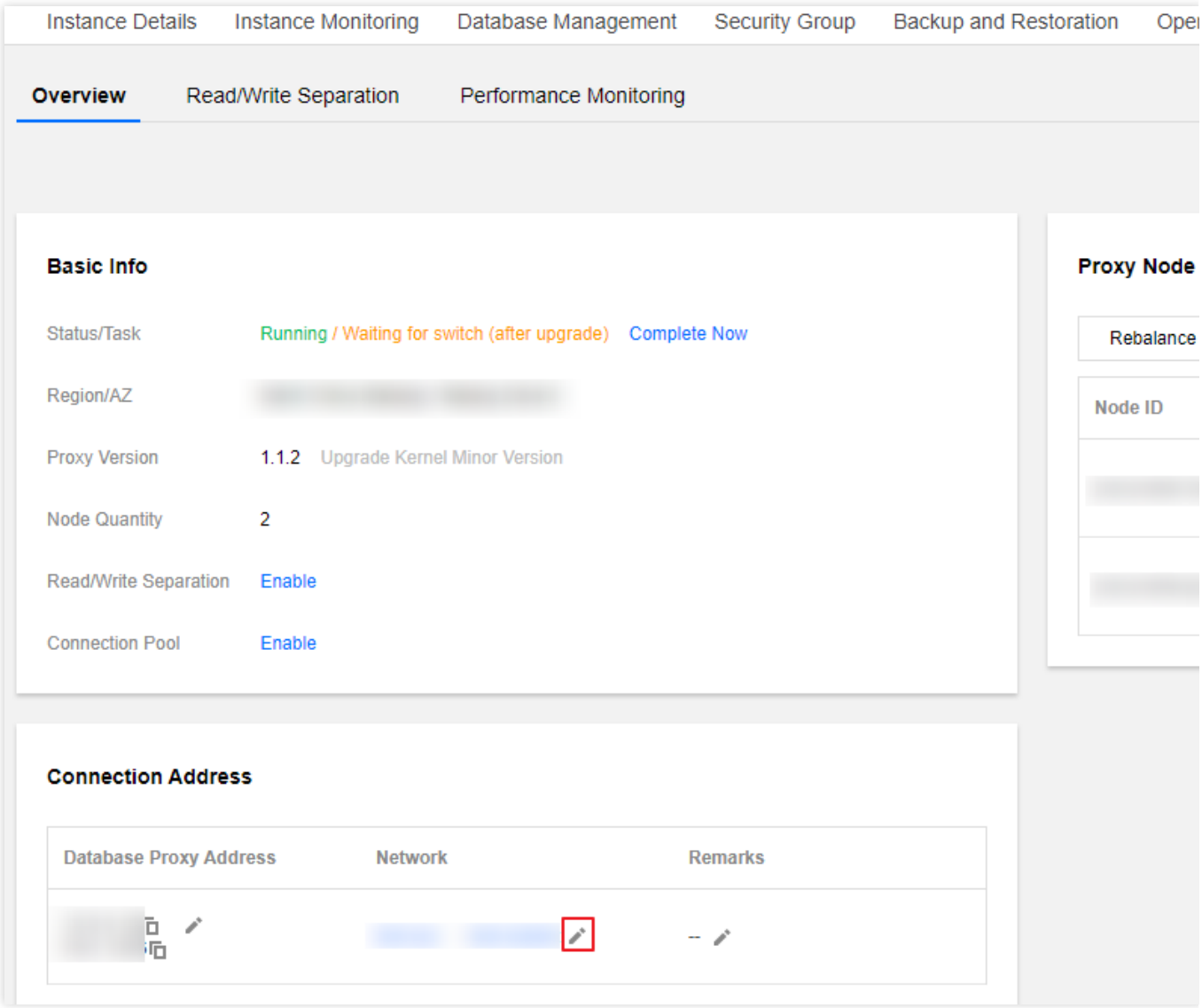

4. In the pop-up dialog box, select a new network and click **OK**.

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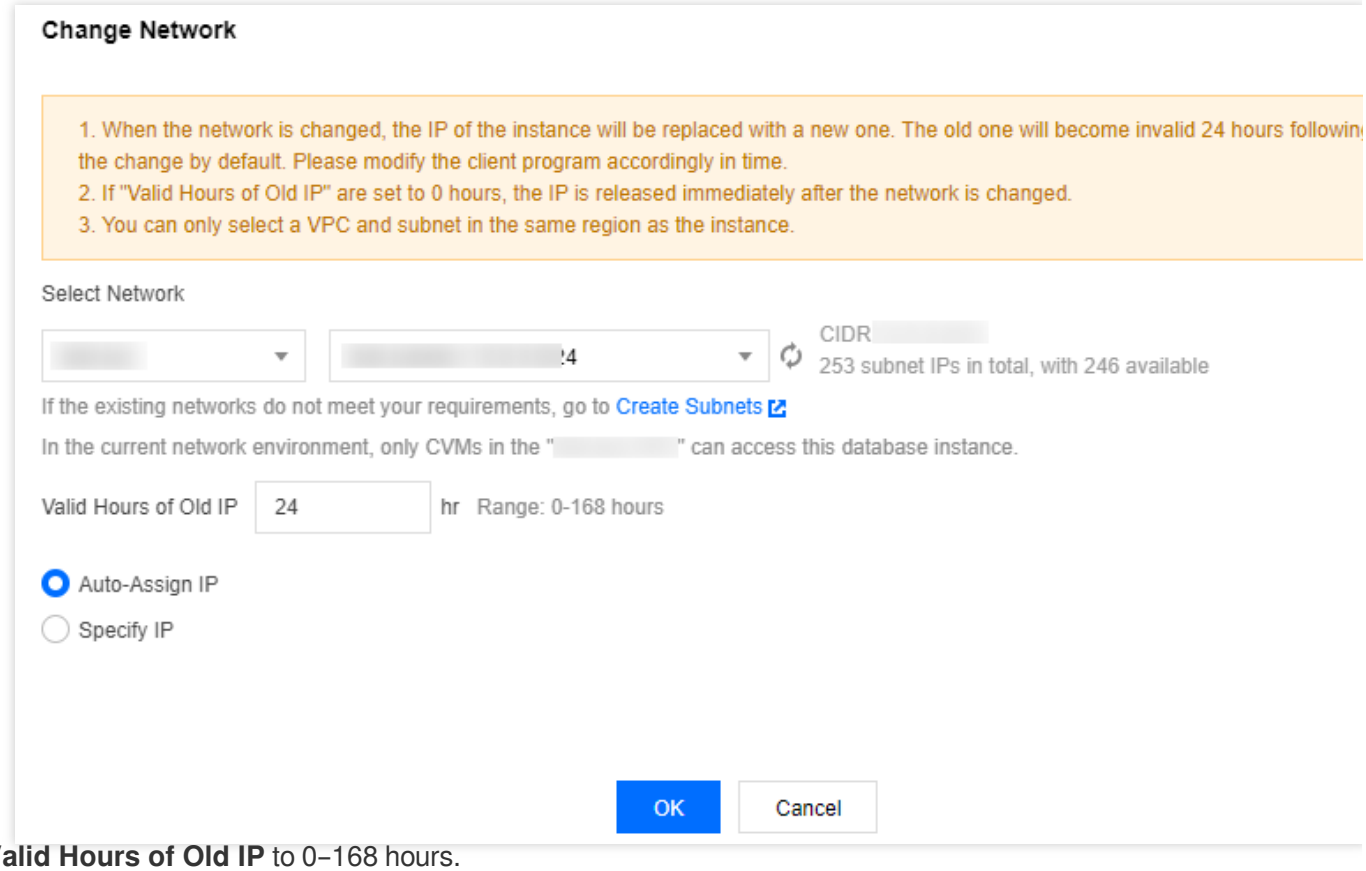

Set **Valid Hours of Old IP** to 0–168 hours.

Select **Auto-Assign IP** or **Specify IP**.

5. After successfully changing the network, you can view the new network under **Connection Address**.

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Viewing Database Proxy Monitoring Data

Last updated：2024-07-22 15:17:58

This document describes how to view database proxy node monitoring data in the TencentDB for MySQL console.

Prerequisites

You have enabled the database proxy. For more information, see Enabling Database Proxy.

Supported Monitoring Metrics

Metric Name	Unit	Description
Current connections	Count	Current node connections
Requests	Count/sec	Node access requests
Read requests	Count/sec	Read operation requests
Write requests	Count/sec	Write operation requests
CPU utilization	%	CPU utilization
Memory utilization	%	Memory utilization
Memory usage	MB	Used memory

Directions

Option 1:

1. Log in to the TencentDB for MySQL console. In the instance list, click the ID or **Manage** in the **Operation** column of the source instance with proxy enabled to enter the instance management page.
2. On the instance management page, select **Database Proxy** > **Performance Monitoring** page, and click a proxy node name to view its monitoring data. You can switch between different nodes by clicking their names.

Note:

The default granularity of monitoring within four hours is 5 seconds.

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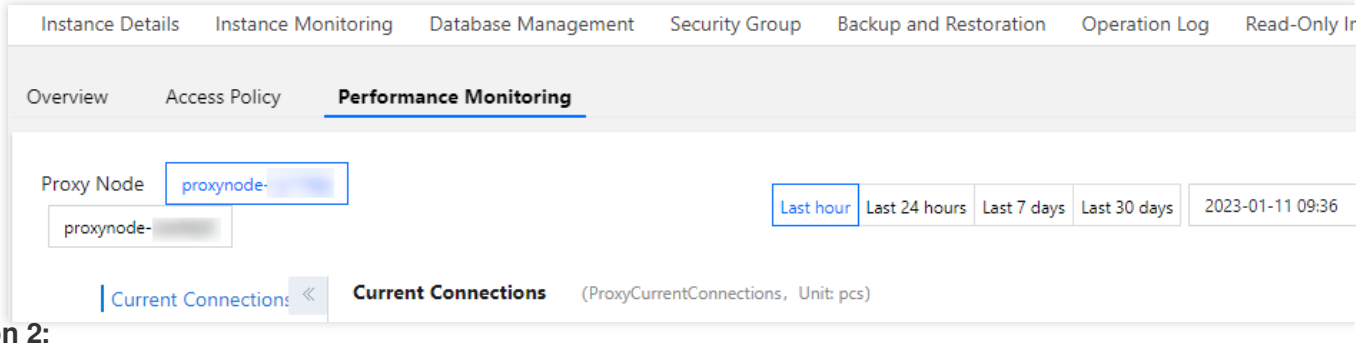
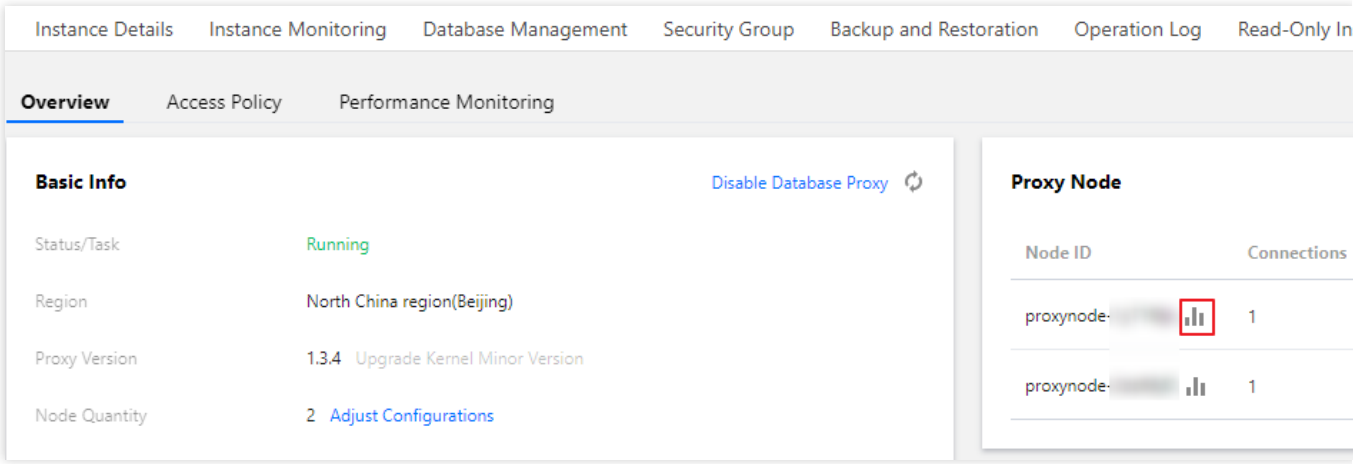


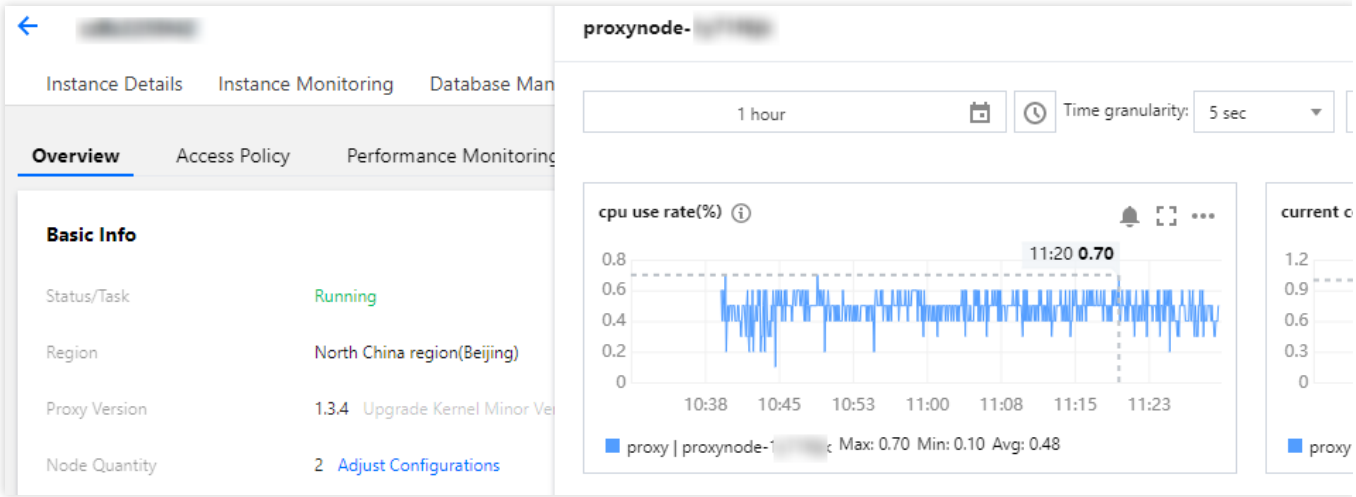
Option 2:

1. Log in to the TencentDB for MySQL console. In the instance list, click the ID or **Manage** in the **Operation** column of the source instance with proxy enabled to enter the instance management page.
2. On the instance management page, select the **Database Proxy** > **Overview**, and click icon

after the target node ID in the **Proxy Node** column, then you can view the performance monitoring data of the node.



The displayed page after redirection is as follows.



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Load Rebalancing

Last updated：2024-07-22 15:18:09

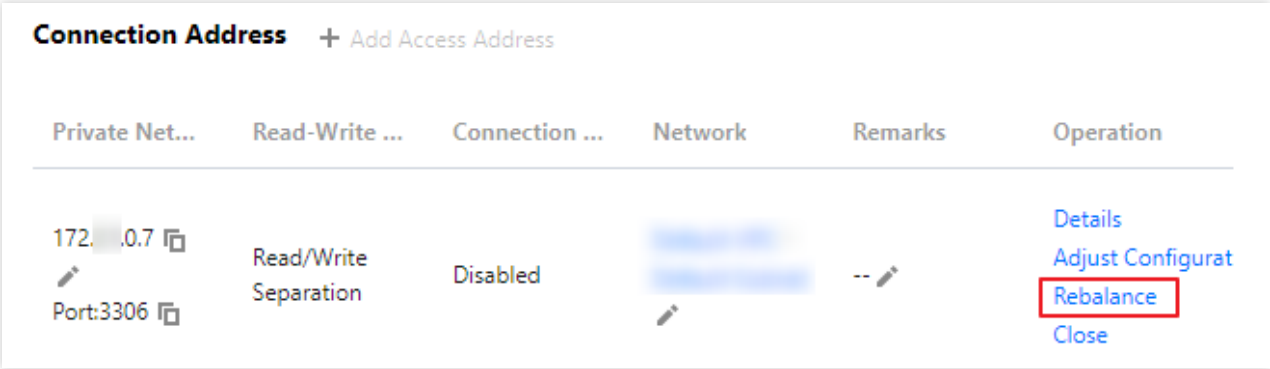
After the database proxy is enabled, you can view **Connections** in the proxy node list or the performance monitoring data of each proxy node to check whether the numbers of connections on the nodes are unbalanced. If there is a large number of persistent connections, increasing the number of the database proxy nodes may also cause load imbalance among them, and if so, you can distribute the connections by clicking **Rebalance**. This document describes how to manually rebalance the node in the console.

Prerequisites

You have enabled the database proxy. For more information, see Enabling Database Proxy.

Directions

1. Log in to the TencentDB for MySQL console. Select the region at the top of the page and click the target instance ID to enter the instance management page.
2. On the instance management page, select **Database Proxy** > **Overview**, find the target access address in **Connection Address**, and click **Rebalance** in the **Operation** column.



3. In the pop-up window, click **OK**.

Note:

Rebalancing will cause the disconnection of the session to the address, during which the service will be unavailable momentarily. We recommend that you restart the service during off-peak hours. Make sure that your business has a reconnection mechanism.

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Disabling Database Proxy

Last updated：2024-07-22 15:18:21

This document describes how to disable database proxy in the TencentDB for MySQL console.

Note:

Before disabling the database proxy, make sure that your client does not access the database through the proxy address, as the generated data will be deleted and cannot be recovered after the database proxy is disabled.

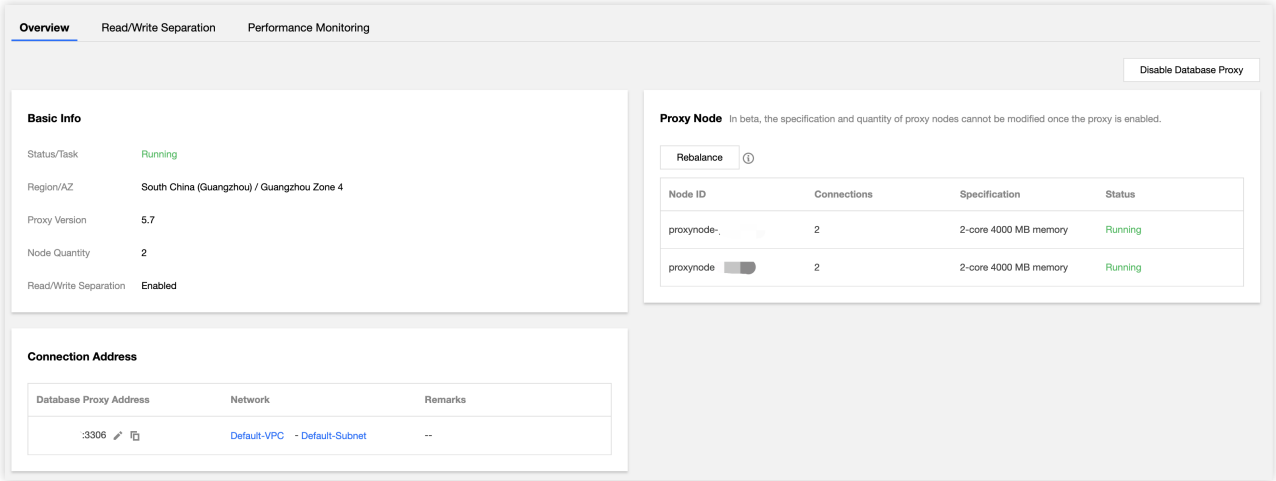
Prerequisites

You have enabled the database proxy. For more information, see Enabling Database Proxy.

Directions

1. Log in to the TencentDB for MySQL console. In the instance list, select the desired instance, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.

2, On the instance management page, select **Database Proxy** > **Overview** > **Basic Info** > **Disable Database Proxy**.



2. In the pop-up dialog box, confirm that everything is correct and click **OK**.

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Transaction Split Feature

Last updated：2024-07-22 15:19:24

The TencentDB for MySQL database proxy provides the transaction split feature. This feature separates read and write operations in one transaction to different instances for execution and forwards read requests to read-only instances, thereby lowering the load of the source instance.

Background

By default, the TencentDB for MySQL database proxy forwards all requests in a transaction to the source instance to ensure the transaction correctness. In some frameworks, however, all requests are encapsulated to transactions that are not committed automatically, causing an excessive load of the source instance. In this case, you can use the transaction split feature.
The transaction split feature is disabled by default. You can enable it by adjusting the configuration of the database proxy address.

Prerequisites

You have enabled the database proxy. For more information, see Enabling Database Proxy.

Directions

1. Log in to the TencentDB for MySQL console, select the region at the top of the page, and click the ID of the target instance to enter the instance management page.
2. On the instance management page, select **Database Proxy** > **Access Policy**, find the target access policy, and click **Settings**.
Note:
You can also find the target access address in **Database Proxy** > **Overview** > **Connection Address**. Then, click **Adjust Configurations** in the **Operation** column.
3. In the pop-up window, toggle on **Transaction Split** and click **OK**.

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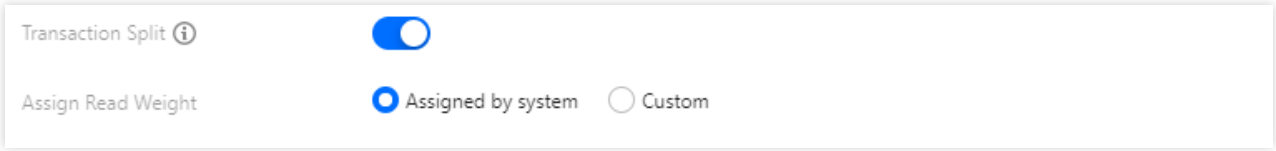

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Momentary Disconnection Prevention Feature

Last updated：2024-07-22 15:19:36

This document describes the momentary disconnection prevention feature of the TencentDB for MySQL database proxy.

Background

During the instance Ops, you may need to make some adjustments, such as configuration modification, planned HA switch, and planned restart. Theses Ops may cause the problems, such as session interruption, momentary disconnection and failed new connections. The TencentDB for MySQL database proxy provides the momentary disconnection prevention feature that enables lossless application continuity to prevent disconnection and transaction interruption.

How It Works

The momentary disconnection prevention feature implements MySQL's session track mechanism. When the lossy behavior is perceived, the database proxy will disconnect the client from the source node before the switch, and connect to the source node after the switch. Then the session-related system variables, user variables, and character set encoding information will be transferred to the new backend connection through the session track mechanism, so as to realize the lossless switching on the application side.

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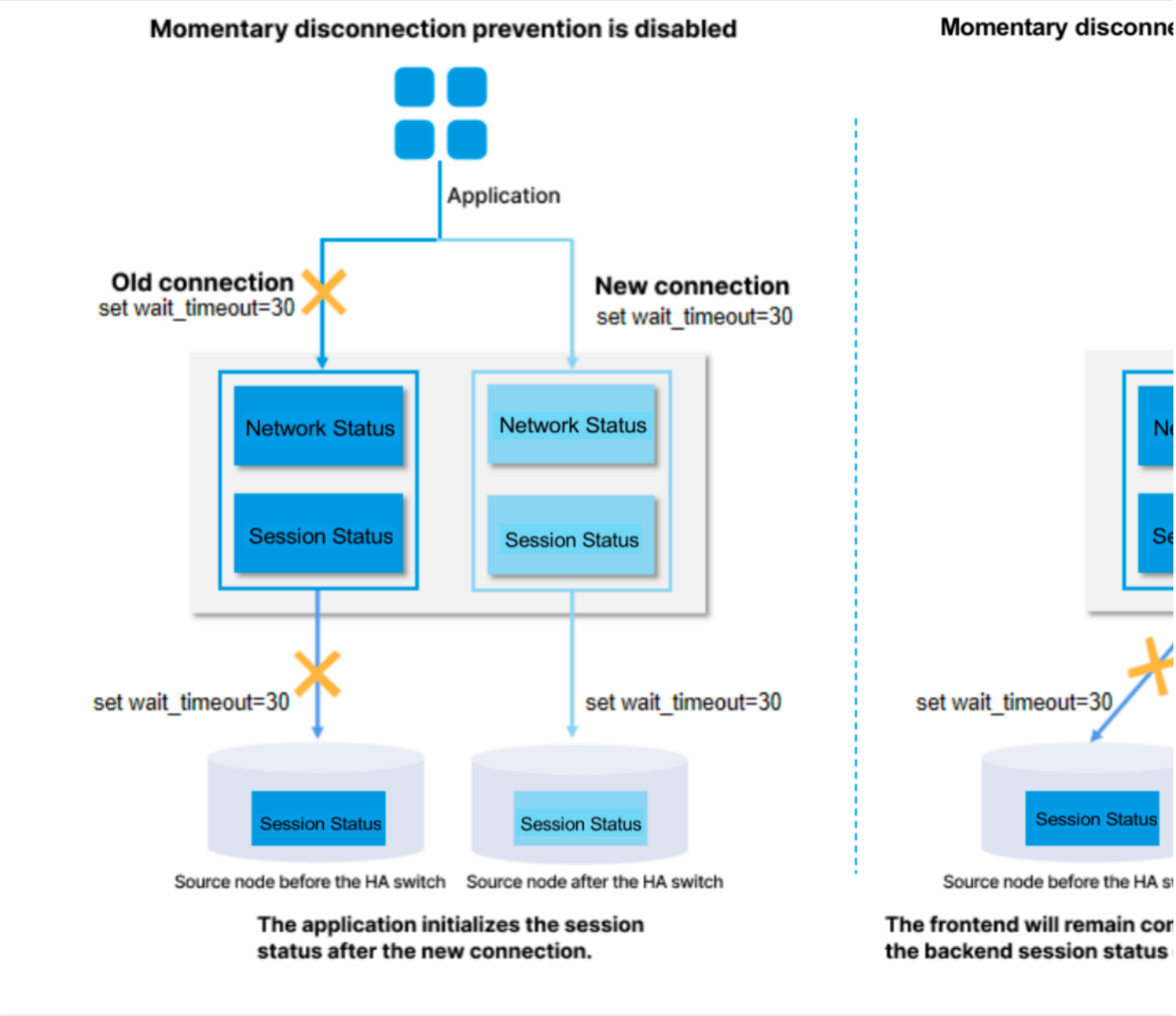

Notes

If the statement uses the temp tables associated with each session, the connection cannot be recovered, and an error will be reported.

To use the momentary disconnection prevention feature, you need to upgrade the database proxy kernel version to v1.3.1 or later.

The disconnection prevention feature will stop the transactions over 3 seconds.

When the connection is switched, if the database proxy is receiving the result message from the database, only part of the data will be transferred due to the source/replica switch, and the momentary disconnection prevention feature will be disabled.

Performance Testing

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The performance test of the momentary disconnection prevention feature for Tencent DB for MySQL database proxy is described in the following.

Test environment

Region/AZ: Beijing - Beijing Zone 7
Client: S5.8XLARGE64 (32-core 64 GB Standard S5)
Client operating system: CentOS 8.2 64-bit
Network: Both the CVM and TencentDB for MySQL instances are in the same VPC subnet.
The information of the tested TencentDB for MySQL instance is as follows:
Storage type: Local SSD disk
Instance type: General
Parameter template: High-performance template

Test tool

SysBench, as the tool for the performance test, is a modular, cross-platform, and multi-threaded benchmark tool for evaluating OS parameters that are important for a system running a database under intensive load. The idea of this benchmark suite is to quickly get an impression about system performance without setting up complex database benchmarks or even without installing a database at all.

Test method

In different Ops scenarios, you can analyze the ratio of momentary disconnections before and after the operation to test whether a database proxy provides momentary disconnection prevention for the high-availability MySQL instance.

Test Results

In the following Ops scenarios, the high-availability MySQL instance maintains a 100% connection keep-alive rate by the momentary disconnection prevention capability of the database proxy.

Ops scenario	Keep-alive rate
Performing source-replica switch	100%
Upgrading kernel minor version	100%
Adjusting the instance specifications	100%

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Automatic Read/Write Separation Feature
Automatic Read/Write Separation Overview

Last updated：2024-07-22 15:20:14

This document describes the automatic read/write separation feature of the database proxy service in TencentDB for MySQL and its strengths and routing rules.

Automatic Read/Write Separation

Currently, businesses of many users in the production environment have problems such as more reads and less writes and unpredictable business loads. In application scenarios with a large number of read requests, a single instance may not be able to withstand the pressure of read requests, which even may affect the businesses. To implement the auto scaling of read capabilities and mitigate the pressure on the database, you can create one or multiple read-only instances and use them to sustain high numbers of database reads. However, this solution requires that businesses can be transformed to support read/write separation, and the code robustness determines the quality of business read/write separation, which imposes high technical requirements and has low flexibility and scalability.
Therefore, after creating a read-only instance, you can purchase a database proxy, configure access address policy, and configure the database proxy address in your application so as to automatically forward write requests to the source instance and read requests to the read-only instance. In addition, this method provides natural solutions to other business challenges as detailed below:
Scenarios where the load is unpredictable or fluctuates irregularly with obvious peaks and troughs
In internet business scenarios, business load and access pressure are often unpredictable and unstable, and there will be frequent great fluctuations. If the business uses a large number of non-persistent connections to access the database, it is easy to generate many new connections. In other words, the number of connections between the database and the application is likely to fluctuate as the business access pressure changes frequently, and this is often difficult to predict.
Connection management for the dedicated database proxy allows you to efficiently reuse database connections to appropriately scale applications that handle unpredictable workloads. First, this feature allows multiple application connections to share the same database connection to effectively use database resources. Second, it allows you to adjust the number of open database connections to maintain predictable database performance. Finally, it allows you to delete unusable application requests to guarantee the overall application performance and availability.
Scenarios where the application is frequently connected to and disconnected from the database
Applications built based on technologies such as serverless, PHP, or Ruby on Rails may frequently open and close database connections to process application requests.

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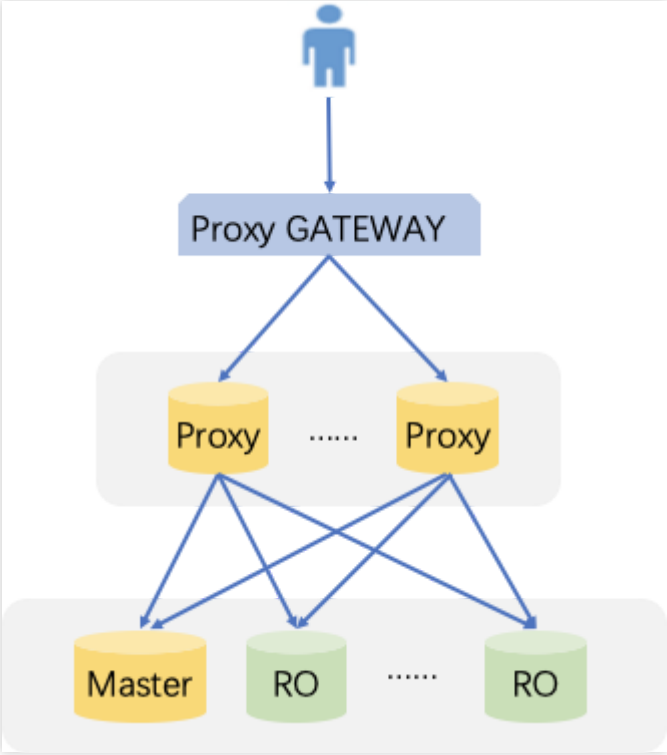
The dedicated database proxy can help you maintain a database connection pool to prevent unnecessary pressure on data computing and the memory used to establish new connections.

Scenarios where the database access connection is idle for a long time and is not released

SaaS applications and traditional ecommerce applications may make database connections idle to minimize the response time for user reconnection. You can use the dedicated database proxy to retain idle connections and establish database connections as needed instead of excessively increasing the threshold or providing database services with higher specifications to support most idle connections.

Scenarios where you want to improve the smoothness and stability of database PaaS service failover

With the dedicated database proxy, you can build applications that can tolerate active and passive database failures in an imperceptible manner with no need to write complex failure processing code. The dedicated database proxy will automatically route read traffic to new database instances while retaining the application connections.



Advantages

Read/write requests are automatically separated with a unified access address.

Native linkage support improves the performance and reduces the maintenance costs.

You can flexibly set weights and thresholds.

Failover is supported, so that even if the database proxy fails, requests can access the source database normally.

When a source instance is switched, or its configuration is changed, or a read-only instance is added/removed, the database proxy can dynamically hot reload the configuration without causing network disconnections or restarts.

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Read/Write Separation Routing Rules

Sending to the source instance

DDL statements such as `CREATE` , `ALTER` , `DROP` , and `RENAME` .

DML statements such as `INSERT` , `UPDATE` , and `DELETE` .

`SELECT FOR UPDATE` statement.

Statements related to temp tables.

Certain system function calls (such as `last_insert_id()`) and all custom function calls.

Statements related to `LOCK` .

Statements after transaction is enabled (including `set autocommit=0`).

Stored procedures.

Multiple statements concatenated by ";".

`KILL` (SQL statement, not command).

All queries and changes of user variables.

Sending to the read-only instance

Non-transactional read (`SELECT`) statements.

Sending to all instances

`show processlist` statement.

All changes of system variables (`SET` command).

`USE` command.

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Configuring Database Proxy Read-Write Attributes

Last updated：2024-07-22 15:21:09

After creating a read-only instance, you can purchase the database proxy service and configure the connection address policy. Then, you can configure the database proxy address in your application so as to automatically forward write requests to the source instance and read requests to the read-only instance. This document describes how to enable read/write separation in the console.

Prerequisites

You have enabled the database proxy. For more information, see Enabling Database Proxy.

Directions

1. Log in to the TencentDB for MySQL console, select the region at the top of the page, and click the ID of the target instance to enter the instance management page.
2. On the instance management page, select **Database Proxy** > **Overview**, find the target access address in **Connection Address**, and click **Adjust Configurations** in the **Operation** column.

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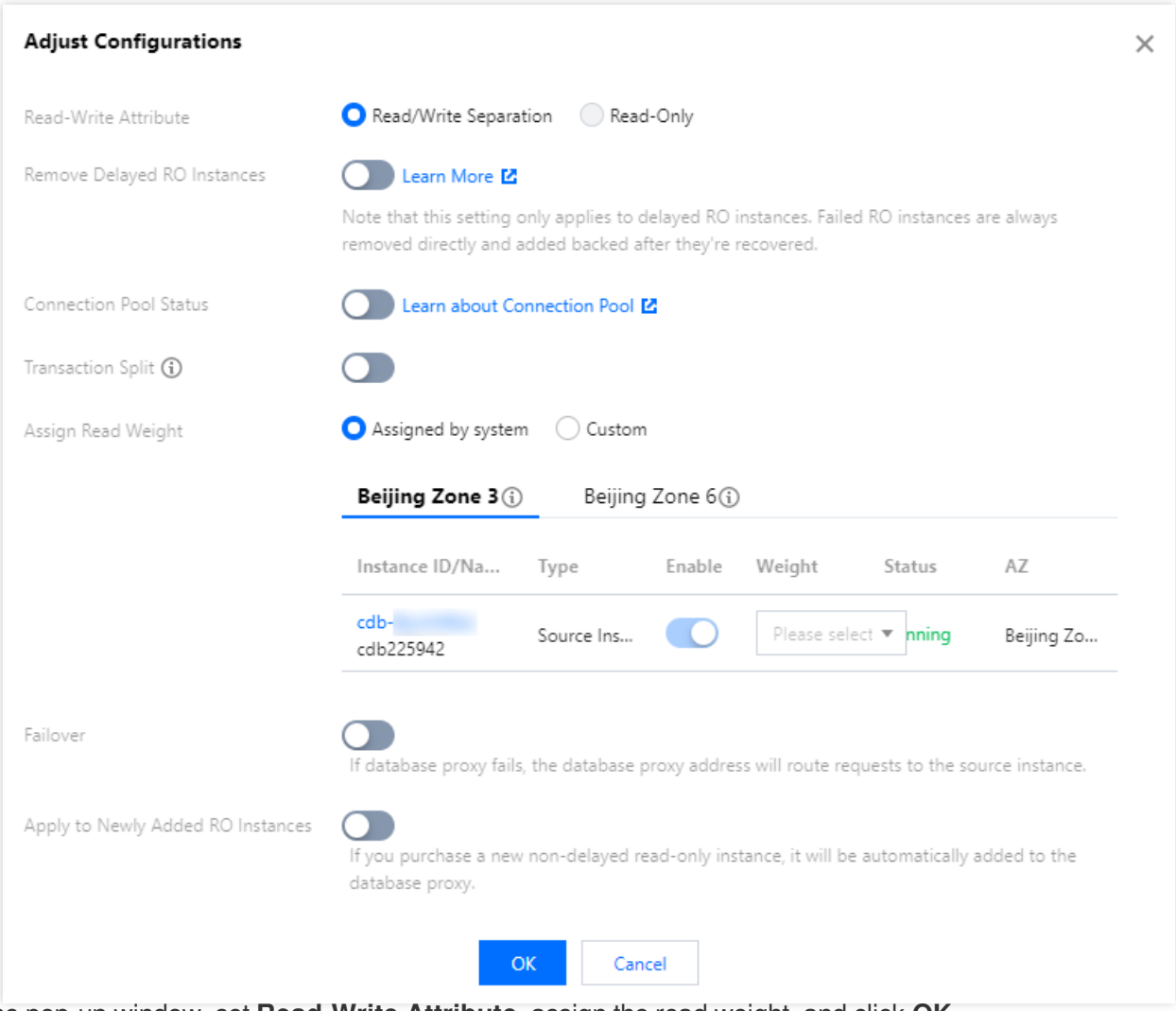

3. In the pop-up window, set **Read-Write Attribute**, assign the read weight, and click **OK**.

Note:

The weight here pertains to the allocation strategy for read requests (non-transactional).

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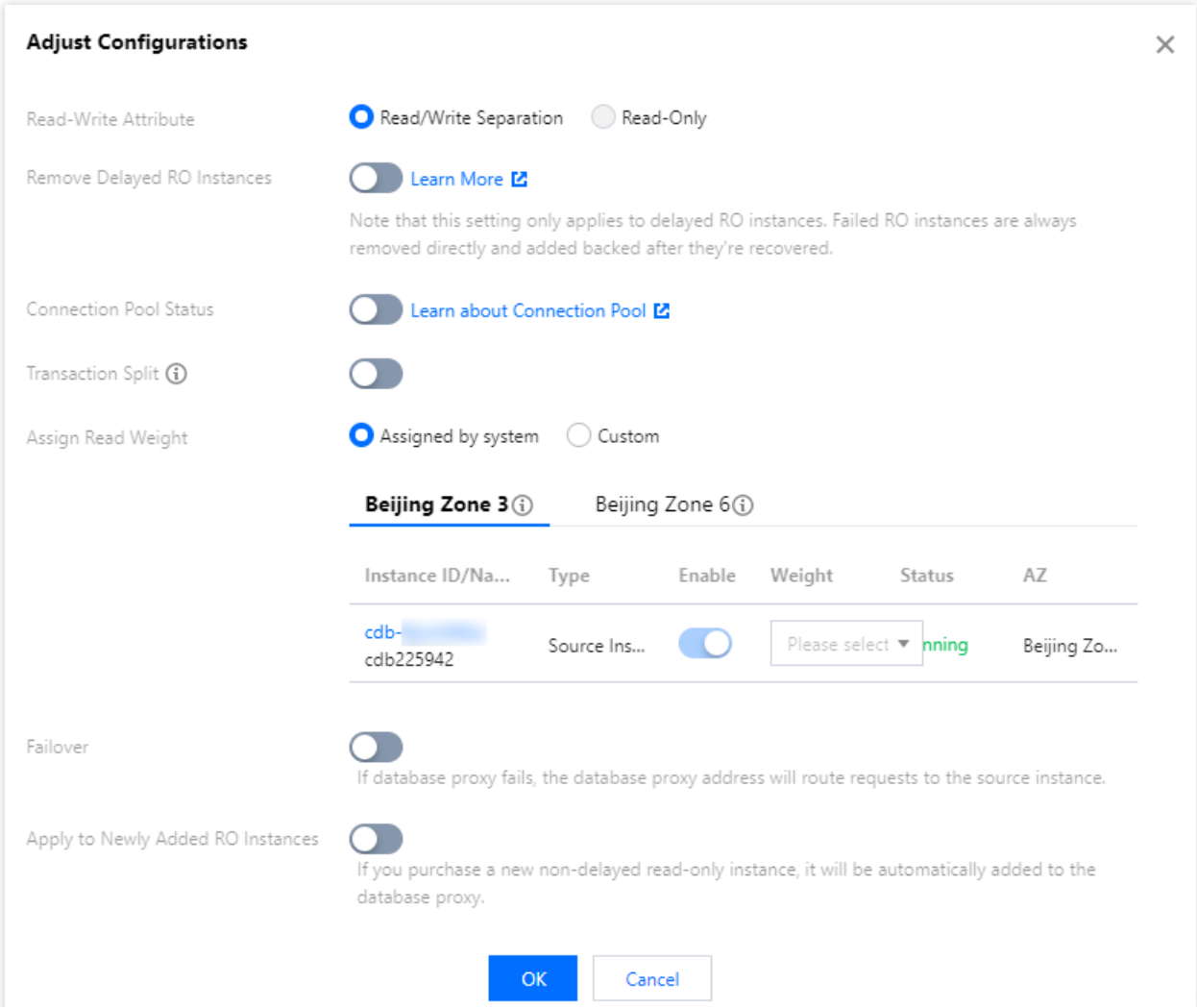

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Connection Pool Feature
Connection Pool Overview

Last updated：2024-06-18 16:33:11

TencentDB for MySQL database proxy supports the connection pool feature, currently offering session-level and transaction-level connection pools, which can effectively solve the issue of high instance loads due to frequent establishments of new connections by short connection services. This document introduces the features of session-level connection pool.

Prerequisites

You have enabled the database proxy.
The database kernel minor version is MySQL 5.7 20211030 or later.
The database kernel minor version is MySQL 8.0 20230630 or later.

Note：

The database proxy connection pool capability has been identified to cause deadlock issues during the 'change user' operation in earlier minor versions of the MySQL kernel. This issue has been rectified in the MySQL 8.0 20230630 minor kernel version. If the minor kernel version of your primary instance has not been updated to MySQL 8.0 20230630, there is a certain level of risk involved. It is recommended to disable the database proxy connection pool capability. If you want to continue utilizing the database proxy connection pool capability, it is advised to upgrade the minor kernel version of your primary instance to MySQL 8.0 20230630 or later. For instructions on upgrading, refer to upgrading kernel minor version.

Background

Session-level connection pool

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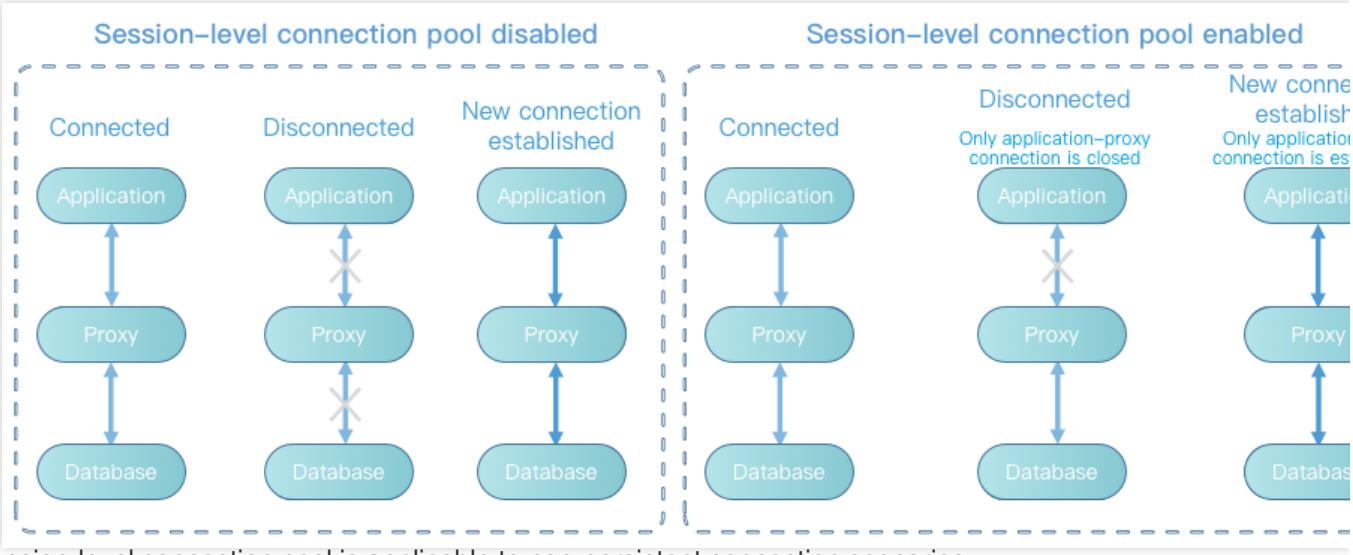

The session-level connection pool is applicable to non-persistent connection scenarios.

The session-level connection pool is used to reduce the instance load caused by frequent establishments of new non-persistent connections. If a client connection is closed, the system will determine whether the current connection is idle, and if so, the system will put it into the proxy connection pool and retain it for a short period of time.

When the client initiates a new connection, if the connection pool has an available connection, the connection can be used directly to reduce the database connection overheads; otherwise, a new connection will be established as usual.

Note:

The session-level connection pool does not reduce the number of concurrent connections to the database, but it can reduce the overheads of the main thread of TencentDB for MySQL by lowering the speed for connecting the application to the database, so as to better process business requests. However, idle connections in the connection pool will occupy your connection quantity temporarily.

The session-level connection pool cannot be used to solve the problem of connection heap caused by a large number of slow SQL queries, which must first be solved by yourself.

Notes

Currently, the connection pool feature does not support setting different permissions for different IPs under the same account, as that may cause a permission error during connection reuse. For example, if `mt@test123` has `database_a` permissions, while `mt@test456` does not, a permission error may occur when you enable the connection pool.

The connection pool feature is for the database proxy instead of the client. You don't need to use the connection pool of the database proxy if your client already supports it.

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Enabling and Disabling the Connection Pool Feature

Last updated：2024-05-09 17:43:00

This document describes how to enable or disable the connection pool feature.

Prerequisites

You have enabled the database proxy.
The database kernel minor version is MySQL 5.7 20211030 or later.
The database kernel minor version is MySQL 8.0 20230630 or later.

Note：

The database proxy connection pool capability has been identified to cause deadlock issues during the 'change user' operation in earlier minor versions of the MySQL kernel. This issue has been rectified in the MySQL 8.0 20230630 minor kernel version. If the minor kernel version of your primary instance has not been updated to MySQL 8.0 20230630, there is a certain level of risk involved. It is recommended to disable the database proxy connection pool capability. If you want to continue utilizing the database proxy connection pool capability, it is advised to upgrade the minor kernel version of your primary instance to MySQL 8.0 20230630 or higher. For instructions on upgrading, please refer to upgrading kernel minor version.

Enabling the connection pool feature

1. Log in to the TencentDB for MySQL console, select the region at the top of the page, and click the ID of the target instance to enter the instance management page.
2. On the instance management page, select **Database Proxy** > **Access Policy**, find the target access policy, and click **Settings**.

Note:

You can also find the target access address in **Database Proxy** > **Overview** > **Connection Address**. Then, click **Adjust Configurations** in the **Operation** column.

3. In the pop-up window, toggle on **Connection Pool Status.** Once it is enabled, select **Session-Level Connection Pool** or **Transaction-Level Connection Pool** (database proxy kernel version 1.4.1 or later needed), and click **OK**.

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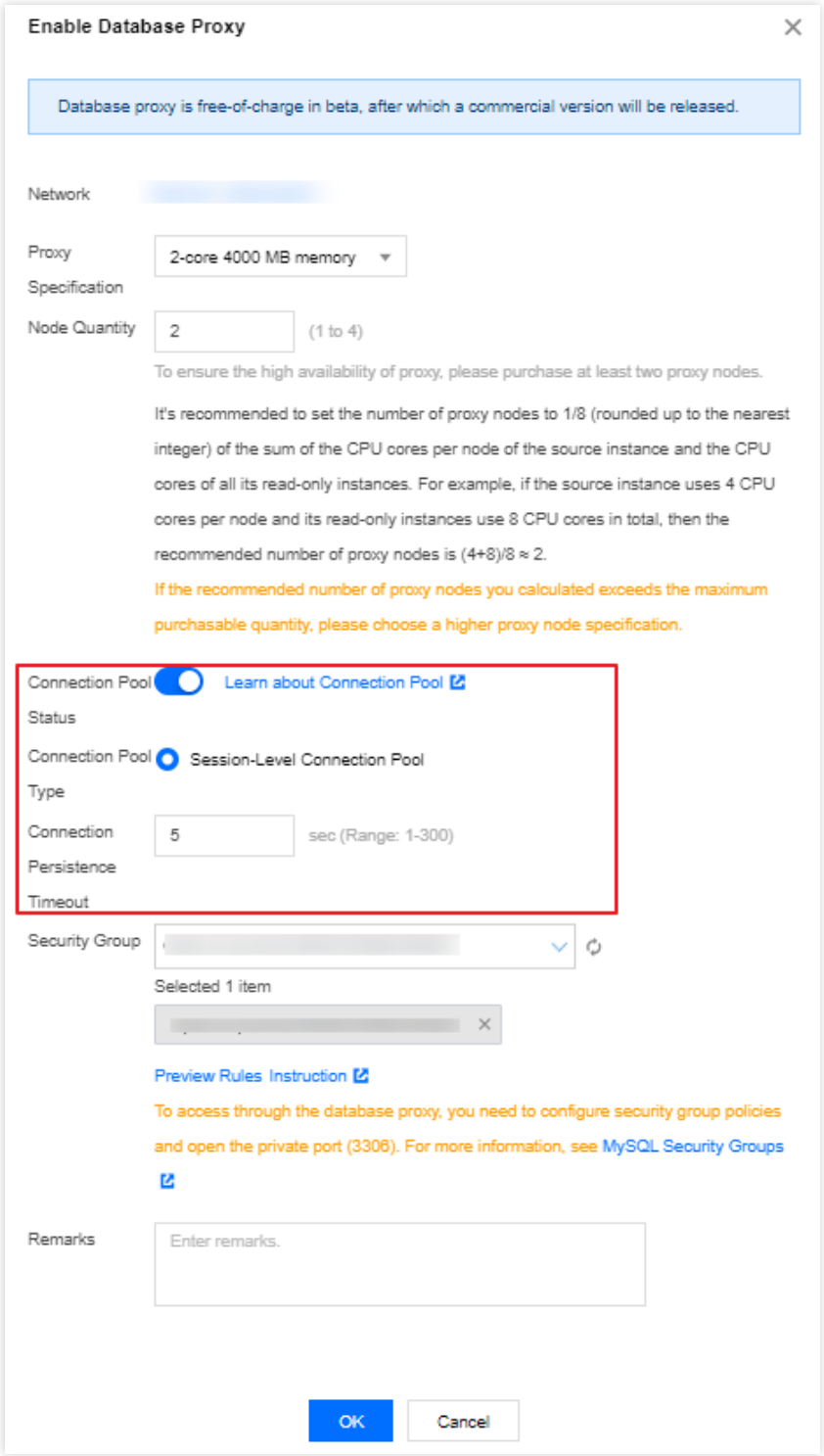

Disabling the connection pool feature

1. Log in to the TencentDB for MySQL console, select the region at the top of the page, and click the ID of the target instance to enter the instance management page.
2. On the instance management page, select **Database Proxy** > **Access Policy**, find the target access policy, and click **Settings**.

Note:

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You can also find the target access address in **Database Proxy** > **Overview** > **Connection Address**. Then, click **Adjust Configurations** in the **Operation** column.

3. In the pop-up window, toggle off **Connection Pool Status** and click **OK**.

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Other Features

Hint Syntax Usage

Last updated：2024-07-22 15:21:57

This document describes how to use the hint syntax on the database proxy.

The hint syntax can be used to forcibly execute SQL requests on the specified instance. A hint has the highest routing priority. For example, it is not subject to consistency and transaction constraints.You need to reasonably evaluate whether it is required in your business scenario before using it.

Note:

When using the MySQL command line tool to connect and use the `HINT` statement, you need to add the `-c` option in the command; otherwise, the hint will be filtered by the tool.

The database proxy kernel version greater than or equal to version 1.1.3 supports `PREPARE` statement when the hint syntax is used through the database proxy.

Currently, three types of hints are supported:

Assign to the source instance for execution:

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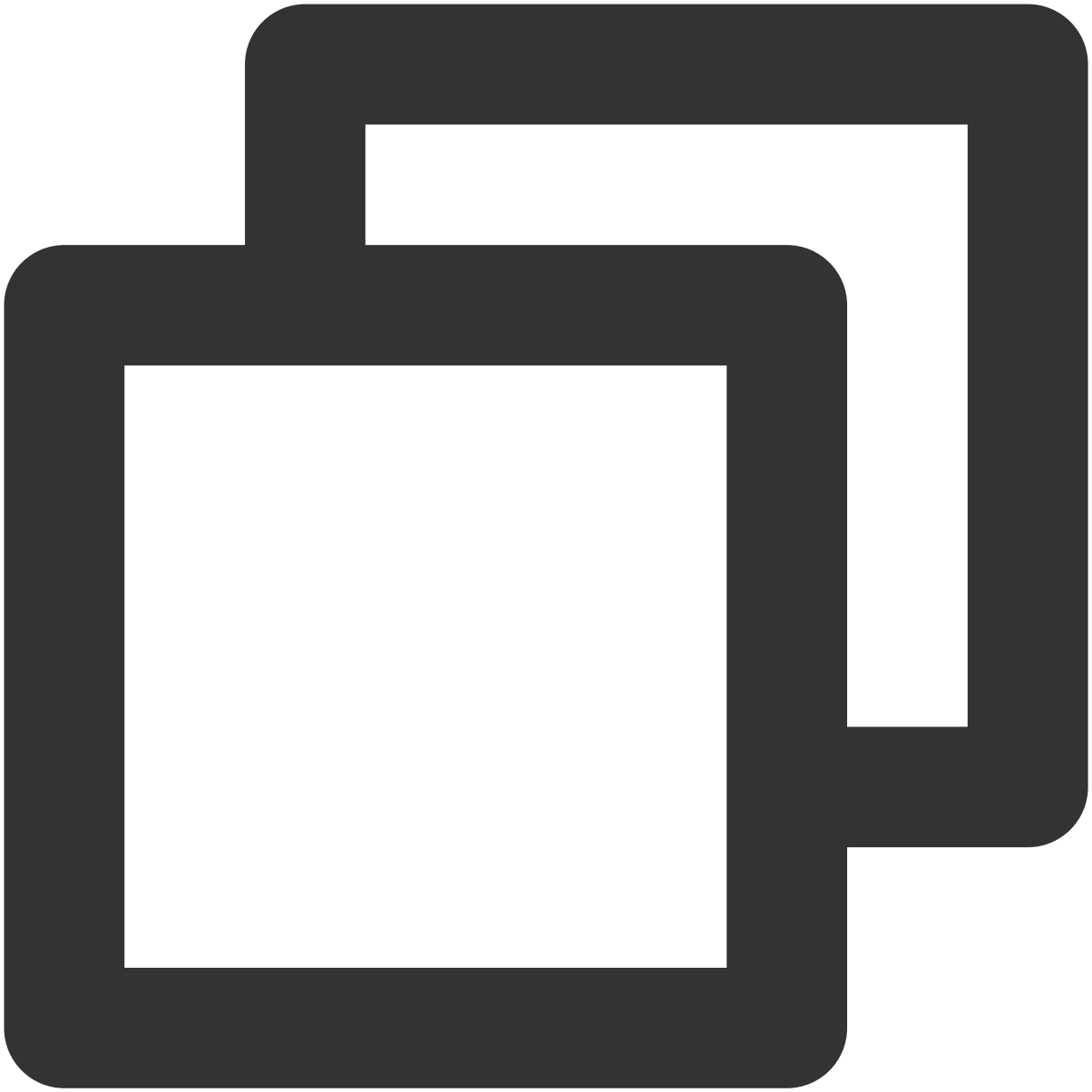

```
/* to master */
or
/*FORCE_MASTER*/
```

Assign to a read-only instance for execution:

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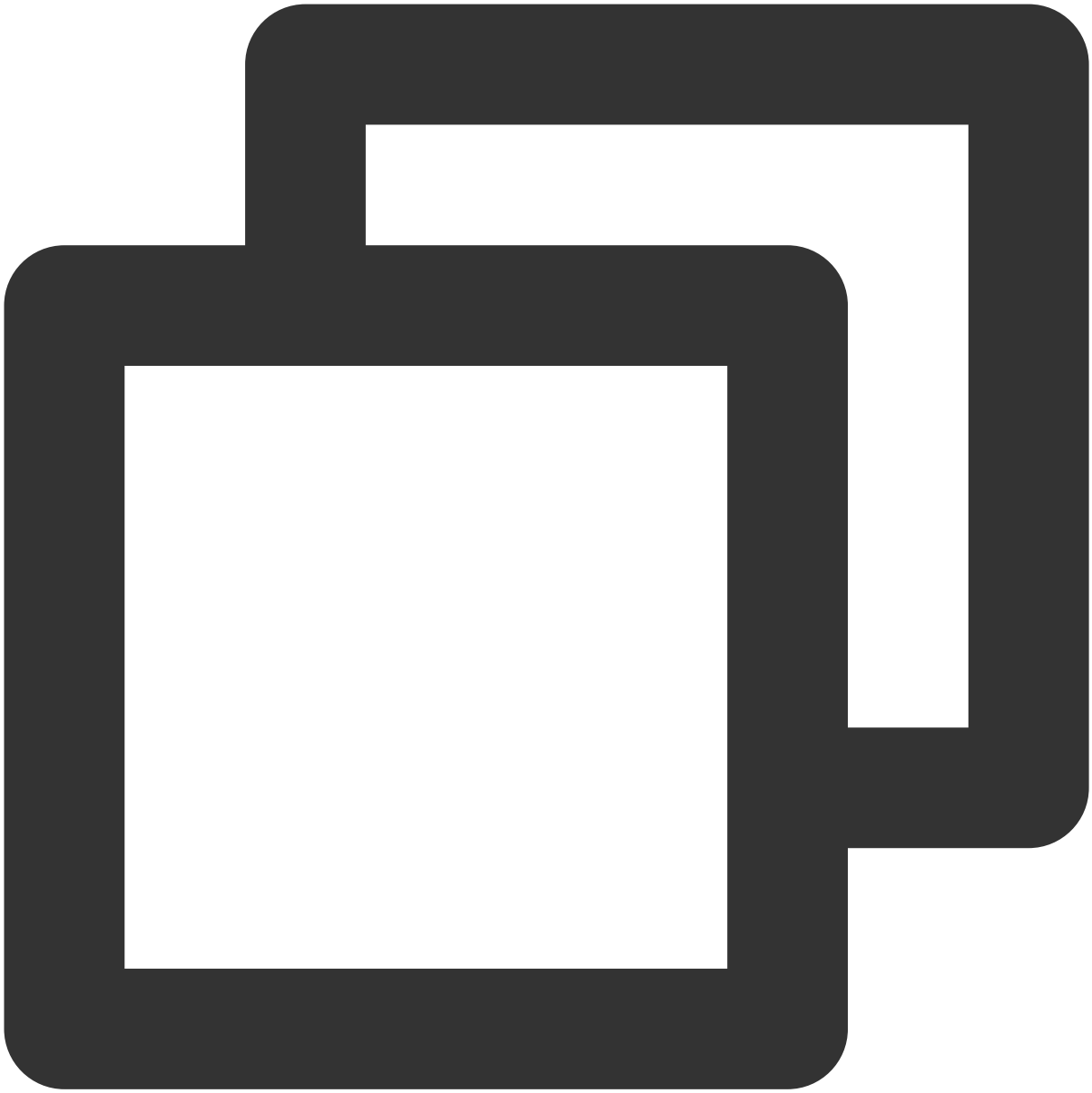

```
/* to slave */
or
/*FORCE_SLAVE*/
```

Specify an instance for execution:

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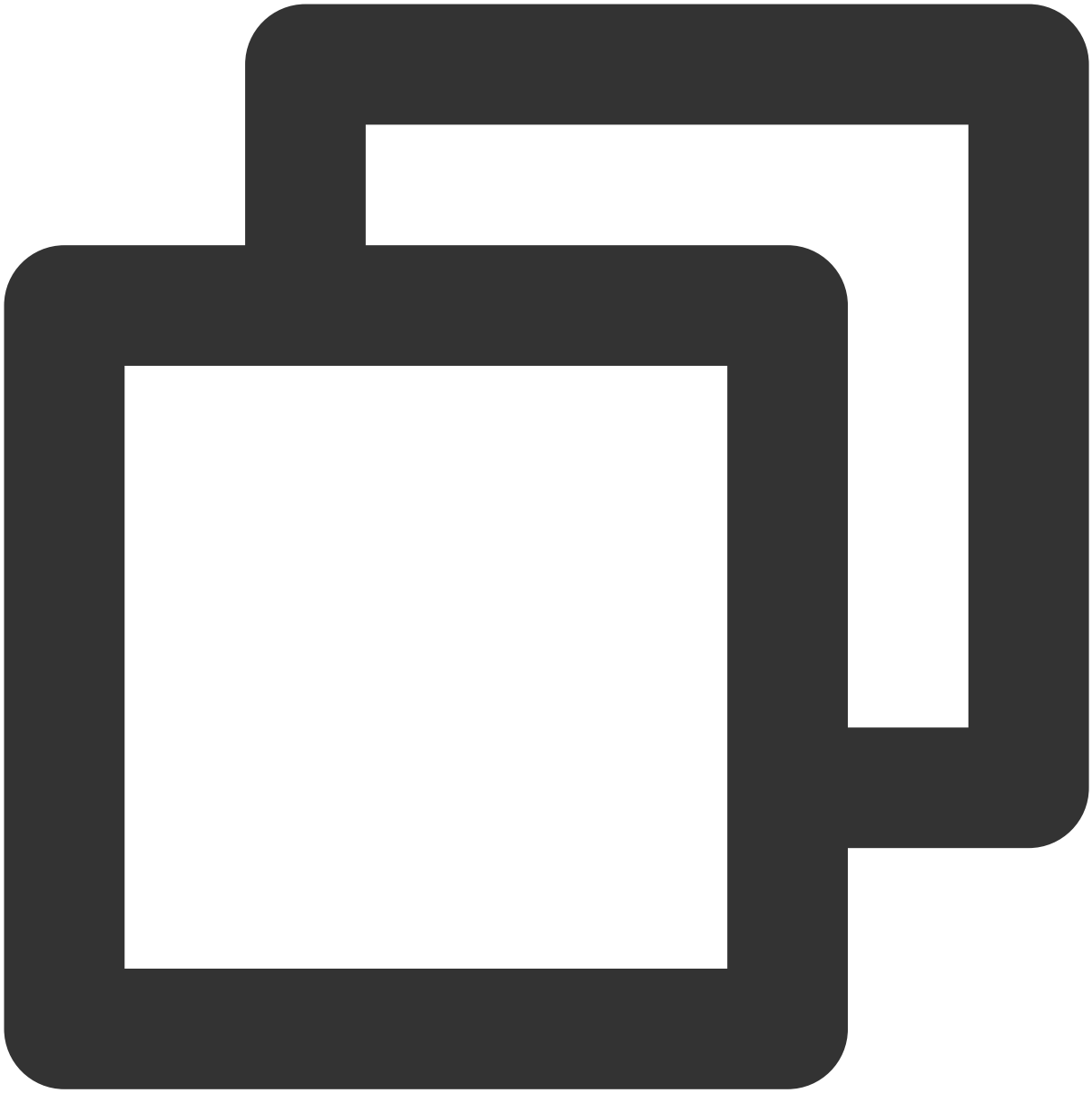

```
/* to server server_name*/
```

`server_name` can be a short ID, such as `/* to server test_ro_1 */` .

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Account Management
Creating Account

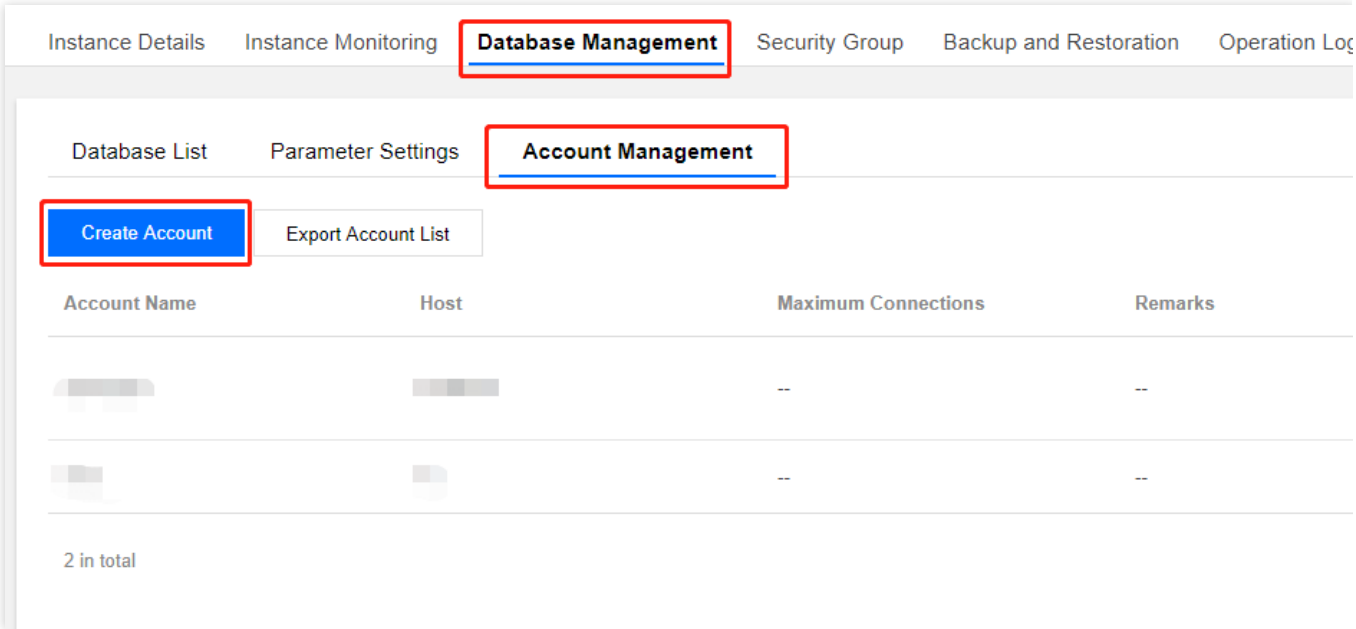
Last updated：2024-07-22 15:27:14

Overview

In addition to the default root account created by the system, you can also create other database accounts in the TencentDB for MySQL console as needed.

Directions

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the instance management page, select **Database Management**> **Account Management** and click **Create Account**.



3. In the pop-up window, enter the account name, host, and password, confirm the password, and click **OK**.

Account Name:

In MySQL 5.5 and 5.6, the database account name can contain 1–16 letters, digits, or underscores. It must begin with a letter and end with a letter or digit.

In MySQL 5.7 and 8.0, the database account name can contain 1–32 letters, digits, or underscores. It must begin with a letter and end with a letter or digit.

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Host: Specify a host address to access the database. It can be an IP and contain `%` (indicating no limit on the IP range). Multiple hosts should be separated by line break, space, semicolon, comma, or vertical bar.
Example 1: Enter `%` to indicate no limit on the IP range, that is, clients at all IP addresses are allowed to use this account to connect to the database.
Example 2: Enter `10.5.10.%` to indicate that clients with an IP range within `10.5.10.%` are allowed to use this account to connect to the database.
Password: The password must contain 8–64 characters in at least two of the following character types: letters, digits, and special symbols `\\_+-&=!@#$%^\\*()` . You can also set the password complexity to improve the database security as instructed in Setting Password Complexity.
Maximum Connections: The number of connections for this account, which must be no more than 10,240. If you don't enter a value, no limit will be imposed (subject to the maximum number of connections).
4. After successful creation, the database account can be managed in the database account list of the current instance.

Related APIs

API Name	Description
CreateAccounts	Creates a TencentDB account

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Setting Password Complexity

Last updated：2024-07-22 15:27:34

TencentDB for MySQL allows you to set the password complexity to improve the strength of database access passwords and optimize the database security.

Prerequisites

The database version is:
MySQL 5.6, with minor version 20201231 or later.
MySQL 5.7, with minor version 20201231 or later.
MySQL 8.0, with minor version 20201230 or later.
The instance must be on a two-node/three-node architecture.

Use Limits

For any password set during account creation or reset in the TencentDB for MySQL console, it must at least meet the following initial account password requirements:
It can contain 8 to 64 characters
It must contain at least three of the following character types: uppercase letters, lowercase letters, digits, and special symbols.
Special characters are `_+-&=!@#$%^*()` .

Enabling Password Complexity

Note:
After the password complexity feature is enabled, any password set during account creation or reset must follow the password complexity policy.

Enabling when creating an instance on the purchase page

1. Log in to the TencentDB for MySQL purchase page.
2. Configure parameters as needed. Select **Enable** after the **Password Complexity** parameter.

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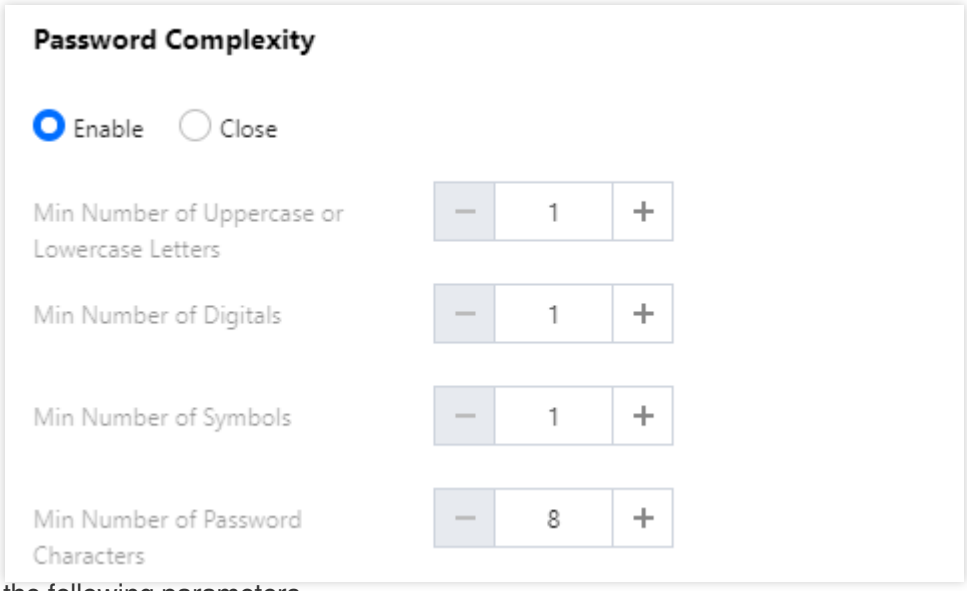


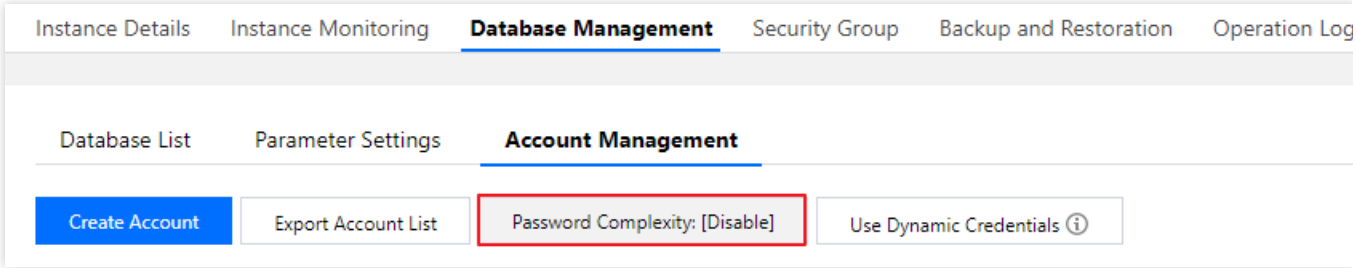
3. Set the following parameters.

Parameter	Description
Min Number of Uppercase or Lowercase Letters	You can select a number between 1 (default value) and 16.
Min Number of Digitals	You can select a number between 1 (default value) and 16.
Min Number of Symbols	You can select a number between 1 (default value) and 16.
Min Number of Password Characters	You can select a number between 8 (default value) and 64. The minimum value must be greater than the sum of the above three parameters.

Enabling for existing instances in the console

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.

2. On the instance management page, select **Database Management**> **Account Management** and click **Password Complexity** (disabled by default).



3. Select **Enable** in the **Password Complexity** pop-up window, set the following parameters, and click **OK**.

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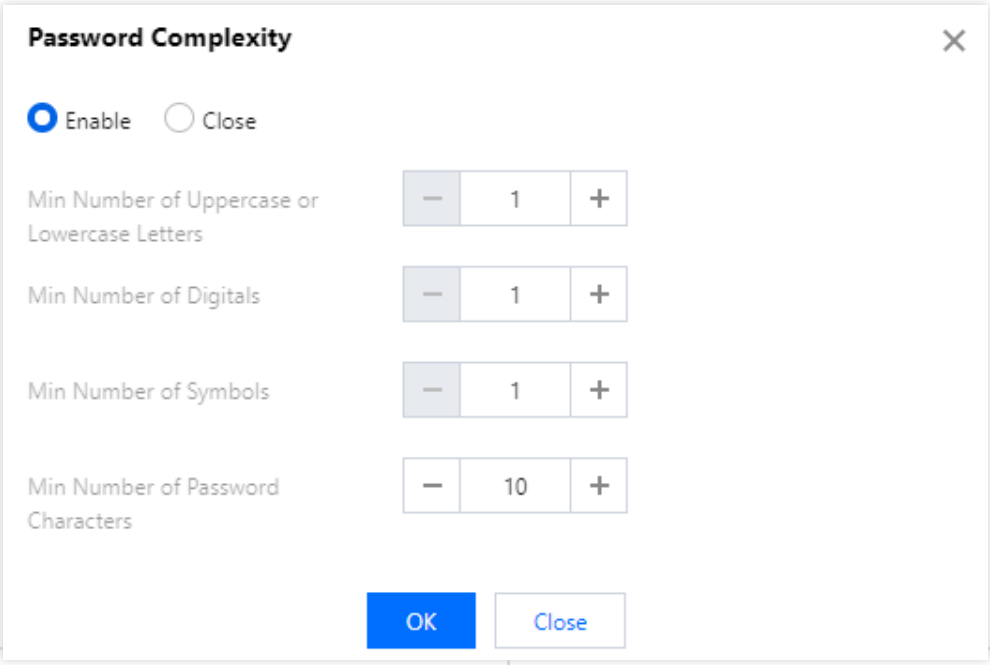

Parameter	Description
Min Number of Uppercase or Lowercase Letters	You can select a number between 1 (default value) and 16.
Min Number of Digitals	You can select a number between 1 (default value) and 16.
Min Number of Symbols	You can select a number between 1 (default value) and 16.
Min Number of Password Characters	You can select a number between 8 (default value) and 64. The minimum value must be greater than the sum of the above three parameters.

Disabling Password Complexity

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the instance management page, select **Database Management**> **Account Management** and click **Password Complexity**.

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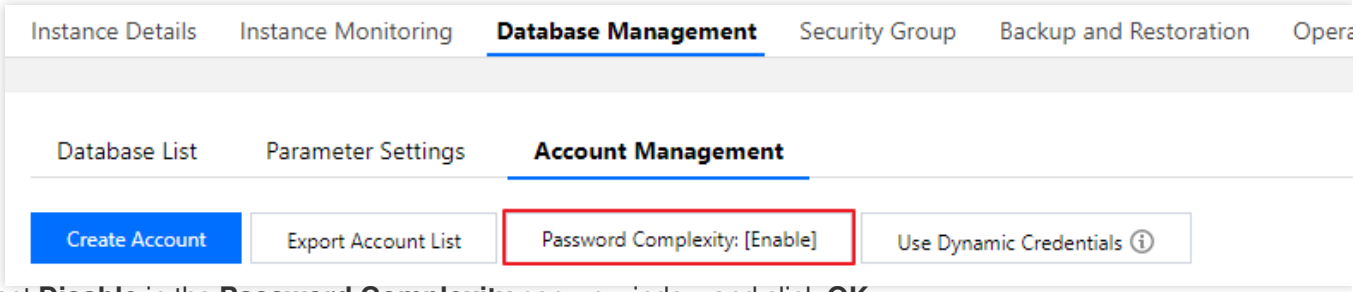
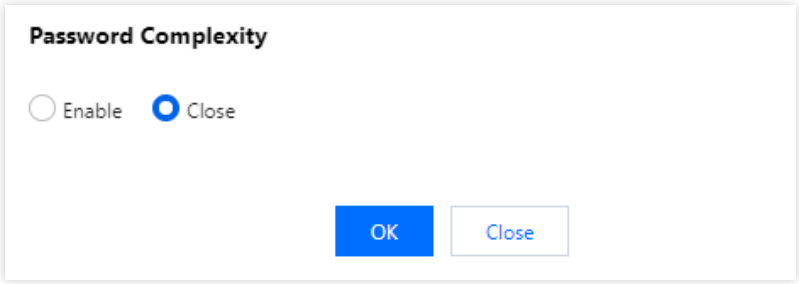


3. Select **Disable** in the **Password Complexity** pop-up window and click **OK**.



Relevant Documentation

Creating Account

Resetting Password

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Resetting Password

Last updated：2024-07-22 15:27:49

Overview

If you forgot your database account password or need to change it while using TencentDB for MySQL, you can reset it in the console.

Note:

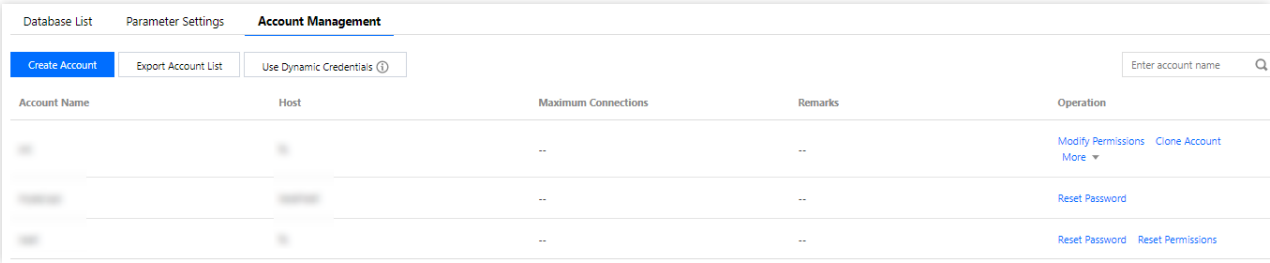
For TencentDB for MySQL, the password resetting feature has been connected to CAM; therefore, we recommend that you exercise tighter control over the permission to this API (password resetting) or sensitive resources (i.e., TencentDB for MySQL instances) by granting such permission only to appropriate personnel.

For data security, we recommend that you regularly reset the password at least once every three months.

Directions

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to access the instance management page.

2. On the instance management page, select **Database Management** > **Account Management**, find the account for which to reset the password, and click **Reset Password** or select **More** > **Reset Password**.



3. In the pop-up window, enter a new password, confirm the password, and click **OK**.

Note:

The password should be a combination of 8–64 characters containing at least two of the three types: letters, digits, and symbols (_+-&=!@#$%^*()).

Related APIs

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API Name	Description
ModifyAccountPassword	Modifies the password of a TencentDB account

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Modifying Account Permissions

Last updated：2023-12-05 17:32:58

Operational Scenario

You have the capability to manage existing database accounts through the MySQL Cloud Database Console, granting them either global privileges or object-level privileges. Concurrently, you also possess the ability to revoke these authorizations.

Account Authorization Description

Authorization	Description
ALTER	The authority to alter the structure of tables within the database, encompassing the modification of table fields, the addition and deletion of table fields, as well as the creation and removal of table indices.
ALTER ROUTINE	Modify the permissions of routines such as stored procedures and functions.
CREATE	The authority to create new objects such as databases, tables, views, stored procedures, and functions.
CREATE ROUTINE	The authority to create routine objects such as stored procedures and functions.
CREATE TEMPORARY TABLES	The authorization to create temporary tables.
CREATE USER	This authority allows for the creation of new users and the allocation of corresponding permissions to them.
CREATE VIEW	The authority to create view objects.
DELETE	The authority to delete data from a specified table.
DROP	The authority to delete objects such as databases, tables, views, stored procedures, and functions.
EVENT	The authority to create, modify, and eradicate events.
EXECUTE	This authority permits users to execute pre-existing objects such as stored procedures and functions.

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INDEX	The authority to create and eradicate indices.
INSERT	The authority to insert or write new data into the table.
LOCK TABLES	Securing the requisite permissions for executing read and write operations on the designated data table.
PROCESS	The authority to view the information of all currently active threads and processes.
REFERENCES	The authority to create or remove foreign key constraints within the current database.
RELOAD	The authority to reload certain system configuration files, as well as to restart or shut down the database.
REPLICATION CLIENT	Authority to observe and administer the status and parameters of the replication process.
REPLICATION SLAVE	The authority to replicate data from the Master server.
SELECT	The authority to query data from the designated table.
SHOW DATABASES	Display the permissions of all databases in the current database server.
SHOW VIEW	Displaying the permissions of the view.
TRIGGER	Authority to create and administer triggers.
UPDATE	Permission to update data in a specified table.

Directions

1. Log in to the TencentDB for MySQL console. In the instance list, click the instance ID or **Manage** in the **Operation** column to access the instance management page.
2. Select the **Database Management** > **Account Management** tab, find the account for which to modify the permissions, and click **Modify Permissions**.

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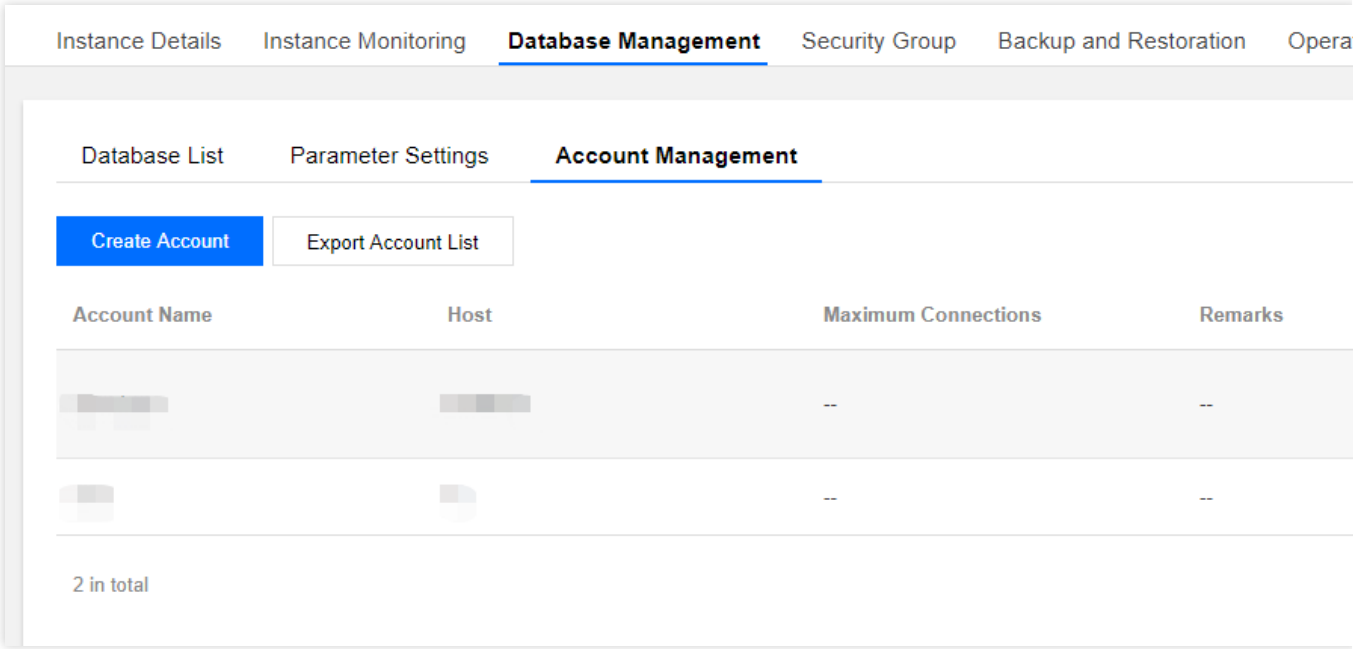

3. In the pop-up dialog box, select or deselect permissions and click **OK** to complete the modification.

Global Privileges: Grant global permissions to all databases in the instance.

Object-Level Privileges: Grant permissions to certain databases in the instance.

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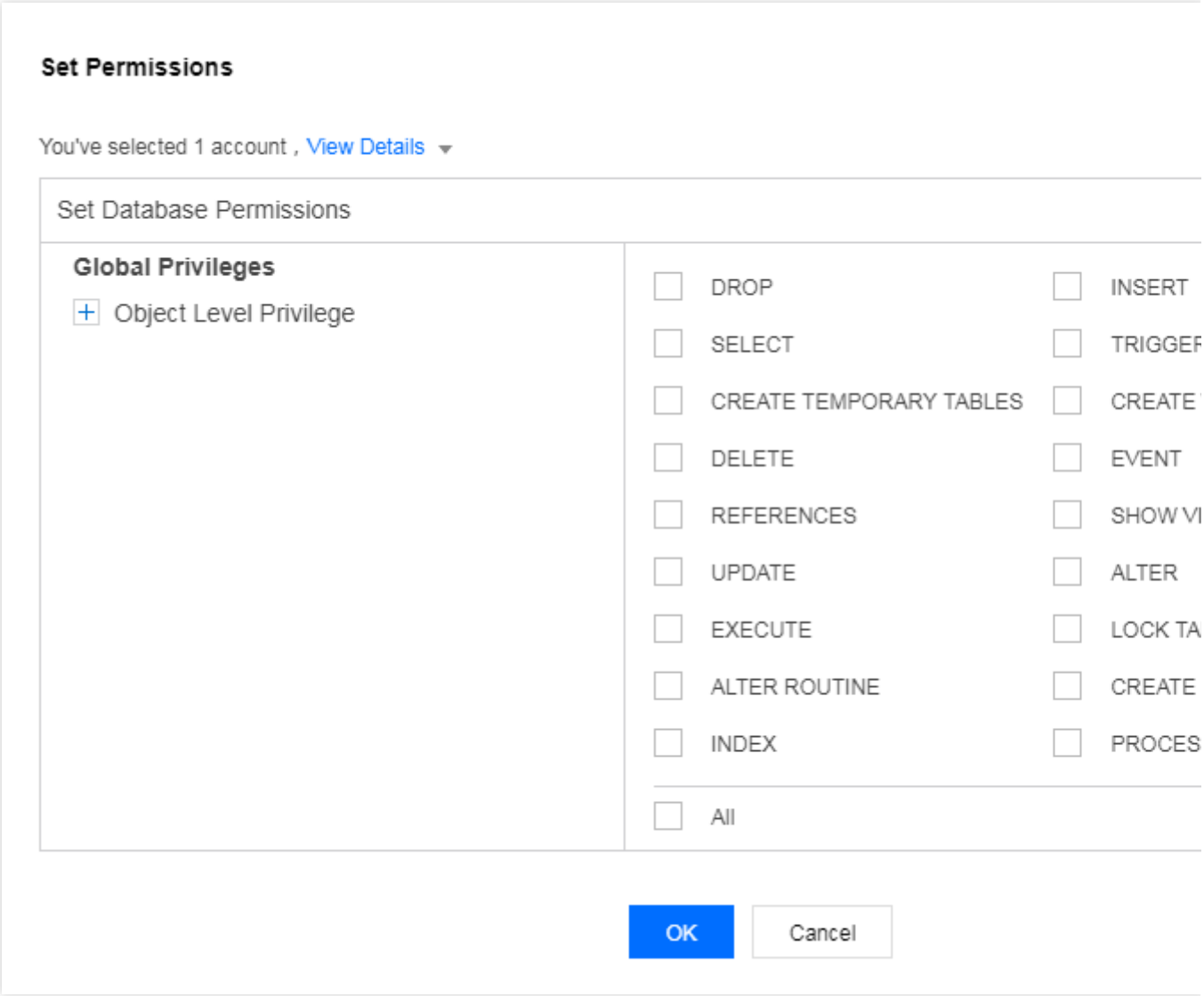

Related APIs

API Name	Description
ModifyAccountPrivileges	Modifies the permissions of a TencentDB instance account

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Modifying Host Addresses with Access Permissions

Last updated：2024-07-22 15:28:14

Operation Scenario

By modifying the host address authorized by the database account in the TencentDB for MySQL console, you can control the access to the database to improve the access security.

Directions

1. Log in to the TencentDB for MySQL console.
2. In the instance list, select the instance to be modified and click the instance name or **Manage** in the **Operation** column to enter the instance management page.
3. Select **Database Management** > **Account Management**, find the account for which to modify the host, and select **More** > **Modify Host**.

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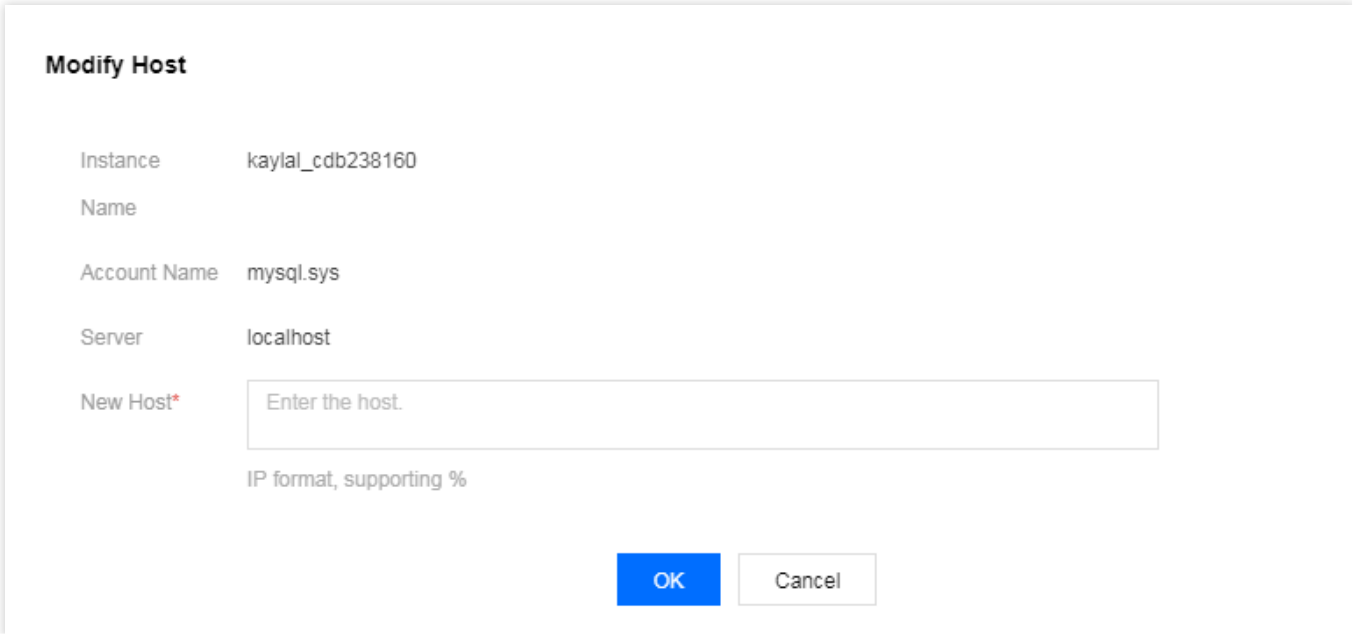
4. In the pop-up dialog box for modifying host, enter the new host address and click **OK**.

Note:

The host address may come in the format of an IP address. To allow all the clients to access the database using the database account, enter '%'.



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Deleting Account

Last updated：2024-07-22 15:28:27

Operation Scenarios

In order to disable an existing database account, it must be deleted in the TencentDB for MySQL console.

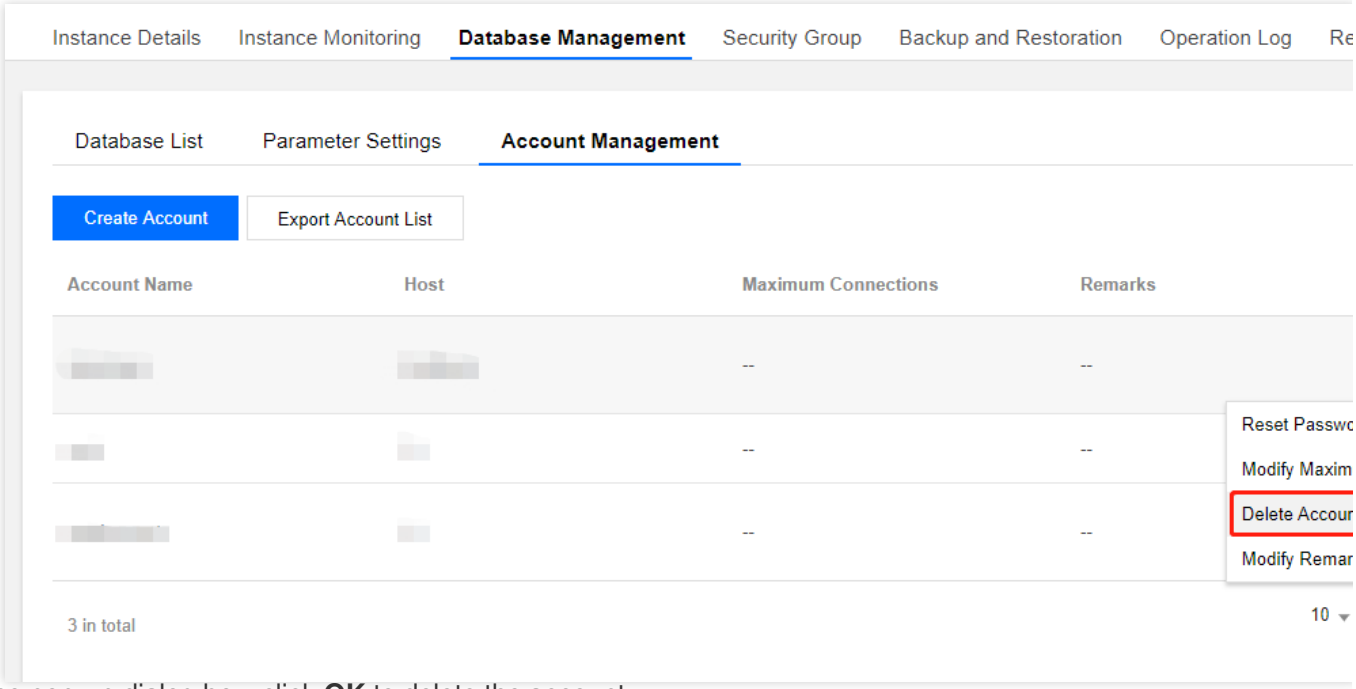
Note:

A database account cannot be recovered once deleted.

In order to avoid accidental deletion from interrupting normal use by your business, you need to make sure that the database account to be deleted is no longer used by any applications.

Directions

1. Log in to the TencentDB for MySQL Console. In the instance list, click an instance ID or **Manage** in the "Operation" column to enter the instance management page.
2. Select the **Database Management** > **Manage Account** tab, find the account to be deleted, and select **More** > **Delete Account**.



3. In the pop-up dialog box, click **OK** to delete the account.

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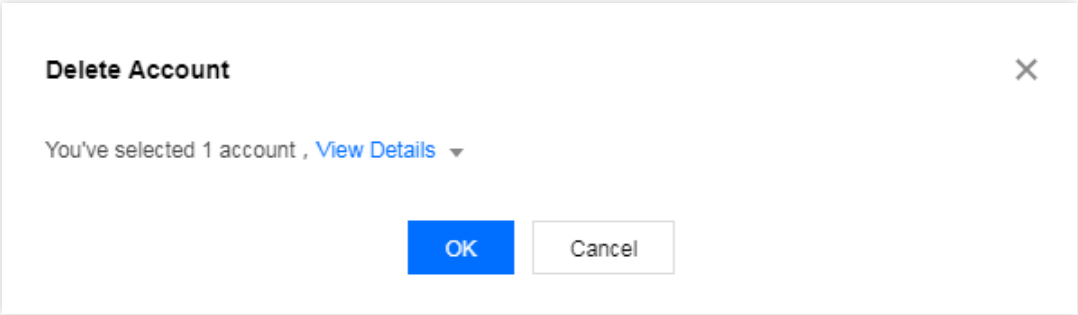

Related APIs

API Name	Description
DeleteAccounts	Deletes a TencentDB account

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Database Management Center (DMC)
DMC Overview

Last updated：2024-07-22 15:31:37

Overview

Database Management Center (DMC) is a one-stop Tencent Cloud database management tool. Services supported include database/table-level operations, real-time monitoring, instance session management, SQL window, and data management.
DMC is currently supported for TencentDB for MySQL, TencentDB for MariaDB, TDSQL-C for MySQL, TencentDB for Redis, and TDSQL for MySQL.

Features

Data management
It supports database operations such as creating and deleting databases/tables, modifying table structures, and maintaining table data.
Database instance session management
It displays multidimensional instance session information to help you easily view and perform relevant operations.
Database monitoring
It supports multidimensional monitoring of database status, InnoDB row operations, database connections, and traffic.
SQL window
It provides a SQL compiler and can save frequently used SQL templates and custom SQL statements. It can also display and export SQL statement execution results.

Benefits

Ease of use
DMC aims to provide easy-to-use database management services. You can use the convenient operation interface to perform database operations such as creating databases/tables.
Visualization
You do not need to separately install drivers or applications to use DMC. Instead, you just need to log in to the DMC console to manage, monitor, and manipulate databases in multiple dimensions through the visualization management page.

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Real-Time database status monitoring

DMC can collect database instance data in real time such as CPU utilization, number of connections, and storage capacity usage, so as to intuitively display database instance running conditions.

Real-Time database performance monitoring

DMC supports database performance monitoring at the second level, covering multiple monitoring items related to MySQL status, InnoDB row operations, threads, and network to help you monitor fluctuations in each performance item in real time. In addition, it supports the categorized calculation of sessions and allows you to kill instance sessions, helping you quickly locate causes of exceptions and implement performance optimization.

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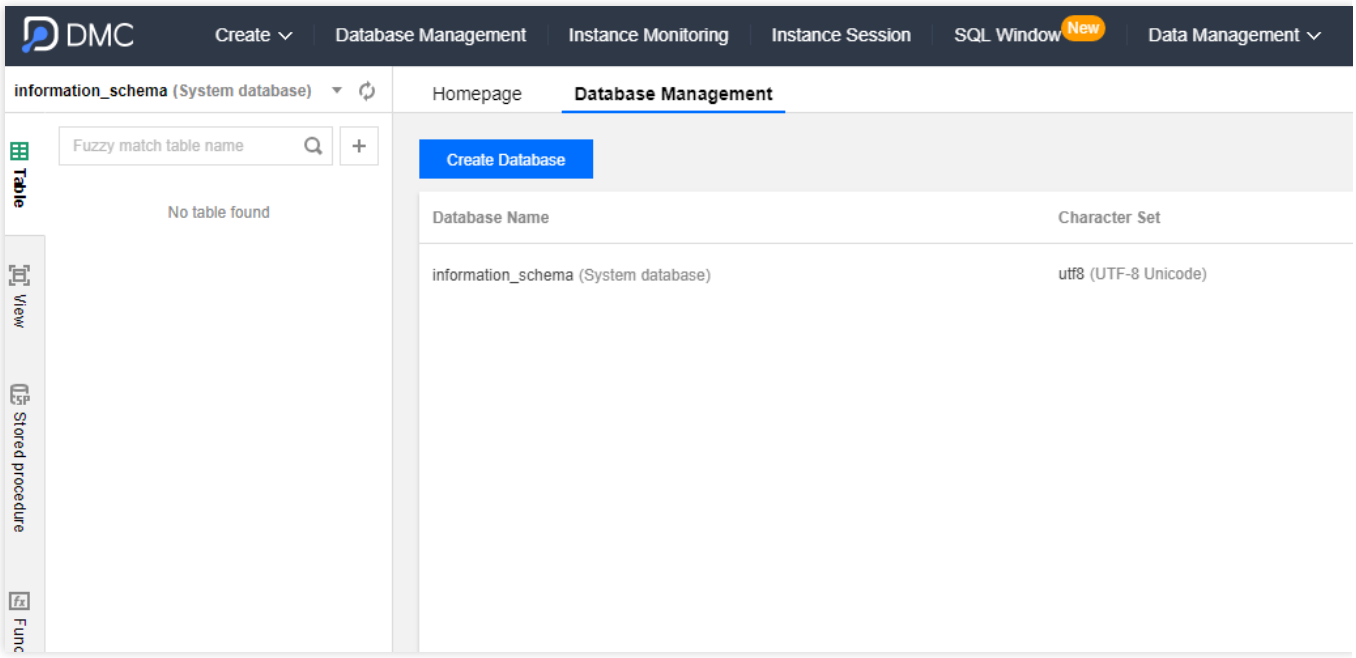
DMC Management

Last updated：2024-07-22 15:36:14

This document describes the features of DMC, such as database/table creation, database management, instance monitoring, instance session management, and visualized table data editing.

Database/Table Creation

1. Log in to DMC and select **Create** > **Create Database** > **Create Database** or **Create** > **Create Table** on the navigation bar at the top.



2. In the pop-up dialog box, configure the new database or table.

Note:

For more information on the character set and collation, see MySQL official documentation.

Database creation dialog box:

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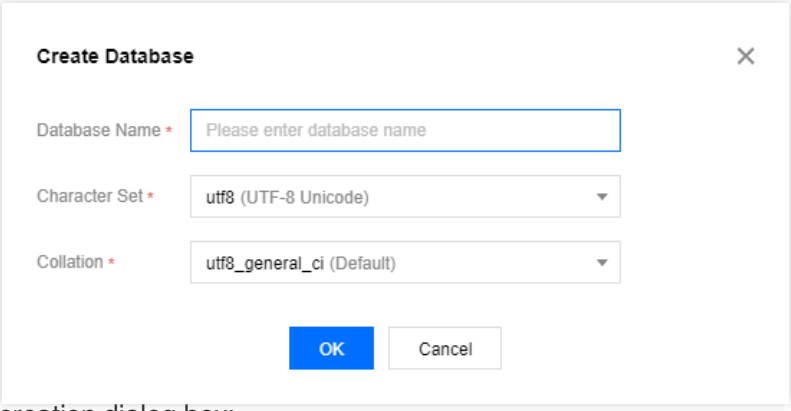

Table creation dialog box:

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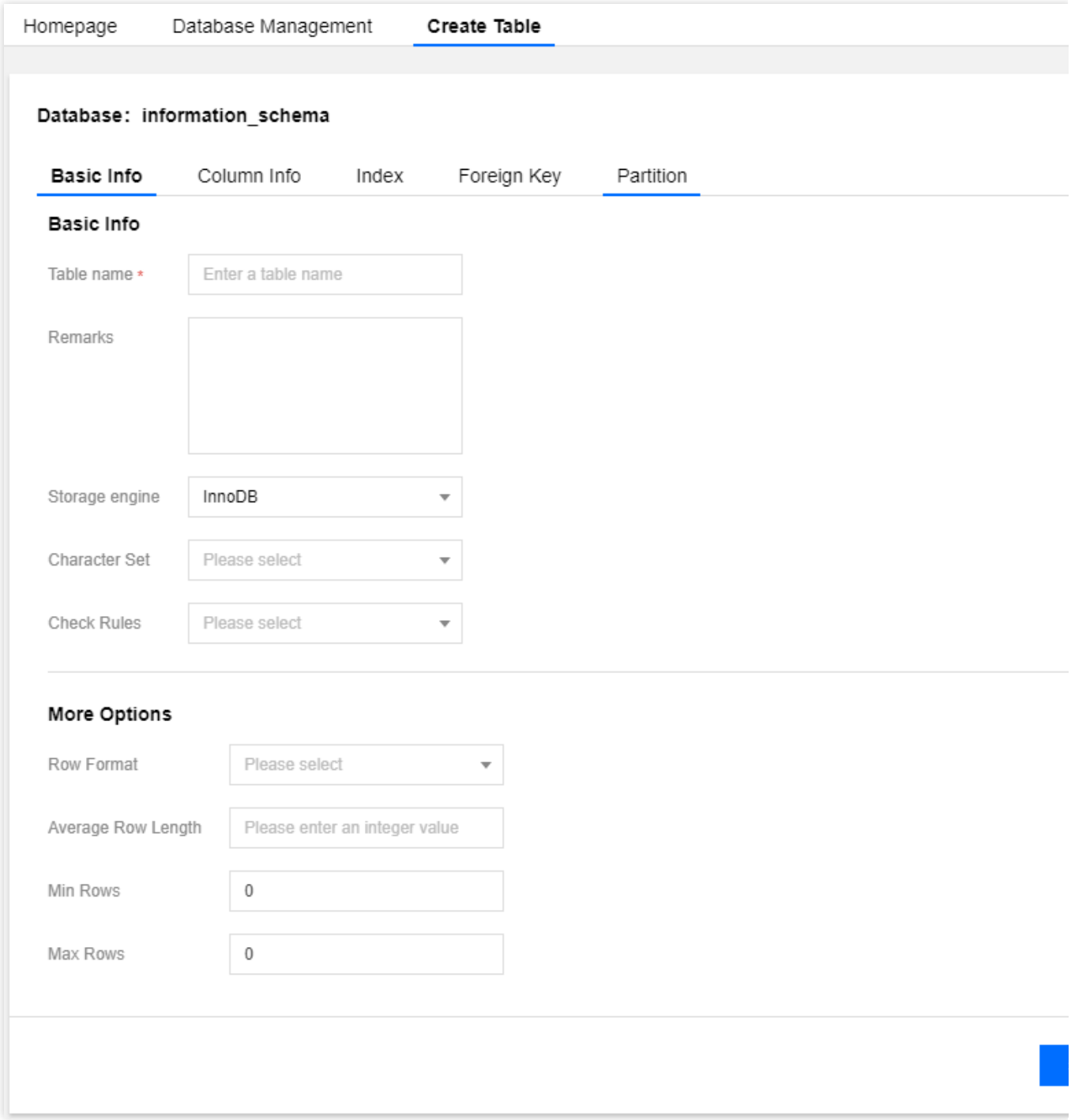

Database Management

Log in to DMC, select **Database Management** on the navigation bar at the top, and create, edit, or delete databases on the displayed page.

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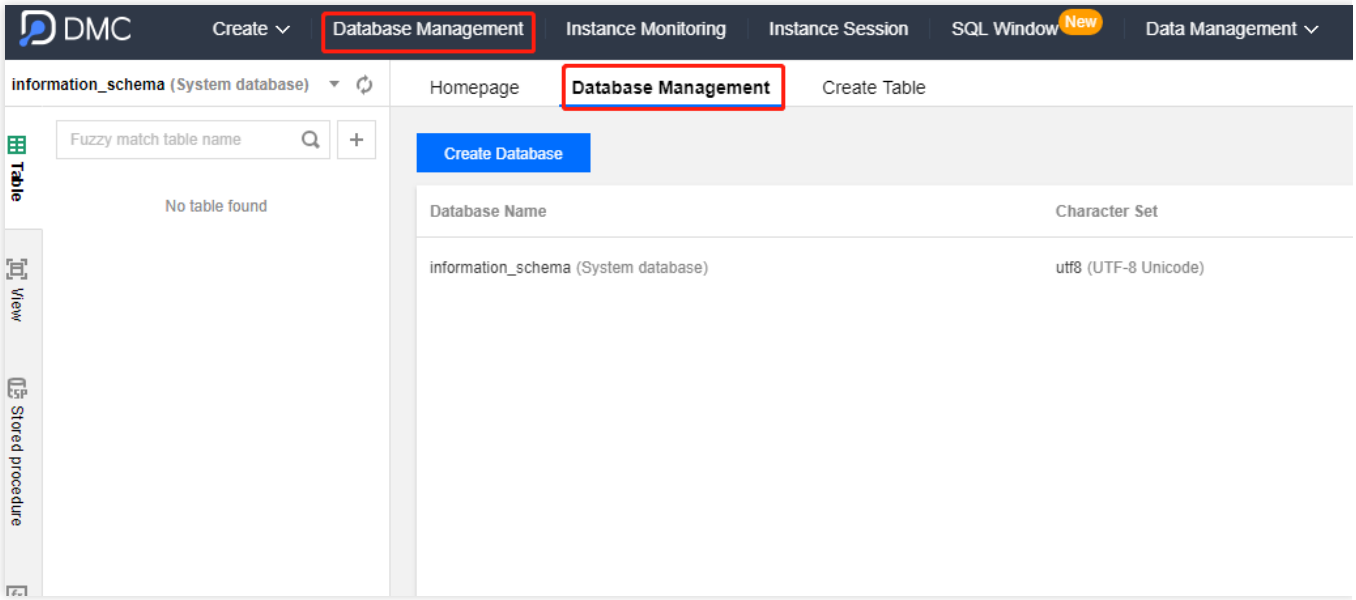

Instance Session Management

Log in to DMC, select **Instance Session** on the navigation bar at the top, and enter the instance session management page. You can view the details of all database sessions in the instance from four dimensions: session overview, users, access sources, and databases.

DMC allows you to kill sessions, facilitating your session management.

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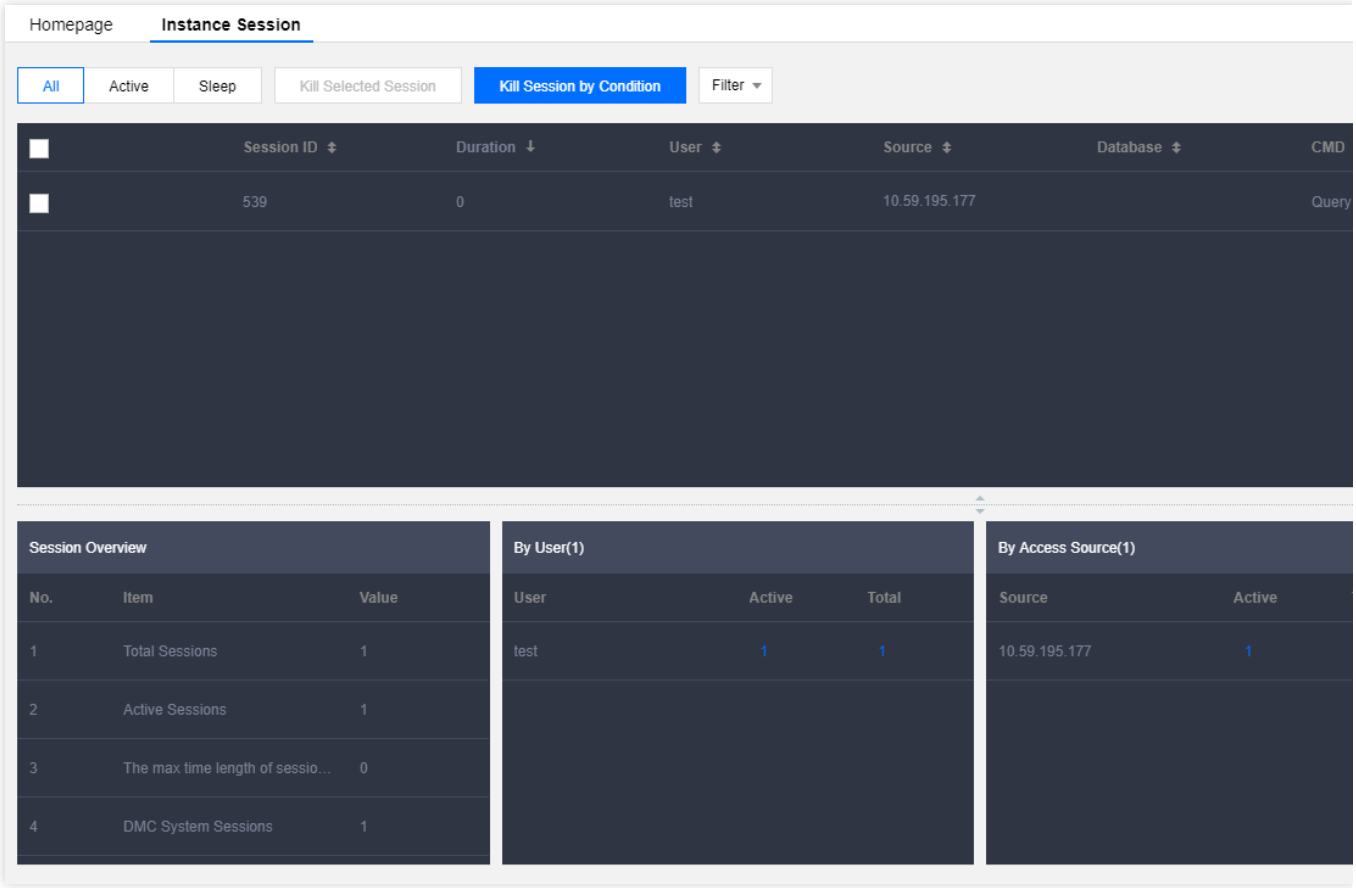

SQL Window

Log in to DMC, select **SQL Window** on the navigation bar at the top, or click **SQL Operation** on the **Operation** menu on the left sidebar to access the SQL window, which supports the following features:

Run SQL commands and view results

Optimize SQL statement formats

View SQL command execution plans

Save commonly used SQL statements

Use SQL templates

Export SQL statement execution results

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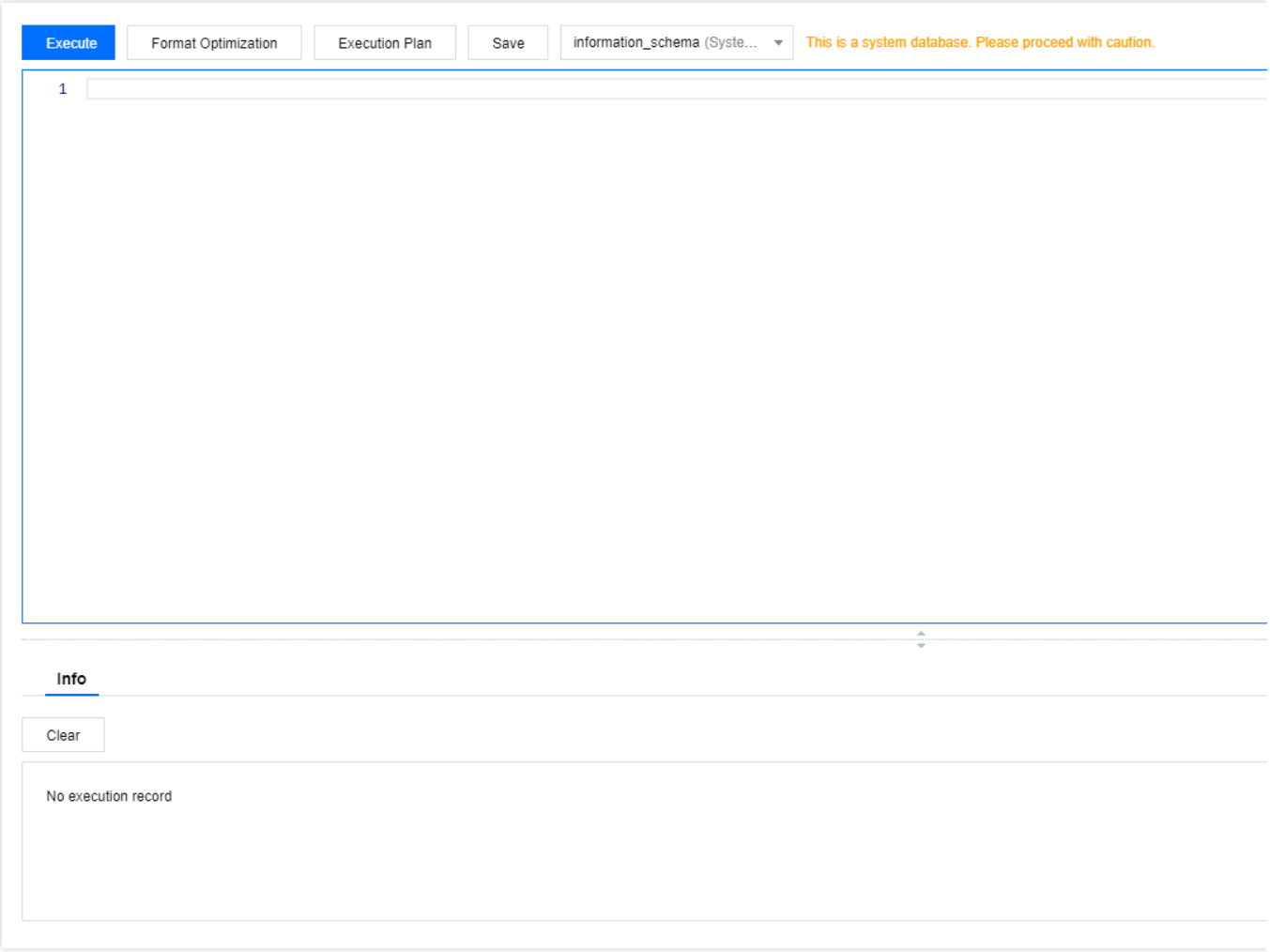

Data Management

Log in to DMC, select **Data Management** > **Data Importing** or **Data Exporting** on the navigation bar at the top, and you can import data into or export data from a database.

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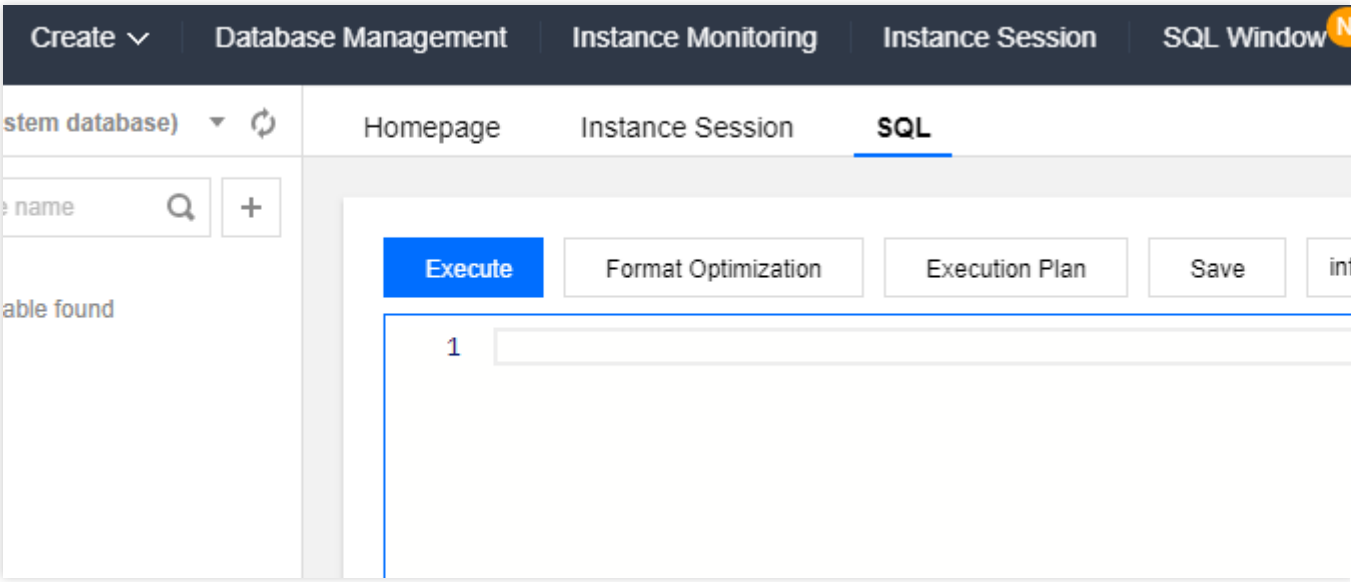

Visualized Table Data Editing

DMC for MySQL supports inserting, deleting, and updating data. You can click a table in the left **Table** list to insert, delete, and update its data in batches in the right pane, and then click **OK** in the **Quick Operation** pane to preview the SQL statements and implement the modification.

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Parameter Configuration
Setting Instance Parameters

Last updated：2024-07-22 15:41:12

You can view and modify certain parameters and query parameter modification logs in TencentDB for MySQL console.

Note:

You can modify the parameters of both source and read-only instances in the console in the same way as detailed below.

Use Limits

To ensure instance stability, only some parameters can be modified in the console. These parameters are displayed on the **Parameter Settings** page.

If the modified parameter requires instance restart to take effect, the system will ask you if you want to restart. We recommend that you do so during off-peak hours and ensure that your application has a reconnection mechanism.

If you want to return to the default formula, clear the entered parameters and apply.

Modifying Parameters in Parameter List

Batch modifying parameters

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to access the instance management page.
2. Select **Database Management** > **Parameter Settings** and click **Batch Modify Parameters**.

UI for the source instance:

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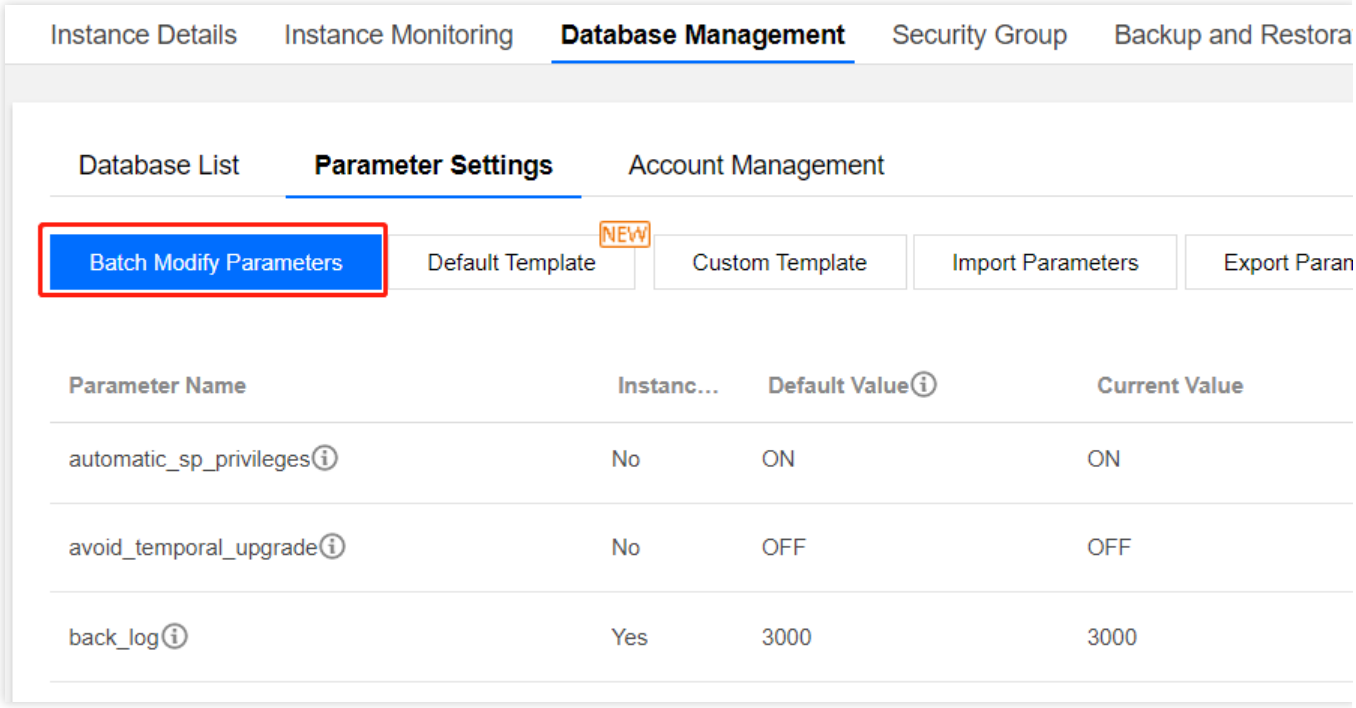
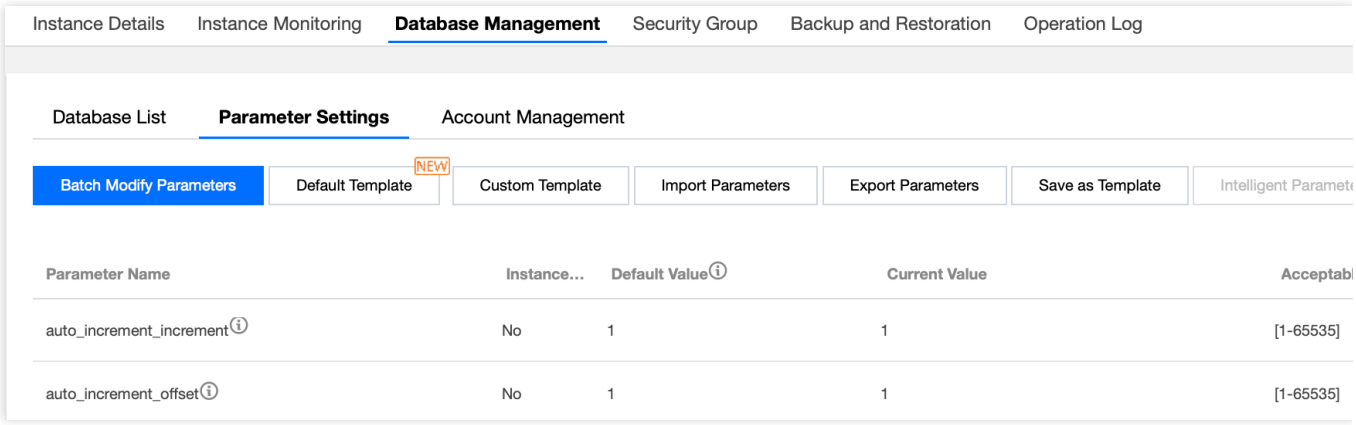


UI for the read-only instance:



3. Locate the desired parameters, and modify their values in the **Current Value** column. After confirming that everything is correct, click **Confirm Modification**.

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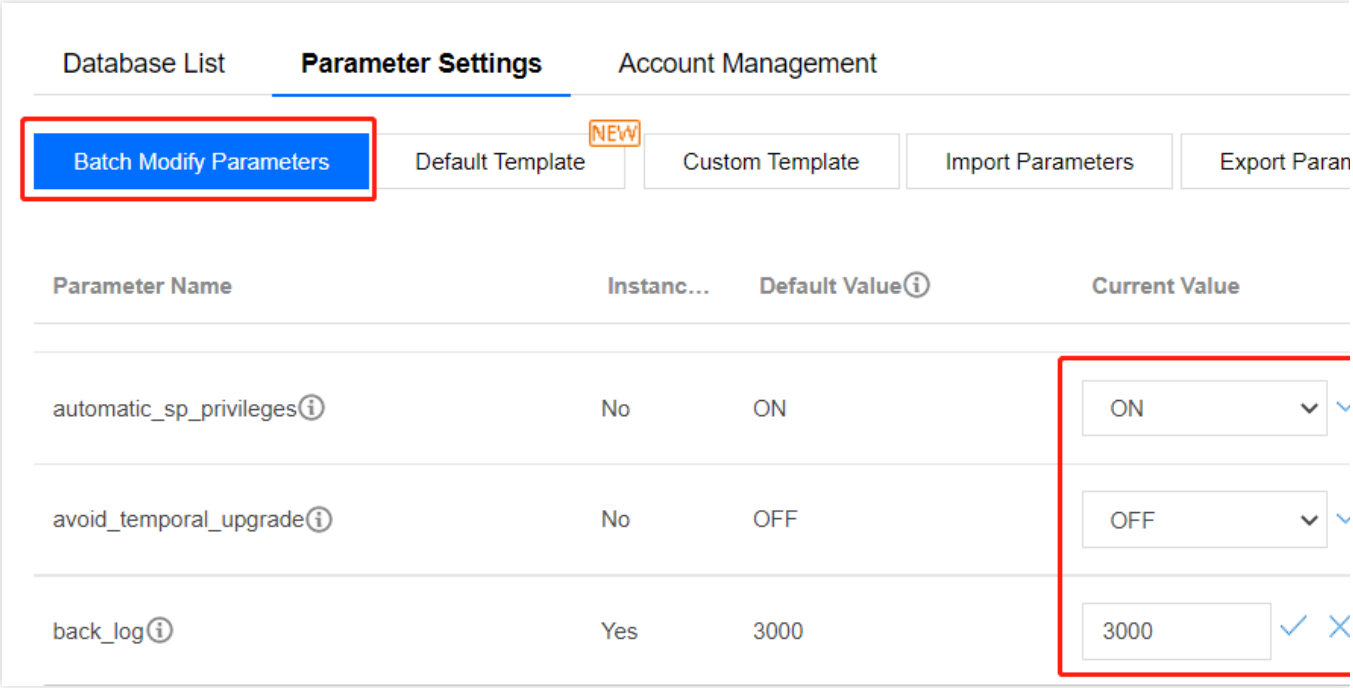

4. In the pop-up window, select an option in the **Execution Mode** and click **OK**.

Note:

If you select **Immediate execution**, the parameter modification task will be executed and take effect immediately.

If you select **During maintenance time**, the parameter modification task will be executed and take effect during this time. For more information, see Setting Instance Maintenance Window.

Modifying one parameter

1. Log in to the TencentDB for MySQL console, click an instance ID in the instance list, and enter the instance management page.

2. On the **Database Management** > **Parameter Settings** tab, locate the desired parameter in the parameter list and click

in the **Current Value** column.

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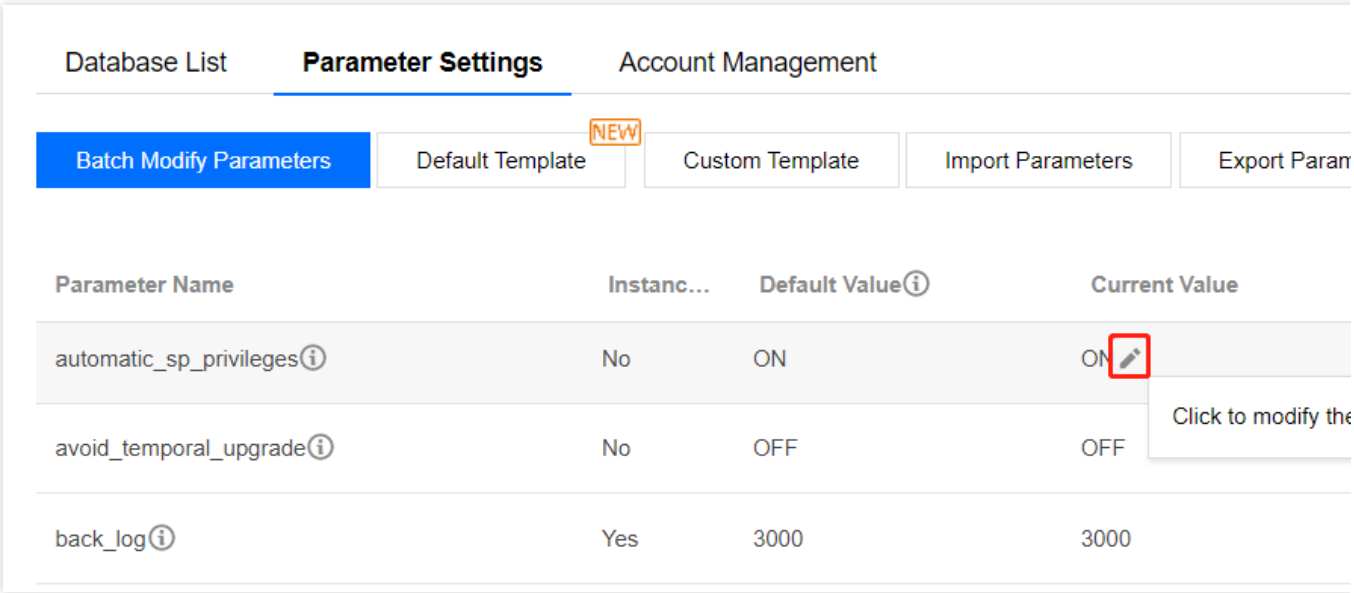
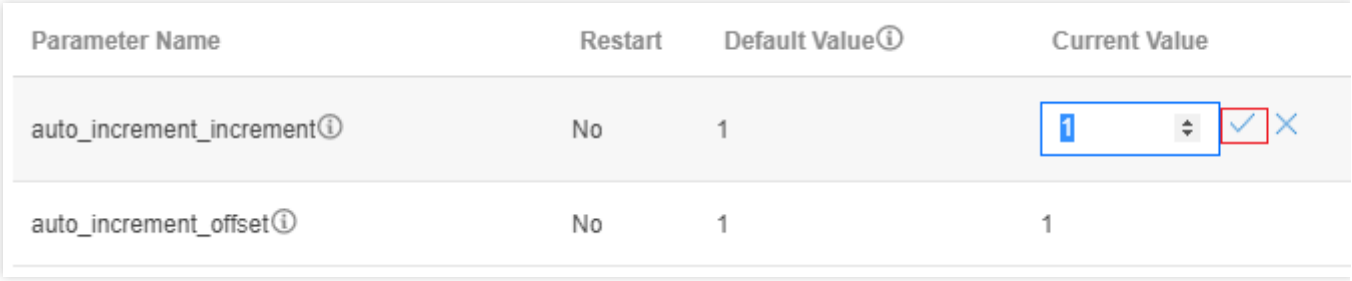


3. Modify the value within the restrictions stated in the **Acceptable Values** column and click

to save the modification. You can click

to cancel the operation.



4. In the pop-up window, select an option in the **Execution Mode** and click **OK**.

Note:

If you select **Immediate execution**, the parameter modification task will be executed and take effect immediately.

If you select **During maintenance time**, the parameter modification task will be executed and take effect during this time. For more information, see Setting Instance Maintenance Window.

Modifying Parameters by Importing Parameter Template

Option 1. Importing a parameter template on the Parameter Settings page

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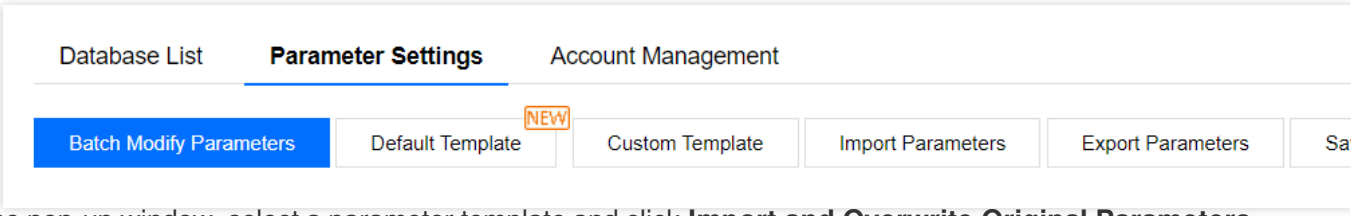
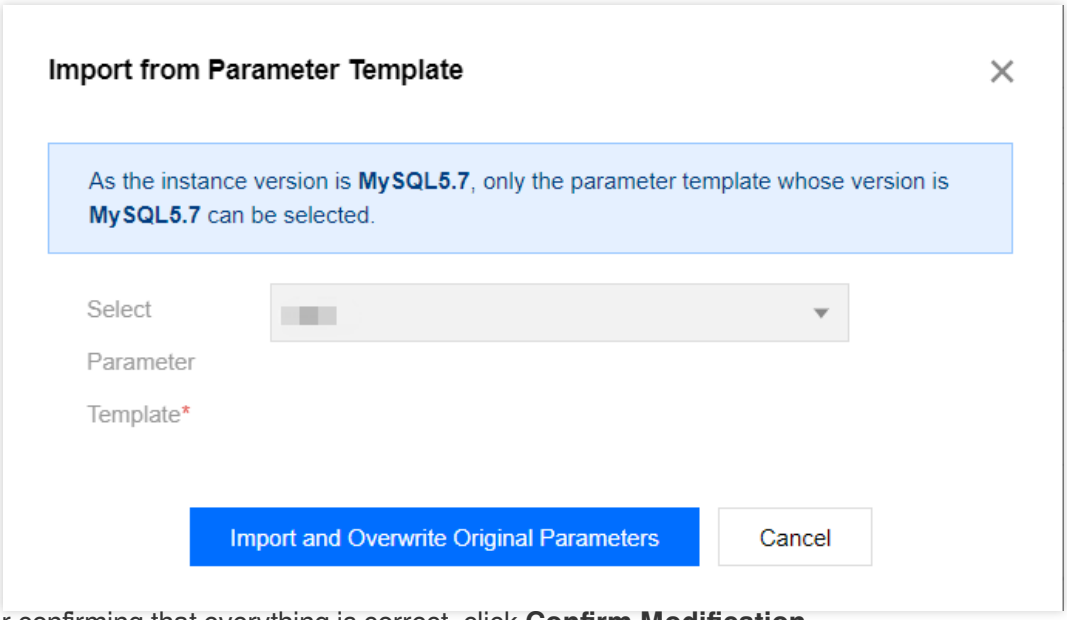
1. Log in to the TencentDB for MySQL console, click an instance ID in the instance list, and enter the instance management page.
2. Select **Database Management** > **Parameter Settings** and click **Custom Template**. If you haven't configured a commonly used custom template yet, you can select **Custom Template** on the left sidebar in the TencentDB for MySQL console, click **Create Template** to configure a parameter template, and then import it from the custom template as described in this step.



3. In the pop-up window, select a parameter template and click **Import and Overwrite Original Parameters**.



4. After confirming that everything is correct, click **Confirm Modification**.

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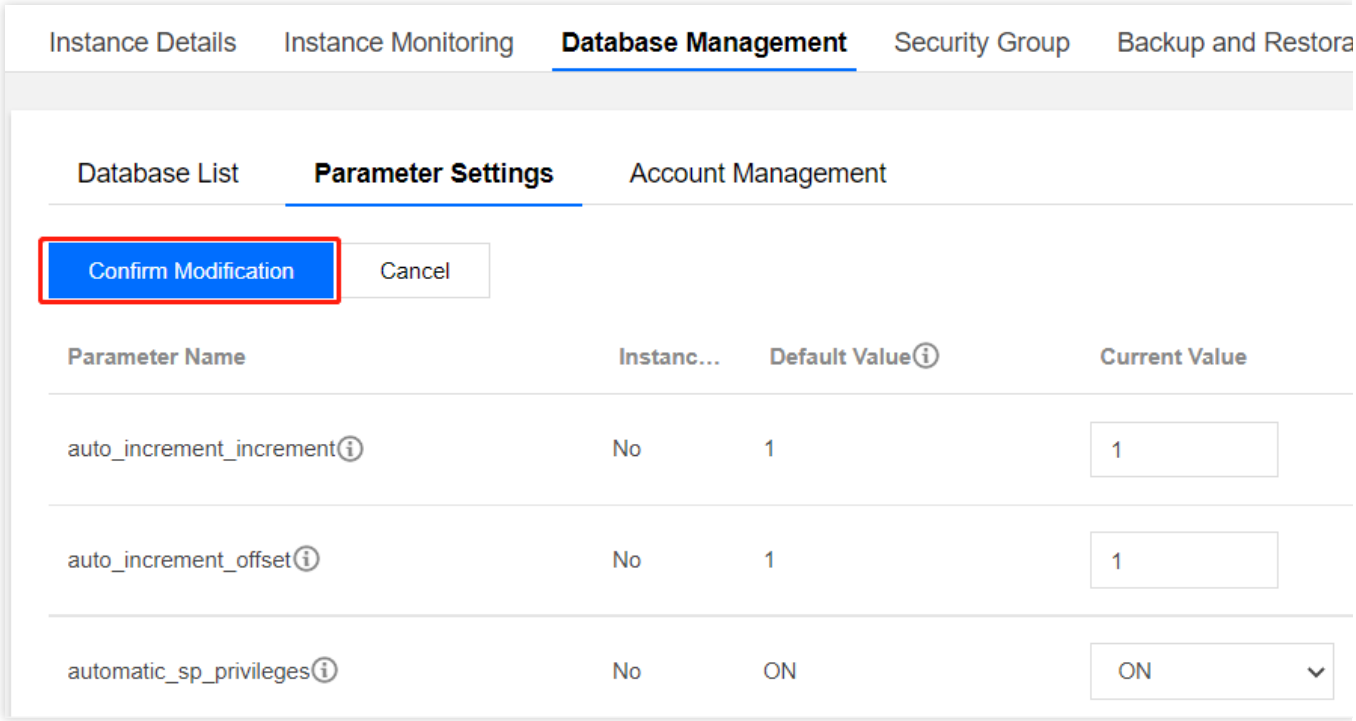


5. In the pop-up window, select an option in the **Execution Mode** and click **OK**.

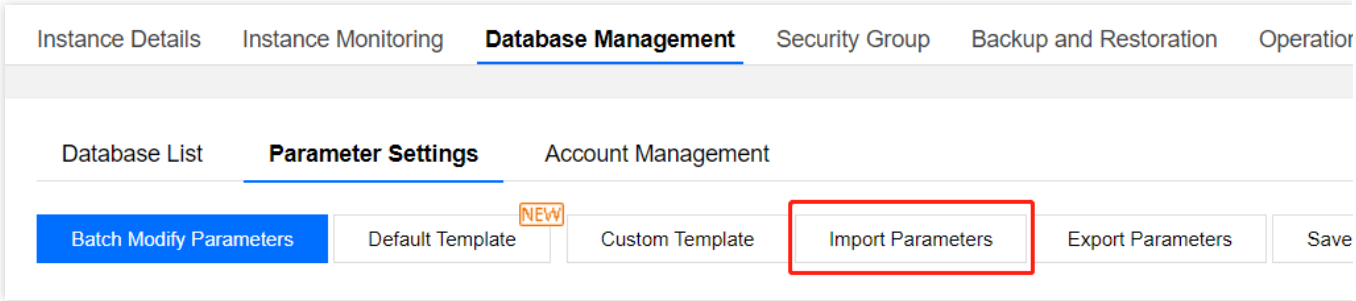
Note:

If you select **Immediate execution**, the parameter modification task will be executed and take effect immediately.

If you select **During maintenance time**, the parameter modification task will be executed and take effect during this time. For more information, see Setting Instance Maintenance Window.

Option 2. Modifying parameters by importing a parameter configuration file

1. Log in to the TencentDB for MySQL console, click an instance ID in the instance list, and enter the instance management page.
2. Select **Database Management** > **Parameter Settings** and click **Import Parameters**.



3. Click **Select File** to locate the desired parameter file and click **Import and Overwrite Original Parameters**.

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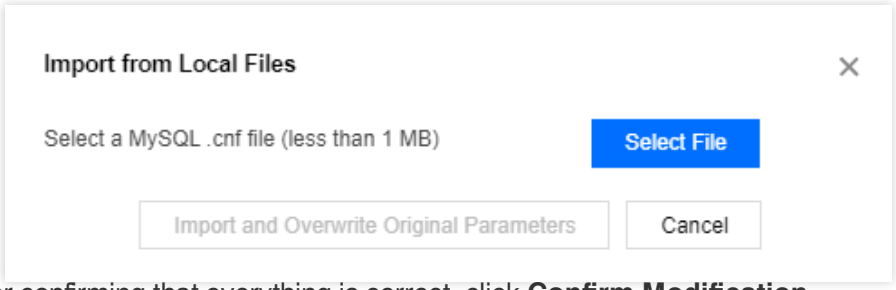


4. After confirming that everything is correct, click **Confirm Modification**.
5. In the pop-up window, select the **execution mode** and click **OK**.

Note:

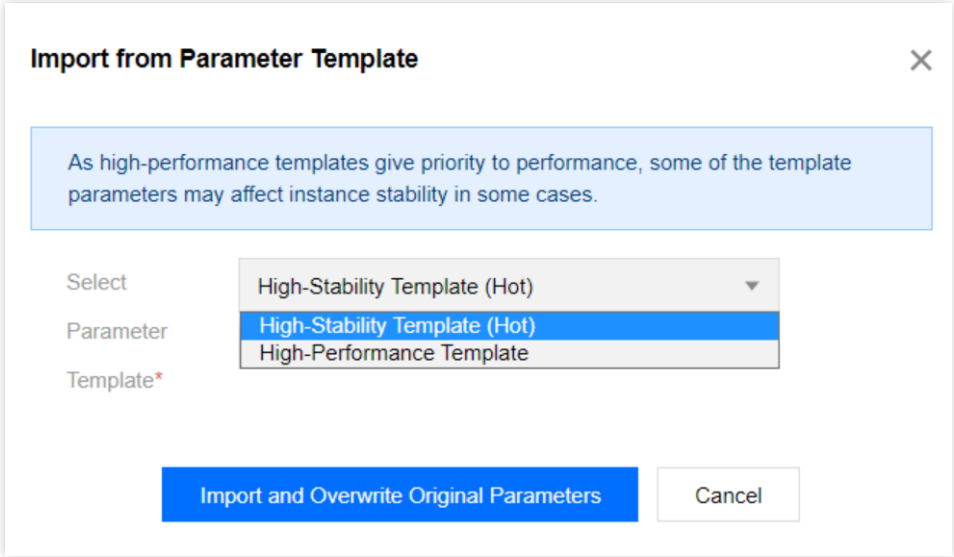
If you select **Immediate execution**, the parameter modification task will be executed and take effect immediately.
If you select **During maintenance time**, the parameter modification task will be executed and take effect during this time. For more information, see Setting Instance Maintenance Window.

Option 3. Importing a parameter template on the "Parameter Template" page

For more information, see Managing Parameter Template > Applying a Parameter Template to a Database.

Restoring to Default Template

1. Log in to the TencentDB for MySQL console, click an instance ID in the instance list, and enter the instance management page.
2. Select **Database Management** > **Parameter Settings**, click **Default Template**, select **High-Stability Template** or **High-Performance Template**, and click **Import and Overwrite Original Parameters**.



3. Click **Confirm Modification** to redirect to the parameter modification confirmation window.

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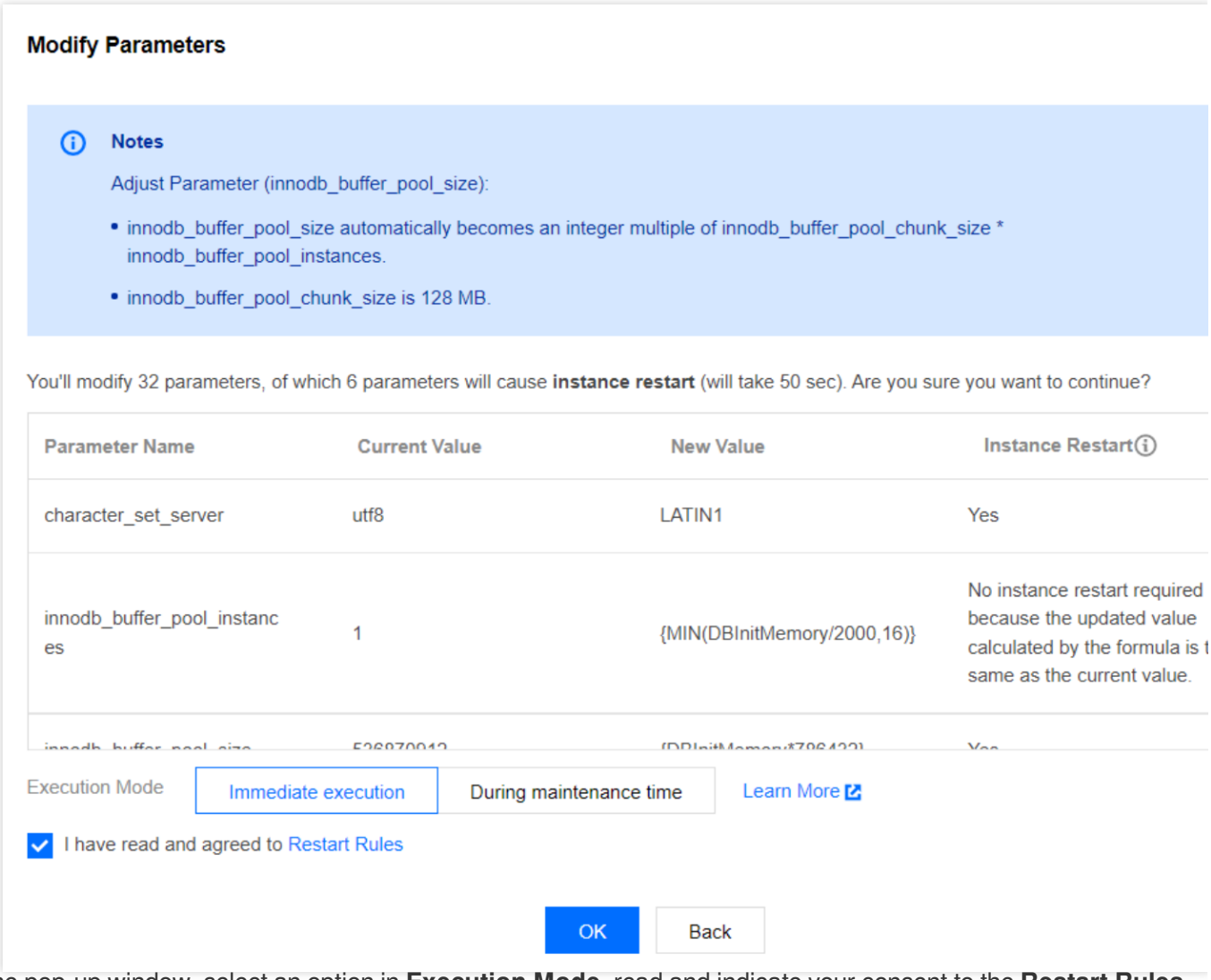

4. In the pop-up window, select an option in **Execution Mode**, read and indicate your consent to the **Restart Rules**, and click **OK**.

Note:

If you select **Immediate execution**, the parameter modification task will be executed and take effect immediately.

If you select **During maintenance time**, the parameter modification task will be executed and take effect during this time. For more information, see Setting Instance Maintenance Window.

Parameter Formula

You can use a formula to set the instance parameters. To do so, set the parameters related to the instance specification as a formula, and when the instance specification is changed, the parameter values in the formula will be dynamically changed accordingly and still take effect after the specification change. In this way, the instance is always in the optimal state for running business smoothly.

Taking the `{DBinitMemory\\*786432}` value of the parameter `innodb_buffer_pool_size` as an example, when the `DBinitMemory` in the instance specification is changed, the parameter configuration here

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doesn't need to be modified, and the value of `innodb_buffer_pool_size` will be changed automatically.

Expression syntax is supported as follows:

Supported Type	Description	Sample
Variable	DBinitMemory: Instance memory in MB (integer type). For example, if the memory size of the instance is 4000 MB, the value of DBinitMemory is 4000. DBInitCpu: The number of CPU cores of the instance (integer type). For example, if the instance specification is 8 cores, the value of DBInitCpu is 8.	{DBinitMemory * 786432} = memory size (DBinitMemory) * percentage (75% by default) * 1024 * 1024 (unit conversion)
Operator	Formula syntax: It should be enclosed in braces (`{}`). Division operator (/): It divides the dividend by the divisor and returns an integer quotient. If the calculation result is a decimal number, only the integer part will be retained. Decimal numbers are not supported; for example, `{MIN(DBInitMemory/4+500,1000000)}` instead of `{MIN(DBInitMemory0.25+500,1000000)}` is supported. Multiplication operator (*): It multiplies two numbers and returns an integer product. If the calculation result is a decimal number, only the integer part will be retained. Decimal number calculation is not supported.	-
Function	MAX(): It returns the greatest value in an integer or parameter formula list. MIN(): It returns the smallest value in an integer or parameter formula list.	{MAX(DBInitCpu/2,4)}

Parameters that support parameter formulas

Note:

TencentDB for MySQL continuously optimizes parameter settings. The following lists only certain parameters that support parameter formula. You can learn more about parameter formulas in the parameter template in the console.

Parameter	Description	Default Formula
thread_pool_size	The number of thread groups in the thread pool. The default value means that the number of thread	{MIN(DBInitCpu,64)}

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	groups is the same as the number of CPU cores.	
table_open_cache_instances	The number of partitions where MySQL caches table handles.	{MIN(DBInitMemory/1000,16)}
table_open_cache	The size of the table descriptor, which can reduce the file open/close times.	{MAX(DBInitMemory*512/1000,2048)}
table_definition_cache	The number of opened table cache instances.	{MAX(DBInitMemory*512/1000,2048)}
max_connections	Max connections.	{MIN(DBInitMemory/4+500,1000000)}
join_buffer_size	The minimum size of the buffer used for normal index scans, range index scans, and table joins that perform full-table scans.	{MIN(DBInitMemory*128,262144)}
innodb_write_io_threads	The number of I/O threads in InnoDB used for write operations.	{MAX(DBInitCpu/2,4)}
innodb_read_io_threads	The number of I/O threads in InnoDB used for read operations.	{MAX(DBInitCpu/2,4)}
innodb_buffer_pool_instances	The number of partitions in the InnoDB buffer pool.	{MIN(DBInitMemory/2000,16)}
innodb_buffer_pool_size	The size of the buffer pool in bytes, i.e., the memory zone where InnoDB caches tables and index data.	{DBInitMemory*786432}

Exporting Parameter Configuration as File

1. Log in to the TencentDB for MySQL console, click an instance ID in the instance list, and enter the instance management page.
2. Select **Database Management** > **Parameter Settings** and click **Export Parameters** to export the parameter configuration file.

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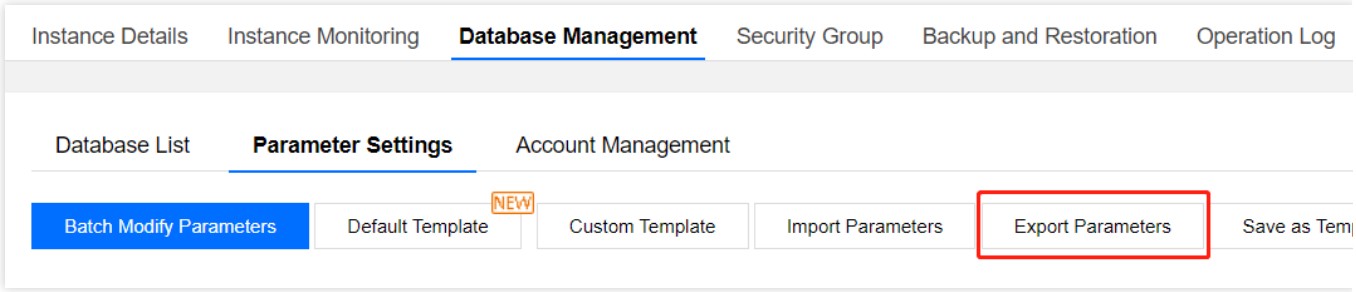
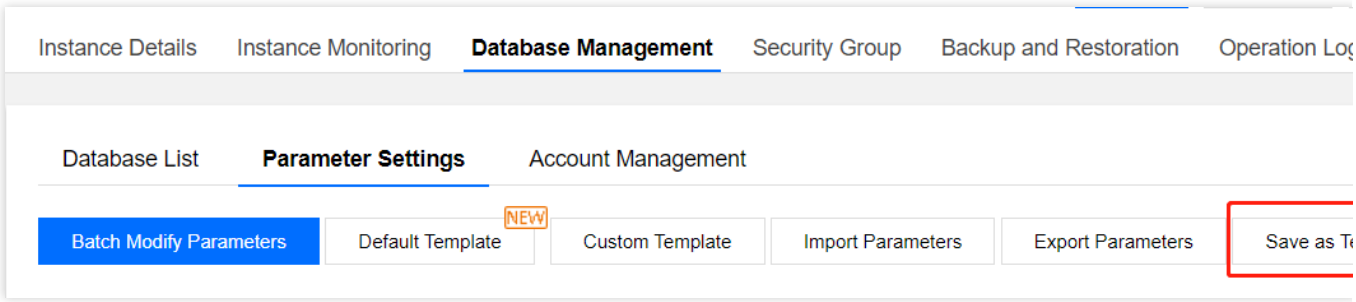


Exporting Parameter Configuration as Template

1. Log in to the TencentDB for MySQL console, click an instance ID in the instance list, and enter the instance management page.
2. Select **Database Management** > **Parameter Settings** and click **Save as Template** to save the existing parameter configuration as a parameter template.



Modifying Parameters During Custom Time Window

Before you confirm the parameter modification, the **Modify Parameters** dialog box will pop up for you to select a custom time window for the modification to take effect.

Note:

If you select **During maintenance time**, the parameter modification task will be executed and take effect during this time. For more information, see Setting Instance Maintenance Window.

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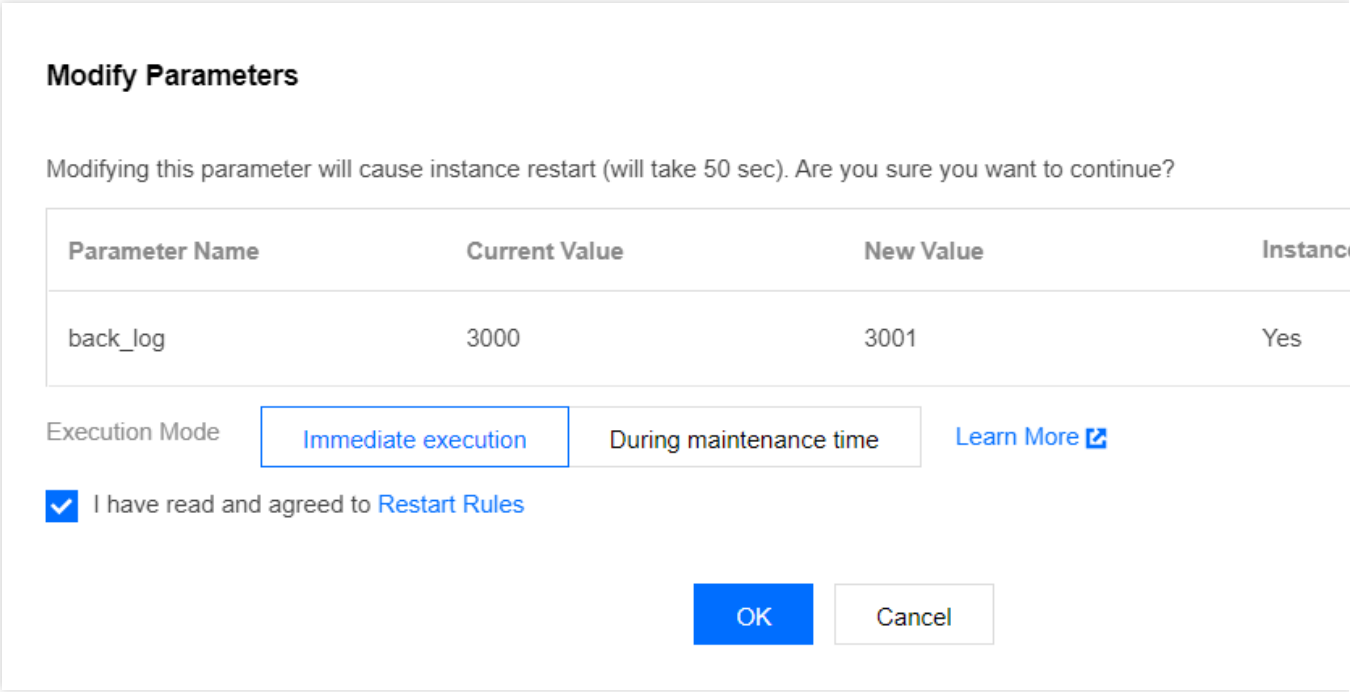
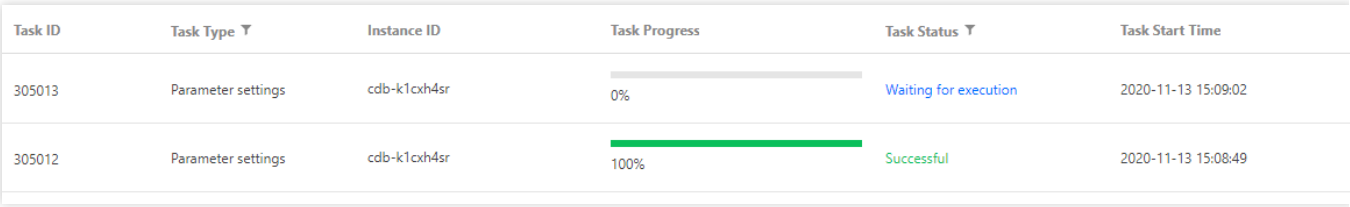


Canceling Parameter Modification Task

If a parameter modification task (to be executed **during maintenance window**) has been submitted but you want to cancel it, you can select **Task List** on the left sidebar in the console, locate the task, and click **Cancel** in the **Operation** column. You can cancel a task only before it is executed. The task status should be **Waiting for execution**.



Viewing Parameter Modification Log

1. Log in to the TencentDB for MySQL console, click an instance ID in the instance list, and enter the instance management page.
2. On the **Database Management** > **Parameter Settings** tab, click **Recent Modifications** on the right.

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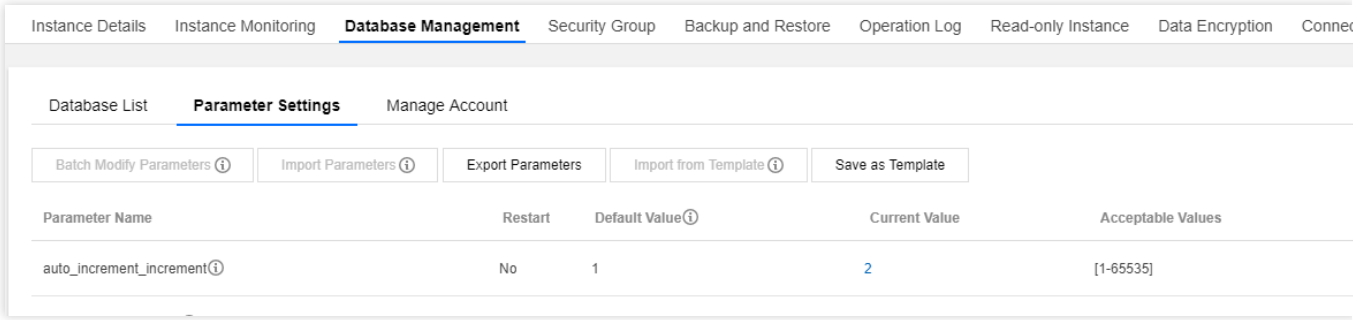

3. You can view the recent parameter modification records here.

Subsequent Operations

You can use templates to manage database parameters in batches. For more information, see Managing Parameter Template.

For suggestions on the configuration of key parameters, see Suggestions on Parameter Settings.

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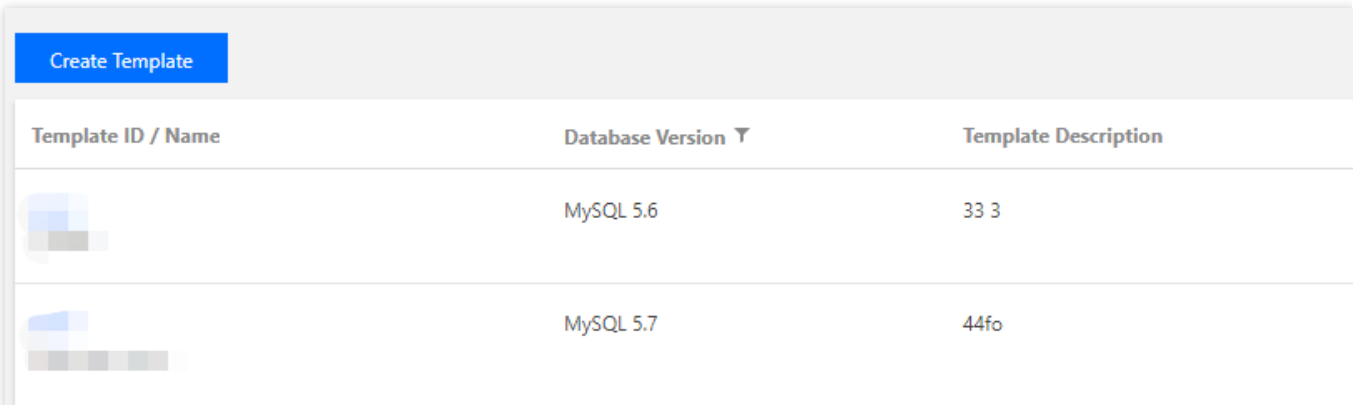
Managing Parameter Template

Last updated：2024-07-22 15:41:39

Besides the system parameter templates provided by TencentDB for MySQL, you can create custom parameter templates in order to configure parameters in batches.
You can use the parameter template to configure and manage the parameters of a database engine. A template is like a container of the values of database engine parameters, which can be applied to one or more TencentDB instances.
You can log in to the TencentDB for MySQL console and click **Parameter Templates** on the left sidebar to create, view, and manage parameter templates which support the following features:
Support default parameter templates.
Create templates by modifying the default parameters to generate custom parameter optimization schemes.
Import the MySQL configuration file `my.conf` to generate templates.
Save parameter configurations as templates.
Import parameters from templates to apply to one or more instances.
Note:
If the parameters in the template are updated, the instance parameters are not updated unless they are manually re-applied to the instances.
You can apply the parameter changes to single or multiple instances by importing a template.

Creating a Parameter Template

You can create a parameter template, modify the parameter values, and apply the template to instances.
1. Log in to the TencentDB for MySQL console, select **Parameter Templates** on the left sidebar, and click **Create Template**.



2. In the pop-up dialog box, specify the following configurations, and click **Create and Set Parameters**.
Template Name: enter a unique template name.
Database Version: select a database version.

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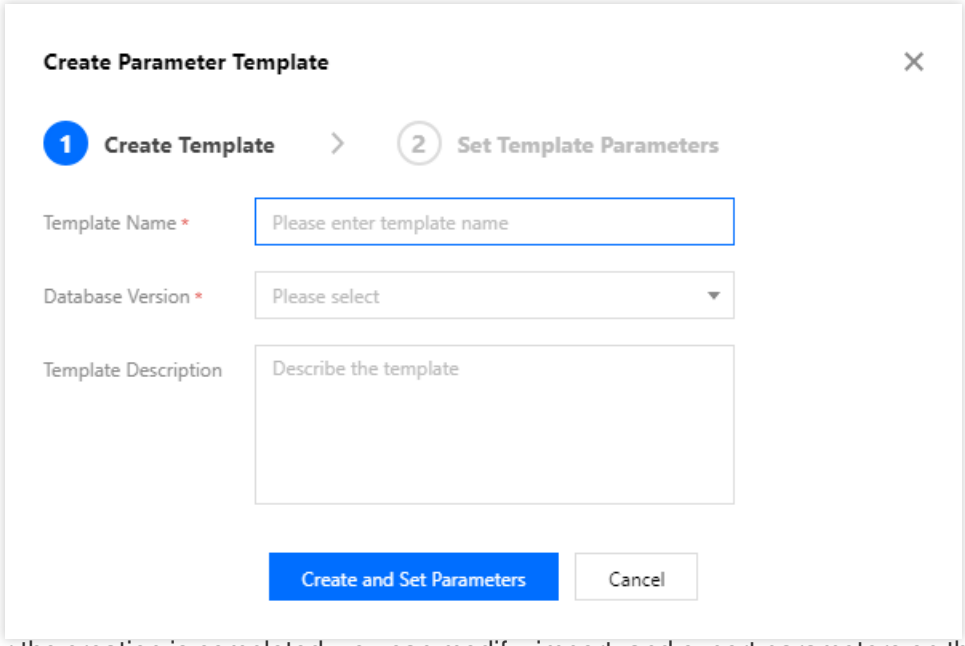
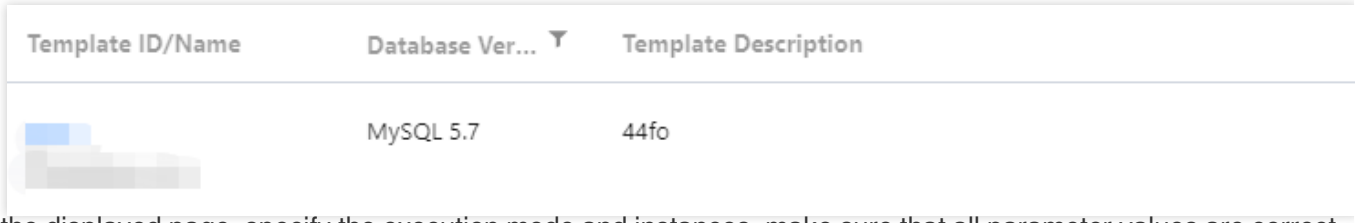
Template Description: enter a brief description of the parameter template.



3. After the creation is completed, you can modify, import, and export parameters on the template details page.

Applying a Parameter Template to Instances

1. Log in to the TencentDB for MySQL console and select **Parameter Templates** on the left sidebar.
2. In the parameter template list, locate the desired template and click **Apply to Instance** in the **Operation** column.



3. On the displayed page, specify the execution mode and instances, make sure that all parameter values are correct, and click **Submit**.

Execution Mode: **Immediate execution** is selected by default. If you select **During maintenance window**, the parameter modification task will be executed and take effect during the instance maintenance period.

MySQL Instance: select one or more instances that need to apply the parameter template in the specified region.

Parameter Comparison: view the changed parameter values of the selected instance.

Note:

Before applying a parameter template to multiple instances, please make sure the parameters can be applied to those instances.

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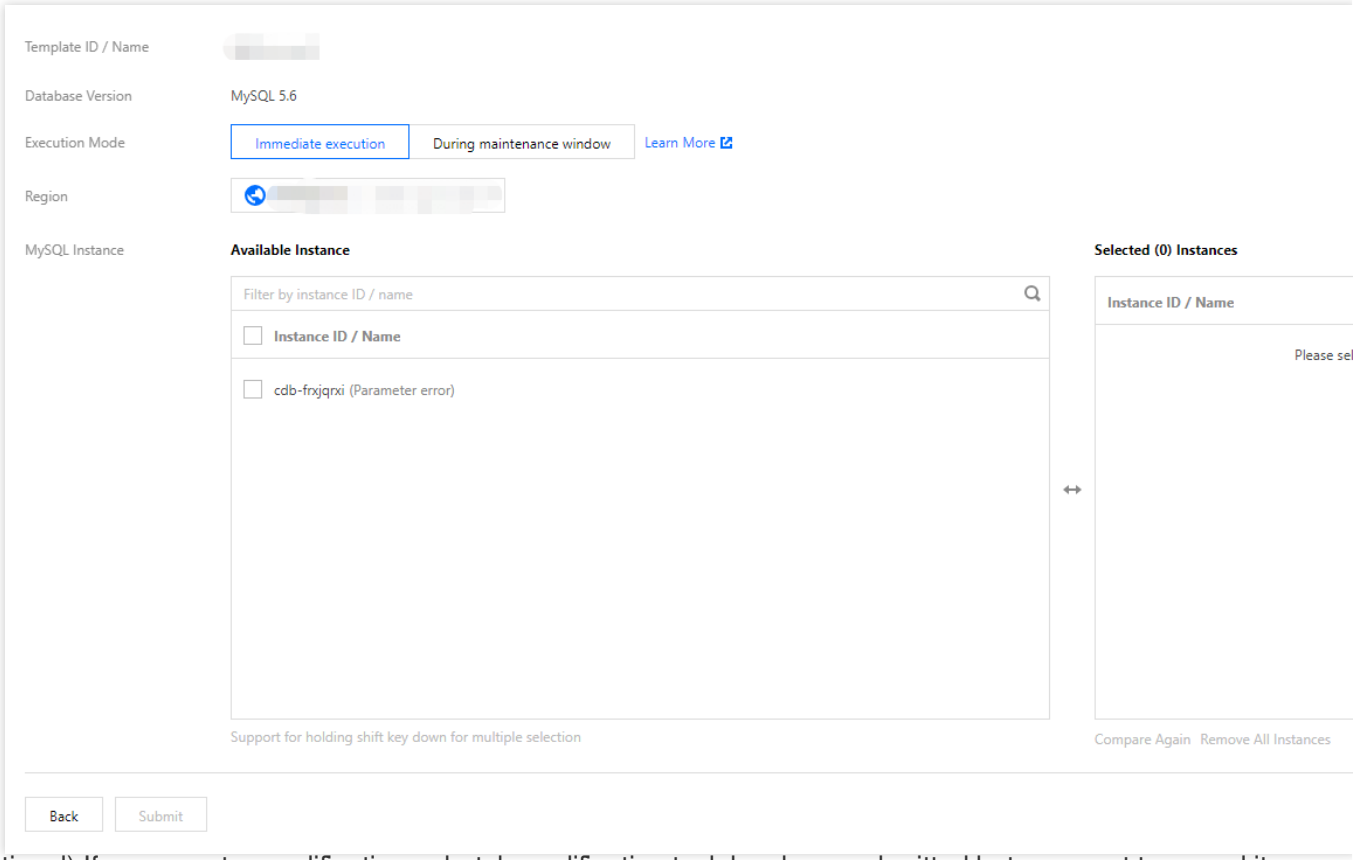
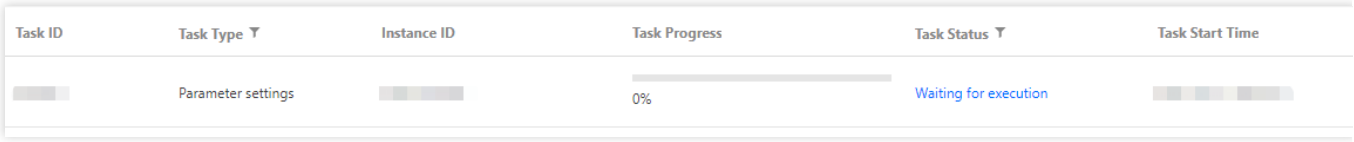


4. (Optional) If a parameter modification or batch modification task has been submitted but you want to cancel it, you can select **Task List** on the left sidebar in the console, locate the task, and click **Cancel** in the **Operation** column. You can cancel a task only before it is executed. The task state should be "Waiting for execution".



Copying a Parameter Template

To include most of the custom parameters and values of an existing parameter template in a new template, you can copy the existing template.

Method 1. Copying an existing parameter template

1. Log in to the TencentDB for MySQL console, select **Parameter Templates** on the left sidebar, click the parameter template name or **View Details** in the **Operation** column in the template list, and enter the parameter template details page.
2. Select **More** > **Save as Template** at the top.
3. In the pop-up dialog box, specify the following configurations:

Template Name: enter a unique template name.

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Template Description: enter a brief description of the parameter template.

4. After confirming that everything is correct, click **Save**.

Method 2. Saving parameters of an instance as a parameter template

1. Log in to the TencentDB for MySQL console, select **Instance List** on the left sidebar, and click an instance ID/name in the instance list to access the instance management page.
2. Select **Database Management** > **Parameter Settings** and click **Save as Template**.
3. In the pop-up dialog box, specify the following configurations:

Template Name: enter a unique template name.

Template Description: enter a brief description of the parameter template.

4. After confirming that everything is correct, click **Create and Save**.

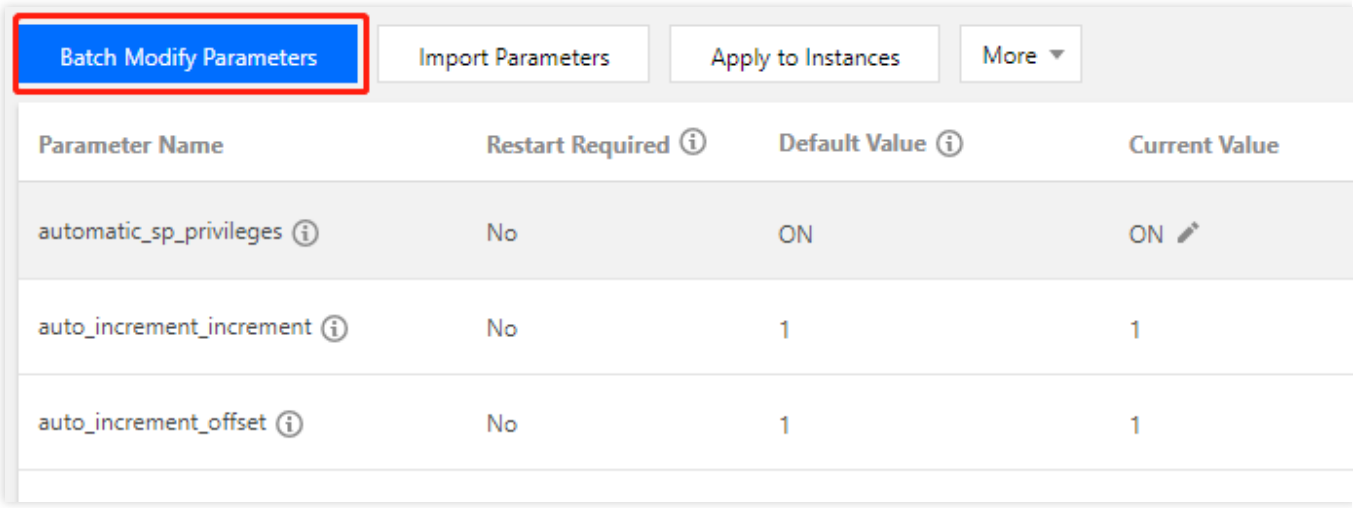
Modifying Parameter Values in a Parameter Template

1. Log in to the TencentDB for MySQL console, select **Parameter Templates** on the left sidebar, click the parameter template name or **View Details** in the **Operation** column in the template list, and enter the parameter template details page.
2. Click **Batch Modify Parameters** or click

in the **Current Value** column to modify the parameter value.

Note:

If you click **Import Parameters**, you need to upload a local parameter configuration file. To avoid importing failures, the configuration file should be in the same format as the configuration file of the MySQL database server, or you can use the file template of the exported parameters.



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Importing a Parameter Template

1. Log in to the TencentDB for MySQL console, select **Parameter Templates** on the left sidebar, click the parameter template name or **View Details** in the **Operation** column in the template list, and enter the parameter template details page.
2. Click **Import Parameters**.

Note:

If you click **Import Parameters**, you need to upload a local parameter configuration file. To avoid importing failures, the configuration file should be in the same format as the configuration file of the MySQL database server, or you can use the file template of the exported parameters.

3. In the pop-up dialog box, select a file to upload and click **Import and Overwrite Original Parameters**.

Exporting a Parameter Template

Method 1

1. Log in to the TencentDB for MySQL console and select **Parameter Templates** on the left sidebar.
2. In the parameter template list, locate the desired template and click **Export** in the **Operation** column.

Method 2

1. Log in to the TencentDB for MySQL console, select **Parameter Templates** on the left sidebar, click the parameter template name or **View Details** in the **Operation** column in the template list, and enter the parameter template details page.
2. Select **More** > **Export Parameters** at the top.

Deleting a Parameter Template

If a parameter template is created redundantly or no longer needed, it can be easily deleted.

1. Log in to the TencentDB for MySQL console and select **Parameter Templates** on the left sidebar.
2. In the parameter template list, locate the desired template and click **Delete** in the **Operation** column.
3. Click **OK** in the pop-up dialog box.

See Also

For suggestions for configuration of key parameters, see Suggestions on Parameter Settings.

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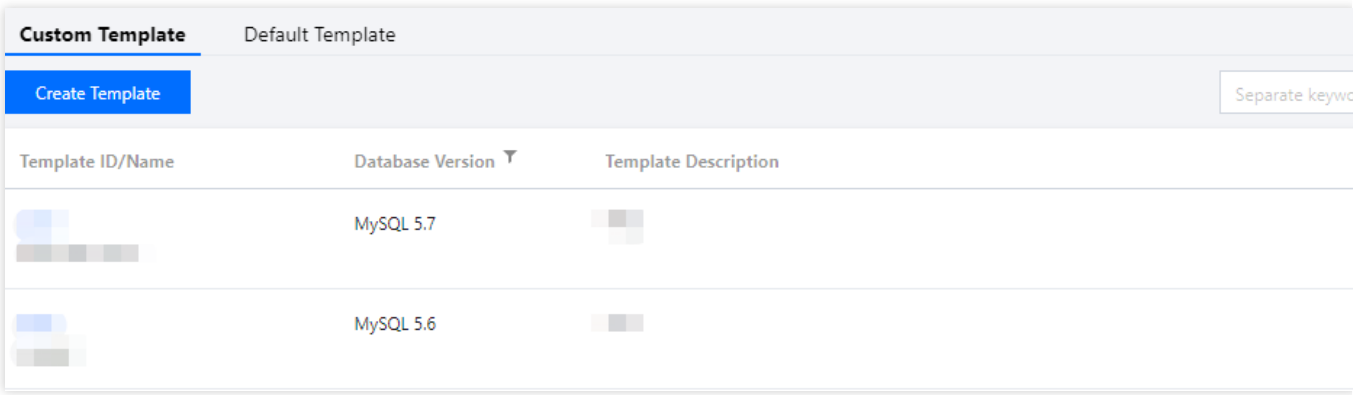
Comparison of Different Template Parameters

Last updated：2024-07-22 15:41:51

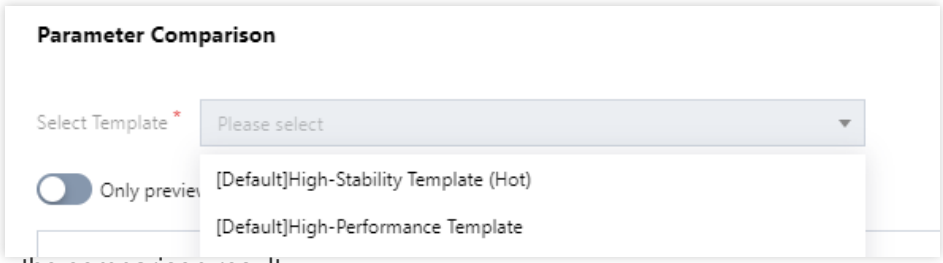
You can compare custom parameter templates with other custom templates or default templates to view their differences in the TencentDB for MySQL console.

Directions

1. Log in to the TencentDB for MySQL console, select **Parameter Template** on the left sidebar, select the custom templates to be compared, and click **Compare**.



2. In the pop-up dialog box, select the target templates to be compared through **Select Parameter Template**.



3. View the comparison result.

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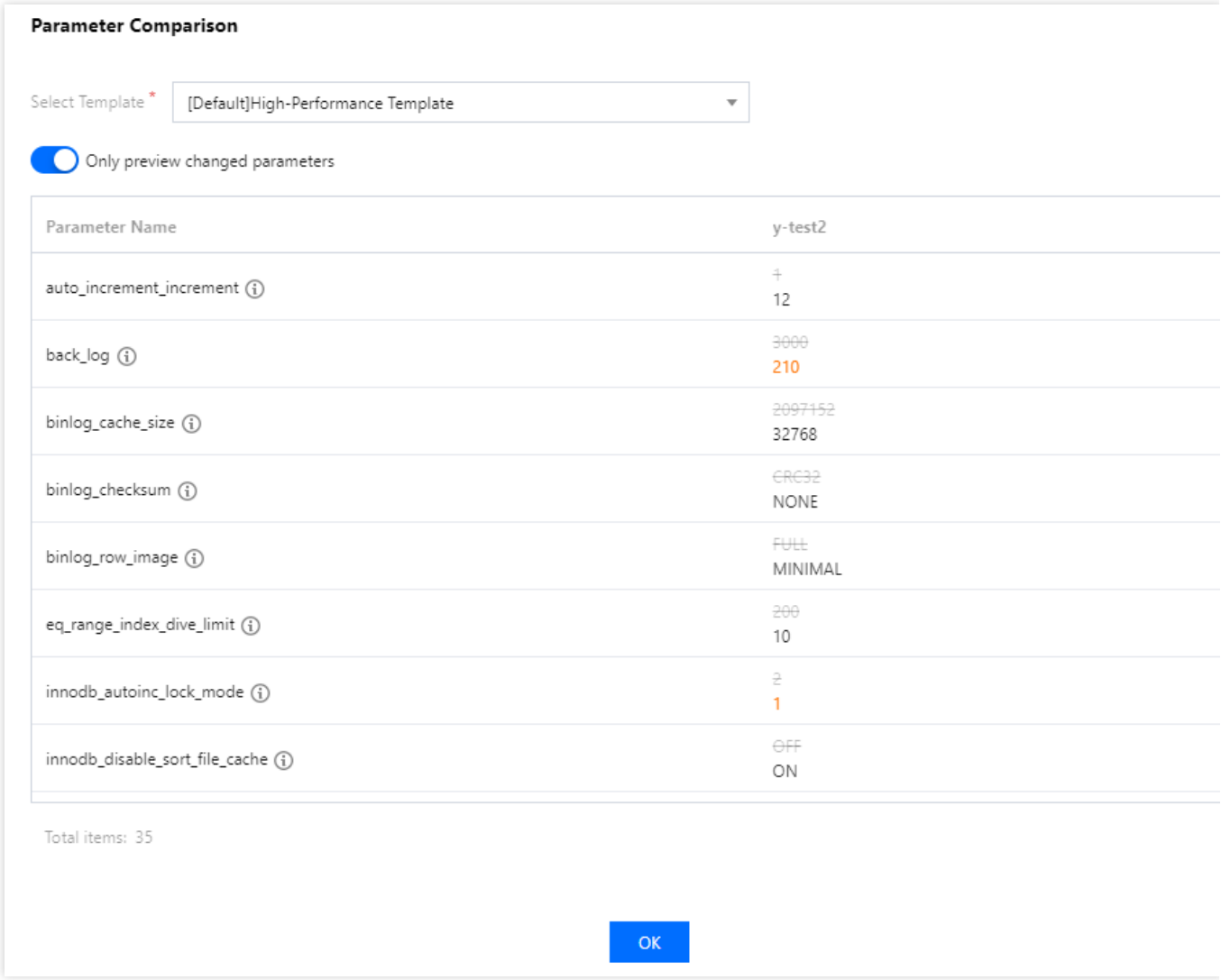

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Performance Comparison of Parameter Templates

Last updated：2024-07-22 15:42:05

Test Tool

Sysbench 1.0.20 is the tool used to test the database benchmark performance.

Tool installation

Run the following code to install Sysbench 1.0.20:

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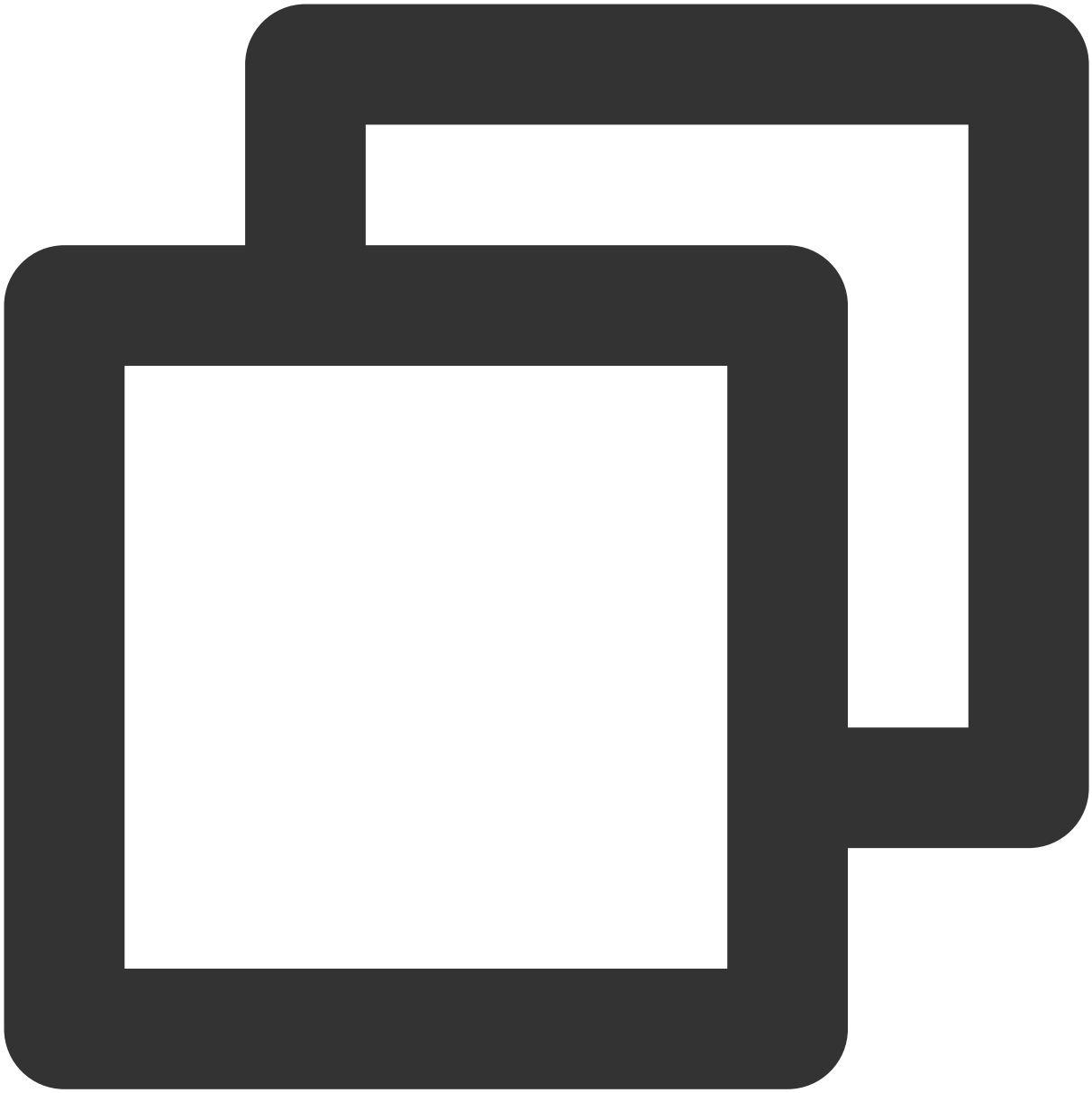

```
git clone https://github.com/akopytov/sysbench.git
git checkout 1.0.20
yum install gcc gcc-c++ autoconf automake make libtool bzr mysql-devel git mysql
cd sysbench
./autogen.sh
./configure
make -j
make install
```

Note:

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The installation directions above apply to performance stress testing on a CentOS CVM instance. For directions on installing the tool on other operating systems, see the official Sysbench documentation.

Test Environment

Type	Description
Test instance specification	Three common specifications, namely, 4-core CPU and 8 GB memory, 8-core CPU and 32 GB memory, and 16-core CPU and 128 GB memory
Client configuration	64-core CPU and 128 GB memory
Client private network bandwidth	23 Gbps
Test data volume	Database instance memory * 1.2
Test database instance versions	5.6 20210630, 5.7 20210630, and 8.0 20210330

Note on client specification: High-spec client machines are used so as to ensure that the database instance performance can be measured through stress testing on a single client. For low-spec clients, we recommend you use multiple clients for concurrent stress testing and aggregate the results.
Note on network latency: When performing the test, make sure that clients and database instances are in the same AZ to prevent the testing result from being affected by network factors.

Test Method

Test data preparations

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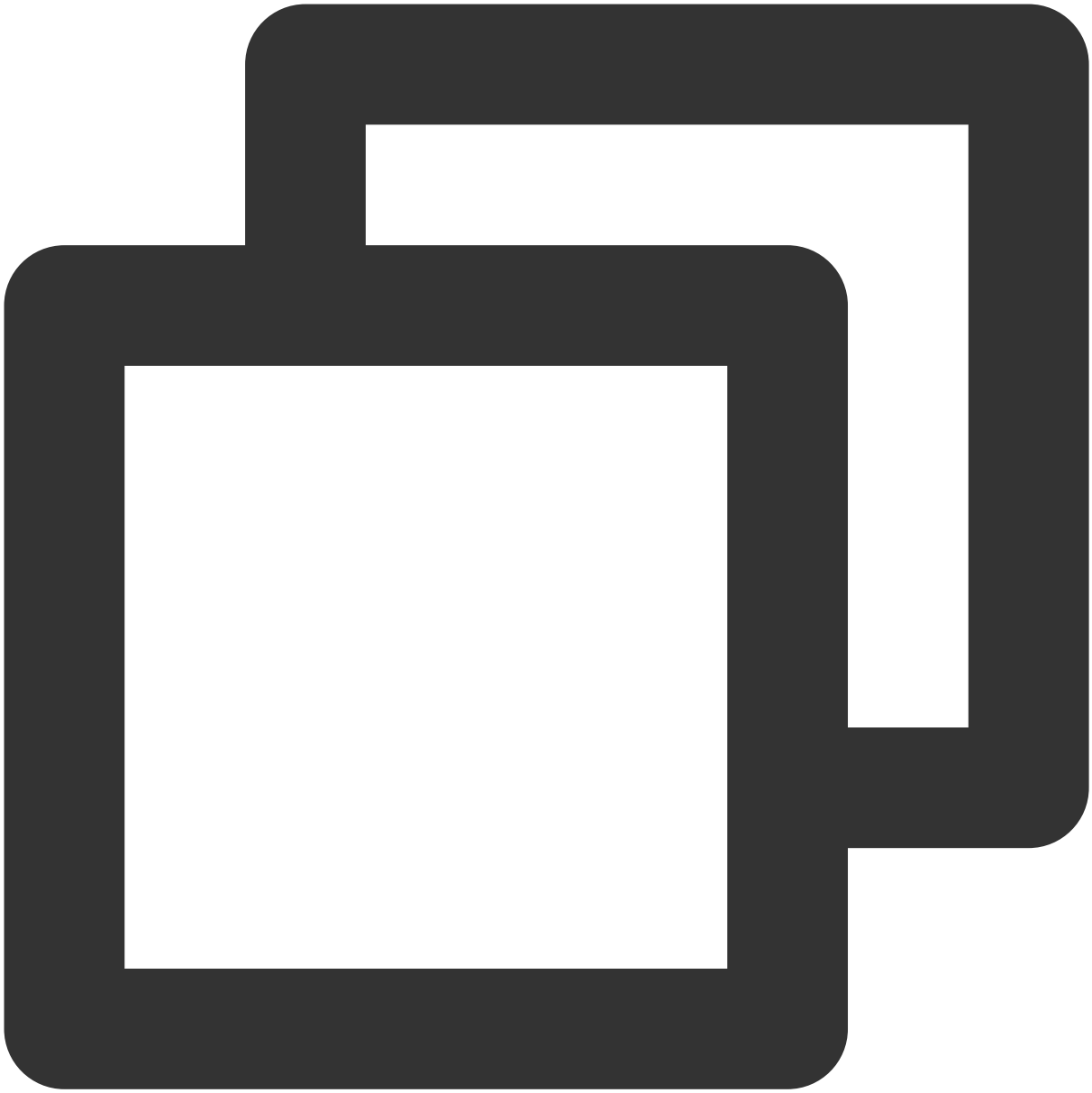

```
sysbench --db-driver=mysql --mysql-host=xxxx --mysql-port=xxxx --mysql-user=xxxx --
```

Command for performance stress testing

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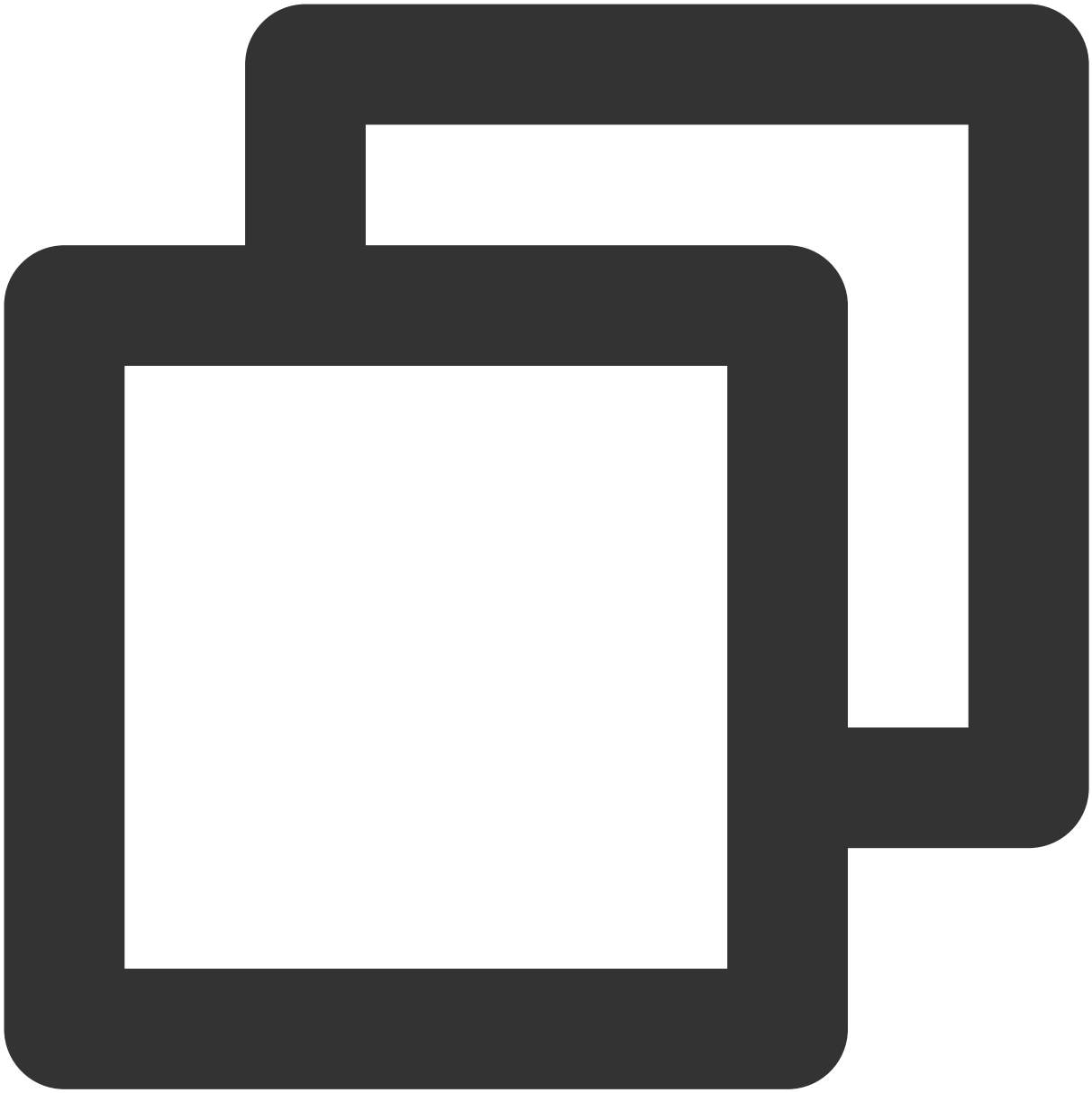

```
sysbench --db-driver=mysql --mysql-host=xxxx --mysql-port=xxxx --mysql-user=xxxx --
```

Descriptions of stress testing parameters:

`oltp_read_write` indicates to implement the OLTP test by calling the `/usr/share/sysbench/oltp_read_write.lua` script.

`--tables=xxxx` indicates the number of tables in this test.

`--table_size=xxxx` indicates the number of table rows in this test.

`--threads=xxxx` indicates the number of concurrent connections of the client in this test.

`--report-interval=1` indicates that the test result is output once every second.

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`--percentile=95` indicates the sampling rate, which is 95% by default.
`--time=600` indicates the execution time of this test, which is 600 seconds.

Scenario model

The test cases in this document all use the Lua script of sysbench.
For the common configurations, performance testing is conducted for different parameter templates. The test results are as follows:

Test result

v5.6 20210630

CPU (Core)	Memory (GB)	Threads	Test Duration	Template	SysBench QPS	SysBench TPS	avg_lat
4	8	32	10 min	Default template (disused)	34428.69	1721.43	18.59 ms
				High-performance parameter template	35917.50	1795.87	17.82 ms
				High-stability parameter template	34834.04	1741.70	18.37 ms
8	32	64	10 min	Default template (disused)	61210.19	3060.51	20.91 ms
				High-performance parameter template	67719.55	3385.98	18.90 ms
				High-stability parameter template	64910.09	3245.50	19.72 ms
16	128	128	10 min	Default template (disused)	106965.44	5348.27	23.93 ms
				High-performance parameter template	127955.48	6397.77	20.00 ms
				High-stability parameter template	119509.02	5975.45	21.41 ms

v5.7 20210630

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CPU (Core)	Memory (GB)	Threads	Test Duration	Template	SysBench QPS	SysBench TPS	avg_lat
4	8	32	10 min	Default template (disused)	34428.69	1721.43	18.59 ms
				High-performance parameter template	35917.50	1795.87	17.82 ms
				High-stability parameter template	34834.04	1741.70	18.37 ms
8	32	64	10 min	Default template (disused)	61210.19	3060.51	20.91 ms
				High-performance parameter template	67719.55	3385.98	18.90 ms
				High-stability parameter template	64910.09	3245.50	19.72 ms
16	128	128	10 min	Default template (disused)	106965.44	5348.27	23.93 ms
				High-performance parameter template	127955.48	6397.77	20.00 ms
				High-stability parameter template	119509.02	5975.45	21.41 ms

v8.0 20210330

CPU (Core)	Memory (GB)	Threads	Test Duration	Template	SysBench QPS	SysBench TPS	avg_lat
4	8	32	10 min	Default template (disused)	32594.79	1629.74	19.63 ms
				High-performance parameter template	33383.77	1669.19	19.17 ms
				High-stability parameter template	32071.90	1603.60	19.95 ms
8	32	64	10 min	Default template (disused)	65718.22	3285.91	19.47 ms
				High-performance	70195.37	3509.77	18.23

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				parameter template			ms
				High-stability parameter template	60704.69	3035.23	21.08 ms
16	128	128	10 min	Default template (disused)	132023.66	6601.18	19.38 ms
				High-performance parameter template	151021.67	7551.08	16.95 ms
				High-stability parameter template	132391.01	6619.55	19.33 ms

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Suggestions on Parameter Configuration

Last updated：2024-07-22 15:42:17

Parameters in TencentDB for MySQL have been optimized on the basis of official default values in MySQL. We recommend that you configure the following parameters for your TencentDB for MySQL instance after purchase based on your business scenarios.

character_set_server

Default value: UTF8
Restart required: Yes
Description: Configure the default character set for the MySQL server. TencentDB for MySQL offers four character sets: LATIN1, UTF8, GBK, and UTF8MB4. Among them, LATIN1 supports English characters, with one character having one byte; UTF8 is generally used for international encoding that contains all characters used by all countries, with one character having three bytes; in GBK, every character has two bytes; and UTF8MB4 (a superset of UTF8) is completely backward compatible and supports emojis, with one character having four bytes.
Recommendation: After purchasing an instance, you need to select the appropriate character set based on the data format required in your business to ensure that the client and the server use the same character set, preventing garbled text and unnecessary restarts.

lower_case_table_names

Default value: `0`
Restart required: Yes
Description: When creating a database or table, you can set whether storage and query operations are case-sensitive. This parameter can be set to 0 (case-sensitive) or 1 (case-insensitive). The default value is 0.
Recommendation: TencentDB for MySQL is case-sensitive by default. We recommend that you configure this parameter based on your business needs and usage habits.

sql_mode

Default values:

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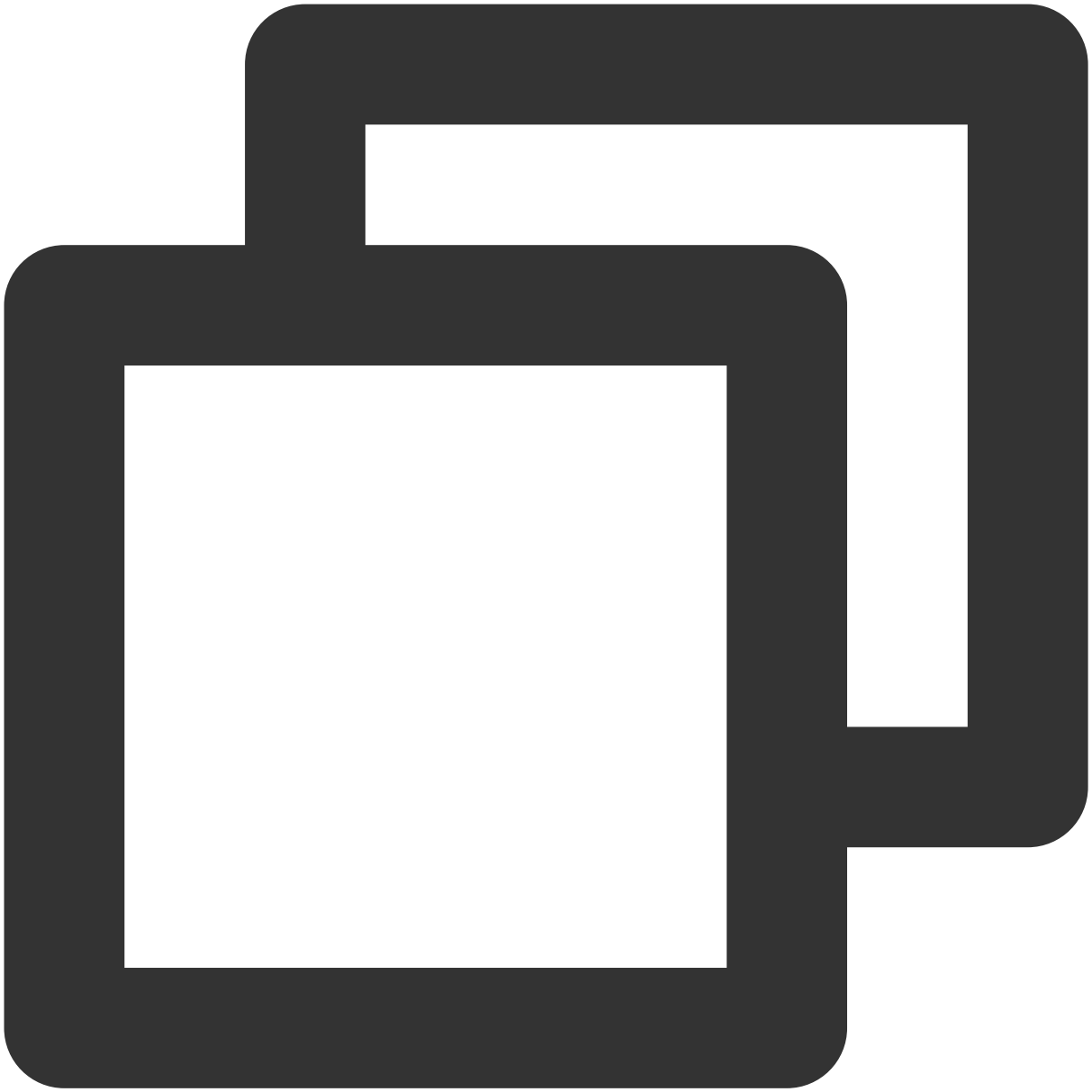

```
NO_ENGINE_SUBSTITUTION (v5.6); ONLY_FULL_GROUP_BY, STRICT_TRANS_TABLES, NO_ZERO_IN_
```

Restart required: No

Description: TencentDB for MySQL can operate in different SQL modes, which define the SQL syntax and data check that it should support.

The default value of this parameter on v5.6 is `NO_ENGINE_SUBSTITUTION` , indicating that if the used storage engine is disabled or not compiled, an error will be reported.

On v5.7 and v8.0, the default values are `ONLY_FULL_GROUP_BY, STRICT_TRANS_TABLES` , `NO_ZERO_IN_DATE, NO_ZERO_DATE` , `ERROR_FOR_DIVISION_BY_ZERO` , `NO_AUTO_CREATE_USER` ,

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and `NO_ENGINE_SUBSTITUTION` .

Here:

`ONLY_FULL_GROUP_BY` means that in a GROUP BY operation, the column in SELECT or the HAVING or ORDER BY subquery must be a function column that appears in or relies on GROUP BY.

`STRICT_TRANS_TABLES` enables strict SQL mode. `NO_ZERO_IN_DATE` controls whether the server permits dates in which the year part is nonzero but the month or day part is zero. The effect of `NO_ZERO_IN_DATE` depends on whether strict SQL mode is enabled.

`NO_ZERO_DATE` controls whether the server permits a zero date as valid. Its effect depends on whether strict SQL mode is enabled.

`ERROR_FOR_DIVISION_BY_ZERO` means that in strict SQL mode, if data is divided by zero during the INSERT or UPDATE process, an error rather than a warning will be generated, while in non-strict SQL mode, NULL will be returned.

`NO_AUTO_CREATE_USER` prohibits the GRANT statement from creating a user with an empty password.

`NO_ENGINE_SUBSTITUTION` means that if the storage engine is disabled or not compiled, an error will be reported.

Recommendation: As different SQL modes support different SQL syntax, we recommend that you configure them based on your business needs and development habits.

long_query_time

Default value: `10`

Restart required: No

Description: Used to define the time threshold for slow queries, with the default value as 10s. If a query execution takes 10s or longer, the execution details will be recorded in the slow log for future analysis.

Recommendation: As business scenarios and performance sensitivity may vary, we recommend that you set the value in consideration of future performance analysis.

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Intelligent Parameter Tuning

Last updated：2023-11-15 16:03:25

This document describes how to implement intelligent parameter tuning in the TencentDB for MySQL console.

Background

The concept of "deep learning" has been gaining popularity among general users. As relevant technologies are getting more mature, the TencentDB team is thinking about how to use deep learning to improve the operating efficiency of databases. The first thing that comes to mind is database parameter tuning. Due to the huge differences in business systems, it is impossible to perform targeted tuning in a fine-grained manner like optimizing SQL, which is a challenge for DBAs. They often have to draw upon their experience to build a set of better performing parameter templates. The ability to tune database parameters is more like an exclusive skill of expert DBAs.
Between 2019 and 2021, the TencentDB team published two papers entitled "Automatic Database Tuning Using Deep Reinforcement Learning" and "An Online Cloud Database Hybrid Tuning System for Personalized Requirements" respectively, and applied for international patents for the theory. Now, the theory is developed into a usable system based on the papers, which improves the database performance by tuning parameters in real-world use cases.
Why database parameter tuning?
High numbers of parameters: For example, MySQL has hundreds of configuration items, so tuning is difficult.
High labor costs: A full-time DBA is required, and expert experience is needed, which incur high labor costs.
Poor tool universality: Existing tools have limited features and involve time-consuming operations, producing a poor effect.
New requirements in the cloud: Some users don't have a full-time Ops team, making it impossible to implement parameter tuning.

Prerequisites

You have a running TencentDB for MySQL instance.

Use Limits

Scenario-based intelligent tuning can be performed only three times per instance per month. This limit is reset on the first day of each month.

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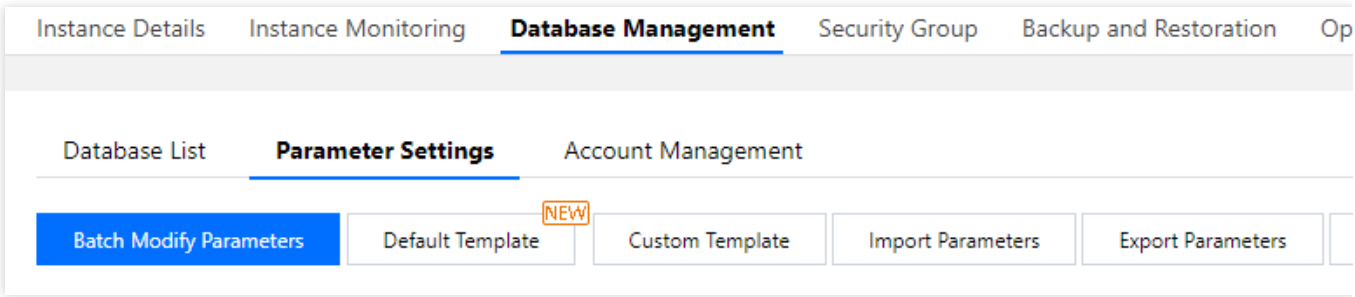
AI-based intelligent analysis (coming soon) can be performed only once per instance per month. This limit is reset on the first day of each month.
Intelligent parameter tuning can be performed only for instances with at least four CPU cores.
The intelligent parameter tuning task list keeps only the last 15 tuning results.
When an instance is terminated/returned or expires, any ongoing intelligent parameter tuning task in it will be automatically aborted and deleted.
Only one tuning task can be executed per instance at any time.
The intelligent parameter tuning feature currently is supported only in Beijing, Shanghai, and Guangzhou regions and will be available in more regions in the future.

Directions

Previously purchased MySQL instance

1. Log in to the TencentDB for MySQL console and select a region at the top. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the instance management page, select **Database Management** > **Parameter Settings** > **Intelligent Parameter Tuning**.



3. In the **Intelligent Parameter Tuning** pop-up window, select **Scenario-Based Intelligent Tuning** or **AI-Based Intelligent Analysis** as the tuning method and click **Analyze**.

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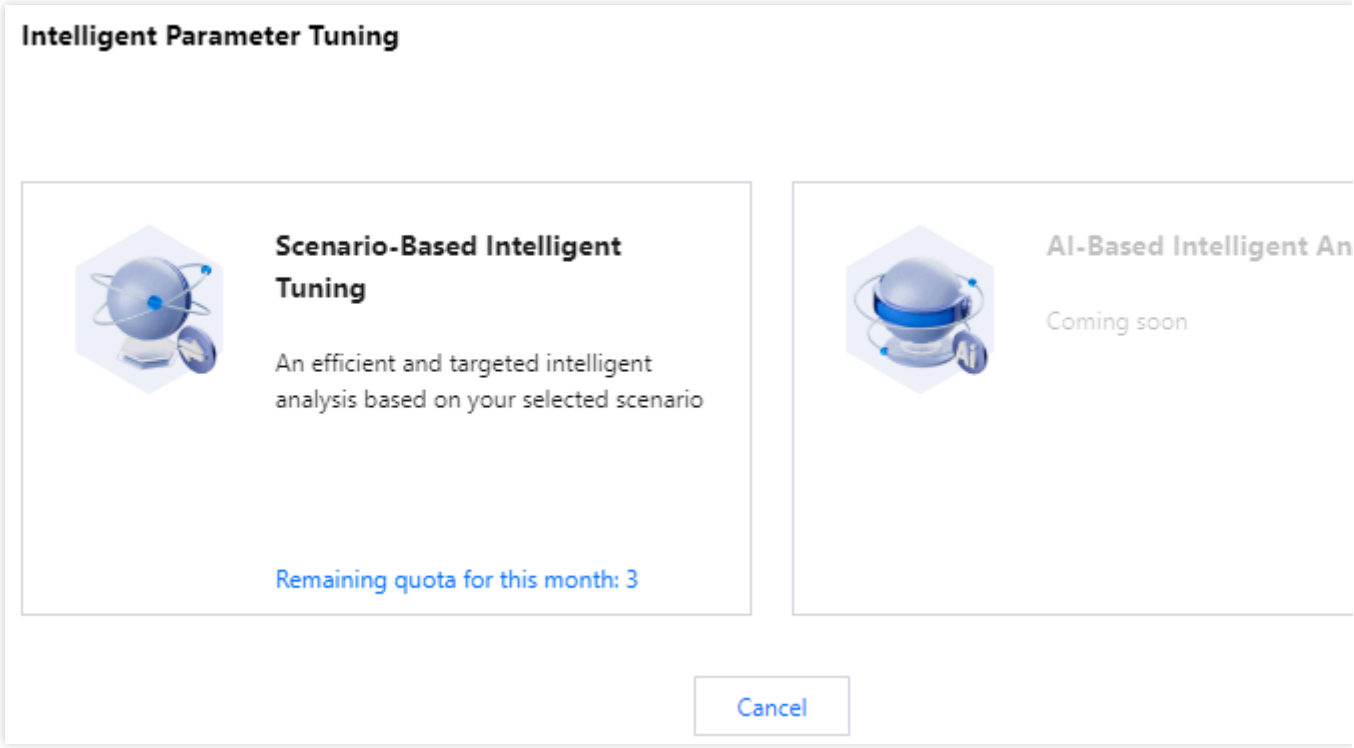

If you select **Scenario-Based Intelligent Tuning**, follow the steps below:

Scenario-based intelligent tuning: An efficient and targeted intelligent analysis based on your selected scenario.

Select a business scenario in the **Scenario** drop-down list, which can be **Order Transactions**, **OLTP Performance Test**, or **Pressure Test**.

After selecting a scenario, you can customize the business ratio in the scenario for more accurate system analysis.

Then, click **Analyze**.

Order Transactions (TPCC)

Customizable items: Order processing (high), Payment (high), Order query (low), Logistics (low), Warehousing (low)

Data Reading Mode: Cache (default), Disk + Cache

Concurrency: Low, Middle, High (default)

OLTP Performance Test (Sysbench)

Customizable items: Reading data (high), Writing data (none by default)

Data Reading Mode: Cache (default), Disk + Cache

Concurrency: Low, Middle, High (default)

Pressure Test (myslap)

Concurrency: Low, Middle, High (default)

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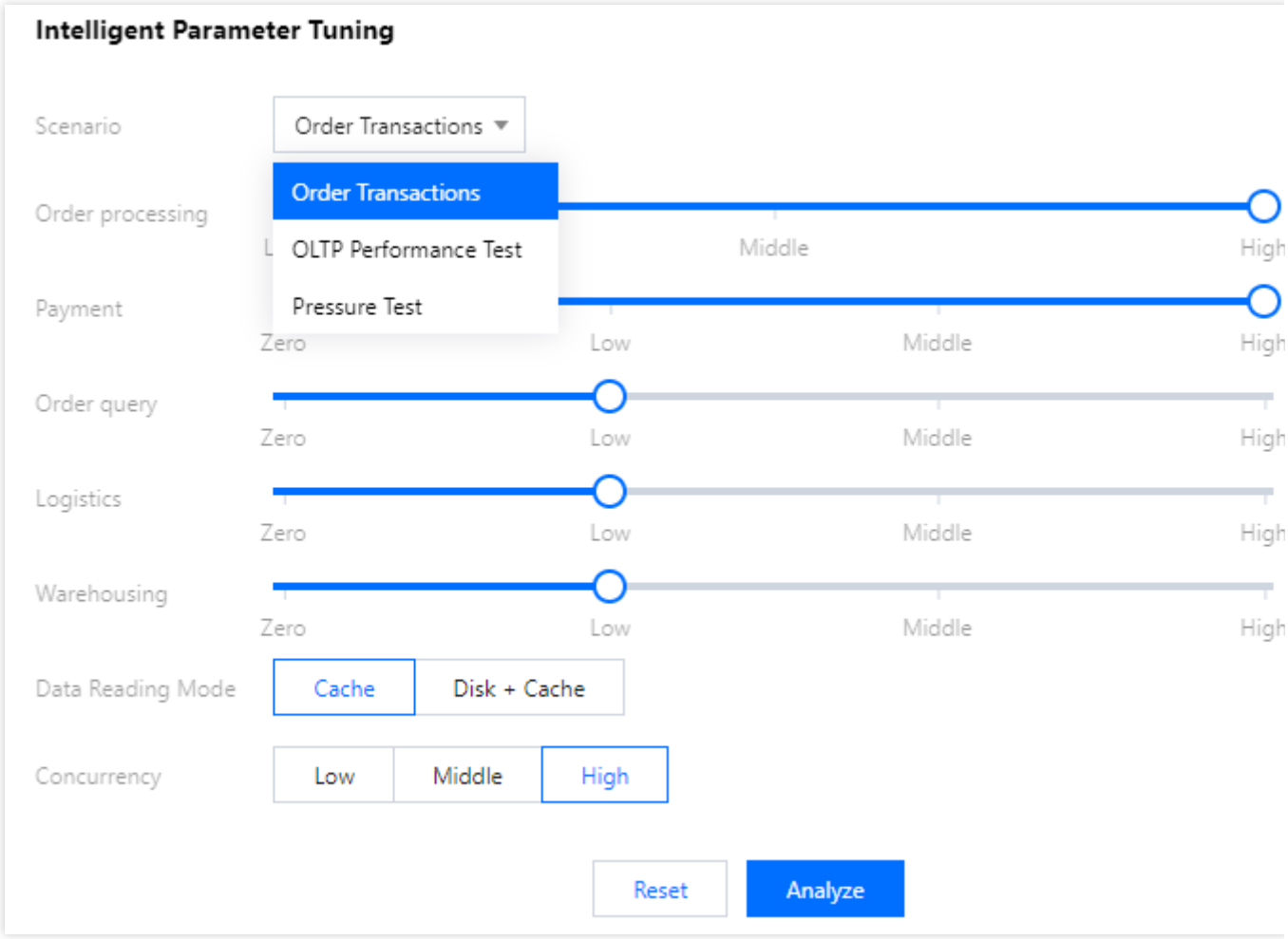

If you select **AI-Based Intelligent Analysis** (coming soon), follow the steps below:

AI-Based Intelligent Analysis: The database business type is determined through in-depth analysis of database operating metrics, the performance of different parameters in specific scenarios is analyzed with deep learning algorithms, and then parameter suggestions are presented.

After selecting **AI-Based Intelligent Analysis**, click **Analyze**.

Note：

The AI-based intelligent analysis is under improvement and will be available soon.

This is a time-consuming intelligent analysis based on deep learning algorithm and big data analytics. We recommend you perform it during off-peak hours.

4. The parameter tuning task starts when the analysis starts. You can select **Intelligent Parameter Tuning** > **View Task** on the **Parameter Settings** page to view the task details.

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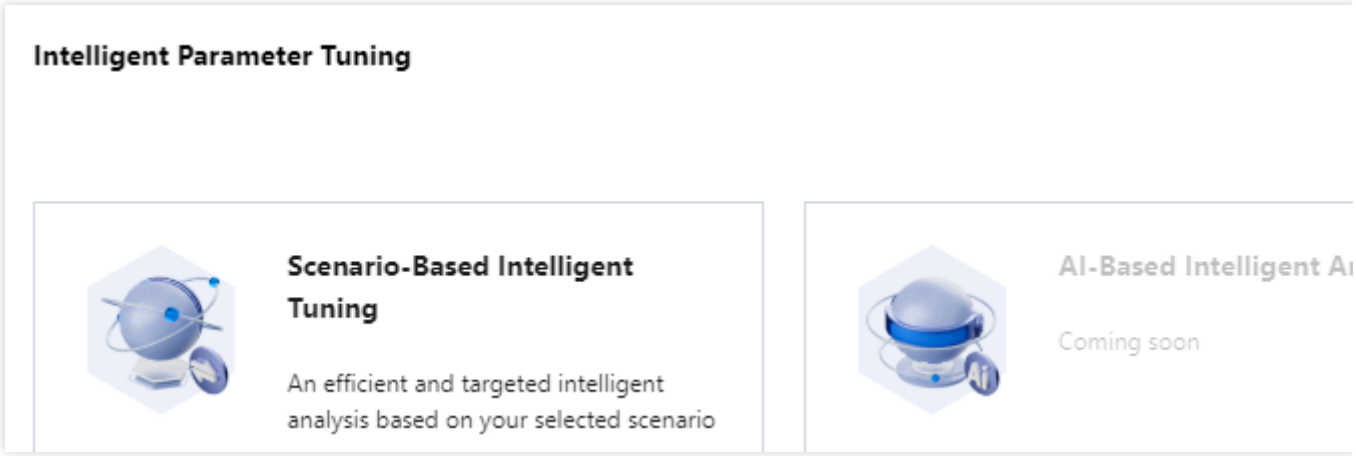
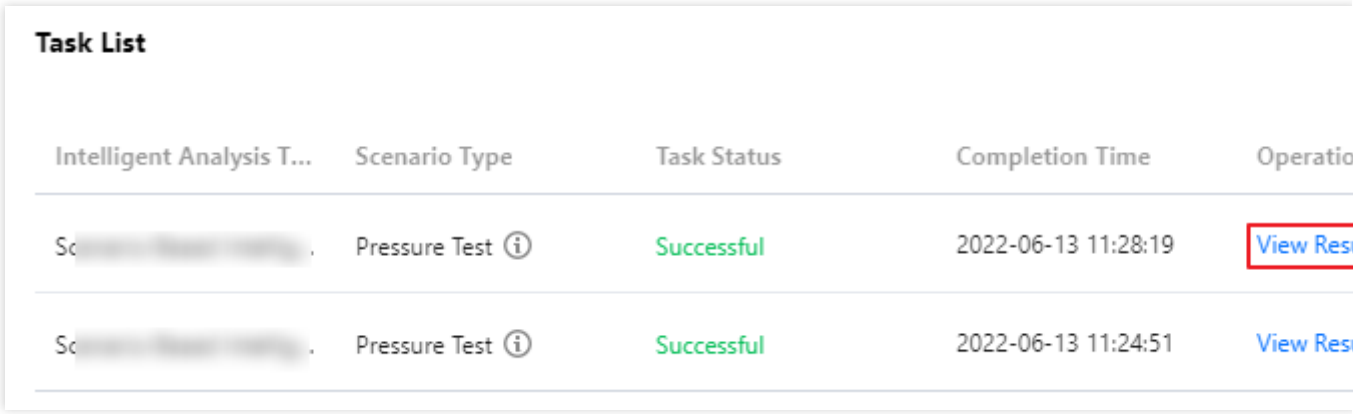


5. After the parameter tuning task is completed, you can click **View Results** in the **Operation** column in **Intelligent Parameter Tuning** > **View Task**.



6. After confirming the parameter tuning recommendations, click **Apply to Instance**.

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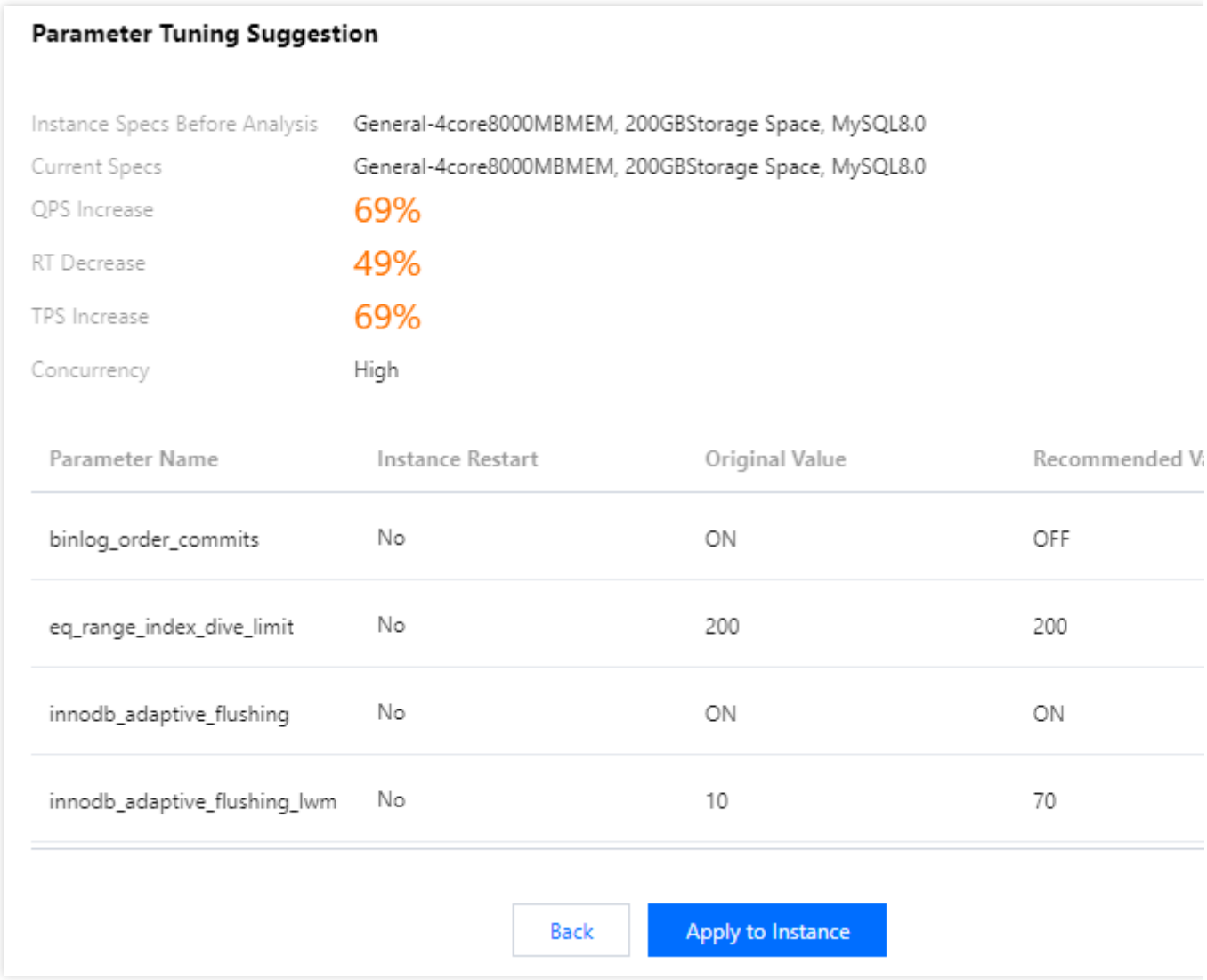

7. Confirm the parameter change in the pop-up window, select the **Execution Mode**, read and indicate your consent to the **Restart Rules**, and click **OK**.

Execution mode:

Immediate execution: The change will be applied to the instance immediately after the confirmation.

During maintenance time: The change will be applied to the instance during the maintenance time, which can be modified on the **Instance Details** page.

Newly purchased MySQL instance

When purchasing a TencentDB for MySQL instance, after selecting a parameter template, you can choose whether to enable **Scenario-Based Intelligent Tuning**. If this feature is enabled, the system will perform secondary adjustment according to the selected business scenario, which can be **Order Transactions**, **OLTP Performance Test**, or **Pressure Test**.

You can view the change results in **Parameter Settings** > **Intelligent Parameter Tuning** > **View Task**.

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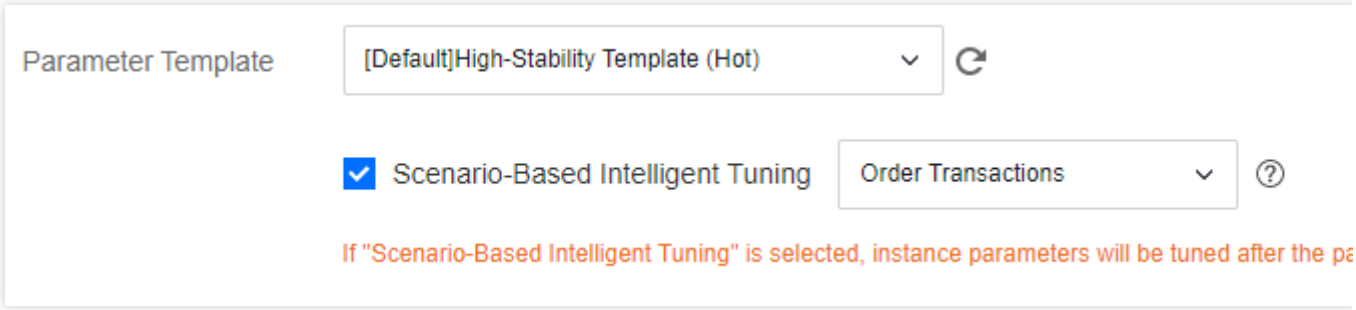

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Modification Records of System Parameter Templates

Last updated：2024-02-18 11:28:56

TencentDB for MySQL provides system parameter templates for batch parameter settings. The parameters in system parameter templates may be optimized and updated with MySQL iteration. This document describes the update history of the parameters in system parameter templates.

Note:

If the parameters in the template are updated, the instance parameters are not updated unless they are manually re-applied to the instances. You can apply the parameter changes to single or multiple instances by importing a template. For directions on how to use system parameter templates, see Managing Parameter Template.

January 2024

Parameter	MySQL 5.6	MySQL 5.7	MySQL 8.0	Change Description
thread_pool_oversubscribe	✓	✓	✓	Changes in Default Value of thread_pool_oversubscribe Parameter in High-Performance Parameter Templates for MySQL 5.6, 5.7, 8.0. Previous Default Value: 10 Updated Default Value: 16

December 2023

Parameter	MySQL 5.6	MySQL 5.7	MySQL 8.0	Change Description
thread_pool_oversubscribe	✓	✓	✓	The default value for the parameter 'thread_pool_oversubscribe' has been modified. Previous Default Value: 3 Updated Default Value: 10

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August 2023

Parameter	MySQL 5.7	MySQL 8.0	Change Description
innodb_fast_ahi_cleanup_for_drop_table	✓	✓	The default value for the parameter 'innodb_fast_ahi_cleanup_for_drop_table' has been altered. Previous Default Value: OFF Updated Default Value: ON

June 2023

Parameter	MySQL 5.5	MySQL 5.6	MySQL 5.7	MySQL 8.0	Change Description
time_zone	✓	✓	✓	✓	Modification of Default Value for the 'time_zone' Parameter Previous Default Value: SYSTEM Updated Default Value: +8:00

May 2023

Parameter	MySQL 5.7	MySQL 8.0	Change Description
innodb_async_truncate_work_enabled	✓	-	5.7 Version Asynchronous Table Deletion Function Switch Parameter Modification The parameter has been changed from innodb_async_truncate_work_enabled to innodb_table_drop_mode. (May 15, 2023)
innodb_parallel_ddl	-	✓	Parameter Deprecation (May 5, 2023)

March 2023

Parameter	MySQL 5.7	MySQL 8.0	Change Description

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innodb_temp_data_file_path	✓	✓	Modification of Default Value for innodb_temp_data_file_path Parameter Prior Default Value：ibtmp1:12M:autoextend Altered Default Value：ibtmp1:12M:autoextend:max:1048576M

January 2023

Parameter	MySQL 5.7	MySQL 8.0	Change Description
max_execution_time	✓	✓	Dynamic setting is supported for `max_execution_time` Restart required: No Default value: `0` Value range: 0–4294967295 Unit: ms

August 2022

Parameter	MySQL 5.7	MySQL 8.0	Change Description
innodb_buffer_pool_size	✓	✓	Dynamic setting is supported for `innodb_buffer_pool_size` Restart required: No Default value: {DBInitMemory * 786432} Value range: {DBInitMemory * 524288} - {DBInitMemory * 943718} DBinitMemory: An integer of instance memory size

July 2022

Parameter	MySQL 5.7	MySQL 8.0	Change Description
innodb_temp_data_file_path	✓	✓	Parameter modification is supported for `innodb_temp_data_file_path` (temp

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			tablespace size) and the parameter properties are as follows: Restart required: Yes Default value: `ibtmp1:12M:autoextend` Value range of `ibtmp` : 12 MB - 1024 MB. After you select `autoextend` , the maximum value can be set to 2097152 MB

March 2022

Parameter	MySQL 5.6	MySQL 5.7	MySQL 8.0	Change Description
innodb_open_files	✓	✓	✓	Removed
innodb_stats_sample_pages	-	✓	✓	Removed
wait_timeout	✓	✓	✓	New value range: 1–31536000
thread_cache_size	✓	✓	✓	New value range: 1–16384

December 2021

Parameter	MySQL 5.6	MySQL 5.7	MySQL 8.0	Change Description
binlog_row_image	✓	&#10003	✓	Default value: `FULL` . For the early created instances, the default value is `MINIMAL` . Manual modification is supported.

November 2020

Parameter	MySQL 8.0	Change Description
iinnodb_flush_log_at_trx_commit	✓	Parameter added
sync_binlog	✓	Parameter added
local_infile	✓	Parameter added

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innodb_log_file_size	✓	Parameter added
cdb_recycle_bin_enabled	✓	Parameter added
binlog_format	✓	New value range: `row`
innodb_autoinc_lock_mode	✓	New default value: `2`
table_open_cache	✓	New default value: `2000`
slave_pending_jobs_size_max	✓	New default value: `1073741824`
time_zone	&#10003	New value range: [SYSTEM|-12:00|-11:00|-10:00|-09:00|-08:00|-05:00|-04:00|-03:00|-02:00|-01:00|+00:00|+01:00|+02:00|+03:0+05:30|+06:00|+06:30|+07:00|+08:00|+09:00|+10:00|+11:00|+1
max_connections	&#10003	New value range: 1–100000
slave_rows_search_algorithms	&#10003	New default value: TABLE_SCAN,INDEX_SCAN,HASH_SCAN
innodb_open_files	&#10003	New default value: `10240`
slave_parallel_type	&#10003	New value range: LOGICAL_CLOCK|TABLE|DATABASE

August 2020

Parameter	MySQL 5.6	MySQL 5.7	Change Description
log_warnings	✓	✓	Parameter added
innodb_flush_log_at_trx_commit	✓	✓	Parameter added
sync_binlog	✓	✓	Parameter added
local_infile	✓	✓	Parameter added
innodb_log_file_size	✓	✓	Parameter added
binlog_format	✓	✓	New range value: `row`
innodb_autoinc_lock_mode	✓	✓	New default value: `2`
innodb_open_files	✓	✓	New value range: 1–102400
table_open_cache	✓	✓	New default value: `2000`

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slave_pending_jobs_size_max	✓	✓	New default value: 1 GB
time_zone	✓	✓	New value range: [SYSTEM|-12:00|-11:00|-10:0 -05:00|-04:00|-03:00|-02:00|-01:00|+00:00|+01:0 +05:30|+06:00|+06:30|+07:00|+08:00|+09:00|+1
max_connections	✓	✓	New value range: 1–100000
cdb_more_gtid_feature_supported	-	✓	All kernel features supported
cdb_more_gtid_feature_supported	&#10003	-	New default value: `off`
slave_parallel_workers	-	✓	All kernel features supported
tls_version	-	✓	Removed
slave_rows_search_algorithms	✓	✓	New default value: TABLE_SCAN,INDEX_SCAN
innodb_open_files	✓	&#10003	New default value: `10240`

August 2020

Parameter	MySQL 5.5	Change Description
innodb_autoinc_lock_mode	&#10003	New default value: TABLE_SCAN,INDEX_SCAN,HASH_SCAN
innodb_open_files	&#10003	New default value: `10240`

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Network and Security Access Management Overview

Last updated：2024-07-22 15:54:11

Issues

If you have multiple users managing different Tencent Cloud services such as CVM, VPC, and TencentDB, and they all share your Tencent Cloud account access key, you may face the following problems:
Your key will be easily compromised because it is shared by several users.
You cannot restrict the access from other users and your service will be vulnerable to the security risks caused by their maloperations.

Solution

You can avoid the problems above by allowing different users to manage different services through sub-accounts. By default, a sub-account does not have permissions to use Tencent Cloud services or resources. Therefore, you need to create a policy to grant different permissions to the sub-accounts.
Cloud Access Management (CAM) is a web-based Tencent Cloud service that helps you securely manage and control access permissions to your Tencent Cloud resources. Using CAM, you can create, manage, and terminate users (groups), and control the Tencent Cloud resources that can be used by the specified user through identity and policy management.
When using CAM, you can associate a policy with a user or user group to allow or forbid them to use specified resources to complete specified tasks. For more information on CAM policies, see Element Reference.
You can skip this section if you do not need to manage permissions to TencentDB resources for sub-accounts. This will not affect your understanding and use of the other sections of the document.

Getting started

A CAM policy must authorize or deny the use of one or more TencentDB operations. At the same time, it must specify the resources that can be used for the operations (which can be all resources or partial resources for certain operations). A policy can also include the conditions set for the manipulated resources.
Note:
We recommend that you manage TencentDB resources and authorize TencentDB operations through CAM policies. Although the user experience does not change for existing users who are granted permissions by project, we do not

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recommend that you continue to manage resources and authorize operations in a project-based manner.

Effectiveness conditions cannot be set in TencentDB for the time being.

Task	Link
Basic policy structure	Policy syntax
Operation definition in a policy	Operations in TencentDB
Resource definition in a policy	Resources in TencentDB
Resource-level permission supported by TencentDB	List of APIs supporting authorization at resource level
Console examples	Console examples

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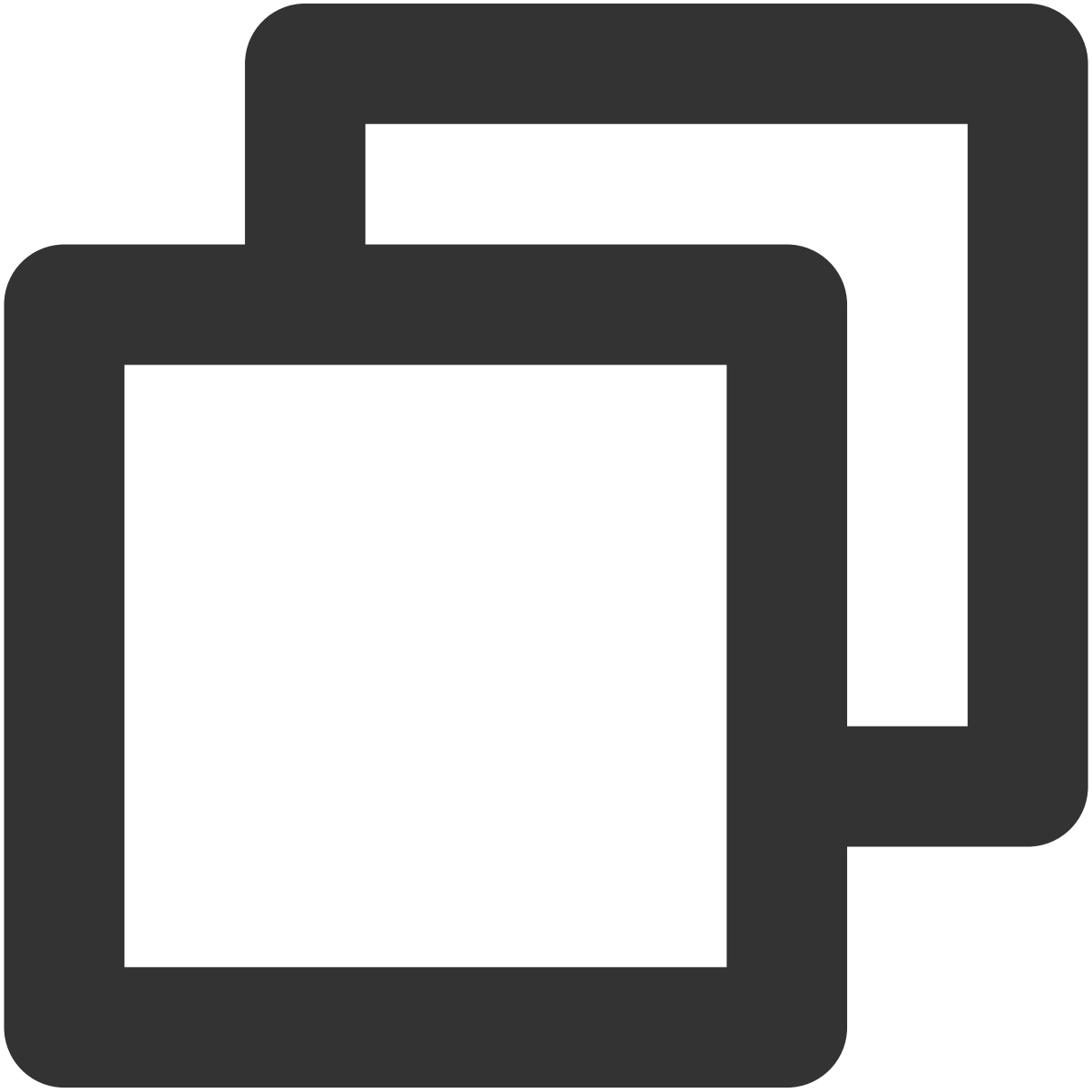
Authorization Policy Syntax

Last updated：2024-07-22 15:54:25

Policy syntax

CAM policy:



```
{
```

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```
          "version":"2.0",
          "statement":
          [
             {
                "effect":"effect",
                "action":["action"],
                "resource":["resource"],
                 "condition": {"key":{"value"}}
             }
         ]
}
```

version is required. Currently, only the value "2.0" is allowed.

statement describes the details of one or more permissions. This element contains a permission or permission set of other elements such as `effect` , `action` , `resource` , and `condition` . One policy has only one statement.

effect is required. It describes whether the declaration result is `allow` or explicit `deny` .

action is required. It specifies whether to allow or deny the operation. The operation can be an API (prefixed with "cdb:").

resource is required. It describes the details of authorization. A resource is described in a six-segment format. Detailed resource definitions vary by product.

condition is required. It describes the condition for the policy to take effect. A condition consists of operator, action key, and action value. A condition value may contain information such as time and IP address. Some services allow you to specify additional values in a condition.

Operations in TencentDB

In a TencentDB policy statement, you can specify any API operation from any service that supports TencentDB. APIs prefixed with `cdb:` should be used for TencentDB, such as `cdb:CreateDBInstance` or `cdb:CreateAccounts` .

To specify multiple operations in a single statement, separate them by comma.

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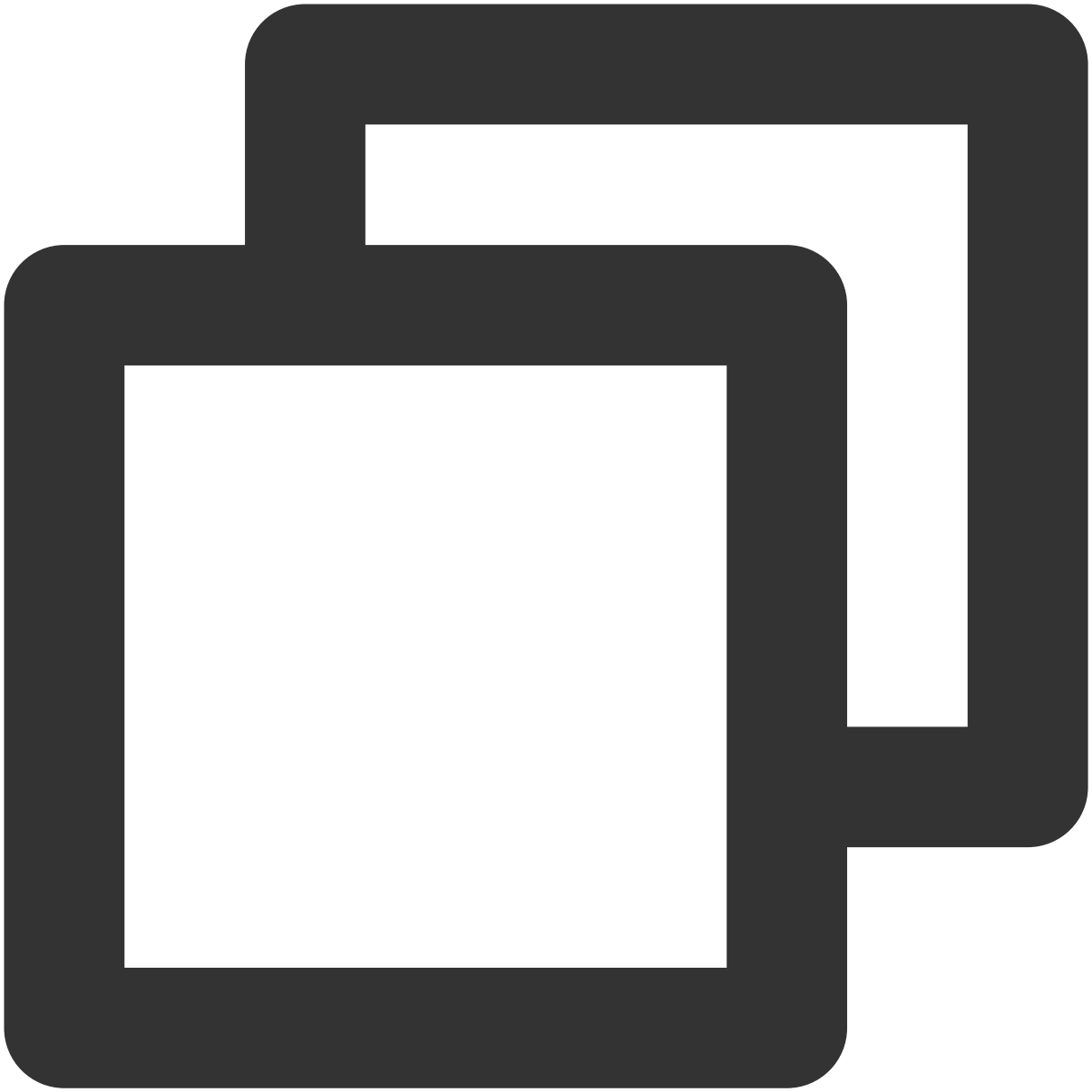

```
"action":["cdb:action1","cdb:action2"]
```

You can also specify multiple operations by using a wildcard. For example, you can specify all operations beginning with "Describe" in the name.

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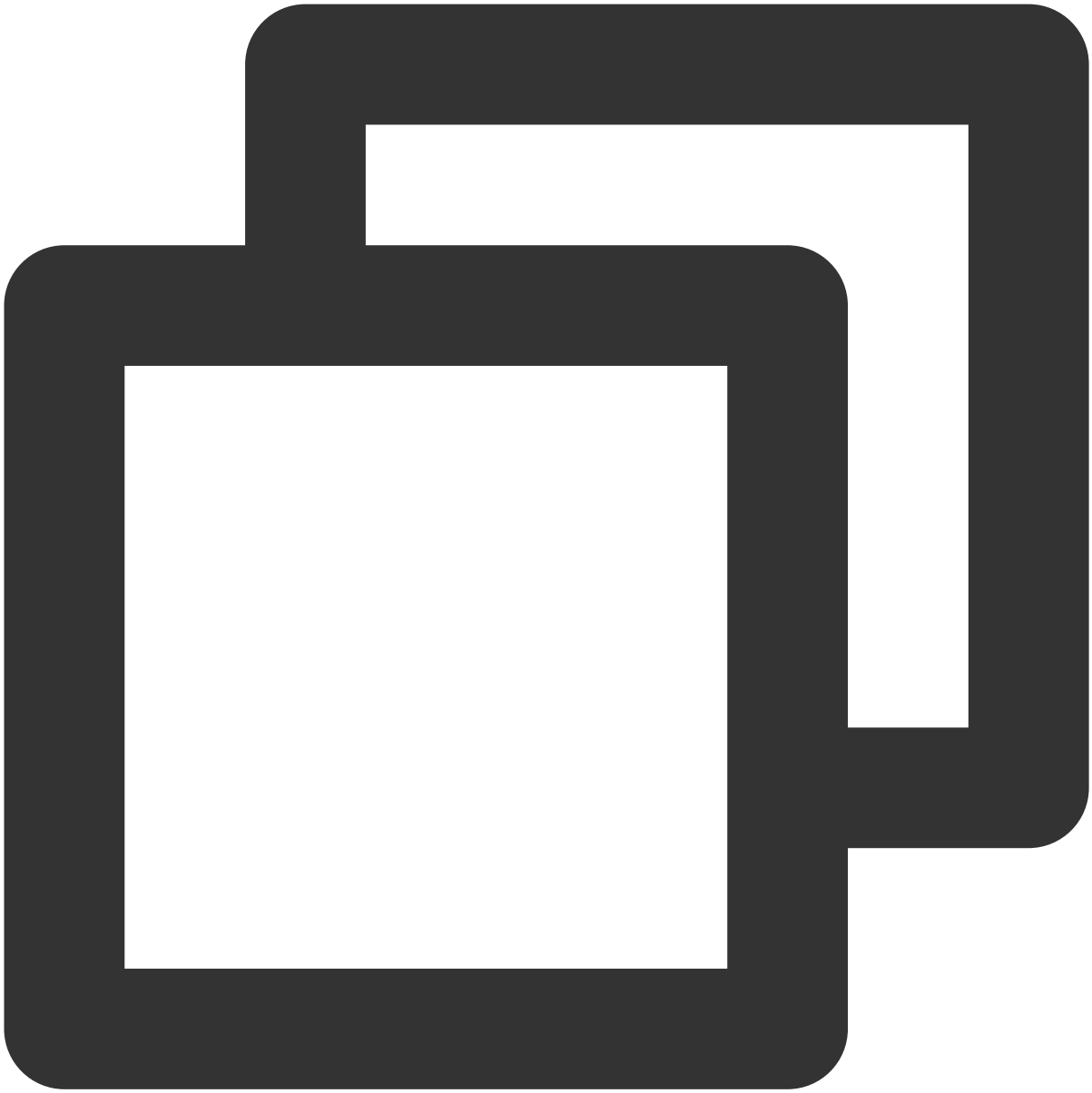

```
"action":["cdb:Describe*"]
```

To specify all operations in TencentDB, use the `*` wildcard.

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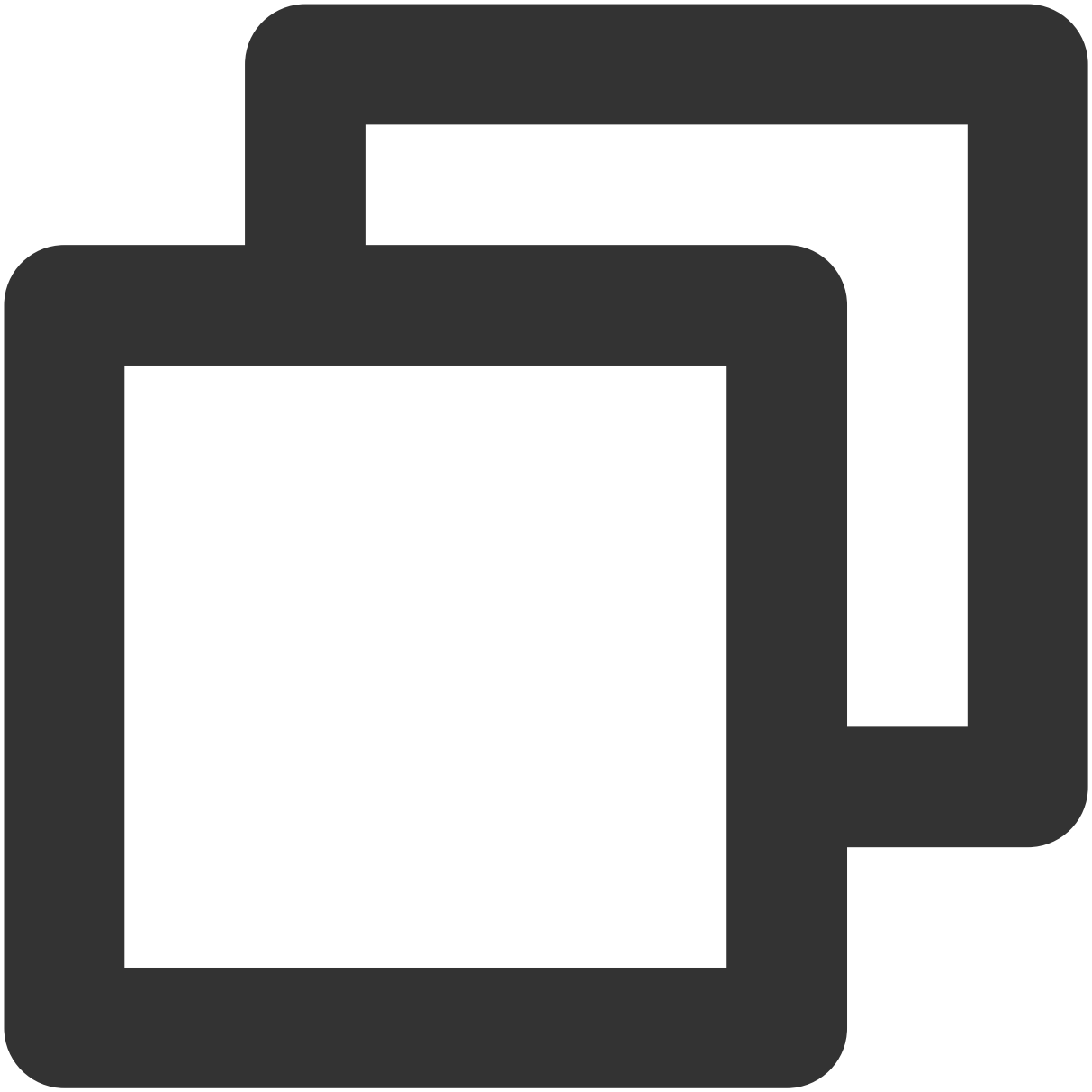

```
"action":["cdb:*"]
```

Resources in TencentDB

Each CAM policy statement has its own applicable resources.

Resources are generally in the following format:

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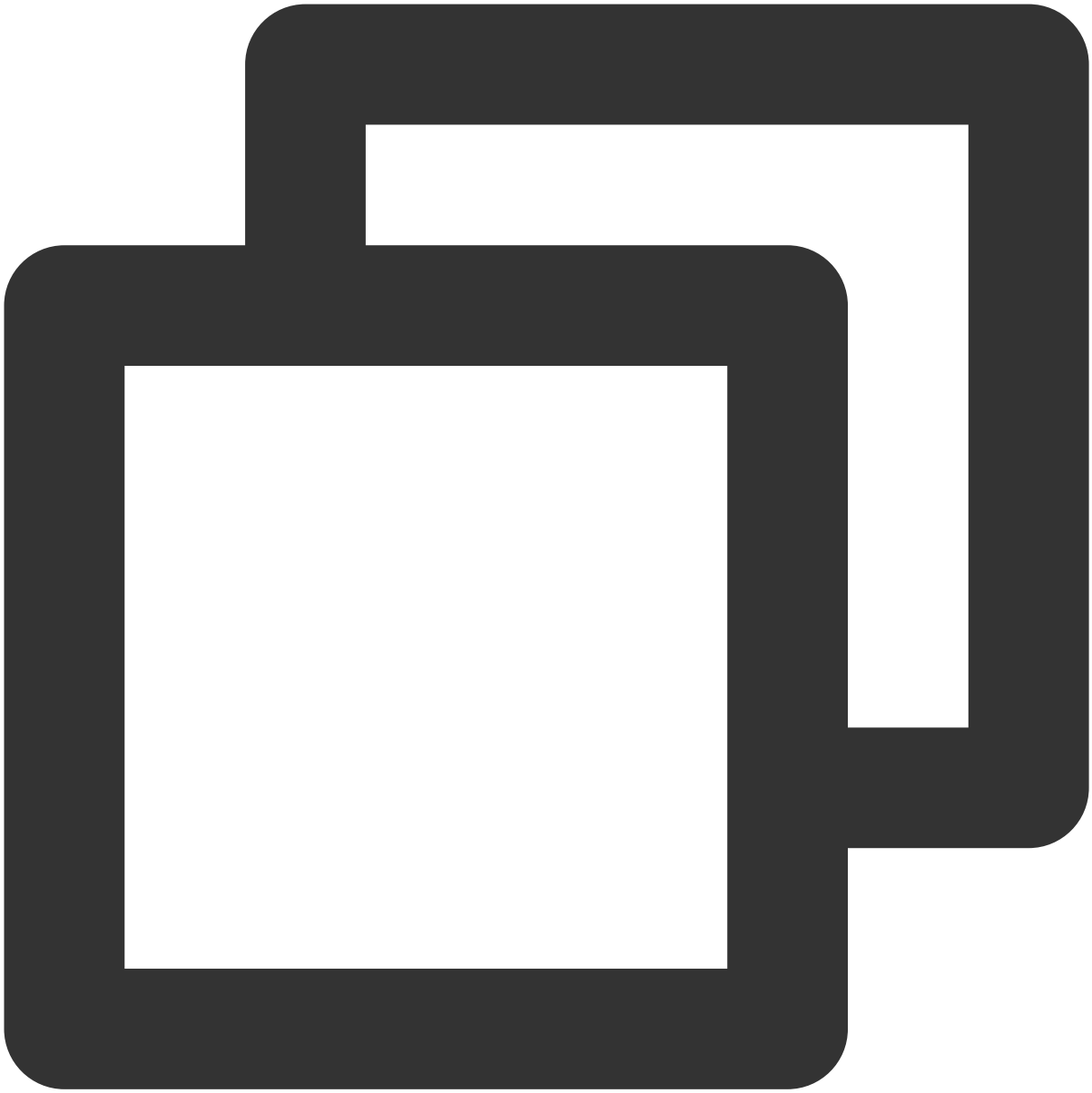

```
qcs:project_id:service_type:region:account:resource
```

project_id describes the project information, which is only used to enable compatibility with legacy CAM logic and can be left empty.

service_type describes the product abbreviation such as `cdb`.

region describes the region information, such as `ap-guangzhou`.

account describes the root account of the resource owner, such as `uin/65xxx763`.

resource describes detailed resource information of each product, such as `instanceId/instance_id1` or `instanceId/*`.

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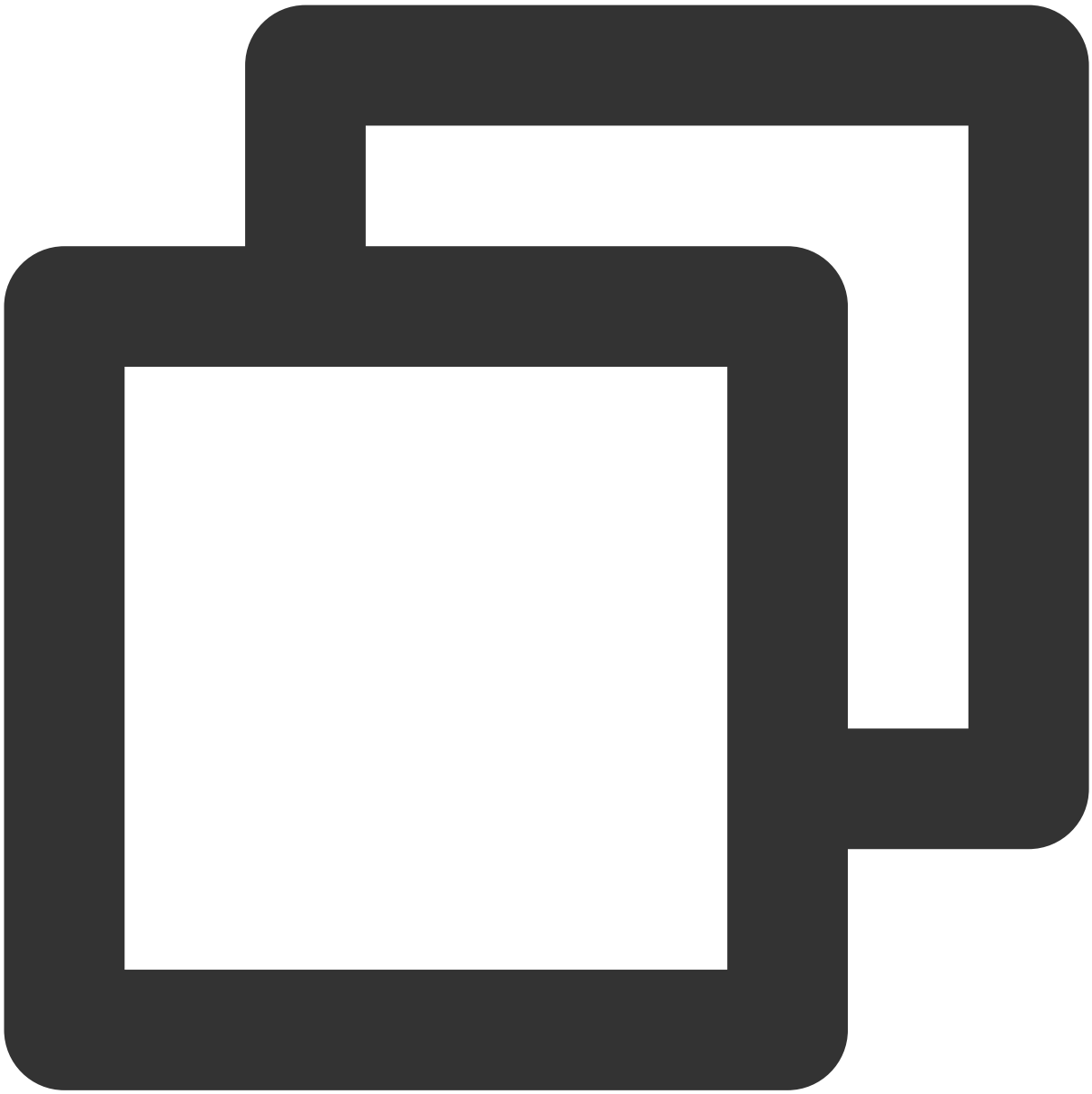
For example, you can specify a resource for a specific instance (cdb-k05xdcta) in a statement.



```
"resource":[ "qcs::cdb:ap-guangzhou:uin/65xxx763:instanceId/cdb-k05xdcta"]
```

You can also use the wildcard "*" to specify it for all instances that belong to a specific account.

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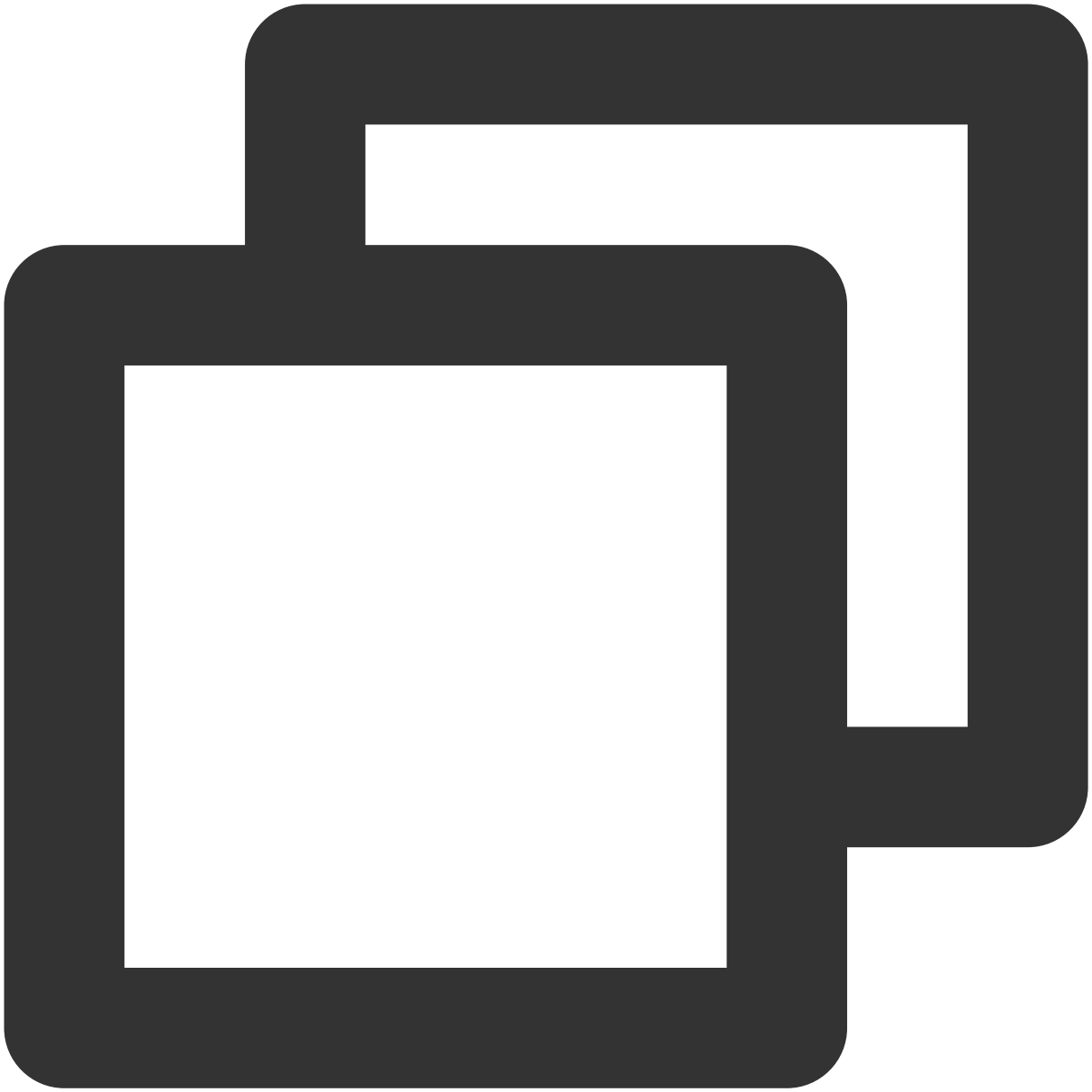

```
"resource":[ "qcs::cdb:ap-guangzhou:uin/65xxx763:instanceId/*"]
```

If you want to specify all resources or a specific API operation does not support resource-level permission control, you can use the `*` wildcard in the `resource` element.

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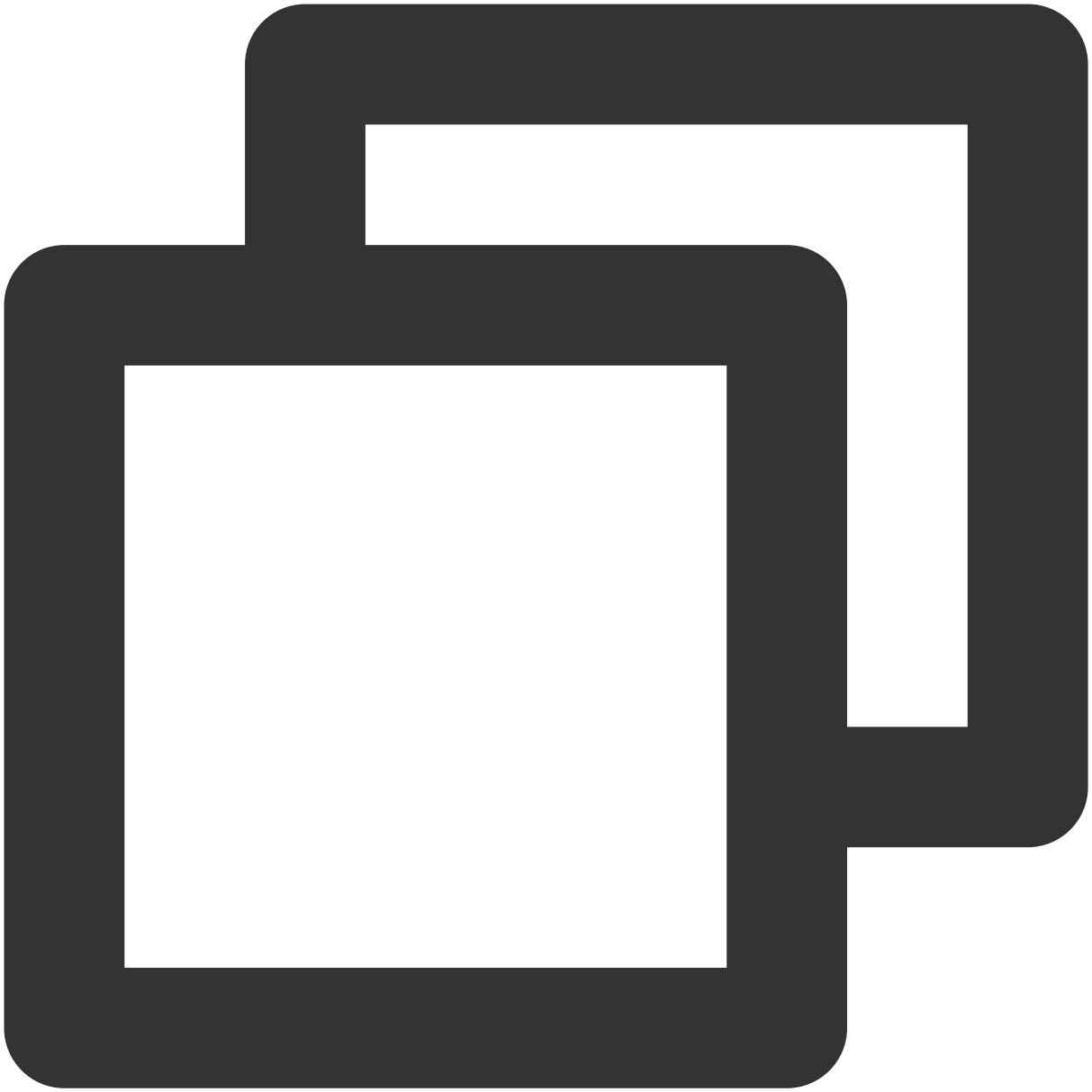

```
"resource": ["*"]
```

To specify multiple resources in one policy, separate them by comma. In the following example, two resources are specified:

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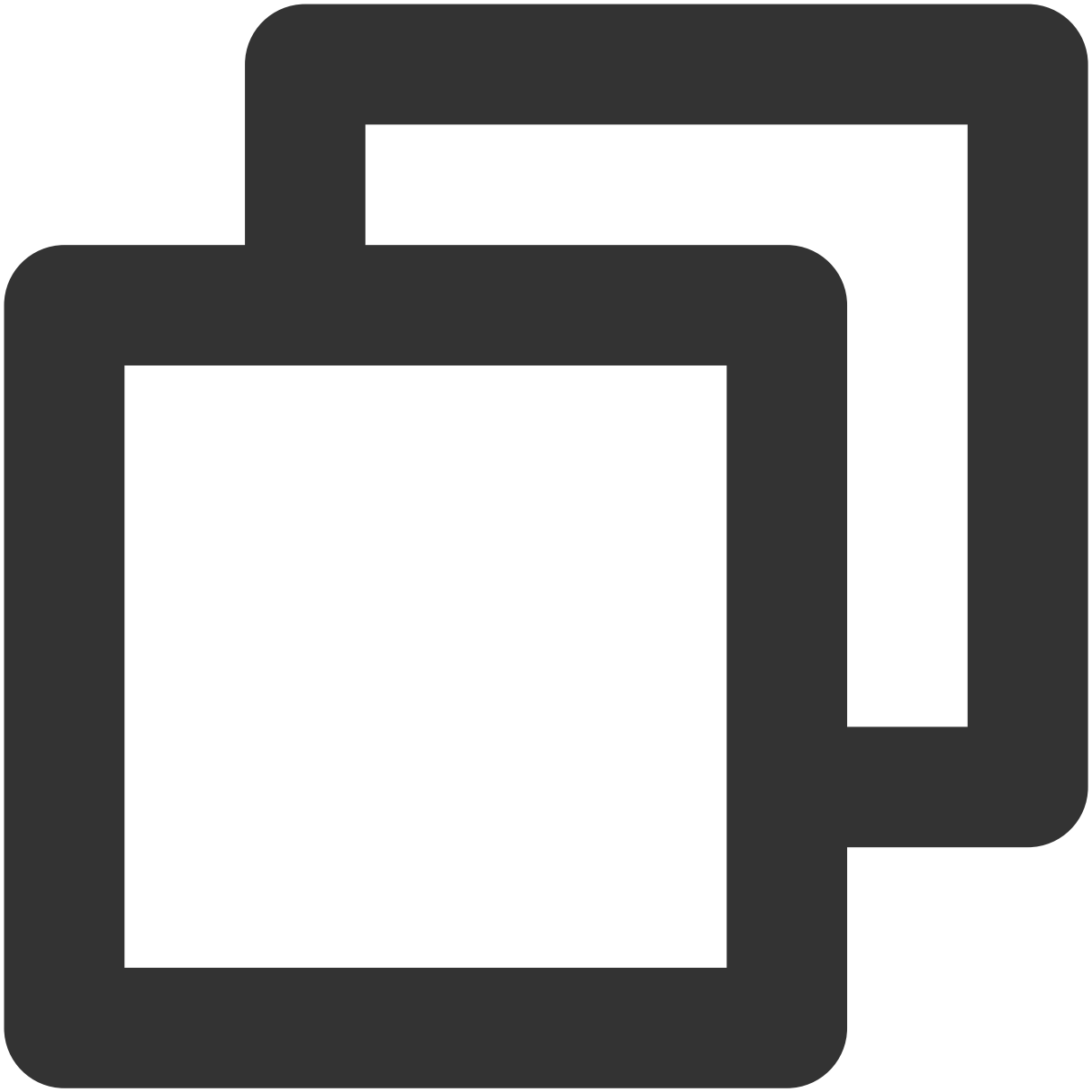

```
"resource":["resource1","resource2"]
```

The table below describes the resources that can be used by TencentDB and the corresponding resource description methods, where words prefixed with `$` are placeholders, `region` refers to a region, and `account` refers to an account ID.

Resource	Resource Description Method in Authorization Policy
Instance	`qcs::cdb:$region:$account:instanceId/$instanceId`
VPC	`qcs::vpc:$region:$account:vpc/$vpcId`

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Security group	`qcs::cvm:$region:$account:sg/$sgId`

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Authorizable Resource Types

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Resource-level permission can be used to specify which resources a user can manipulate. TencentDB supports certain resource-level permissions. This means that for TencentDB operations that support resource-level permission, you can control the time when a user is allowed to perform operations or to use specified resources. The following table describes the types of resources that can be authorized in CAM.

Resource Type	Resource Description Method in Authorization Policy
TencentDB instance-related	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`

The table below lists the TencentDB API operations which currently support resource-level permission control as well as the resources and condition keys supported by each operation. You can use the `*` wildcard in a resource path when defining it.

List of APIs supporting resource-level authorization

API	Resource Path
AddTimeWindow	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
AssociateSecurityGroups	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
CloseWanService	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
CreateAccounts	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
CreateBackup	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
CreateDBImportJob	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
DeleteAccounts	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`

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DeleteBackup	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DeleteTimeWindow	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeAccountPrivileges	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeAccounts	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeBackupConfig	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeBackupDatabases	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeBackupDownloadDbTableCode	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeBackups	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeBackupTables	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeBinlogs	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeDatabases	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeDBImportRecords	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeDBInstanceCharset	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeDBInstanceConfig	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeDBInstanceGTID	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeDBInstanceRebootTime	qcs::cdb:$region:$account:instanceId/*

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	qcs::cdb:$region:$account:instanceId/$instanceId
DescribeDBSwitchRecords	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeDBSecurityGroups	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeInstanceParamRecords	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeInstanceParams	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeRoGroups	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeRollbackRangeTime	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeSlowLogs	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeSupportedPrivileges	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeTables	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeTimeWindow	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeDatabasesForInstances	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeMonitorData	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DescribeTableColumns	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
DropDatabaseTables	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
InitDBInstances	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId

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IsolateDBInstance	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyAccountDescription	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyAccountPassword	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyAccountPrivileges	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyAutoRenewFlag	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyBackupConfig	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyBackupInfo	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyDBInstanceName	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyDBInstanceProject	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyDBInstanceSecurityGroups	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyDBInstanceVipVport	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyInstanceParam	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyDBInstanceModes	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyTimeWindow	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
ModifyProtectMode	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId
OfflineDBInstances	qcs::cdb:$region:$account:instanceId/* qcs::cdb:$region:$account:instanceId/$instanceId

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OpenDBInstanceGTID	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
OpenWanService	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
ReleaseIsolatedDBInstances	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
RestartDBInstances	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
StartBatchRollback	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
SubmitBatchOperation	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
SwitchDrInstanceToMaster	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
SwitchForUpgrade	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
DisassociateSecurityGroups	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
UpgradeDBInstance	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`
UpgradeDBInstanceEngineVersion	`qcs::cdb:$region:$account:instanceId/*` `qcs::cdb:$region:$account:instanceId/$instanceId`

List of APIs not supporting resource-level authorization

For TencentDB API operations that don't support resource-level authorization, you can still authorize a user to perform them, but you must specify `*` as the resource element in the policy statement.

API	Description
CreateDBInstance	Creates a monthly subscribed TencentDB instance
CreateDBInstanceHour	Creates a pay-as-you-go TencentDB instance

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CreateParamTemplate	Creates a parameter template
DeleteParamTemplate	Deletes a monitoring template item
DescribeProjectSecurityGroups	Queries the security group information of a project
DescribeDefaultParams	Queries the list of default configurable parameters
DescribeParamTemplateInfo	Queries the details of a parameter template
DescribeParamTemplates	Queries the list of parameter templates
DescribeAsyncRequestInfo	Queries the execution result of an async task
DescribeTasks	Queries the list of tasks for a TencentDB instance
DescribeUploadedFiles	Queries the list of imported SQL files
ModifyParamTemplate	Modifies a parameter template
RenewDBInstance	Renews a TencentDB instance
StopDBImportJob	Stops a data import task
DescribleRoMinScale	Queries the minimum specification supported by a read-only instance
DescribeRequestResult	Queries the details of a task
DescribeRoMinScale	Queries the minimum specification for read-only instance purchase or upgrade

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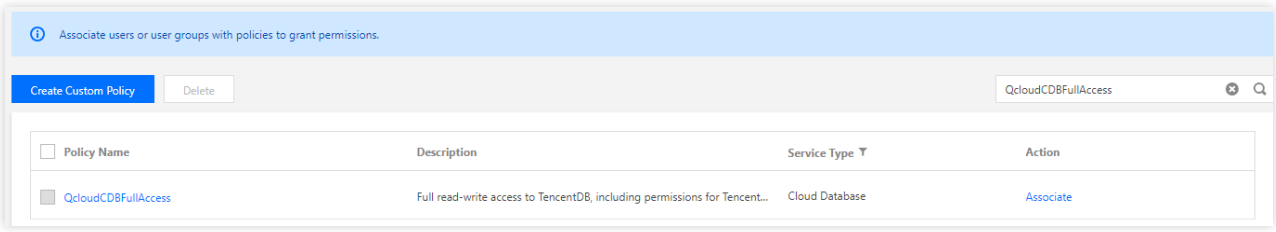
Console Examples

Last updated：2024-07-22 15:54:53

This document provides examples about how to grant a user permissions to view and use specific resources in the TencentDB console by using a CAM policy.

Full access policy for TencentDB

To grant a user permissions to create and manage TencentDB instances, you can implement the `QcloudCDBFullAccess` policy for the user.
Log in to the CAM console, select **Policies** on the left sidebar, and search QcloudCDBFullAccess in the upper right corner.



The policy syntax is as follows:

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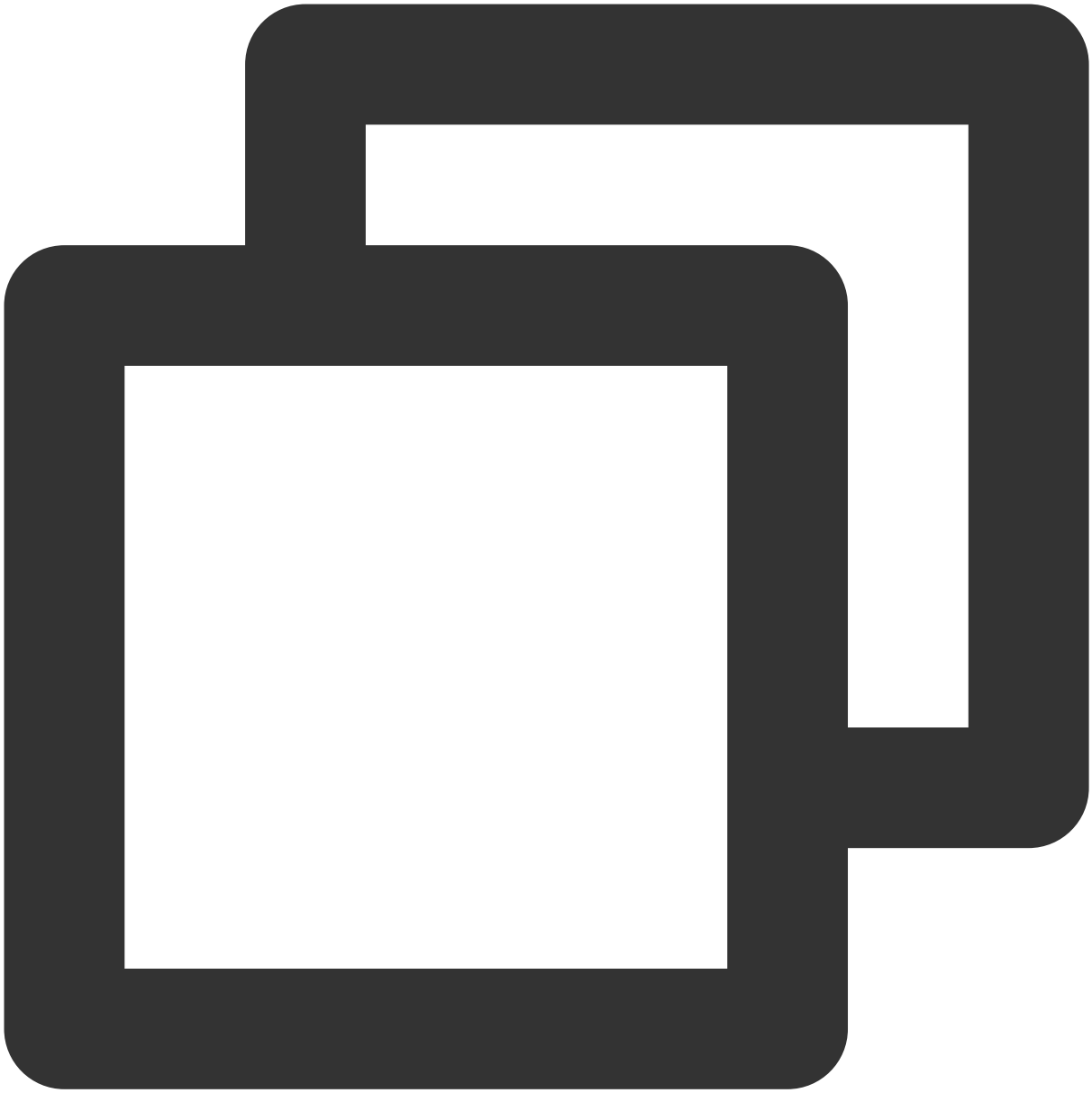

```
{
    "statement": [
        {
            "action": [
                "cdb:*"
            ],
            "effect": "allow",
            "resource": "*"
        },
        {
            "action": [
```

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```
                "vpc:*"
            ],
            "effect": "allow",
            "resource": "*"
        },
        {
            "action": [
                "cvm:*"
            ],
            "effect": "allow",
            "resource": "qcs::cvm:::sg/*"
        },
        {
            "action": [
                "cos:*"
            ],
            "effect": "allow",
            "resource": "*"
        },
        {
            "action": [
                "monitor:*",
                "cam:ListUsersForGroup",
                "cam:ListGroups",
                "cam:GetGroup"
            ],
            "effect": "allow",
            "resource": "*"
        },
        {
            "action": [
                "kms:CreateKey",
                "kms:GenerateDataKey",
                "kms:Decrypt",
                "kms:ListKey"
            ],
            "effect": "allow",
            "resource": "*"
        }
    ],
    "version": "2.0"
}
```

The above policy achieves its goal by allowing the user to separately authorize the use of TencentDB, VPC, security group, COS, KMS, and all resources available in the monitor with the CAM policy.

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Read-only permission policy for TencentDB

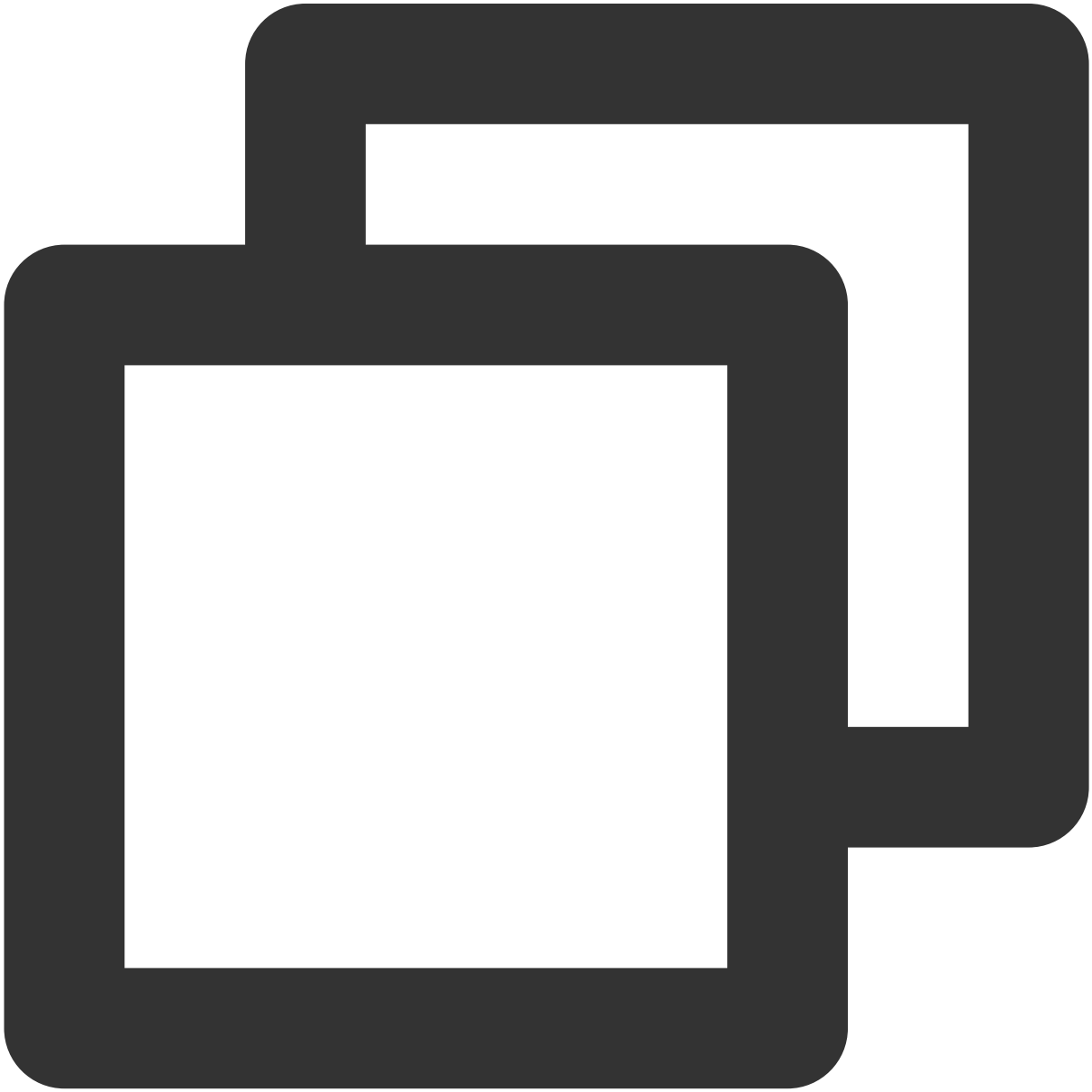
To grant a user permission to view TencentDB instances but not create, delete, or modify them, you can implement the policy named `QcloudCDBInnerReadOnlyAccess` for the user.

Note:

We recommend that you configure the read-only policy for TencentDB.

Log in to the CAM console, select **Policies** on the left sidebar, click **Service Type** in the policy list and select **TencentDB for MySQL** in the drop-down list, and then you can see this policy in the results.

The policy syntax is as follows:



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```
{
    "statement": [
        {
            "action": [
                "cdb:Describe*"
            ],
            "effect": "allow",
            "resource": "*"
        }
    ],
    "version": "2.0"
}
```

Read-only permission policy for TencentDB-related resources

To grant a user permissions to view TencentDB instances and related resources (VPC, security groups, COS, and Cloud Monitor) but not create, delete, or modify them, you can implement the `QcloudCDBReadOnlyAccess` policy for the user.

Log in to the CAM console, select **Policies** on the left sidebar, click **Service Type** in the policy list and select **TencentDB for MySQL** in the drop-down list, and then you can see this policy in the results.

The policy syntax is as follows:

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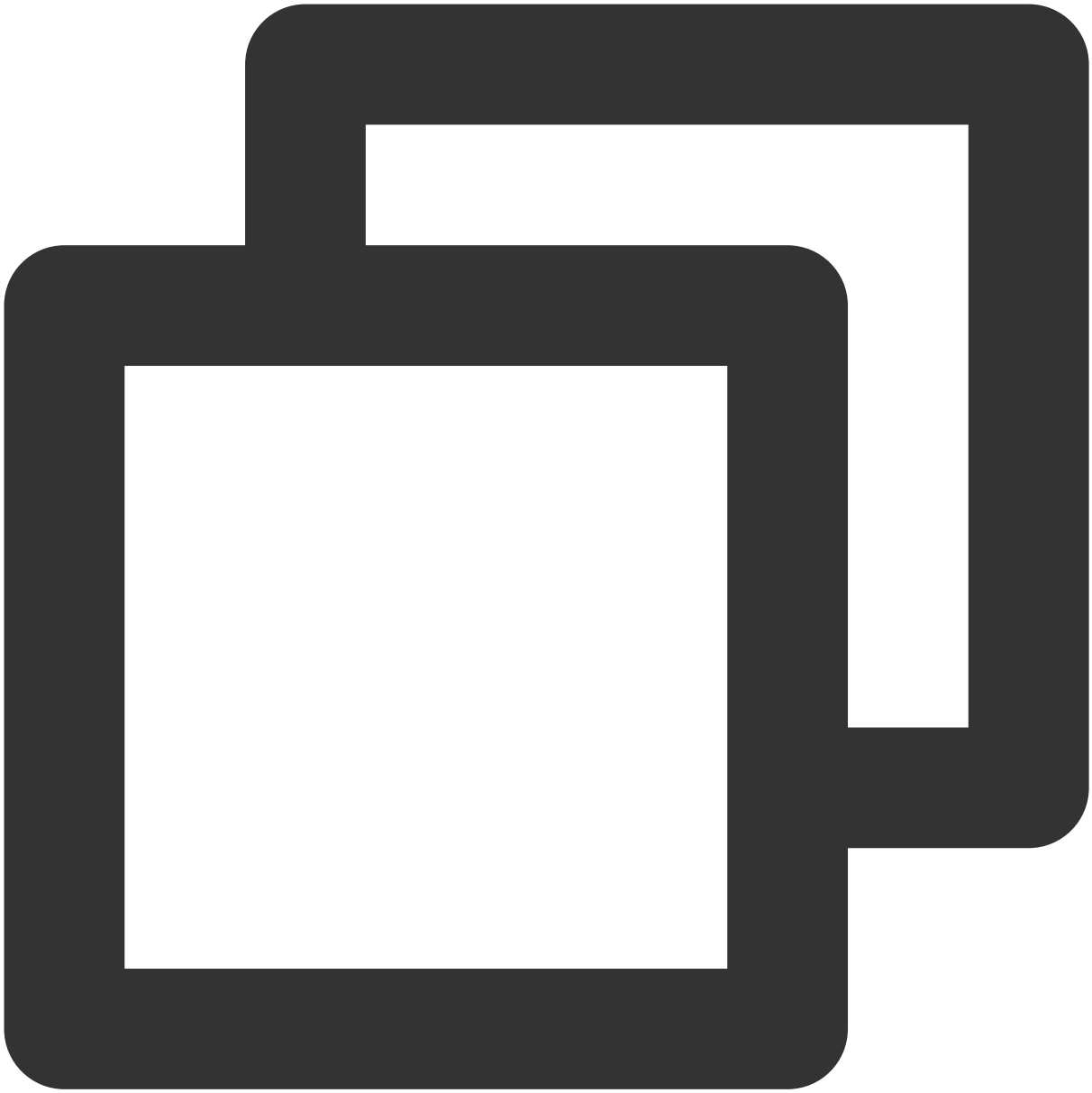

```
{
    "statement": [
        {
            "action": [
                "cdb:Describe*"
            ],
            "effect": "allow",
            "resource": "*"
        },
        {
            "action": [
```

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```
                "monitor:Describe*",
                "monitor:Get*",
                "cam:ListUsersForGroup",
                "cam:ListGroups",
                "cam:GetGroup"
            ],
            "effect": "allow",
            "resource": "*"
        }
    ],
    "version": "2.0"
}
```

The above policy achieves its goal by allowing the user to separately authorize the use of the following operations with the CAM policy.

All operations in TencentDB that begin with "Describe".

All operations in VPC that begin with "Describe", "Inquiry", or "Get".

All operations in security groups that begin with "DescribeSecurityGroup".

All operations in COS that begin with "List", "Get", and "Head" as well as the "OptionsObject" operation.

All operations in the monitor.

Policy for granting a user permissions to use APIs not at the resource level

To grant a user permissions to use only APIs not at the resource level, you can implement the `QcloudCDBProjectToUser` policy for the user.

Log in to the CAM console, select **Policies** on the left sidebar, click **Service Type** in the policy list and select **TencentDB for MySQL** in the drop-down list, and then you can see this policy in the results.

The policy syntax is as follows:

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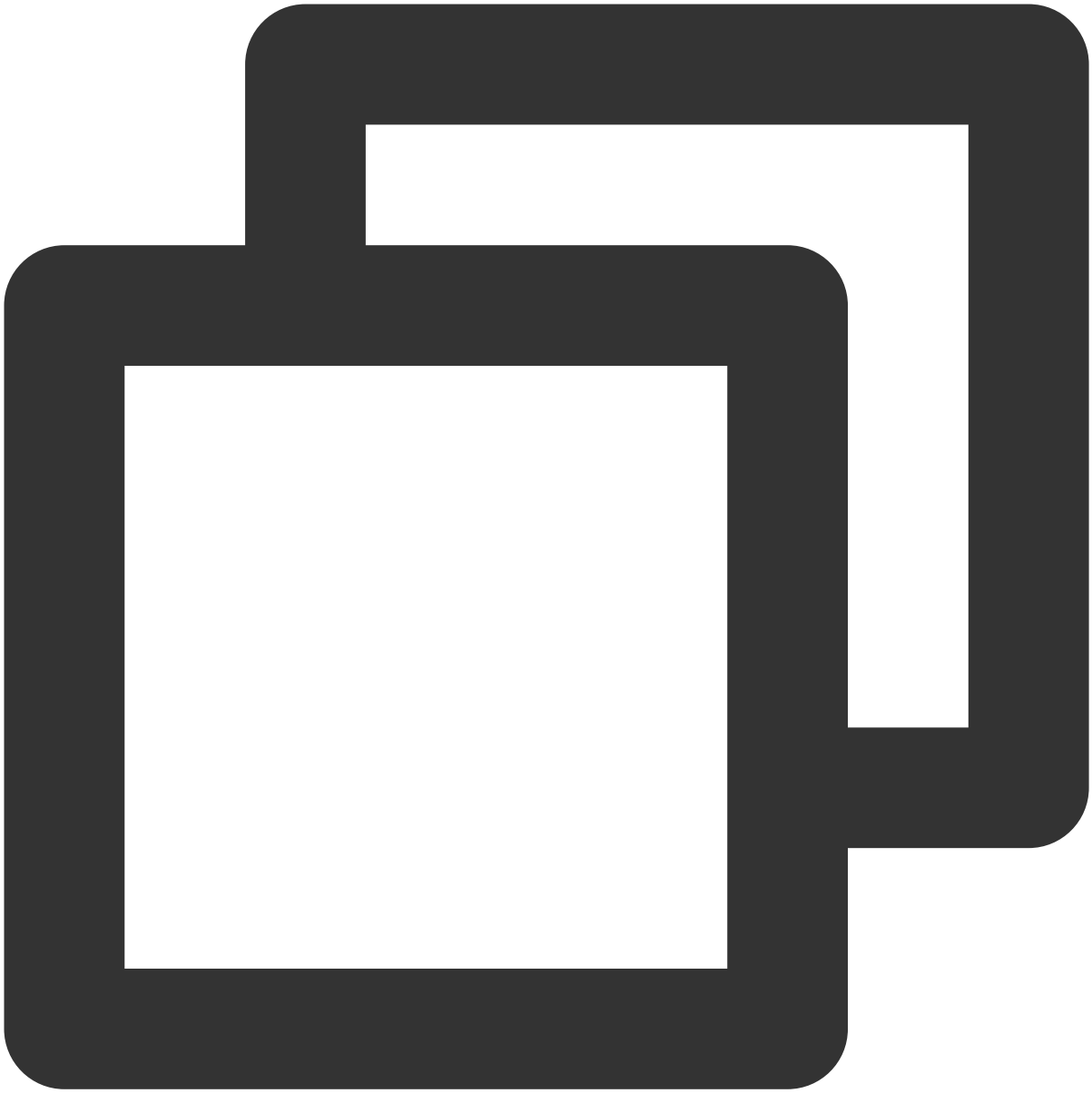

```
{
    "version": "2.0",
    "statement": [
        {
            "action": [
                "cdb:BalanceRoGroupLoad",
                "cdb:CancelBatchOperation",
                "cdb:CreateBatchJobFiles",
                "cdb:CreateDBInstance",
                "cdb:CreateDBInstanceHour",
                "cdb:CreateMonitorTemplate",
```

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```
                "cdb:CreateParamTemplate",
                "cdb:DeleteBatchJobFiles",
                "cdb:DeleteMonitorTemplate",
                "cdb:DeleteParamTemplate",
                "cdb:DescribeBatchJobFileContent",
                "cdb:DescribeBatchJobFiles",
                "cdb:DescribeBatchJobInfo",
                "cdb:DescribeProjectSecurityGroups",
                "cdb:DescribeDefaultParams",
                "cdb:DescribeMonitorTemplate",
                "cdb:DescribeParamTemplateInfo",
                "cdb:DescribeParamTemplates",
                "cdb:DescribeRequestResult",
                "cdb:DescribeRoGroupInfo",
                "cdb:DescribeRoMinScale",
                "cdb:DescribeTasks",
                "cdb:DescribeUploadedFiles",
                "cdb:ModifyMonitorTemplate",
                "cdb:ModifyParamTemplate",
                "cdb:ModifyRoGroupInfo",
                "cdb:ModifyRoGroupVipVport",
                "cdb:StopDBImportJob",
                "cdb:UploadSqlFiles"
            ],
            "effect": "allow",
            "resource": "*"
        }
    ]
}
```

Policy for granting a user permissions to manipulate a specific TencentDB instance

To grant a user the permission to manipulate a specific TencentDB instance, associate the following policy with the user. For example, the policy below allows the user to manipulate the TencentDB instance "dcdb-xxx" in Guangzhou region.

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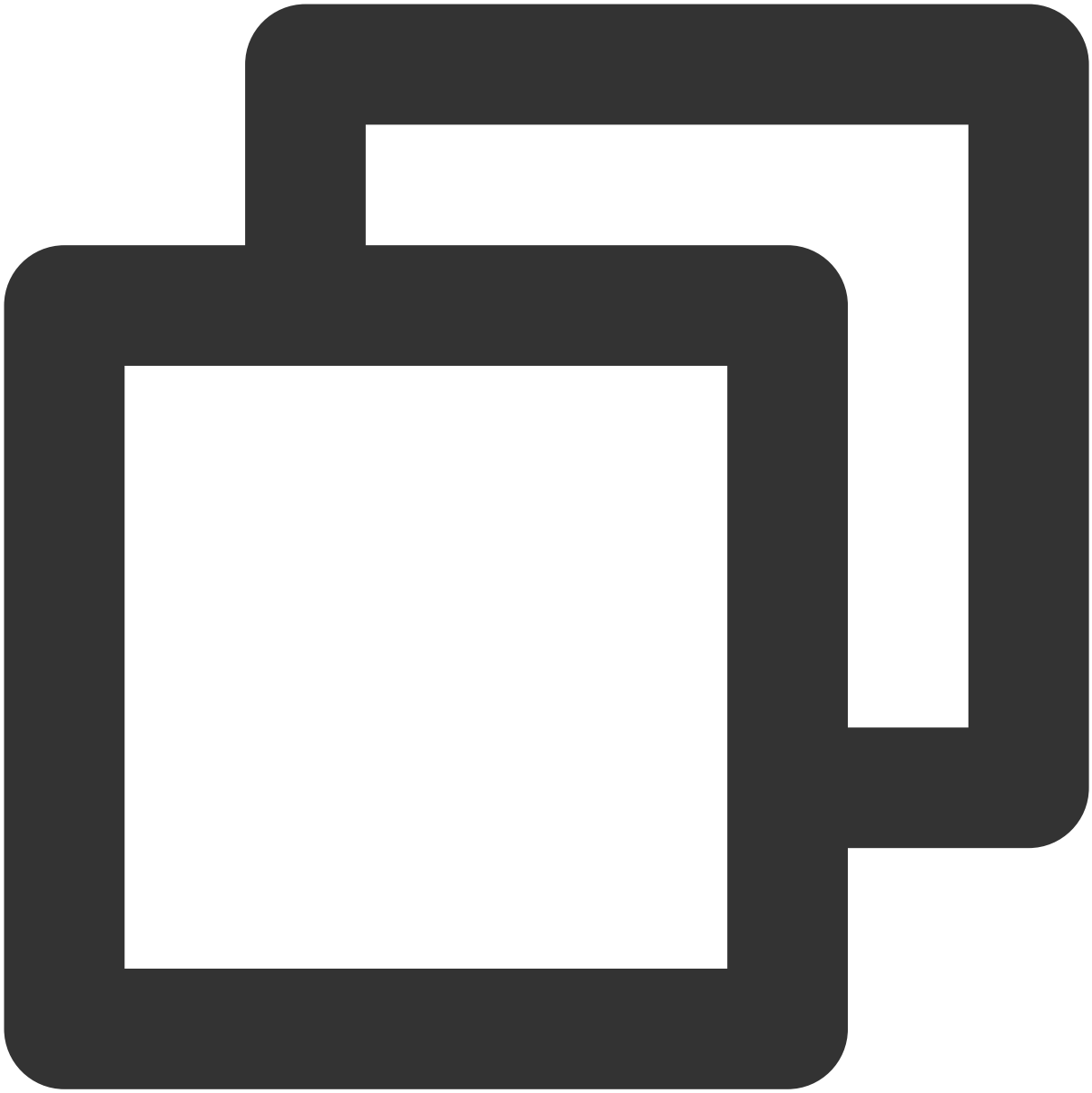

```
{
    "version": "2.0",
    "statement": [
        {
            "action": "cdb:*",
            "resource": "qcs::cdb:ap-guangzhou::instanceId/cdb-xxx",
            "effect": "allow"
        }
    ]
}
```

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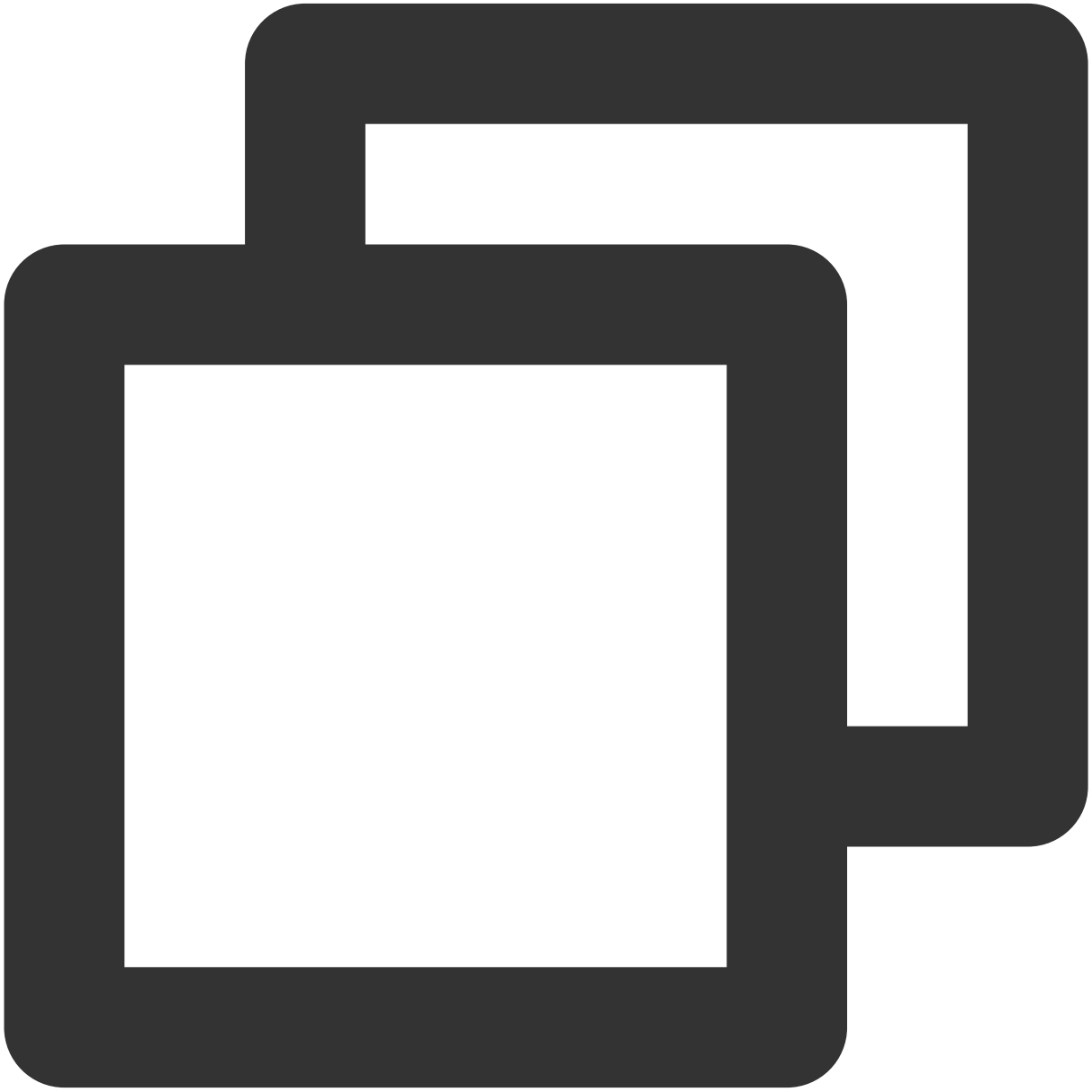
Policy for granting a user permissions to manipulate TencentDB instances in batches

To grant a user permissions to manipulate TencentDB instances in batches, associate the following policy with the user. For example, the policy below allows the user to manipulate the TencentDB instances "cdb-xxx" and "cdb-yyy" in Guangzhou region and "cdb-zzz" in Beijing region.



```
{
    "version": "2.0",
```

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```
    "statement": [
        {
            "action": "cdb:*",
            "resource": ["qcs::cdb:ap-guangzhou::instanceId/cdb-xxx", "qcs::cdb:ap-
            "effect": "allow"
        }
    ]
}
```

Policy for granting a user permissions to manipulate TencentDB instances in a specific region

To grant a user permissions to manipulate TencentDB instances in a specific region, associate the following policy with the user. This policy authorizes the user to operate TencentDB instances in Guangzhou region.

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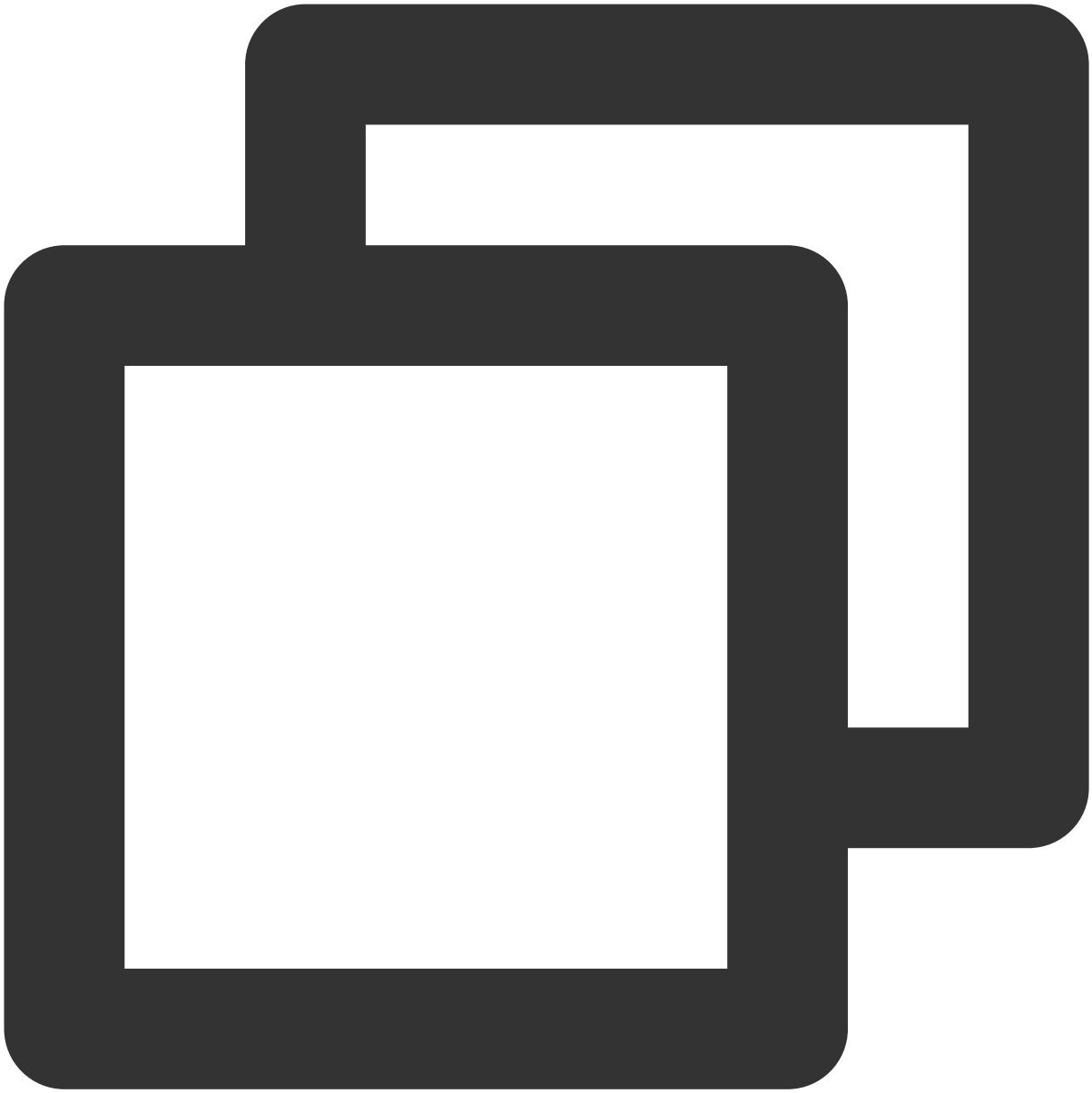

```
{
    "version": "2.0",
    "statement": [
        {
            "action": "cdb:*",
            "resource": "qcs::cdb:ap-guangzhou::*",
            "effect": "allow"
        }
    ]
}
```

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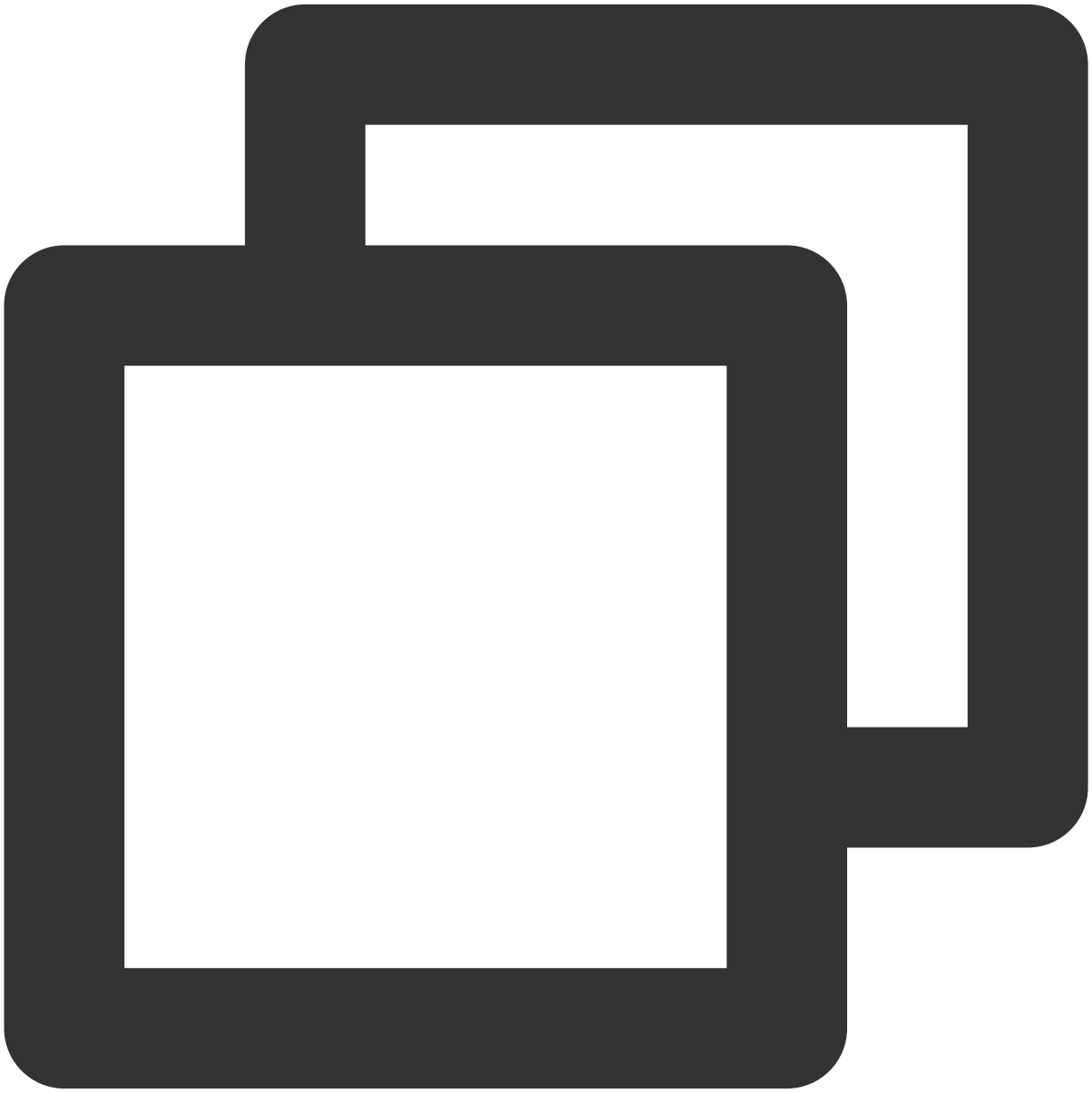
Custom policy

If preset policies cannot meet your requirements, you can create custom policies as shown below. If permissions are granted by resources, for a TencentDB API operation that does not support authorization at the resource level, you can still authorize a user to perform it, but you must specify `*` as the resource element in the policy statement.
The syntax of custom policies is as follows:



```
{
    "version": "2.0",
    "statement": [
```

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```
        {
            "action": [
                "Action"
            ],
            "resource": "Resource",
            "effect": "Effect"
        }
    ]
}
```

Replace "Action" with the operation to be allowed or denied.

Replace "Resource" with the resources that you want to authorize the user to manipulate.

Replace "Effect" with "Allow" or "Deny".

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TencentDB Security Group Management

Last updated：2024-07-22 15:55:06

Overview

Security group serves as a stateful virtual firewall with filtering feature for configuring network access control for one or more TencentDB instances. It is an important network security isolation tool provided by Tencent Cloud. Instances with the same network security isolation demands in one region can be put into the same security group, which is a logical group. TencentDB and CVM share the security group list and are matched with each other within the security group based on rules. For specific rules and limitations, see Security Group Overview.

Note:

TencentDB for MySQL security groups currently only support network access control for VPCs and public networks but not the classic network.

As TencentDB doesn't have any active outbound traffic, outbound rules don't apply to it.

Security groups are supported for source, read-only, and disaster recovery TencentDB for MySQL instances.

Configuring a security group for TencentDB

Step 1. Create a security group

1. Log in to the CVM console.
2. Select **Security Group** on the left sidebar, select a region, and click **Create**.
3. In the pop-up dialog window, configure the following items, and click **OK**.

Template: Select a template based on the service to be deployed on the TencentDB instance in the security group, which simplifies the security group rule configuration, as shown in the table below.

Template	Description	Description
Open all ports	All ports are opened to the public and private networks. This may pose security issues.	-
Open ports 22, 80, 443, and 3389 and the ICMP protocol	Ports 22, 80, 443, and 3389 and the ICMP protocol are opened to the public network. All ports are opened to the private network.	This template doesn’t take effect for TencentDB.
Custom	You can create a security group and then add custom rules. For more information, see Add a security group rule.	-

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Name: Custom name of the security group.

Project: Select a project for easier management. By default, **DEFAULT PROJECT** is selected.

Remarks: A short description of the security group for easier management.

Step 2. Add a security group rule

1. On the Security Group page, click **Modify Rule** in the **Operation** column on the row of the security group for which to configure a rule.
2. On the security group rule page, click **Inbound Rules** > **Add Rule**.
3. In the pop-up window, set the rule.

Type: **Custom** is selected by default. You can also choose another system rule template. MySQL(3306) is recommended.

Source or **Target**: Traffic source (inbound rules) or target (outbound rules). You need to specify one of the following options:

Source or Target	Description
A single IPv4 address or an IPv4 range	In CIDR notation, such as 203.0.113.0, 203.0.113.0/24 or 0.0.0.0/0, where 0.0.0.0/0 indicates all IPv4 addresses will be matched.
A single IPv6 address or an IPv6 range	In CIDR notation, such as FF05::B5, FF05:B5::/60, ::/0 or 0::0/0, where ::/0 or 0::0/0 indicates all IPv6 addresses will be matched.
ID of referenced security group. You can reference the ID of: Current security group Other security group	Current security group indicates the CVM associated with the security group. Other security group indicates the ID of another security group under the same project in the same region.
Reference an IP address object or IP address group object in a parameter template.	-

Protocol Port: Enter the protocol type and port range or reference a protocol/port or protocol/port group in a parameter template.

Note:

To connect to a TencentDB for MySQL instance, you must open its port. You can log in to the TencentDB for MySQL console, click an instance ID to enter the instance details page.

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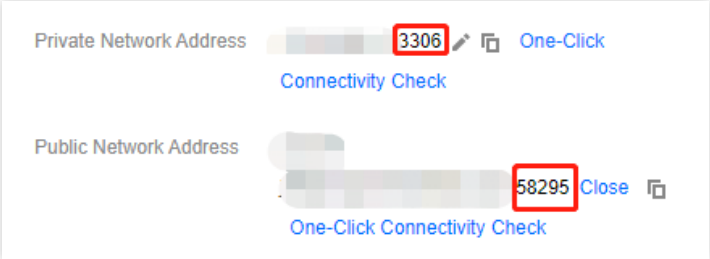

TencentDB for MySQL uses private network port 3306 by default and supports customizing the port. If the default port is changed, the new port should be opened in the security group.

The TencentDB for MySQL public port is automatically assigned by the system and cannot be customized. After the public network access is enabled, it will be controlled by the ACL of the security group. When configuring the security policy, you need to open the private port 3306.

The security group rules displayed on the **Security Group** page in the TencentDB for MySQL console take effect for private and public (if enabled) network addresses of the TencentDB for MySQL instance.

Policy: **Allow** or **Reject**. **Allow** is selected by default.

Allow: Traffic to this port is allowed.

Reject: Data packets will be discarded without any response.

Remarks: A short description of the rule for easier management.

4. Click **Complete**.

Use case

Scenario: You have created a TencentDB for MySQL instance and want to access it from a CVM instance.

Solution: When adding security group rules, select MySQL(3306) in **Type** to open port 3306.

You can also set **Source** to all or specific IPs (IP ranges) as needed to allow them to access TencentDB for MySQL from a CVM instance.

Inbound or Outbound	Type	Source	Protocol and Port	Policy
Inbound	MySQL(3306)	All IPs: 0.0.0.0/0 Specific IPs: Specify IPs or IP ranges	TCP:3306	Allow

Step 3. Configure a security group

A security group is an instance-level firewall provided by Tencent Cloud for controlling inbound traffic of TencentDB. You can associate a security group with an instance when purchasing it or later in the console.

Note:

Currently, security groups can be configured only for **TencentDB for MySQL instances in VPC**.

1. Log in to the TencentDB for MySQL console, click an instance ID in the instance list, and enter the instance management page.
2. On the **Security Group** tab, click **Configure Security Group**.
3. In the pop-up dialog box, select the security group to be bound and click **OK**.

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Importing security group rules

1. On the Security Group page, click the ID/name of the target security group.
2. On the inbound rule or outbound rule tab, click **Import Rule**.
3. In the pop-up window, select an edited inbound/outbound rule template file and click **Import**.

Note:
As existing rules will be overwritten after importing, we recommend that you export the existing rules before importing new ones.

Cloning a security group

1. On the Security Group page, locate the target security group and click **More** > **Clone** in the **Operation** column.
2. In the pop-up window, select the target region and project and click **OK**. If the new security group needs to be associated with a CVM instance, do so by managing the CVM instances in the security group.

Deleting a security group

1. On the Security Group page, locate the security group to be deleted and click **More** > **Delete** in the **Operation** column.
2. In the pop-up window, click **OK**. If the current security group is associated with a CVM instance, it must be disassociated first before being deleted.

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Enabling Public Network Address

Last updated：2024-07-05 09:14:59

This document introduces how to manually enable or disable the public network address through the TencentDB for MySQL console, to facilitate public access to the MySQL instance. Using the system-assigned domain name and port, you can connect to the database via a public network address. Once the public network is enabled, it is convenient for daily testing and management, thereby enhancing the convenience for users in development and use.

Note:

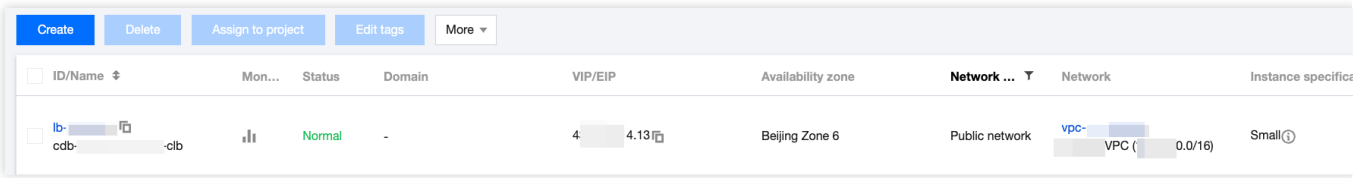
Failures of public network access will not be counted in the overall availability calculation of the TencentDB for MySQL service.

Public network access to your TencentDB for MySQL instance poses a risk to its security, hence it is advisable to employ it solely for administrative purposes, testing, or auxiliary database management. The availability of the Service Level Agreement (SLA) cannot be ensured in this context. For business access, please select private network access.

Precautions

After enabling public network access, TencentDB for MySQL instances switch to a CLB architecture, and the system automatically creates a basic CLB instance in the same region on the CLB Console, to provide public network capabilities. Be aware of the resource limitation policies of the CLB architecture (as shown in the table below). For higher performance requirements, you can also directly purchase a CLB.

Classification	Number of Concurrent Connections	Number of New Connections	Packet Volume	Inbound Bandwidth	Outbound Bandwidth
CLB	2000	200/s	Unlimited	20 Mbps	20 Mbps



Note:

The CLB instance automatically created upon enabling the public network address can be tried for free.

After disabling the public network address, the corresponding CLB instance on the CLB console will be automatically deleted.

Starting mid-May 2024, the CLB health check source IP will be in the 100.64.0.0/10 subnet. Once the public network is enabled, if your simple CLB instance shows an abnormal health status, you can **allow the 100.64.0.0/10 subnet** in the security group settings for your TencentDB for MySQL instance to resolve the issue of failed health checks

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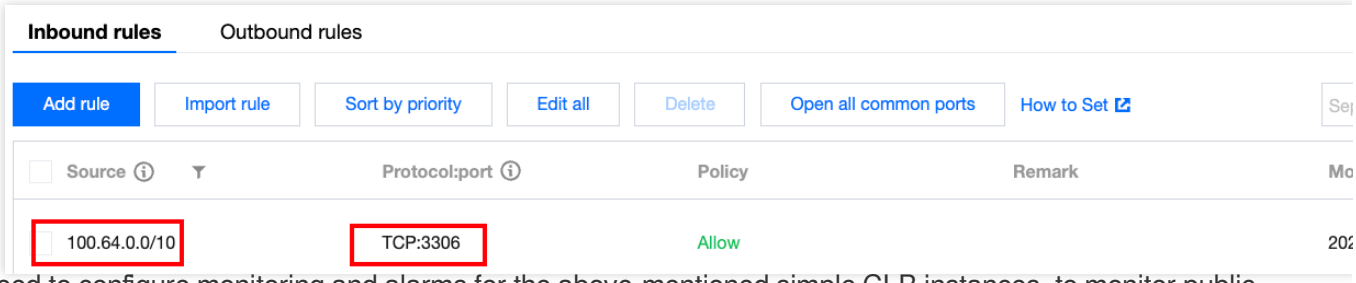
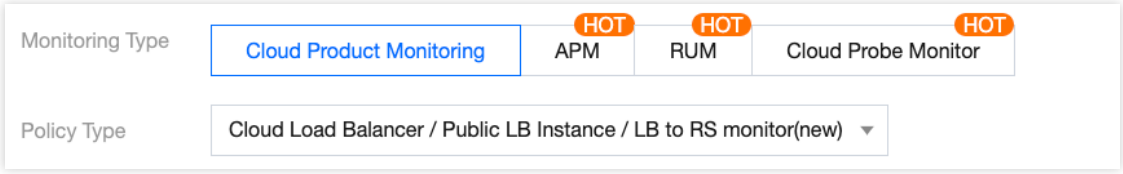
causing the CLB instance to display an abnormal health status. Please refer to Manage Cloud Database Security Groups for operations.



You need to configure monitoring and alarms for the above-mentioned simple CLB instances, to monitor public network connections through metrics (such as the number of new public network connections established, number of public network connections, public network outbound bandwidth, and public network inbound bandwidth) after enabling the public network address. Refer to Alarm Policy for operation steps, and select the policy type as shown in the following figure.



Use Limitations

Currently, the primary instance regions of Guangzhou, Shanghai, Beijing, Chengdu, Chongqing, Nanjing, Hong Kong (China), Singapore, Seoul, Tokyo, Silicon Valley, Virginia, and Frankfurt support enabling the public network. For regions where read-only instances can enable the public network, refer to the console. If your instance's region does not support enabling but requires the public network, see Enable Public Network Access through CLB to access TencentDB for MySQL instance via the public network.

Enable the Public Network Address

1. Log in to the TencentDB for MySQL console. In the instance list, click an **instance ID** or **Manage** in the **Operation** column to access the instance details page.
2. Under **Public Network Address** on the instance details page, click **Enable**.

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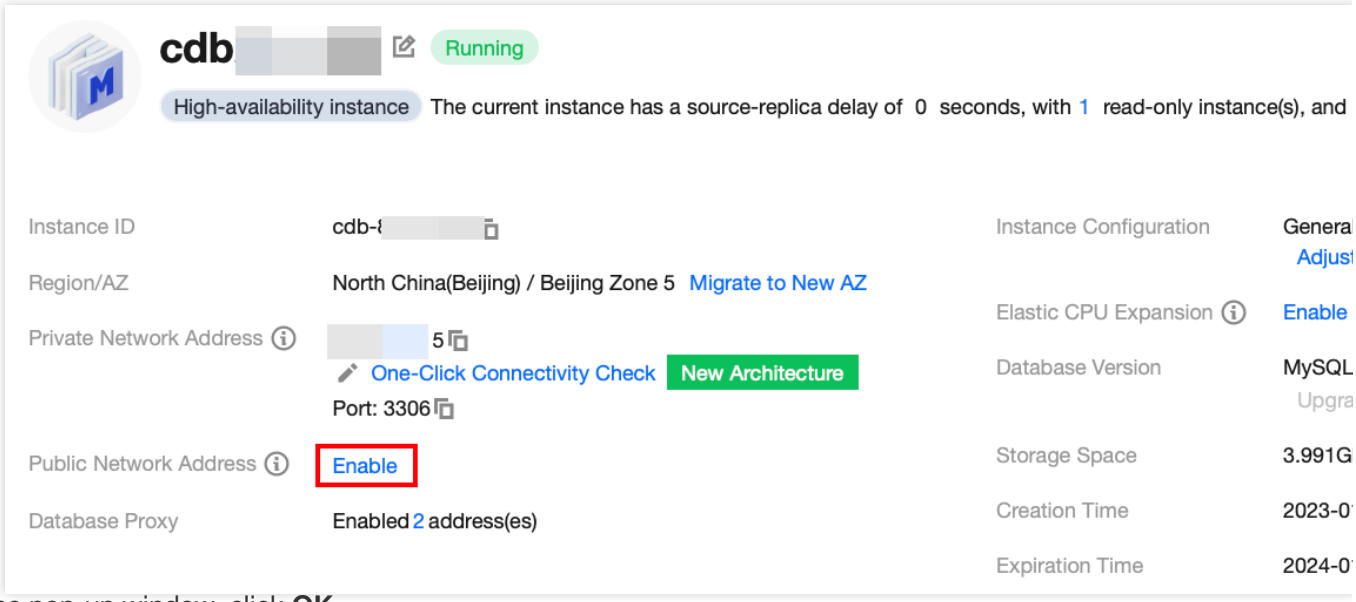

3. In the pop-up window, click **OK**.

Note：

After the public network address is enabled, it can be found in the basic information section.

The public network connection can be disabled through the switch. After it is re-enabled, the public network address corresponding to the domain name remains the same.

Disable the Public Network Address

1. Log in to MySQL Console, in the Instance List, click **Instance ID** or **Manage** in the **Operate** column to enter the Instance Details page.
2. On the Instance Details page, click **Off** behind the **Public Network Address**.
3. In the pop-up window, confirm that everything is correct, and click **OK**.
4. Return to the Instance Details page, the **Public Network Address** will no longer display the public network address, indicating that the public network feature is turned off.

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Network Switch

Last updated：2024-07-22 15:55:22

Overview

Tencent Cloud supports classic network and VPC as described in Overview, which are capable of offering a diversity of smooth services. On this basis, we provide more flexible services as shown below to help you manage network connectivity with ease.

Network switch

Switch from classic network to VPC: A single TencentDB source instance can be switched from classic network to VPC.

Switch from VPC A to VPC B: A single TencentDB source instance can be switched from VPC A to VPC B.

Custom IP and port

Custom source instance IP and port: The IP and port of a source instance can be customized on the instance details page in the console.

Custom read-only instance IP and port: The IP and port of a read-only instance can be customized on the instance details page in the console.

Notes

After the switch from classic network to VPC, only clients in the same VPC can interconnect with each other. You can configure a VPC IP range to keep the VPC IP the same as the classic network IP.

The repossession time for the old IP is 24 hours by default and can be up to 168 hours. If "Valid Hours of Old IP" is set to 0 hours, the IP is released immediately after the network is changed.

The switch from classic network to VPC is irreversible. After the switch to a VPC, the TencentDB instance cannot communicate with Tencent Cloud services in another VPC or classic network.

The network switch of a primary instance doesn't apply to its associated read-only instances or disaster recovery instances, you need to manually switch the network for these instances.

Subnet Description

A subnet is a logical network space in a VPC. You can create subnets in different AZs in the same VPC, which communicate with each other over the private network by default.

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After you select a network, the subnet IPs in the AZ of the selected instance are displayed by default. You can also select subnet IPs in other AZs in the region of the instance. Business connections adopt nearby access, so the network latency will not be increased.

Directions

Switching the network

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance details page.
2. Click **Switch to VPC** or **Change Network** after **Network** in the **Basic Info** section.
3. In the pop-up window, select a VPC and a subnet and click **OK**.

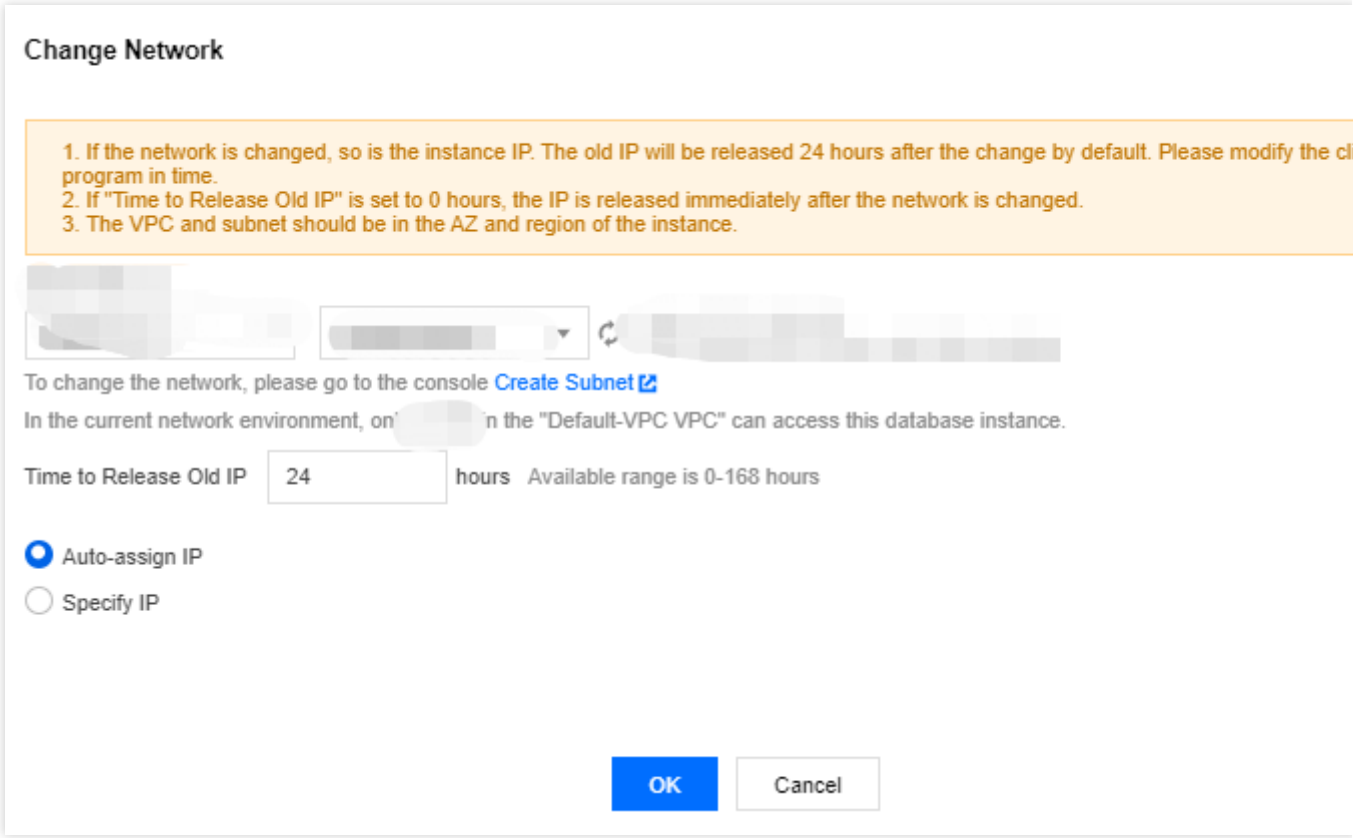
Note:

If there is no IP address specified, one will be automatically assigned by the system.

You can only select a VPC in the region of the instance, but you can choose a subnet in any AZ and view its IP range.

We recommend that you select a VPC in the region where the CVM instance resides; otherwise, the CVM instance will not be able to access TencentDB for MySQL over the private network, unless a peering connection or a CCN instance is created between the two VPCs.

Switch from classic network to VPC



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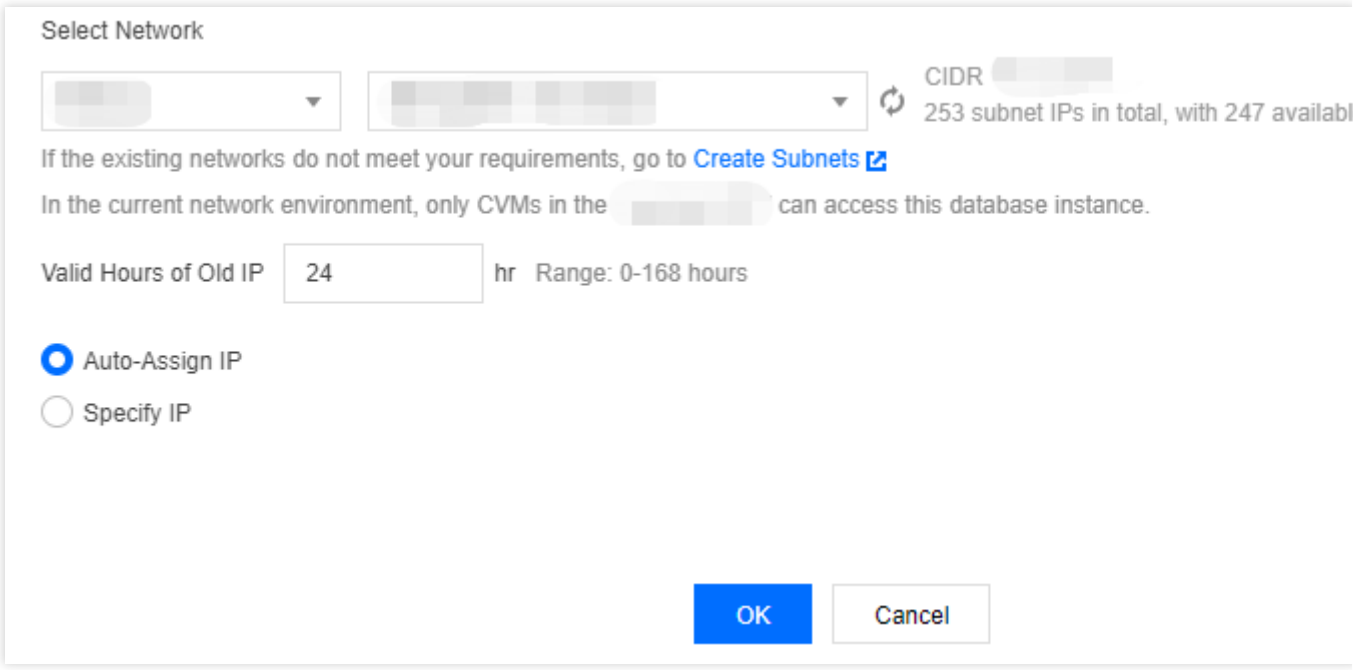
Switch from VPC A to VPC B



4. Return to the instance details page where you can view the network of the instance.

Switching the RO group network

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance details page.
2. In the **RO Group Info** of a read-only instance, click **Change Subnet** or **Switch to VPC** according to the network switch type (classic network to VPC or VPC to VPC).
3. In the pop-up window, select a VPC and a subnet and click **OK**.

Note:

If there is no IP address specified, one will be automatically assigned by the system.

You can only select a VPC in the region of the instance, but you can choose a subnet in any AZ and view its IP range. We recommend you select a VPC in the region where the CVM instance resides; otherwise, the CVM instance will not be able to access TencentDB for MySQL over the private network, unless a peering connection or a CCN instance is created between the two VPCs.

Customizing the IP and port

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance details page.
2. Click

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after **Private Network Address** and **Private Port** in the **Basic Info** section.

Note:

Modifying the private network address and port affects the database business being accessed.

3. In the pop-up window, specify the IP and port and click **OK**.

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Enabling Public Network Access Through CLB

Last updated：2024-05-23 21:38:27

TencentDB for MySQL supports both private and public network addresses, with the former enabled by default for you to access your instance over the private network and the latter enabled or disabled as needed. To access your database instance from a Linux or Windows CVM instance over the public network, you can enable the public network address. You can also enable public network access through CLB, but you must configure security group rules in this case.
This document describes how to enable public network access through CLB and connect to an instance through MySQL Workbench.

Prerequisites

You have applied for using the backend service feature.
1. Go to the Cross-Region CLB Binding 2.0 Application page.
2. Fill out and submit the application.
3. Upon completion of the beta application submission, submit a ticket to CLB to apply for access to the backend service features.

Note:
Enabling the public network services through CLB is exclusively applicable when the CLB instances and the MySQL instances belong to the same VPC network. It is currently not supported for instances across different VPC networks.

Step 1. Purchase a CLB instance

Note:
If you already have a CLB instance in the same region as TencentDB for MySQL, skip this step.
Go to the CLB purchase page, select the configuration, and click **Buy Now**.

Note:
Region: You need to select the region where the TencentDB for MySQL instance is.

Step 2. Configure the CLB instance

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The following describes how to configure the CLB instance in the same VPC as the database instance and in a different VPC respectively.

Scenario: Deploying the CLB instance in the same VPC as the TencentDB for MySQL instance

1. Enable cross-VPC access so that the CLB instance can be bound to another private IP.
a. Log in to the CLB console, select the region, and click the target instance ID in the instance list to enter the instance management page.
b. On the **Basic Info** page, click **Configure** in the **Real Server** section.
c. In the pop-up window, click **Submit**.
2. Configure a public network listener port.
a. Log in to the CLB console, select the region, and click the target instance ID in the instance list to enter the instance management page.
b. On the instance management page, select the **Listener Management** tab and click **Create** below **TCP/UDP/TCP SSL Listener**.
c. In the pop-up window, complete the settings and click **Submit**.

Step 3. Bind a TencentDB for MySQL instance

1. After creating the listener, click it in **Listener Management** and click **Bind** on the right.
2. In the pop-up window, select **Other Private IPs** as the object type, enter the IP address and port of the TencentDB for MySQL instance, and click **OK**.

Note:

The login account must be a standard account (bill-by-IP). If binding fails, submit a ticket for assistance.

Step 4. Configure the TencentDB for MySQL security group

1. Log in to the TencentDB for MySQL console and select a region. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the instance management page, select the **Security Group** tab, click **Configure Security Group**, configure the security group rule to open all ports, and confirm that the security group allows access from public IPs. For more information on configuration, see TencentDB Security Group Management.

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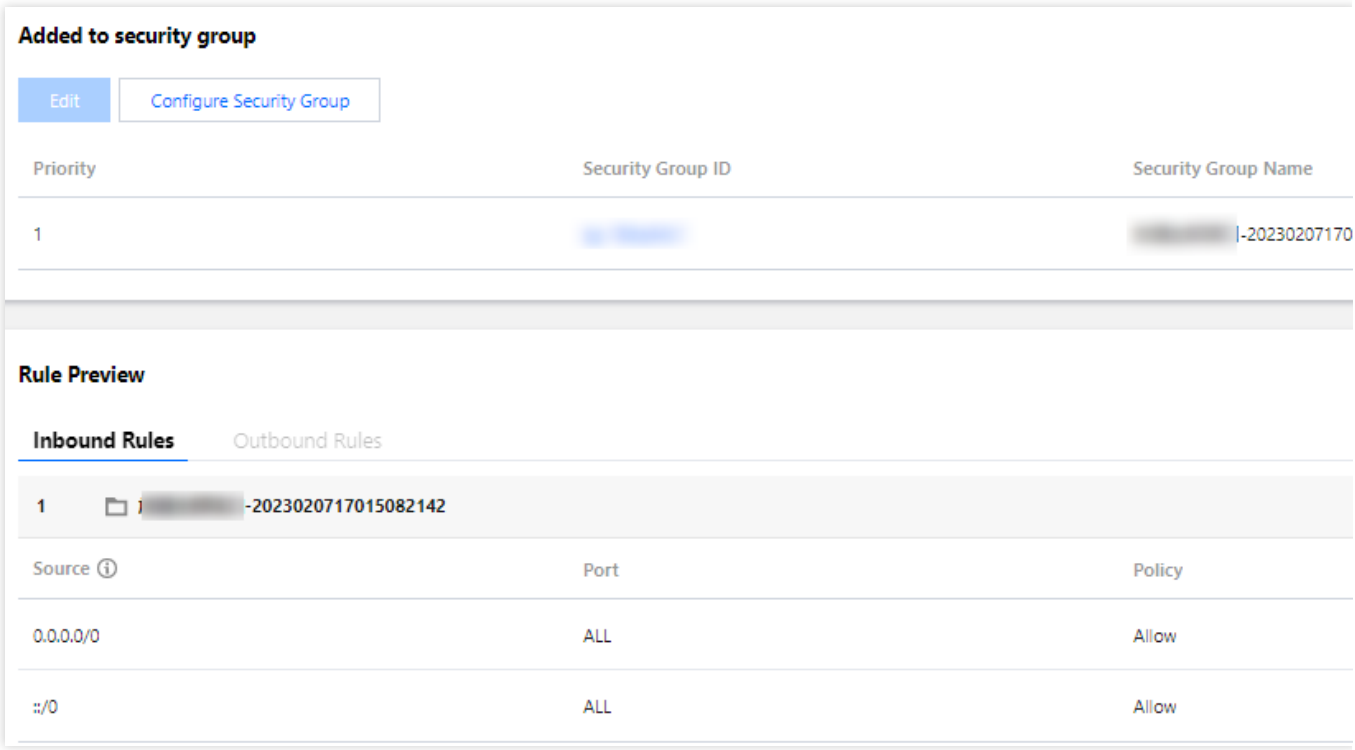


Step 5. Connect to the instance through the MySQL Workbench client

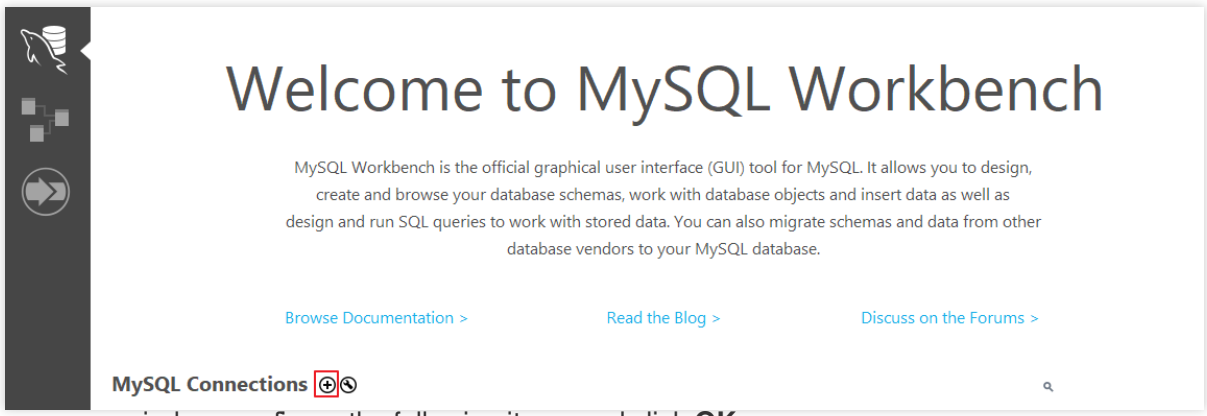
1. Download MySQL Workbench from MySQL Community Downloads and install it.

1. Go to the download page and click **MySQL Workbench**.

2. Click **Download** after **Windows (x86, 64-bit), MSI Installer**.

3. Click **No thanks, just start my download**.

4. After MySQL Workbench is installed, open it and click the plus sign after **MySQL Connections** to add the information of the target instance.



5. In the pop-up window, configure the following items and click **OK**.

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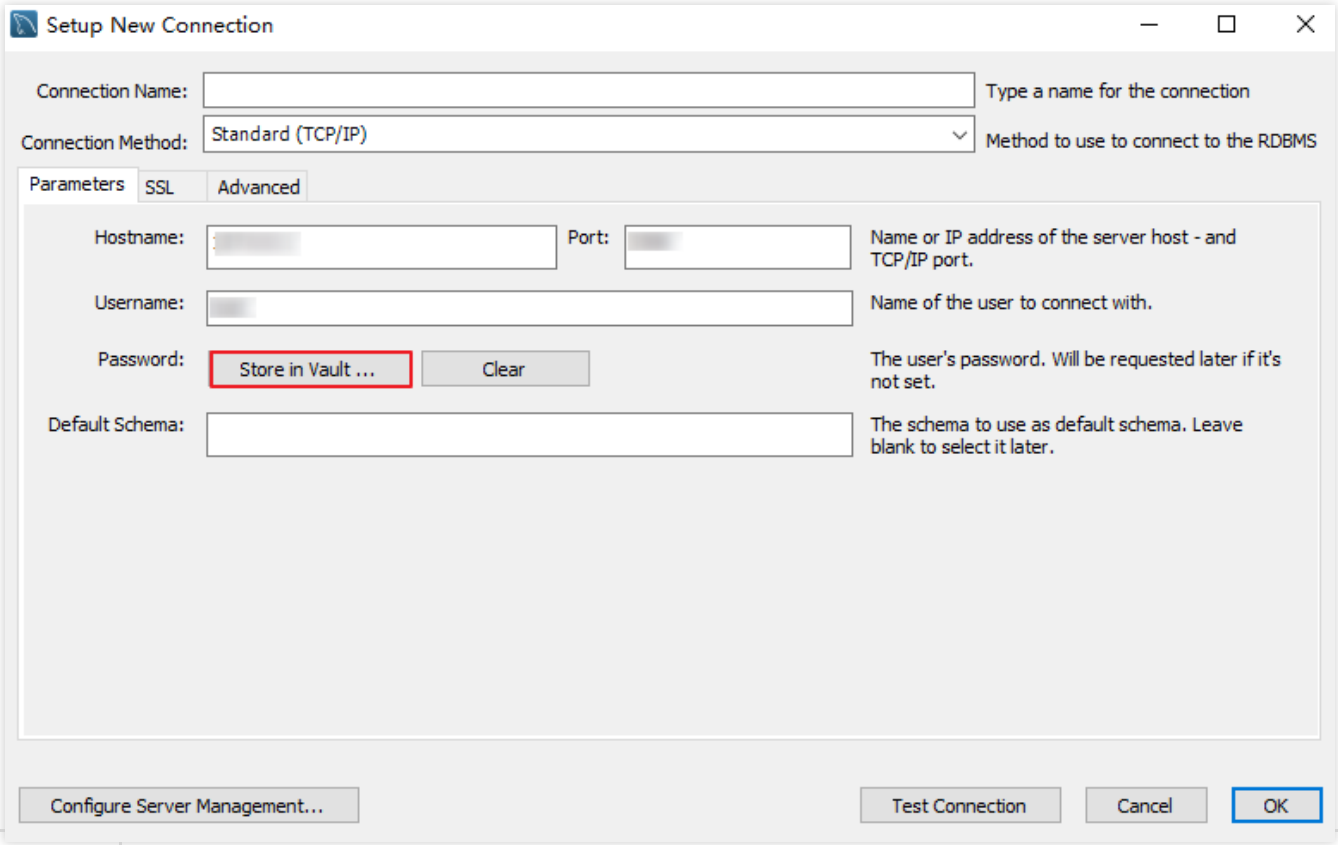

Parameter	Description
Connection Name	Name the connection.
Connection Method	Select **Standard (TCP/IP)**.
Hostname	Enter the address of the CLB instance. You can view the VIP information in the basic information on the CLB instance details page.
Port	Enter the port of the CLB instance. You can view the TCP port number in listener management on the CLB instance details page.
Username	Enter the account name of the target MySQL instance, i.e., the account created in **Database Management** > **Account Management** on the instance management page.
Store in Vault...	Enter the account password of the target MySQL instance in the **Password** field and save it.

6. Return to the MySQL Workbench homepage and click the just configured instance to connect to it.

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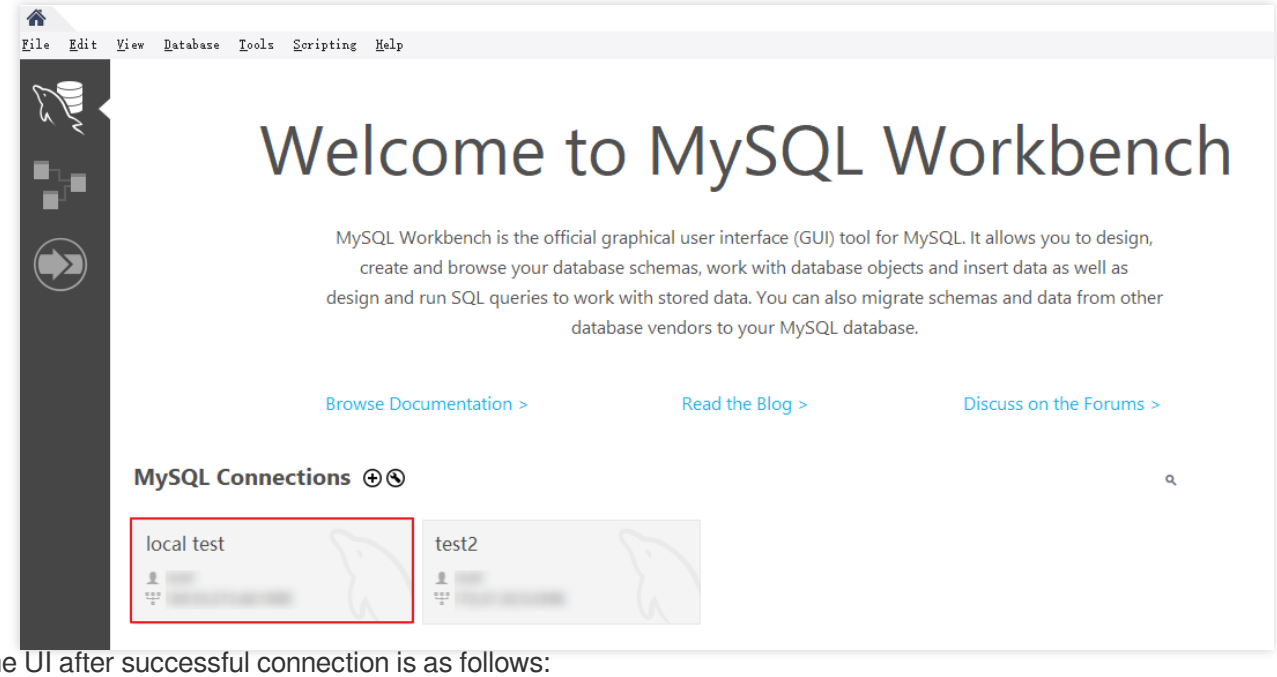
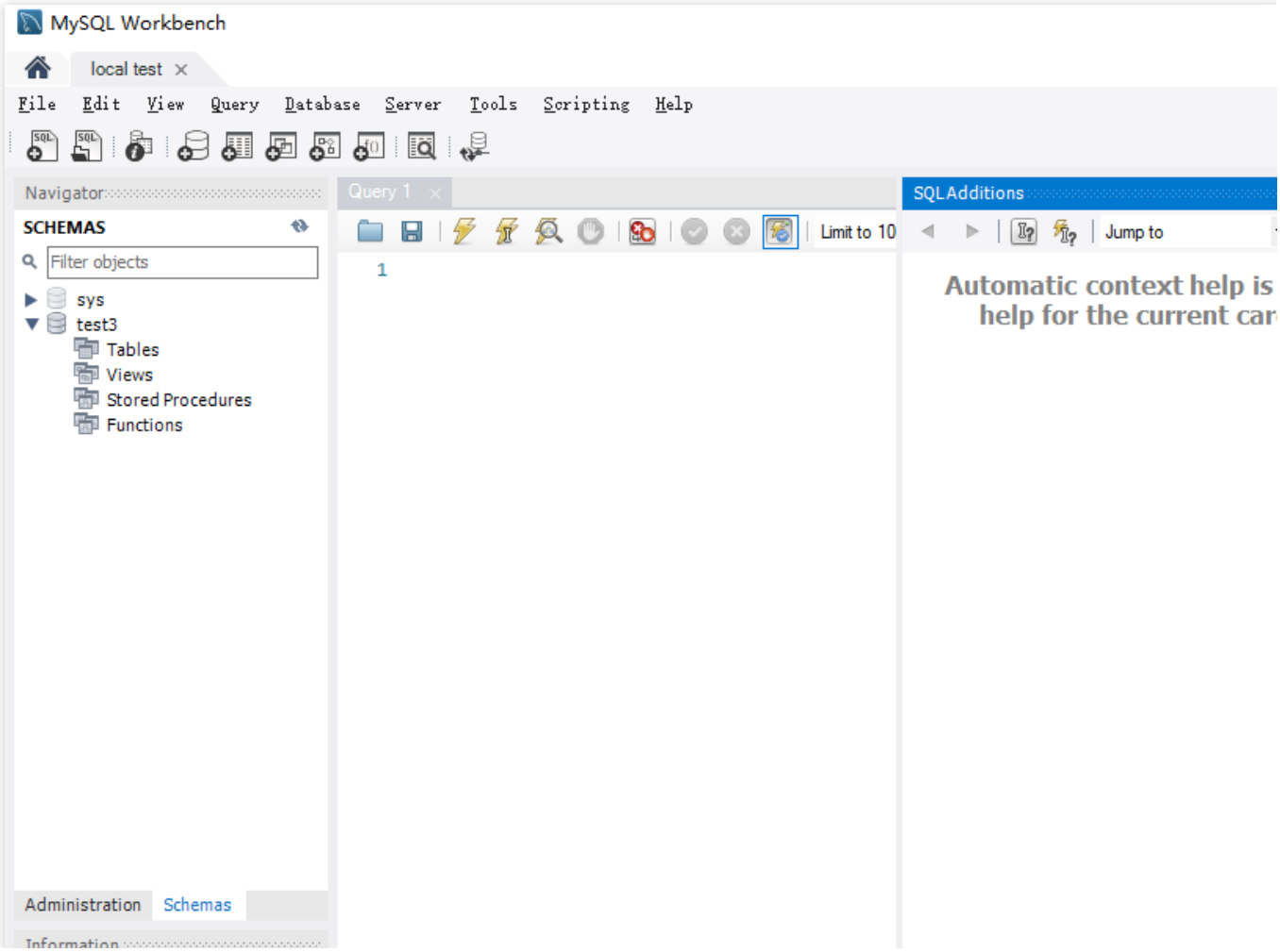


7. The UI after successful connection is as follows:



Enabling Transparent Data Encryption

Last updated：2024-07-22 15:55:36

Overview

TencentDB for MySQL comes with the transparent data encryption (TDE) feature. Transparent encryption means that the data encryption and decryption are transparent to users. TDE supports real-time I/O encryption and decryption of data files. It encrypts data before it is written to disk, and decrypts data when it is read into memory from disk, which meets the compliance requirements of static data encryption.

Prerequisites

The instance architecture must be two-node/three-node.
The database version must be MySQL 5.7 or 8.0.
You have activated Key Management Service (KMS). If not, you can enable it as instructed during the TDE activation process.
You have granted KMS key permissions. If not, you can grant permissions as instructed during the TDE activation process.
Your account needs the `QcloudAccessForMySQLRole` permission. To do so, you can follow the instructions provided during the TDE activation process.
Note:

-The keys used for encryption are generated and managed by
KMS
. TencentDB for MySQL does not provide keys or certificates required for encryption.
TDE does not incur fees, but KMS may. For more information, see KMS Billing Overview.
If your account has overdue payment, you can't get keys from KMS, which may cause instance migration and upgrade tasks to fail. For more information, see Payment Overdue.

Use Limits

Once the authorization is revoked, MySQL databases will be inaccessible upon restart.
TDE can't be disabled once enabled.
Once TDE is enabled, you need to decrypt data before you can restore it to a local database.

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TDE enhances the security of static data while compromising the read-write performance of encrypted databases. Therefore, use it based on your actual needs.
If the source instance is associated with a read-only or disaster recovery instance, you only need to enable TDE for the source instance, which will then be automatically enabled for its associated instances.
After TDE is enabled, if your account has overdue payment, you cannot get keys from KMS, which may cause migration, upgrade, and other tasks to fail.
After TDE is enabled, more CPU resources will be consumed, and about 5% of the performance will be compromised.
After TDE is enabled, authenticated applications and users can access the data transparently.

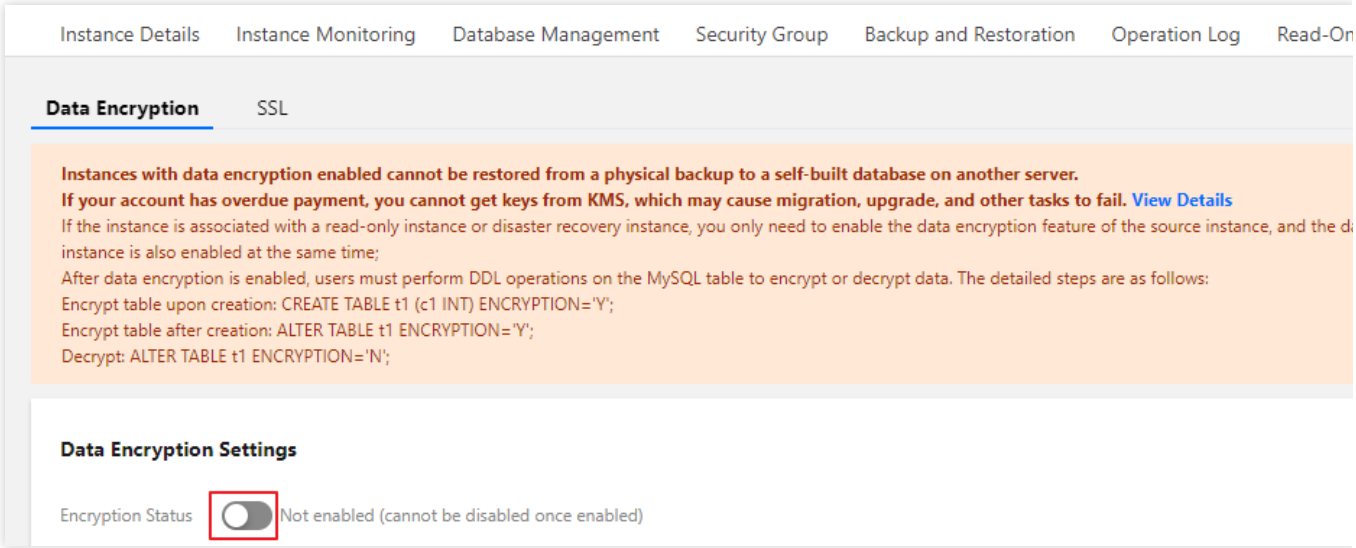
Directions

Enabling TDE

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the **Data Security** tab, toggle on **Encryption Status**.

Note:

An instance with TDE enabled cannot be restored from a physical backup to a self-created database on another server.
TDE can't be disabled once enabled.



3. In the pop-up dialog box, activate the KMS, grant the KMS key permissions, select a key, and click **Encrypt**.
If you select **Use key auto-generated by Tencent Cloud**, the key will be auto-generated by Tencent Cloud.

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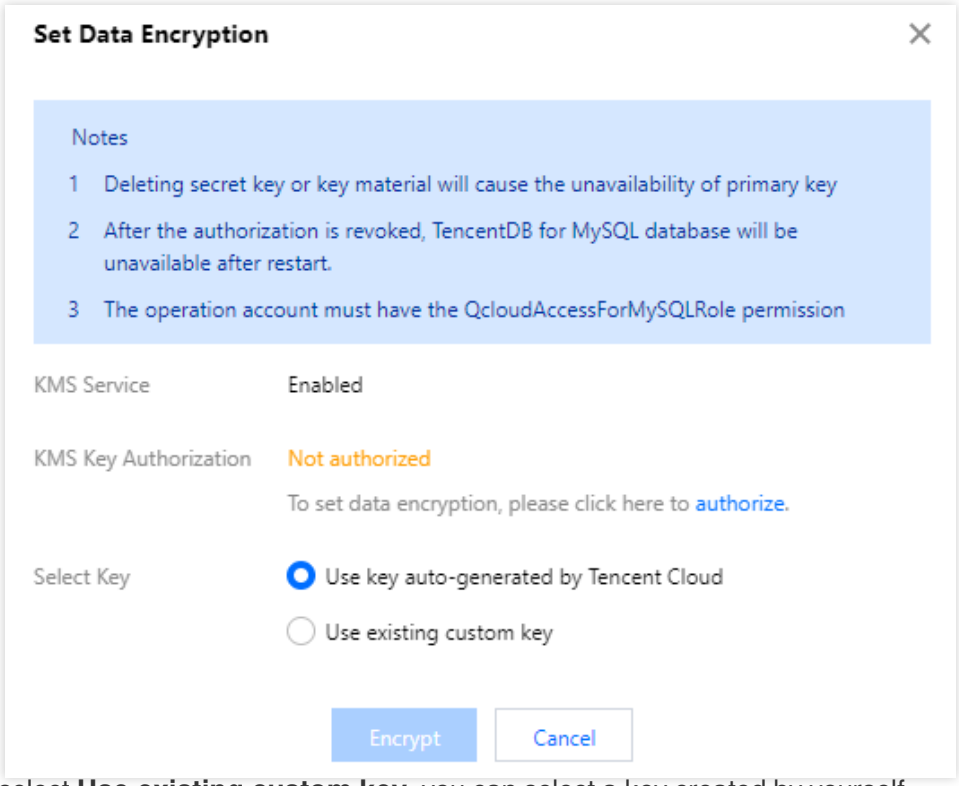

If you select **Use existing custom key**, you can select a key created by yourself.

Note:

If there are no custom keys, click **go to create** to create keys in the KMS console. For more information, see Creating a Key.

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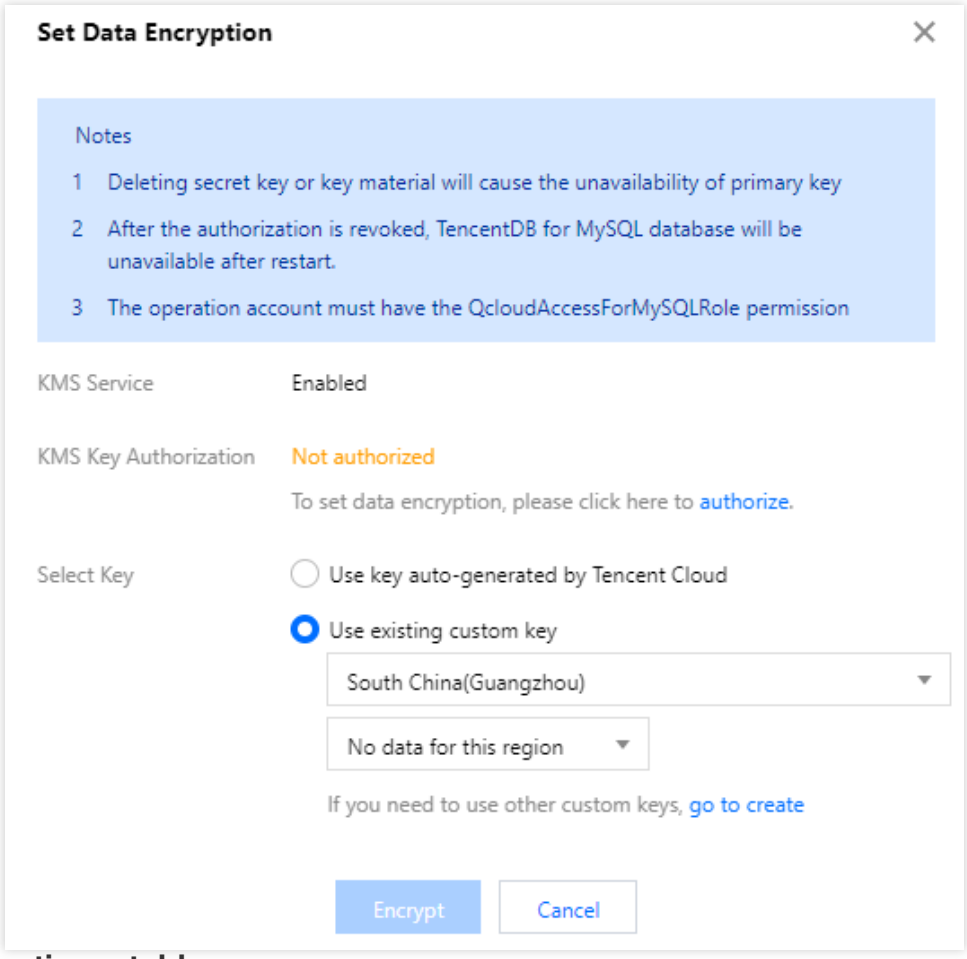

Encrypting a table

Once you enable TDE, you can encrypt a table of a MySQL instance by running the example DDL statements on the table.

To encrypt a table upon creation, run the following statement:

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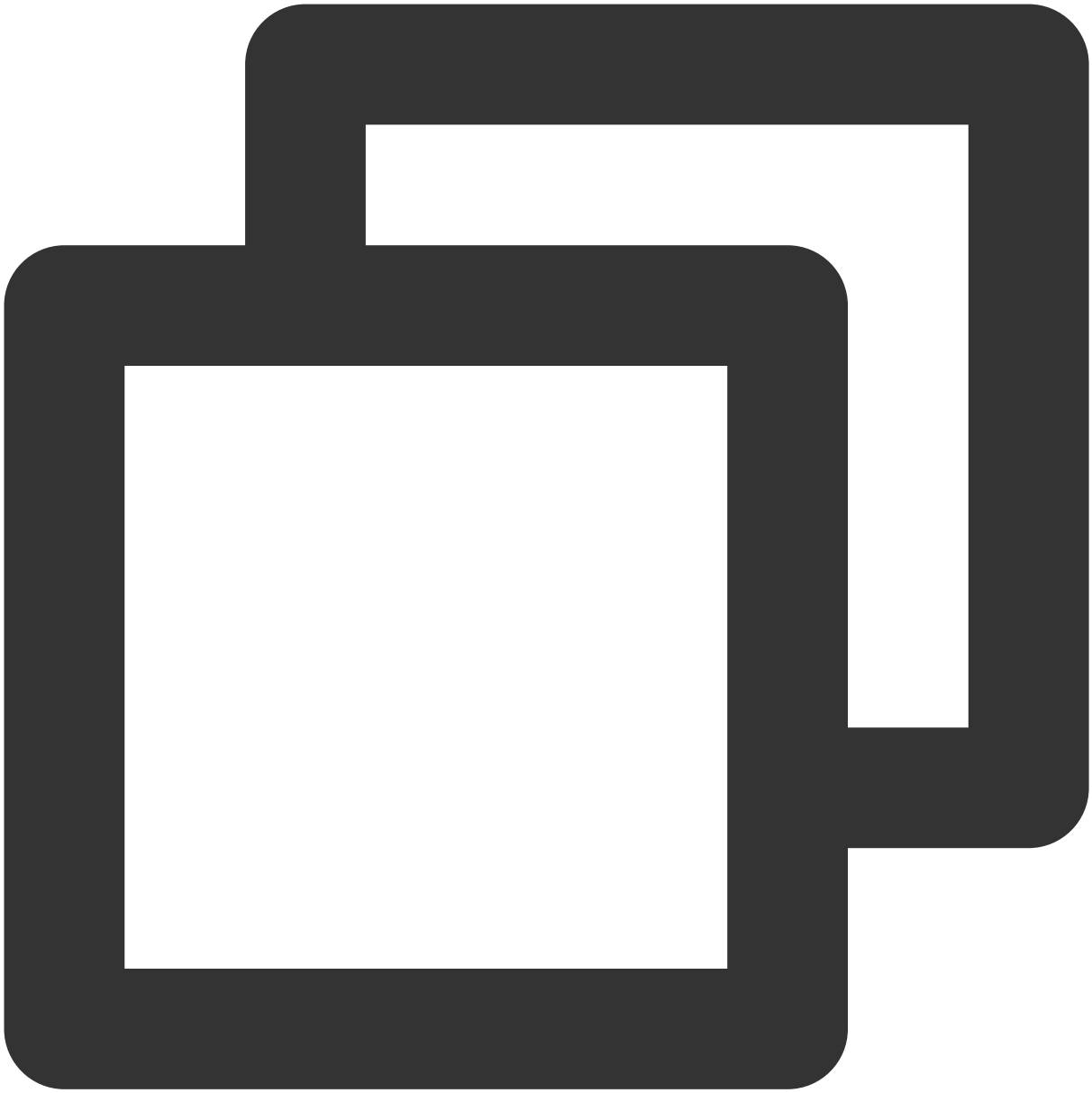

```
CREATE TABLE t1 (c1 INT) ENCRYPTION='Y';
```

To encrypt an existing table, run the following statement:

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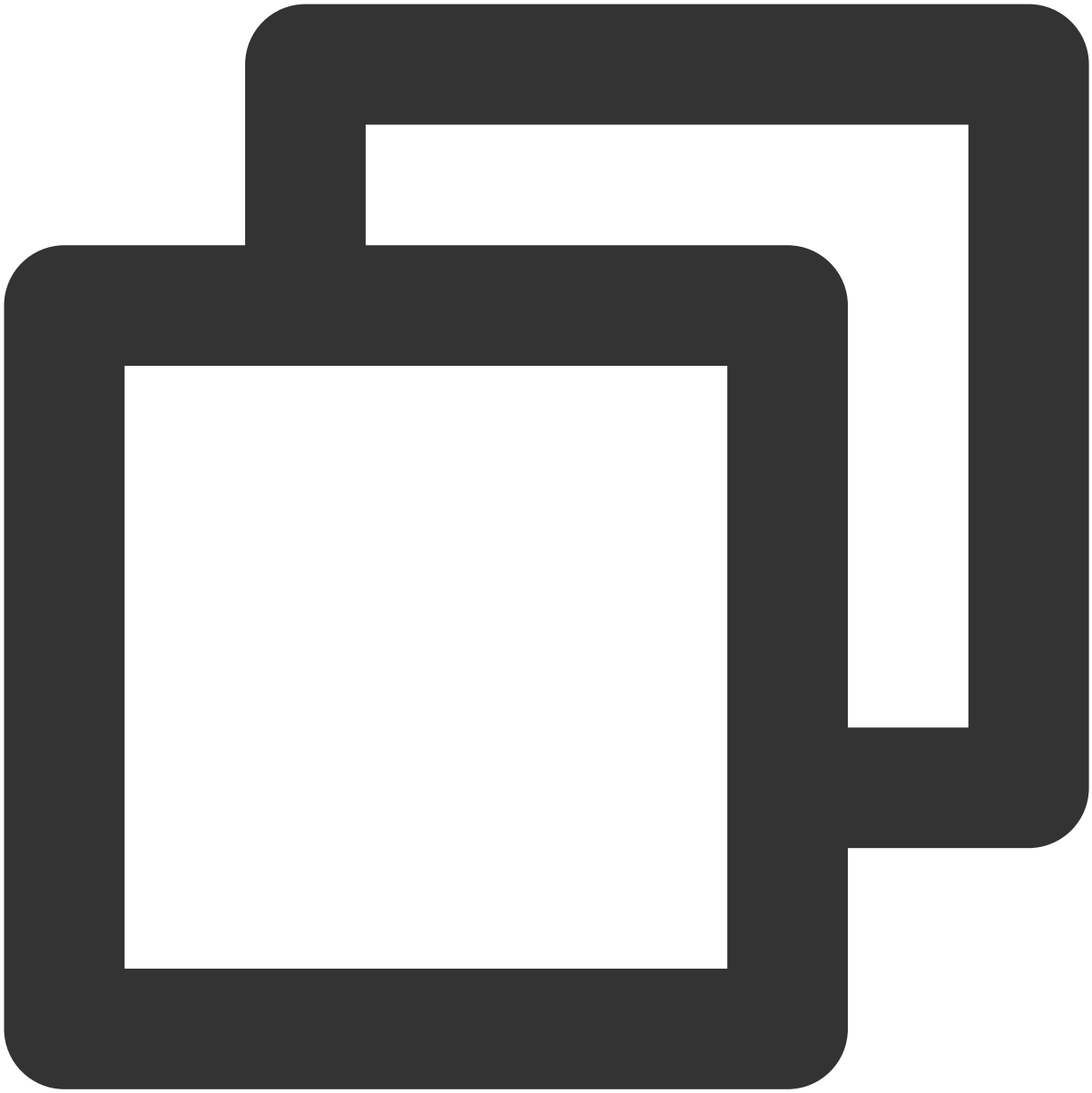

```
ALTER TABLE t1 ENCRYPTION='Y';
```

Decrypting a table

Once you enable TDE, you can decrypt a table of a MySQL instance by running the example DDL statement on the table.

To decrypt an encrypted table, run the following statement:

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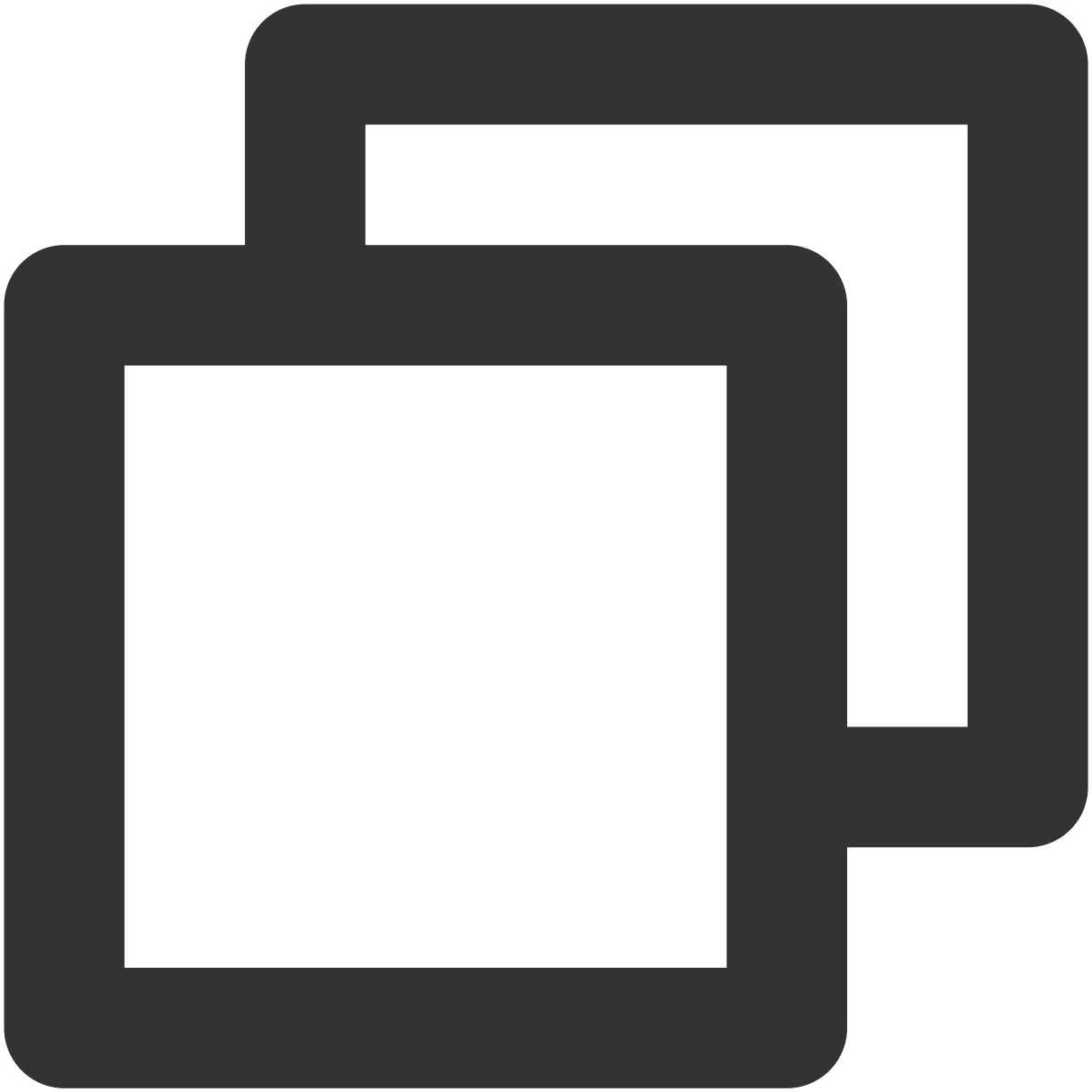

```
ALTER TABLE t1 ENCRYPTION='N';
```

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Setting SSL Encryption

Last updated：2024-07-25 14:07:20

SSL encryption overview

Secure Sockets Layer (SSL) authentication is a process that authenticates the connection from the user client to the TencentDB server. After SSL encryption is enabled, you can get a CA certificate and upload it to the server. Then, when the client accesses the database, the SSL protocol will be activated to establish an SSL secure channel between the client and the server. This implements encrypted data transfer, prevents data from being intercepted, tampered with, and eavesdropped during transfer, and ultimately ensures the data security for both the client and the server.
The SSL protocol needs to be established based on reliable TCP and has the advantage of being independent from application layer protocols; therefore, high-level application layer protocols such as HTTP, FTP, and TELNET can be transparently established on it. It completes encryption algorithm processing, communication key negotiation, and server authentication before communication is made over application layer protocols. After that, all data transferred over application layer protocols will be encrypted to ensure communication privacy.

Background

When you connect to a database in an unencrypted manner, all information transferred over the network will be in plaintext and may be eavesdropped, tampered with, and impersonated by malicious users. The SSL protocols are designed to address these risks and can bring the following benefits theoretically:
Information is encrypted and cannot be eavesdropped by a third party.
There is a verification mechanism for immediate tampering detection by both parties in the communication.
Identity certificates will be used to authenticate the identity.
TencentDB for MySQL supports enhancing the connection security by enabling SSL encryption as well as downloading and installing SSL CA certificates to the required application services.

Note：

SSL encryption protects the traffic between the database and the server rather than the data itself. Encrypting the network connection at the transport layer can improve the security and integrity of the communication data, but will increase the response time of the network connection.

Prerequisites

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The instance version is MySQL 5.6/5.7/8.0.
The instance architecture is two-node/three-node.
The instance engine is InnoDB/RocksDB.

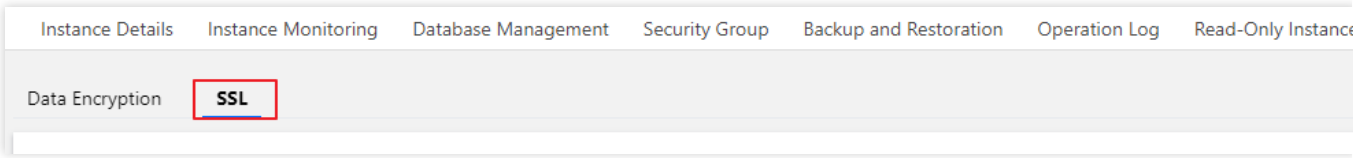
Supported Versions

MySQL uses OpenSSL to implement secure connections. TencentDB for MySQL supports Transport Layer Security Protocol (TLS) versions 1.0, 1.1, 1.2, and 1.3, depending on the MySQL version. The following table shows the MySQL versions that support TLS.

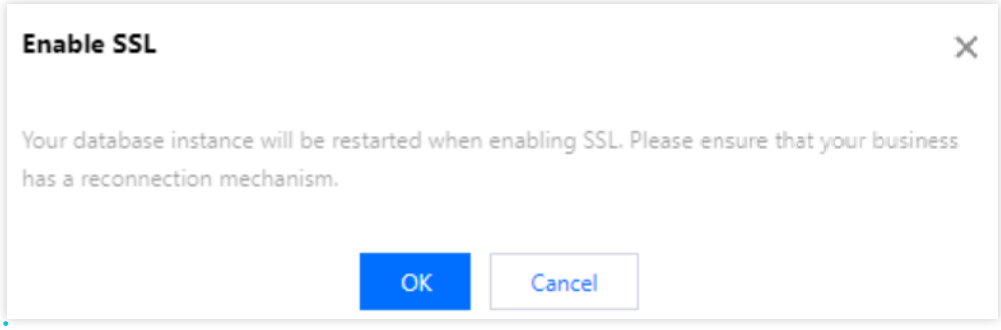
MySQL Version	TLS1.0	TLS1.1	TLS1.2	TLS1.3
MySQL 5.7	Not Supported	Not Supported	Supported	Supported
MySQL 8.0	Supported	Supported	Supported	Supported

Enabling SSL encryption

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the instance management page, select the **Data Security** > **SSL** tab.



3. This feature is disabled by default. Toggle it on and click **OK**.
The window to enable SSL encryption in the source instance is as follows:



Note：

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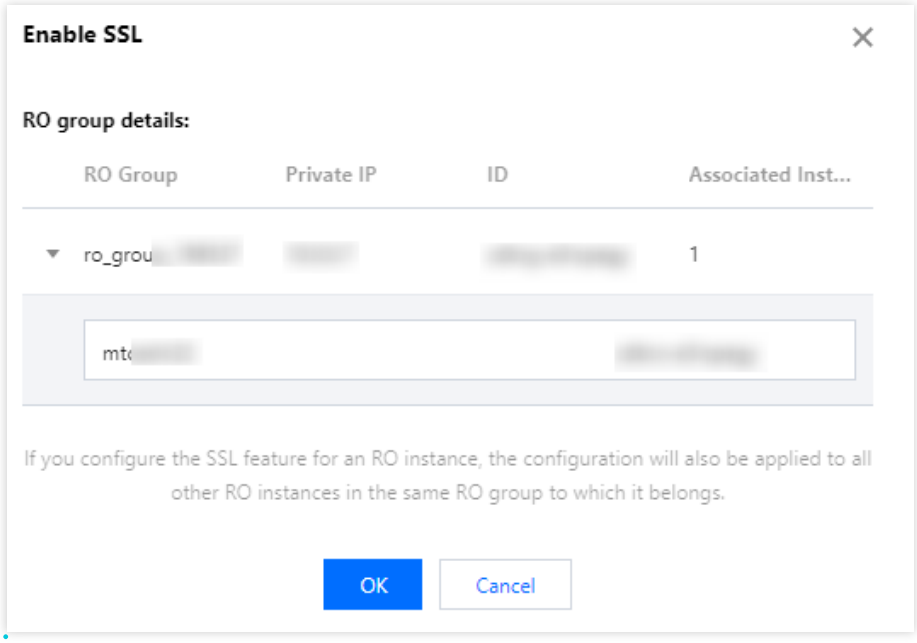
During the process of enabling SSL encryption, your database instance will be restarted to load the SSL certificate. Make sure that your business has a reconnection mechanism.
The window to enable SSL encryption in a read-only instance is as follows:



Note：
The configuration of the SSL encryption feature in a read-only instance will be synced to other read-only instances in its read-only group.
4. Click **Download** to download the SSL CA certificate.The certificate has a validity period of 20 years.
The downloaded file is a compressed package (TencentDB-CA-Chain.zip), which contains the following three files:
.p7b file: It is used to import the CA certificate into Windows.
.jks file: It is the truststore certificate storage file in Java and always has the password `tencentdb` . It is used to import the CA certificate chain into Java.
.pem file: It is used to import the CA certificate into other systems or applications.

Configuring an SSL CA certificate

After enabling SSL encryption, you need to configure an SSL CA certificate when using a client to connect to TencentDB. The following takes Navicat as an example to describe how to install an SSL CA certificate. For other applications or clients, refer to their respective documentation.
Note：
Every time SSL encryption is enabled or disabled for TencentDB for MySQL, a new certificate will be generated.
1. Open Navicat.
2. Right-click the target database and select **Edit Connection**.
3. Select the **SSL** tab, select the path of the CA certificate in .pem format, complete the settings, and click **OK**.

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Note：

If the error message `connection is being used` is displayed, it may be because the previous session has not been disconnected. In this case, restart Navicat and try again.

4. Double-click the target database to test whether the connection is normal.

Disabling SSL encryption

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the instance management page, select the **Data Security** > **SSL** tab.
3. Toggle the switch off and click **OK** in the pop-up window.

Note：

During the process of disabling SSL encryption, your database instance will be restarted to uninstall the SSL certificate. Make sure that your business has a reconnection mechanism.

Use the MySQL command-line client to enable the SSL-encrypted instance

If your database version is different, the connection command parameters of the MySQL client will be different. You can use the following command to query the database version you are using, and then refer to the subsequent steps to connect to the instance.

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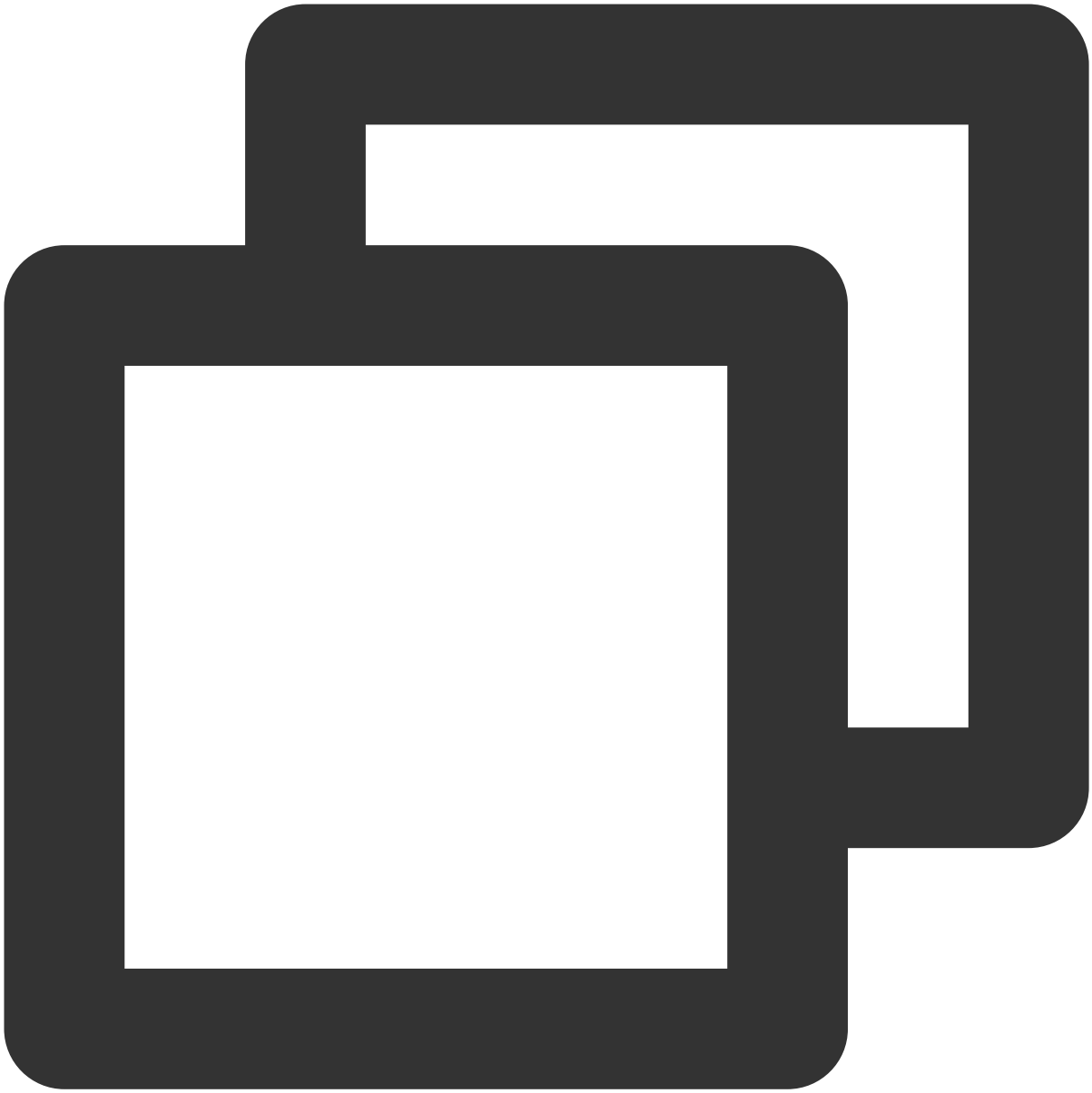

```
SELECT VERSION();

Query Result Example:
+--------------+
| VERSION()    |
+--------------+
| 8.0.30-txsql |
+--------------+
1 row in set (0.00 sec)
```

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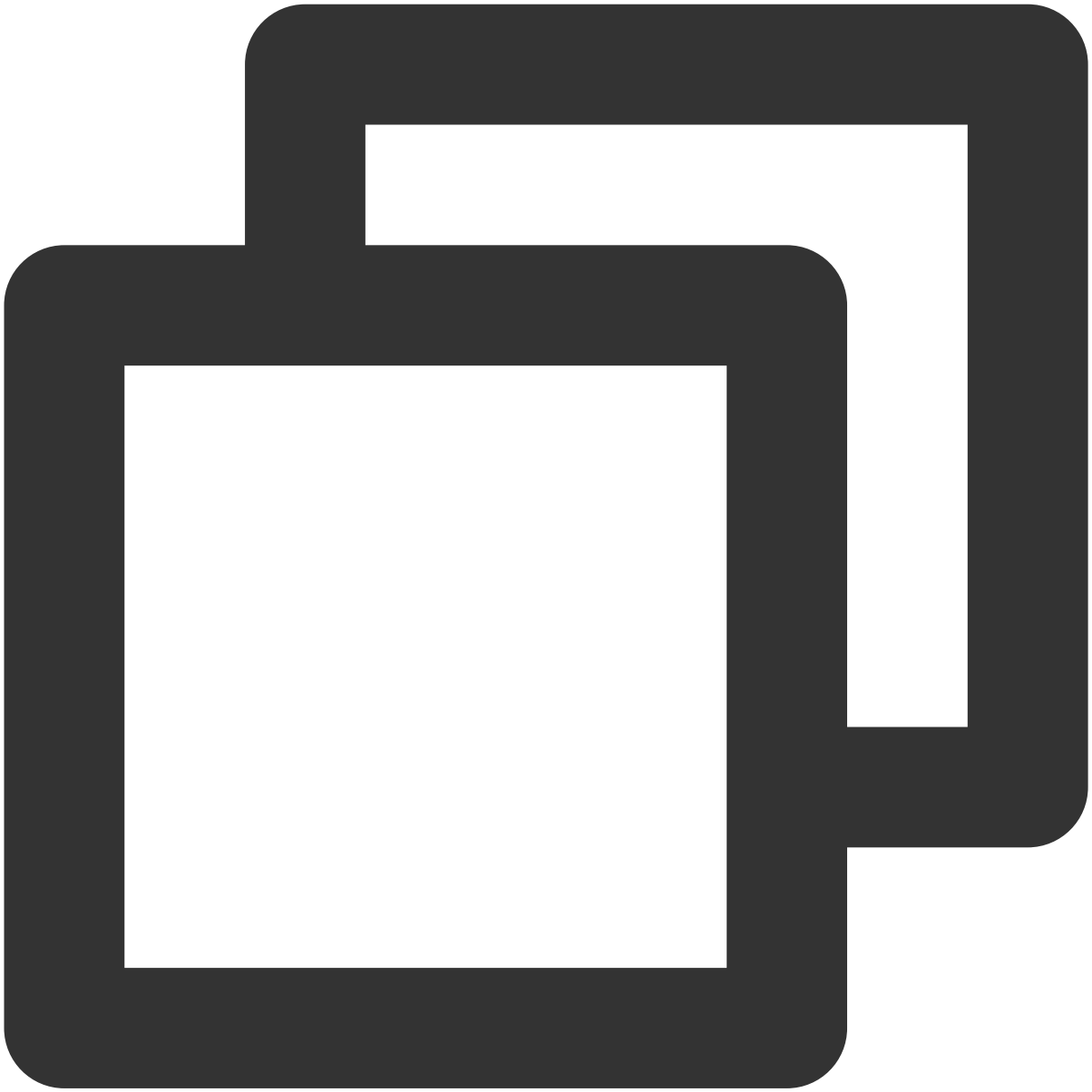
1. Download the SSL CA certificate through the TencentDB for MySQL console. For operations, refer to Enable SSL Encryption.
2. Using the MySQL command-line client to enable the SSL-encrypted instance through the command.

For the MariaDB client, connect to the instances using the following command.



```
mysql -h <IP address> --ssl-ca=<CA certificate> --ssl -P <Port number> -u < usernam
```

When the client database version is MySQL 5.6, use the following command to connect to the instance.

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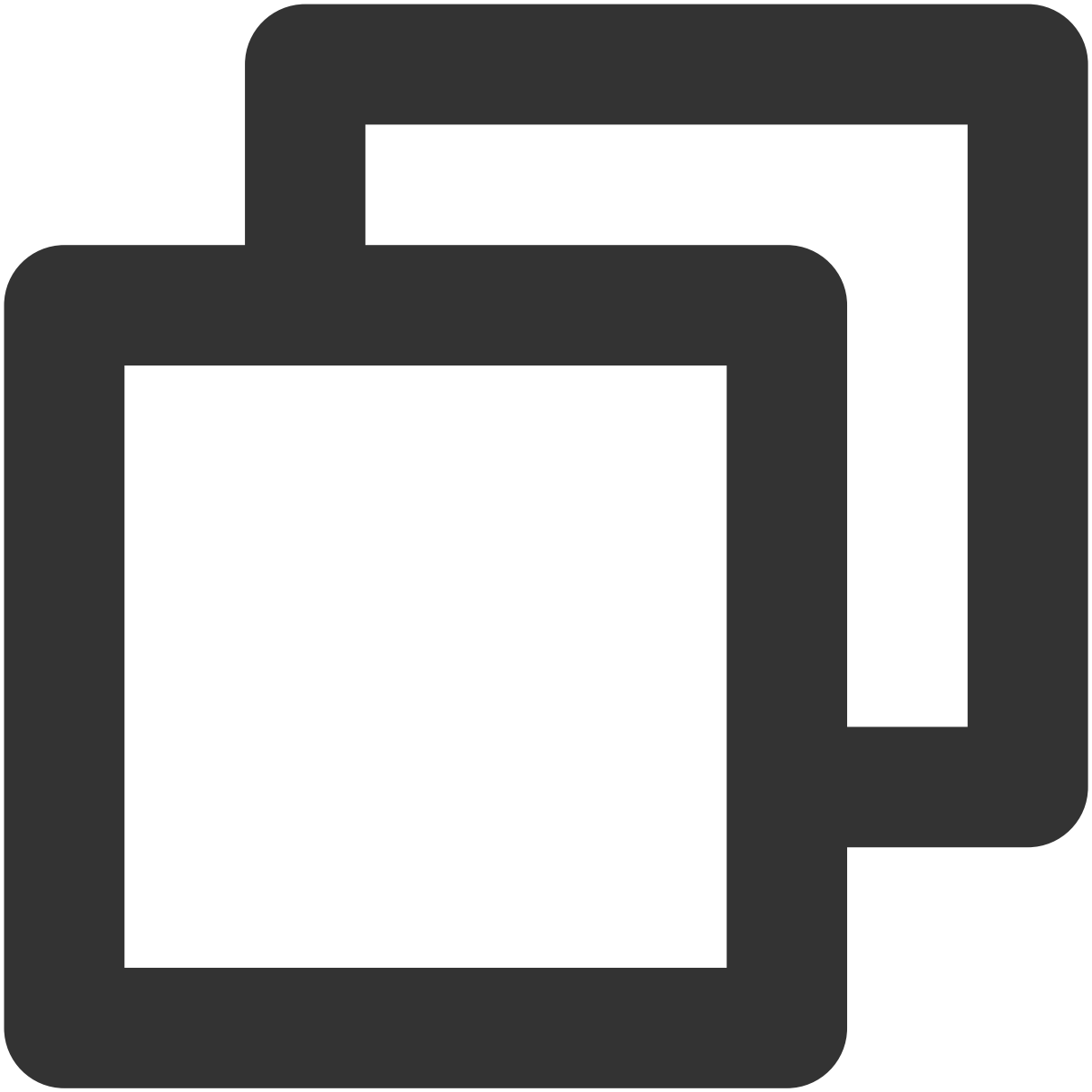

```
mysql -P <Port number> -h <IP address>  -u < username > -p< password > --ssl-ca<CA
```

When the client database version is MySQL 5.7/8.0, use the following command to connect to the instance.

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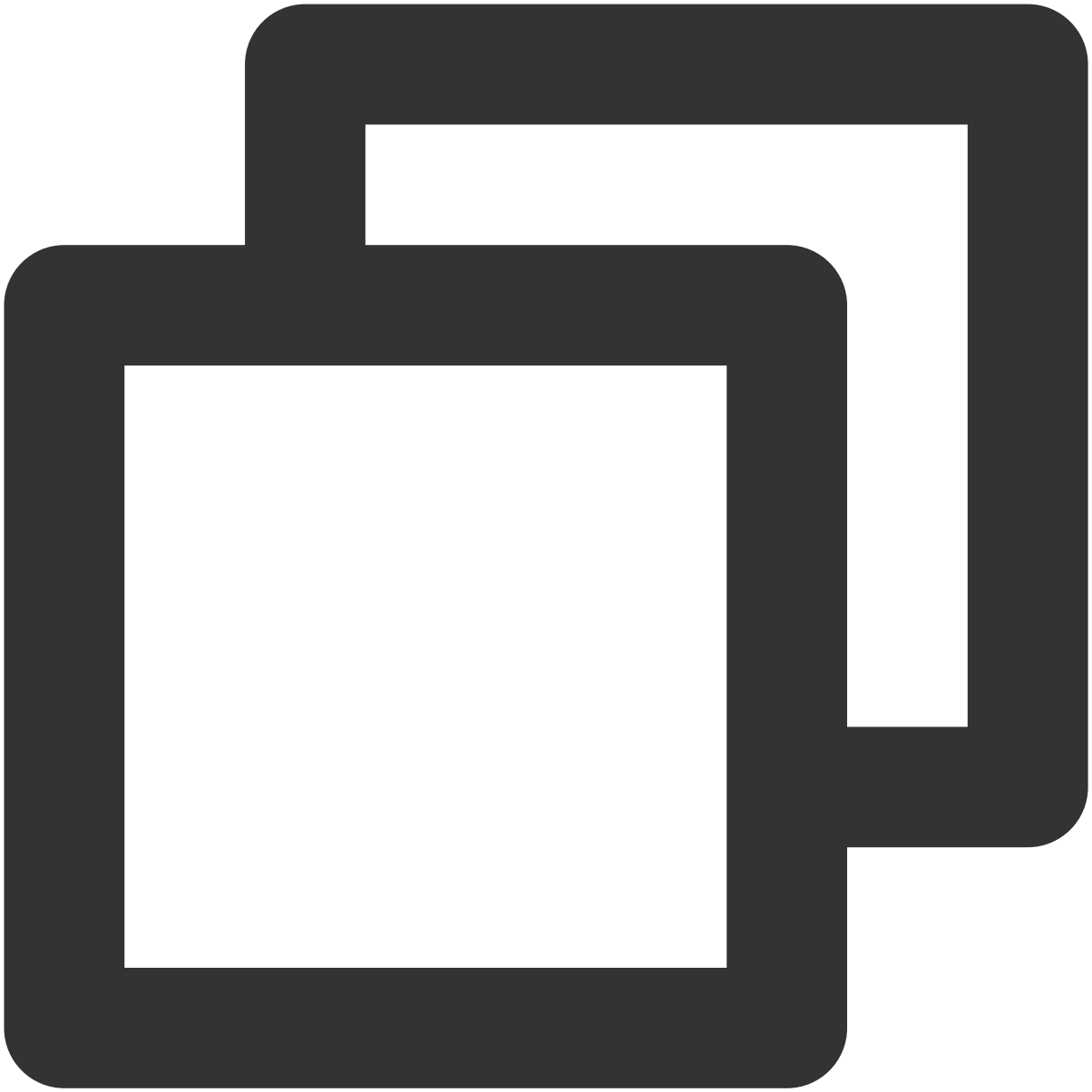

```
mysql -h <IP address> --ssl-ca=<CA certificate> --ssl-mode=REQUIRED -P <Port number
```

To use other SSL modes, such as VERIFY_CA or VERIFY_IDENTITY, connect to the instance using the following command.

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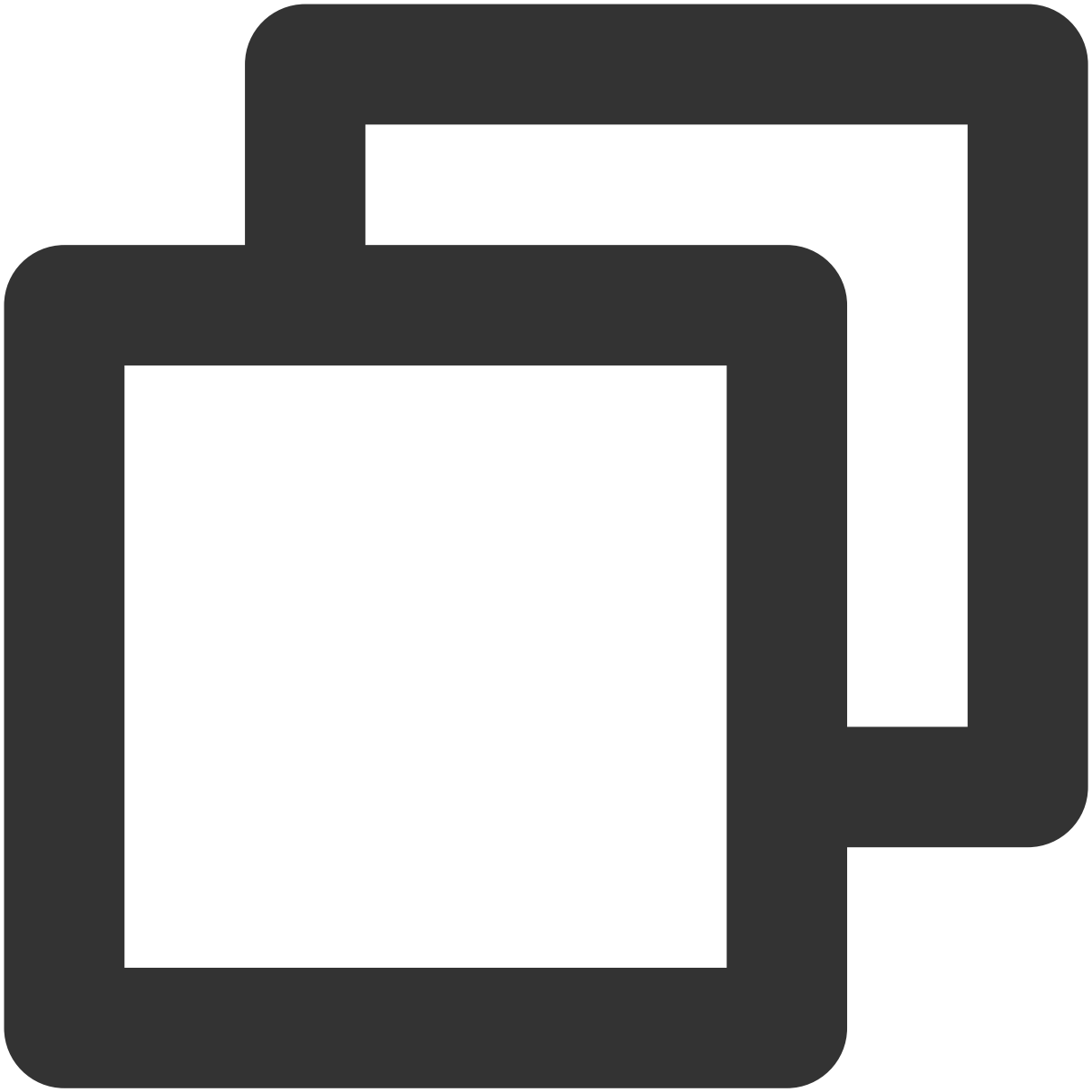

```
mysql -h <IP address> --ssl-ca=<CA certificate> --ssl-mode=VERIFY_CA -P <Port numbe
```

Note:

The --ssl-mode parameter indicates the SSL mode. Generally, REQUIRED and VERIFY_CA modes are recommended. These modes require the MySQL client to use the SSL/TLS protocol to connect to the MySQL server and to verify the SSL/TLS certificate of the MySQL server. The VERIFY_IDENTITY mode, in addition to verifying the SSL/TLS certificate of the MySQL server, requires that the hostname used by the client matches the identifier in the server certificate; otherwise, the MySQL client will refuse to connect to the MySQL server.

3. Enter the password for the corresponding username as prompted by the system.

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```
[root@VM-32-12-tencentos ~]# mysql -h [redacted]9 --ssl-ca=ca.pem --ssl-mode=VERIFY_CA -P 3306 -
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is [redacted]33
Server version: 8.0.30-txsql 20221220

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```

Sample code for connecting to an SSL-enabled instance from common programs

PHP

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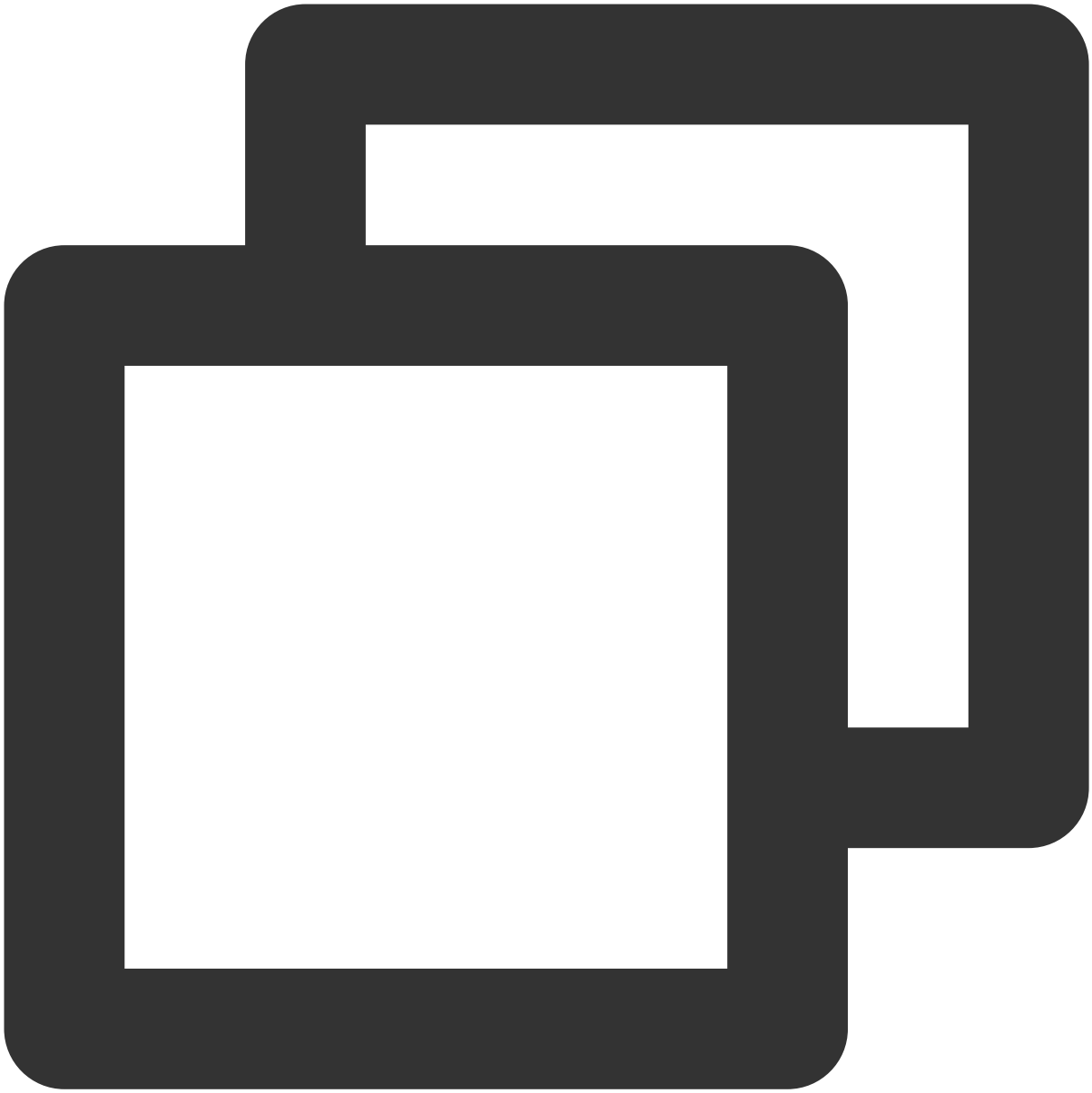

```
$conn = mysqli_init();
mysqli_ssl_set($conn,NULL,NULL, "<path of the downloaded certificate>", NULL, NULL)
mysqli_real_connect($conn, '<database access address>', '<database access username>
if (mysqli_connect_errno($conn)) {
die('Failed to connect to MySQL: '.mysqli_connect_error());
}
```

PHP (Using PDO)

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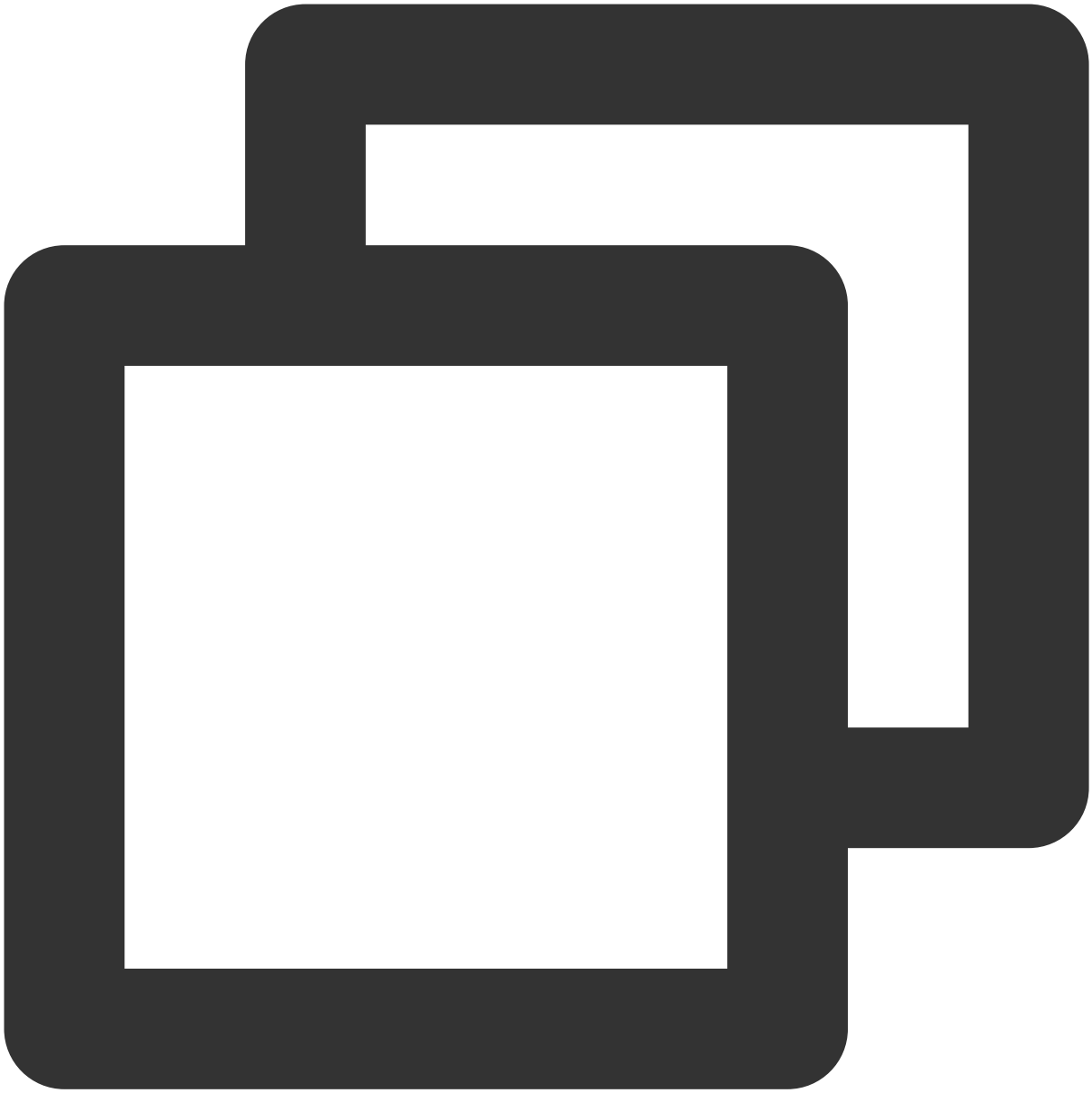

```
$options = array(
  PDO::MYSQL_ATTR_SSL_CA => '<path of the downloaded certificate>'
);
$db = new PDO('mysql:host=<database access address>;port=<access port>;dbname=<the
```

Java (MySQL Connector for Java)

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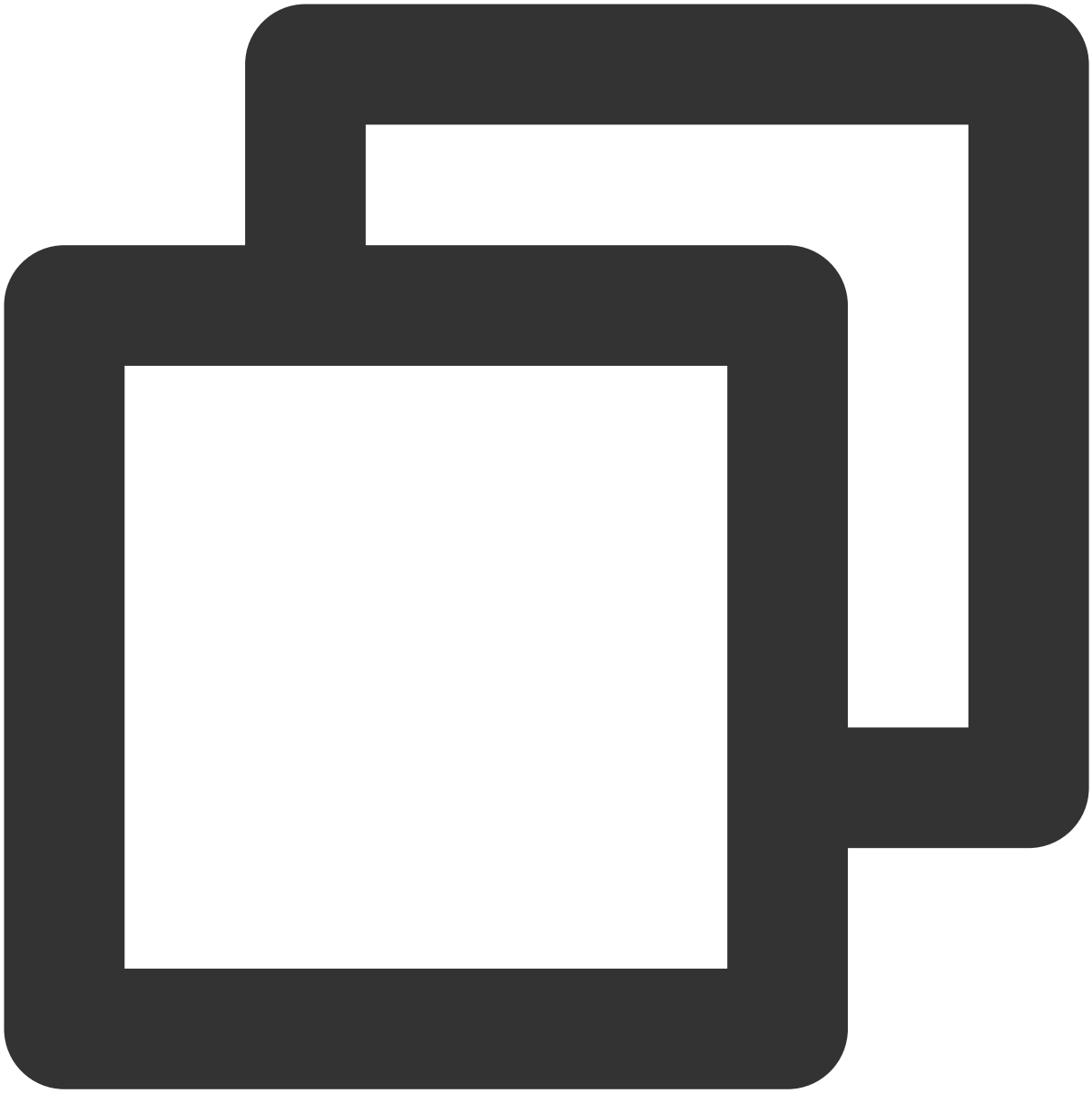

```
# generate truststore and keystore in code

String importCert = " -import "+
  " -alias mysqlServerCACert "+
  " -file " + ssl_ca +
  " -keystore truststore "+
  " -trustcacerts " +
  " -storepass password -noprompt ";
String genKey = " -genkey -keyalg rsa " +
  " -alias mysqlClientCertificate -keystore keystore " +
  " -storepass password123 -keypass password " +
```

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```
  " -dname CN=MS ";
sun.security.tools.keytool.Main.main(importCert.trim().split("\\\\s+"));
sun.security.tools.keytool.Main.main(genKey.trim().split("\\\\s+"));

# use the generated keystore and truststore

System.setProperty("javax.net.ssl.keyStore","<path of the downloaded certificate>")
System.setProperty("javax.net.ssl.keyStorePassword","tencentdb");
System.setProperty("javax.net.ssl.trustStore","<path of the downloaded certificate>
System.setProperty("javax.net.ssl.trustStorePassword","tencentdb");

url = String.format("jdbc:mysql://%s/%s?serverTimezone=UTC&useSSL=true", '<database
properties.setProperty("user", '<database access username>');
properties.setProperty("password", '<database access password>');
conn = DriverManager.getConnection(url, properties);
```

.NET (MySqlConnector)

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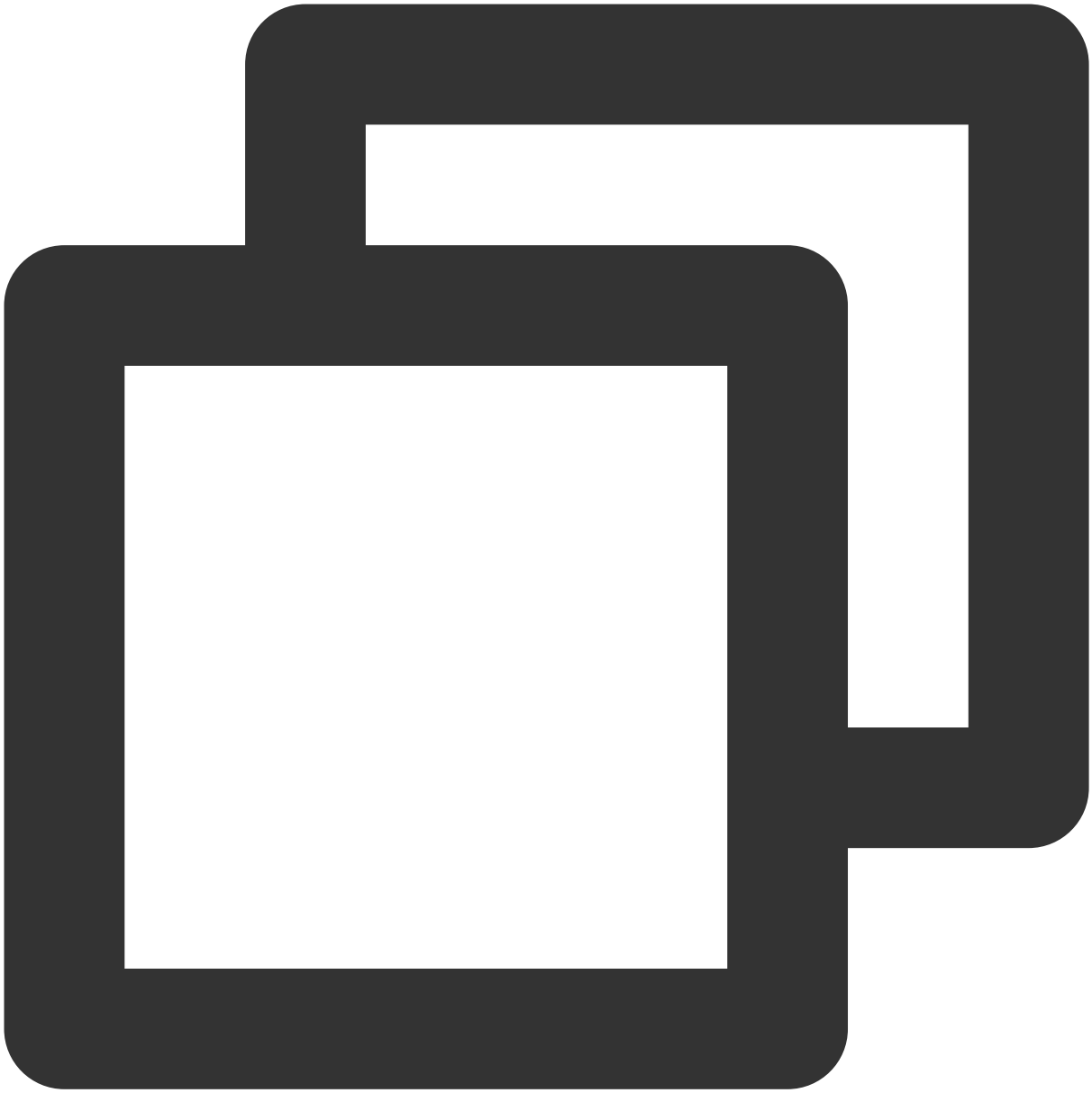

```
var builder = new MySqlConnectionStringBuilder
{
  Server = "<database access address>",
  UserID = "<database access username>",
  Password = "<database access password>",
  Database = "<the specified database to be accessed>",
  SslMode = MySqlSslMode.VerifyCA,
  SslCa = "<downloaded certificate>",
};
using (var connection = new MySqlConnection(builder.ConnectionString))
{
```

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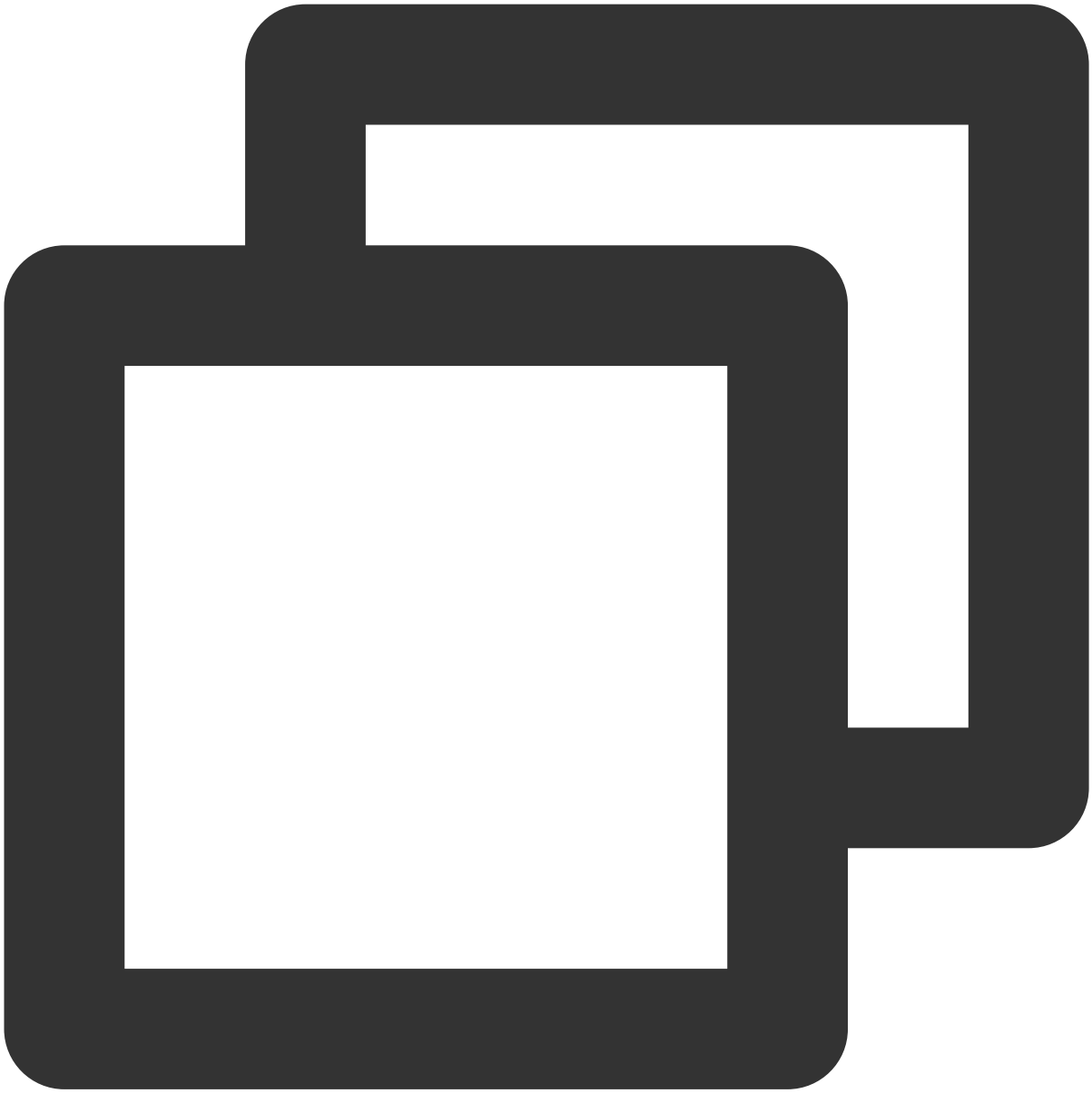
```
    connection.Open();
}
```

Python (MySQLConnector Python)



```
try:
    conn = mysql.connector.connect(user='<database access username>',
                                   password='<database access password>',
                                   database='<the specified database to be accessed>'
                                   host='<database access address>',
                                   ssl_ca='<path of the downloaded certificate>')
except mysql.connector.Error as err:
```

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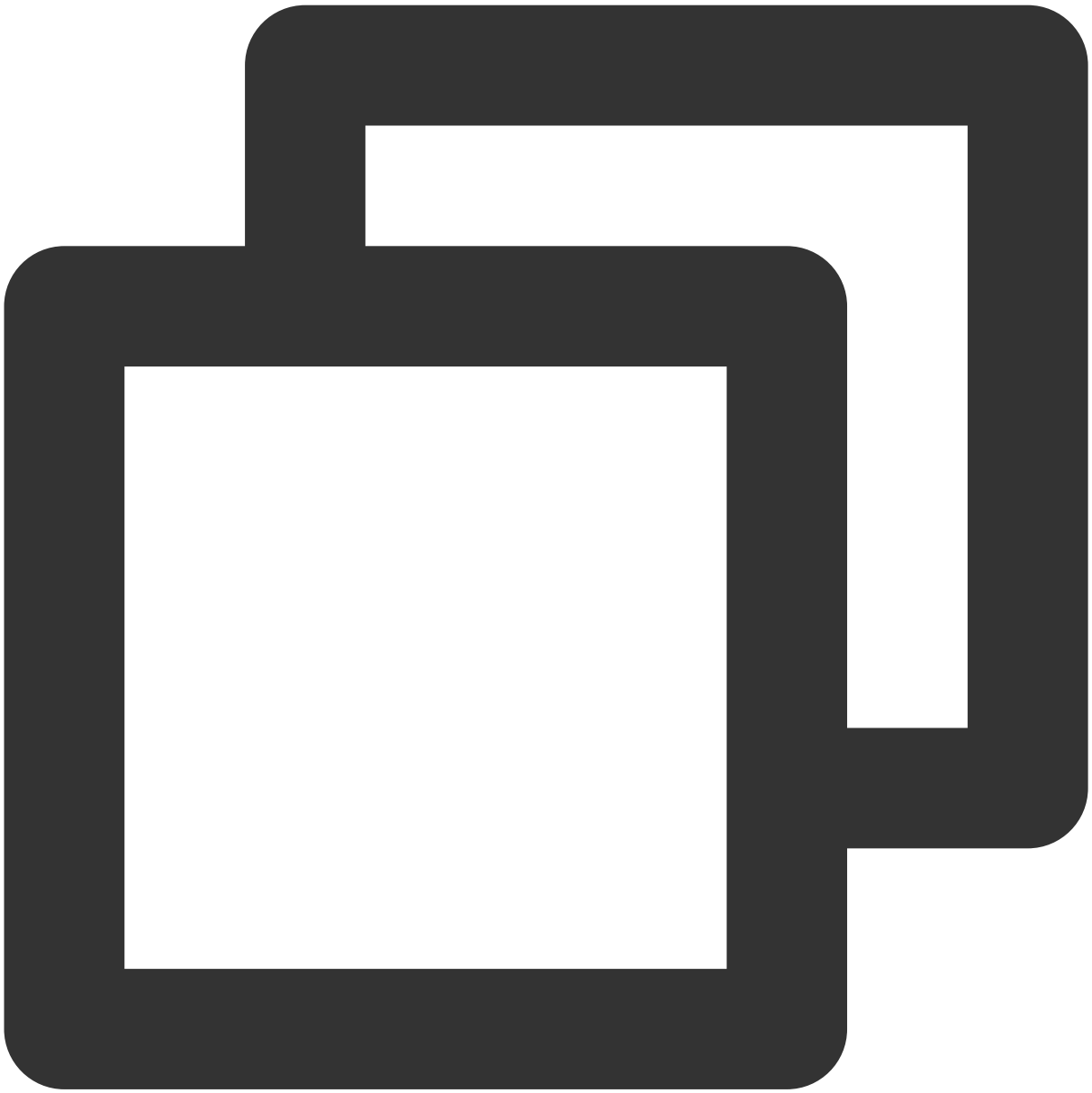
```
    print(err)
```

Python (PyMySQL)



```
conn = pymysql.connect(user='<database access username>',
                       password='<database access password>',
                       database='<the specified database to be accessed>',
                       host='<database access address>',
                       ssl={'ca': '<path of the downloaded certificate>'})
```

Django (PyMySQL)

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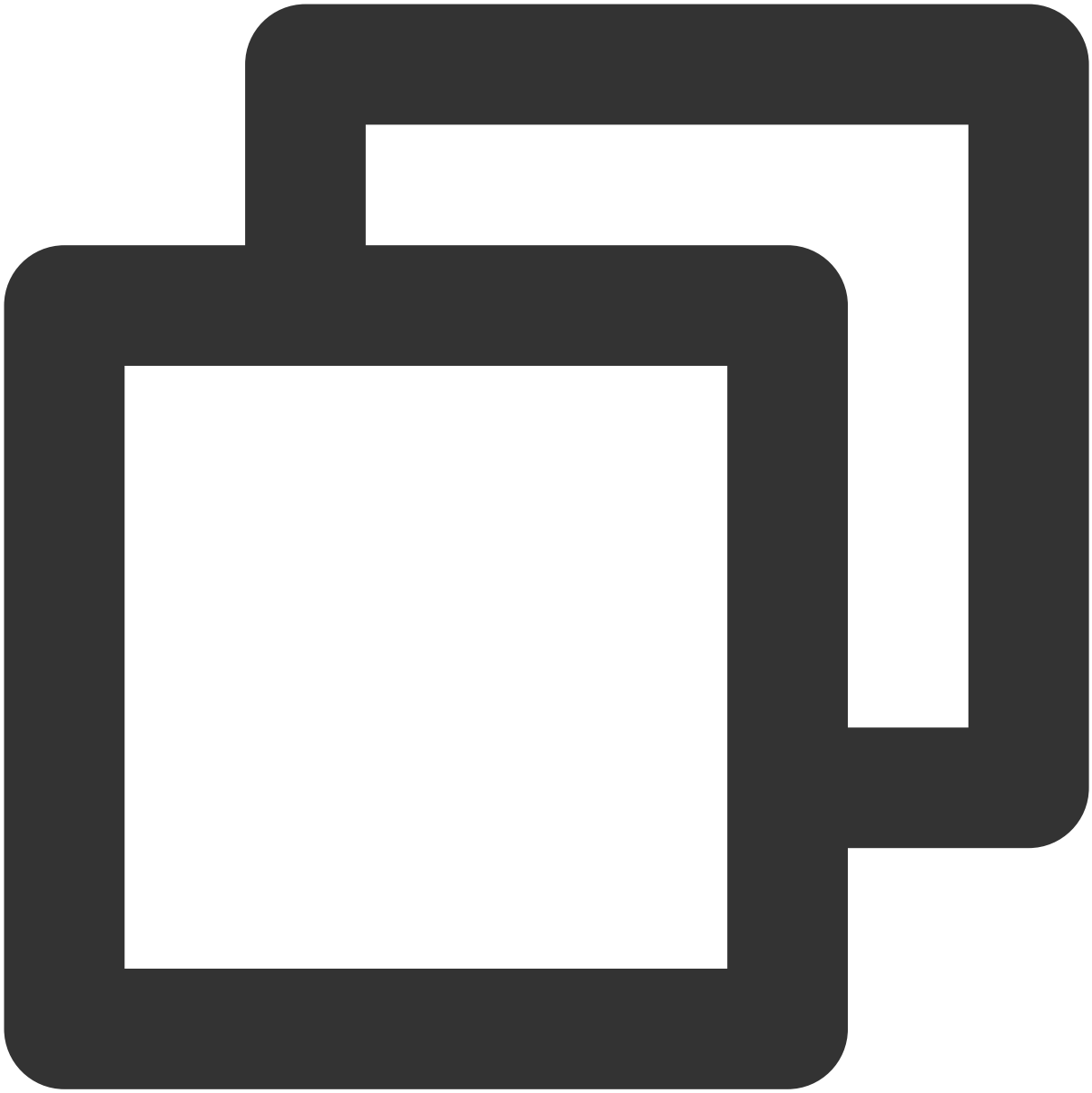

```
DATABASES = {
  'default': {
      'ENGINE': 'django.db.backends.mysql',
      'NAME': '<the specified database to be accessed>',
      'USER': '<database access username>',
      'PASSWORD': '<database access password>',
      'HOST': '<database access address>',
      'PORT': '<access port>',
      'OPTIONS': {
          'ssl': {'ca': '<path of the downloaded certificate>'}
      }
```

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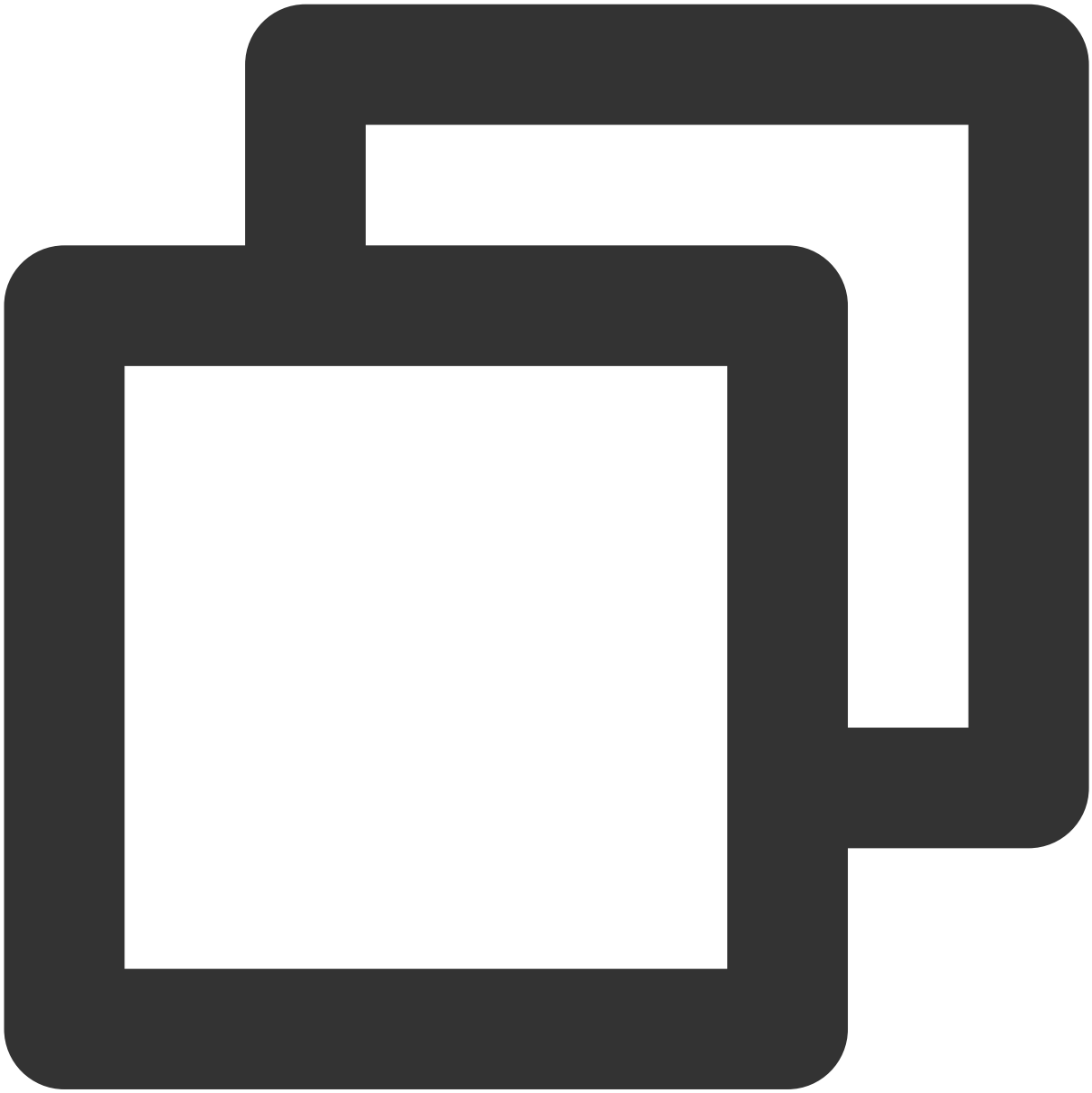
```
    }
}
```

Node.js



```
var fs = require('fs');
var mysql = require('mysql');
const serverCa = [fs.readFileSync("<path of the downloaded certificate>", "utf8")];
var conn=mysql.createConnection({
  host:"<database access address>",
  user:"<database access username>",
  password:"<database access password>",
```

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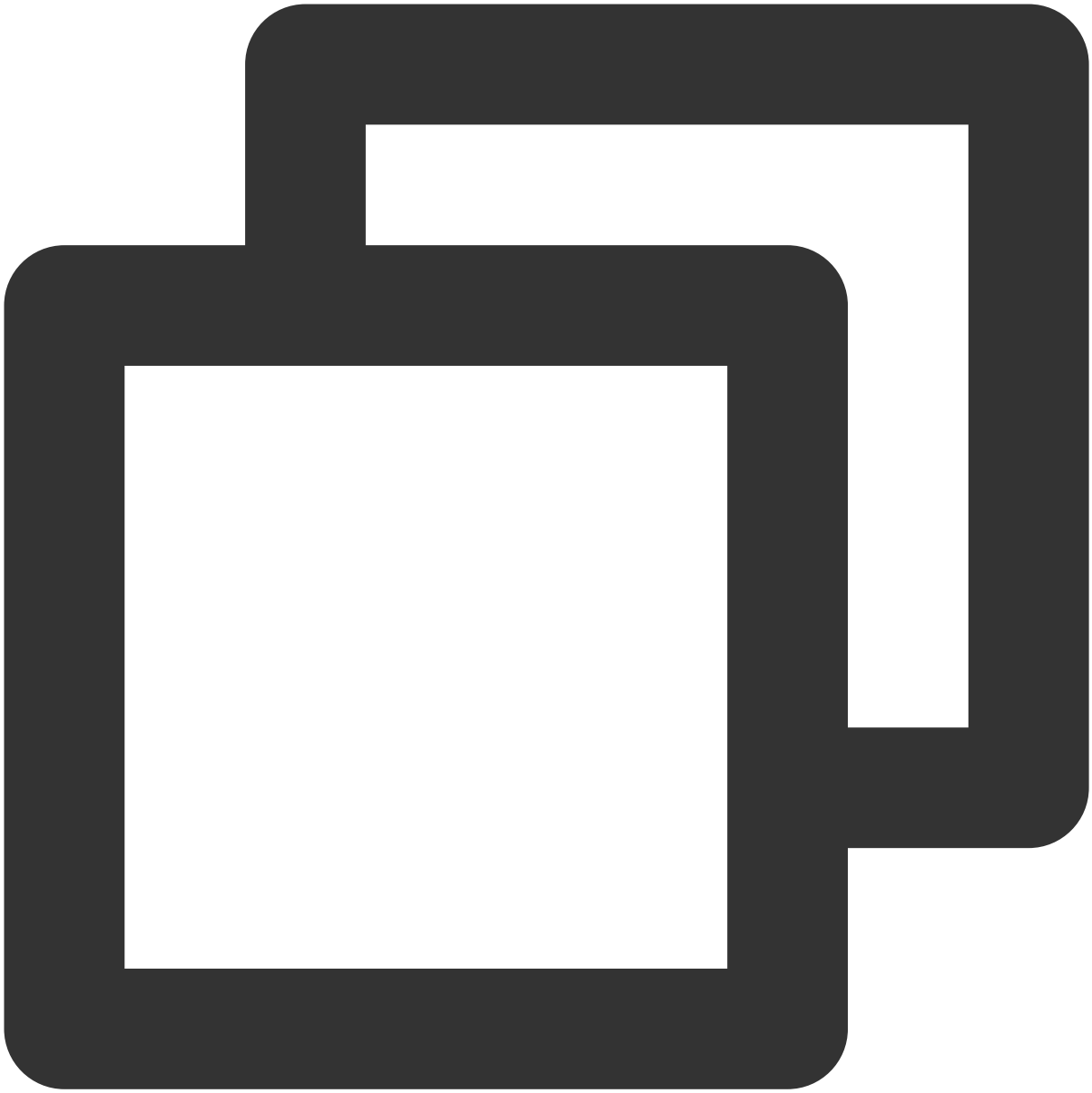
```
    database:"<the specified database to be accessed>",
    port:<access port>,
    ssl: {
        rejectUnauthorized: true,
        ca: serverCa
    }
});
conn.connect(function(err) {
if (err) throw err;
});
```

Golang



```
rootCertPool := x509.NewCertPool()
pem, _ := ioutil.ReadFile("<path of the downloaded certificate>")
if ok := rootCertPool.AppendCertsFromPEM(pem); !ok {
  log.Fatal("Failed to append PEM.")
}
mysql.RegisterTLSConfig("custom", &tls.Config{RootCAs: rootCertPool})
var connectionString string
connectionString = fmt.Sprintf("%s:%s@tcp(%s:<access port>)/%s?allowNativePasswords
db, _ := sql.Open("mysql", connectionString)
```

Ruby

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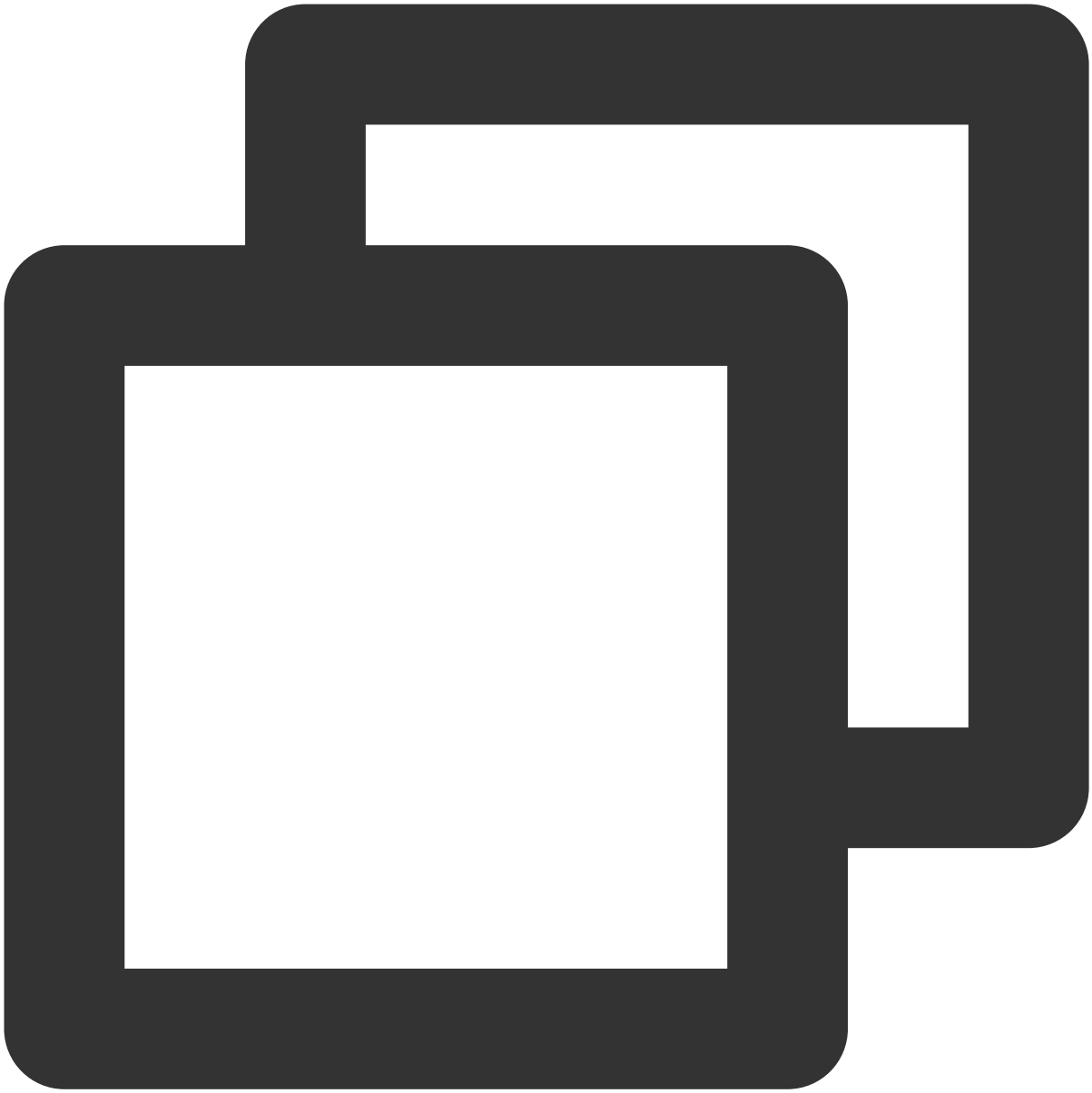

```
client = Mysql2::Client.new(
      :host     => '<database access address>',
      :username => '<database access username>',
      :password => '<database access password>',
      :database => '<the specified database to be accessed>',
      :sslca => '<path of the downloaded certificate>'
  )
```

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Backup and Rollback
Backing up Databases

Last updated：2024-07-23 10:05:47

To avoid data loss or corruption, you can back up a database automatically or manually.

Backup Overview

Backup modes

TencentDB for MySQL single-node (cloud disk), two-node (local disk), and three-node (local disk) instances support **automatic backup** and **manual backup** of databases.

Backup types

TencentDB for MySQL two-node and three-node instances support two backup types:
Physical backup: A full copy of physical data (supports both automatic backup and manual backup).
Logical backup: The backup of SQL statements (supports only manual backup).
Note:
To restore a database from a physical backup, you need to use xbstream to decompress the package first. For more information, see Restoring Database from Physical Backup.
If the number of tables in a single instance exceeds one million, backup may fail and database monitoring may be affected. Make sure that the number of tables in a single instance is below one million.
As the data of tables created by the MEMORY storage engine is stored in the memory, physical backups cannot be created for such tables. To avoid data loss, we recommend that you replace them with InnoDB tables.
If there are a high number of tables without a primary key in the instance, backup may fail, and the high availability of the instance may be affected. You need to create a primary key or secondary index for such tables in time.

Physical Backup Advantages	Logical Backup Disadvantages
High backup speed. Streaming backup and compression are supported. High success rate. Simple and efficient restoration. Faster backup-based coupling operations such as adding real-only instances and disaster recovery instances. 1/8 of average time needed for creating a logical backup.	Long time needed to restore as it takes time to run SQL statements and build indexes. Low backup speed, especially when there are massive amounts of data. Possible increase in source-replica delay due to the pressure on instances during backup. Possible loss of precision information of floating points. Potential backup failures due to wrong views and other problems.

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Ten times faster than logical backups during import.	Slower backup-based coupling operations such as adding read-only instances and disaster recovery instances.

TencentDB for MySQL single-node instances of cloud disk edition support snapshot backup:Snapshot backup backs up data by creating snapshots for disks at the storage layer and is supported for both automatic and manual backups.

Snapshot Backup Advantages	Snapshot Backup Disadvantages
High backup speed. Small size.	Cannot be downloaded.

Backup objects

Data Backup	Log Backup
TencentDB for MySQL two-node and three-node instances: Automatic backup supports full physical backup. Manual backup supports full physical backup, full logical backup, and single-database/table logical backup. Both automatic and manual backups can be compressed and downloaded. Single-node instances of cloud disk edition: Automatic backup supports full snapshot backup. Manual backup supports full snapshot backup. Both automatic and manual backups cannot be downloaded.	TencentDB for MySQL single-node (cloud disk edition), two-node, and three-node instances support binlog backup: Log files occupy the instance's backup space. Log files can be downloaded but cannot be compressed. Retention periods can be set for log files.

Note

Since February 26, 2019, the automatic backup feature of TencentDB for MySQL only supports physical backup (default type) and no longer provides logical backup. automatically. Existing automatic logical backups will be switched to physical backups

This will not affect your business access, but may have impact on your habit of automatic backup. If you need logical backups, you can use the manual backup option in the TencentDB for MySQL console or call the CreateBackup API to generate logical backups.

Instance backup files occupy backup space. We recommend that you plan the usage of backup space appropriately. Usage of backup space that exceeds the free tier will incur fees. For more information, see Backup Space Billing.

We recommend that you back up your database during off-peak hours.

To avoid situations where the required backup files are deleted after the retention period lapses, you need to download them to the local file system in a timely manner.

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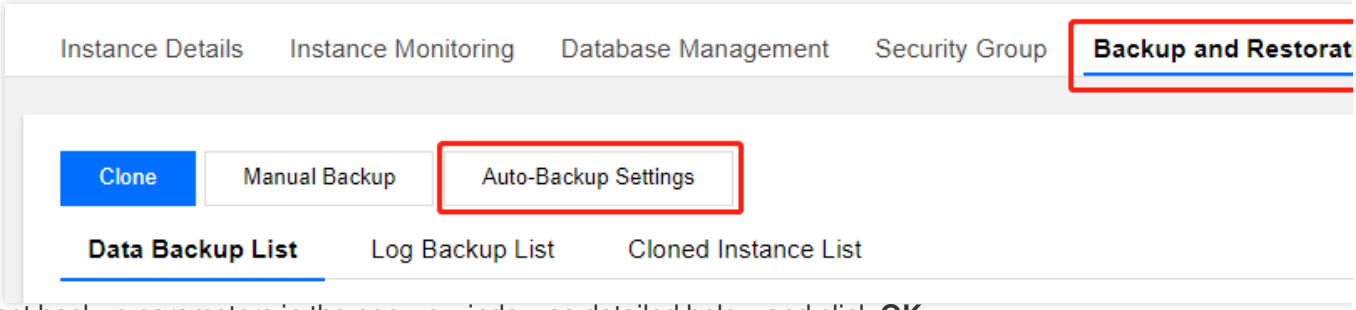
Do not perform DDL operations during the backup process to avoid backup failure due to table locking.
TencentDB for MySQL single-node instances cannot be backed up.

Backing up MySQL Data Automatically

Configuring automatic backup

1. Log in to the TencentDB for MySQL console, click an instance ID on the instance list page to enter the management page, and select **Backup and Restoration** > **Auto-Backup Settings**.



2. Select backup parameters in the pop-up window as detailed below and click **OK**:

Note:

The rollback feature as described in Rolling back Databases relies on the backup cycle and retention days of data backups and log backups (binlog). Rollback will be affected if you reduce the automatic backup frequency and retention period. You can select the parameters as needed.

For example, if the backup cycle is set as Monday and Thursday and the retention period is set as seven days, you can roll a database back to any point of time in the past seven days, which is the actual retention days of data backups and log backups.

Automatic backups cannot be deleted manually. You can set the retention period for automatic backups, and the backups will be deleted automatically when they expire.

Increasing the retention period of data and log backups may cause additional backup space fees.

Shortening the retention period of log backups may affect the data rollback cycle of the instance.

In **Auto-Backup Settings**, you can enable periodic archive for data backups. The settings with periodic archive not enabled are non-archive backup settings. The following describes the parameters for **non-archive backup** and **archive backup**.

Non-archive backup settings

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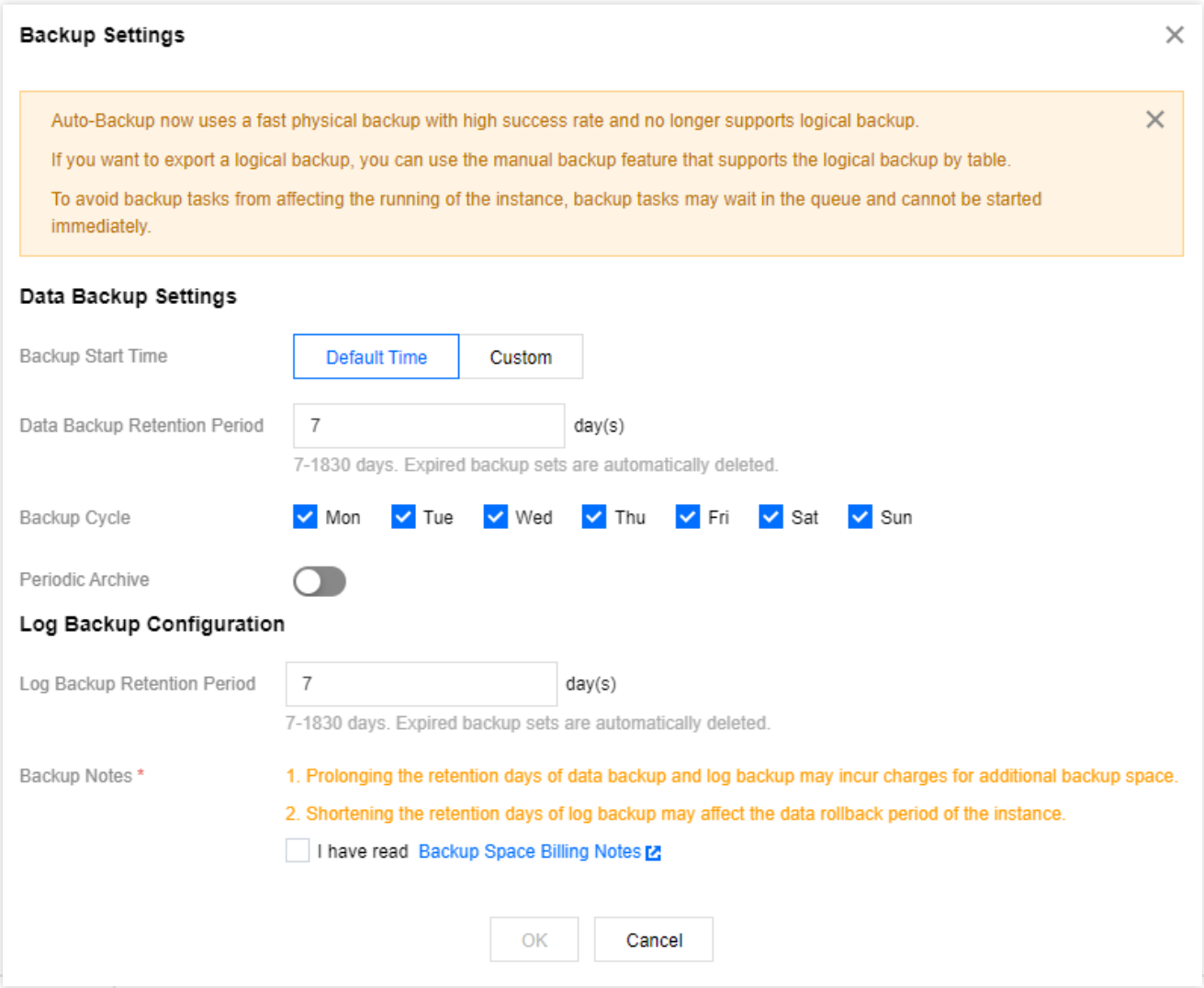

Parameter	Description
Backup Start Time	The default backup start time is automatically assigned by the system. You can set a backup start time range as needed. We recommend that you set it to off-peak hours. This is just the start time of the backup process and does not indicate the end time. For example, if the backup start time is set to 02:00-06:00 AM, the system will initiate a backup at a point in time during this period of time, which depends on the backend backup policy and backup system conditions.
Data Backup Retention Period	For TencentDB for MySQL two-node and three-node instances, data backup files can be retained for 7 (default) to 1,830 days and will be automatically deleted upon expiration. For TencentDB for MySQL single-node instances of cloud disk edition, data backup files can be retained for 7 (default) to 30 days and will be automatically deleted upon expiration.
Backup Cycle	**Configuration rules:** By week: 7 days from Monday to Sunday are selected by default, and you can customize the backup time; however, to ensure your data security, we recommend that you configure to back up at least twice a week.

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	By month: To protect your data security, the interval between any two adjacent backup dates in a month cannot exceed 2 days; for example, if you choose to back up on the 1st day of a month, the next backup date cannot be the 5th day (with the 2nd, 3rd, and 4th days skipped).
Transition-to-Cold Storage (optional)	Select the target data backup transition-to-cold storage policy and specify the number of days: Standard storage days: Specify the number of days after which to transition a generated data backup to standard storage. Archive storage days: Specify the number of days after which to transition a generated data backup to archive storage. For more information on transition-to-cold storage, see Configuring Transition-to-Cold Storage. Note that the archive storage type isn't available yet.
Log Backup Retention Period	For TencentDB for MySQL two-node and three-node instances, log backup files can be retained for 7 (default) to 1,830 days and will be automatically deleted upon expiration. For TencentDB for MySQL single-node instances of cloud disk edition, log backup files can be retained for 7 (default) to 30 days and will be automatically deleted upon expiration.
Transition-to-Cold Storage (optional)	Select the target binlog backup transition-to-cold storage policy and specify the number of days: Standard storage days: Specify the number of days after which to transition a generated binlog backup to standard storage. Archive storage days: Specify the number of days after which to transition a generated binlog backup to archive storage. For more information on transition-to-cold storage, see Configuring Transition-to-Cold Storage. Note that the archive storage type isn't available yet.

Archive backup settings

Note:

You cannot configure archive backup for single-node instances of cloud disk edition.

Archive backup retention period can only be longer than non-archive backup retention period.

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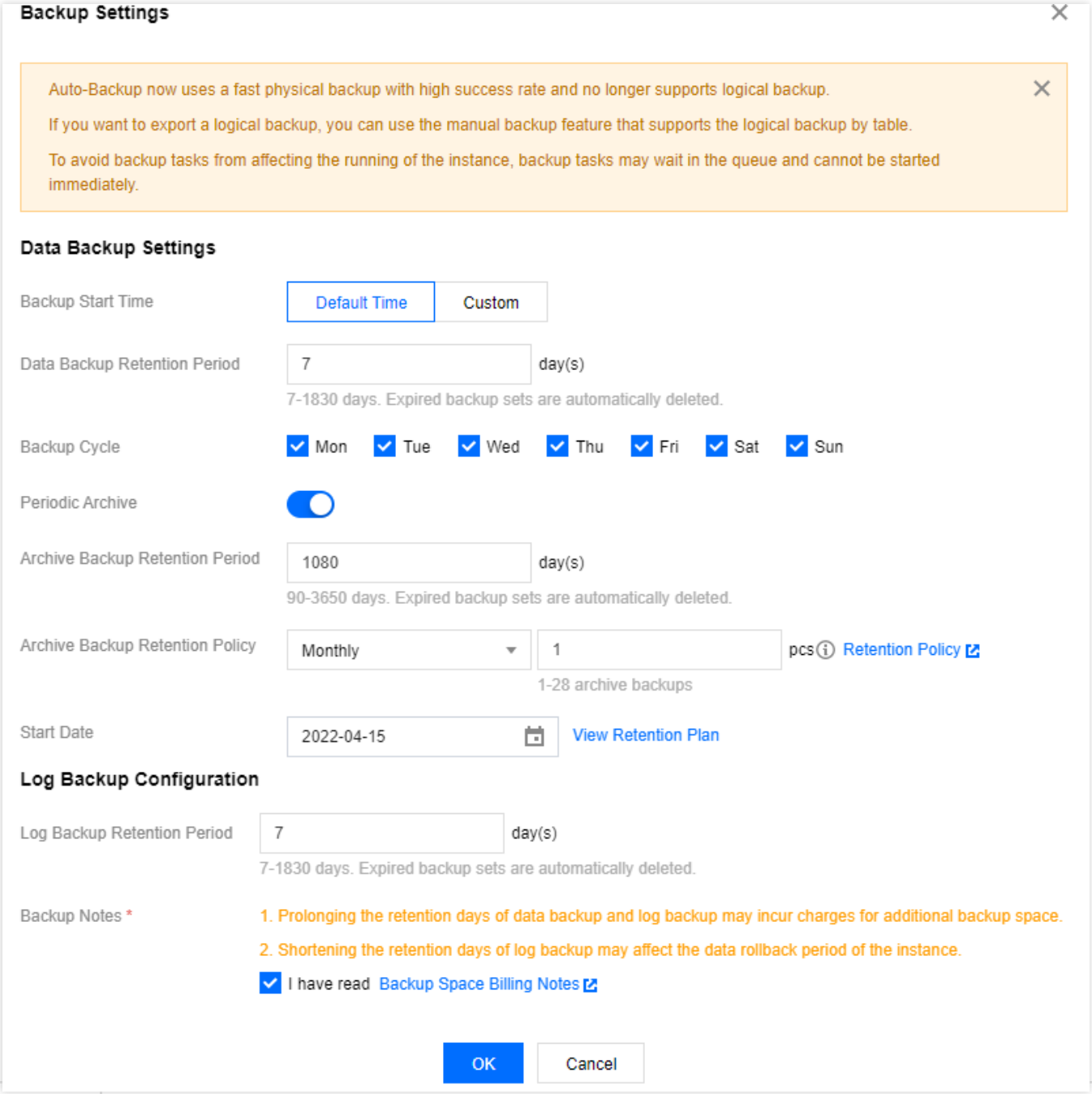

Parameter	Description
Backup Start Time	The default backup start time is automatically assigned by the system. You can set a backup start time range as needed. We recommend that you set it to off-peak hours. This is just the start time of the backup process and does not indicate the end time. For example, if the backup start time is set to 02:00-06:00 AM, the system will initiate a backup at a point in time during this period of time, which depends on the backend backup policy and backup system conditions.
Data Backup Retention Period	For TencentDB for MySQL two-node and three-node instances, data backup files can be retained for 7 (default) to 1,830 days and will be automatically deleted upon expiration.

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Backup Cycle	**Configuration rules:** By week: 7 days from Monday to Sunday are selected by default, and you can customize the backup time; however, to ensure your data security, we recommend that you configure to back up at least twice a week. By month: To protect your data security, the interval between any two adjacent backup dates in a month cannot exceed 2 days; for example, if you choose to back up on the 1st day of a month, the next backup date cannot be the 5th day (with the 2nd, 3rd, and 4th days skipped).
Archive Backup Retention Period	Data backup files can be retained for 90 to 3,650 days (1,080 days by default) and will be automatically deleted upon expiration.
Archive Backup Retention Policy	You can set the number of backups by month, quarter, or year.
Start Time	The time to start archive backup.
Transition-to-Cold Storage (optional)	Select the target data backup transition-to-cold storage policy and specify the number of days: Standard storage days: Specify the number of days after which to transition a generated data backup to standard storage. Archive storage days: Specify the number of days after which to transition a generated data backup to archive storage. For more information on transition-to-cold storage, see Configuring Transition-to-Cold Storage. Note that the archive storage type isn't available yet.
Log Backup Retention Period	Log backup files can be retained for 7 (default) to 1,830 days and will be automatically deleted upon expiration.
Transition-to-Cold Storage (optional)	Select the target binlog backup transition-to-cold storage policy and specify the number of days: Standard storage days: Specify the number of days after which to transition a generated binlog backup to standard storage. Archive storage days: Specify the number of days after which to transition a generated binlog backup to archive storage. For more information on transition-to-cold storage, see Configuring Transition-to-Cold Storage. Note that the archive storage type isn't available yet.

Viewing the retention plan

After you select an archive backup retention policy in the backup settings, you can click **View Retention Plan** to preview it.

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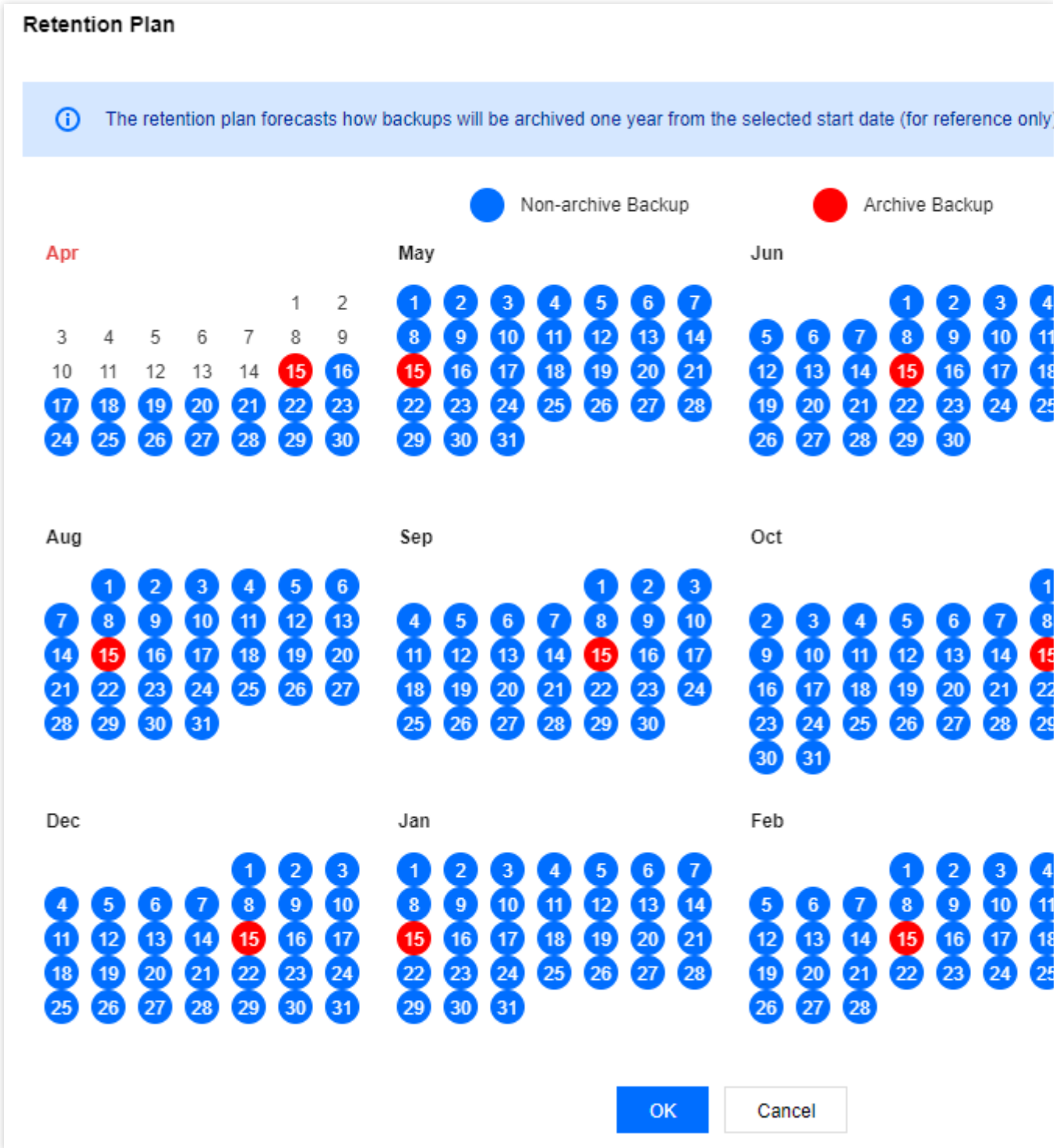
Blue dates are for non-archive backups.

Red dates are for archive backups.

You can click **Non-archive Backup** or **Archive Backup** to hide corresponding dates for easier preview.

The backup plan preview is currently for backups for the year to come and is for reference only.

Example 1: The backup cycle is Monday, Wednesday, Friday, and Sunday, with one backup retained for each month starting from January 11, 2022.



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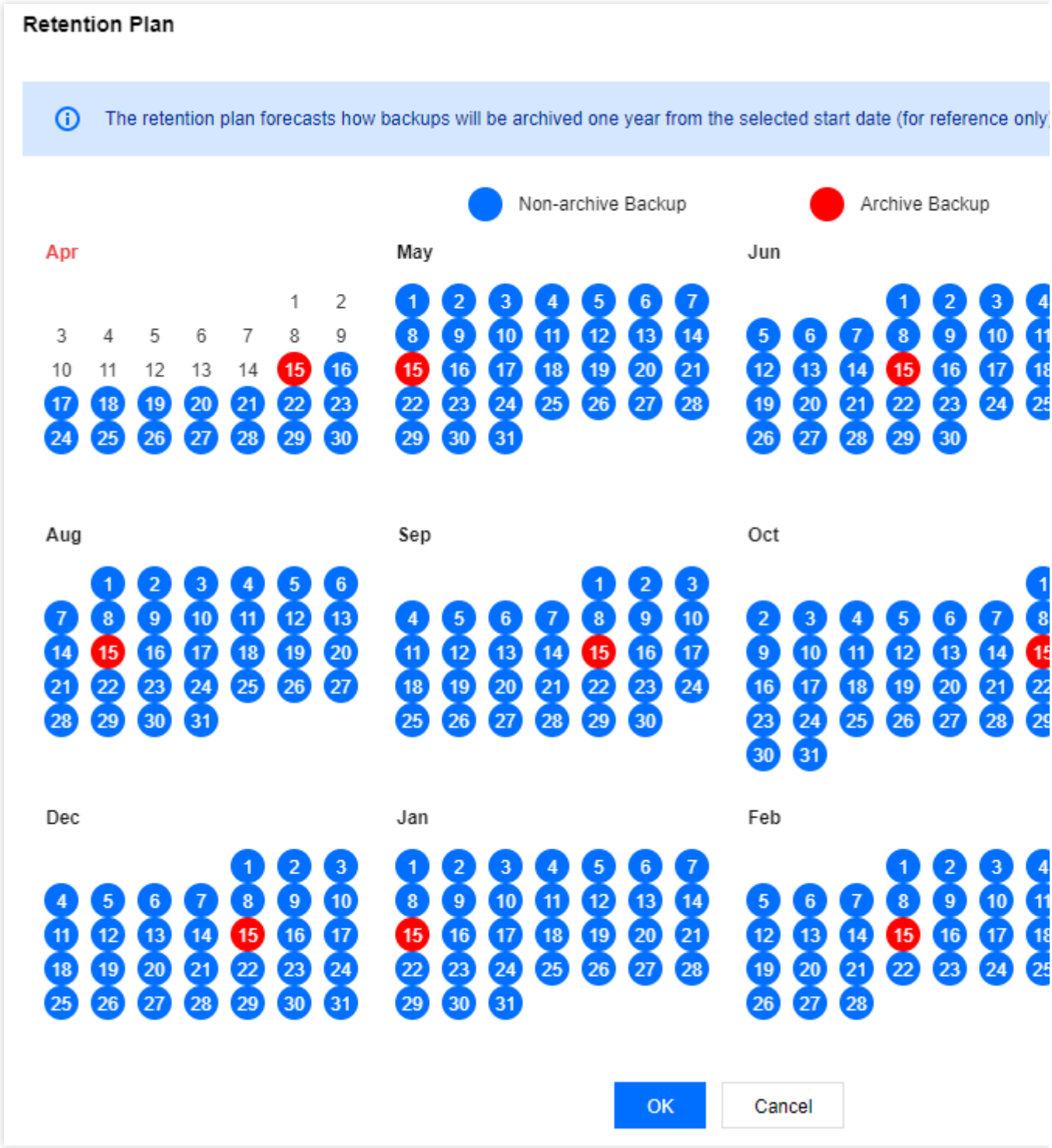
Example 2: The backup cycle is Monday, Wednesday, and Friday, with three backups retained for each quarter starting from January 11, 2022.



Example 3: Show only archive backups.

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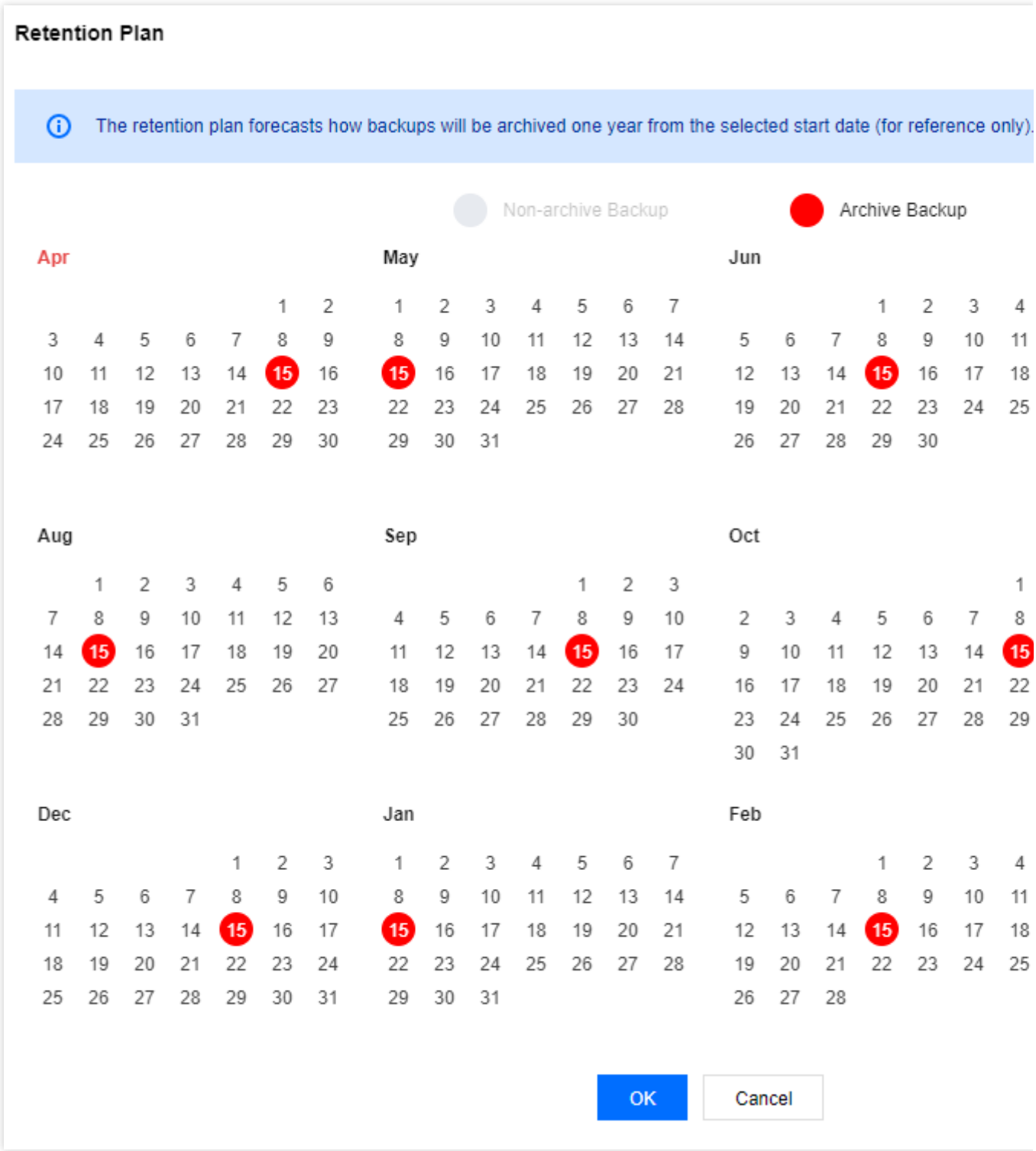

Backing up MySQL Data Manually

The manual backup feature allows you to initiate a backup task manually.

Note:

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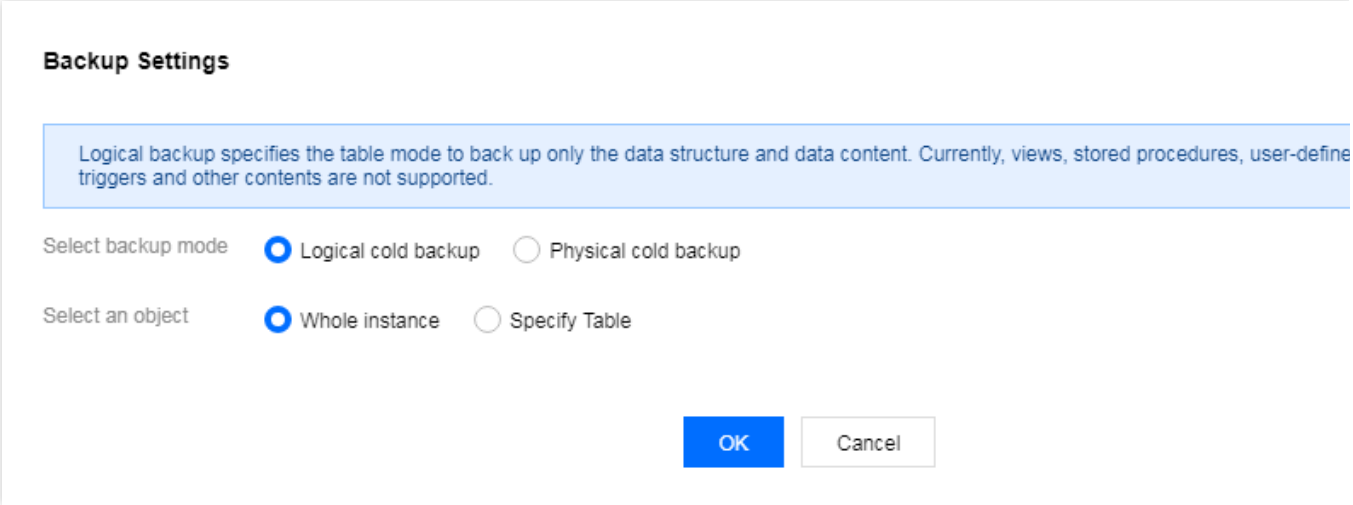
For TencentDB for MySQL two-node and three-node instances, manual backup supports full physical backup, full logical backup, and single-database/table logical backup.
For TencentDB for MySQL two-node and three-node instances, manual backups can be manually deleted from the backup list in the console. You can delete manual backups that are no longer in use to free up space. Manual backups can be retained as long as they are not deleted until the database instance is deactivated.
For TencentDB for MySQL single-node instances of cloud disk edition, manual backup supports full snapshot backup.
For TencentDB for MySQL single-node instances of cloud disk edition, manual backups cannot be deleted.
When the instance is performing daily automatic backup, no manual backup tasks can be initiated.

Directions for TencentDB for MySQL two-node and three-node instances

1. Log in to the TencentDB for MySQL console, click an instance ID on the instance list page to enter the management page, and select **Backup and Restoration** > **Manual Backup**.
2. Select backup modes and objects in the pop-up window, enter an alias, and click **OK**.



Note:

For single-database/table logical backup, select the database or table to be backed up in **Select databases and tables** in the left column and add the selected item to the right column. If you don't have a database, create a database or table first.

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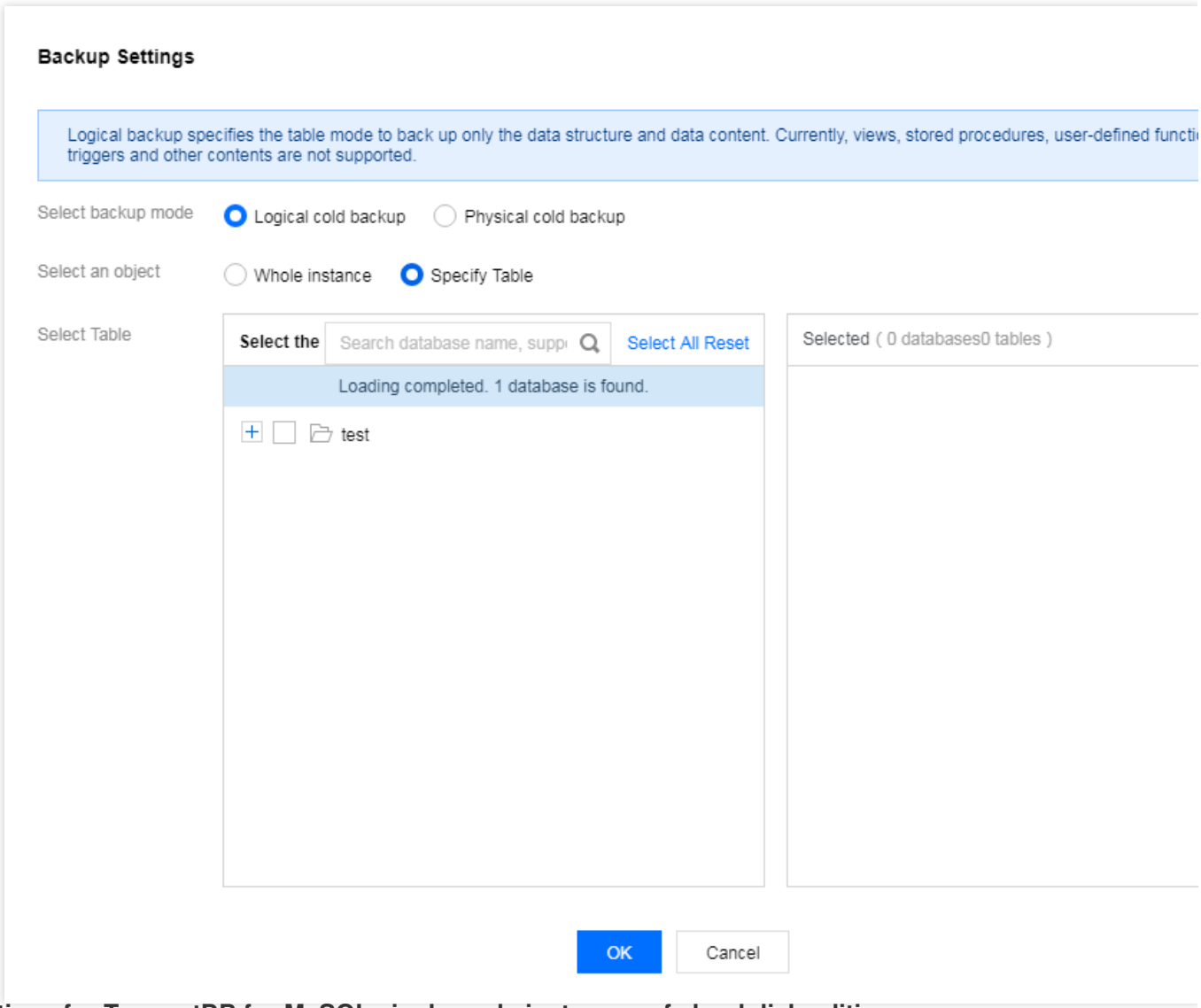

Directions for TencentDB for MySQL single-node instances of cloud disk edition

1. Log in to the TencentDB for MySQL console, click the target instance ID on the instance list page to enter the management page, and select **Backup and Restoration** > **Manual Backup**.
2. Enter an alias and click **OK**.

FAQs

1. Can I download or restore backup files that exceed the retention period?

Expired backup sets will be automatically deleted and cannot be downloaded or restored.

We recommend that you configure a reasonable backup retention period based on your business needs or download the backup files in the TencentDB for MySQL console. Note that the backup files of single-node instances of cloud disk edition cannot be downloaded.

You can also manually back up instance data in the console. Manual backups will be retained permanently.

Note:

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Manual backups will also take up the backup space. We recommend that you plan the usage of the backup space appropriately to reduce costs.

2. Can I delete backups manually?

You can't delete automatic backups manually, but you can set the retention period for them so that they are deleted automatically upon expiration.
For two-node and three-node instances, manual backups can be manually deleted from the backup list in the TencentDB for MySQL console. Manual backups are retained permanently as long as they are not deleted. For single-node instances of cloud disk edition, manual backups cannot be deleted.

3. Can I disable data and log backups?

No. However, you can reduce the backup frequency and delete unnecessary manual backups in the TencentDB for MySQL console to lower the space usage. Note that the manual backups of single-node instances of cloud disk edition cannot be deleted.

4. How do I reduce the backup space costs?

Delete manual backups that are no longer used. You can log in to the TencentDB for MySQL console, click an instance ID/name to access the instance management page, and delete manual backups on the **Backup and Restore** tab. Note that the manual backups of single-node instances of cloud disk edition cannot be deleted.
Reduce the frequency of automatic data backup for non-core businesses. You can adjust the backup cycle and retention period in the console, and the frequency should be at least twice a week.
Note:
The rollback feature relies on the backup cycle and retention days of data backups and log backups (binlog). Rollback will be affected if you reduce the automatic backup frequency and retention period. You can select the parameters as needed. For more information, see Rolling back Databases.
Shorten the retention period of data and log backups for non-core businesses. A retention period of seven days can meet the needs in most cases.
Configure the transition-to-cold storage policy to transition backup files and reduce the storage costs. For more information, see Configuring Transition-to-Cold Storage.

Business Scenario	Recommended Backup Retention Period
Core businesses	7–3,650 days. We recommend that you enable archive backup to periodically retain backup files in the long term.
Non-core, non-data businesses	7 days
Archive businesses	7 days. We recommend that you manually back up data based on your actual business needs and delete the backups promptly after use.

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Testing businesses	7 days. We recommend that you manually back up data based on your actual business needs and delete the backups promptly after use.

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Configuring Transition-to-Cold Storage

Last updated：2024-07-23 10:06:41

TencentDB for MySQL supports transition-to-cold storage for backup files to reduce the backup storage costs. This document describes how to use this feature.

Note:

The free space is not applicable to transitioned backups.

The archive storage type isn't available yet.

Overview

Transition-to-cold storage: The feature automatically transitions the storage types of generated data and binlog backup files according to the configured transition-to-cold storage rules to reduce the storage costs.

After you configure the backup retention period in **Auto-Backup Settings**, backup files will be stored according to the backup policy. Within the configured retention period, you can transition the backup files generated N or X days (customizable) ago to standard or archive storage respectively through the **transition-to-cold storage** feature.

Backup file storage types

Standard storage: It is suitable for business scenarios with frequent access and use. It can be used for rollback and cloning, uses no free space, and only supports downloads over the private network.

Archive storage: It is suitable for business scenarios with infrequent access. It has a minimum storage duration of 180 days and does not support downloads.

Feature overview

You can configure to transition backup files generated a certain number of days ago to standard storage. The number can range from 30 days to the configured number of backup retention days.

You can configure to transition backup files generated a certain number of days ago to archive storage. The number can range from 180 days to the configured number of backup retention days.

The backup storage type can only be transitioned from hot to cold (general storage > standard storage > archive storage) but not vice versa.

All the configured transition-to-cold storage policies will be performed at 00:00 (GMT+08:00) on the next day. As lifecycle tasks are executed asynchronously, the execution for backups after the rule is configured will be finished by 24:00 on the next day in most cases. The time is calculated based on the modification time of the transition-to-cold storage configuration.

Transition-to-cold storage can be configured for data backups and binlog backups separately.

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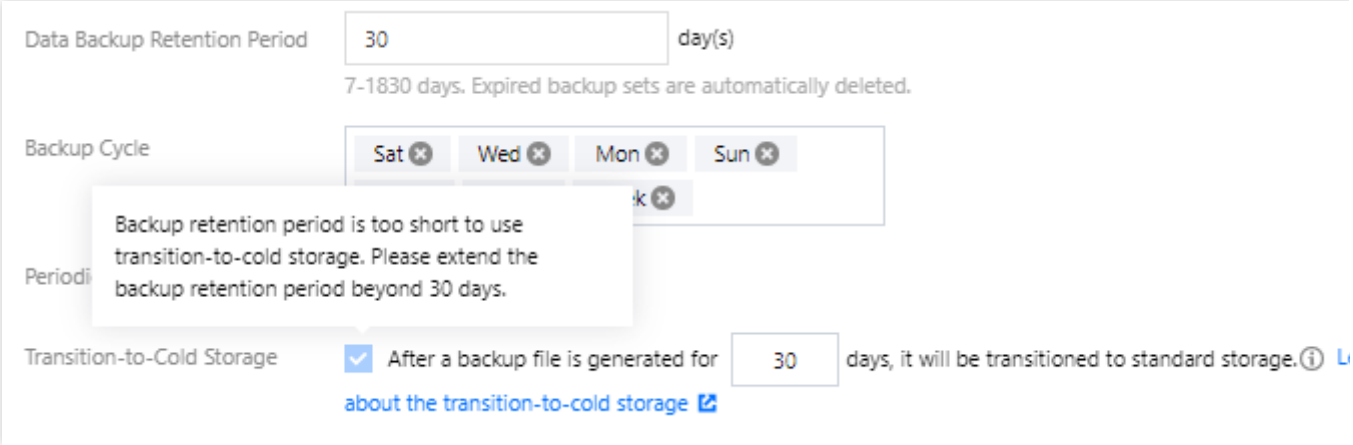
Transition-to-cold storage can be used together with periodic archive.

Billing overview

Transitioned backups are stored at lower prices to reduce the storage costs. For billing details, see Backup Space Billing.

Transition-to-cold storage policy

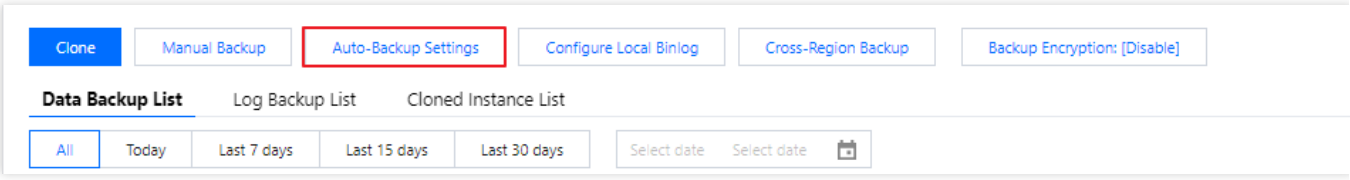
1. Backup retention period ≤ 30 days: Transition-to-cold storage cannot be configured. To configure it, extend the backup retention period to more than 30 days.



2. A transition-to-cold storage rule only takes effect after it is selected.

Configuring transition-to-cold storage

1. Log in to the TencentDB for MySQL console, click an instance ID on the instance list page to enter the management page, and select **Backup and Restoration** > **Auto-Backup Settings**.



2. In the **Backup Settings** pop-up window, configure the data backup retention period and cycle or configure the log backup retention period, select the target transition-to-cold storage policy, and specify the number of days.

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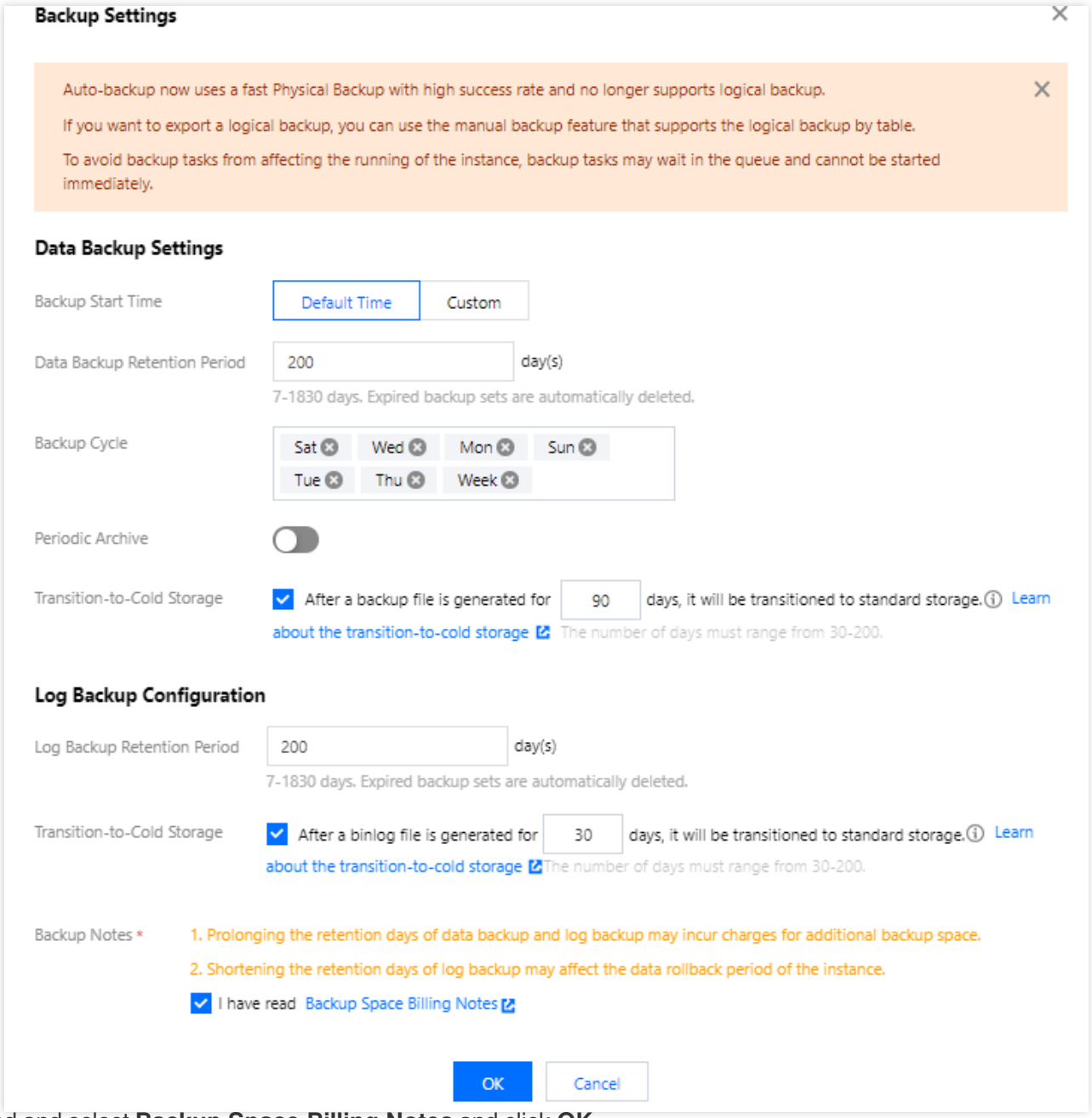

3. Read and select **Backup Space Billing Notes** and click **OK**.

Examples of transition-to-cold storage

Example 1: Non-archive backup + transition-to-cold storage configurationBackground

Company A has a TencentDB for MySQL instance in Guangzhou region. The data backup retention period is 200 days, and the non-archive backup cycle is every Monday, Wednesday, Friday, and Sunday. On December 31, 2022, the following transition-to-cold storage policy is configured: after a backup file is generated for 90 or 180 days, it will be transitioned to standard or archive storage respectively.

Transition expectations

The transition-to-cold storage policy takes effect on January 1, 2023.

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Existing backup files: Starting from January 1, 2023, existing backup files generated for more than 90 or 180 days are transitioned to standard or archive storage respectively.
New backup files: Starting from January 1, 2023, newly generated backup files are transitioned to standard or archive storage respectively after 90 or 180 days.

Example 2: Archive backup + transition-to-cold storage configurationBackground

Company B has a TencentDB for MySQL instance in Guangzhou region. The data backup retention period is 365 days, the non-archive backup cycle is every Monday, Wednesday, Friday, and Sunday, the archive backup retention period is 365 days, and one backup file is retained periodically per month. On January 31, 2023, the following transition-to-cold storage policy is configured: after a backup file is generated for 90 or 180 days, it will be transitioned to standard or archive storage respectively.

Transition expectations

The transition-to-cold storage policy takes effect on February 1, 2023.
Existing backup files: Starting from February 1, 2023, existing backup files generated for more than 90 or 180 days are transitioned to standard or archive storage respectively.
New backup files: Starting from February 1, 2023, newly generated backup files are transitioned to standard or archive storage respectively after 90 or 180 days.
In the backup retention schedule shown in the figure below, each newly generated backup file will be transitioned according to the time configured in the transition-to-cold storage policy, and backups can be transitioned only from hot to cold.

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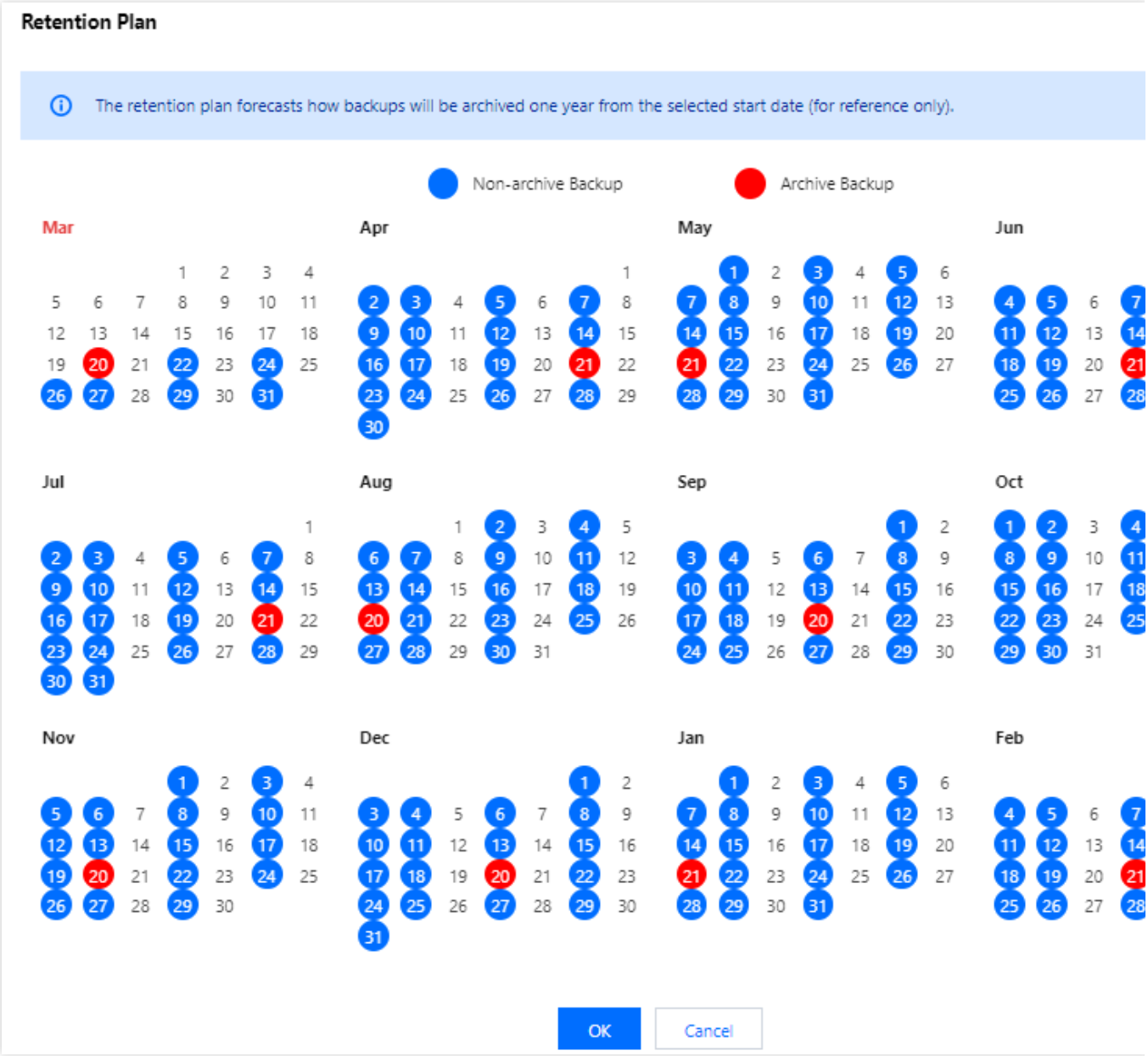

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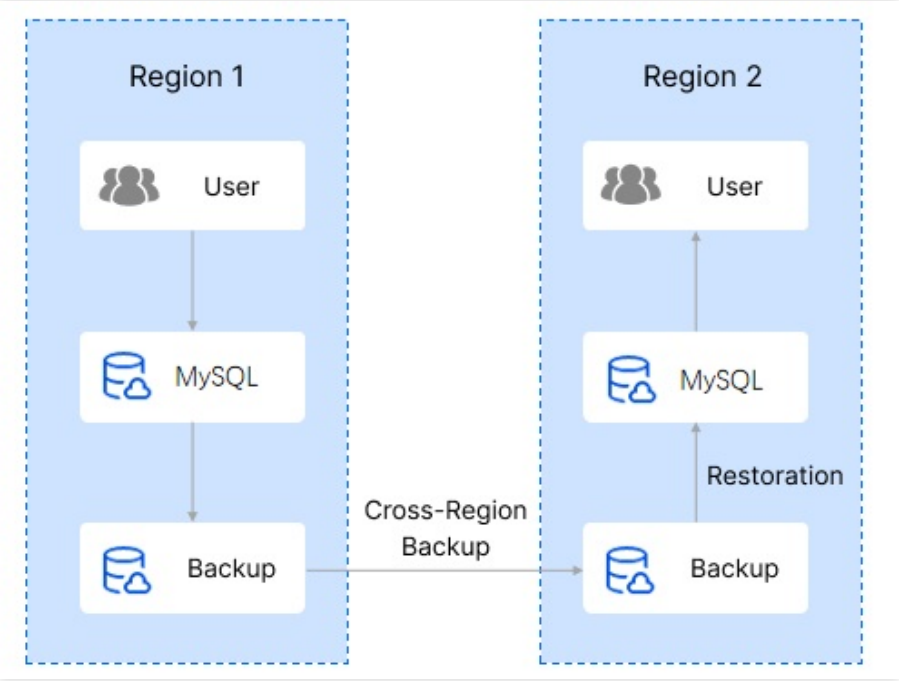
Cross-Region Backup

Last updated：2024-07-23 10:08:14

This document describes the cross-region backup feature of TencentDB for MySQL. This feature allows you to store backup files in another region, which enhances the regulatory compliance and disaster recovery capabilities and improves the data reliability.

Background

Data is an important part of enterprise operations. Although the information technology brings convenience, electronic data and stored information are very vulnerable to damage or loss. Any incident, such as natural disaster, system failure, maloperation, or virus, can cause business interruptions or even disastrous losses. Therefore, ensuring the security and integrity of core data is a top priority of every enterprise.
The cross-region backup feature of TencentDB for MySQL can be used to store backup files in another region so as to minimize data corruptions caused by natural disasters or system failures. This feature ensures the high availability, security, and recoverability of data and implement various features, such as remote backup and restoration, remote disaster recovery, long-term data archive, and regulatory compliance.



Notes on Cross-Region Backup

A cross-region backup can be restored to the instance regions or backup region.

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Once enabled, cross-region backup doesn't affect the local default backup, and both coexist.
Cross-region backup will be triggered after the local automatic backup is completed, that is, the automatic backup will be dumped to the storage device for cross-region backup.
The retention period of cross-region backup only affects the backup cycle of the cross-region storage.
Backups and binlogs stored in a remote region cannot use the free storage space, and cross-region backups will use the space in the backup region of the source instance.
Enabling/disabling cross-region backup or changing the region won't affect existing backups.
After cross-region backup is enabled, the last valid backup and the binlogs generated from the last valid backup time to the current time will be synced to the target region.
If you enable cross-region backup again, remote backups generated before the enablement cannot be used to restore data to the specified time point.

Billing

For more information on cross-region backup billing, see Backup Space Billing.

Differences Between Cross-Region Backup and Local Default Backup

Comparison Item	Cross-Region Backup	Local Default Backup
Enabled by default	No. It needs to be enabled manually.	Yes.
Backup storage region	Up to two specified remote regions.	Instance region.
Backup restoration	The data can be restored to: Original instance New instance in the target region	The data can be restored to: Original instance New instance in the current region
Uses the free storage space	No.	Yes.

Supported Regions

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This feature is currently available in Beijing, Shanghai, Guangzhou, Shenzhen, and Chengdu regions and will be available in more regions in the future.

Enabling Cross-Region Backup

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the instance management page, select **Backup and Restoration** > **Cross-Region Backup**.
3. In the **Cross-Region Backup** window, complete the configuration and click **OK** to enable cross-region backup.
Cross-Region Backup: It is disabled by default.
Back up Binlog: When cross-region backup is enabled, it will be enabled automatically and can be disabled separately.
Backup Region: Select one or two regions other than the source instance region.
Backup Retention Period: 7 days by default. Value range: 3–1830 days. Backup sets will be deleted automatically upon expiration.
4. After cross-region backup is completed, the backup will be synced to the target region and can be queried in the backup list of the source instance.
For cross-region backup files, all selected backup regions are displayed in the **Backup Region** column.
The backup list has the following fields:

Field	Description
File Name	You can set a filename when creating a backup, which cannot be modified after the backup is created.
Backup Time	The backup start time.
Task Start TimeTask End Time	The time points when the backup task starts and ends respectively.
Backup Size	The size of the current backup file.
Type	The type of the backup file. For a cross-region backup, it is **Physical cold backup**.
Backup Mode	Automatic backup
Backup Method	Full backup
Backup Region	It displays all regions where the backup file is stored.
Status	It displays the backup task status.
Operation	DownloadClone

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Disabling Cross-Region Backup

You can disable the cross-region backup feature in the console. After it is disabled, cross-region backup files won't be deleted immediately; instead, they will be deleted automatically upon expiration.

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the instance management page, select **Backup and Restoration** > **Cross-Region Backup**.
3. In the **Cross-Region Backup** window, disable the feature and click **OK**.

FAQs

Why are fees still incurred after I disable cross-region backup?

If your data volume exceeds the free storage space, the excessive data will be billed. After cross-region backup is disabled, no more new backups will be generated, but existing backups won't be deleted immediately. They will be retained within the retention period and use the storage space before expiration, so they will still incur fees before expiration. You can set the backup retention period to automatically clear all expired backup files, and then no more cross-region backup fees will be incurred.

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Backup Encryption

Last updated：2023-09-13 15:48:23

TencentDB for MySQL supports backup encryption for physical backups and log backups (binlog). To use an encrypted backup, you need to download it and its encryption key for decryption. This document describes how to enable or disable the backup encryption feature and download a key.

Prerequisite

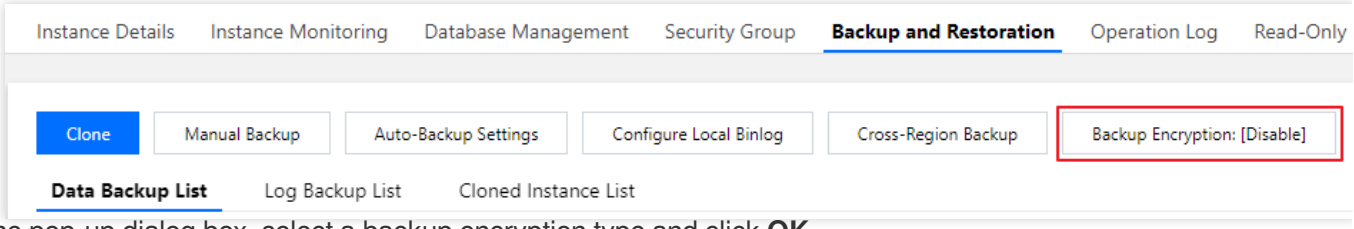
The MySQL instance architecture is two-node/three-node.

Note

After backup encryption is enabled, the previous backup will not be encrypted, but the new backup files will be automatically encrypted for storage.
You cannot modify the backup encryption key.
After backup encryption is enabled, you don't need to manually decrypt a backup in the console, as the backend will decrypt it automatically before relevant operations such as cloning. However, if you download an encrypted backup, you need to download its key for decryption. For more information, see Restoring Database from Physical Backup.

Enabling backup encryption

1. Log in to the TencentDB for MySQL console. In the instance list, click an **instance ID** or **Manage** in the **Operation** column to access the instance management page.
2. On the instance management page, select **Backup and Restoration** and click **Backup Encryption**.



3. In the pop-up dialog box, select a backup encryption type and click **OK**.

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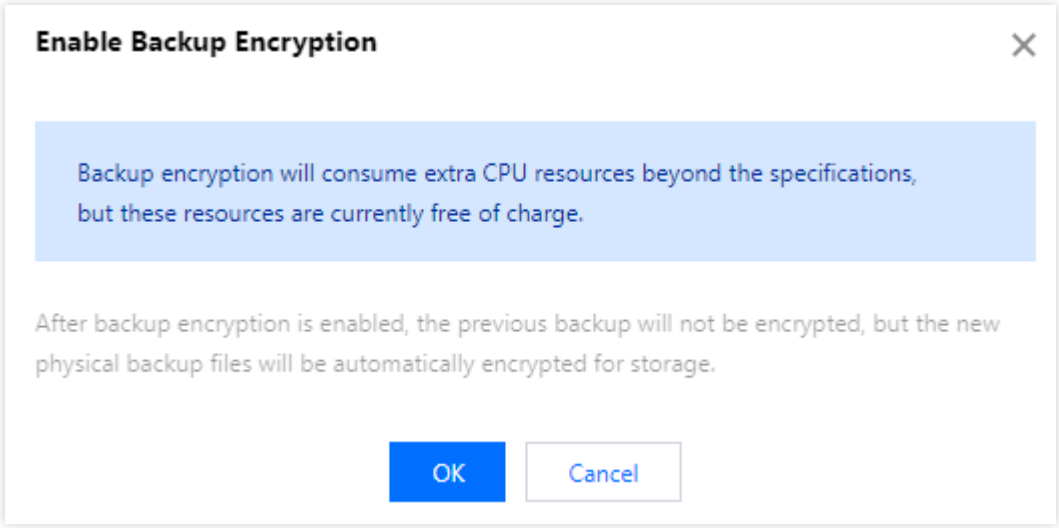

Note

After enabling the corresponding backup encryption, the physical backup time may be extended by 20%, and the log backup time may be extended by 30%.

4. After the backup encryption is enabled, the backup files generated based on the automatic backup settings will be automatically encrypted.

5. You can also click **Manual backup**. On the manual backup setting page, select the configuration, click **OK** to encrypt the newly added physical backup.

Parameter	Description
Select backup mode	Select **Physical cold backup**.
Object	It is the instance by default.
Backup Encryption	It is enabled by default.
Backup Name	It can contain up to 60 letters, digits, or symbols (-_./()[]+=:@).

Disabling backup encryption

Note

After backup encryption is disabled, the previous backup will not be decrypted, and the new backup files will not be encrypted for storage.

1. Log in to the TencentDB for MySQL console. In the instance list, click the ID of the target instance or **Manage** in the **Operation** column to enter the instance management page.

2. On the instance management page, select **Backup and Restoration** and click **Backup Encryption**.

3. In the pop-up window, disable the corresponding backup encryption type, and click **OK**.

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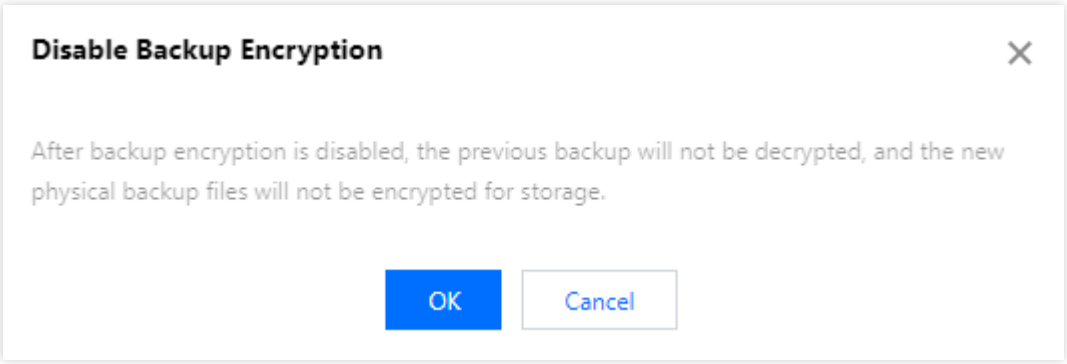
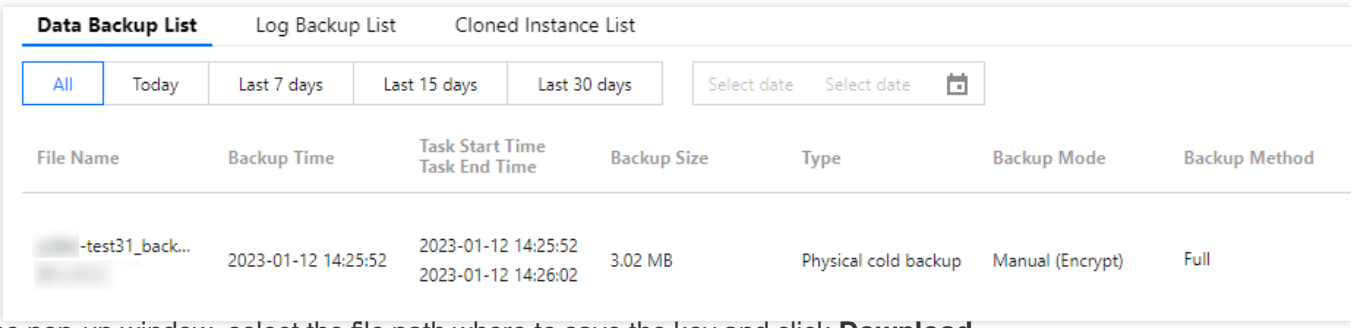


Downloading a backup key

1. Log in to the TencentDB for MySQL console. In the instance list, click the ID of the target instance or **Manage** in the **Operation** column to enter the instance management page.
2. On the instance management page, select the **Backup and Restoration** > **Data Backup List** tab, find the target backup, and click **Download Key** in the **Operation** column.



3. In the pop-up window, select the file path where to save the key and click **Download**.

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Setting Backup Download Rules

Last updated：2024-07-23 10:10:25

By default, you can download backup files of TencentDB for MySQL instances over public or private network. To limit the download, you can adjust backup download settings.

Note:

Backup download settings are supported in the following regions:

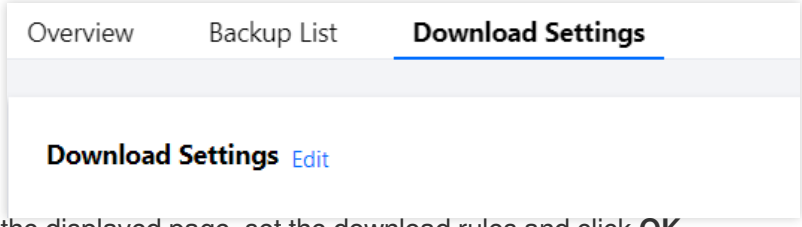
Guangzhou, Shanghai, Beijing, Shenzhen, Chengdu, Chongqing, Nanjing, Hong Kong (China), Beijing Finance, Shanghai Finance, Shenzhen Finance, Toronto, Singapore, Silicon Valley, Frankfurt, Seoul, Mumbai, Bangkok, and Tokyo.

Setting backup download rules

1. Log in to the TencentDB for MySQL console, select **Database Backup** on the left sidebar, and select a region at the top.
2. On the **Download Settings** tab, view the backup download settings and click **Edit** to modify them.

Note:

Download over public network is enabled by default and when it is enabled, download over private network is also allowed.



3. On the displayed page, set the download rules and click **OK**.

Download over public network:

Enabled: You cannot set any download rule.

Disabled: You can set the download rules for private network by allowing or blocking specific IPs and VPCs.

Set the download rules:

If you don't specify any value, the condition won't take effect.

You should separate the values of an IP condition with commas.

You can enter IPs or IP ranges as the values of an IP condition.

If no IP and VPC requirements are set, there will be no limit on download over private network.

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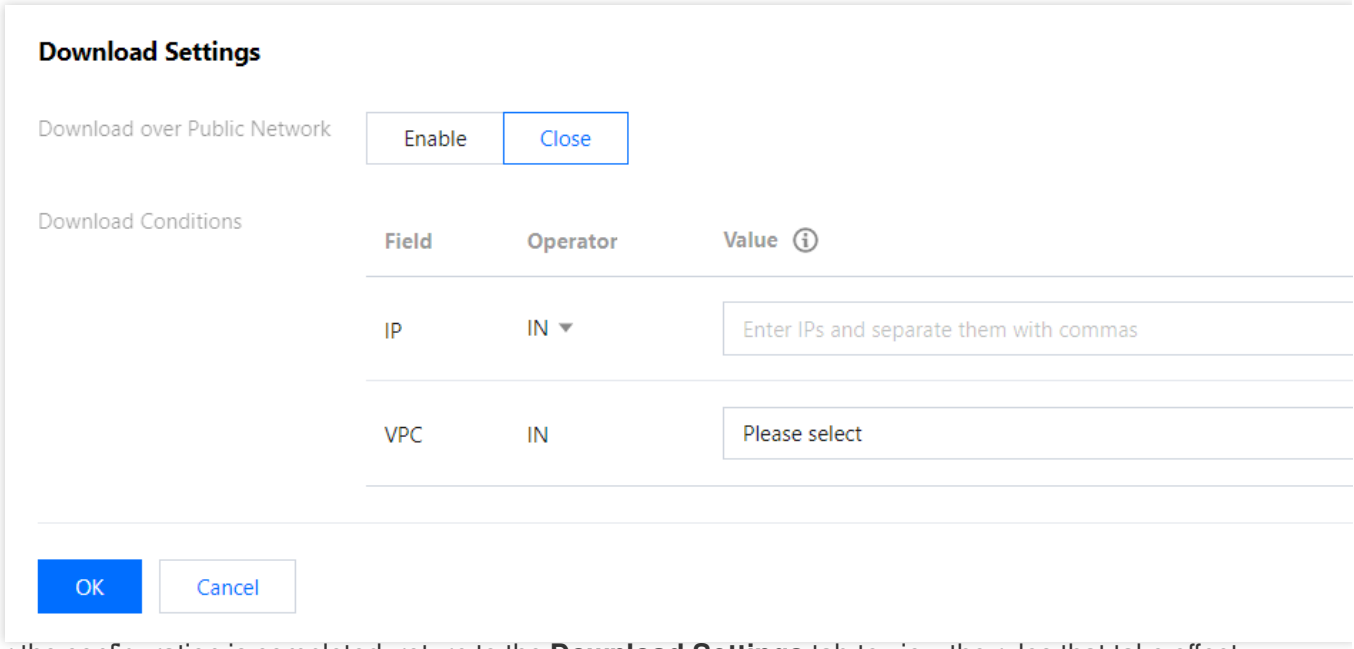
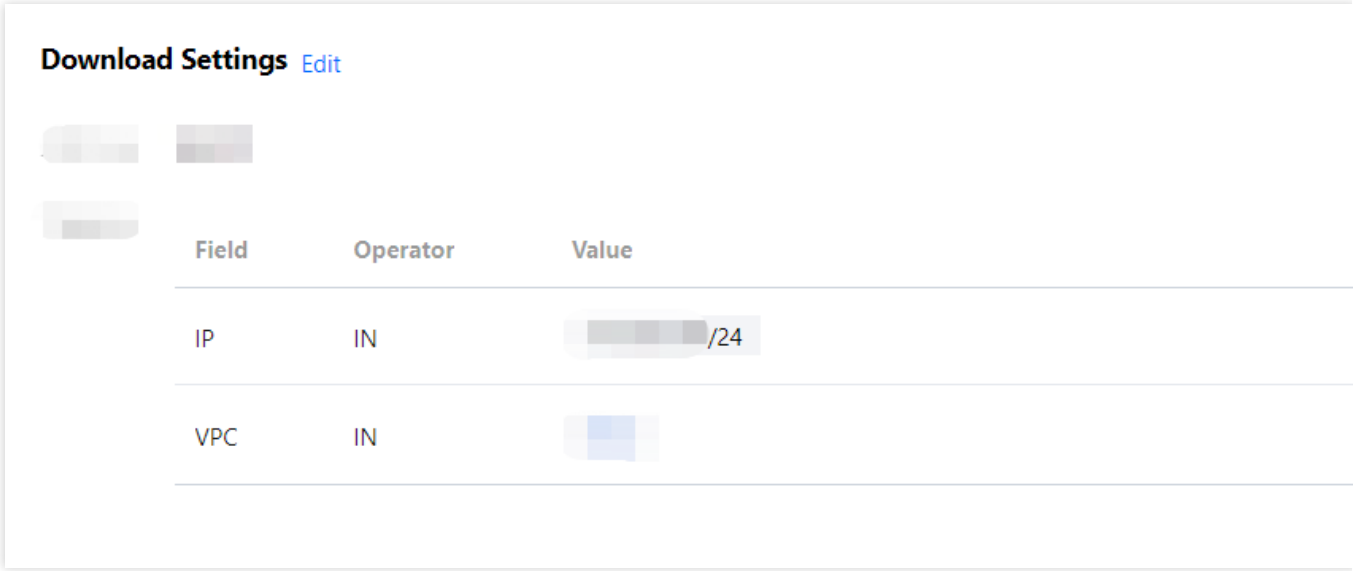


4. After the configuration is completed, return to the **Download Settings** tab to view the rules that take effect.



Authorizing sub-accounts to set backup download rules

By default, sub-accounts do not have the permission to set backup download rules for TencentDB for MySQL instances. Therefore, you need to create CAM policies to grant specific sub-accounts the permission.

Cloud Access Management (CAM) is a web-based Tencent Cloud service that helps you securely manage and control access permissions to your Tencent Cloud resources. Using CAM, you can create, manage, and terminate users (groups), and control the Tencent Cloud resources that can be used by the specified user through identity and policy management.

You can use CAM to bind a user or user group to a policy which allows or denies them access to specified resources to complete specified tasks. For more information on CAM policy elements, see Element Reference.

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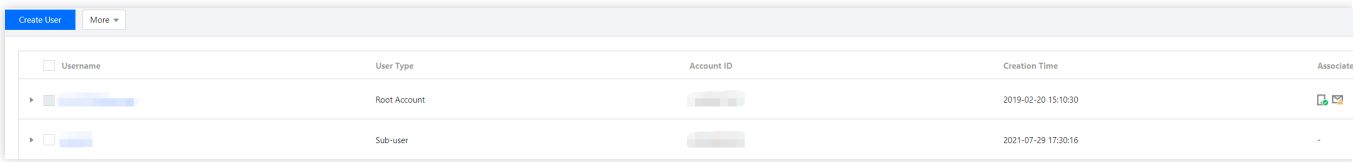
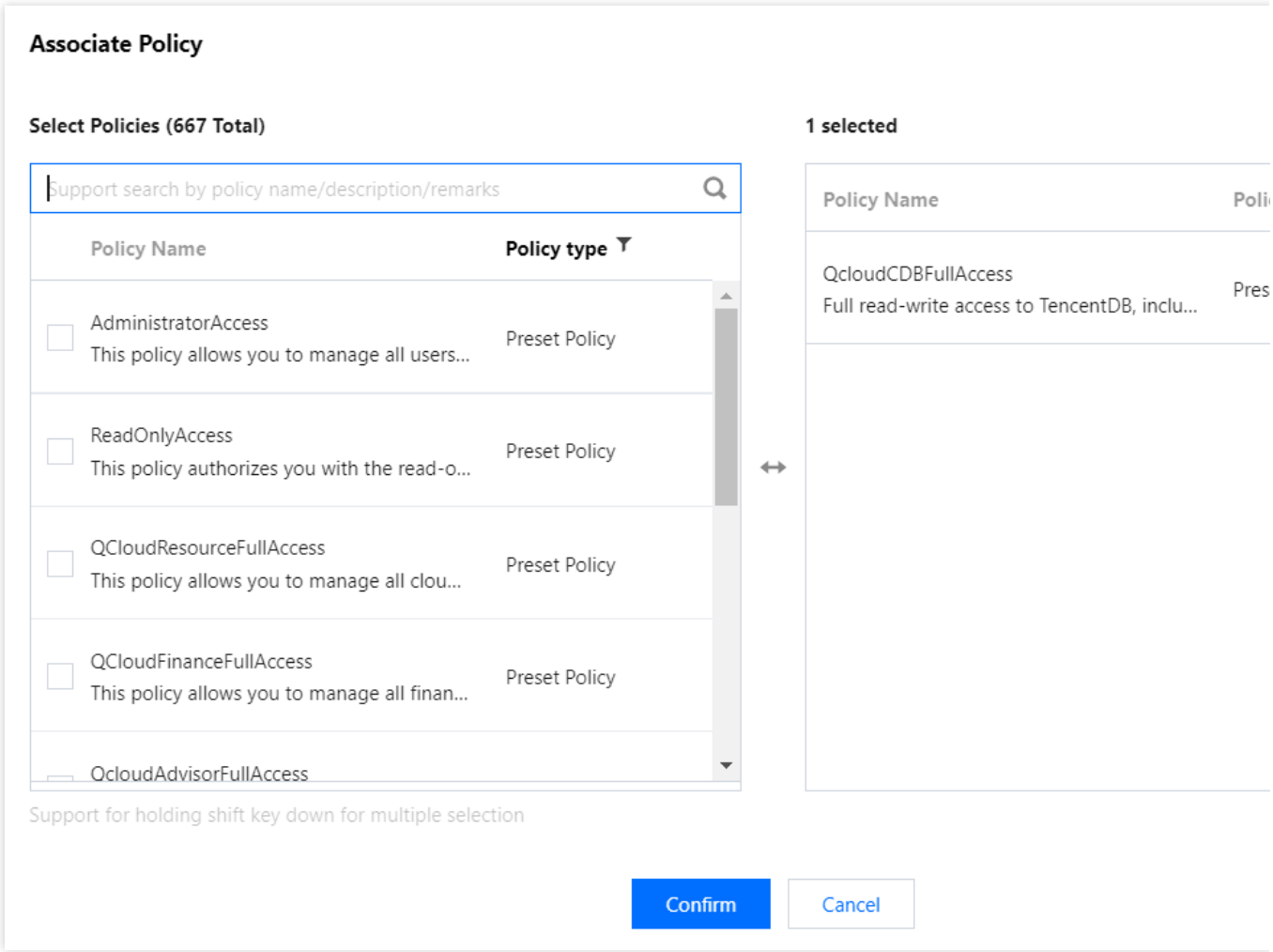
Authorizing sub-accounts

1. Log in to the CAM console with the root account, locate the target sub-user in the user list, and click **Authorize**.



2. In the pop-up window, select the **QcloudCDBFullAccess** preset policy and click **OK** to complete the authorization.



Policy syntax

The following policy syntax is used to authorize a sub-account to set backup download rules for TencentDB for MySQL instances:

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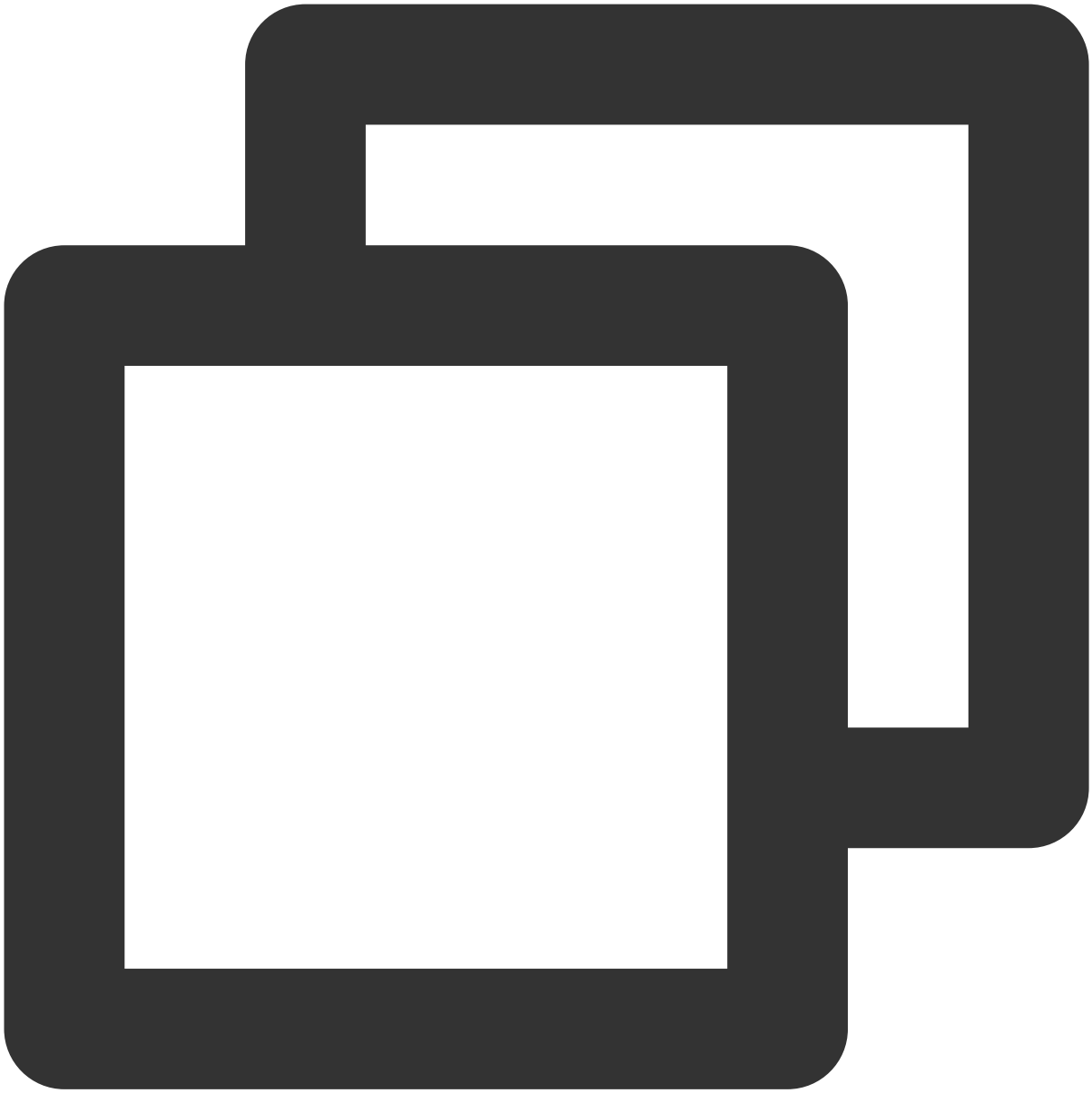

```
{
        "version":"2.0",
        "statement":
        [
            {
                "effect":"effect",
                "action":["action"],
                "resource":["resource"]
              }
        ]
}
```

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version is required. Currently, only the value "2.0" is allowed.

statement element describes the details of one or more permissions. This element contains a permission or permission set of other elements such as `effect` , `action` , and `resource` . One policy has only one `statement` .

effect is required. It describes the result of a statement. The result can be "allow" or an "explicit deny".

action is required. It specifies whether to allow or deny the operation. The operation can be an API (prefixed with "cdb:"). which can be an API (prefixed with `name`) or a feature set (a set of specific APIs prefixed with `permid`).

resource is required. It describes the details of authorization.

API operations

In a CAM policy statement, you can specify any API operation from any service that supports CAM. For database audit, the API prefixed with `name/cdb:` should be used. To specify multiple operations in a single statement, separate them by comma:

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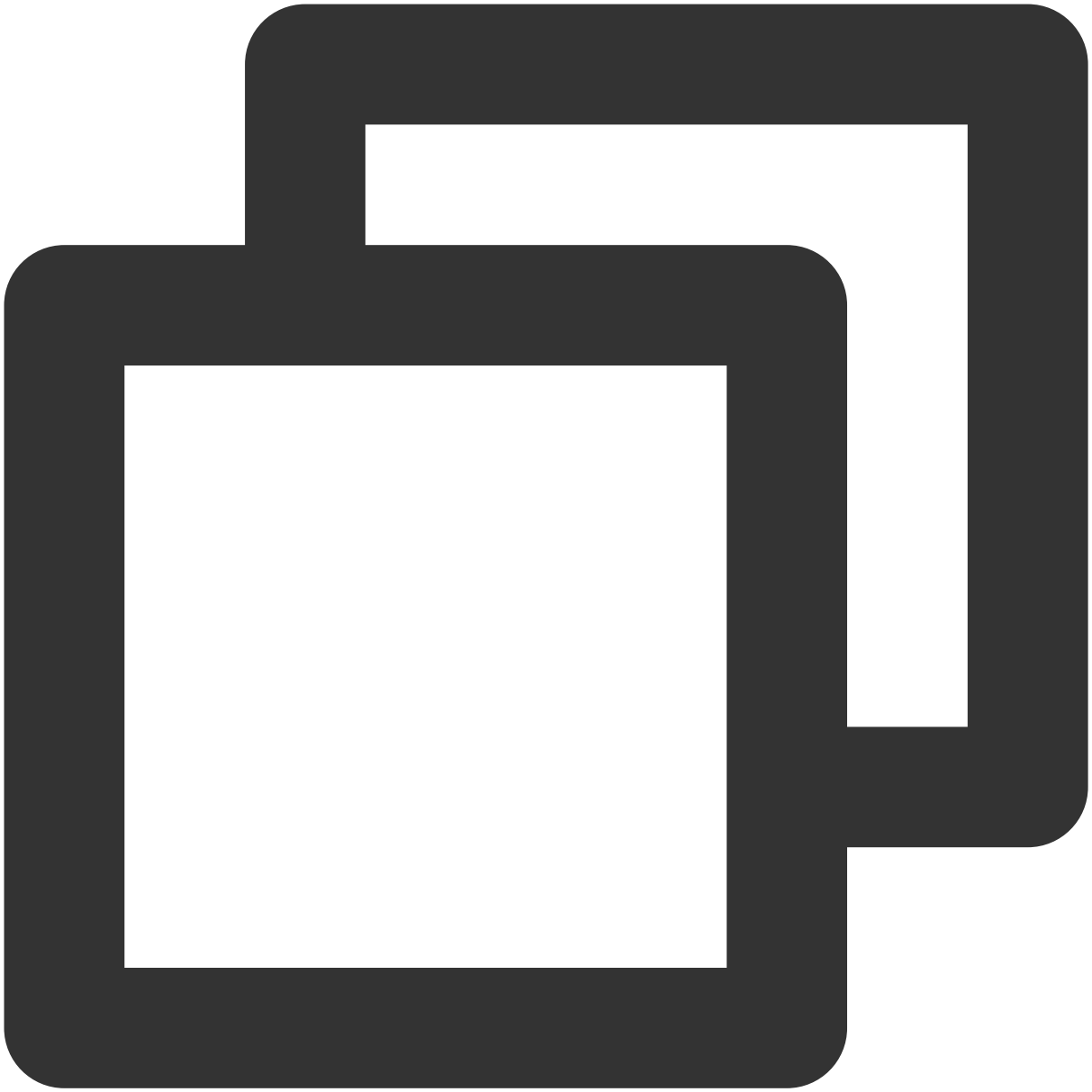

```
"action":["name/cdb:action1","name/cdb:action2"]
```

You can also specify multiple operations by using a wildcard. For example, you can specify all operations beginning with "Describe" in the name as shown below:

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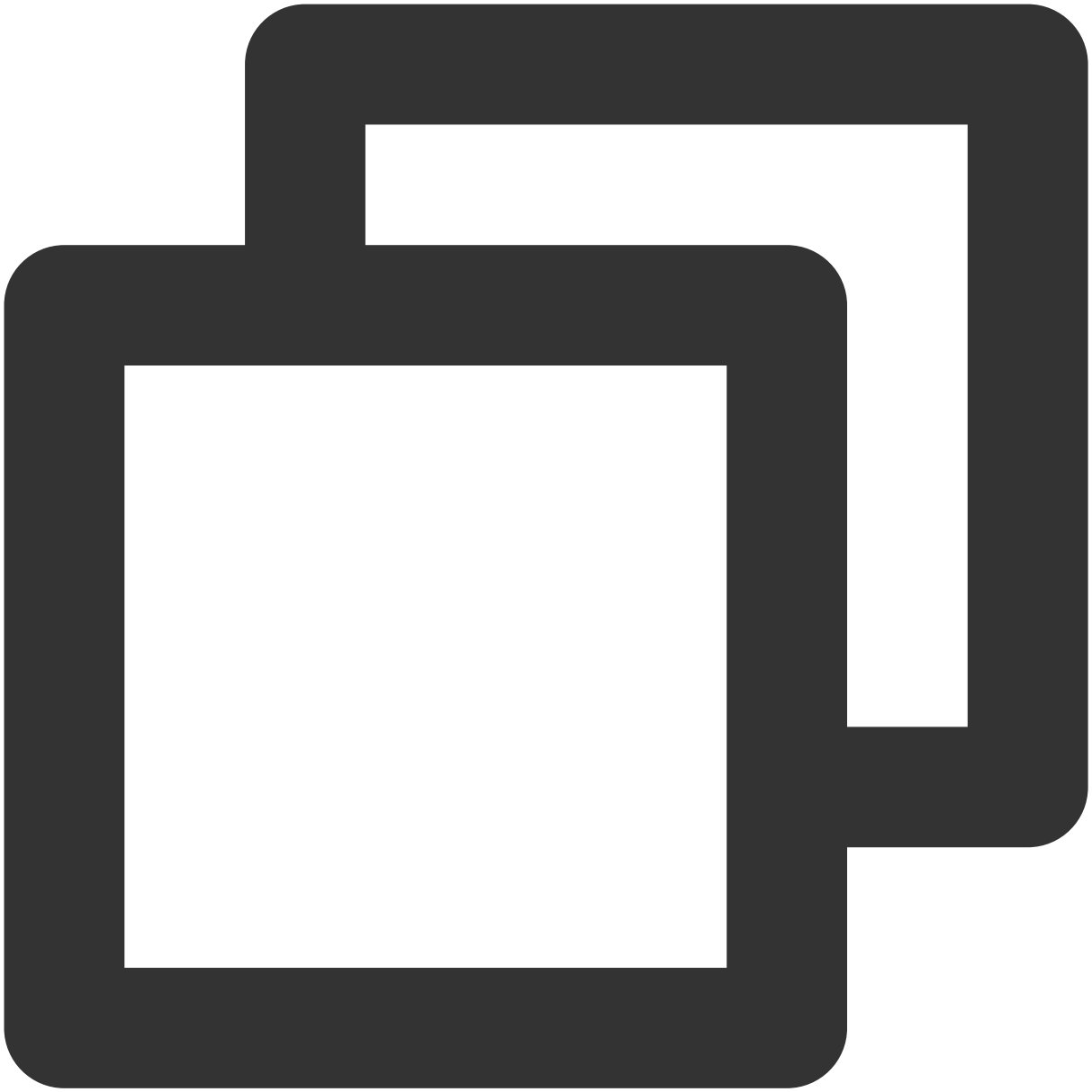

```
"action":["name/cdb:Describe*"]
```

Resource path

Resource paths are generally in the following format:

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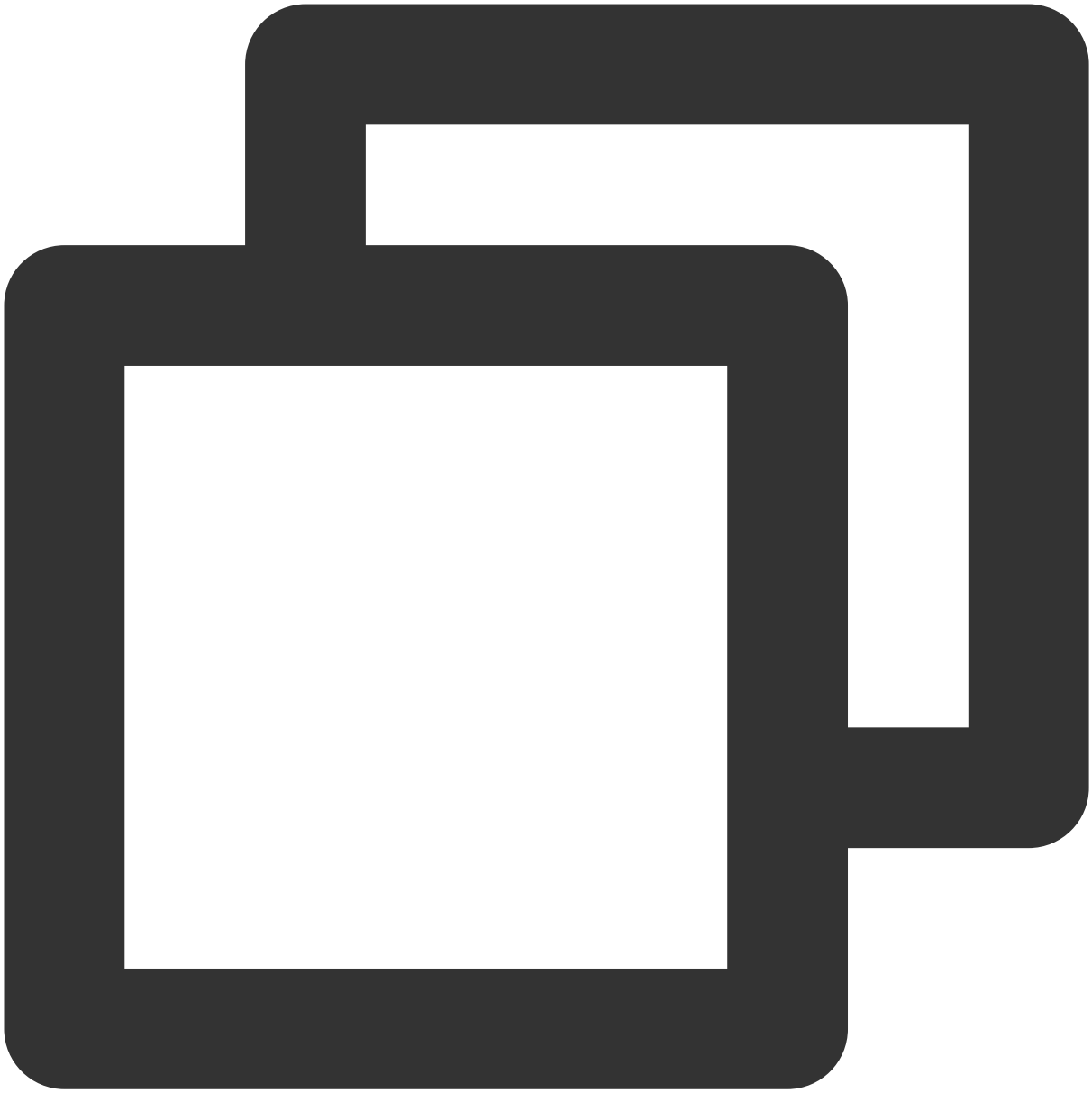

```
qcs::service_type::account:resource
```

service_type: Describes the product abbreviation, such as `cdb` here.

account: Describes the root account of the resource owner, such as `uin/326xxx46` .

resource: Describes the detailed resource information of the specific service. Each TencentDB for MySQL instance (instanceId) is a resource.

Below is a sample:

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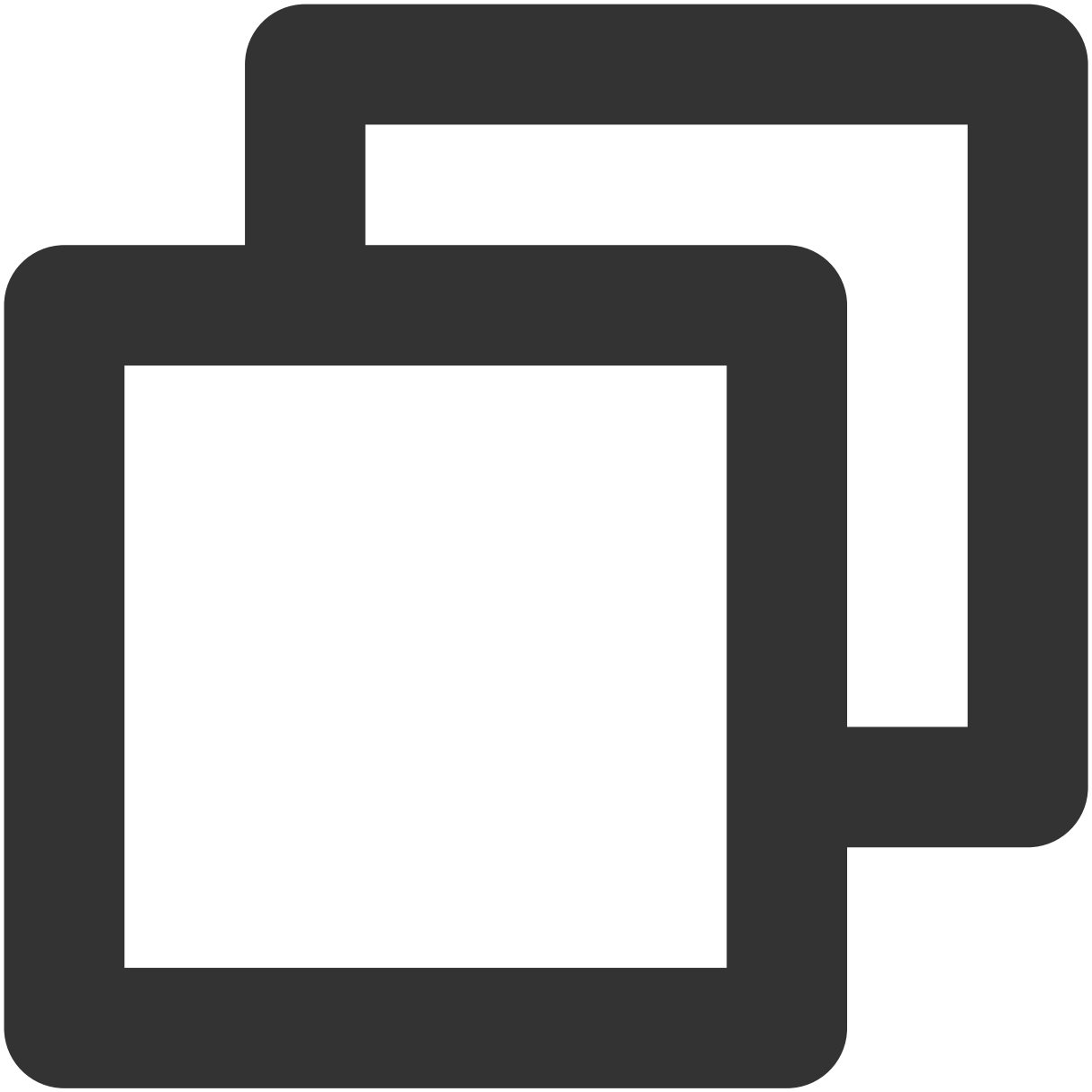

```
"resource": ["qcs::cdb::uin/326xxx46:instanceId/cdb-kfxxh3"]
```

Here, `cdb-kfxxh3` is the ID of the TencentDB for MySQL instance resource, i.e., the `resource` in the CAM policy statement.

Example

The following example only shows the usage of CAM. For the complete list of APIs used to set MySQL backup download rules, see the API documentation.

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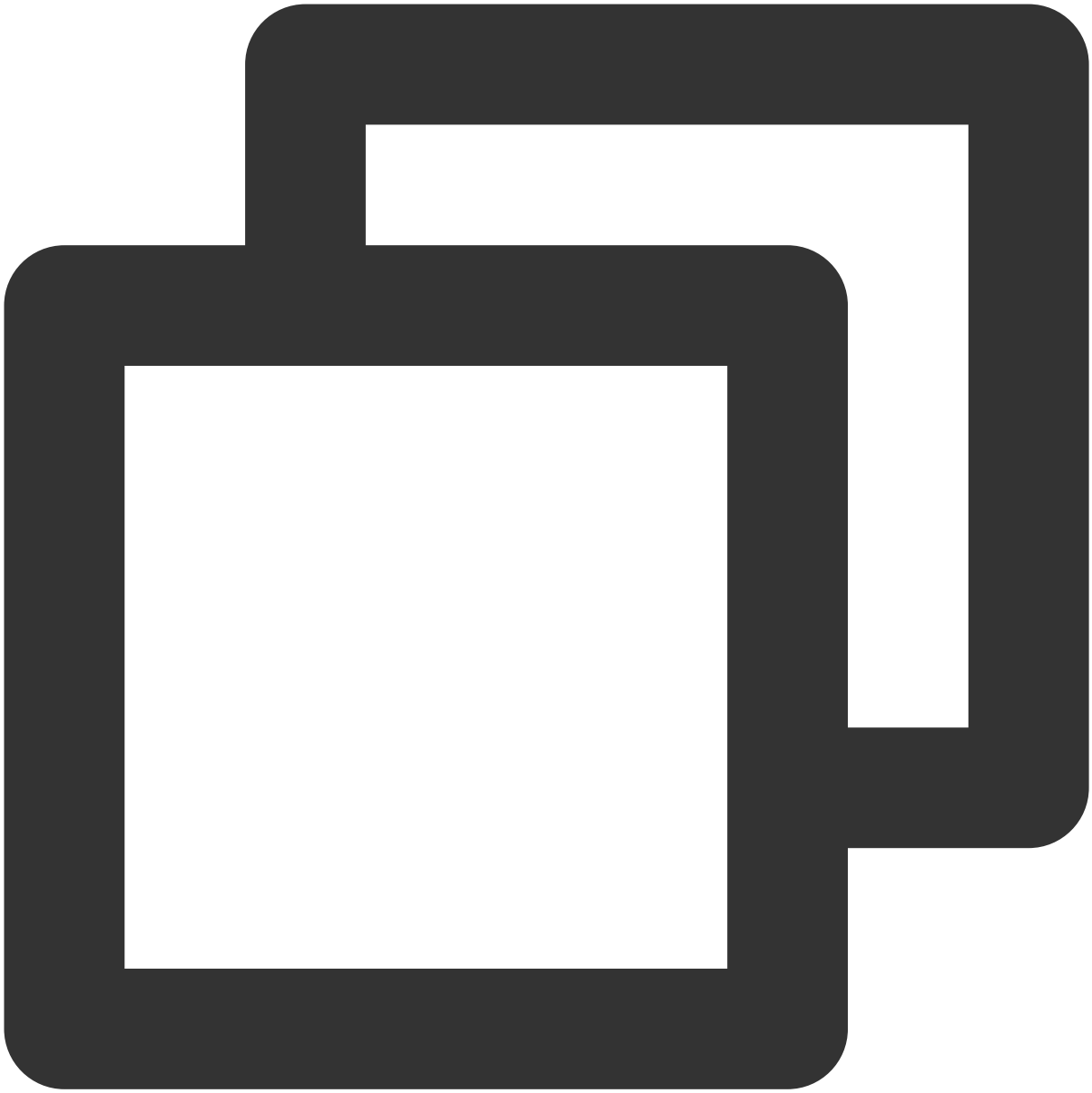

```
{
        "version":"2.0",
        "statement":
        [
            {
               "effect":"allow",
               "action": ["name/cdb: ModifyBackupDownloadRestriction"],
               "resource": ["*"]
             }
        ]
}
```

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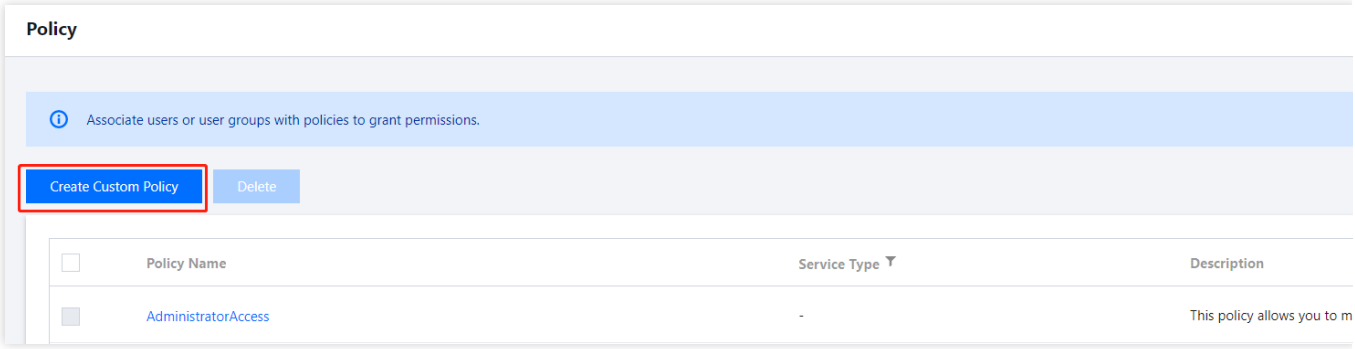
Customizing CAM policy for setting MySQL backup download rules

1. Log in to the CAM console with the root account, select **Policies** on the left sidebar, and click **Create Custom Policy**.



2. In the pop-up dialog box, select **Create by Policy Generator**.
3. On the **Select Service and Action** page, select configuration items, click **Add Statement**, and click **Next**.
Effect: Select **Allow** or **Deny** for the action.
Service: Select **TencentDB for MySQL**.
Action: Select all APIs of setting MySQL backup download rules. For more information, see the API documentation.
Resource: For more information, see Resource Description Method. You can enter `*` to indicate that the backup download rules of TencentDB for MySQL instances in the specified region can be set.

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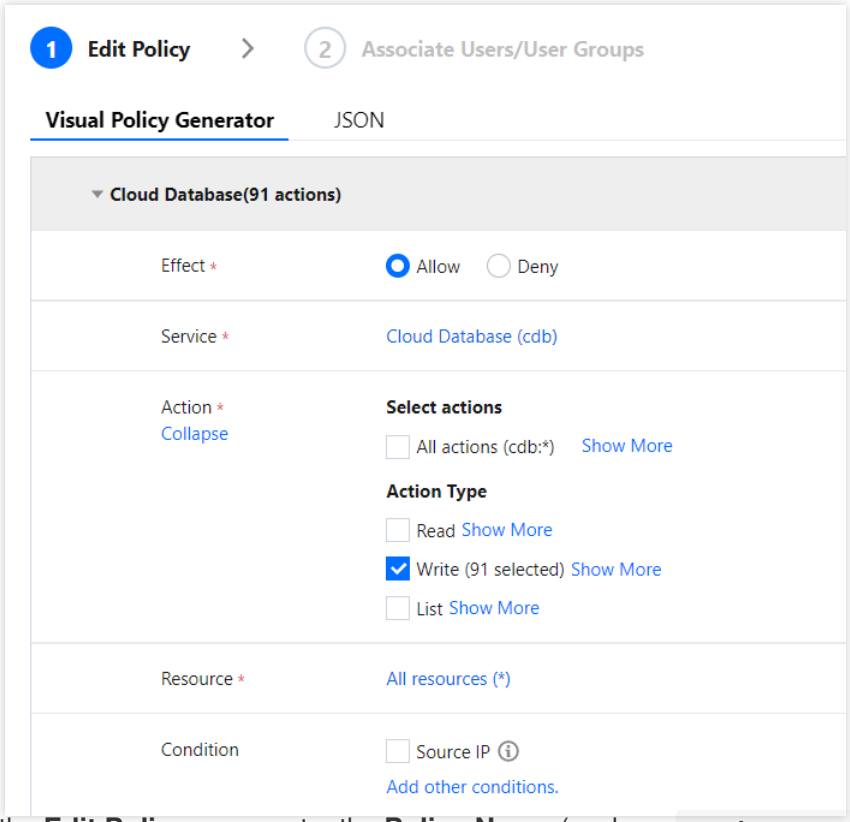
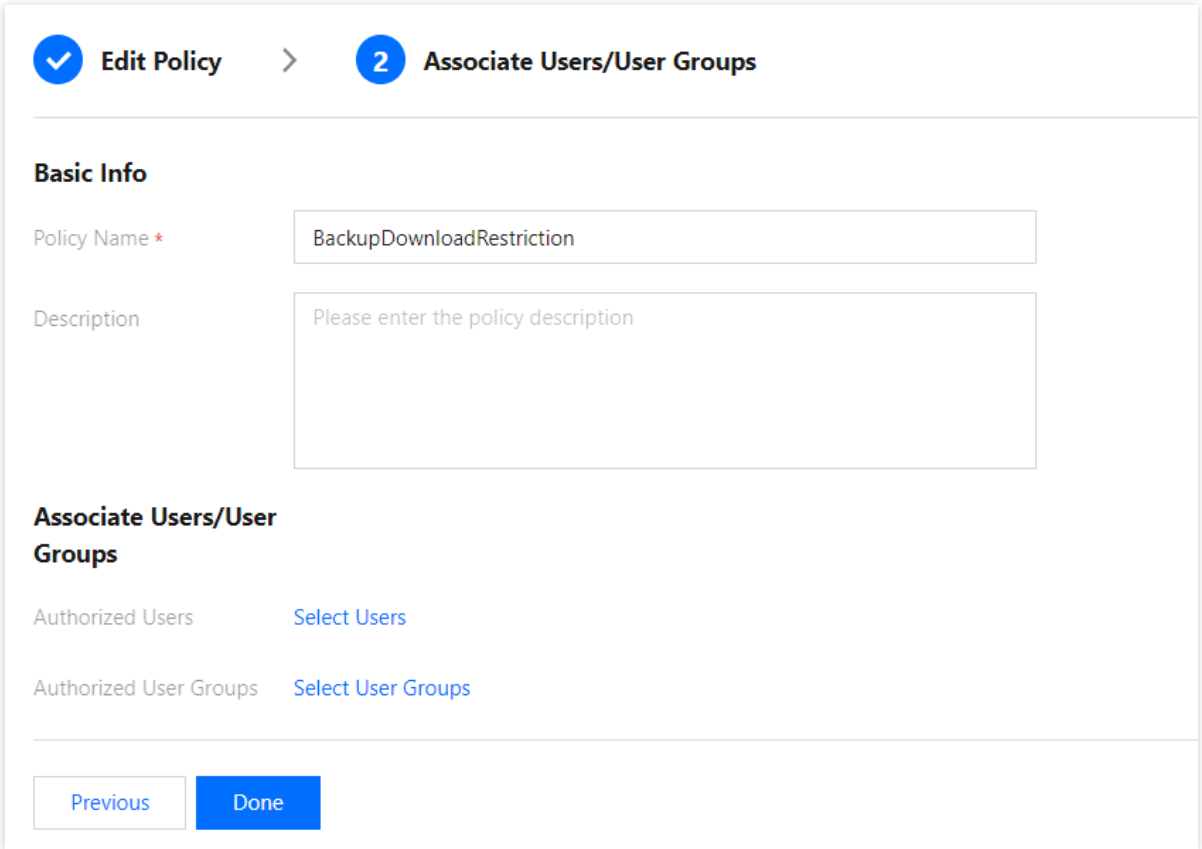


4. On the **Edit Policy** page, enter the **Policy Name** (such as `BackupDownloadRestriction`) as required and **Description** and click **Done**.



5. Return to the policy list and you can view the custom policy just created.

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Viewing Backup Space

Last updated：2024-07-23 10:11:56

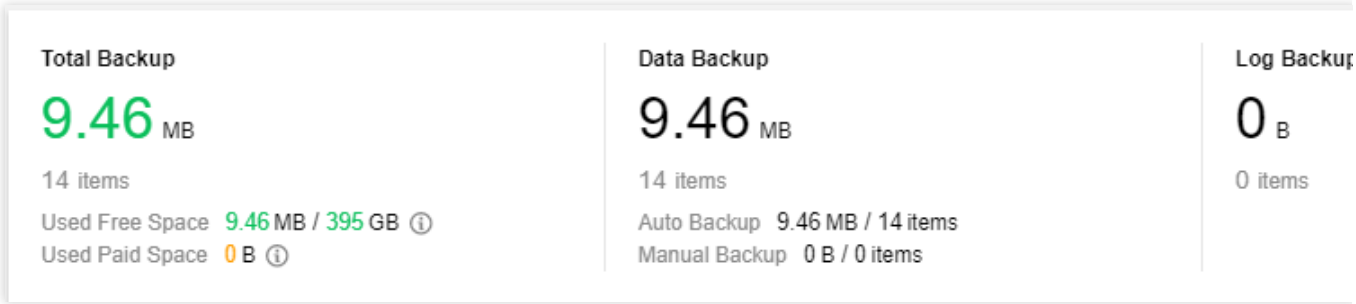
This document describes how to view the TencenDB for MySQL instance backup space and free tier in the console.

Overview

For two-node and three-node instances of local disk edition, the backup space occupied by TencentDB for MySQL instance backup files is allocated by region. It is equivalent to the total storage capacity used by all database backups in a region, including automatic data backups, manual data backups, and log backups. Increasing the backup retention period or manual backup frequency will use more database backup space.
For single-node instances of cloud disk edition, the backup space occupied by TencentDB for MySQL instance backup files is allocated by instance. The free backup space of one instance is equivalent to 200% of its storage space.

Viewing the backup space and free tier of an instance of local disk edition

1. Log in to the TencentDB for MySQL console and select **Database Backup** on the left sidebar.
2. Select a region at the top to view its backup information on the **Overview** tab, including total backup, backup trend, and real-time backup statistics.
Total Backup: This section displays the size and quantity of all backups, data backups, and log backups as well as the free tier occupied by all the backups.
Note:
Green: The total backup space used does not exceed the free tier.
Orange: The total backup space used has exceeded the free tier and incurred fees. For more information, see Backup Space Billing.



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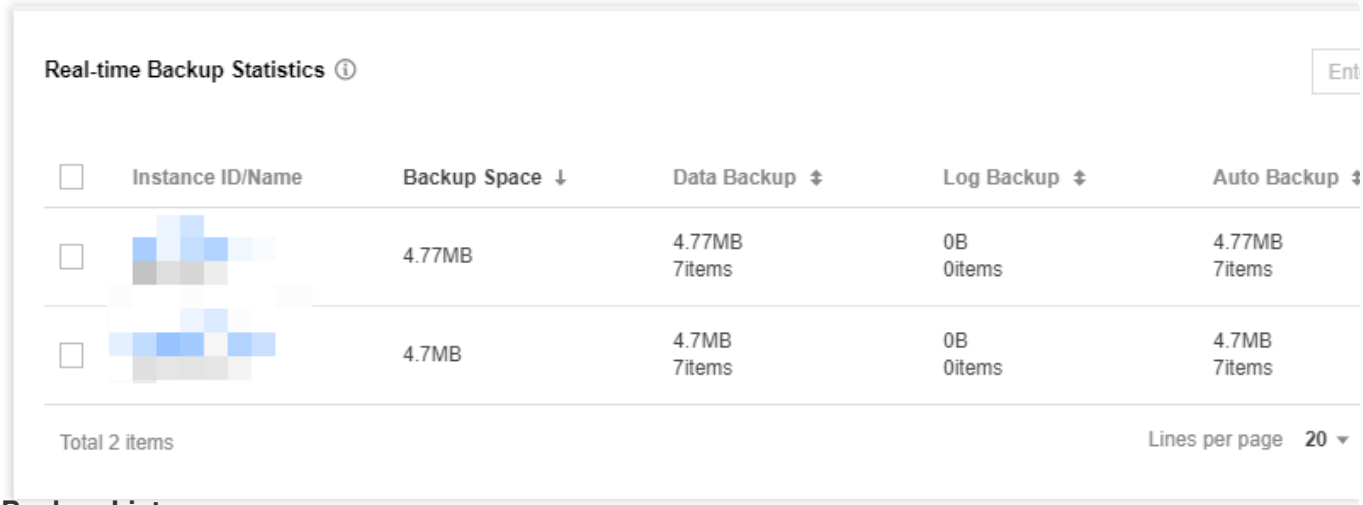
Backup Trend: This section displays the trends of all backups, data backups, and log backups as well as the free space.
Real-Time Backup Statistics: This section displays the instance IDs/names (you can click an ID/name to enter the instance details page), backup space (which can be sorted by size), and data/log backups in the selected region. You can search for an instance by ID/name in the search box in the top-right corner.
3. Select **Backup List** at the top, where the backup list is divided into data backups and log backups. Click an instance name in the list to enter the instance details page. The backup list supports filtering by time period and fuzzy search by instance ID/name.



Data Backup List
Filtering by information field is supported:
Type: All, logical cold backup, physical cold backup.
Backup Mode: **All**, **Automatic**, **Manual**.
Backup Method: Currently, only full backup is supported.
Backups can be sorted by backup time, task start time, task end time, or backup size.
Click **Details** in the **Operation** column to enter the **Backup and Restoration** tab, where you can click **Download** to download backups. You can only **delete** manual backups
Log Backup List
Backups can be sorted by log data start time or end time.
Click **Details** in the **Operation** column to enter the **Backup and Restoration** tab, where you can click **Download** to download logs.

Viewing the backup space and free tier of an instance of cloud disk edition

1. Log in to the TencentDB for MySQL console. In the instance list, click the ID of the target instance or **Manage** in the **Operation** column to enter the instance management page.

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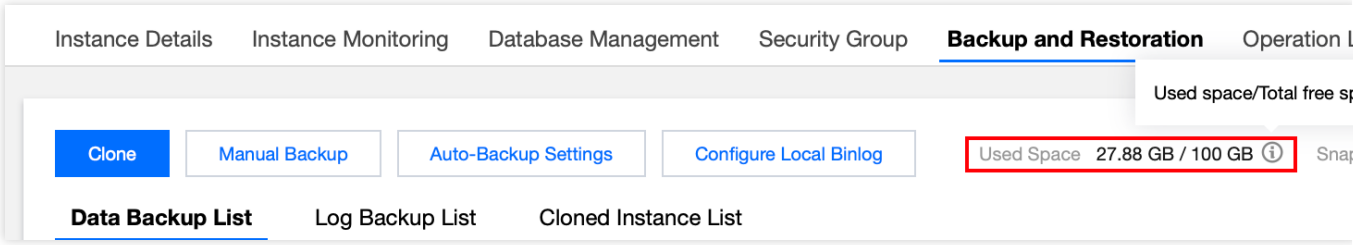
2. On the instance management page, select **Backup and Restoration** to view the used backup space and free space of the instance.



FAQs

How will I be charged for backup space beyond the free tier? How can I reduce the costs of backup space?

For more information, see Backup Space Billing.

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Configuring Local Binlog Retention Policy

Last updated：2024-07-23 10:12:39

This document describes how to set the binlog retention period for a TencentDB for MySQL instance in the console.

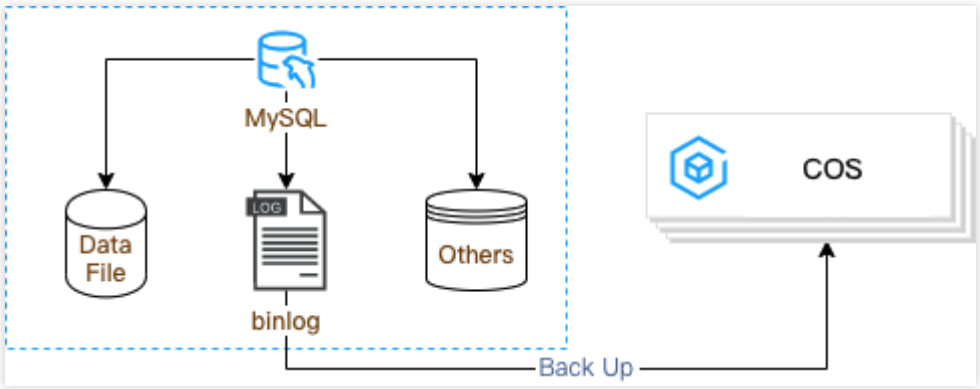
Note:

You cannot configure local binlog retention for single-node instances of cloud disk edition.

If there is a disaster recovery instance for the source instance, the local binlog retention period cannot be shorter than 120 hours.

Binlog Description

Binlog grows fast when a TencentDB for MySQL instance executes large transactions or lots of DML operations. Binlog is split every 256 MB and uploaded to COS. You can see the uploaded binlog files in the log list in the console.



Overview

Before being uploaded to COS, binlog files are stored on the instance disk (i.e., locally). You can set the local binlog retention period, control the maximum percentage of disk space binlog can take up, or expand disk space in the console. We recommend that you clear data no longer used to keep the disk utilization below 80%.

MySQL's data sync is based on binlog. To ensure database restorability, stability, and high availability, binlog cannot be disabled in TencentDB for MySQL.

The generated binlog files are automatically backed up to COS through the automatic backup feature provided by TencentDB for MySQL. The binlog files whose backups are already uploaded to COS will be cleared according the local binlog retention policy. To prevent exceptions, the binlog files in use cannot be cleared even they expire. Therefore, the local binlog clearing has a delay.

Note:

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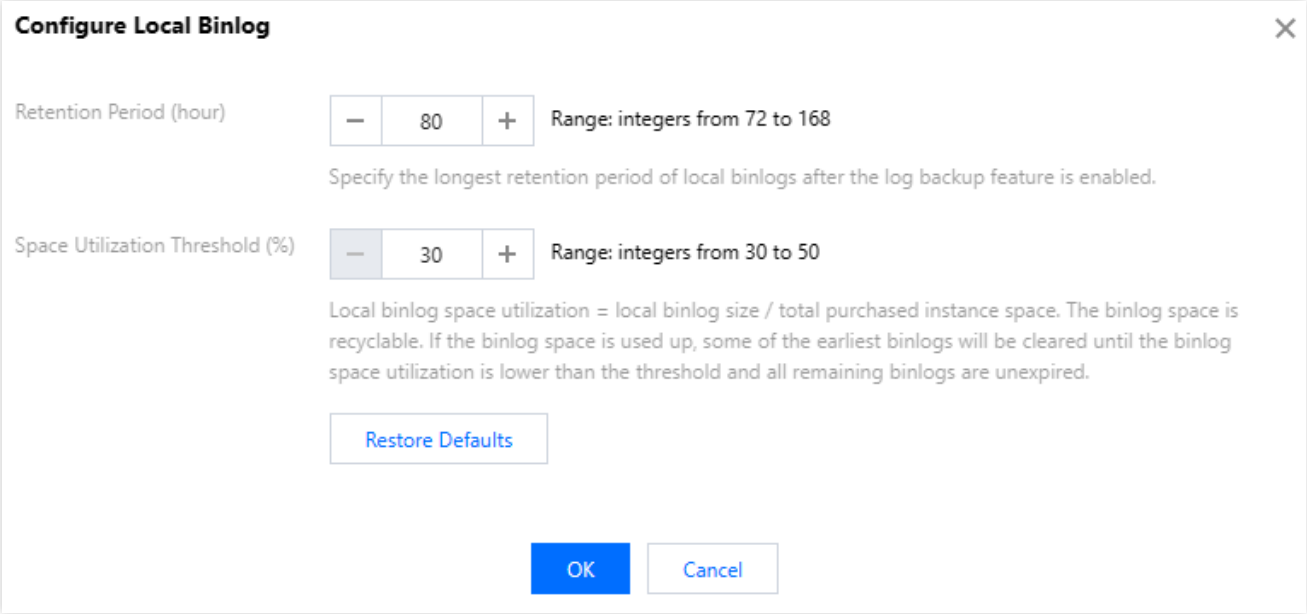
Rule for clearing expired binlog files:
The local binlog files are checked once every 60 seconds. If a binlog file's start time or space usage does not meet the set retention rule, it will be added to the queue of to-be-deleted files. The binlog files in the queue will be sorted by time and deleted starting from the oldest file one by one until the queue is cleared.

Directions

1. Log in to the TencentDB for MySQL console and click an instance ID in the instance list to enter the instance management page.
2. On the instance management page, select the **Backup and Restoration** and click **Configure Local Binlog**.
3. In the pop-up window, specify the retention period and space utilization threshold and click **OK**.



FAQs

Will database restoration be affected if the local binlog retention period is too short?

No, because the generated binlog files will be uploaded to COS through the automatic backup feature as soon as possible, and those not uploaded yet cannot be cleared. However, too short a retention period will affect the speed of rollback.

What is the default retention policy for local binlog?

By default, the local binlog retention period is 120 hours, and the maximum binlog space utilization is 30%. You can customize the retention period as needed. If there is a disaster recovery instance for the source instance, it cannot be shorter than 120 hours; otherwise, it can range from 72 to 168 hours.

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Will binlog files take up the instance disk space?

Yes. Before the binlog files are uploaded to COS and cleared according to the retention policy, they will be stored on the instance disk.

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Restoring Database from Backup File
Restoring Database from Physical Backup

Last updated：2024-02-18 11:32:00

Overview

Note:

To save the storage space, physical and logical backups in TencentDB for MySQL will be compressed with qpress and then packed with xbstream offered by Percona.

The open-source Percona XtraBackup can be used to back up and restore databases. This document describes how to use XtraBackup to restore a physical backup file of TencentDB for MySQL instance to a CVM-based self-built database.

Note:

If you use the TDE or Instant DDL feature, you cannot restore data from a physical backup in a self-built system.

XtraBackup only supports Linux but not Windows.

For more information about how to restore data in Windows, see Offline Data Migration > Data Migration with Command Line Tool.

Prerequisites

Download and install XtraBackup.

For MySQL 5.6 and 5.7, download Percona XtraBackup 2.4.6 or later at Percona official website. For more information on installation, see Percona XtraBackup 2.4 documentation.

For MySQL 8.0, download Percona XtraBackup 8.0.22-15 or later at Percona official website. For more information on installation, see Percona XtraBackup 8.0 documentation.

Supported instance architectures: two-node or three-node MySQL

Instances with TDE enabled cannot be restored from a physical backup.

Note:

This document takes a CVM instance on CentOS and a MySQL 5.7 instance as an example.

Step 1.
Download the backup file

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You can download data backups and log backups of TencentDB for MySQL instances in the console.

Note:

Each IP can have up to 10 download links by default, with a download speed limit of 20–30 Mbps each.

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the **Backup and Restoration** > **Data Backup List** tab, locate the backup file to be downloaded and click **Download** in the **Operation** column.
3. Copy the download address in the pop-up dialog box, log in to the Linux CVM in the same VPC as the TencentDB instance as instructed in Customizing Linux CVM Configurations, and run `wget` to download the file over the high-speed private network.

Note:

You can also click **Download** to download it directly. However, this may take a longer time.

`wget` command format: wget -c 'backup file download address' -O custom filename.xb

Below is a sample:

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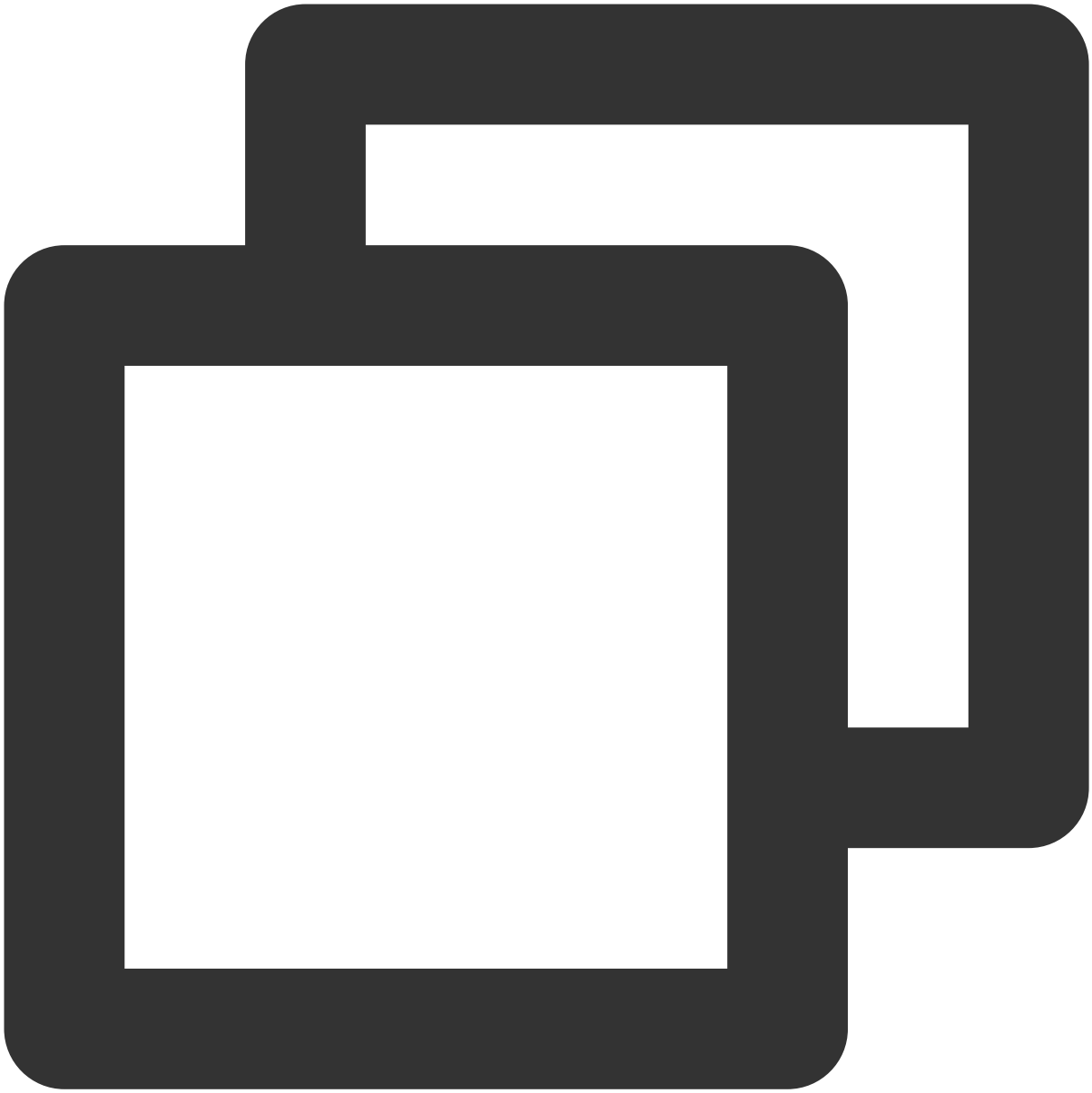

```
wget -c 'https://mysql-database-backup-sh-1218.cos.ap-nanjing.myqcloud.com/12427%2F
```

Step 2. Download the backup decryption key (required only if the backup encryption feature is enabled)

You can download data backups and decryption keys of TencentDB for MySQL instances in the console.

Note:

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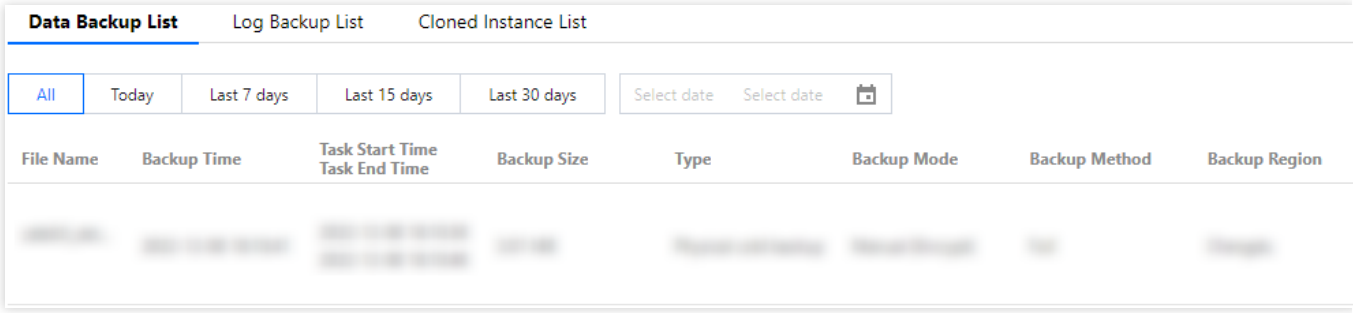
A decryption key is generated for each database backup separately. If the backup encryption feature is enabled, you need to download and save the backup file together with the decryption key.

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the **Backup and Restoration** > **Data Backup List** tab, locate the decryption key of the backup file to be downloaded and click **Download Key** in the **Operation** column.



Step 3. Restore data

3.1 Unpack the backup file

Run the `xbstream` command to unpack the backup file to the target directory.

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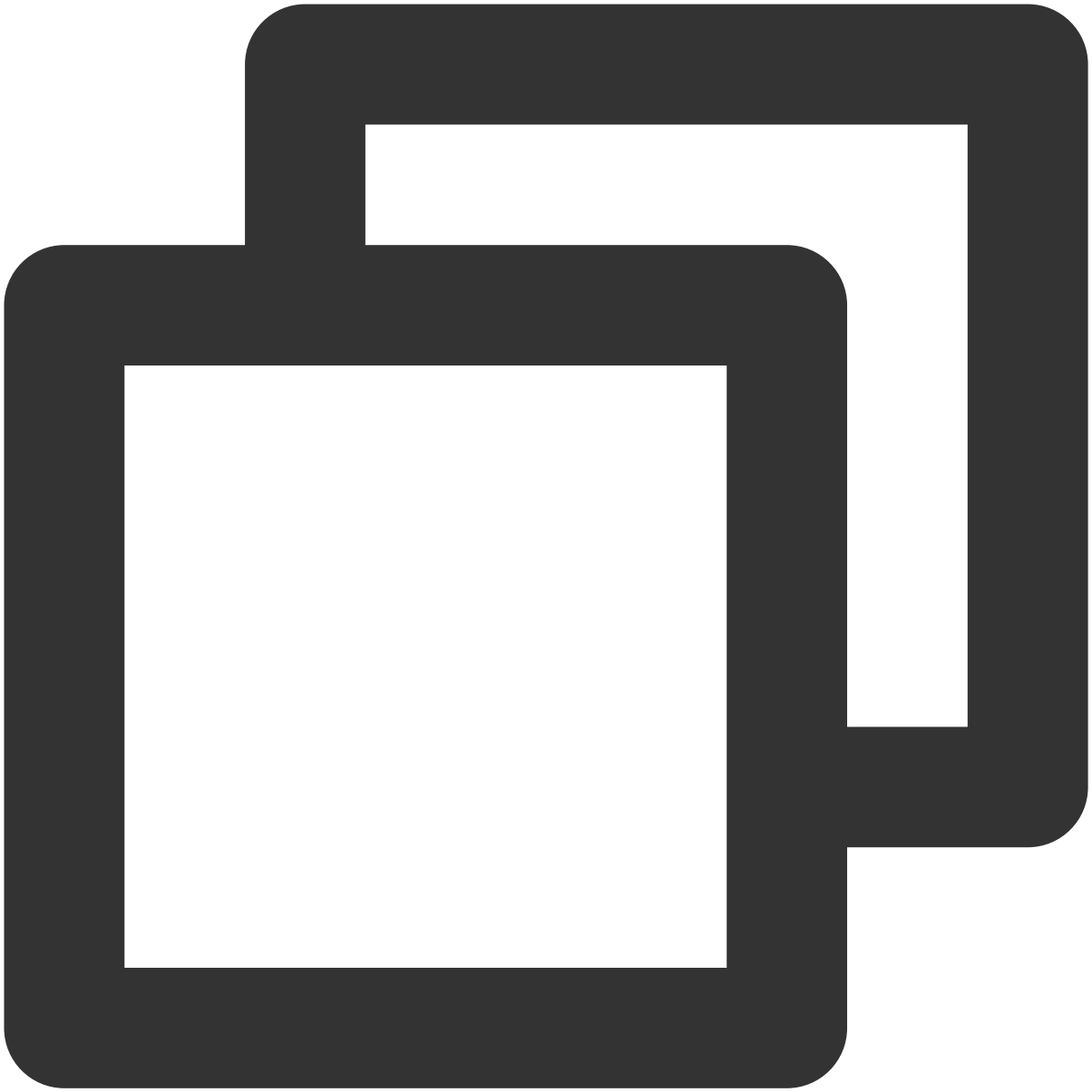

```
xbstream -x --decrypt=AES256 --encrypt-key-file=<backup key file> --parallel=2  -C
```

Note:

The target directory `/data/mysql` is used as an example in this document. You can replace it with the directory you actually use to store the backup file.

Replace `/data/test.xb` with your backup file.

The unpacking result is as shown below:

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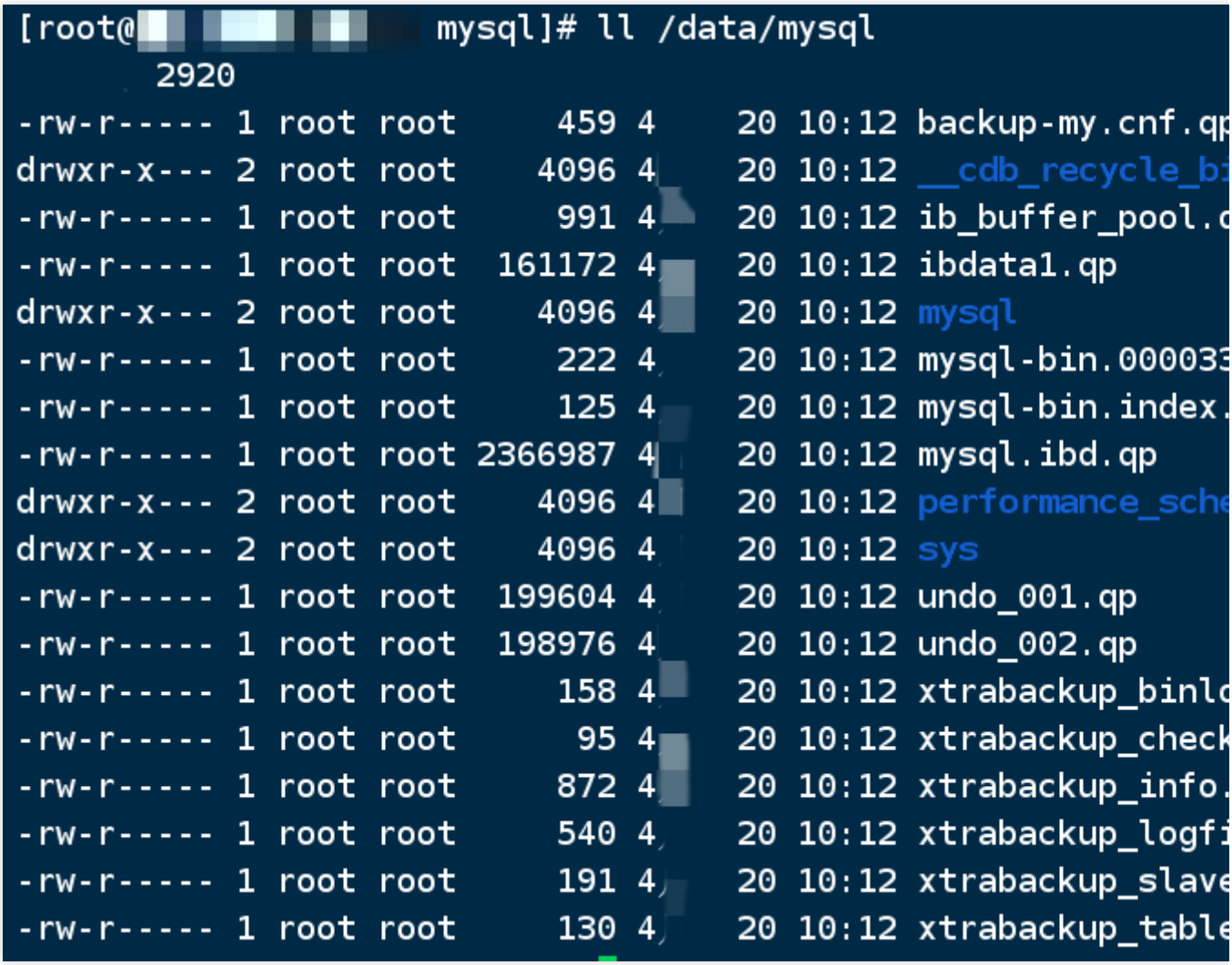

3.2 Decompress the backup file

1. Download qpress by running the following command.

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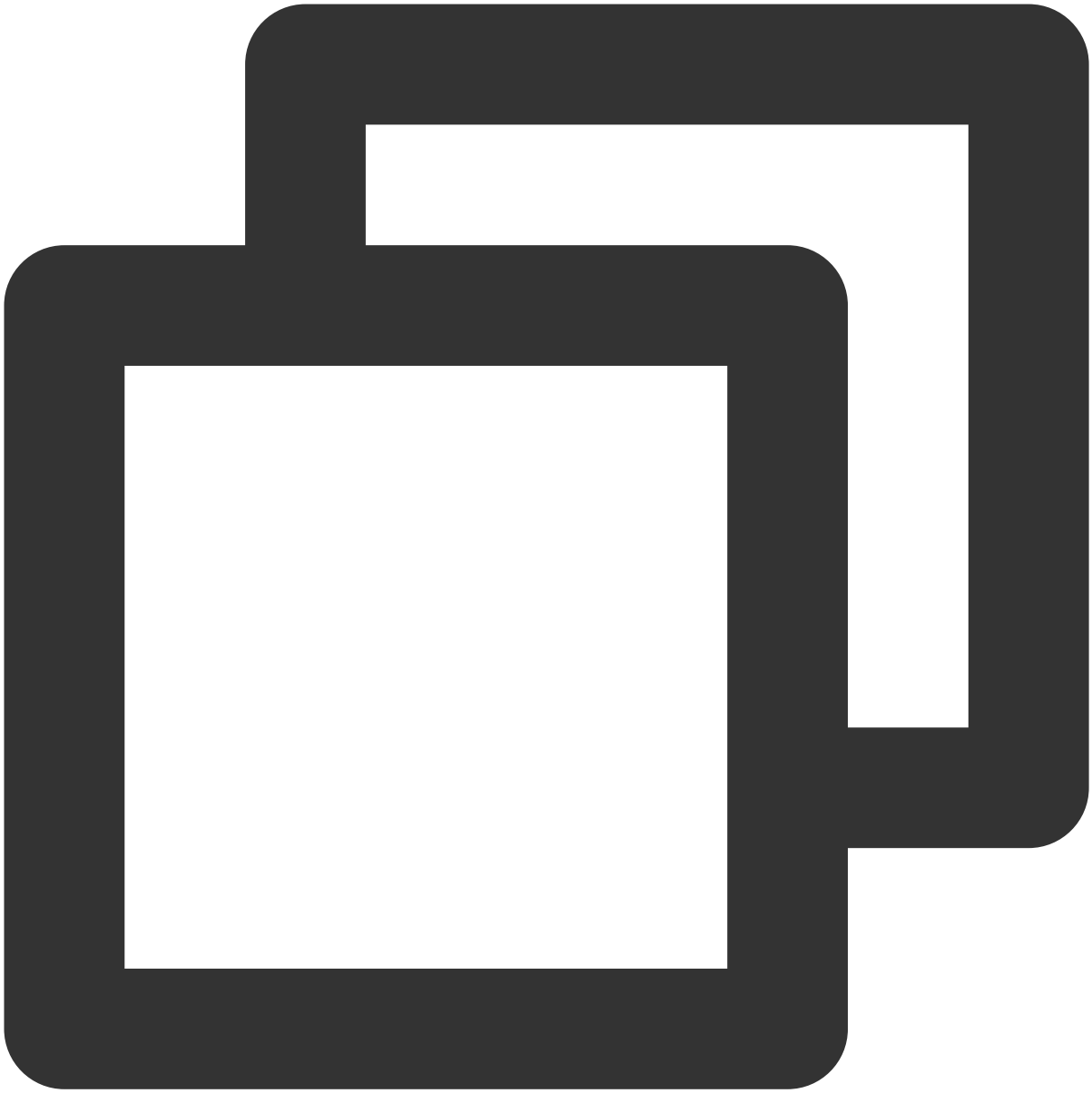

```
wget -d --user-agent="Mozilla/5.0 (Windows NT x.y; rv:10.0) Gecko/20100101 Firefox/
```

Note:

If an error is displayed during the `wget` download, you can click here to download qpress locally and upload it to the Linux CVM instance. For more information, see Uploading Files from Linux or MacOS to Linux CVM via SCP.

2. Extract the qpress binary files by running the following command.

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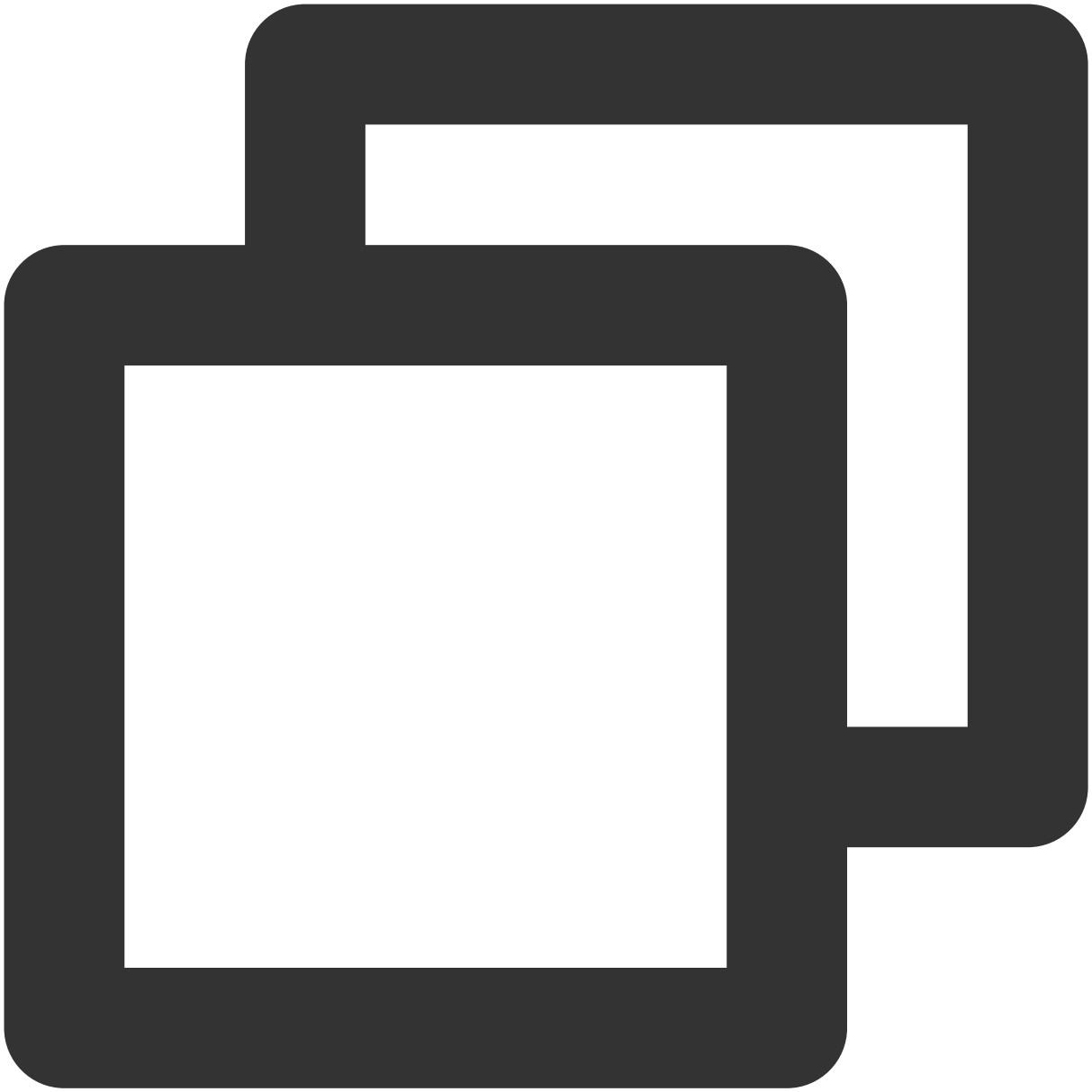

```
tar -xf qpress-11-linux-x64.tar -C /usr/local/bin
source /etc/profile
```

3. Then, decompress all `.qp` files in the target directory by running the following command:

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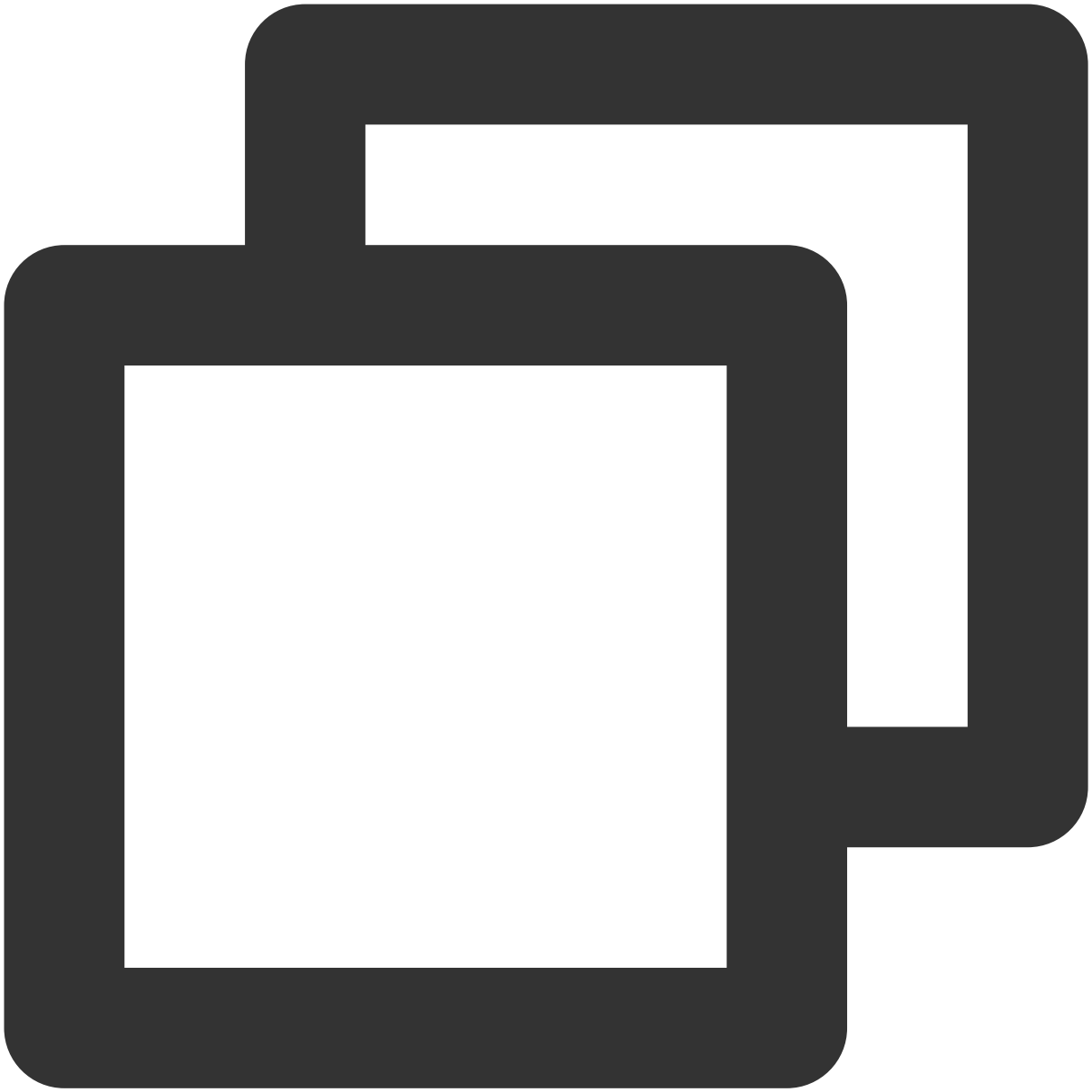

```
xtrabackup --decompress --target-dir=/data/mysql
```

Note:

`/data/mysql` is the target directory where the backup file was previously stored. You can replace it with the directory you actually use.

The `--remove-original` option is supported only in Percona Xtrabackup 2.4.6 and later.

`xtrabackup` won't delete the original files during decompression by default. If you want to delete them upon the completion of decompression, add the `--remove-original` parameter to the above command.

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```
[root@VM_17_57_centos data]# xtrabackup --decompress  --target-dir=/data
xtrabackup: recognized server arguments: --datadir=/var/lib/mysql --log_bin=/var/lib/mysql/mysql-bin --server-id=1573
xtrabackup: recognized client arguments: --datadir=/var/lib/mysql --log_bin=/var/lib/mysql/mysql-bin --server-id=1573 --decomp
xtrabackup version 2.4.12 based on MySQL server 5.7.19 Linux (x86_64) (revision id: 170eb8c)
181204 10:39:13 [01] decompressing ./test/fc1.ibd.qp
181204 10:39:13 [01] decompressing ./test/fc2.ibd.qp
181204 10:39:13 [01] decompressing ./test/sbtest4.frm.qp
181204 10:39:13 [01] decompressing ./test/sbtest3.ibd.qp
181204 10:39:14 [01] decompressing ./test/fc1.frm.qp
181204 10:39:14 [01] decompressing ./test/sbtest5.frm.qp
181204 10:39:14 [01] decompressing ./test/sbtest7.frm.qp
181204 10:39:14 [01] decompressing ./test/sbtest2.frm.qp
181204 10:39:14 [01] decompressing ./test/sbtest1.ibd.qp
181204 10:39:14 [01] decompressing ./test/sbtest4.ibd.qp
181204 10:39:14 [01] decompressing ./test/sbtest9.ibd.qp
181204 10:39:14 [01] decompressing ./test/sbtest5.ibd.qp
181204 10:39:14 [01] decompressing ./test/fc2.frm.qp
181204 10:39:14 [01] decompressing ./test/sbtest10.ibd.qp
181204 10:39:14 [01] decompressing ./test/sbtest7.ibd.qp
181204 10:39:14 [01] decompressing ./test/mytest.ibd.qp
181204 10:39:14 [01] decompressing ./test/sbtest2.ibd.qp
181204 10:39:14 [01] decompressing ./test/sbtest6.frm.qp
181204 10:39:14 [01] decompressing ./test/sbtest1.frm.qp
181204 10:39:14 [01] decompressing ./test/sbtest10.frm.qp
181204 10:39:14 [01] decompressing ./test/sbtest3.frm.qp
181204 10:39:14 [01] decompressing ./test/sbtest8.ibd.qp
181204 10:39:14 [01] decompressing ./test/sbtest6.ibd.qp
181204 10:39:14 [01] decompressing ./test/sbtest8.frm.qp
181204 10:39:14 [01] decompressing ./test/mytest.frm.qp
181204 10:39:14 [01] decompressing ./test/sbtest9.frm.qp
181204 10:39:14 [01] decompressing ./xtrabackup_logfile.qp
181204 10:39:14 [01] decompressing ./ibdata1.qp
181204 10:39:14 [01] decompressing ./undo001.qp
181204 10:39:14 [01] decompressing ./mysql/general_log.frm.qp
181204 10:39:14 [01] decompressing ./mysql/procs_priv.MYI.qp
181204 10:39:14 [01] decompressing ./mysql/ndb_binlog_index.MYI.qp
181204 10:39:14 [01] decompressing ./mysql/slow_log.frm.qp
181204 10:39:14 [01] decompressing ./mysql/general_log.CSV.qp
181204 10:39:14 [01] decompressing ./mysql/time_zone_leap_second.MYD.qp
```

3.3 Prepare the backup file

After a backup file is decompressed, perform the `apply log` operation by running the following command.

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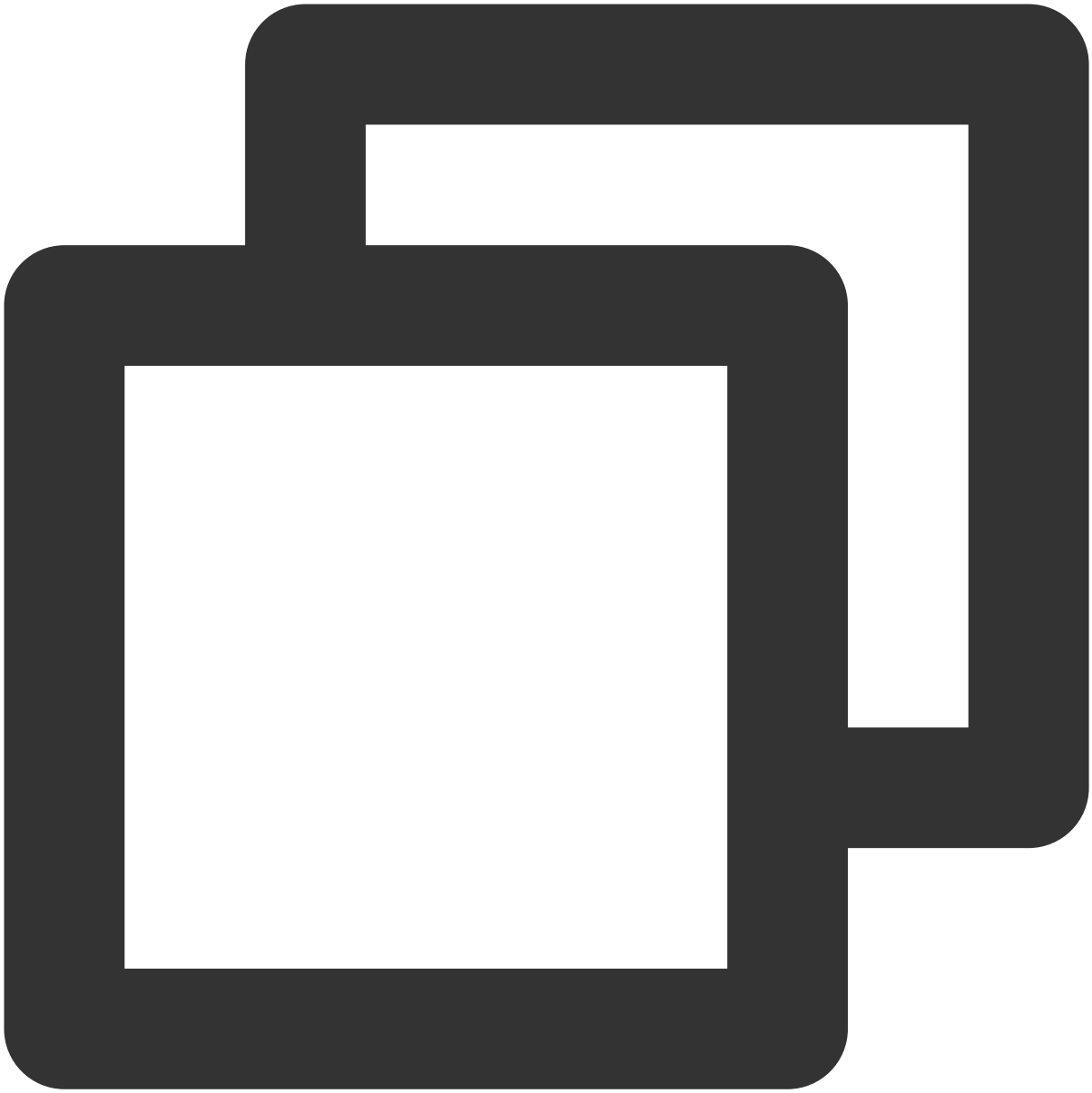

```
xtrabackup --prepare  --target-dir=/data/mysql
```

If the execution result contains the following output, it means that the `prepare` operation succeeded.

```
InnoDB: Starting shutdown...
InnoDB: Shutdown completed; log sequence number 922626089
181204 10:47:24 completed OK!
```

3.4 Modify the configuration file

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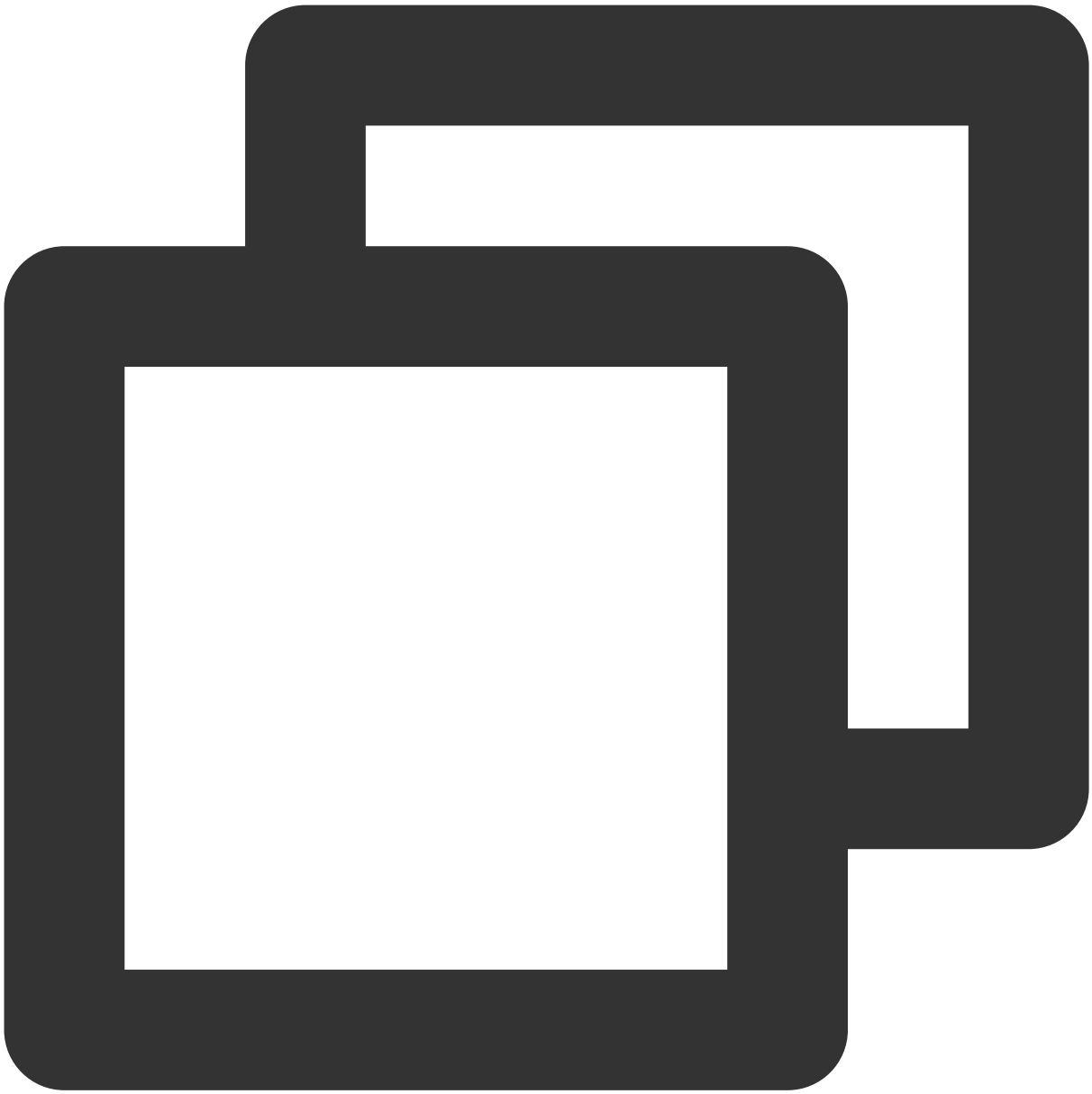
1. Run the following command to open the `backup-my.cnf` file.



```
vi /data/mysql/backup-my.cnf
```

Note:

The target directory `/data/mysql` is used as an example in this document. You can replace it with the directory you actually use.

2. Given the existing version issues, the following parameters need to be commented out from the extracted `backup-my.cnf` file.

innodb_checksum_algorithm

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innodb_log_checksum_algorithm

innodb_fast_checksum

innodb_page_size

innodb_log_block_size

redo_log_version

```
# This MySQL options file was generated by innobackup

# The MySQL server
[mysqld]
innodb_data_file_path=ibdata1:12M:autoextend
innodb_log_files_in_group=2
innodb_log_file_size=536870912
innodb_undo_directory=.
innodb_undo_tablespaces=0
server_id=0
#innodb_checksum_algorithm=innodb
#innodb_log_checksum_algorithm=innodb
#innodb_fast_checksum=false
#innodb_page_size=16384
#innodb_log_block_size=512
#redo_log_version=0
```

3.5 Modify file attributes

Modify file attributes and check whether files are owned by the `mysql` user.

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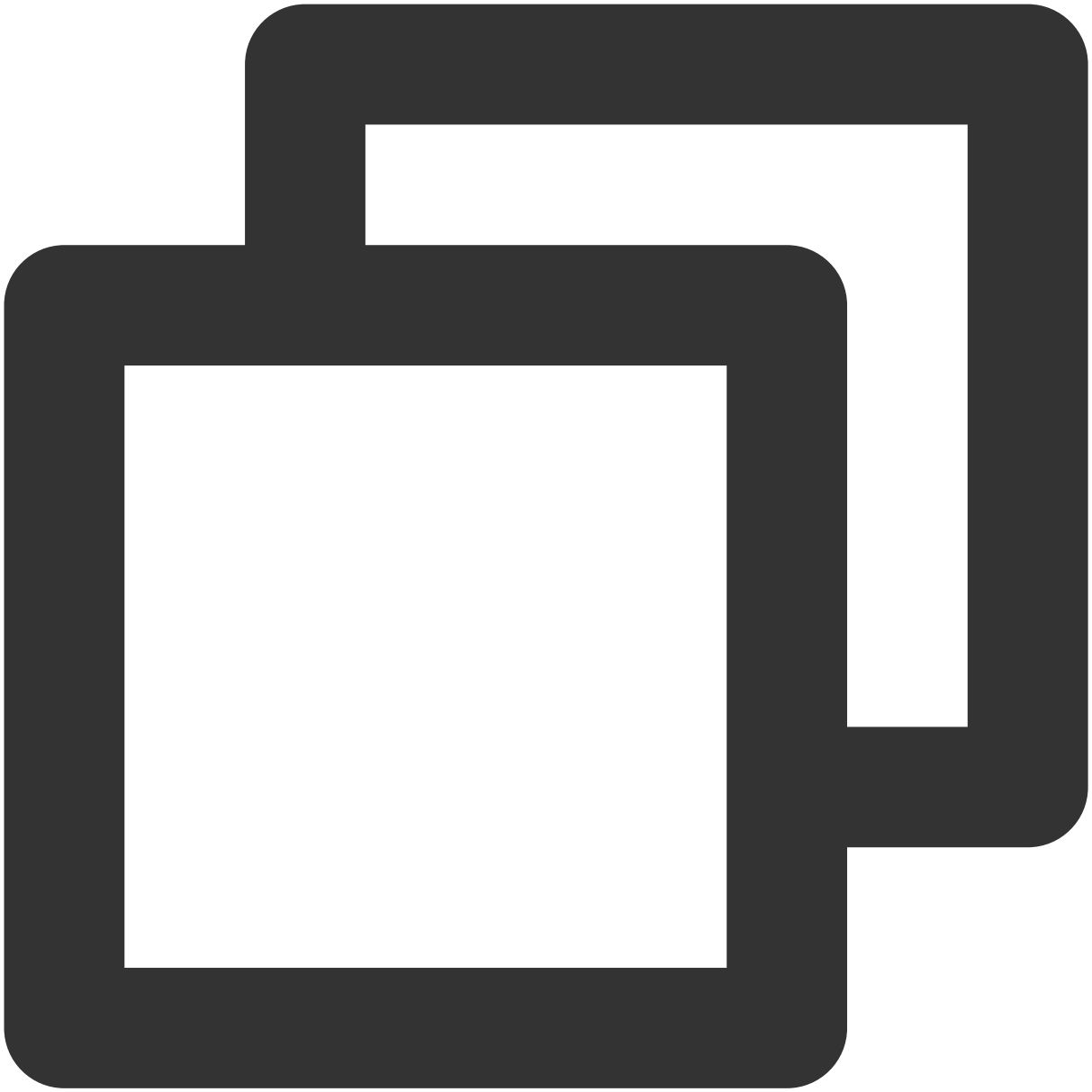

```
chown -R mysql:mysql /data/mysql
```

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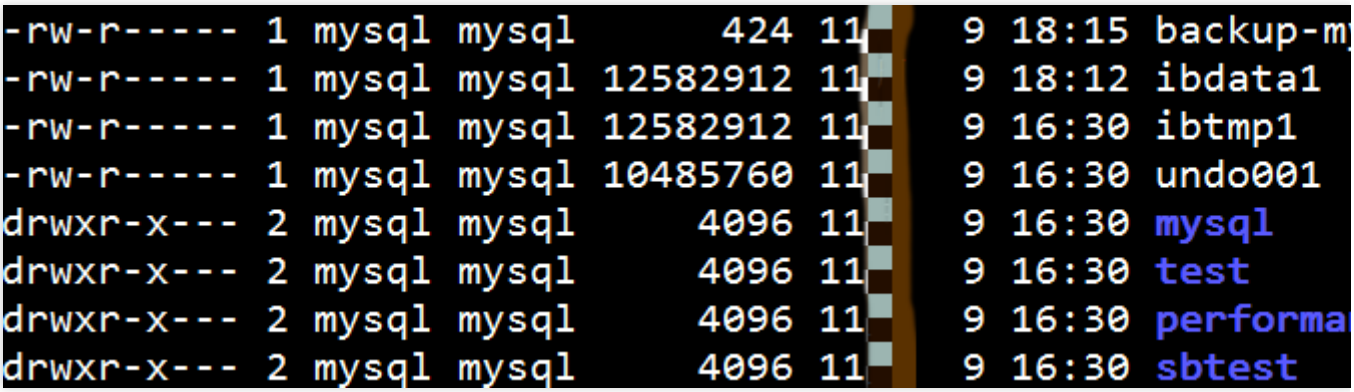

Step 4. Start the mysqld process and log in for verification

1. Start the mysqld process.

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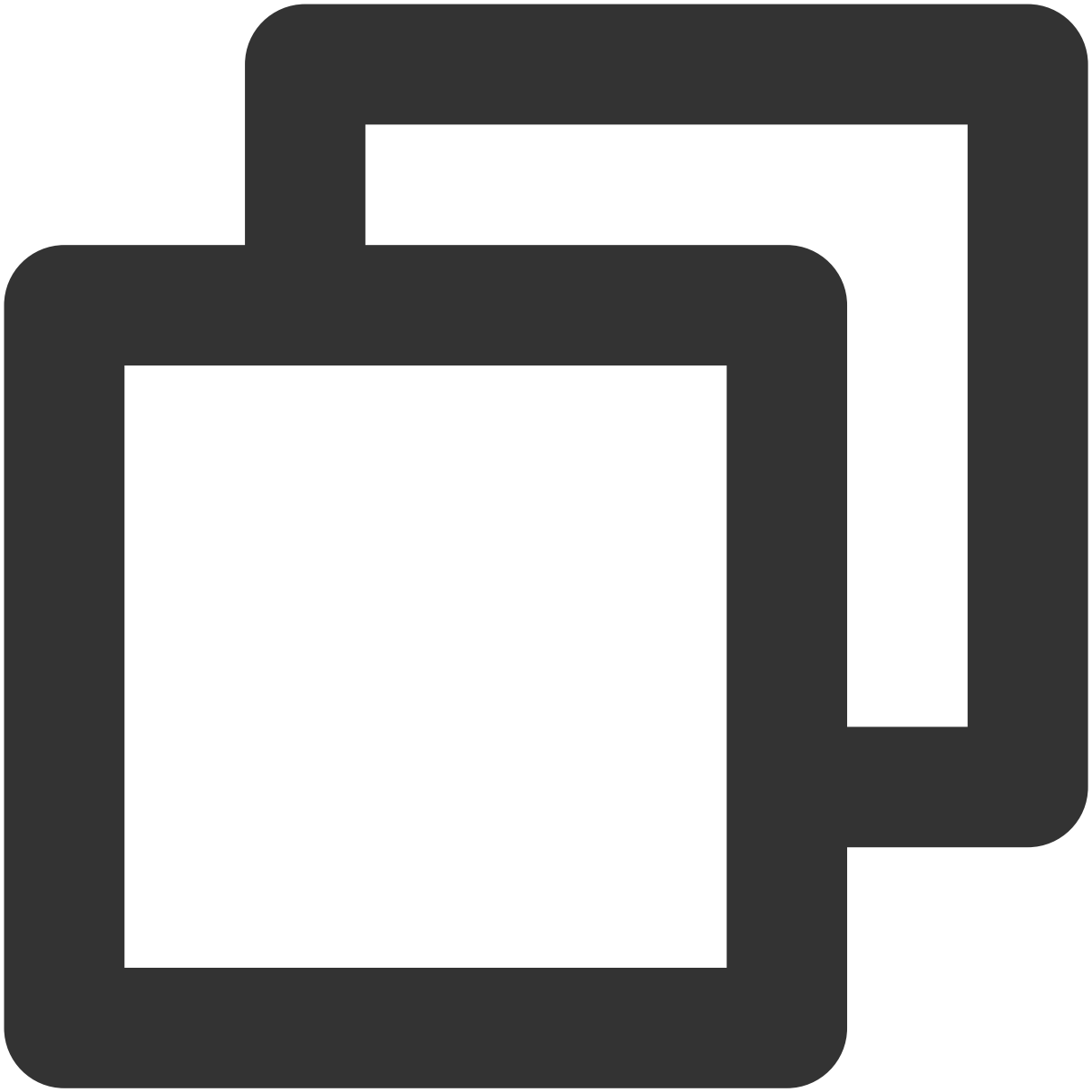

```
mysqld_safe --defaults-file=/data/mysql/backup-my.cnf --user=mysql --datadir=/data/
```

2. Log in to the MySQL client for verification.

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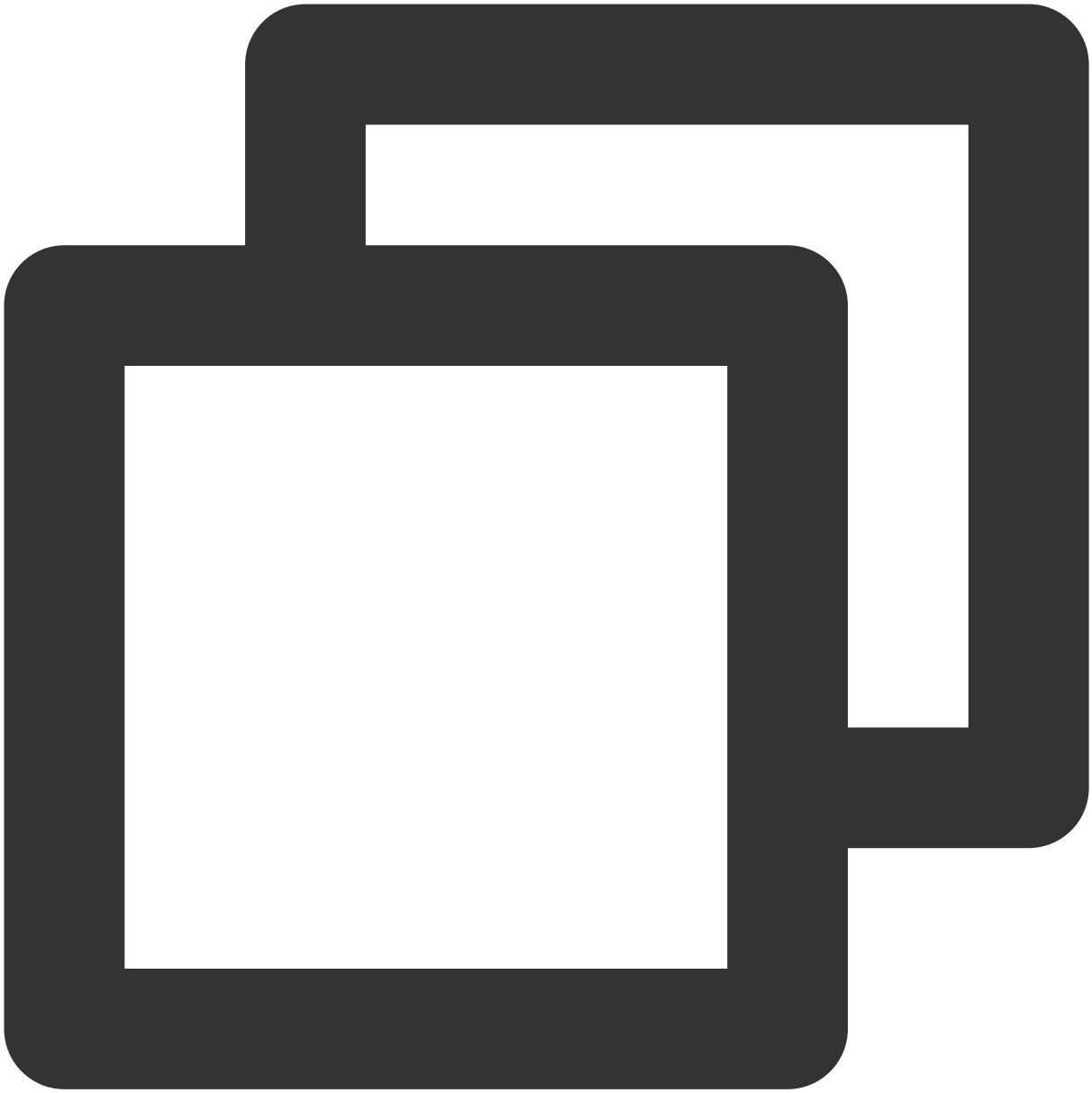

```
mysql  -uroot
```

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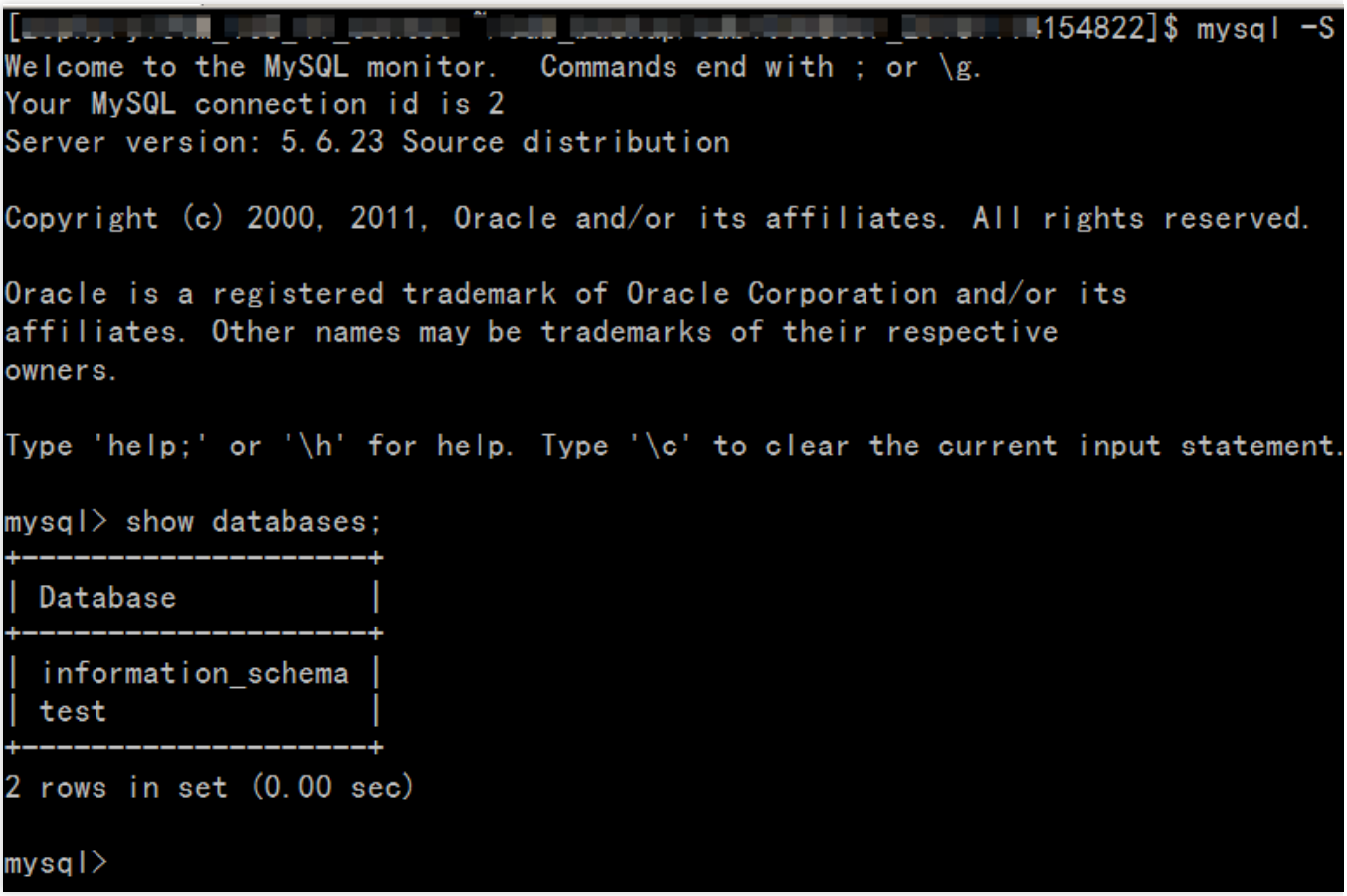

FAQs About Backup

See FAQs and Troubleshooting.

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Restoring Database from Logical Backup

Last updated：2024-07-23 10:13:16

Overview

Note:

To save the storage space, physical and logical backups in TencentDB for MySQL will be compressed with qpress and then packed with xbstream offered by Percona.

TencentDB for MySQL supports logical backup as described in Backing up Databases. In the console, you can manually create logical backup files of an entire instance or specified databases/tables and download them. This document describes how to manually restore data from logical backup files.

The restoration method described in this document only applies to Linux.

For more information about how to restore data in Windows, see Offline Data Migration > Data Migration with Command Line Tool.

Supported instance architectures: two-node or three-node MySQL

Directions

Step 1. Download the backup file

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.

2. On the **Backup and Restoration** > **Data Backup List** tab, locate the backup file to be downloaded and click **Download** in the **Operation** column.

3. We recommend that you copy the download link in the pop-up dialog box, log in to a (Linux) CVM instance in the same VPC as the TencentDB instance, and run the `wget` command for download over the private network at a higher speed. For more information, see Customizing Linux CVM Configurations

Note:

You can also click **Download** to download it directly. However, this may take a longer time.

`wget` command format: wget -c 'backup file download address' -O custom filename.xb

Below is a sample:

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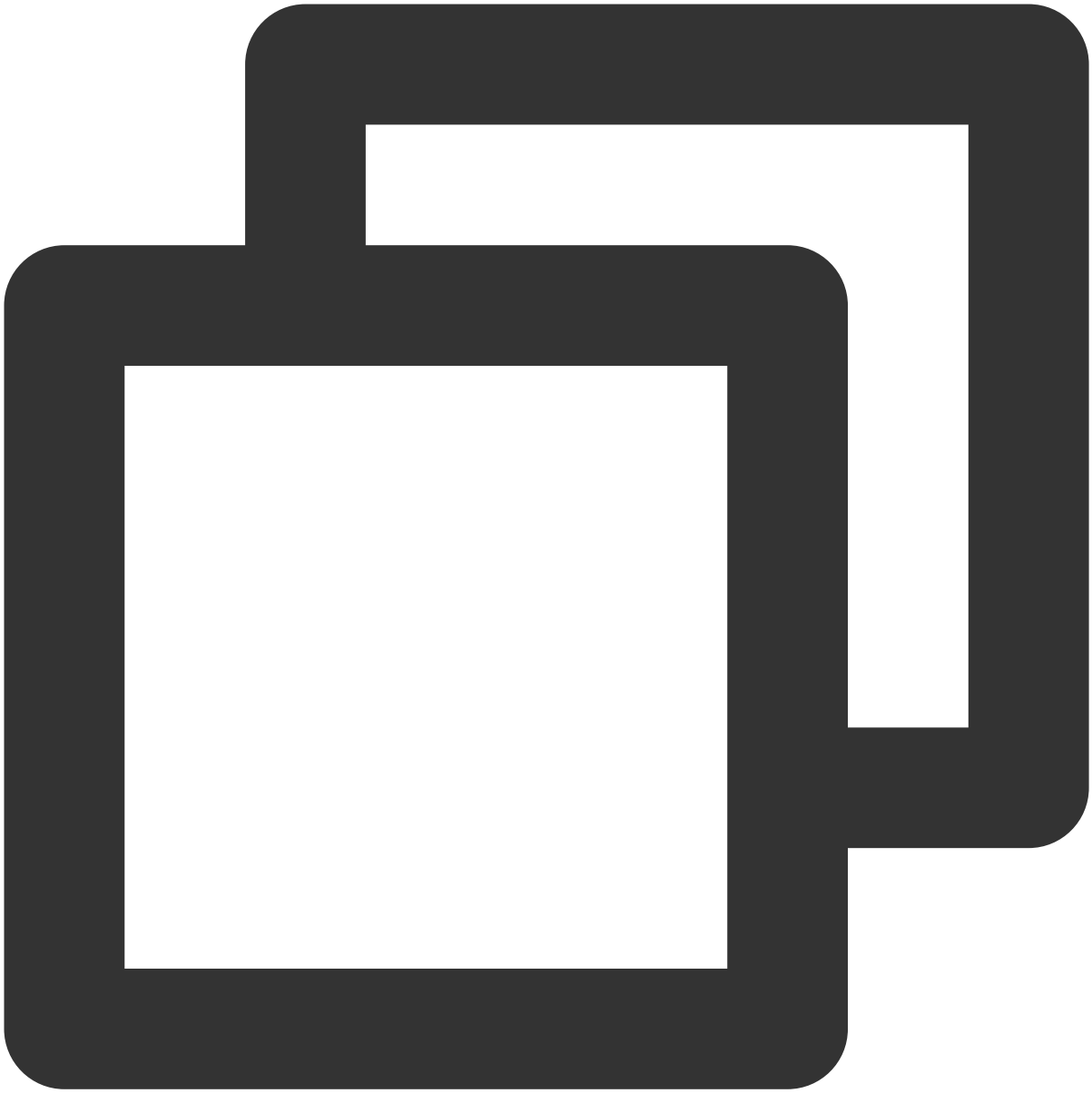

```
wget -c 'https://mysql-database-backup-bj-118.cos.ap-beijing.myqcloud.com/12427%2Fm
```

Step 2. Unpack the backup file

Unpack the backup file with xbstream.

Note:

xbstream can be downloaded at Percona official website. Select Percona XtraBackup 2.4.6 or later. For more information on installation, see Installing Percona XtraBackup on Red Hat Enterprise Linux and CentOS.

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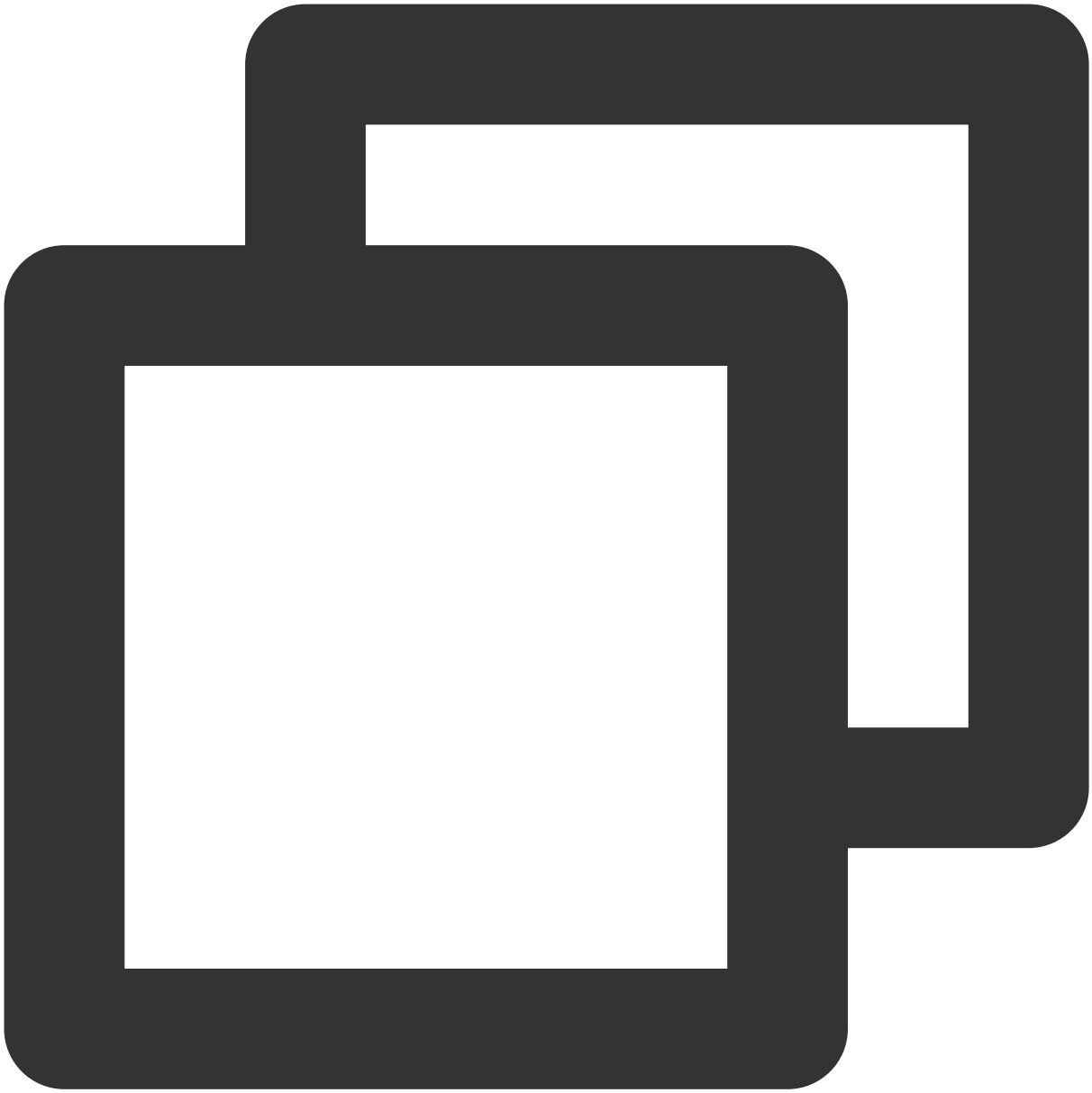

```
xbstream -x < test0.xb
```

Note:

Replace `test0.xb` with your backup file.

The unpacking result is as shown below:

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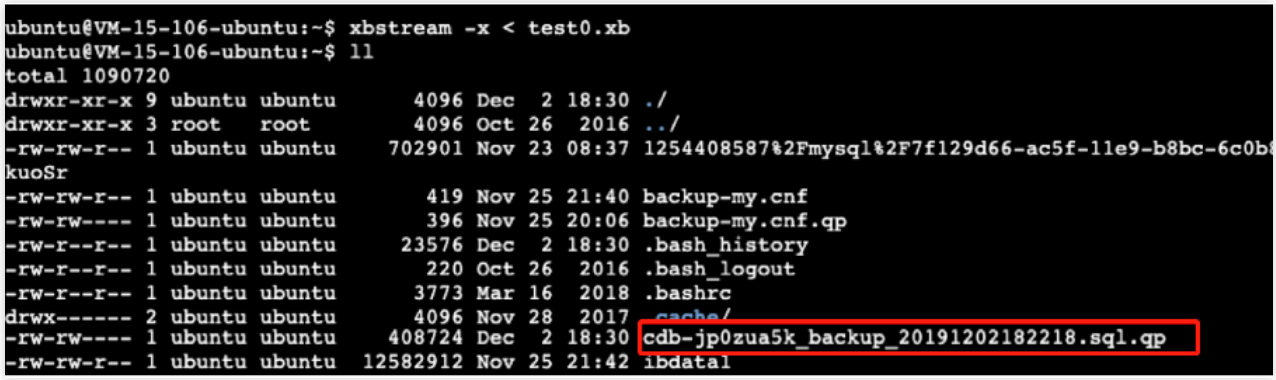

Step 3. Decompress the backup file

1. Download qpress by running the following command.

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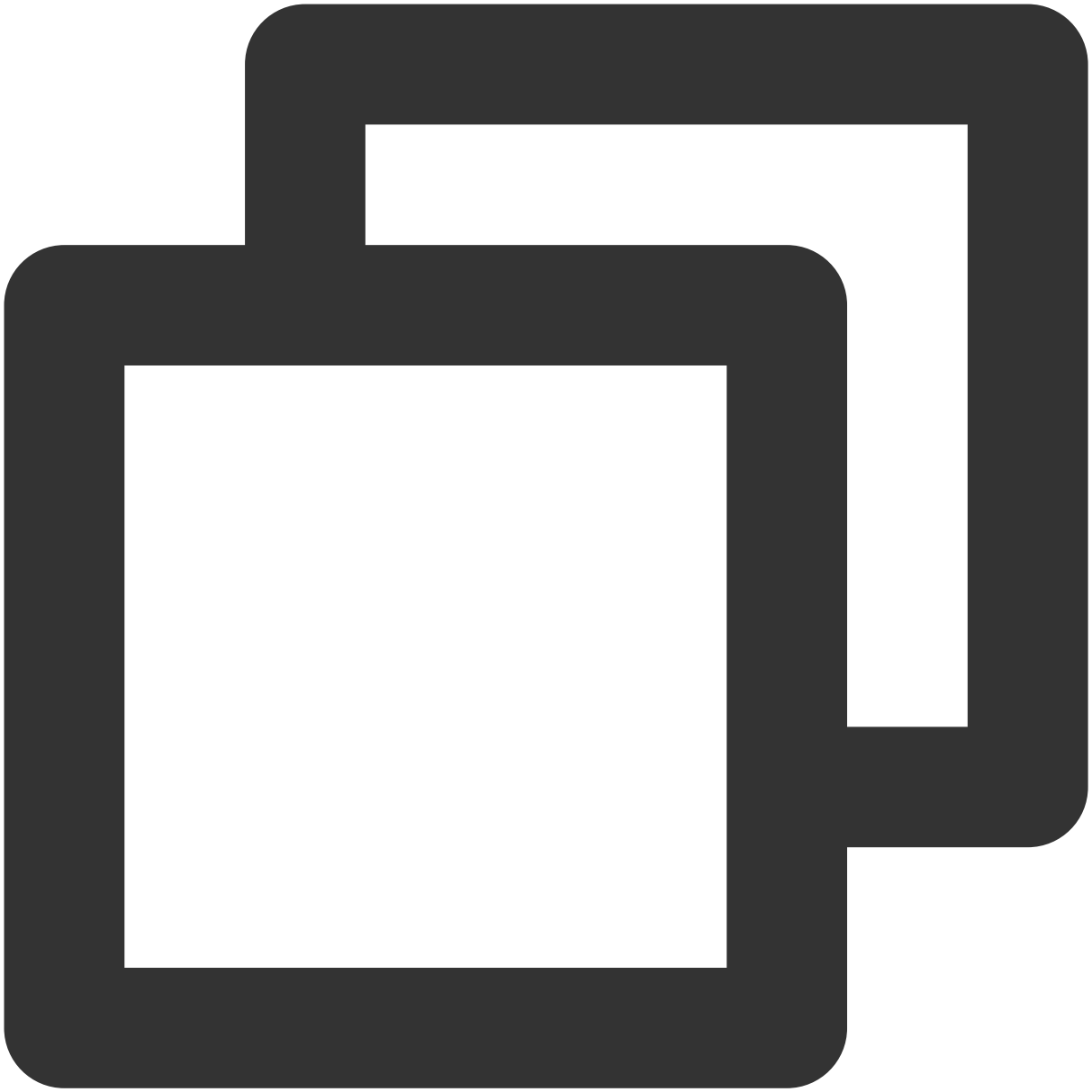

```
wget -d --user-agent="Mozilla/5.0 (Windows NT x.y; rv:10.0) Gecko/20100101 Firefox/
```

Note:

If an error is displayed during the `wget` download, you can click here to download qpress locally and upload it to the Linux CVM instance. For more information, see Uploading Files from Linux or MacOS to Linux CVM via SCP.

2. Extract the qpress binary files by running the following command.

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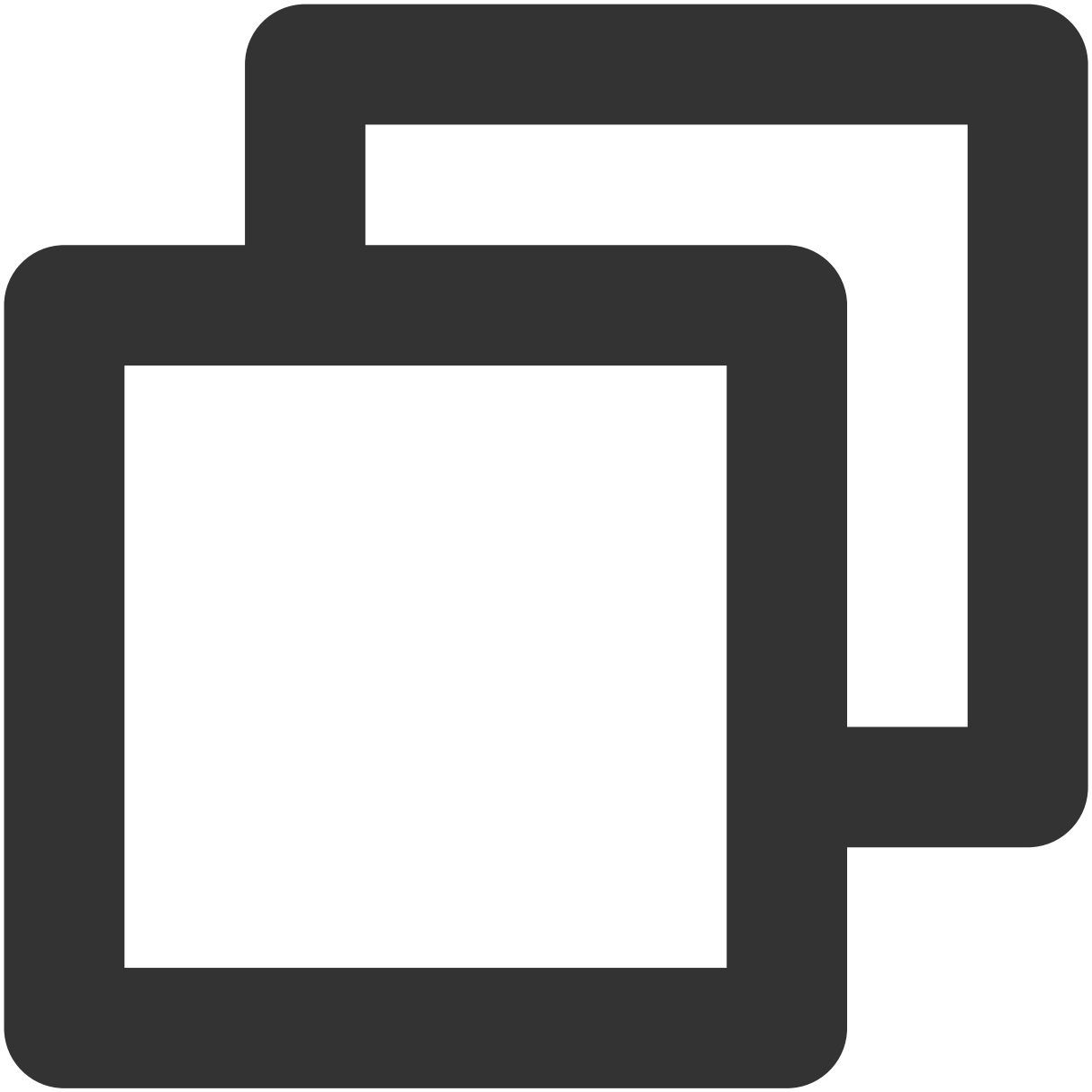

```
tar -xf qpress-11-linux-x64.tar -C /usr/local/bin
source /etc/profile
```

3. Decompress the backup file with qpress.

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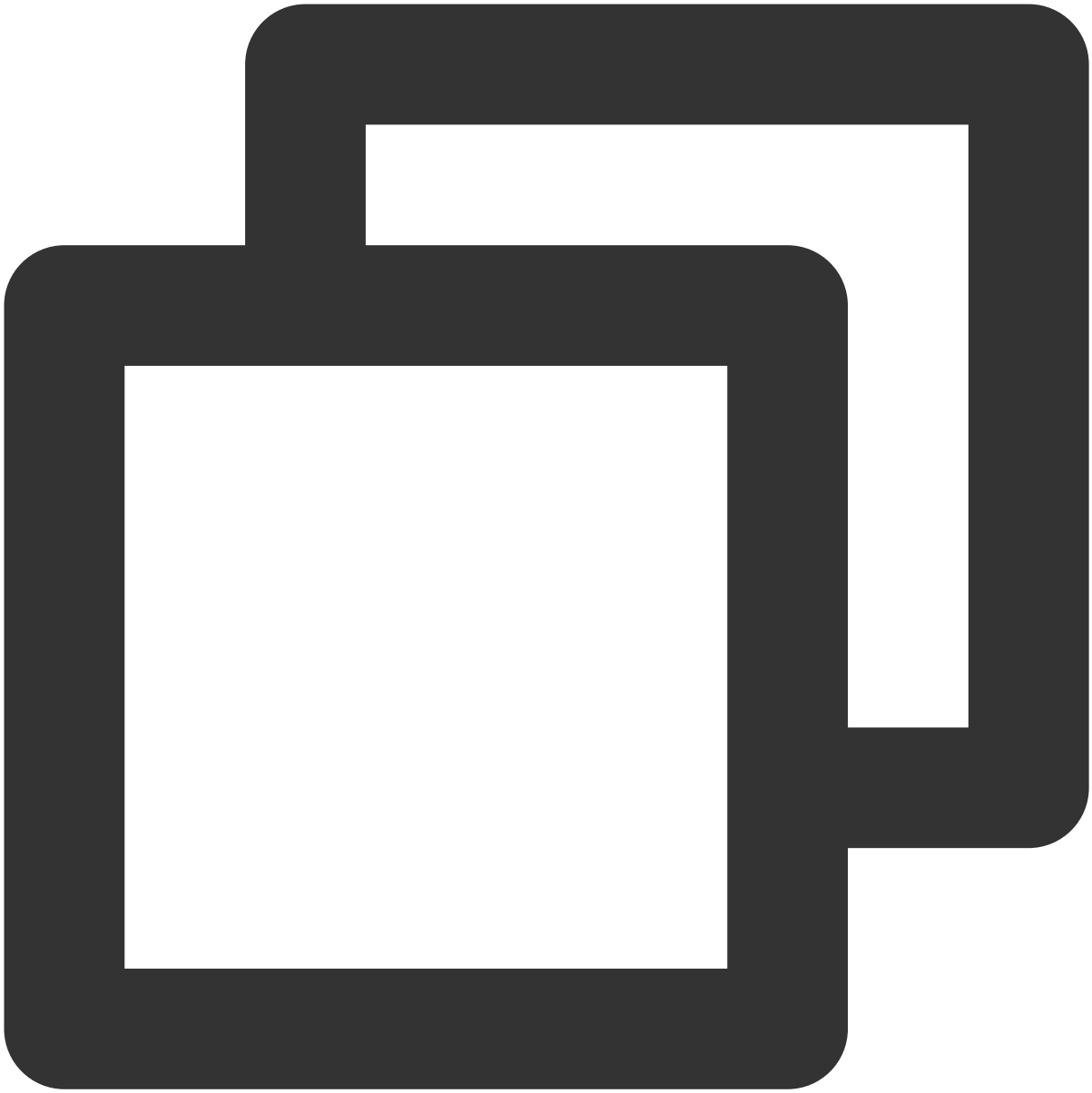

```
qpress -d cdb-jp0zua5k_backup_20191202182218.sql.qp .
```

Note:

Find the backup file with `.sql.qp` extension by decompression time and replace `cdb-jp0zua5k_backup_20191202182218` with its filename.

The decompressing result is as shown below:

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```
ubuntu@VM-15-106-ubuntu:~$ qpress -d cdb-jp0zua5k_backup_20191202182218.sql.qp .
ubuntu@VM-15-106-ubuntu:~$ ll
total 1091792
drwxr-xr-x 9 ubuntu ubuntu      4096 Dec  2 18:32 ./
drwxr-xr-x 3 root   root        4096 Oct 26  2016 ../
-rw-rw-r-- 1 ubuntu ubuntu    702901 Nov 23 08:37 1254408587%2Fmysql%2F7f129d66-ac5f-11e9-b
kuoSr
-rw-rw-r-- 1 ubuntu ubuntu       419 Nov 25 21:40 backup-my.cnf
-rw-rw---- 1 ubuntu ubuntu       396 Nov 25 20:06 backup-my.cnf.qp
-rw-r--r-- 1 ubuntu ubuntu     23657 Dec  2 18:32 .bash_history
-rw-r--r-- 1 ubuntu ubuntu       220 Oct 26  2016 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu      3773 Mar 16  2018 .bashrc
drwx------ 2 ubuntu ubuntu      4096 Nov 28  2017 .cache/
-rw-rw-r-- 1 ubuntu ubuntu   1097176 Dec  2 18:32 cdb-jp0zua5k_backup_20191202182218.sql
-rw-rw---- 1 ubuntu ubuntu    408724 Dec  2 18:30 cdb-jp0zua5k_backup_20191202182218.sql.qp
-rw-rw-r-- 1 ubuntu ubuntu  12582912 Nov 25 21:42 ibdata1
-rw-rw---- 1 ubuntu ubuntu    179769 Nov 25 20:06 ibdata1.qp
```

Step 4. Import the backup file into the target database

Import the .sql file into the target database by running the following command:

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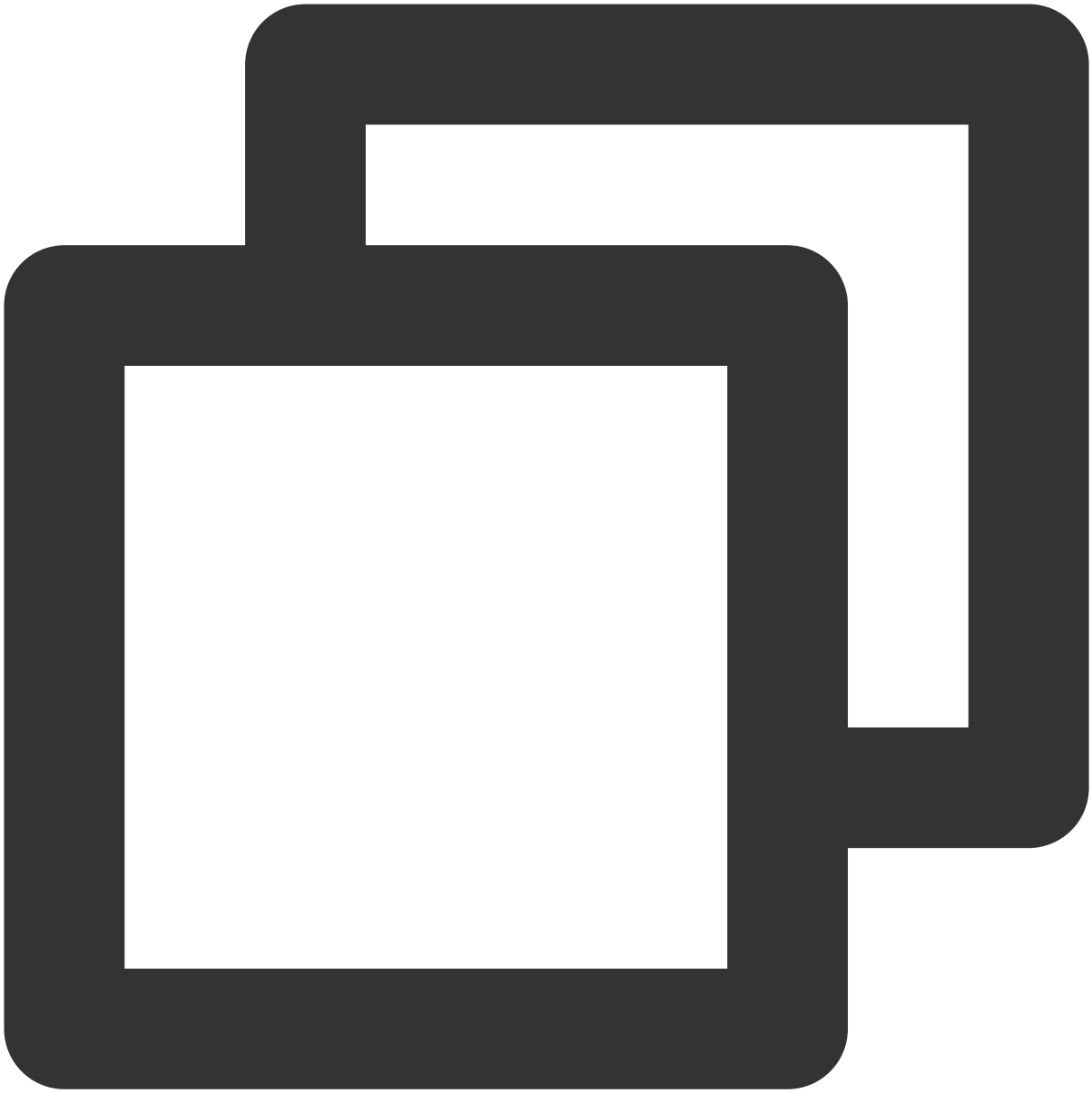

```
mysql -uroot -P3306 -h127.0.0.1 -p < cdb-jp0zua5k_backup_20191202182218.sql
```

Note:

This document takes importing into a local MySQL instance with port 3306 as an example. You can replace it as needed.

Replace `cdb-jp0zua5k_backup_20191202182218.sql` with the .sql file extracted by qpress.

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Downloading Backups

Last updated：2024-07-23 10:13:41

The TencentDB for MySQL console provides the list of backup files that can be downloaded. You can use the downloaded backups to restore data from one database to another (such as a self-built one).
This document describes how to download a backup file in the console.

Note:

The download rule varies by region. After the cross-region backup feature is enabled, you need to configure the download rule for each region selected for backup.
Data backups generated by manual backup for single-node instances of the cloud disk edition are snapshot backups, which cannot be downloaded.

File types supported for download, decompression, and deletion

Category	Backup Type	Method	Download	Decompression Required After Download	Deletion
Data backup	Logical backup	Manual	✓	✓	✓
	Physical backup	Manual	✓	✓	✓
		Automatic	✓	✓	×
Log backup	Physical backup	Automatic	✓	✓	×

Downloading a data backup file

1. Log in to the TencentDB for MySQL console.
2. Select the region at the top, find the target instance, and click the instance ID or **Manage** in the **Operation** column to enter the instance management page.
3. On the instance management page, select the **Backup and Restoration** tab and click **Data Backup List**.

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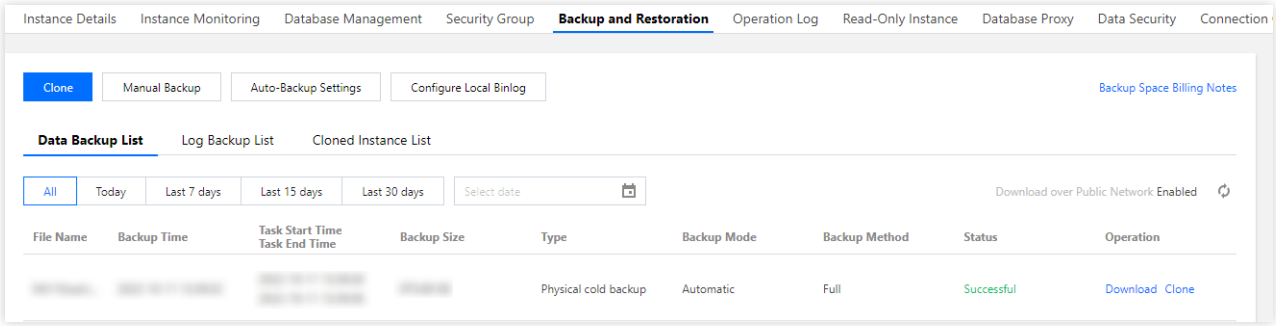


4. Click **Download** in the **Operation** column in the backup list to enter the download page. Then, select the backup file in the target region, click **Copy Download URL** for high-speed download with the `wget` command, or directly click **Download**.

Note:

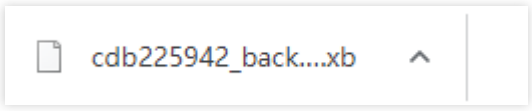
We recommend that you copy the download address, log in to a Linux CVM instance in the same VPC as the TencentDB instance as instructed in Customizing Linux CVM Configurations, and run the `wget` command for fast download over the private network.

The download address is valid for 12 hours, after which you will need to enter the download page again to get a new one.

The URL must be enclosed with quotation marks when the `wget` command is used to download.

`wget` command format: `wget -c 'backup file download address' -O custom filename.xb` .

5. View the downloaded file.



Downloading a log backup file

1. Log in to the TencentDB for MySQL console.

2. Select the region at the top, find the target instance, and click the instance ID or **Manage** in the **Operation** column to enter the instance management page.

3. On the instance management page, select the **Backup and Restoration** tab and click **Log Backup List**.

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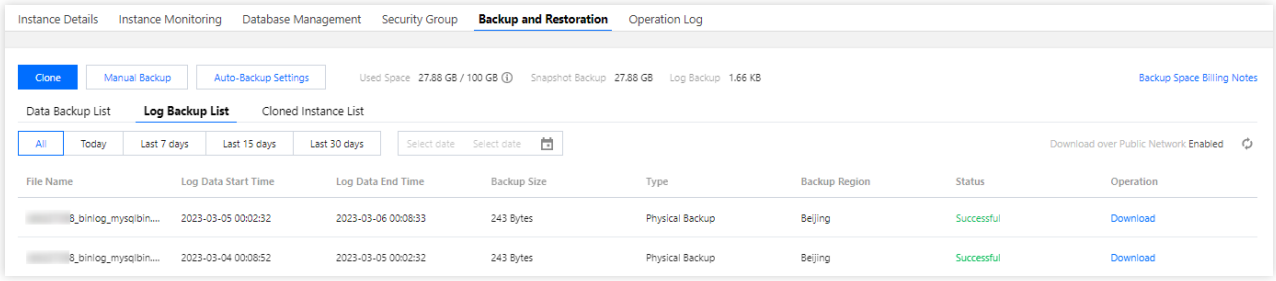


4. Click **Download** in the **Operation** column in the backup list to enter the download page. Then, select the backup file in the target region, click **Copy Download URL** for high-speed download with the `wget` command, or directly click **Download**.

Note:

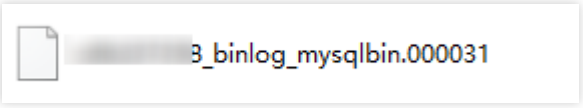
We recommend you copy the download address, log in to a Linux CVM instance in the same VPC as the TencentDB instance as instructed in Customizing Linux CVM Configurations, and run the `wget` command for fast download over the private network.

The download address is valid for 12 hours, after which you will need to enter the download page again to get a new one.

The URL must be enclosed with quotation marks when the `wget` command is used to download.

`wget` command format: `wget -c '<backup file download address>' -O <custom filename>`.

5. View the downloaded file.



Decompressing a backup file

For more information on how to decompress a physical backup file, see Restoring Database from Physical Backup.

For more information on how to decompress a logical backup file, see Restoring Database from Logical Backup.

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Rolling back Databases

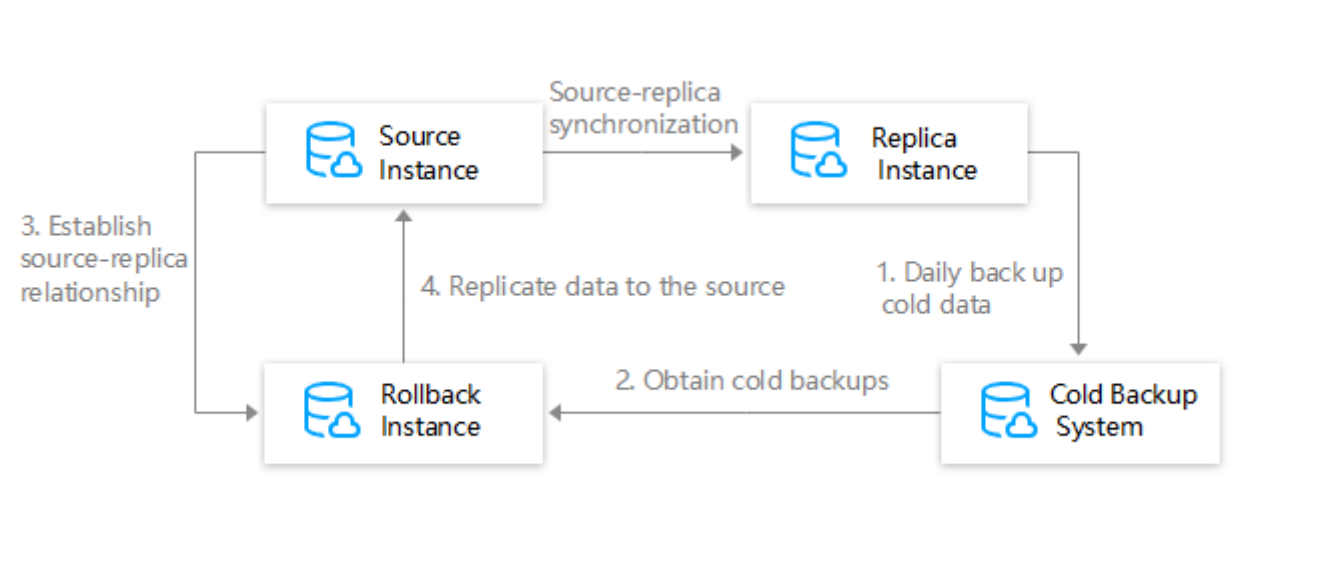
Last updated：2024-07-23 10:14:39

Overview

TencentDB for MySQL will not modify any of your data. Data corrupted due to personal reasons can be recovered through rollback in a self-service manner. A rollback feature is provided to roll back databases or tables in Tencent Cloud based on data backup and binlog backup. Real-time data rollback is supported.
By reconstructing periodical images and real-time transactions, the TencentDB for MySQL rollback feature can roll back a database or table to the specified point in time, and the time slices of all data are guaranteed to be identical. A new database or table will be generated in the original instance, and during the process, the original database or table can be accessed normally. Upon the completion of rollback, you can see both the new and original databases or tables.

How Rollback Works

The rollback feature can roll back databases or tables to a specified point in time based on `cold data backup and corresponding binlog backup` .



1. Data is exported from the MySQL replica and imported to the cold backup system daily.
2. To roll back databases or tables, request for a temp rollback instance from the rollback system. Export the cold data from the cold backup system and import it to the temp rollback instance (types of imported data vary by rollback method).

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3. Establish a source-replica relationship between the rollback instance and MySQL source instance, set the rollback time, and specify the databases or tables to be rolled back.
4. Replicate the rollback databases or tables to the MySQL source instance.

Feature Limits

Single-node instances of the cloud disk edition cannot be rolled back.
Only source instances can be rolled back. Read-only instances and disaster recovery instances cannot be rolled back.
Only specified databases or tables can be rolled back. The databases or tables after rollback will be renamed and replicated to the source instance.
MySQL 5.6, 5.7, and 8.0 support rollback. If you are using MySQL 5.5, we recommend you upgrade to a later version as instructed in Upgrading Database Engine.

Note

The rollback feature is subject to the backup cycle and retention days set for automatic backup. It enables data rollback based on data backup and binlog backup according to the configured retention days and backup cycle. For the backup cycle settings, see Backing up Databases. To ensure MySQL data security, set the automatic backup cycle to at least twice a week.
If a monthly subscribed instance has not expired but your account has overdue payments, the backup service will be downgraded with rollback disabled. If you need to roll it back, top up your account to a positive balance.
If the database or table to be rolled back does not exist or has been dropped, you need to log in to the TencentDB instance and create one first before performing rollback in the console.
If the cold backup before rollback does not contain the table, the rollback will fail.

Directions

1. Log in to the TencentDB for MySQL console, select one or multiple target instances in the instance list, and select **More** > **Roll Back**.
Note:
If rollback is to be performed on only one instance, you can also go to the instance management page and click **Roll Back** in the top-right corner.
Up to 5 rollback tasks can be initiated at a time under the same APPID.

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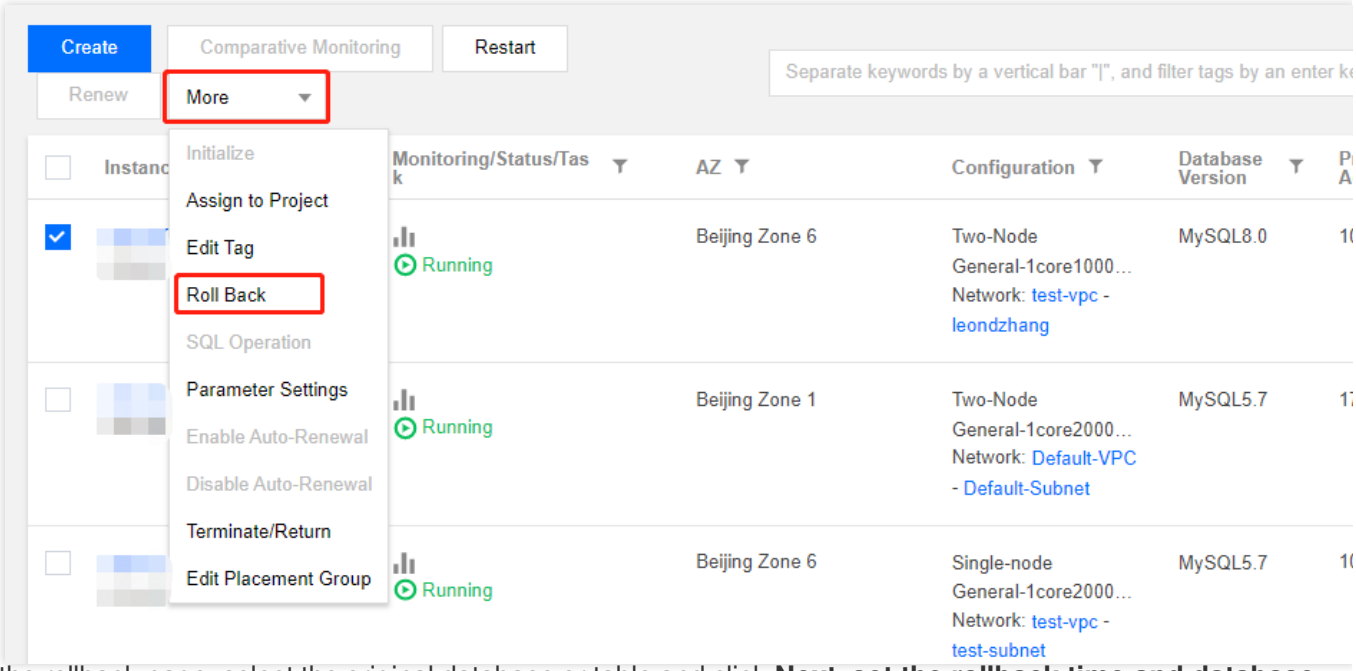

2. On the rollback page, select the original database or table and click **Next: set the rollback time and database table name**.

Fast mode: Import full backup of the instance, and then roll back the selected databases and tables. This rollback mode is slower than the other modes but has no limit.

Faster mode: Full backup + database-level binlog. For cross-database operation, if associated database is not selected at the same time, the database callback will fail.

Ultrafast mode: Full backup + table-level binlog. For cross-table operation, if associated table is not selected at the same time, the table rollback will fail.

Note:

Only databases/tables with names containing digits, letters, underscores, or their combinations can be rolled back. Databases/tables with names containing special symbols are not supported.

In the mode where specified databases/tables can be rolled back only, a maximum of 500 databases/tables in the same instance can be rolled back at a time.

If the rollback involves composite operations on other databases or tables during the execution of binlogs, the SQL statements may fail.

If the rollback involves foreign keys and other constraints of the table during the execution of binlogs, the SQL statements may fail.

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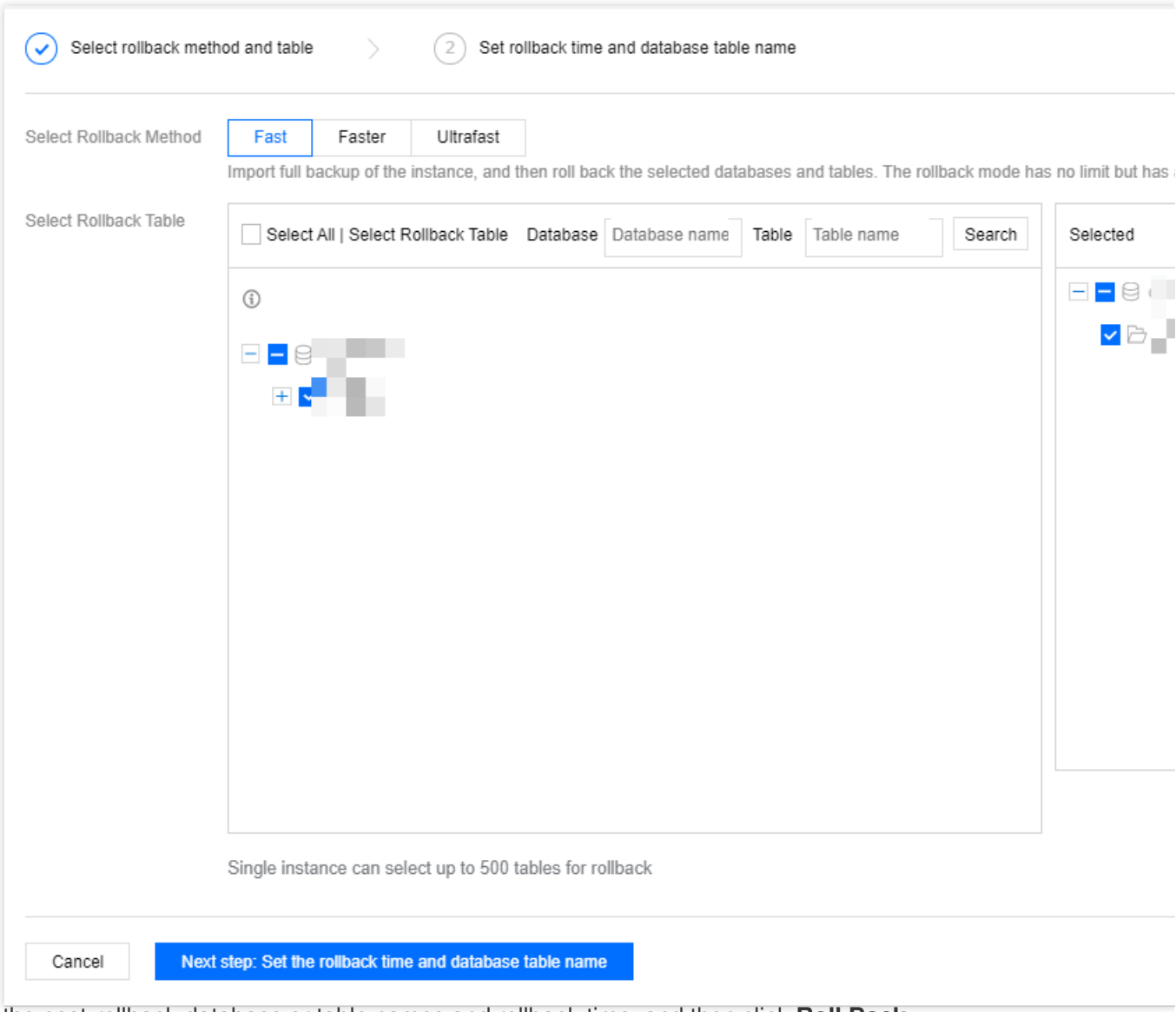

3. Set the post-rollback database or table names and rollback time, and then click **Roll Back**.

Note:

Only one rollback time can be set for each instance.

If you choose to set a batch rollback time, all databases or tables will be rolled back at the specified time.

If you choose to set a single-table rollback time, tables will be rolled back at their respective rollback time.

The database or table name after rollback can contain up to 64 letters, digits, or symbols (.-_$).

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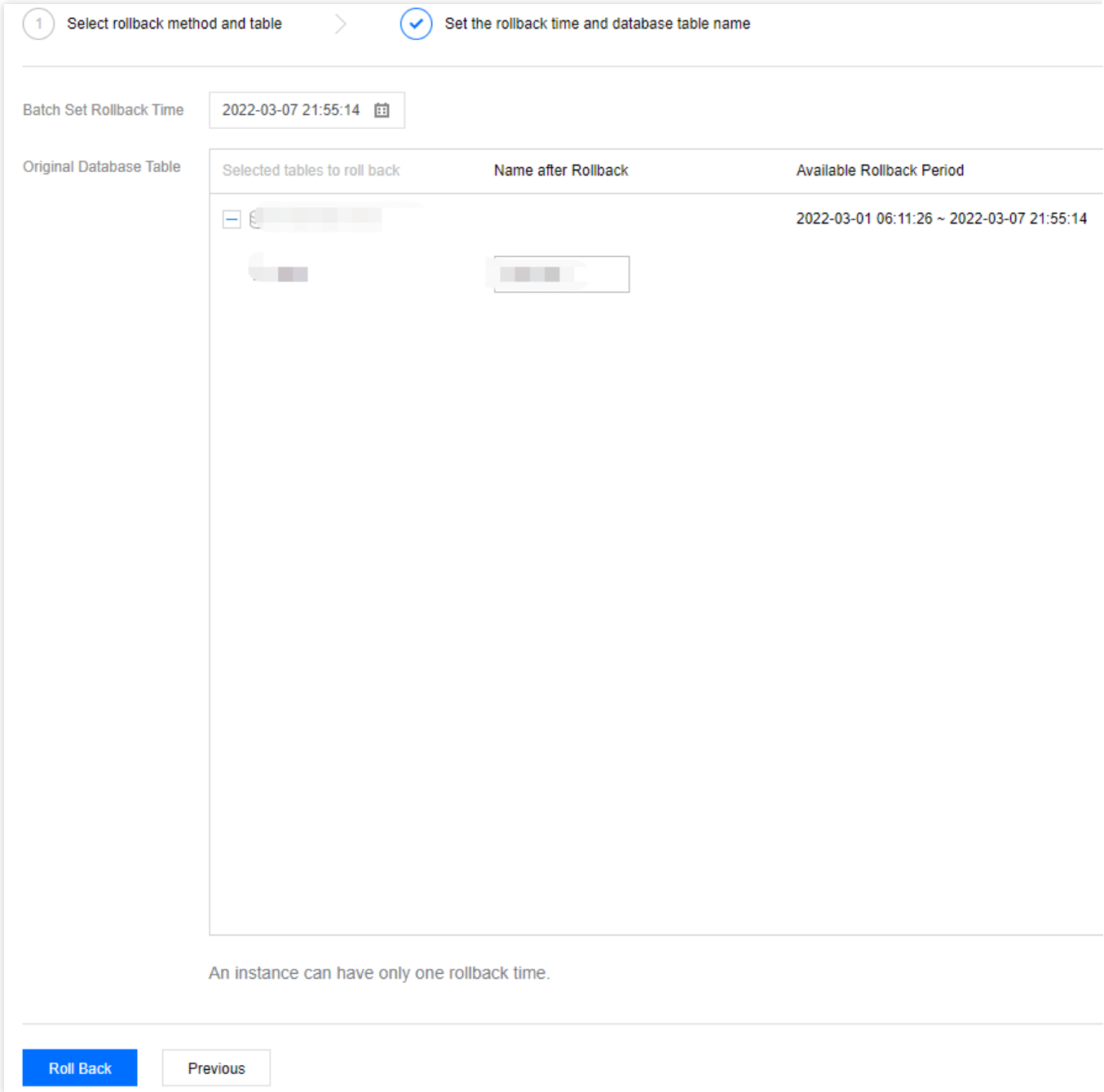
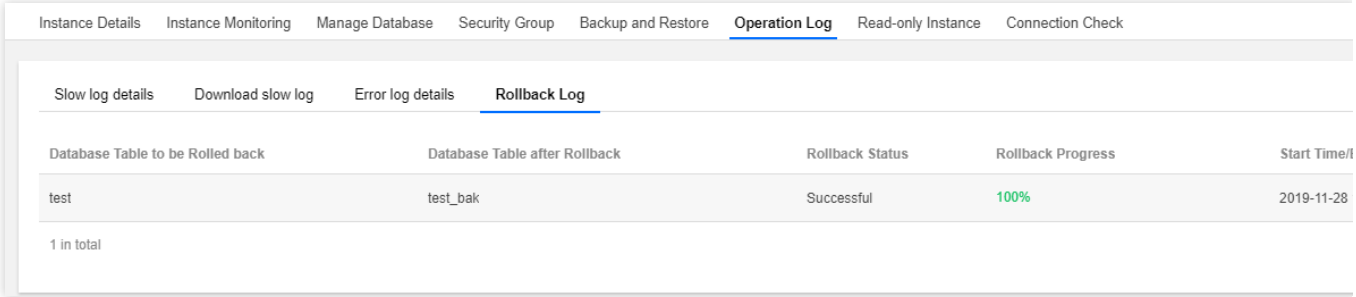


4. After submission, go to **Operation Log** > **Rollback Log** and view the rollback progress. Click **View Details** to view the rollback log in real time.



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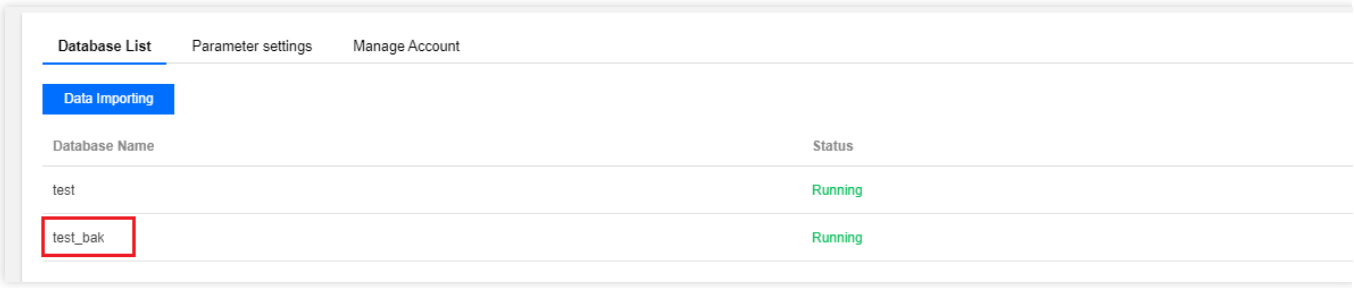
5. Once the rollback is completed, go to **Database Management** > **Database List** to view the new databases or tables after rollback in the original instance.



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Deleting Backups

Last updated：2024-07-23 10:15:00

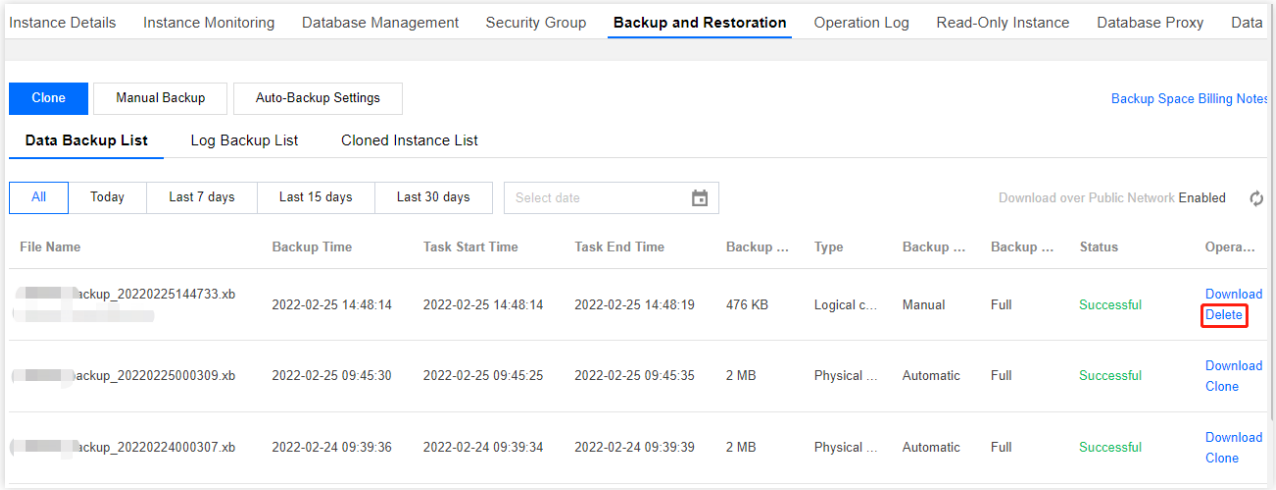
You can delete database backups to reduce backup space costs.

Note:

Manual backups can be deleted from the backup list in the console, but automatic backups cannot be manually deleted.

Directions

1. Log in to the TencentDB for MySQL console, click an instance ID in the instance list, and enter the instance management page.
2. On the **Backup and Restoration** tab, locate the backup you want to delete in the backup list, and click **Delete** in the **Operation** column.



3. In the pop-up dialog box, confirm the backup file to be deleted and click **OK**.

Note:

Once deleted, backup files cannot be recovered.

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Cloning Instances

Last updated：2024-02-18 11:22:15

This document describes how to clone a TencentDB for MySQL instance and quickly restore data to the newly purchased clone in the console.

Overview

TencentDB for MySQL provides the instance cloning feature. You can now restore an instance to any point in time within the log backup retention period or from a specific physical backup set by cloning. The clone is a new instance created from the backup data according to the restoration point in time you have specified. After the clone has been verified, you can migrate its data back to the original instance with DTS or you can start using the clone.

Clone mode

Clone an instance and restore the clone to any point in time within the log backup retention period you set.
Clone an instance and restore the clone from a specific physical backup set within the data backup retention period you set.

Clone billing

The clone adopts the pay-as-you-go billing mode. For more information on this billing mode and fee calculation, see Billing Overview.
The clone will not be billed until the clone process is completed.

Prerequisites

Supported instance architectures: TencentDB for MySQL single-node, two-node, and three-node architectures.
The original instance must be in **Running** status.
If the clone mode is set to **By backup set**, the original instance must have created at least one physical backup. You can log in to the console and view the backup status on the **Backup List** tab.
Your account balance must be positive.

Note

The specification of the new instance must be greater than or equal to that of the original instance.

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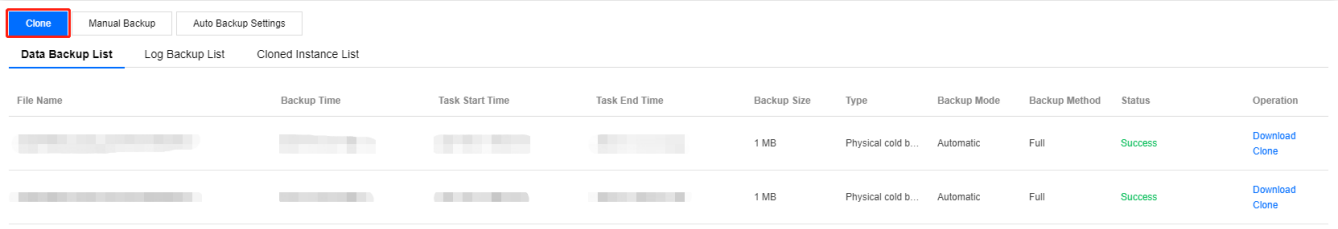
The hard disk space of the clone instance must be larger than the amount of the data to be cloned from, or else the clone task may fail.
The AZ, database version, replication mode, and default database parameters of the clone must be the same as those of the original instance.
The clone will not be displayed in the instance list in the console until the clone process is completed.

Directions

1. Log in to the TencentDB for MySQL console. In the instance list, click an instance ID or **Manage** in the **Operation** column to enter the instance management page.
2. On the instance management page, select **Backup and Restoration** > **Data Backup List** and click **Clone** in the top-left corner, or locate the target backup and click **Clone** in the **Operation** column.



3. On the displayed purchase page, specify the clone mode and other configuration items and click **Buy Now**.
By time point: You can restore an instance to any time point within the log backup retention period.
By backup set: You can restore data from a backup set to a new instance. The available backup sets depend on the data backup retention period.
Note:
You can log in to the console, select **Database Backup** on the left sidebar, and view backup retention period on the **Backup List** tab.

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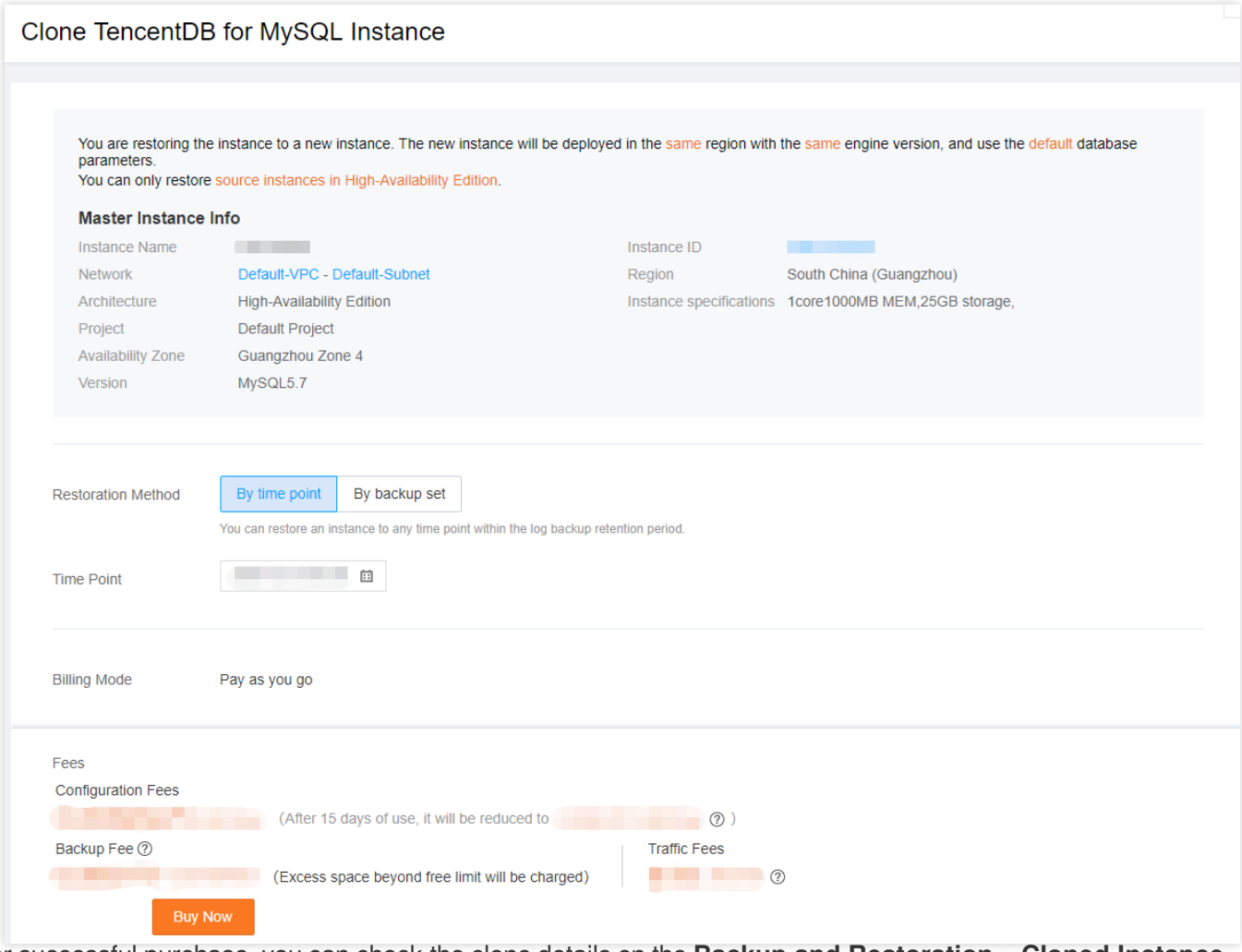
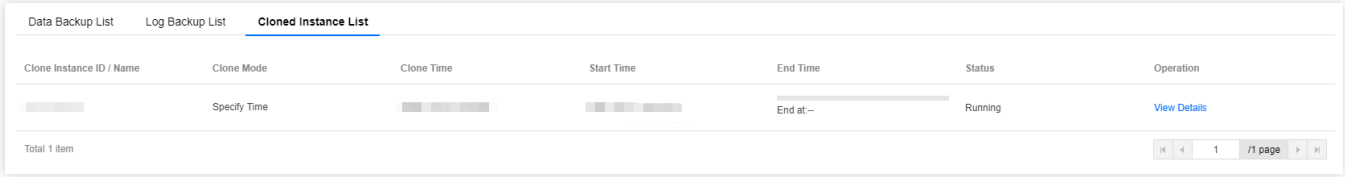


4. After successful purchase, you can check the clone details on the **Backup and Restoration** > **Cloned Instance List** tab.



5. After the clone process is completed, you can view the clone in the instance list.

Relevant Documentation

For more information on restoration of a single database or table, see Rolling back Databases.

For more information on how to restore data to a self-created instance, see Restoring Database from Physical Backup and Restoring Database from Logical Backup.

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FAQs

Will the access to the source instance be affected during the clone process?

The original backup set and binlogs uploaded to COS are used for cloning, which will not affect the access to the source instance.

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Data Migration
Migrating with DTS

Last updated：2024-07-23 10:15:54

DTS can smoothly migrate structures, full data, and incremental data of MySQL databases in local IDCs, third-party cloud vendors, and Tencent Cloud to TencentDB for MySQL without causing any server downtime.

Cross-Account TencentDB Instance Migration

Migration from MySQL to TencentDB for MySQL

FAQs about MySQL Data Migration

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Importing SQL Files

Last updated：2024-06-18 16:37:52

Overview

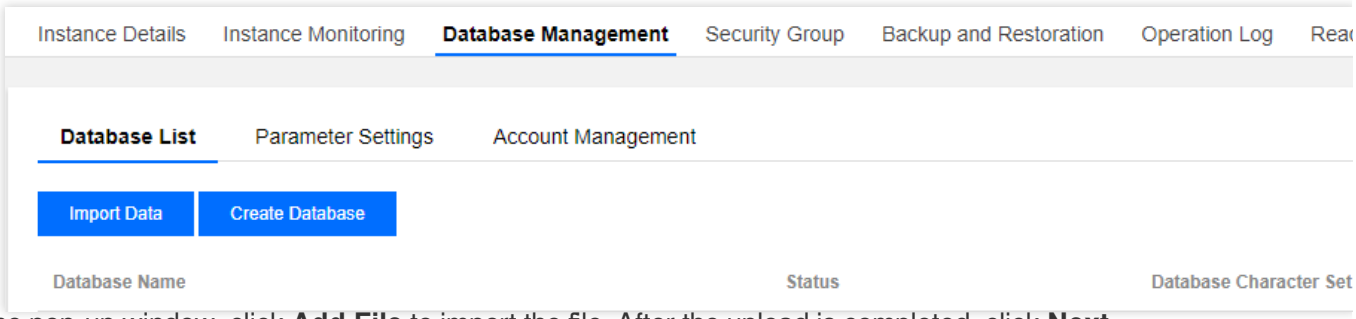
TencentDB for MySQL supports importing SQL files via the console, allowing you to execute SQL statements in the selected database. You can also use this feature to create databases/tables and change table structures to initialize or modify the instance.

Note:

Only two-node and three-node TencentDB for MySQL instances support importing SQL files.

Directions

1. Log in to the TencentDB for MySQL console. In the instance list, click an **Instance ID** or **Manage** in the **Operation** column to access the instance management page.
2. On the instance management page, select **Database Management** > **Database List** and click **Import Data**.



3. In the pop-up window, click **Add File** to import the file. After the upload is completed, click **Next**.

Note:

To avoid database unavailability caused by corruption of system tables, do not import data from system tables such as the `mysql.user` table.

Only incremental import is supported. Clear any obsolete data in the database before importing.

You can import an unencrypted .zip file. The unzipped files must be .sql files with a total size of no more than 5 GB.

A single file should not exceed 12 GB (if it is zipped, the file should not exceed 5 GB after being unzipped), and the file name can contain only letters, digits, and underscores.

Uploaded files are valid for 14 days and will be automatically deleted after expiration.

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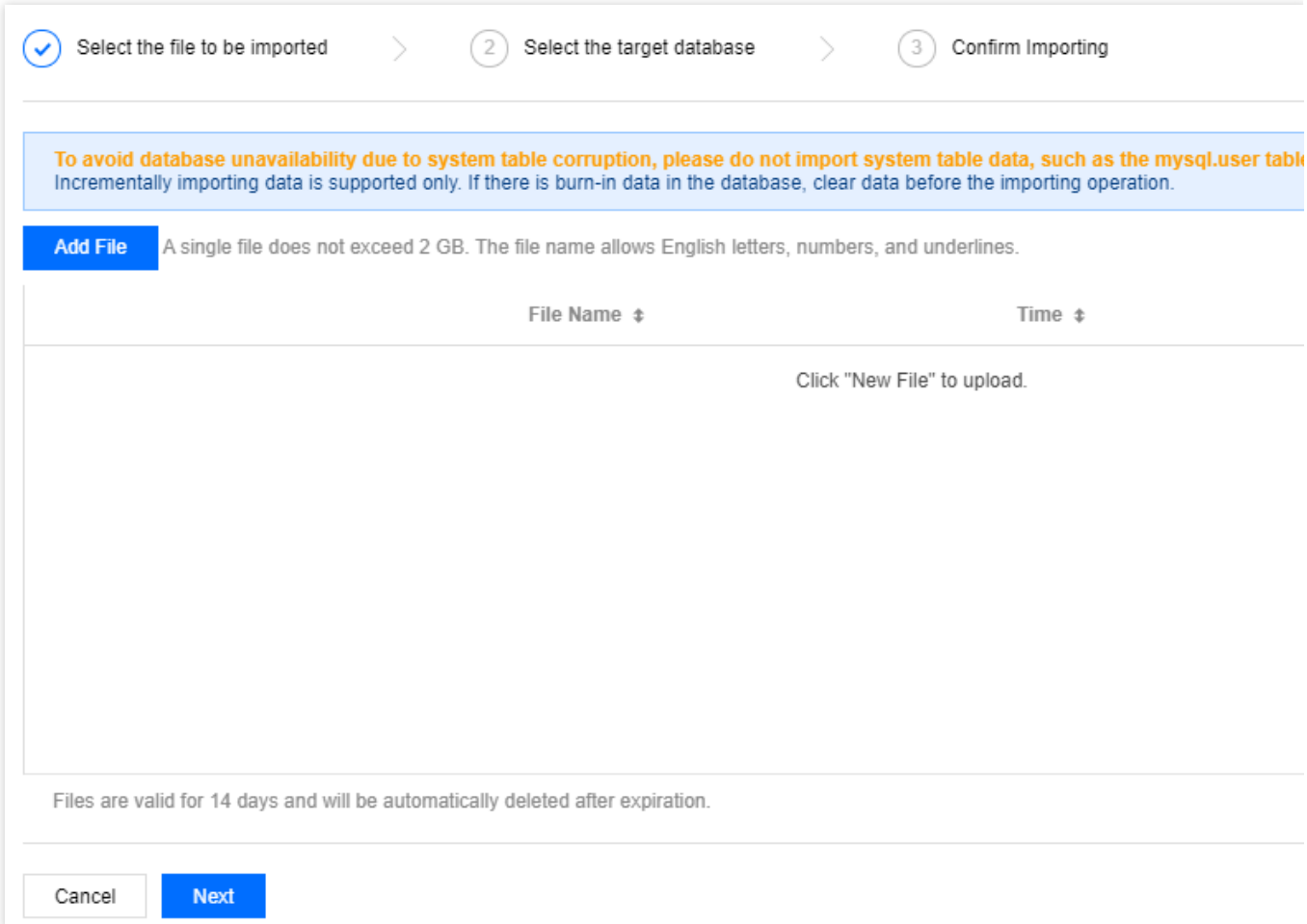

4. On the **Select the target database** page, select the target database and click **Next**.

5. On the confirmation page, confirm that the imported data is correct, enter the account password, and click **Import**.

Note:

The import cannot be rolled back. Confirm the import information before proceeding.

If you forgot the password, reset it as instructed in Resetting Password.

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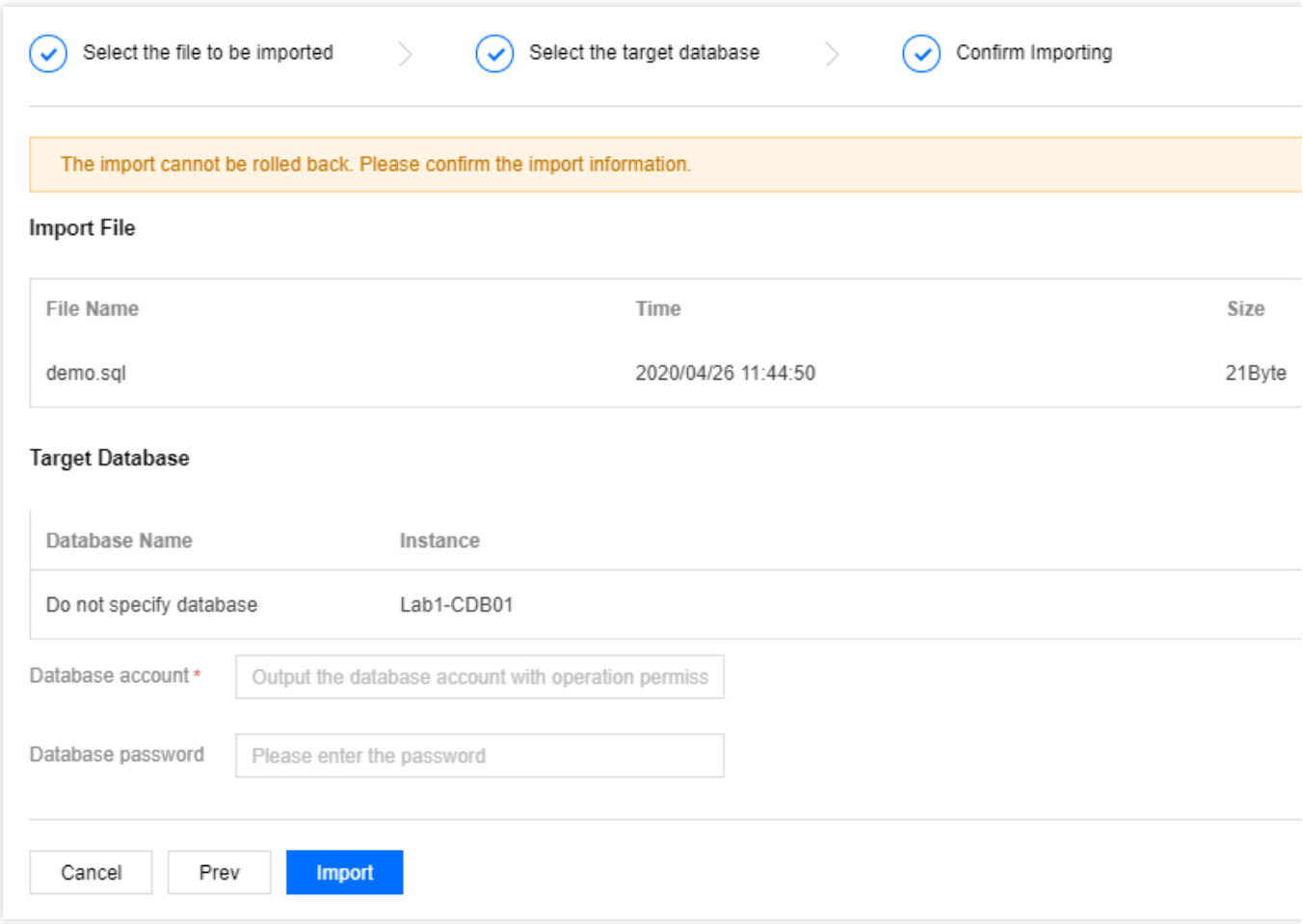

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Migrating Data Offline

Last updated：2024-07-23 10:17:45

This document describes how to migrate data in the console or with the command line tool.

Data Migration Through Console

There are two modes for migrating data through the console: physical backup and logical backup. For more information, see the following documents:
Restoring Database from Physical Backup
Restoring Database from Logical Backup

Data Migration with Command Line Tool

1. Generate the SQL file to be imported with the MySQL command line tool "mysqldump" in the following way:
Note:
The data files exported using mysqldump must be compatible with the SQL specification of your purchased TencentDB for MySQL version. You can log in to the database and get the MySQL version information by running the `select version();` command. The name of the generated SQL file can contain letters, digits, and underscores but not "test".
Make sure that the same source and target database versions, source and target database character sets, and mysqldump tool versions are used. You can specify the character set using the parameter --default-character-set .

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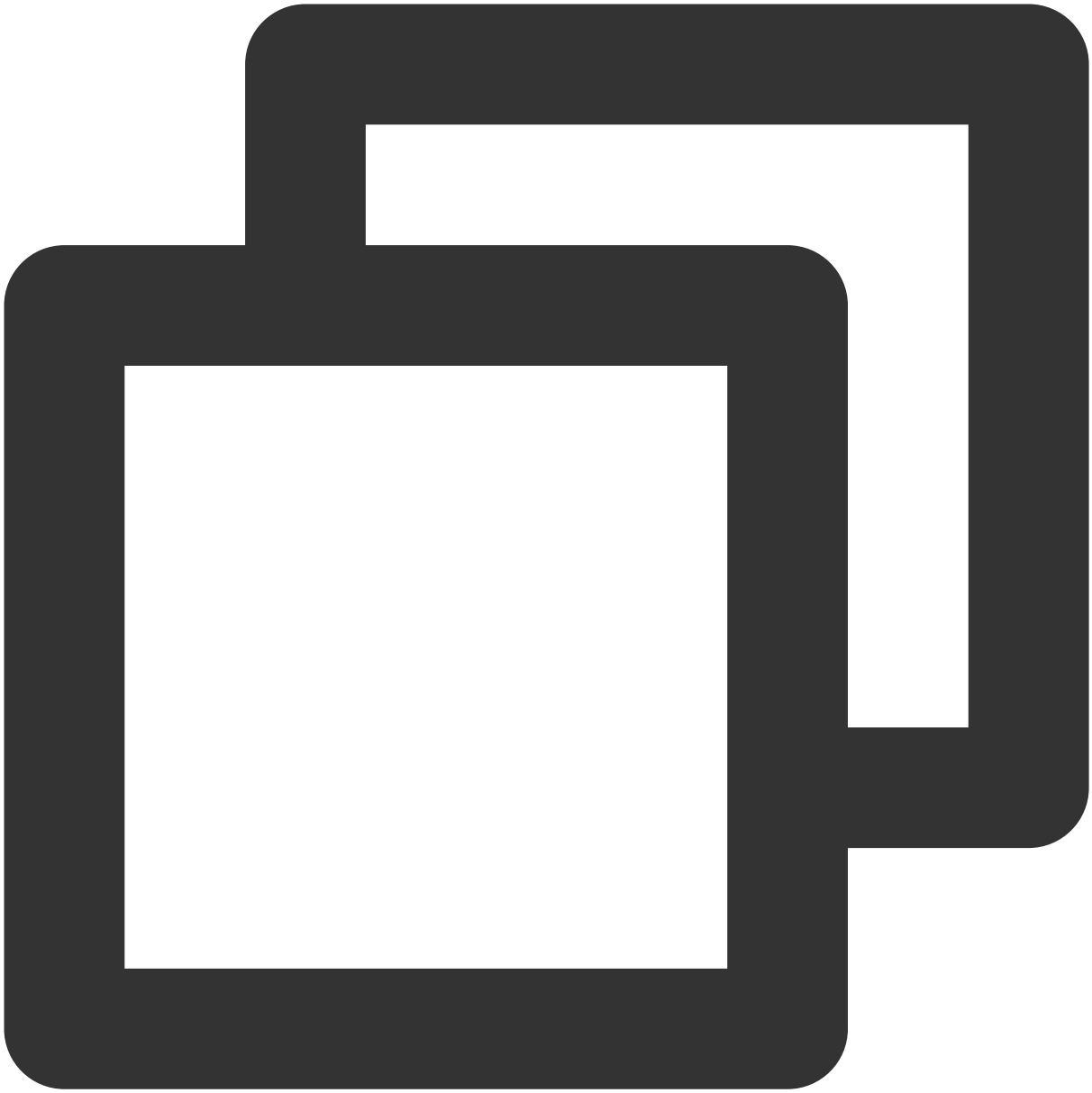

```
shell > mysqldump [options] db_name [tbl_name ...] > bak_pathname
```

Here, `options` is the export option, `db_name` is the database name, `tbl_name` is the table name, and `bak_pathname` is the export path.

For more information on how to export data with mysqldump, see MySQL official documentation.

2. Import data to the target database with the MySQL command line tool as follows:

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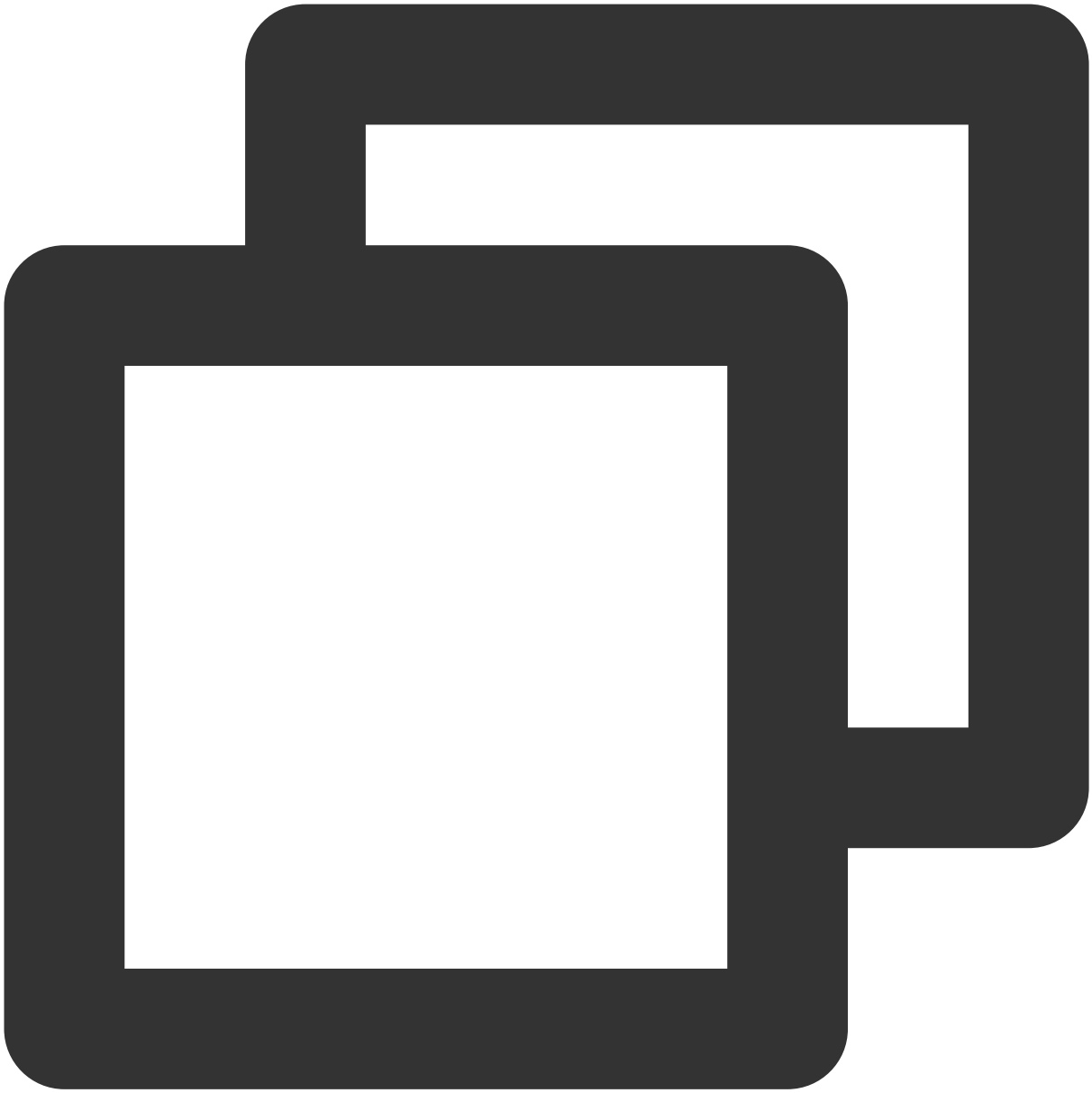

```
shell > mysql -h hostname -P port -u username -p < bak_pathname
```

Here, `hostname` is the target server for data restoration, `port` is the port of target server, `username` is the username of the database on the target server, and `bak_pathname` is the full path to the backup file.

Migrating data (Windows)

1. Use the Windows version of mysqldump to generate the SQL file to be imported. For more information, see the description in Data Migration with Command Line Tool.
2. Enter the command prompt and import the data into the target database with the MySQL command line tool.

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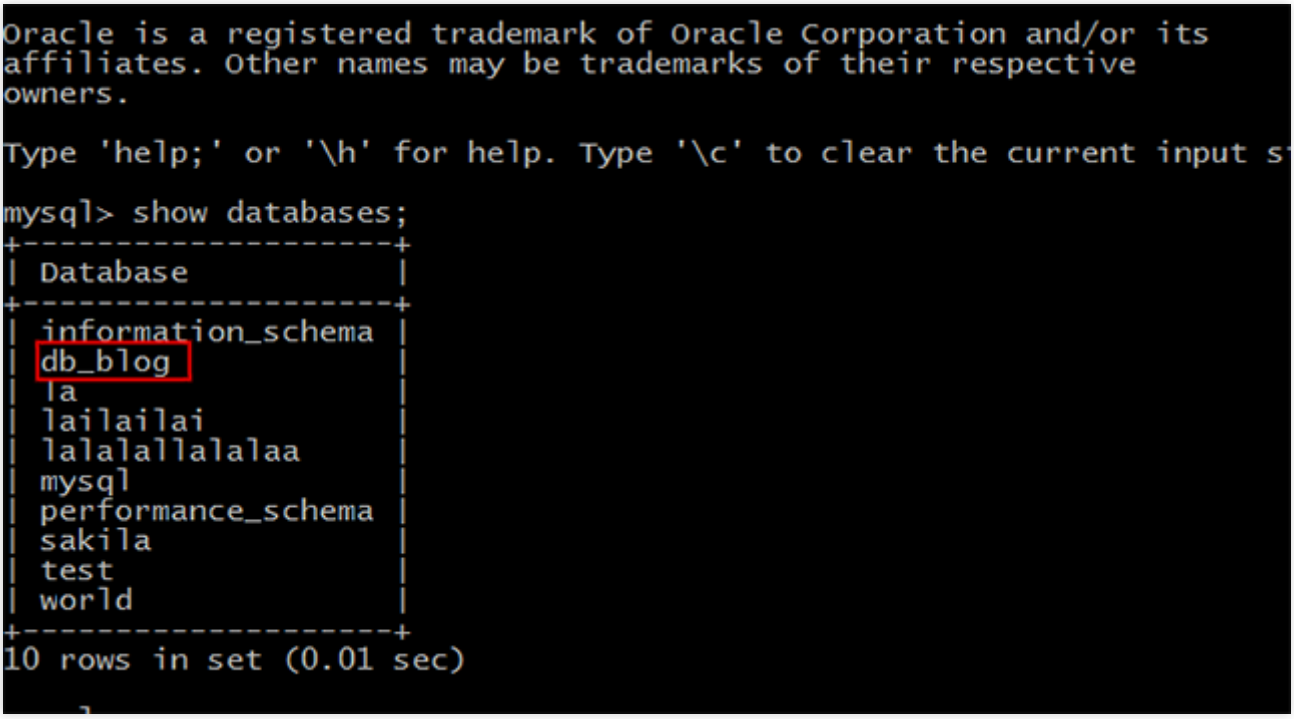
3. Log in to the target MySQL database, run the `show databases;` command, and you can see that the backup database has been imported into the target database.



Migrating data (Linux)

This document uses a Linux CVM instance as an example. For more information on how to access a database from a CVM instance, see Accessing MySQL Database.

1. Log in to the CVM instance and generate the SQL file to be imported with the MySQL command line tool "mysqldump". Take the `db_blog` database in TencentDB as an example:

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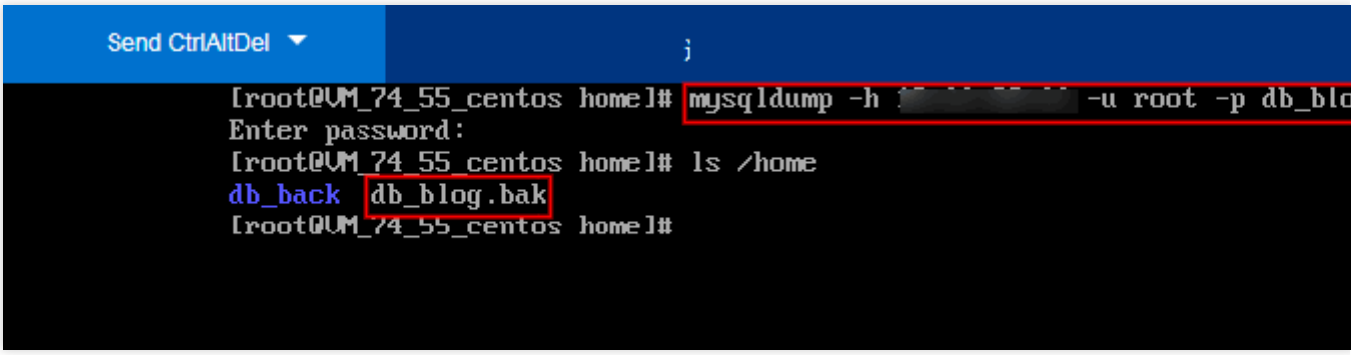
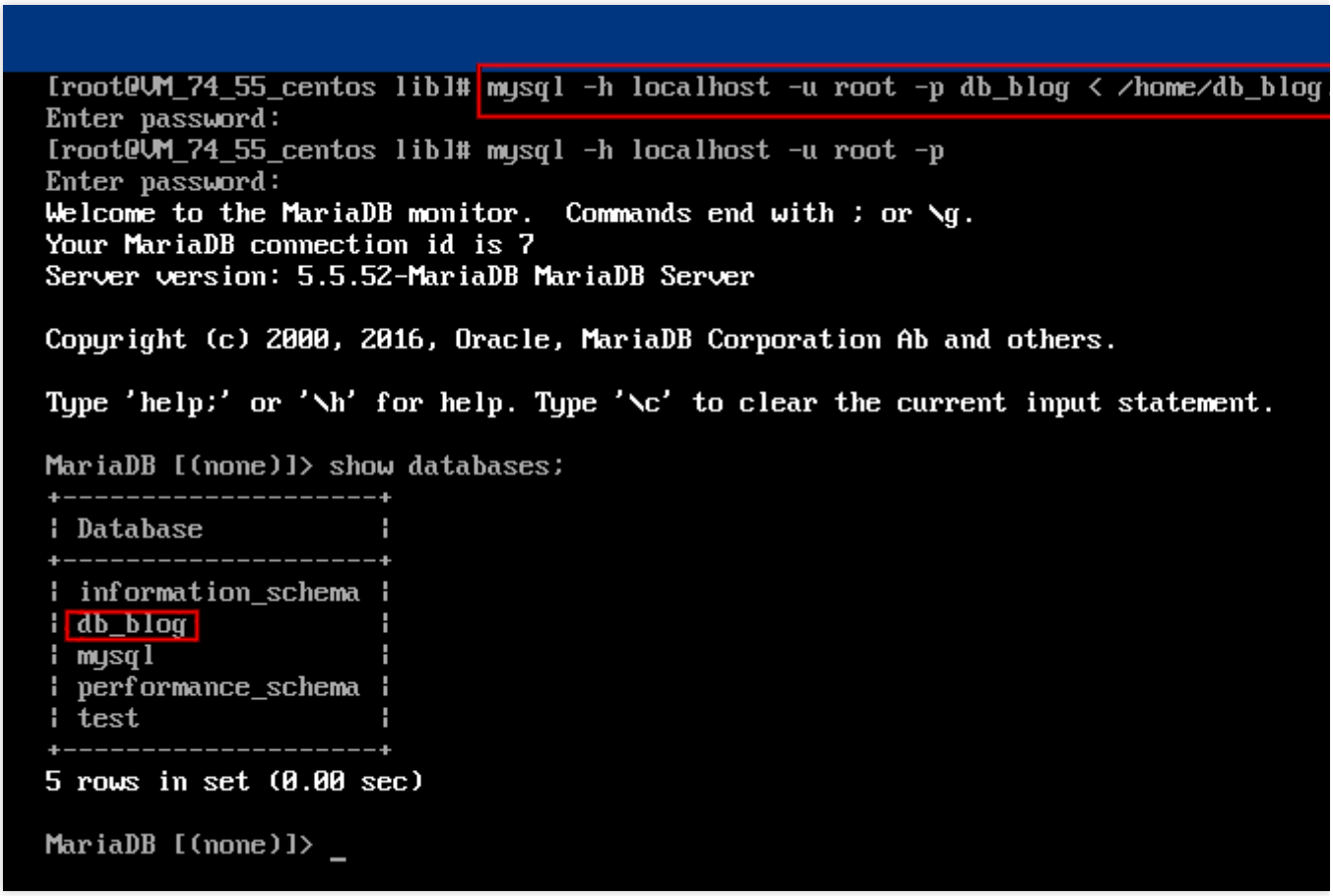


2. Use the MySQL command line tool to restore the data to the target database.

3. Log in to the target MySQL database, run the `show databases;` command, and you can see that the backup database has been imported into the target database.



Issues with Character Set of Imported Data Files

1. If no character set is specified during data file import into TencentDB, the one set by the database will be used.
2. Otherwise, the specified character set will be used.
3. If the specified character set is different from that of TencentDB, garbled text will be displayed.

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For more information, see the character set description in Use Limits.

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Monitoring and Alarms

Monitoring

Last updated：2024-07-23 10:19:28

To make it easier for you to view and stay up to date with how instances work, TencentDB for MySQL provides a wide variety of performance monitoring metrics and convenient monitoring features (custom view, time comparison, merged monitoring metrics, etc). You can log in to the TencentDB for MySQL console, and view them in **Instance Monitoring** on the instance management page.

Note:

You can get instance monitoring metrics by calling the GetMonitorData API or using the TencentDB for MySQL monitoring metrics in Tencent Cloud Observability Platform (TCOP).

You can create dashboards for monitoring metrics to analyze monitored data dynamically.

If the number of tables in a single instance exceeds one million, database monitoring may be affected. Make sure that the number of tables in a single instance is below one million.

Types of Instances for Monitoring

TencentDB for MySQL source, read-only, and disaster recovery instances as well as database proxy nodes can be monitored, and each instance is provided with a separate monitoring view for easy query.

Monitoring Types

Four types of monitoring are available for TencentDB for MySQL: resource monitoring, engine monitoring (general), engine monitoring (extended), and deployment monitoring. You can view the metrics of different monitoring types to gain a quick and accurate understanding of how instances perform and operate.

Note:

TencentDB for MySQL single-node instances of cloud disk edition currently support resource monitoring and engine monitoring (general) but not engine monitoring (extended) and deployment monitoring.

Resource monitoring provides monitoring data of CPU, memory, disk, and network.

Engine monitoring (general) provides monitoring data of the number of connections, locks, hotspot tables, and slow queries, helping you troubleshoot issues and optimize the performance.

Engine monitoring (extended) provides a wider variety of engine-related monitoring metrics so as to assist you in identifying existing or potential database problems as much as possible.

Deployment monitoring provides monitoring metrics with regard to source-replica delay. It divides into source monitoring and replica monitoring:

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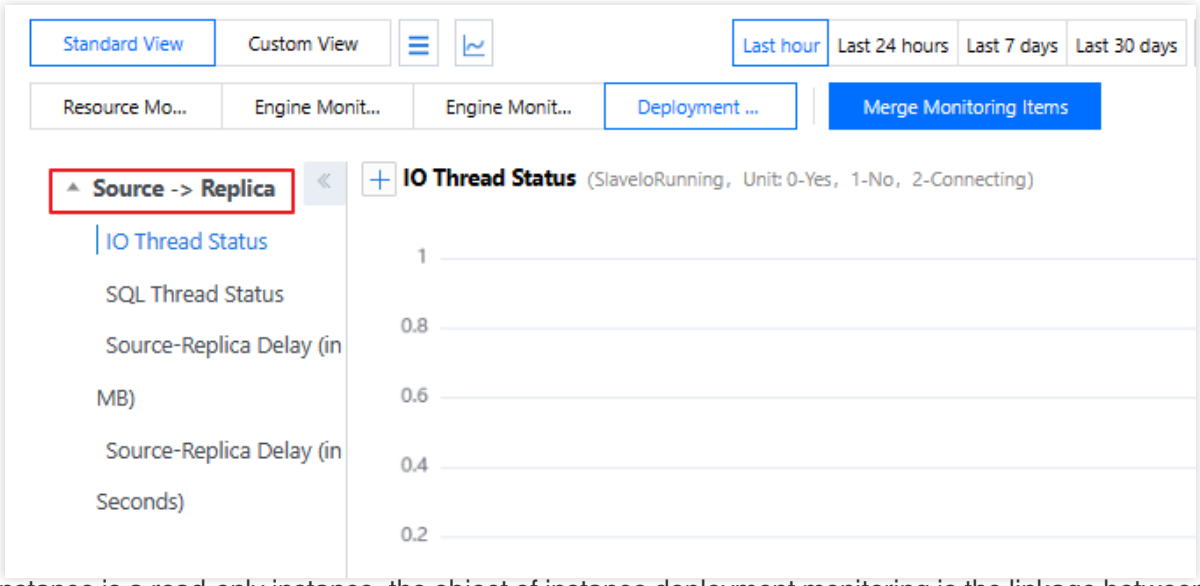
If the instance is a source instance, the object of instance deployment monitoring is the linkage between the source instance and its hidden replica. Deployment monitoring displays the IO and SQL thread status of the hidden replica. The source-replica delay (in MB or in seconds) refers to the delay between the source instance and its hidden replica.



If the instance is a read-only instance, the object of instance deployment monitoring is the linkage between the source instance and the read-only instance. Deployment monitoring displays the IO and SQL thread status of the read-only instance. The source-replica delay (in MB or in seconds) refers to the delay between the read-only instance and the source instance.

If the instance is a disaster recovery instance:

a. The object of instance deployment monitoring (source) is the linkage between the disaster recovery instance and the source instance. Deployment monitoring displays the IO and SQL thread status of the disaster recovery instance. The source-replica delay (in MB or in seconds) refers to the delay between the disaster recovery instance and the source instance.

b. The object of instance deployment monitoring (replica) is the linkage between the disaster recovery instance and its hidden replica. Deployment monitoring displays the IO and SQL thread status of the hidden replica. The source-replica delay (in MB or in seconds) refers to the delay between the disaster recovery instance and its hidden replica.

Monitoring Granularity

TencentDB for MySQL has adopted an adaptive policy for monitoring granularity since August 11, 2018, which means that you cannot select a monitoring granularity as desired for the time being. The adaptive policy is as follows:

Time Span	Monitoring Granularity	Adaptation Description	Retention Period
(0h, 4h]	5 seconds	The time span is below 4 hours, and the monitoring granularity is 5 seconds.	1 day

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(4h, 2d]	1 minute	The time span is above 4 hours but below 2 days, and the monitoring granularity is 1 minute.	15 days
(2d, 10d]	5 minutes	The time span is above 2 days but below 10 days, and the monitoring granularity is 5 minutes.	31 days
(10d, 30d]	1 hour	The time span is above 10 days but below 30 days, and the monitoring granularity is 1 hour.	62 days

Note:

Currently, you can view monitoring data of TencentDB for MySQL in the past 30 days.

Monitoring Metrics

TCOP provides the following monitoring metrics for TencentDB for MySQL instances in the instance dimension:

Note:

For more information on how to use TencentDB monitoring metrics, see Introduction.

Metric Name	Parameter	Unit	Description
Queries per Second	qps	Counts/second	Number of SQL statements (INSERT, SELECT, UPDATE, DELETE, and REPLACE) executed by the database per second. This metric mainly represents the actual processing capability of the TencentDB instance.
Transactions per Second	tps	Counts/second	The number of transactions executed per second in the database
Slow Queries	slow_queries	-	The number of queries that take more than `long_query_time` second(s) to be executed
Full-Table Scans	select_scan	Counts/sec	The number of full-table scans executed per second
SELECT Queries	select_count	Counts/sec	The number of queries executed per second
UPDATE Queries	com_update	Counts/sec	The number of updates executed per second

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DELETE Queries	com_delete	Counts/sec	The number of deletions executed per second
INSERT Queries	com_insert	Counts/sec	The number of insertions executed per second
REPLACE Queries	com_replace	Counts/sec	The number of replacements executed per second
Total Queries	queries	Counts/sec	All executed SQL statements such as SET and SHOW
Open Connections	threads_connected	-	The number of currently open connections
Connection Utilization	connection_use_rate	%	The number of open connections/the maximum number of connections
Query Utilization	query_rate	%	Actual QPS/Recommended QPS
Total Disk Usage	capacity	MB	This includes MySQL's data directories and logs such as binlog, relaylog, undolog, errorlog, and slowlog.
Disk Space Used by Data	real_capacity	MB	This includes only MySQL's data directories.
Disk Space Used by Logs	log_capacity	MB	This includes only MySQL's logs binlog, relaylog, undolog, errorlog, and slowlog.
Disk Space Used by Log Files	disk_log_used	MB	This includes only MySQL's binlog, relaylog, and undolog.
Disk Space Used by Temp Files	disk_tmp_used	MB	This includes only MySQL's temp files.
Disk Utilization	volume_rate	%	Total disk usage/Purchased instance space
Private Outbound	bytes_sent	Byte/sec	The number of bytes sent per second

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Traffic			
Private Inbound Traffic	bytes_received	Byte/sec	The number of bytes received per second
Query Cache Hit Rate	qcache_hit_rate	%	The query cache hit rate
Query Cache Utilization	qcache_use_rate	%	The query cache utilization
Table Locks Awaited	table_locks_waited	Counts/second	The number of times that a request for a table lock could not be granted immediately and a wait was needed
Temp Tables	created_tmp_tables	Counts/second	The number of internal temporary tables created by the server while executing statements
InnoDB Cache Hit Rate	innodb_cache_hit_rate	%	The InnoDB engine cache hit rate
InnoDB Cache Utilization	innodb_cache_use_rate	%	The InnoDB engine cache utilization
InnoDB Disk Reads	innodb_os_file_reads	Counts/sec	The total number of file reads performed by read threads within InnoDB
InnoDB Disk Writes	innodb_os_file_writes	Counts/second	The total number of file writes performed by write threads within InnoDB
InnoDB fsync() Calls	innodb_os_fsyncs	Counts/second	The number of calls of the fsync function by InnoDB per second
Tables Opened by InnoDB	innodb_num_open_files	-	The number of tables InnoDB currently holds open
MyISAM Cache Hit Rate	key_cache_hit_rate	%	The MyISAM engine cache hit rate

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MyISAM Cache Utilization	key_cache_use_rate	%	The MyISAM engine cache utilization
CPU Utilization	cpu_use_rate	%	If overuse of idle resources is permitted, the CPU utilization may exceed 100%
Memory Utilization	memory use rate	%	If overuse of idle resources is permitted, the memory utilization may exceed 100%
Memory Usage	memory_use	MB	If overuse of idle resources is permitted, the used memory may exceed the purchased specification
Temp Files	created_tmp_files	Counts/sec	The number of temp files created per second
Opened Tables	opened_tables	-	The number of open tables
COMMIT Statements	com_commit	Counts/sec	The number of COMMIT statements per second
ROLLBACK Statements	com_rollback	Counts/sec	The number of ROLLBACK statements per second
Created Threads	threads_created	-	The number of threads created to handle connections
Running Threads	threads_running	-	The number of threads that are not sleeping
Max Connections	max_connections	-	The maximum number of connections
Temp Disk Tables	created_tmp_disk_tables	Counts/sec	The number of internal on-disk temporary tables created by the server while executing statements
Requests to Read Next Row	handler_read_rnd_next	Counts/sec	The number of requests to read the next row in the data file
Rollbacks Performed in	handler_rollback	Counts/sec	The number of requests for a storage engine to perform a rollback

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Storage Engine			operation
Internal COMMIT Statements	handler_commit	Counts/sec	The number of internal COMMIT statements per second
InnoDB Free Pages	innodb_buffer_pool_pages_free	-	The number of free pages in the InnoDB buffer pool
Total InnoDB Pages	innodb_buffer_pool_pages_total	-	The total size of the InnoDB buffer pool in pages
InnoDB Logical Reads	innodb_buffer_pool_read_requests	Counts/sec	The number of logical read requests
InnoDB Physical Reads	innodb_buffer_pool_reads	Counts/sec	The number of logical reads that InnoDB could not satisfy from the buffer pool, and had to read directly from disk
Data Read in InnoDB	innodb_data_read	Byte/sec	The amount of data read per second
Total InnoDB Reads	innodb_data_reads	Counts/sec	The total number of data reads per second
Total InnoDB Writes	innodb_data_writes	Counts/sec	The total number of data writes per second
Data Written in InnoDB	innodb_data_written	Byte/sec	The amount of data written per second
InnoDB Rows Deleted	innodb_rows_deleted	Counts/sec	The number of rows deleted from InnoDB tables
InnoDB Rows Inserted	innodb_rows_inserted	Counts/sec	The number of rows inserted into InnoDB tables
InnoDB Rows Updated	innodb_rows_updated	Counts/sec	The number of rows updated in InnoDB tables
InnoDB Rows Read	innodb_rows_read	Counts/sec	The number of rows read from InnoDB tables

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Avg. Time to Acquire an InnoDB Row Lock	innodb_row_lock_time_avg	ms	The average time to acquire a row lock for InnoDB tables
InnoDB Row Lock Waits	innodb_row_lock_waits	Counts/sec	The number of times operations on InnoDB tables had to wait for a row lock
Unused Blocks in Key Cache	key_blocks_unused	-	The number of key blocks unused by the MyISAM key cache
Used Blocks in Key Cache	key_blocks_used	-	The number of key blocks used by the MyISAM key cache
Blocks Read from Key Cache	key_read_requests	Counts/sec	The number of requests to read a key block from the MyISAM key cache
Blocks Read from Disk	key_reads	Counts/sec	The number of requests to read a disk data block from the MyISAM key cache
Blocks Written into Key Cache	key_write_requests	Counts/sec	The number of requests to write a key block to the MyISAM key cache
Blocks Written into Disk	key_writes	Counts/sec	The number of requests to write a disk data block to the MyISAM key cache
Source-Replica Delay (in MB)	master_slave_sync_distance	MB	The amount of data by which the replica has lagged behind the source
Source-Replica Delay (in Seconds)	seconds_behind_master	Sec	The source-replica delay (in seconds)
IO Thread Status	slave_io_running	Status values: 0: Yes; 1: No; 2: Connecting	The IO thread running status

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SQL Thread Status	slave_sql_running	Status value: 0: Yes; 1: No	The SQL thread running status

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Alarm Policies (TCOP)

Last updated：2024-07-23 10:19:48

This document describes how to create alarm policies and associate alarm objects in the Tencent Cloud Observability Platform (TCOP) console.

Overview

You can create alarm policies to trigger alarms and send alarm notifications when the Tencent Cloud service status changes. The created alarm policies can determine whether an alarm needs to be triggered according to the difference between the monitoring metric value and the given threshold at intervals.
You can take appropriate precautionary or remedial measures in a timely manner when the alarm is triggered by changed product status. Therefore, properly created alarm policies can help you improve the robustness and reliability of your applications. For more information on alarms, see Creating Alarm Policy in TCOP.
To send an alarm for a specific status of a product, you need to create an alarm policy at first. An alarm policy is composed of three compulsory components, that is, the name, type and alarm triggering conditions. Each alarm policy is a set of alarm triggering conditions with the logical relationship "OR", that is, as long as one of the conditions is met, an alarm will be triggered. The alarm will be sent to all users associated with the alarm policy. Upon receiving the alarm, the user can view the alarm and take appropriate actions in time.
Note:
Make sure that you have set the default alarm recipient; otherwise, no notifications will be sent based on the default alarm policy of TencentDB.

Directions

Creating an alarm policy

1. Log in to the TCOP console, select **Alarm Policy** under **Alarm Management** module on the left sidebar, and click the **Policy Management** tab.
2. In the alarm policy list, click **Create**.
3. On the **Create Alarm Policy** page, set the policy name, policy type, alarm object, and trigger condition.
Policy Type: It divides into source monitoring and replica monitoring, which are applicable to different types of instances.
Deploy monitoring on the source: When the monitored instance is a source instance which is not a replica of any instance, replication-related monitoring data is invalid for the source, and the IO and SQL threads are disabled.

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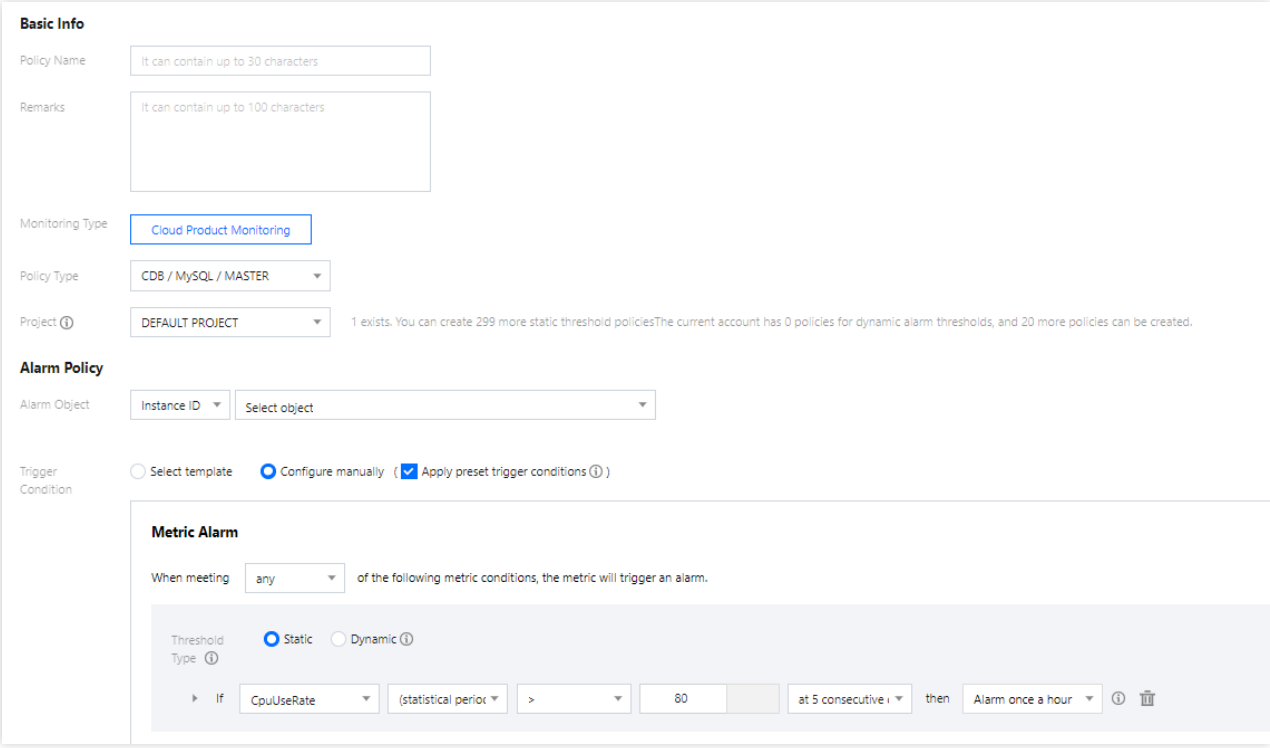
Replication-related monitoring data is valid and the IO and SQL threads can be enabled only when the monitored instance is a disaster recovery or a read-only instance.
Deploy monitoring on the replica: The two-node or three-node source instance and disaster recovery instance come in a source/replica architecture by default. As a result, replication-related monitoring data is valid for the replica only when the monitored instance is a source or disaster recovery instance. Such monitoring data can reflect the replication delay distance and time between the source or disaster recovery instance and its hidden replica nodes. We recommend that you keep an eye out for such monitoring data of the replica. If the source or disaster recovery instance fails, its monitored hidden replica nodes can be promoted to the source instance quickly.
Alarm Object: The instance to be associated with the policy alarm. You can find the desired instance by selecting the region where it is located or searching for its ID.
Trigger Condition: An alarm trigger is a semantic condition composed of metric, comparison, threshold, statistical period, and duration. For example, if the metric is disk utilization, the comparison is >, the threshold is 80%, the statistical period is 5 minutes, and the duration is two statistical periods, then the data on disk utilization of a database will be collected once every five minutes, and an alarm will be triggered if the disk utilization exceeds 80% for two consecutive times.
Configure Alarm Notification: You can select a preset or custom notification template. Each alarm policy can be bound to three notification templates at most. For more information, see Creating Notification Template.



4. After confirming that everything is correct, click **Complete**.

Associating an alarm object

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After the alarm policy is created, you can associate some alarm objects with it. When an alarm object satisfies an alarm trigger condition, an alarm notification will be sent.

1. In the alarm policy list, click the name of an alarm policy to enter the alarm policy management page.
2. Click **Add Object** in the **Alarm Object** section.
3. In the pop-up window, select the target alarm object and click **OK** to associate it with the alarm policy.

FAQs

How can I configure the source-replica delay monitoring?

You can do so by following the steps below based on the actual scenarios.

Scenario 1: Configure source-replica delay monitoring for the source instance

1.1 Log in to the TCOP console select **Alarm Policy** under **Alarm Management** module on the left sidebar, and click **Create Policy** on the **Policy Management** tab.

1.2 On the **Create Alarm Policy** page, select **Policy Type**: **Cloud Database** > **MySQL** > **Replica Monitoring**.

Note:

When configuring source-replica delay monitoring for the source instance, you must select replica monitoring as the policy type, so that the delay information from the replica to the source is monitored.

1.3 Complete the trigger condition settings for the monitoring items "Source-Replica Delay (in MB)" and "Source-Replica Delay (in Seconds)" as well as other configuration items as needed, and click **Complete**.

1.4 After the setting is completed, the alarm can be triggered when the monitoring items "Source-Replica Delay (in MB)" and "Source-Replica Delay (in Seconds)" meet the trigger conditions.

Scenario 2: Configure source-replica delay monitoring for the read-only and disaster recovery instances

1.1 Log in to the TCOP console select **Alarm Policy** under **Alarm Management** module on the left sidebar, and click **Create Policy** on the **Policy Management** tab.

1.2 On the **Create Alarm Policy** page, select **Policy Type**: **Cloud Database** > **MySQL** > **Host Monitoring**.

Note:

When configuring source-replica delay monitoring for the read-only instance, you must select host monitoring as the policy type, so that the delay information from the read-only instance to the source instance is monitored.

?When configuring source-replica delay monitoring for the disaster recovery instance, you can select host monitoring as the policy type, so that the delay information from the disaster recovery instance to the source instance is monitored. If you select replica monitoring as the policy type, then the delay information from the replica of the disaster recovery instance to the disaster recovery instance is monitored.

1.3 Complete the trigger condition settings for the monitoring items "Source-Replica Delay (in MB)" and "Source-Replica Delay (in Seconds)" as well as other configuration items as needed, and click **Complete**.

1.4 After the setting is completed, the alarm can be triggered when the monitoring items "Source-Replica Delay (in MB)" and "Source-Replica Delay (in Seconds)" meet the trigger conditions.

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Alarm Notification (DBbrain)

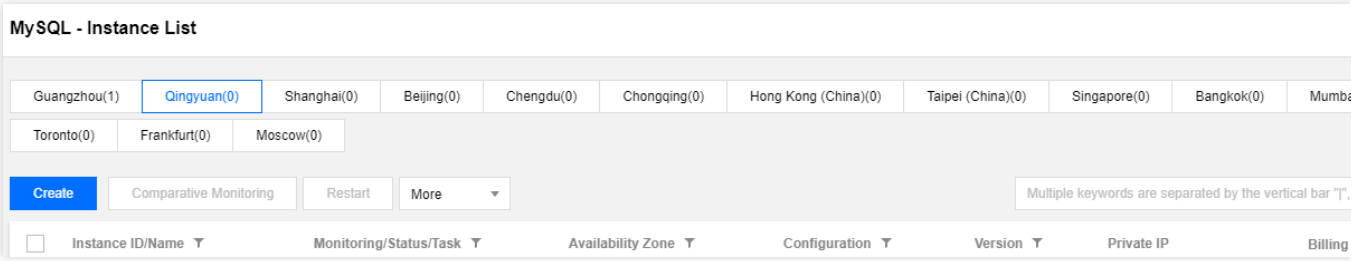
Last updated：2024-07-23 10:20:22

This document describes how to view exception alarm messages from DBbrain in the TencentDB for MySQL console.
DBbrain's exception alarms notification service pushes MySQL instance exception alarm messages to you in real time, allowing you to conveniently and promptly discover database exception diagnosis problems.
All pushed exception alarm messages are displayed in the historical message list, so you can quickly view and locate previously pushed exception diagnosis problems.

Viewing an alarm

Option 1

Log in to the TencentDB for MySQL console. If an exception diagnosis problem occurs on an instance when you are in the console, a window will pop up in the top-right corner of the console in real time to push the exception alarm message notification, which contains the database instance information such as instance ID, instance name, diagnosis item, and start time. This allows you to quickly learn the diagnosis of the database instance.
You can click **View Exception Diagnosis Details** in the message notification to view the specific diagnosis details and optimization advice for the instance.
If you check **No alarm again today** in the message notification, when an exception diagnosis problem occurs in a database instance under your account, no exception alarm messages will be pushed to you in a pop-up window.



Option 2

Log in to the TencentDB for MySQL console, select **Instance List**, **Task List**, **Parameter Template**, **Recycle Bin** or **Placement Group** on the left sidebar, and click **Exception Alarm** in the top-right corner to expand the list of historical exception alarm messages. The number of alarms generated in the instances under your account is displayed next to the button.

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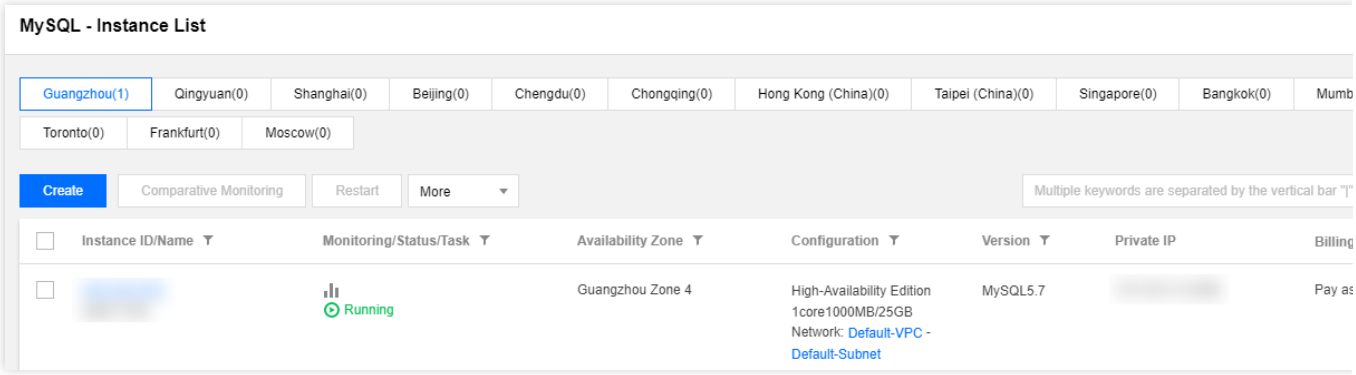
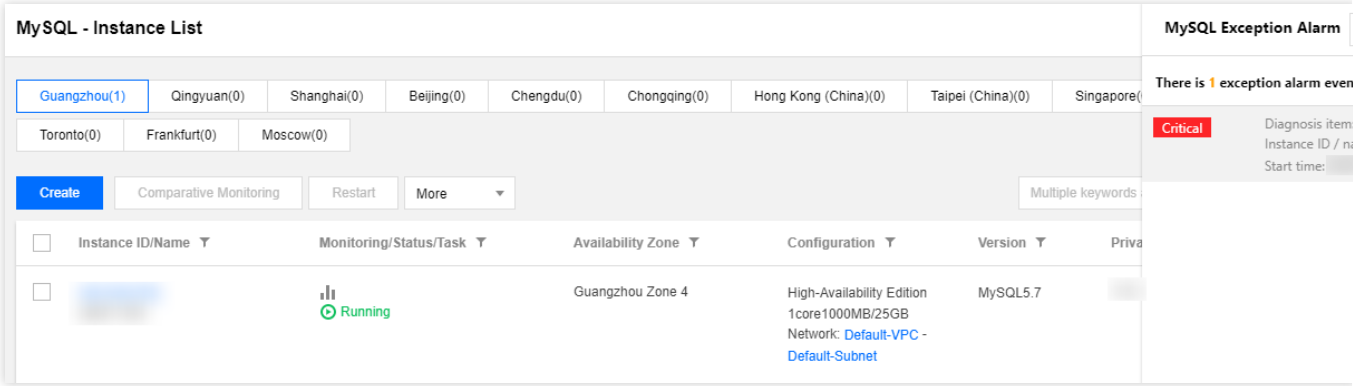


In the expanded list of historical exception alarm messages, you can view all pushed exception alarm messages. You can view them by region and click a message to view the diagnosis details of the exception alarm event.



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Setting Event Alarms

Last updated：2024-06-18 11:11:49

TencentDB for MySQL supports the event alarm feature. When you set an event pattern, event target, and recipient, if an exception event is detected, the event alarm will send alarm notifications to the recipient through various optional channels. This document explains how to set up event alarms.

Step 1: Enabling EventBridge

Tencent Cloud EventBridge implements permission management through Cloud Access Management (CAM). CAM is a permission and access management service provided by Tencent Cloud, mainly used to help customers securely manage access rights to resources under Tencent Cloud accounts. Users can create, manage, and terminate users (groups) with CAM, and control the access rights of other users to Tencent Cloud resources using identity and policy management. Before using EventBridge, you need to activate the service on the product page. For the method to activate with a main account and to authorize sub-accounts to use this service, see Activate EventBridge.

Step 2: Setting Event Alarms

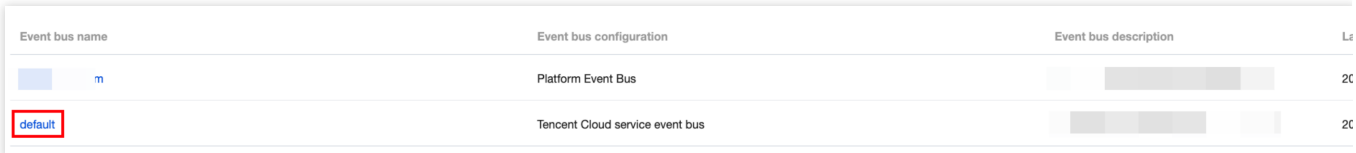
Note:

For alarm events generated by TencentDB for MySQL, all will be delivered to the **Tencent Cloud service event set**, with this delivery being the default and not supporting modification or editing.

After enabling the Tencent Cloud EventBridge service, it will automatically create a default cloud service event set in the **Guangzhou region**. Alarm events generated by TencentDB for MySQL will be automatically delivered to it.

Method 1: Tencent Cloud EventBridge Configuration

1. Log in to Tencent Cloud Observability Platform > Event Set.
2. Select **Guangzhou** as the region at the top.
3. Click on the **default** event set under the cloud service event set.



4. Click **Manage Event Rules**, then on the redirection page, click **Create** (taking creating an event rule as an example, if an event rule already exists, you can directly modify it with no need to recreate it).
5. After completing the following configuration on the new event rule page, click **Next**.

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Parameter	Description
Rule name	Fill in the rule name, which can only include letters, digits, underscores (_), and hyphens (-), must start with a letter, end with a digit or letter, and contain 2-60 characters.
Rule description	Fill in the rule description, which can only include digits, Chinese and English characters and common punctuation marks, and must be no more than 200 characters.
Tag	Customize whether to enable tags. Once enabled, tags can be added to the event rule.
Data conversion	Event data conversion helps you easily process the event content. For example, you can extract and parse fields within the event, perform mapping reorganization, and then deliver it to the event target.
Event Example	Provides an example of event structure for reference in configuring event matching rules. You can find the target template under event example selection for reference, and select TencentDB for MySQL as the cloud service type.
Rule pattern	Supports form mode and custom events, where form mode is recommended for convenience.
Tencent Cloud service	Select TencentDB for MySQL.
Event Type	Select the alarm event type as needed.
Subject to match	Select the matching object for event alarms.

6. Complete relevant settings on the event target page, check **Enable Event rules now**, and click **Complete**. (There are various trigger methods available, which you can choose as needed. The following example selects "Message Push" as the trigger method. The channel push will be sent to the designated contacts. You need to set the recipient user separately at the recipient area. The notification period shall be agreed upon with the account user. The receiving channels can include Email, message center, SMS, and Telephone).

Note:

To configure multiple event targets, click **Add**.

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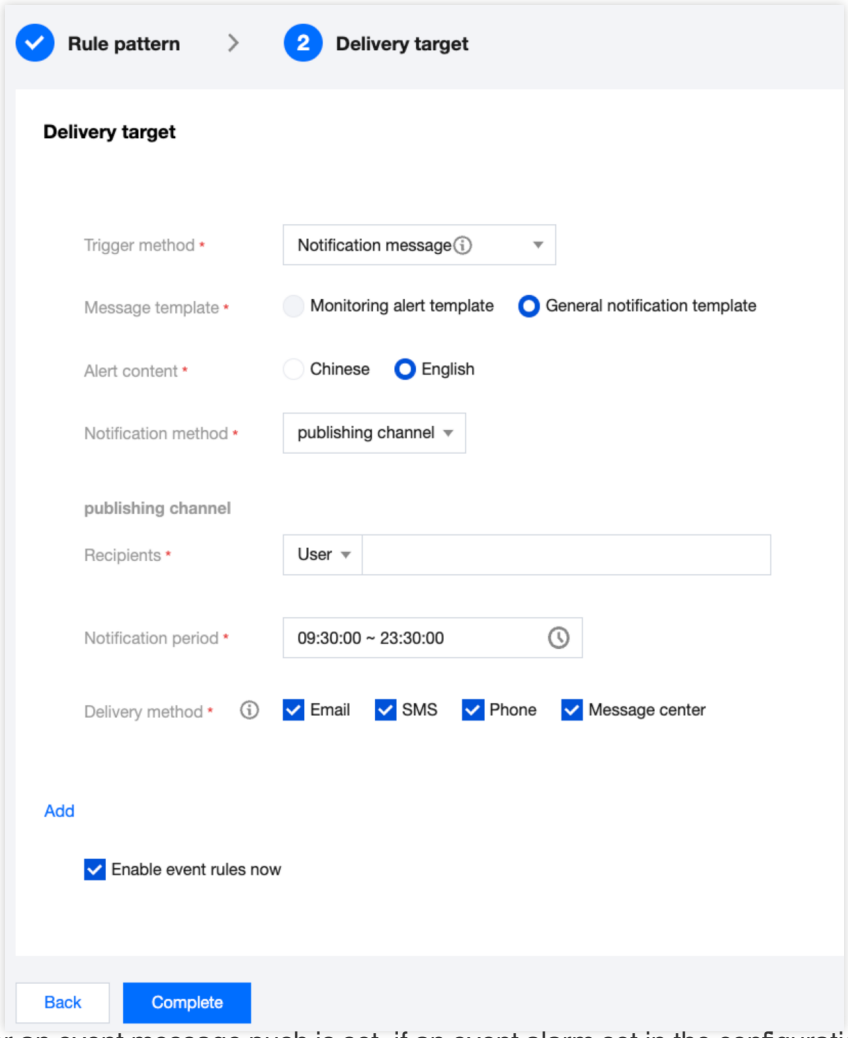
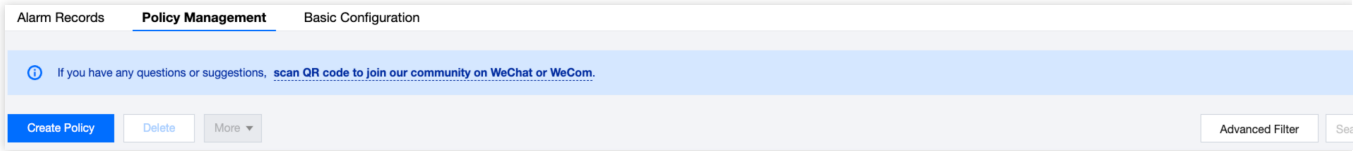


7. After an event message push is set, if an event alarm set in the configuration occurs, the system will notify via the receiving channels set for your specified recipients.

Method 2: TCOP Alarm Policy Configuration

Create an Alarm Policy

1. Log in to the TCOP Console, select **Alarm Management** > **Policy Management** page from the left navigation.
2. On the alarm policy list page, click **Create Policy**.



3. On the policy creation page, complete the settings for basic information, alarm rules, and alarm notifications.

Policy Type: Divided into host monitoring and standby monitoring, with each applicable to different instance types.

Alarm Object: The object instance to be associated can be found by selecting the object's region or searching for the object's instance ID.

Trigger Condition: Find event alarms, click **Add Event**, and add alarm events according to business needs.

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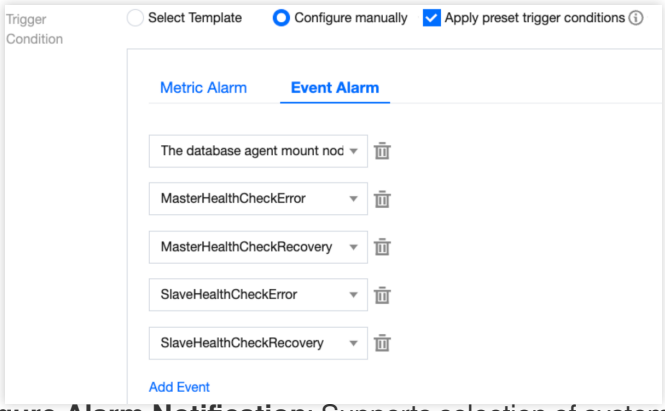
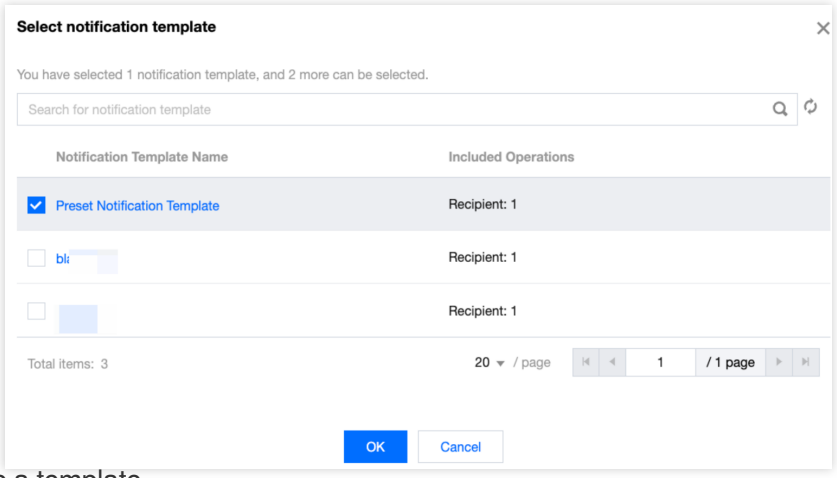


Configure Alarm Notification: Supports selection of system preset notification templates and user-defined notification templates. Each alarm policy can be bound to a maximum of three notification templates. For user-defined notification templates, see Create New Notification Template.

Select a system preset template.



Create a template.

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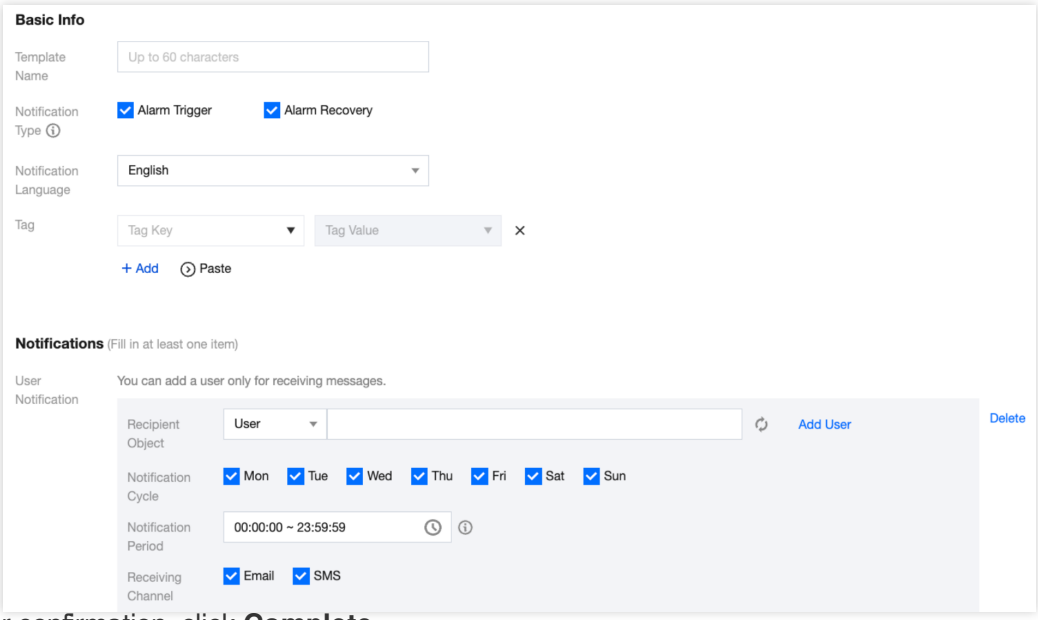

4. After confirmation, click **Complete**.

Associate Alarm Objects

After creating an alarm policy, you can also associate it with other alarm objects (other instances that need this alarm policy). When objects meet the alarm trigger conditions, an alarm will be sent.

1. On the Alarm Policy List Page, click **Alarm Policy Name** to enter the Manage Alarm Policy page.
2. In the **Alarm Object** column of the Alarm Policy Management page, click **Add Object**.
3. In the pop-up dialog box, select the alarm object you wish to associate, and click **OK** to associate the alarm object.

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Operation Logs

Operation Logs

Last updated：2023-11-20 15:45:38

Overview

A SQL statement query that takes more time than the specified value is referred to as a "slow query", and the corresponding statement is called a "slow query statement". The process where a database administrator (DBA) analyzes slow query statements and finds out the reasons why slow queries occur is known as "slow query analysis". In the Operation Log tab, you can view the slow logs details, error logs details, rollback logs, and logs delivery of the instance and download slow logs. You can also view and download database logs on the command line interface (CLI) or through TencentDB APIs. For more information, see DescribeSlowLogs and DescribeBinlogs.

Note：

Currently, slow log download, rollback and log delivery features are not supported for TencentDB for MySQL single-node instances of the cloud disk edition.

Notes on MySQL slow queries

long_query_time: Slow query threshold parameter that is accurate to the microsecond level. The default value is 1 second. When a SQL statement takes more time than the threshold to execute, it will be recorded in a slow log. When the long_query_time parameter is adjusted, existing slow logs will not be affected. For example, if the slow log threshold parameter is 1s, slow logs will be reported for exceeding queries; after this value is modified to 2s, the previously reported logs will still be displayed.

log_queries_not_using_indexes: Whether to log unindexed queries. The default value is OFF.

The Directions

1. Log in to the TencentDB for MySQL console. In the instance list, click an **Instance ID** or **Manage** in the **Operation** column to enter the instance management page.

2. On the **Operation Log** tab, you can view the slow logs details, error logs details, rollback logs and logs delivery of the instance and download slow logs.

Feature	Description
Slow Log Details	Records SQL statements that took more than 1 second to execute in the database for the past month
Download Slow	Downloads slow logs

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Log	
Error Log Details	Records the detailed information of each startup and shutdown as well as all the serious warnings and errors during operation
Rollback Log	Records the status and progress of rollback tasks
Log Delivery	Collects data from slow logs and error logs sourced from TencentDB for MySQL instances, and deliver them to the Cloud Log Service (CLS) for analysis

3. On the **Download Slow Log** tab, click **Download** in the **Operation** column to download slow logs.
4. We recommend that you copy the download address in the pop-up window, log in to a (Linux) CVM instance in the same VPC as the TencentDB instance, and run the wget command to download over the private network at a higher speed. For more information, see Customizing Linux CVM Configurations.
Note：
Logs with a size of 0 KB cannot be downloaded.
You can also click Download to download it directly. However, this may take a longer time.
wget command format: wget -c 'log file download address' -O custom filename.log
Below is a sample:

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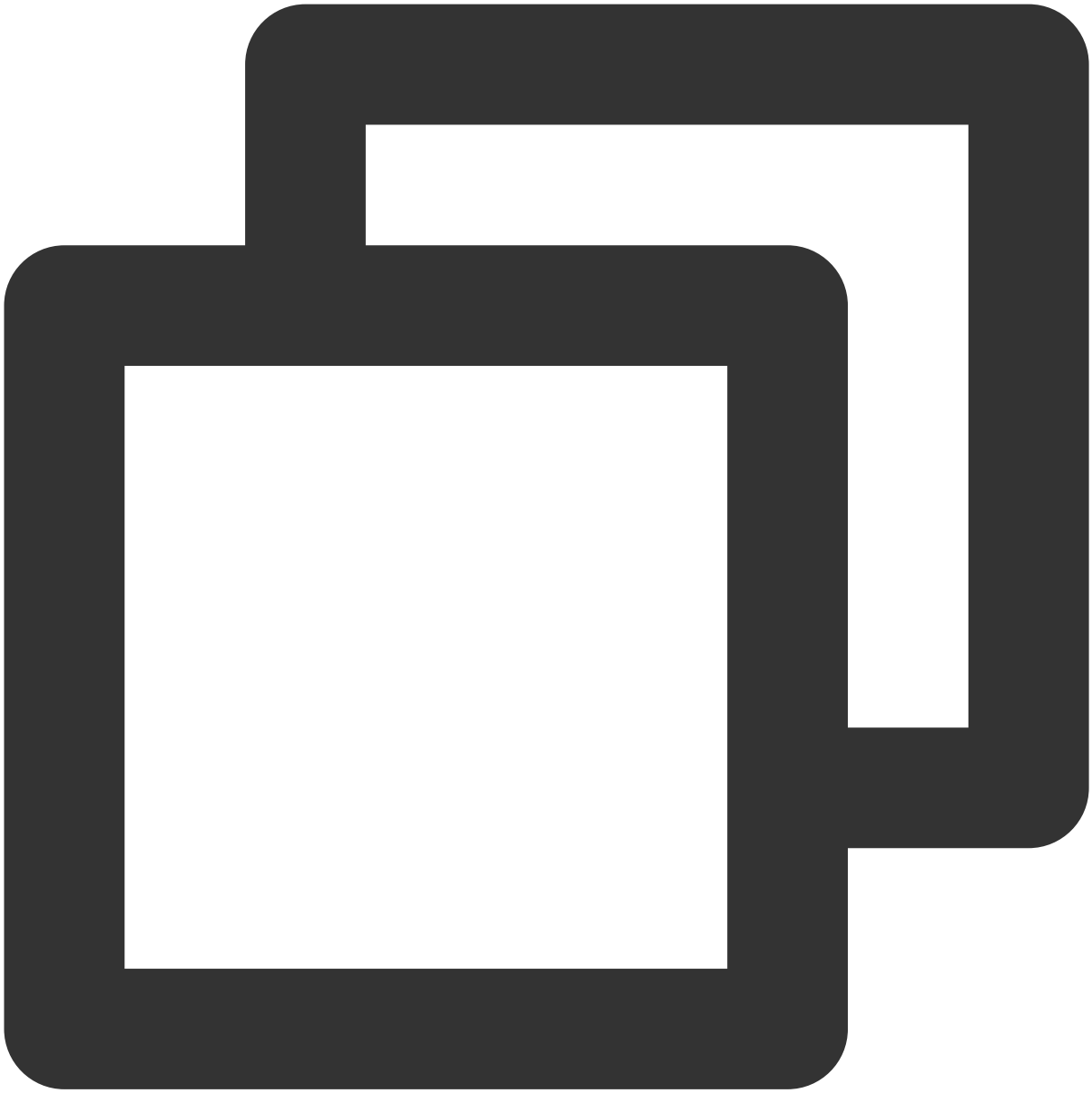

```
wget -c 'http://szx.dl.cdb.tencentyun.com:303/cfdee?appid=1210&time=1591&sign=aIGM%
```

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Log Delivery

Last updated：2024-06-18 16:23:02

TencentDB for MySQL offers log delivery feature, which can collect slow log and error log details sourced from TencentDB for MySQL instances and deliver it to Cloud Log Service (CLS) for analysis to quickly monitor and troubleshoot business issues. This document describes how to enable or disable the log delivery feature in the console.

Prerequisites

Before using this feature, please ensure that you have enabled CLS.

Use Limits

Only two-node/three-node local disk instances and read-only instances support the use of log delivery.

Slow Log Definition

Field Value	Type	Description
TIMESTAMP	-	Reserved field of CLS, represents the time when the log was generated.
instance_id	String	Database instance ID (e.g., cdb-xxx).
db_name	String	Database name.
rows_examined	Long	Number of scanned rows.
rows_sent	Long	Number of returned rows.
query_time	Double	Execution time (in seconds).
lock_time	Double	Lock wait time (in seconds).
user_host	String	Client information.

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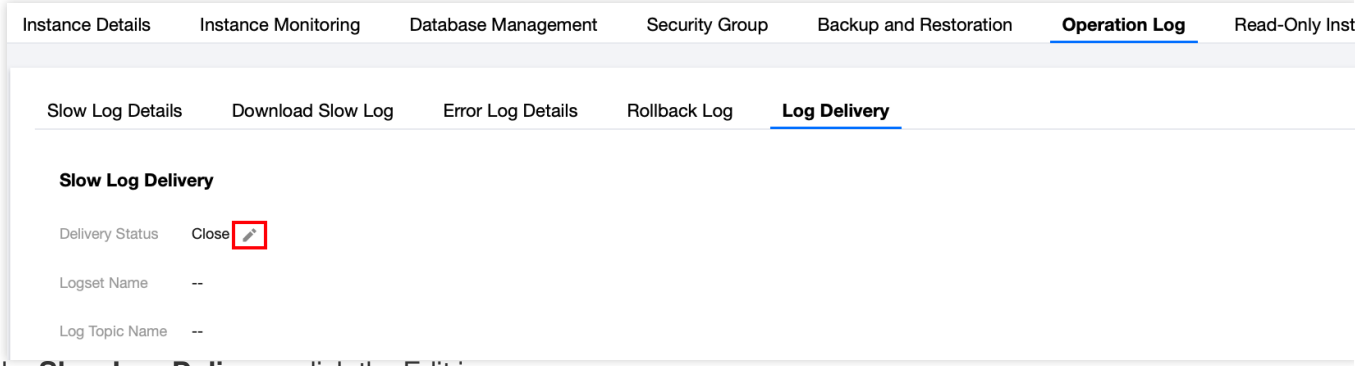
user_name	String	Username used by the client to connect to the database instance.
query_sql	String	Slow og SQL.

Error Log Definition

Field Value	Type	Description
TIMESTAMP	-	Reserved field of CLS, represents the time when the log was generated.
instance_id	String	Database instance ID (e.g., cdb-xxx).
content	String	Content of the error log.
level	String	Level of the error log. Such as warning, note and error. For logs without a level, the entry would be none, such as deadlock error logs.

Enabling Slow Log Delivery

1. Log in to the TencentDB for MySQL console. In the instance list, click the **Instance ID** to enter the management page.
2. On the instance management page, select **Operation Log** > **Log Delivery**.



3. Under **Slow Log Delivery**, click the Edit icon.
4. In the pop-up window, select **Enable**, configure the following items, then click **OK**.

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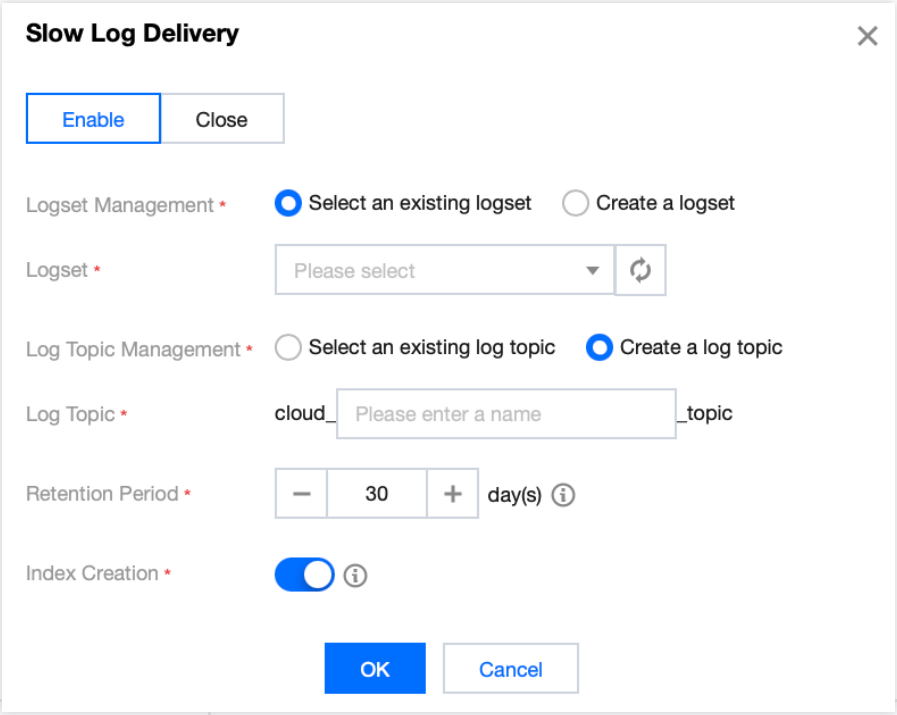

Parameter	Description
Region	Select the region for log shipping, supporting offsite shipping.
Logset Management	A logset is a classification of log topics for your convenience in managing them. You can Select an existing logset or Create a logset.
Logset	Select an existing logset: You can filter from the existing logset in the search box to categorize your slow log delivery. Create a logset: You can create a new logset to categorize your slow log delivery. The naming format for creating a logset is **cloud_ custom_logset**, where the custom field supports only letters, digits, and underscores, with a length of no more than 20 characters.
Log Topic Management	A log topic is the fundamental unit for log data collection, storage, search, and analysis. You can Select an existing log topic or Create a log topic.
Log Topic	Select an existing log topic: This option can be configured only when an existing logset is selected in logset operations. You may filter the log topics under the selected logset in the search box. Create a log topic: Create a new log topic under the selected logset. The naming format for creating a log topic is **cloud_custom_topic**, where the custom field only supports letters, digits, and underscores, with a length of no more than 20 characters. **Note:** You can manage log topic. For more details, see Managing Log Topic.
Retention Period	Select the retention period for the slow log data delivery, which defaults to 30 days. It allows you to choose between 1 to 3600 days, and the data will be automatically cleared

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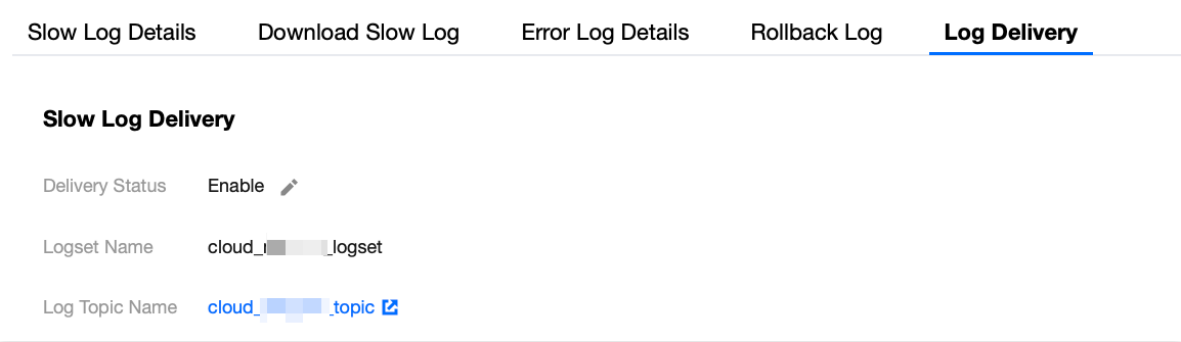
	after the logs expire. If an existing log topic is selected, the retention time will default to match the existing log topic's retention period.
Index Creation	Enabled by default. Index configuration is critical for log retrieval and analysis in CLS. Only if the index is enabled, the log can be analyzed and retrieved. Learn More. If an existing log topic is selected, the index status will default to match the existing log topic's index status.

5. After you successfully enable slow log delivery, you can see the Delivery Status is enable under Slow Log Delivery. Clicking on the Log Topic Name will take you to the CLS Console for further analysis and management.



Disable Slow Log Delivery

Note:

After disabling the slow log delivery, the generated slow log delivery data will continue to be stored according to the retention period selected when slow log delivery is enabled, and data will be automatically cleared after expiration.

1. Log in to the TencentDB for MySQL console. In the instance list, click the **Instance ID** to enter the management page.
2. On the instance management page, select **Operation Log** > **Log Delivery**.
3. Under **Slow Log Delivery**, click the Edit icon.
4. In the pop-up window, select **Close** and click **OK**.

Enabling Error Log Delivery

1. Log in to the TencentDB for MySQL console. In the instance list, click the **Instance ID** to enter the management page.
2. On the instance management page, select **Operation Log** > **Log Delivery**.
3. Under **Error Log Delivery**, click the Edit icon.
4. In the pop-up window, select **Enable**, configure the following items, then click **OK**.

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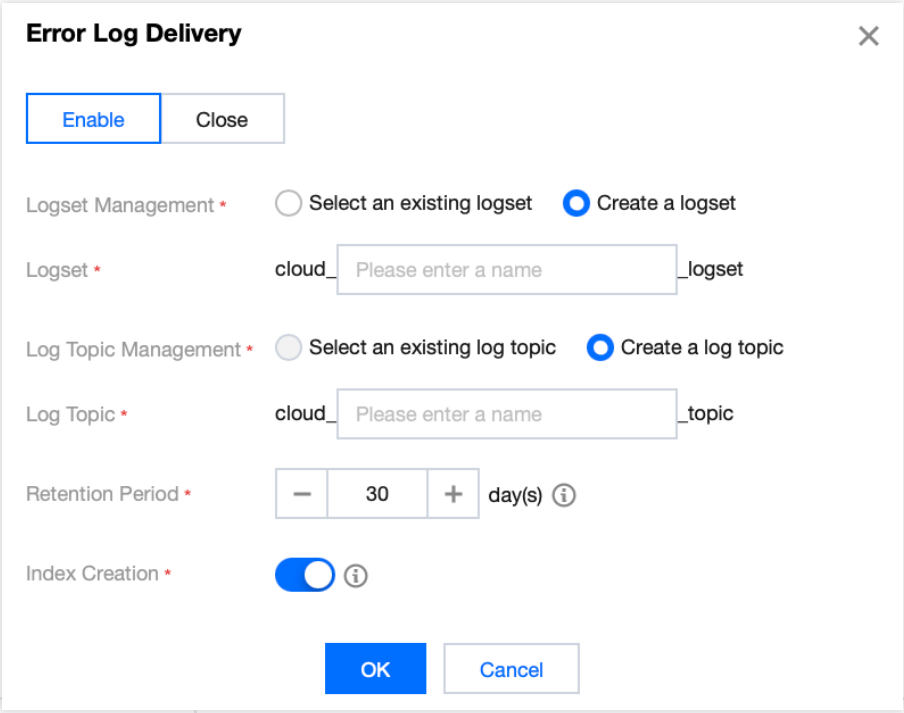

Parameter	Description
Region	Select the region for log shipping, supporting offsite shipping.
Logset Management	A logset is a classification of log topics for your convenience in managing them. You can Select an existing logset or Create a logset.
Logset	Select an existing logset: You can filter through existing logsets in the search box to categorize your error log delivery. Create a logset: You can create a new logset as the categorization for error log delivery. The naming format for creating a logset is **cloud_custom_logset**, where the custom field supports only letters, digits, and underscores, with a length of no more than 20 characters.
Log Topic Management	A log topic is the fundamental unit for log data collection, storage, search, and analysis. You can Select an existing log topic or Create a log topic.
Log Topic	SSelect an existing log topic: This option can be configured only when an existing logset is selected in logset operations. You may filter the log topics under the selected logset in the search box. Create a log topic: Create a new log topic under the selected logset. The naming format for creating a log topic is **cloud_custom_topic**, where the custom field only supports letters, digits, and underscores, with a length of no more than 20 characters. **Note:** You can manage log topic. For more details, please refer to Managing Log Topic.
Retention Period	Select the retention period for the slow log data delivery, which defaults to 30 days. It allows you to choose between 1 to 3600 days, and the data will be automatically cleared after the logs expire. If an existing log topic is selected, the retention time will default to match the existing log topic's retention period.

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Index Creation	Enabled by default. Index configuration is critical for log retrieval and analysis in CLS. Only if the index is enabled, the log can be analyzed and retrieved. Learn More. If an existing log topic is selected, the index status will default to match the existing log topic's index status.

5. After you successfully enable slow log delivery, you can see the Delivery Status is enable under Error Log Delivery. Clicking on the Log Topic Name will take you to the CLS Console for further analysis and management.

Disable Error Log Delivery

Note:

After disabling the error log delivery, the generated error log data will continue to be stored according to the retention period selected when the error log delivery is enabled, and data will be automatically cleared after expiration.

1. Log in to the TencentDB for MySQL console. In the instance list, click the **Instance ID** to enter the management page.
2. On the instance management page, select **Operation Log** > **Log Delivery**.
3. Under **Error Log Delivery**, click the Edit icon.
4. In the pop-up window, select **Close** and click **OK**.

Related Documents

Logset
Managing Log Topic
Chart Overview
Creating Processing Task
Syntax and Rules

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Tag
Overview

Last updated：2024-07-23 10:22:09

Overview

A **tag** is a key-value pair provided by Tencent Cloud to identify a resource in the cloud. For more information, see Tag Overview.

You can manage TencentDB for MySQL resources in a categorized manner by using various tag types, such as business, purpose, and person-in-charge, making it easier to find the right resources. Tags have no semantic meaning for Tencent Cloud and are parsed and matches strictly based on strings. During us, you only need to pay attention to applicable use limits.

Below is a specific use case to show how a tag is used.

Case Background

A company owns 10 TencentDB for MySQL instances in Tencent Cloud. Distributed in three departments (ecommerce, gaming, and entertainment), these instances are used to serve internal business lines such as marketing, game A, game B, and post-production. The OPS owners of the three departments are John, Jane, and Harry, respectively.

Setting a Tag

To facilitate management, the company categorizes its TencentDB for MySQL resources with tags and defines the following tag key-value pairs.

Tag Key	Tag Value
Department	Ecommerce, gaming, and entertainment
Business	Marketing, game A, game B, and post-production
OPS owner	John, Jane, and Harry

These tag keys/values are bound to TencentDB for MySQL instances in the following way:

instance-id	Department	Business	OPS Owner
cdb-abcdef1	Ecommerce	Marketing	Harry
cdb-abcdef2	Ecommerce	Marketing	Harry
cdb-abcdef3	Gaming	Game A	John

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cdb-abcdef3	Gaming	Game B	John
cdb-abcdef4	Gaming	Game B	John
cdb-abcdef5	Gaming	Game B	Jane
cdb-abcdef6	Gaming	Game B	Jane
cdb-abcdef7	Gaming	Game B	Jane
cdb-abcdef8	Entertainment	Post-production	Harry
cdb-abcdef9	Entertainment	Post-production	Harry
cdb-abcdef10	Entertainment	Post-production	Harry

Using a Tag

For more information on how to create and delete a tag, see Operation Guide.

For more information on how to edit a tag in TencentDB for MySQL, see Editing a Tag.

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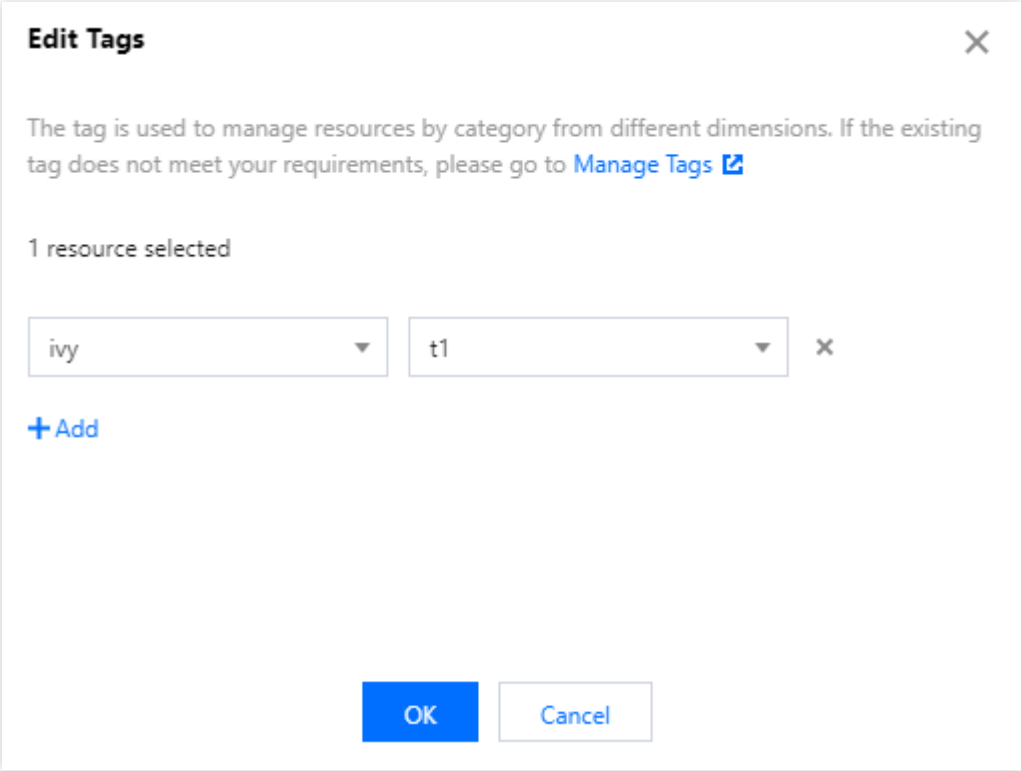
Editing Tags

Last updated：2024-07-23 10:22:21

You can edit resource tags by the following steps.

Editing the tag of a single instance

1. Log in to the TencentDB for MySQL console. In the instance list, locate the desired instance and click **More** > **Edit Tag** in the **Operation** column.
2. In the pop-up dialog box, add, modify, or delete a tag, and click **OK**.



Editing the tags of multiple instances

1. Log in to the TencentDB for MySQL console. In the instance list, select multiple instances and click **More** > **Edit Tag** at the top.
2. In the pop-up dialog box, add, modify, or delete a tag, and click **OK**.

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