

# **TencentDB for MySQL**

## **FAQs**

### **Product Documentation**



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# FAQs

## Related to Selection

Last updated : 2023-12-27 11:05:48

### How do I select an appropriate TencentDB for MySQL instance?

Before purchasing a MySQL instance, it is crucial to understand the features of different instances. This can help you select one that best suits your operations. This section provides guidance on how to select a MySQL instance that is suitable for your business needs.

#### Instance Information

Before purchasing a MySQL instance, it is essential to consider factors such as price, performance, workload, and business usage scenarios so that you can buy an instance with high cost-effectiveness. As elements such as database storage engine, instance architecture, storage type, and resource isolation policy are closely intertwined and can impact one another, you might feel confused during the selection process. Therefore, this section provides a concise overview of these aspects to help you in selecting a suitable instance.

#### 1. Database Storage Engine

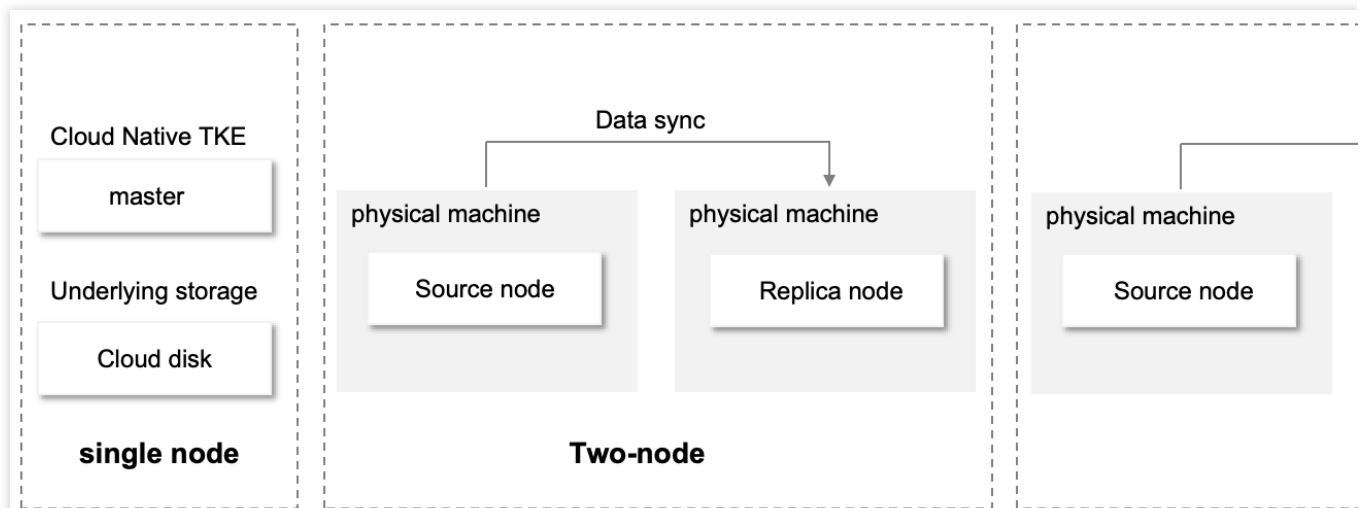
A storage engine refers to the type of tables. The storage engine of database determines the manner in which tables are stored in a computer.

**InnoDB:** The most frequently used OLTP storage engine, uses multi-version concurrency control (MVCC) and row-level locking technologies, offering high performance and reliable processing capabilities. In comparison to other MySQL storage engines, InnoDB offers functions including data foreign key and rollback, ensuring better data integrity. It also provides higher-level query functionalities. InnoDB kernel has been optimized a lot by Tencent Cloud and therefore has great performance advantages and is extensively applied in scenarios that involve high concurrency and require high performance.

**RocksDB:** A widely popular high-performance persistent key-value (KV) store, TXRocks is a transactional storage engine developed by Tencent's TSQL team based on RocksDB. Thanks to the RocksDB LSM Tree storage structure, TXRocks reduces the waste caused by the half-full page and fragmentation mechanism of InnoDB, while also supporting the compact storage formats. Therefore, while providing similar performance as InnoDB, TXRocks can save up to half or even more storage space compared to InnoDB. This makes it more suitable for business scenarios that require high read-write performance and involve large data volumes.

#### 2. Instance Architecture

CDB MySQL supports three types of instance architectures: single-node, two-node, and three-node.



Architecture	Description	Applicable Scenarios
Single-Node	Supported versions: MySQL 5.7 and 8.0. Node: Single Node.	Personal learning, micro-websites, non-core small-scale enterprise systems, and the development and testing environments of large and medium-sized corporations.
Two-Node	Supported versions: MySQL 5.6, 5.7, and 8.0. Nodes: One Primary and One Standby. Primary-Standby Replication Mode: Asynchronous (default) and Semi-Synchronous	Gaming, internet, IoT, retailing e-commerce, logistics, insurance, and securities, etc.
Three-Node	Supported versions: MySQL 5.6, 5.7, and 8.0. Nodes: One Primary and Two Standbys. Primary-Standby Replication Mode: Asynchronous (default), Strong-synchronous, and Semi-Synchronous	Gaming, internet, IoT, retailing e-commerce, logistics, insurance, and securities, etc.

### III. Storage Classification

The underlying storage of TencentDB for MySQL accommodates Local SSD, SSD CBS and Enhanced SSD CBS.

Performance Metrics	Enhanced SSD CBS	SSD CBS	Local SSD
Maximum Capacity per Disk (GB)	30000	30000	12000
Maximum IOPS per Disk	Reaches 100,000 with additional performance included	26000	150000
Calculation	Baseline Performance: Random IOPS	Random IOPS =	IOPS is relevant

Formula of Random IOPS	$= \min\{1800 + \text{Capacity (GiB)} \cdot 50, 50000\}$ <i>Extra Performance: Maximum IOPS = <math>\min\{\text{Extra Performance Value} \cdot 128, 50000\}</math></i> For more details, please refer to <a href="#">Enhanced SSD CBS Performance Description</a>	$\min\{1800 + \text{Capacity (GiB)} \cdot 30, 26,000\}$	to the instance specifications. For details, see <a href="#">Instance Specification</a> .
Maximum Throughput per Disk (MB/s)	Reaches 1,000 with additional performance	260	-
Throughput Calculation Formula (MB/s)	Baseline Performance: $\text{Throughput} = \min\{120 + \text{Capacity (GiB)} \cdot 0.5, 350\}$ Additional Performance: $\text{Throughput} = \min\{\text{Additional Performance Value} \cdot 1, 650\}$ For details, please refer to <a href="#">Enhanced SSD CBS Performance Description</a> .	$\text{Throughput} = \min\{120 + \text{Capacity (GiB)} \cdot 0.2, 260\}$	-
One-Way Random Read/Write Latency (ms)	0.2 - 1	0.5 - 3	Microsecond-level

#### IV. Resource Isolation Policy

The resource isolation policies of CDB, including basic, general, and dedicated.

Resource Isolation Policy	Description
Basic Type	Only single-node instances support the basic isolation policy (formerly basic edition), where there is a separation between computing and storage, with the underlying layer using cloud disk storage.
General Type	An instance exclusively utilizes allocated memory and disk resources while sharing CPU resources with other general instances on the same physical machine. Benefit from resource sharing, bringing higher cost-effectiveness and minor CPU resource reutilization. The disk capacity is not tied to the CPU and memory, allowing for flexible matching.
Dedicated Type	An instance has dedicated CPU (with core binding), memory, and disk resources. It promises long-term performance stability and remains unaffected by the behavior of other instances on the physical machine. The peak configuration of the dedicated type is to occupy a physical machine alone, taking full control over all its resources.

## Product Selection

You can follow the following steps to select an instance:

### 1. Selecting Database Storage Engine

If you require full transaction support and robust read-write concurrency capabilities, InnoDB is recommended.

If you want to reduce storage costs, RocksDB is recommended. It uses about half or even less storage space compared to InnoDB, while still providing similar performance.

### 2. Selecting Instance Architecture

Single-Node: Applies to scenarios such as personal learning, sparse websites, non-core small business systems, and the development and testing environments for medium to large-sized enterprises.

Two-Node: Adopts the classic master-slave high-availability architecture, ideal for internet, IoT, retailing e-commerce, logistics, gaming industries, or medium to large-sized enterprises.

Three-Node: Necessary for finance-grade reliability, high security, high availability, high disaster recovery capabilities, resembling business of financial, securities, insurance industries, or core database of large enterprises.

### 3. Selecting Storage Type

For both two-node and three-node architecture instances, the currently supported storage type is local SSD disk. For single-node architecture instances, the supported storage types are SSD CBS and enhanced SSD CBS.

Instances with single-node cloud disk architecture are based on cloud-native design, fulfilling requirements in scenarios such as testing, development, and personal learning. They offer a maximum of 30 TB storage space. The size of storage space has an impact on IOPS.

For the performance metrics of different storage types, see [Storage Types](#).

### 4. Selecting Resource Isolation Policy and Instance Specifications

A single-node architecture supports a basic isolation policy, whereas both two-node and three-node architectures support general and dedicated isolation policies. The instance specifications include parameters such as vCPU, memory, max IOPS, and max storage capacity. You can select the most suitable resource isolation policy and instance specifications based on your business requirements.

#### Note :

For details about all available models and selection options, please see [Purchase Methods](#).

## Related Documents

[Architecture Overview](#)

[Resource Isolation Policy](#)

[Database Instance Type](#)

[Database Instance Replication](#)

[Database Instance Specifications](#)

# Billing

Last updated : 2024-07-23 17:50:44

## How do I request a refund for a purchased instance if I don't need it anymore?

You can request a refund based on your instance type:

Pay-as-you-go instance: TencentDB for MySQL will return resources directly. Refunds cannot be requested.

Monthly subscribed instance:

5-day unconditional return: Each account can return one monthly subscribed TencentDB for MySQL instance unconditionally within five (inclusive) days after purchase by default.

Standard return: If you have already returned one TencentDB instance unconditionally within five days after purchase, you can further return 199 monthly subscribed instances in the console at any time.

For more information, see [Refund](#).

## Will my business be affected if I switch the billing mode switch from pay-as-you-go to monthly subscription? How will I be charged then?

Rest assured that access to your business will not be affected during the switch from pay-as-you-go billing to monthly subscription billing.

For billing details, see [Billing Overview](#).

## Why are additional fees incurred for my monthly subscribed instance?

Usage of backup capacity that exceeds the free tier will be charged. Check whether your usage of backup capacity exceeds the free tier.

You can view the backup space usage on the database backup page in the [TencentDB for MySQL console](#). For more information, see [Backup Space Billing](#).

## Will I be charged if my pay-as-you-go instances are idle?

Yes. If you stop using pay-as-you-go instances, terminate them as soon as possible to avoid further fees.

## How is the backup capacity billed?

TencentDB for MySQL offers a certain amount of backup capacity for free based on the region. The capacity is equivalent to the sum of the storage capacity of all two-node and three-node instances (including source instances and disaster recovery instances) in the region.

The used space and free space of a single-node instance of cloud disk edition are displayed separately, which can be viewed on the **Backup and Restoration** tab.



Instance Details

Instance Monitoring

Database Management

Security Group

Backup and Restoration

Used space/Total free space

Clone

Manual Backup

Auto-Backup Settings

Used Space 27.88 GB / 100 GB ⓘ

Snapshot Backup 27

Data Backup List

Log Backup List

Cloned Instance List

All

Today

Last 7 days

Last 15 days

Last 30 days

Select date

Select date

📅

For prices of backup space that exceeds the free tier, see [Backup Space Billing](#).

To reduce backup costs, see **Suggestions for Reducing Backup Costs** in [Backup Space Billing](#).

# Backup FAQs

Last updated : 2023-08-03 16:30:09

## Backup space billing

[How is the backup space billed?](#)

[How do I reduce the backup space costs?](#)

## Database backup

[How do I configure automatic backup?](#)

[Why can't I initiate a manual backup task?](#)

[Why can't I logically back up and download by table?](#)

[How do I back up data on my own?](#)

[Can I download or restore backup files that exceed the retention period?](#)

[Can I disable data and log backups?](#)

[How do I cancel a backup task?](#)

[Can I delete backups manually?](#)

## Backup and restoration

[How do I download xstream and qpress?](#)

[Why can't a downloaded backup file be unpacked/decompressed with tar?](#)

[What should I do if the backup download is slow?](#)

[Why does an error occur when I download data backup files?](#)

[Can I restore the downloaded backups to another TencentDB for MySQL instance?](#)

[How do I restore and migrate the backups of basic single-node instances?](#)

## How is the backup space billed?

TencentDB for MySQL offers a certain amount of backup capacity for free based on the region. The capacity is equivalent to the sum of the storage capacity of all two-node and three-node instances (including source instances and disaster recovery instances) in the region.

The used space and free space of a single-node instance of cloud disk edition are displayed separately, which can be viewed on the **Backup and Restoration** tab.



For prices of backup capacity that exceeds the free tier, see [Backup Space Billing](#).

## 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).

Reduce the frequency of automatic data backup for non-core businesses (you can adjust the backup cycle and backup file retention period in the console, which 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 Database](#).

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).

Business Scenario	Recommended Backup Retention Period
Core businesses	7–1,830 days
Non-core, non-data businesses	7 days
Archival businesses	7 days. We recommend you manually back up data based on your actual business needs and delete the backups promptly after use
Testing businesses	7 days. We recommend you manually back up data based on your actual business needs and delete the backups promptly after use

## How do I configure automatic backup?

You can configure it on the **Backup and Restoration** tab in the [TencentDB for MySQL console](#).

The screenshot shows the TencentDB for MySQL console interface. At the top, there are navigation tabs: 'Instance Details', 'Instance Monitoring', 'Database Management', 'Security Group', and 'Backup and Recovery'. The 'Backup and Recovery' tab is selected and highlighted with a red box. Below the navigation bar, there are three buttons: 'Clone', 'Manual Backup', and 'Auto-Backup Settings'. The 'Auto-Backup Settings' button is highlighted with a red box. The main content area is titled 'Backup Settings'. Below this title, there is a yellow warning box with the text: 'Auto backup now uses a fast physical backup with high success rate and no longer supports logical backup. If you want to export a logical backup, you can use the manual backup feature that supports the logical backup by tab'. Below the warning box, there is a section titled 'Data Backup Configuration' which is highlighted with a red border. This section contains the following settings: 'Backup Start Time' with 'Default Time' and 'Custom' tabs; 'Data Backup Retention Time' set to '7' days, with a note '7-1830 days, backup sets are automatically deleted after expiration.'; and 'Backup Schedule' with checkboxes for all days of the week (Mon, Tue, Wed, Thurs, Fri, Sat, Sun) all checked. Below this, there is a section titled 'Log Backup Configuration' which contains 'Log Backup Retention Time' set to '7' days, with a note '7-1830 days, backup sets are automatically deleted after expiration.'

## How do I back up data on my own?

TencentDB for MySQL instances are fully backed up on a daily basis by default. For more information, see [Backing up Database > Backup modes](#). You can also back up data by using the following methods:

Use mysqldump.

Use a third-party tool such as Navicat Premium.

Log in to phpMyAdmin as instructed in [DMC Management](#) and click **Export** on the navigation bar at the top.

## How do I restore and migrate the backups of basic single-node instances?

Basic single-node instances only support snapshot backups. For more information, see [Offline Migration of Data > Data Migration with Command Line Tool](#).

## Why does an error occur when I download data backup files?

You can use the `wget -c 'backup file download address' -O custom filename.xb` command to download data backup files. Note that the download address should be placed inside a pair of single quotation marks

(') to help the program identify it.

## Can I restore the downloaded backups to another TencentDB for MySQL instance?

Yes. For detailed directions, see [Restoring Database from Logical Backup](#).

## Can I delete backups manually?

Automatic backups cannot be deleted manually. You can set the retention period for automatic backups, and they will be deleted automatically when they expire.

Manual backups can be manually deleted from the backup list. They can be retained permanently as long as they are not deleted.

1.1 Log in to the [TencentDB for MySQL console](#), click an instance ID/name to access the instance management page, and select the **Backup and Restoration** tab.

1.2 Click **Delete** in the **Operation** column in the backup list.

## How do I cancel a backup task?

Backup tasks cannot be canceled.

## What should I do if the backup download is slow?

We recommend you copy the download address on the **Backup and Restoration** tab in the [TencentDB for MySQL console](#), 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.

`wget` command format: `wget -c 'backup file download address' -O custom filename.xb`

## 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 you configure a reasonable backup retention period based on your business needs or download the backup files in the [TencentDB for MySQL console](#).

You can also manually back up instance data in the console. Manual backups will be retained permanently.

### Note:

Manual backups will also take up the backup space. We recommend you plan the usage of the backup space appropriately to reduce costs.

## Can I disable data and log backups?

No. However, you can reduce the backup frequency and delete manual backups no longer used in the [TencentDB for MySQL console](#) to lower the space usage.

## Why can't I initiate a manual backup task?

You need to check the automatic backup time you configured. If the instance is performing the daily automatic backup task, you cannot initiate a manual backup task.

### Why can't I logically back up and download by tables?

After the backup feature as described in [Backing up Database](#) was upgraded, both logical and physical backups adopted the new compression algorithm, making some download features currently unavailable. To perform logical backups by tables, you can select **Logical backup** > **Specify table** in manual backup and download the completed backup file.

### Why can't a downloaded backup file be unpacked/decompressed with tar?

Because backup files in the latest version adopt a new compression algorithm, they cannot be unpacked/decompressed with the tar tool. Instead, xstream and qpress are required.

For more information on how to unpack/decompress backup files with xstream and qpress, see [Restoring Database from Physical Backup](#) and [Restoring Database from Logical Backup](#).

### How do I download xstream and qpress?

xstream is a subprogram of Percona XtraBackup. To use it, you need to install Percona XtraBackup from binaries or `yum` repositories.

Extract the qpress binary files by running the tar command after downloading qpress.

For more information on XtraBackup and qpress installation, see [Restoring Database from Physical Backup](#).

# Troubleshooting

Last updated : 2022-06-30 10:37:41

## The number of tables in a single instance exceeds 1 million

When the number of tables in a single instance exceeds 1 million, it may cause backup failure and affect database monitoring. You need to keep the number of tables in a single instance below 1 million.

## Large transactions caused by non-primary key tables

### Cause

If there is no primary key table in the instance and the binlog is in row format, when a large amount of data is updated or deleted through a SQL statement, playback on the slave machine will cause a large transaction, resulting in the backup thread unable to acquire the lock, resulting in backup failure.

### Troubleshooting

1. Check all the non-primary key tables that exist in the instance through SQL statements.



```
select TABLE_SCHEMA, TABLE_NAME, TABLE_TYPE, ENGINE, TABLE_ROWS from information_schema
```

2. Add a primary key to a table without a primary key.





```
alter table table_name add primary key(`column_name`);
```

# Rollback

Last updated : 2024-07-23 17:52:56

## How do I recover accidentally deleted data in TencentDB for MySQL?

Data can be recovered through rollback. TencentDB for MySQL allows you to roll back databases or tables to any time point within the backup period. For more information, please see [Data Rollback](#).

XtraBackup can be used to restore MySQL physical backup files to CVM-based self-created databases. For more information, please see [Restoring Database from Physical Backup](#).

XtraBackup can be used to restore MySQL logical backup files to CVM-based self-created databases. For more information, please see [Restoring Database from Logical Backup](#).

## How do I recover accidentally dropped databases or tables in TencentDB for MySQL?

Data can be recovered through rollback. TencentDB for MySQL allows you to roll back databases or tables to any time point within the backup period. For more information, please see [Data Rollback](#).

### Note:

If the database or table to be rolled back has been dropped, you need to log in to the TencentDB instance and create a database or table with the same name as before first before performing rollback in the console.

## If I accidentally delete some data that hasn't been backed up when performing a stored procedure in TencentDB for MySQL, can I restore the data?

With the rollback feature in the console, you can restore the data to any point in time within the backup period.

## Will the current table data be overwritten during a rollback in TencentDB for MySQL?

A rollback operation will generate a new database or table in the original instance. Upon the completion of rollback, you can see both the new and original databases or tables. The new database or table after rollback are named "original database or table name\_bak".

## How do I query the real-time rollback progress and log when a TencentDB for MySQL rollback operation is underway?

You can query rollback progress and log during rollback in real time. For more information, please see [Data Rollback](#).

# Connection and Login

## One-Click Connectivity Checker

Last updated : 2024-07-23 17:57:24

If you are unable to access a TencentDB for MySQL instance over the private or public network, you can use the connectivity checker to easily troubleshoot connectivity issues.

If you encounter a connectivity issue when accessing a TencentDB for MySQL instance from a CVM instance over the private or public network, you can use the connectivity check tool provided in the TencentDB for MySQL console to easily troubleshoot the issue.

## Private Network Connectivity Check

1. Log in to the [TencentDB for MySQL console](#). In the instance list, click the ID of the instance to be checked and access the instance management page.
2. Select **Connection Check > Private Network Check**.
3. Click **Add CVMs to Access This Instance**.

### Note:

Only CVM instances in the same region as the TencentDB for MySQL instance are listed by default. If you need cross-region access, enable network interconnection through a [Cloud Connect Network](#).

4. Click **Start Check** and a check report will be generated after the check is completed.

Private Network Check

Public Network Check

Instance ID


Instance Name

Private IP

Private Port

Network

Default-VPC - Default-Subnet



You have not checked the connection.

The connection check will help you in detecting potential database connection and access problems.  
After the check, solutions will be suggested to ensure that your database can be accessed properly.

Start Check

Add CVMs to Access This Instance

CVM Name	Private IP	Network	Status
----------	------------	---------	--------

5. In the **Operation** column of the check report, click **View Report** to view the check result.

If the check status is **Normal**, it means that the CVM instance is allowed to access this TencentDB for MySQL instance over the private network.

If the check status is **Abnormal**, it means that the CVM instance cannot access this TencentDB for MySQL instance over the private network. In this case, troubleshoot by following the **Suggested Solution** and connect again.

Check Item	Exception Handling
MySQL instance status	The MySQL instance has been terminated. If it is terminated by mistake, please go to the <a href="#">recycle bin</a> to restore it.
CVM instance status	The CVM instance has been terminated. If it is terminated by mistake, please go to the <a href="#">recycle bin</a> to restore it.
	The CVM instance is shut down. To use it, please start it up in the <a href="#">CVM console</a> .
CVM and MySQL are in the same VPC	The networks of the CVM and MySQL instances are of different types. Please refer to <a href="#">Troubleshooting Connection Errors</a> to modify their network types so that they are in the same type of network.
	The CVM and MySQL instances are using different VPC IP ranges. Please refer to <a href="#">Troubleshooting Connection Errors</a> to modify their VPCs so that they are in the same VPC in the same region.
CVM security group policy	The outbound rule of the CVM instance's security group rejects the access to the IP and port of the MySQL instance. Please refer to <a href="#">Troubleshooting Connection Errors</a> to modify the outbound rule to allow the access to the IP and port of the MySQL instance.
MySQL security group policy	The inbound rule of the MySQL instance's security group rejects the access from the IP and port of the CVM instance. Please refer to <a href="#">Troubleshooting Connection Errors</a> to modify the inbound rule to allow the access from the IP and port of the CVM instance.

**Report Details**CVM Name 

Check item	Status	Impact	Suggested Solution
MySQL Instance Status	Normal	--	--
CVM instance status	Normal	--	--
CVM and MySQL are under the same VPC	Normal	--	--
CVM security group policy	Normal	--	--
MySQL security group policy	Normal	--	--

5 in total

**OK**


## Public Network Connectivity Check

1. Log in to the [TencentDB for MySQL console](#). In the instance list, click the ID of the instance to be checked and access the instance management page.
2. Select **Connection Check > Public Network Check**.
3. Click **Add Public Network Servers to Access This Instance**.
4. Click **Start Check** and a check report will be generated after the check is completed.

Private Network Check

Public Network Check

Instance ID Instance Name Public Network Address Public Port Net

Normal

No problem found

The connection check will help you in detecting potential database connection and access problems.  
After the check, solutions will be suggested to ensure that your database can be accessed properly.

Start Check

Last Check Time: 2022-02-25 16:15:48

Add Public Network Servers to Access This Instance

Public Network Server Address	Status	Operatic
	Normal	Delete

5. In the **Operation** column of the check report, click **View Report** to view the check result.

If the check status is **Normal**, it means that the server is allowed to access this TencentDB for MySQL instance over the public network.

If the check status is **Abnormal**, it means that the server cannot access this TencentDB for MySQL instance over the public network. In this case, troubleshoot by following the **Suggested Solution** and connect again.

Check Item	Exception Handling
MySQL instance status	The MySQL instance has been terminated. If it is terminated by mistake, please go to the <a href="#">recycle bin</a> to restore it.
Public network access status	The public network access has been disabled for the MySQL instance. Please refer to <a href="#">Connecting to MySQL Instance</a> to enable it.

Report Details

Public Network Server Address

Check item	Status	Impact	Suggested Solution
MySQL Instance Status	Normal	--	--
Internet Access Status	Normal	--	--
MySQL security group policy	Normal	--	--

3 in total

OK

# Connection

Last updated : 2024-07-23 17:57:37

## How do I connect to a TencentDB for MySQL instance?

You can connect to a TencentDB for MySQL instance in the following ways:

**Private network connection:** a CVM instance can be used to connect to the private network address of a TencentDB instance. This method relies on the high-speed private network of Tencent Cloud and features low delay. The two instances must be under the same account and in the same [VPC](#) in the same region, or both in the classic network.

**Public network connection:** if you cannot access the private network, you can connect to your TencentDB for MySQL instance at its public network address. The public network address needs to be manually enabled. It can be viewed on the instance details page in the [TencentDB for MySQL console](#) and can be disabled if no longer needed. For more information, please see [Connecting to MySQL Instance](#).

## What should I do if the connection to TencentDB for MySQL failed?

### Failure to connect to TencentDB for MySQL from CVM or local computer

1. Use the diagnosis tool to locate the causes

The TencentDB for MySQL console provides a [one-click connectivity check tool](#) to help you locate the causes of connection failures. Then, you can make changes according to the prompts and retry to connect to the instance.

2. Locate the causes by yourself

If you cannot locate the cause of the problem with the one-click connectivity check tool, you can try to locate the cause by yourself by referring to the failure causes as described in [Instance Connection Failure](#).

### Failure to connect to TencentDB for MySQL from DMC

1. Confirm that the database account has authorized all IPs of DMC servers in the region. For more information on authorization, please see [Modifying Host Addresses with Access Permissions](#). You can also set % as the host address authorized by the database account to allow all IPs and only use security groups to control database access.
2. If you confirm that all needed IPs are authorized, then the cause may be incorrect password. Accordingly, you can enter the password again, [reset the password](#), or [create a temporary account with sufficient permissions](#).

For more information, please see [Instance Connection Failure](#).

## How do I view the private/public network addresses?

Log in to the [TencentDB for MySQL console](#), click an instance ID in the instance list to enter the instance details page, and view the private/public network addresses.

## How do I enable the public network address?



Log in to the [TencentDB for MySQL console](#), click an instance ID in the instance list to enter the instance details page, and enable the public network address in **Public Network Address**.

### What should I do if I have slow access over the public network?

We recommend you use the private network. This connection method uses the high-speed private network with a low delay. For more information, please see [Connecting to MySQL Instance](#).

### Can I use a CVM instance to connect to the private network address of a TencentDB for MySQL instance?

1. The following conditions must be met before you can use private network access:

The two instances must be in the same [VPC](#) in the same region, or both in the classic network.

2. You can check whether they are in the same VPC or both in the classic network in the following ways:

You can log in to the [CVM console](#) and view the network information of a CVM instance in the instance list or on the instance details page.

You can log in to the [TencentDB for MySQL console](#) and view the network information of an instance in the instance list or on the instance details page.

For more information, please see [Viewing network type and VPC information](#).

### What should I do if I can't use a CVM instance to connect to the private network address of a TencentDB for MySQL instance?

We recommend you use the [one-click connectivity check tool](#) to troubleshoot the problem first and then find the corresponding solution in [Instance Connection Failure](#) according to the check report.

### My CVM and TencentDB for MySQL instances are in different regions (such as Guangzhou and Shanghai, respectively). Can I use the private network for connection?

No. For solutions, please see [CVM and MySQL in different regions and different VPCs](#).

### My CVM and TencentDB for MySQL instances are in different AZs (such as Shanghai Zone 2 and Shanghai Zone 1, respectively) in the same region. Can I use the private network for connection?

Even if the CVM and TencentDB for MySQL instances are in the same region, they may be in different VPCs.

If they are in different AZs in the same VPC, they can interconnect over the private network.

If they are in different VPCs (such as VPC1 and VPC2, respectively), they cannot interconnect over the private network. For solutions, please see [CVM and MySQL in the same region but different VPCs](#).

### Can I use a CVM instance to connect to a TencentDB for MySQL instance directly over the private network when they are under different accounts?

No. However, you can use [CCN](#) to implement cross-account connection over the private network.

## The verification with telnet found that the network and port connectivity of the TencentDB instance was good, but an error was reported when I tried to log in to it on the command line in the CVM instance. What should I do?

If "ERROR 1045(28000):Access denied for user..." is displayed, check whether the instance account and password entered are correct. If you forgot the password, you can [reset it](#). If the error persists after you enter the correct information again, log in to the [TencentDB for MySQL console](#), click an instance name to enter the instance management page, select **Database Management** > **Account Management** to check whether restrictions are imposed on the IP connecting to your instance.

The message "ERROR 1040(00000):Too many connections" indicates that the number of current connections to the TencentDB instance exceeds the limit. The common reasons and solutions are as follows:

- i. There are too many sleeping threads. We recommend you lower the values of `wait_timeout` and `interactive_timeout` in the console.
- ii. Slow queries heaped up. The `long_query_time` parameter is 10s by default. We recommend you change it to 1-2s and then observe slow query logs.
- iii. If there are few sleeping threads and no slow queries heaped up, we recommend you increase the value of the `max_connections` parameter in the console.

If "ERROR 2003 (HY000): Can't connect to MySQL server..." is displayed, check whether the instance IP and port entered are correct. If the error persists after you enter the correct information, check the security group policies of the instance in the console to verify whether the CVM instance has the permission to connect to the database. For more information, please see [TencentDB Security Group Management](#).

If the connectivity test fails during data migration, check whether the security policy allows the prompted migration proxy IP.

Check the `init_connect` parameter (if set), such as `mysql>set global init_connect='insert into db_monitor.accesslog(thread_id,log_time,localname,matchname) values(connection_id(),now(),user(),current_user())';`

This means that each connection to the database by each non-super-privileged user will insert an entry into the `db_monitor.accesslog` table. Once there are uncommitted transactions or relevant lock waits in the table, then `insert into db_monitor.accesslog` operations will be jammed, causing all connections by non-super-privileged users to be stuck and affecting the normal use of TencentDB. Therefore, please configure the `init_connect` parameter with caution.

# Prohibition of Ping Command

Last updated : 2024-07-23 17:57:48

## Problem Description

To protect TencentDB from DDoS attacks, TencentDB for MySQL prohibits the ping command from being used to check the network connectivity of a private network address by default.

**Note:**

You can use the ping command to check the network connectivity of a public network address.

## Solution

We recommend troubleshooting and locating network connectivity problems quickly with the telnet command.

**The command format is as follows:**



```
telnet private/public IP address private/public port
```

**After the command is executed, network access status is as follows:**

Normal network access

```
[root@v ~]# telnet cd-cdb .tencentcdb.com 63126
Trying ..
Connected to cd-c .tencentcdb.com.
Escape character is '^]'.
V
```

Exceptional network access

```
[root@ ~]# telnet 6 3306
Trying
telnet: connect to address : Connection timed out
[root@VM_78_9_centos ~]#
```

**Note:**

If there is still no network access after running the telnet command, you can easily troubleshoot private and public network connection problems with the [connectivity check tool](#).

# Parameter Modifications

Last updated : 2024-07-24 09:26:29

## How do I modify the configuration parameters of a TencentDB for MySQL instance?

In the [TencentDB for MySQL console](#), click the instance ID in the instance list and enter the management page. Select **Database Management > Parameter Settings**. Common `var\\_name` includes:

Variable	Description
character_set_server	Default character set of the server
connect_timeout	Connection timeout period
long_query_time	A query that takes longer than this time is a slow query.
max_allowed_packet	Maximum packet length
max_connections	Maximum number of connections
sql_mode	Current SQL mode of the server
table_open_cache	Number of tables opened by all threads. Increasing this value will increase the number of file descriptors that mysqld is requested to open.
wait_timeout	Non-interactive connection timeout period

You can view more configuration parameters in **Database Management > Parameter Settings** in the console.

## How do I set Chinese queries in TencentDB for MySQL?

Chinese characters are currently not supported in TencentDB for MySQL.

## How do I enable the scheduler feature in TencentDB for MySQL?

In the [TencentDB for MySQL console](#), click the instance ID in the instance list and enter the management page. Select **Database Management > Parameter Settings** and set the `event_scheduler` parameter to `ON`.

## How do I increase the connection timeout period in TencentDB for MySQL?

In the [TencentDB for MySQL console](#), click the instance ID in the instance list and enter the management page. Select **Database Management > Parameter Settings** and modify the `wait_timeout` parameter.

## How do I modify the `group_concat_max_len` parameter in TencentDB for MySQL?

In the [TencentDB for MySQL console](#), click the instance ID in the instance list and enter the management page. Select **Database Management > Parameter Settings** and modify the `group_concat_max_len` parameter.

## How do I locate the SQL statements for full-table scan in TencentDB for MySQL?

Full-table scan statements are not recorded by default. To locate them, set the

`log_queries_not_using_indexes` parameter to `ON` in **Parameter Settings** in the TencentDB for MySQL console. We recommend that you only enable this parameter for a short period of time.

## How do I change the default character set in TencentDB?

TencentDB for MySQL supports LATIN1, GBK, UTF8 (default), and UTF8MB4 character sets.

Although TencentDB supports changing the default character set, we recommend that you explicitly specify the table encoding when creating a table and specify the connection encoding when establishing a connection for more portable application experience. For more information on MySQL default character set and how to modify it, see [Use Limits](#). You can also modify the character set in the [MySQL Console](#).

## How do I view the character set collation in TencentDB?

TencentDB for MySQL allows you to set the character set collation when creating an instance. You can select a character set to provide a case-sensitive, accent-sensitive, or binary collation for your data, but doing so will affect the results of relevant database operations.

You can run the `show collation` command to view the collation.

**Sample:**



```
show collation where charset = 'utf8mb4';
```

#### Collation description

Collation Option	Description
_CS	Case-sensitive.
_CI	Case-insensitive.



_AS	Accent-sensitive. This option indicates that the sorting will be accent-sensitive; for example, "a" and "á" are different characters.
_AI	Accent-insensitive.
_BIN	Binary.

#### Character set suffix description

Instance Character Set Suffix	Description
_CI_AI	Case-insensitive and accent-insensitive
_CI_AS	Case-insensitive and accent-sensitive
_CS_AI	Case-sensitive and accent-insensitive
_CS_AS	Case-sensitive and accent-sensitive

#### What should I do if the `lower_case_table_names` parameter failed to be modified?

You can modify the `lower_case_table_names` parameter in the TencentDB for MySQL console. If it is set to

1, the case-insensitive mode is enabled. Pay attention to the following when modifying the parameter:

Modifying the parameter will restart the instance.

Before modifying the parameter, make sure that all database and table names in the instance are lowercase; otherwise, an error will be reported if any of them is uppercase.

The parameter cannot be modified in MySQL 8.0 as it supports the case-sensitive mode by default.

Check uppercase table names:



```
select table_schema,table_name from information_schema.tables where table_schema
```

Check uppercase database names:



```
select SCHEMA_NAME from information_schema.SCHEMATA where md5(SCHEMA_NAME) <> md5(low
```

# Instance Upgrade

## Instance Scaling

Last updated : 2024-07-24 09:27:09

### **What is the difference between read-only, replica, and disaster recovery instances?**

Read-only instance: it only allows the read operation and is deployed in the same region as the source instance. A source instance can have up to 5 read-only instances.

Replica instance: It is used to back up the database and deployed in the same region as the source instance. A source instance can have 1 or 2 replica instances.

Disaster recovery instance: It provides cross-AZ and cross-region disaster recovery capabilities. A source instance can have up to 1 disaster recovery 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 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.

### **Can I connect a TencentDB for MySQL read-only instance via the public network?**

Read-only instances can be connected via public and private networks.

### **How often does a TencentDB for MySQL source instance sync data with a disaster recovery instance?**

After sync is enabled and initial sync is completed, the source instance and disaster recovery instance will sync data in real time.

### **Can I add a temp instance to TencentDB for MySQL?**

This operation is currently not supported.

### **Why would instance upgrade fail?**

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.

### **Can I sync real-time data in two instances with an intra-city active-active architecture configured?**

For this purpose, you can purchase [disaster recovery instances](#) in the TencentDB for MySQL console.

# Kernel Upgrade

Last updated : 2024-07-24 09:27:26

## How do I upgrade the kernel minor version?

TencentDB for MySQL supports automatic or manual kernel minor version upgrade. Upgrading adds new features, improves performance, and fixes issues.

### Note:

Currently, basic single-node instances do not support kernel minor version upgrade.

### 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.

### Manual upgrade:

You can also manually upgrade kernel minor version in the console. For more information, please see [Upgrading Kernel Minor Version](#).

### Note:

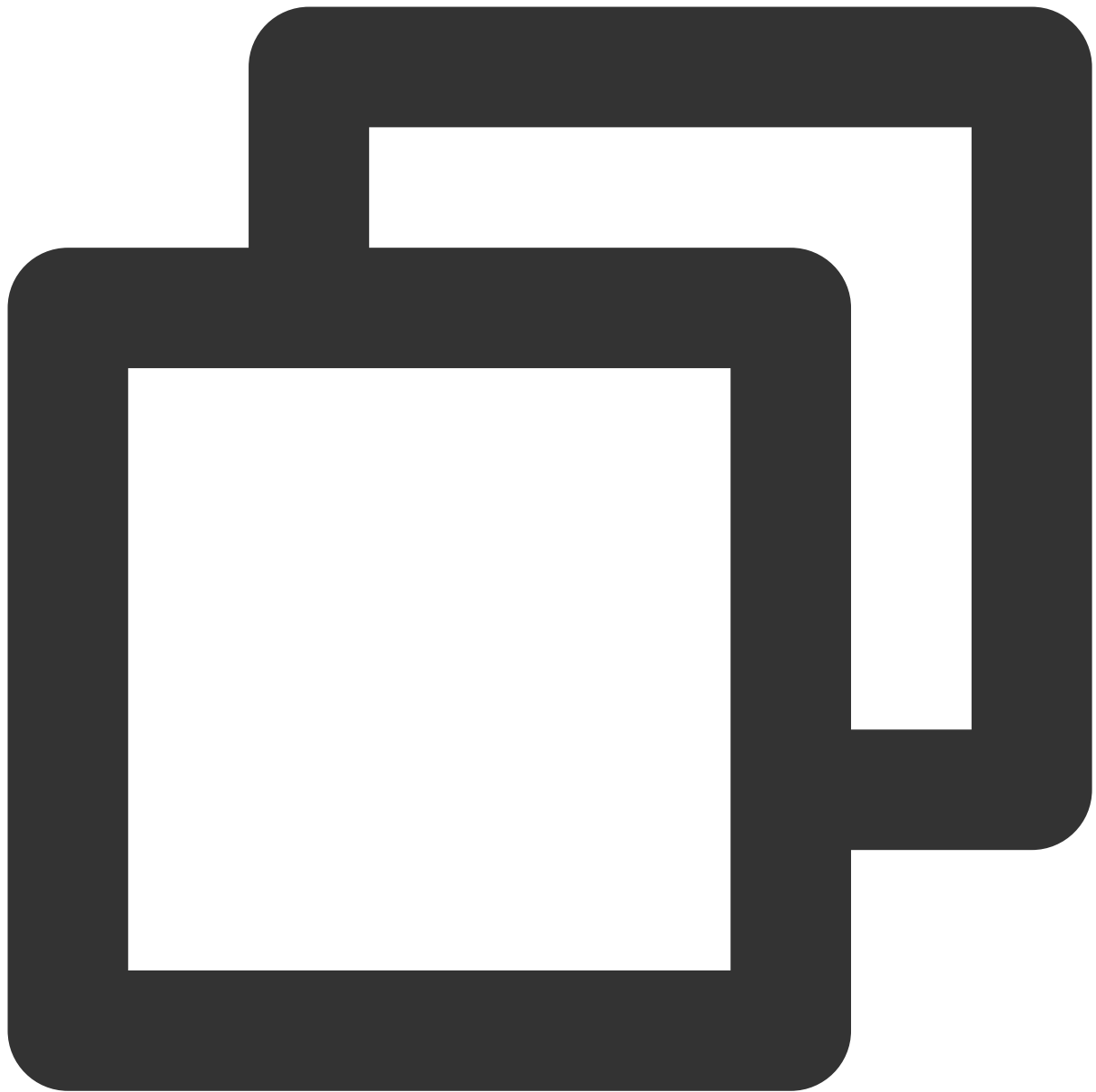
The instance cannot be downgraded once upgraded to the latest kernel minor version.

Operations such as database version upgrade and configuration adjustment are accompanied by a momentary disconnection from the TencentDB for MySQL instance. Please make sure that your business has a reconnection mechanism.

## How do I check the kernel minor version?

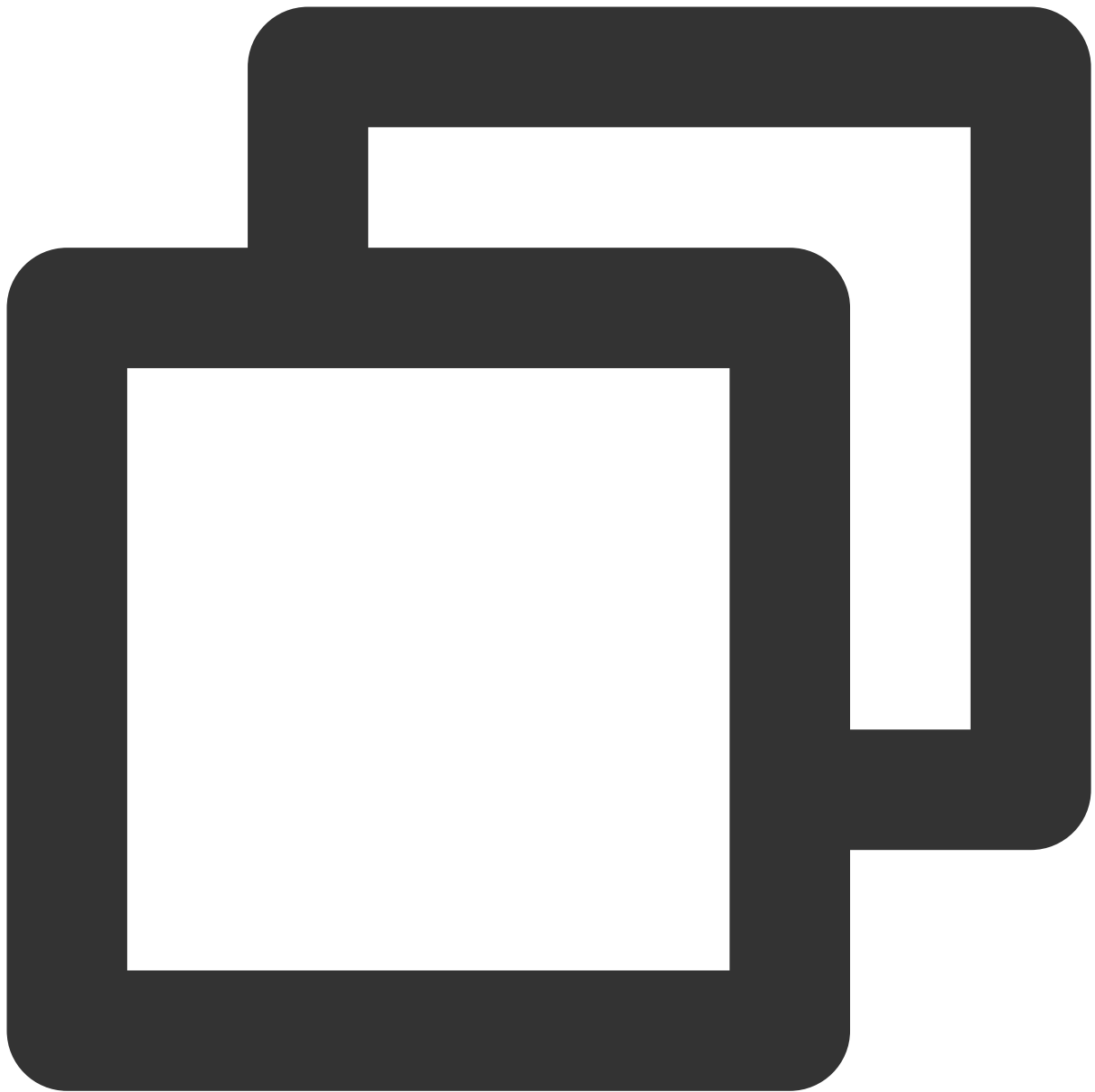
1. Log in to the [CVM instance](#) and run the following command to log in to the TencentDB for MySQL instance. For more information, please see [Connecting to MySQL Instance](#).

Private network access:



```
mysql -h hostname -u username -p
```

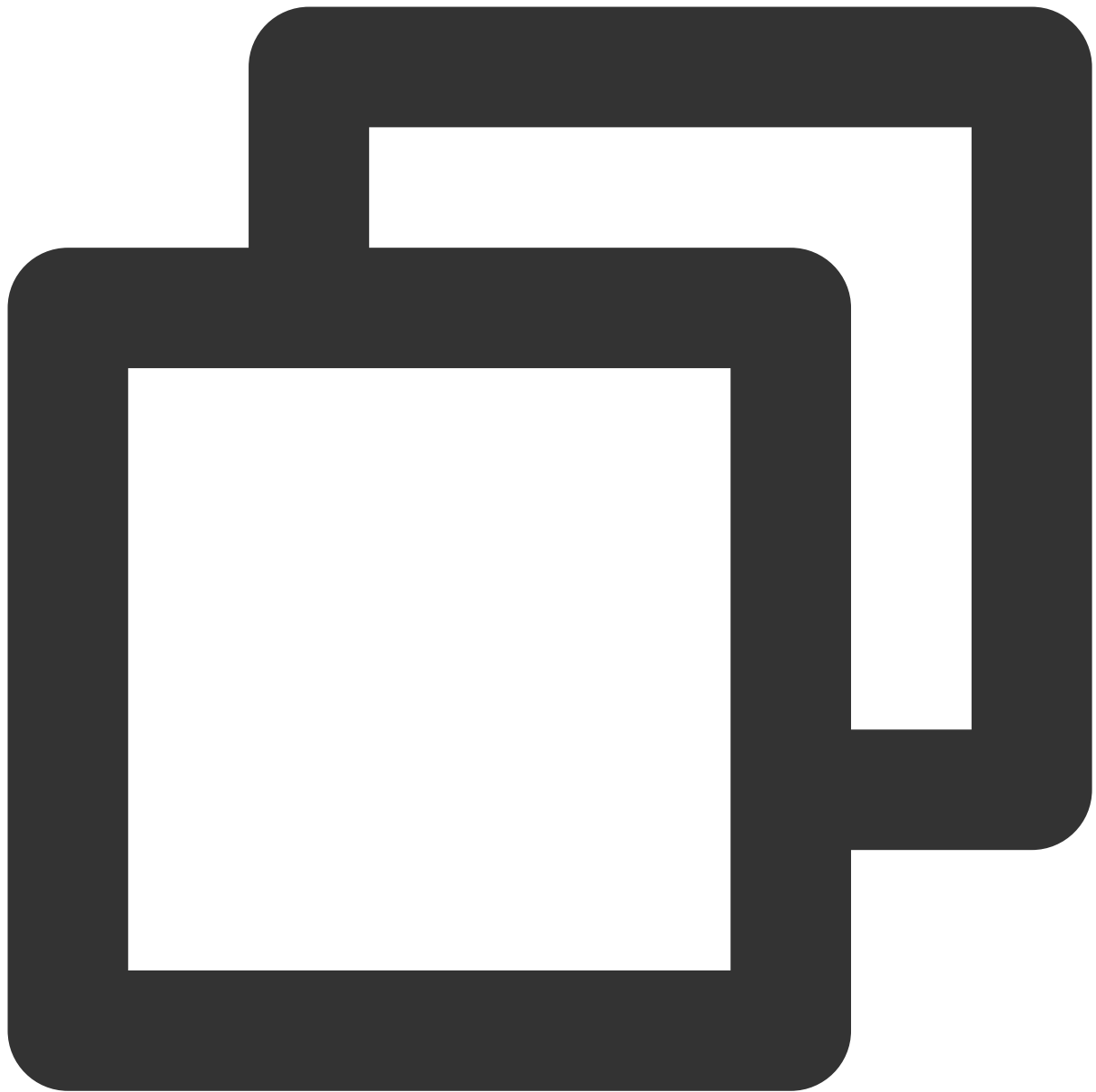
Public network access:



```
mysql -h [database IP] -P[database port] -uroot -p
```

2. Run the following command to check the version number of the TencentDB for MySQL instance.





```
show variables like 'version_comment';
```

```
MySQL [(none)]> show variables like 'version_comment';
+-----+-----+
| Variable_name | Value |
+-----+-----+
| version_comment | 20190830 |
+-----+-----+
1 row in set (0.00 sec)
```

# Account Permissions

Last updated : 2023-02-22 16:15:00

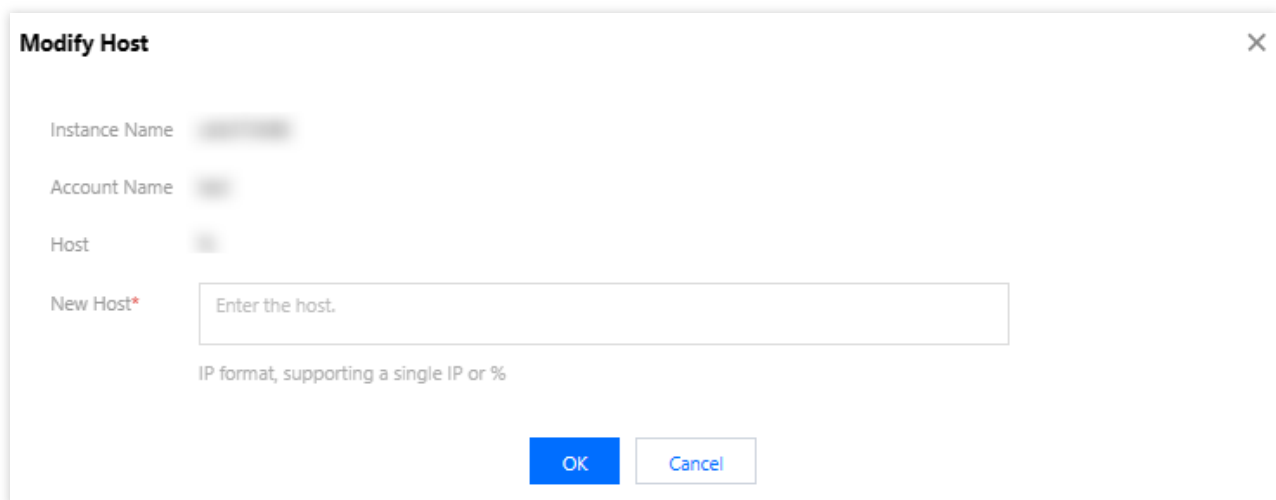
## How do I authorize a MySQL client installed on a server to access TencentDB for MySQL instances?

You can go to the [TencentDB for MySQL console](#) to modify the address of the server where your MySQL client is installed to control its access.

For more information, see [Modifying Host Addresses with Access Permissions](#).

## What should I do if I cannot log in to DMC?

1. You might be using the wrong database account. Log in to the [TencentDB for MySQL console](#), click the instance name and go to **Database Management > Manage Account**, locate the account, and click **More > Modify Host** in the **Operation** column. Set **New Host** to "%" or the address of the server where your MySQL client is installed to grant the account access permissions.



**Modify Host**

Instance Name

Account Name

Host

New Host\*

Enter the host.

IP format, supporting a single IP or %

OK Cancel

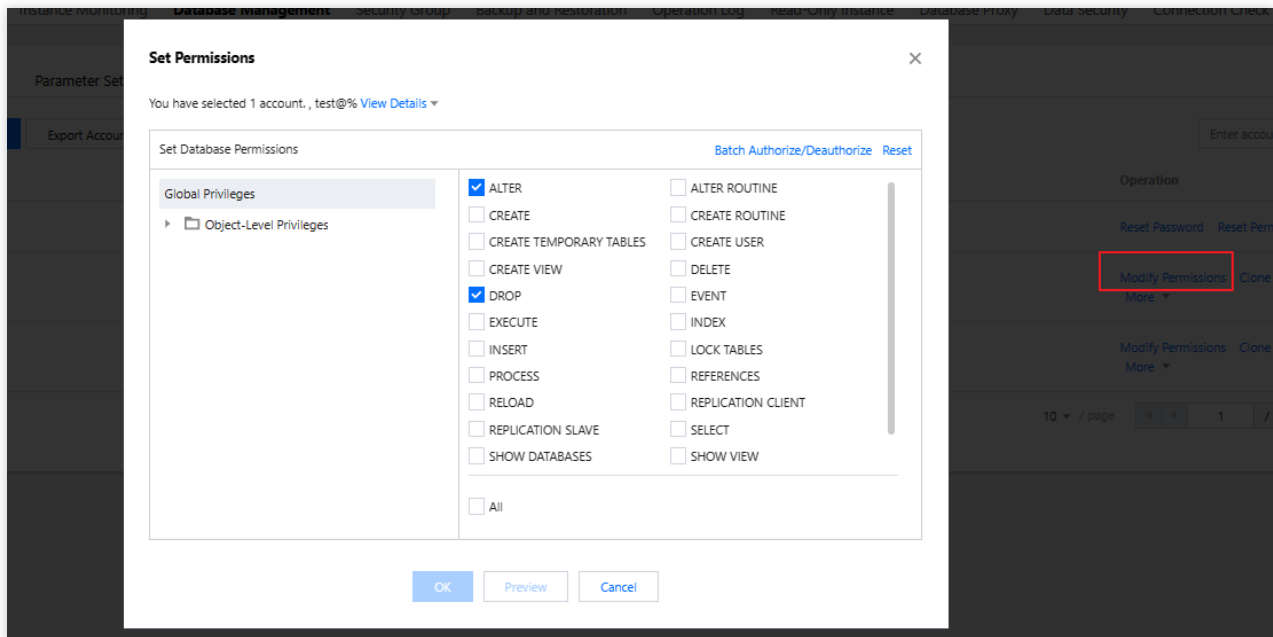
For more information, see [Modifying Host Addresses with Access Permissions](#).

You can also use root account to log in to DMC.

2. If you are using the right account, your password may be incorrect. Enter a correct password or [reset your password](#).

## What should I do if I cannot create any database or table?

You might be using a database account that is not authorized to create databases or tables. Log in to the [TencentDB for MySQL console](#), click the instance name and go to **Database Management > Manage Account**, locate the account, and click **Modify Permissions** in the **Operation** column to grant permissions as shown below.



## What should I do if I have no permissions to modify database parameters such as `sql_mode` ?

You might be using a sub-account without parameter modification permissions. You can use the root account or grant the sub-account permissions as instructed in [Overview](#).

## How do I grant a sub-account permissions to modify TencentDB for MySQL instances?

To grant a user permissions to create and manage TencentDB instances, you can implement the

`QcloudCDBFullAccess` policy for the user. For more information, see [Console Examples > Full Access Policy for TencentDB](#).

# Performance and Memory

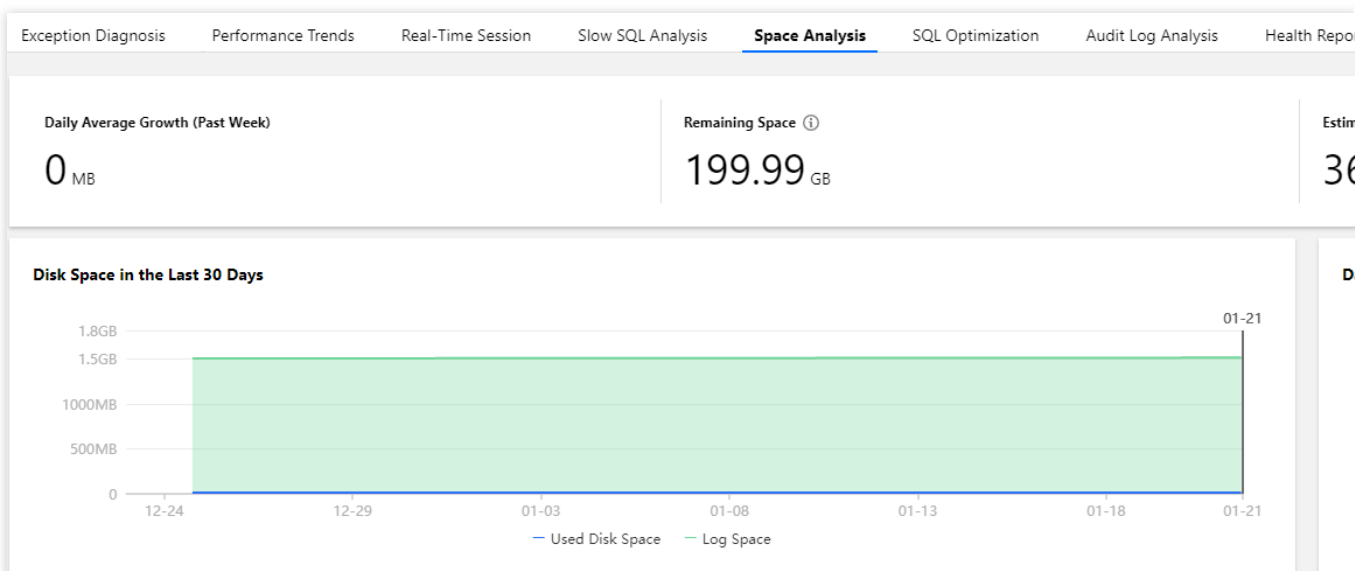
## Performance

Last updated : 2024-07-24 09:29:21

### How do I view the storage capacity usage of a TencentDB for MySQL instance?

Log in to the [DBbrain console](#) and select **Performance Optimization** on the left sidebar. On the displayed page, select a database type and an instance at the top, and select the **Space Analysis** tab.

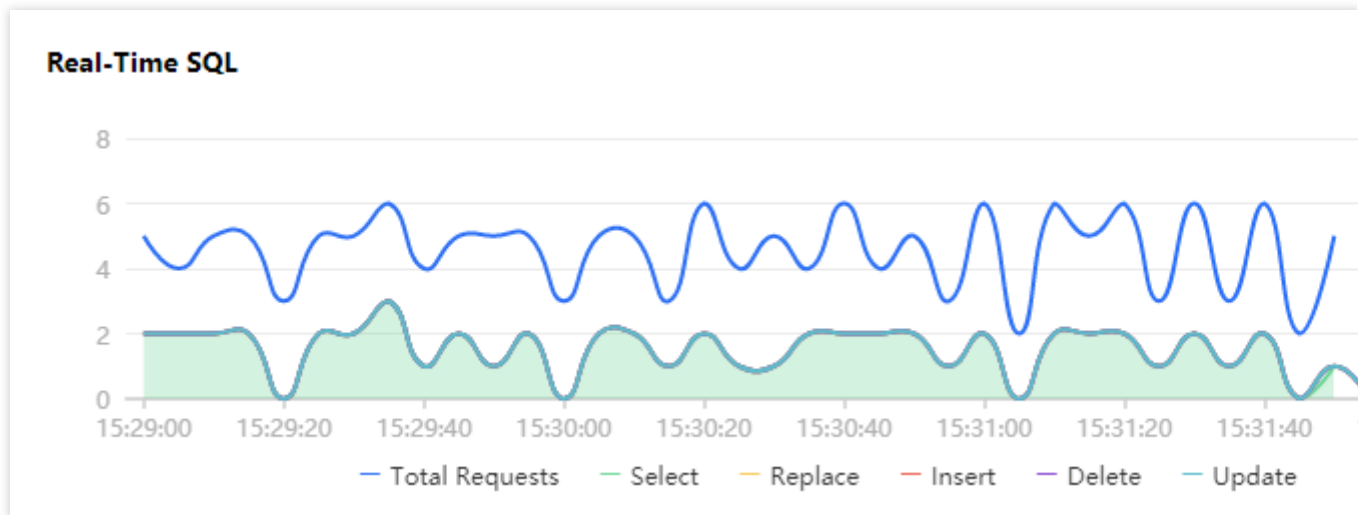
On the **Space Analysis** tab, you can view the daily average growth in the last week, available disk capacity, the estimated number of available days, and disk capacity usage trends in the last week. In addition, you can view the capacity utilization and fragmentation details of each database table in your instance.



### How do I analyze the full SQL execution track of a TencentDB for MySQL instance?

Log in to the [DBbrain console](#) and select **Performance Optimization** on the left sidebar. On the displayed page, select a database type and an instance at the top, and select the **Audit Log Analysis** tab.

1. Click **Create Analysis Task**, select a time period, and click **OK**.
2. Click **View SQL Analysis** in the task list to access the SQL analysis page.
3. On the SQL analysis page, you can display the view by **SQL Type**, **Host**, **User**, or **SQL Code**. You can specify a time period to expand the view and view data at specific points in time.



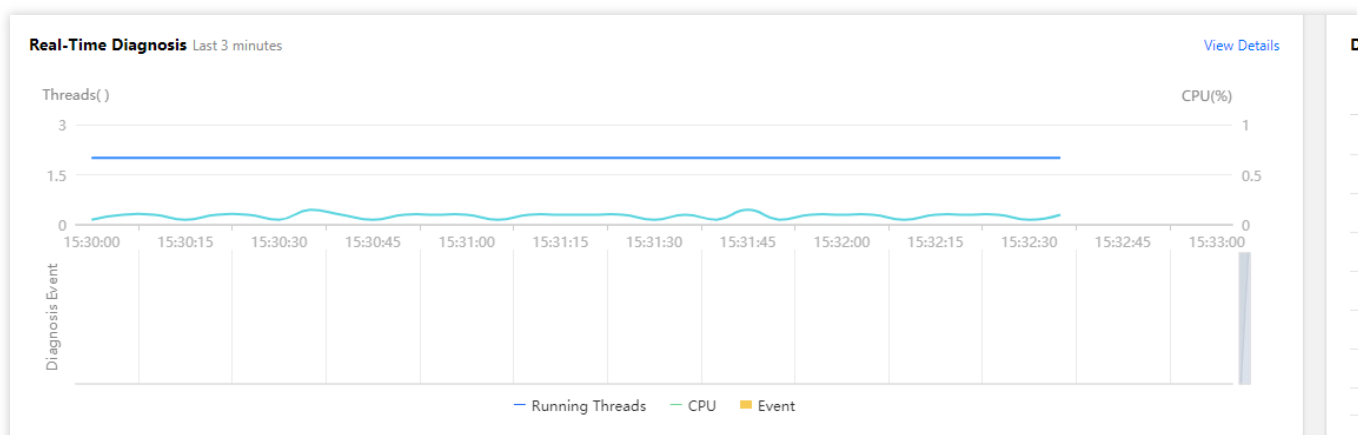
4. Click the SQL template on the target row, and the SQL statement details will be displayed on the right.

On the analysis page, you can view and copy specific SQL statements and optimize them based on the provided optimization suggestion or description.

On the statistics page, you can view the statistical analysis and execution duration track of the specified types of SQL statements by **Host**, **User**, and **SQL Code**.

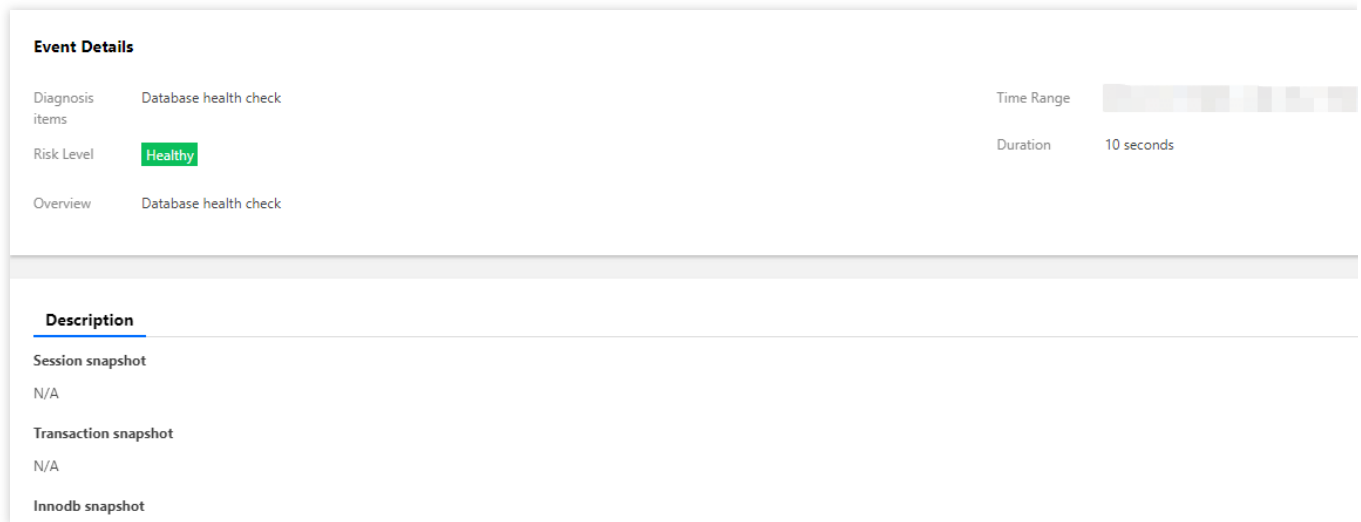
## How do I perform diagnosis or optimization by myself when a TencentDB for MySQL instance is faulty or has an exception?

1. Log in to the [DBbrain console](#) and select **Performance Optimization** on the left sidebar. On the displayed page, select a database type and an instance at the top, and select the **Exception Diagnosis** tab.
2. The **Diagnosis Prompt** column displays the diagnosis event history, including the health level, start time, diagnosis items, and duration. DBbrain performs health checks on the instance regularly.



3. You can click **View Details** or a diagnosis item in the **Diagnosis Prompt** to access the diagnosis details page. Click a diagnosis event in the view, and its details will be displayed below, including the event overview, symptom description, intelligent analysis, and expert suggestions. Based on the expert suggestions, you can solve the database

exception and optimize the instance performance.

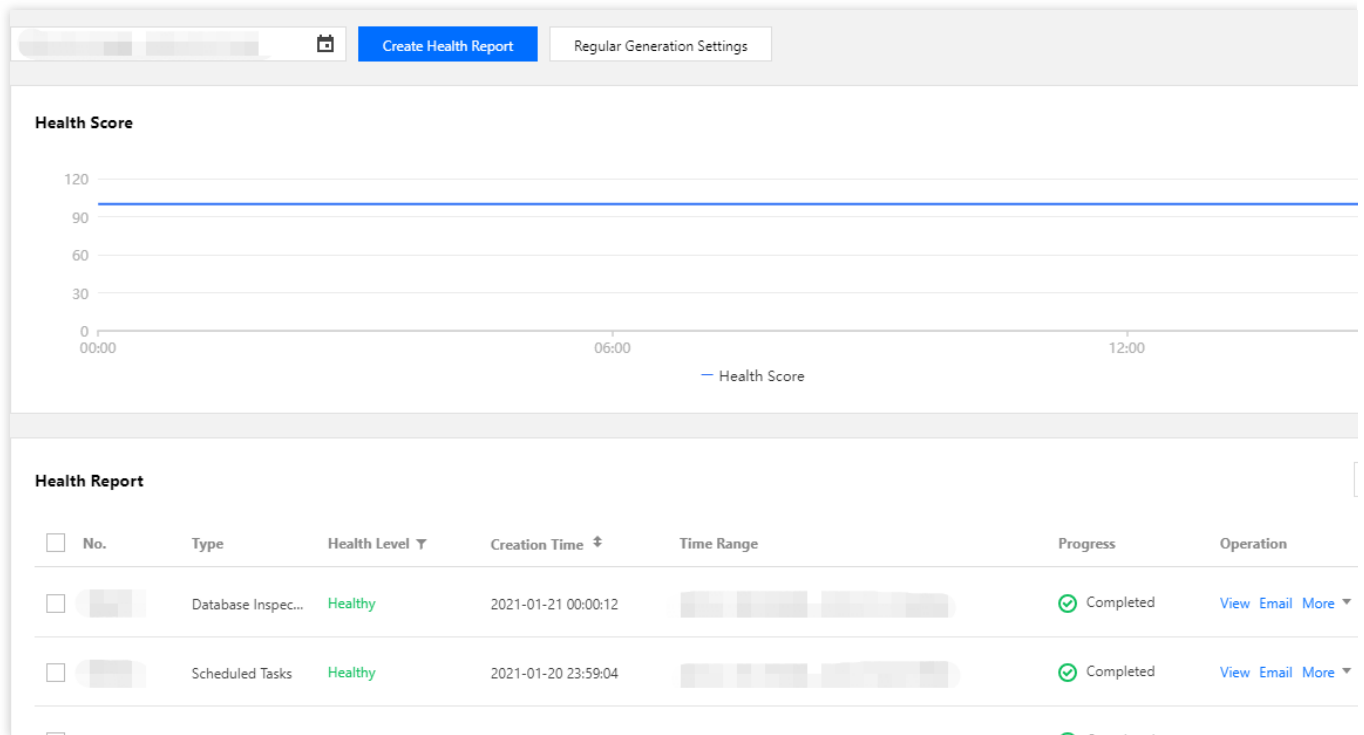


## How can I receive the TencentDB for MySQL health report regularly?

Log in to the [DBbrain console](#) and select **Performance Optimization** on the left sidebar. On the displayed page, select a database type and an instance at the top, and select the **Health Report** tab. You can view the health score trends and the problem overview for the specified time period.

Select the report time range and click **Create Health Report**. After the task is completed, you can view or download the health report for the specified time period.

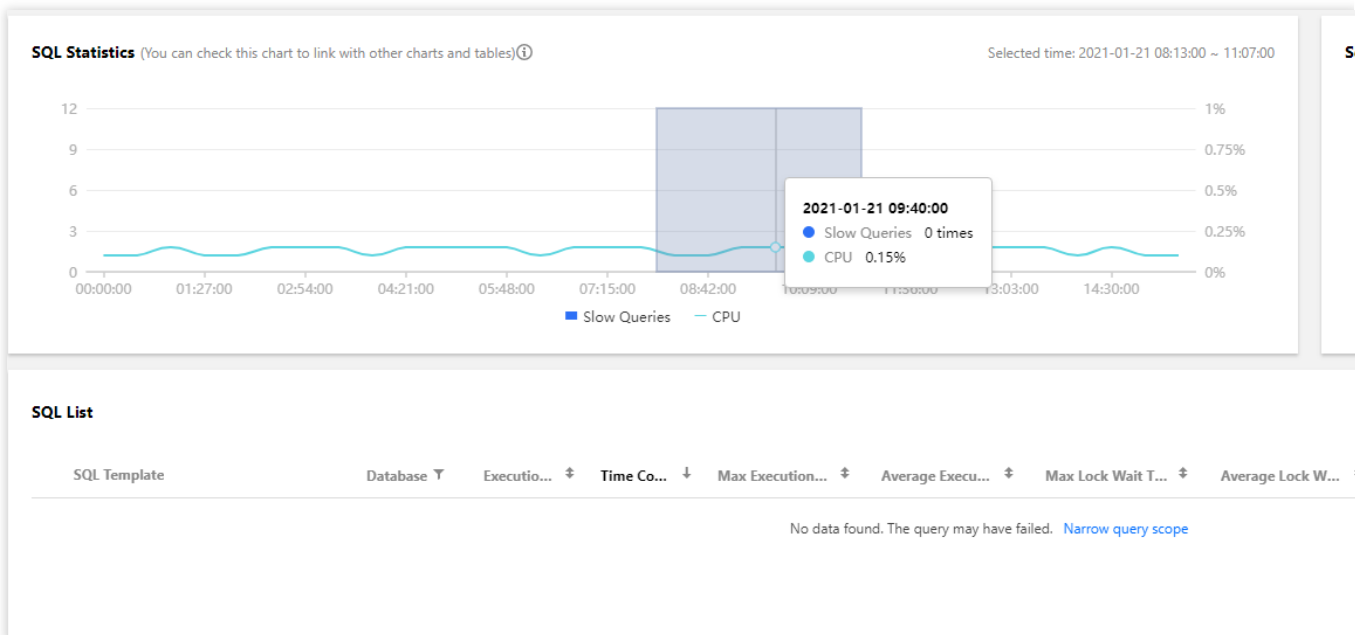
Click **Regular Generation Settings** to configure the frequency for automatically generating health reports.



## How do I view MySQL slow logs and optimize slow queries?

1. Log in to the [DBbrain console](#) and select **Performance Optimization** on the left sidebar. On the displayed page, select a database and an instance at the top, and select the **Slow SQL Analysis** tab. The **SQL Statistics** chart displays the number of slow queries and the CPU utilization of the instance.
2. You can click one slow query or select a time period in the **SQL Statistics** chart, and the aggregated SQL template and execution information will be displayed below. Each column of data can be sorted in ascending or descending order. The **Segmented Time-Consuming SQL Distribution** chart on the right displays the distribution of the overall SQL statement execution duration for the selected time period.





3. Click an aggregated SQL template and the SQL optimization suggestions and statistics will be displayed on the right. You can rewrite the SQL statement or add appropriate indexes based on the optimization suggestion to improve the SQL statement execution efficiency and database performance.

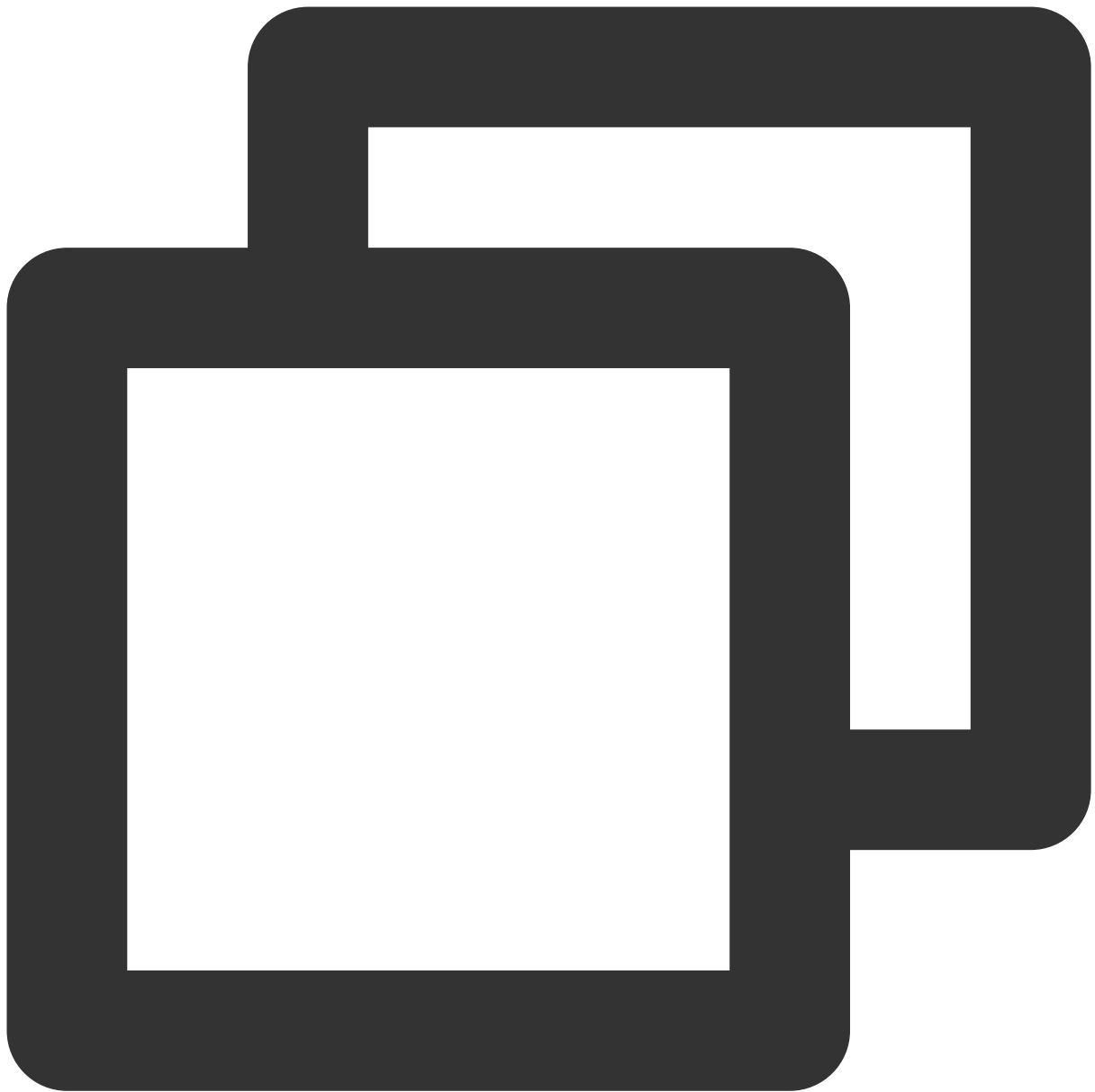
### Why does TencentDB for MySQL crash during task execution?

This is normal because it goes into a status of lock wait as the result of concurrent operations.

### Why is Chinese data garbled in TencentDB for MySQL?

When storing data to TencentDB for MySQL, please log in to the [console](#) and enter the details page of the instance to view the default character set. When writing the program, set `character_set_client`, `character_set_results`, and `character_set_connection` to the same character sets in the instance; otherwise, garbled text will appear if the data to be stored contains Chinese characters.

For example, the default character set of the TencentDB instance is UTF-8. When writing a program to connect to the instance, you need to execute the following statements before storing Chinese data:



```
SET NAMES 'utf8';
```

### What are the common reasons and solutions for issues where the maximum number of connections to TencentDB for MySQL is reached?

There are too many sleeping threads. We recommend lowering the values of `wait_timeout` and `interactive_timeout` in the console.

The slow logs have heaped up. The `long_query_time` parameter is 10 seconds by default. We recommend changing it to 1-2 seconds and then observe slow logs.

If there are few sleeping threads and no slow logs heaped up, we recommend increasing the value of the `max_connections` parameter in the console.

## What are the common reasons and solutions for a high utilization of CPU by TencentDB for MySQL?

Slow logs have heaped up. Please check the monitoring data of slow logs and full table scans, then conduct analysis and optimization by referring to slow logs (which can be downloaded in the console). If no slow logs are found and only full table scans are monitored, change the value of `long_query_time` to 1-2 seconds and then analyze slow logs after using TencentDB for MySQL for a while.

If no slow logs heaped up, please check the monitoring data of memory utilization. If it is much higher than the instance specification and the disk reads/writes increase significantly, there is a bottleneck in the memory, and we recommend upgrading the memory.

## Which monitoring metrics of the instance should I usually pay attention to?

CPU utilization, memory utilization, and disk space utilization. You can [configure alarms](#) as needed, and when you receive alarms, you can take corresponding measures to resolve them.

## How do I get the capacity statistics of multiple instances?

Log in to the [DBbrain console](#) and view the summary instance information on the **Instance Overview** page. Use the [getmonitordata](#) API to query the capacity statistics of multiple instances.

# Memory Allocation

Last updated : 2024-07-24 09:29:54

Memory is an important performance parameter for TencentDB for MySQL. It is common to see the memory utilization increase due to the presence of exceptional SQL statements and lack of database optimization. In severe cases, OOM can even occur and cause master/slave switchover, which compromises business stability and availability. In MySQL, memory can be roughly divided into two parts: globally shared memory and session-level private memory. Shared memory is allocated upon the creation of an instance and shared by all connections. Private memory is used to allocate cache upon connection to the MySQL server. In some special SQL statements or field types, cache may be allocated to a single thread repeatedly. Therefore, all OOM exceptions are caused by the private memory of each connection. The composition of each part is as detailed below:

## Shared Memory

Run the following command to query how the shared memory in the sample is allocated:

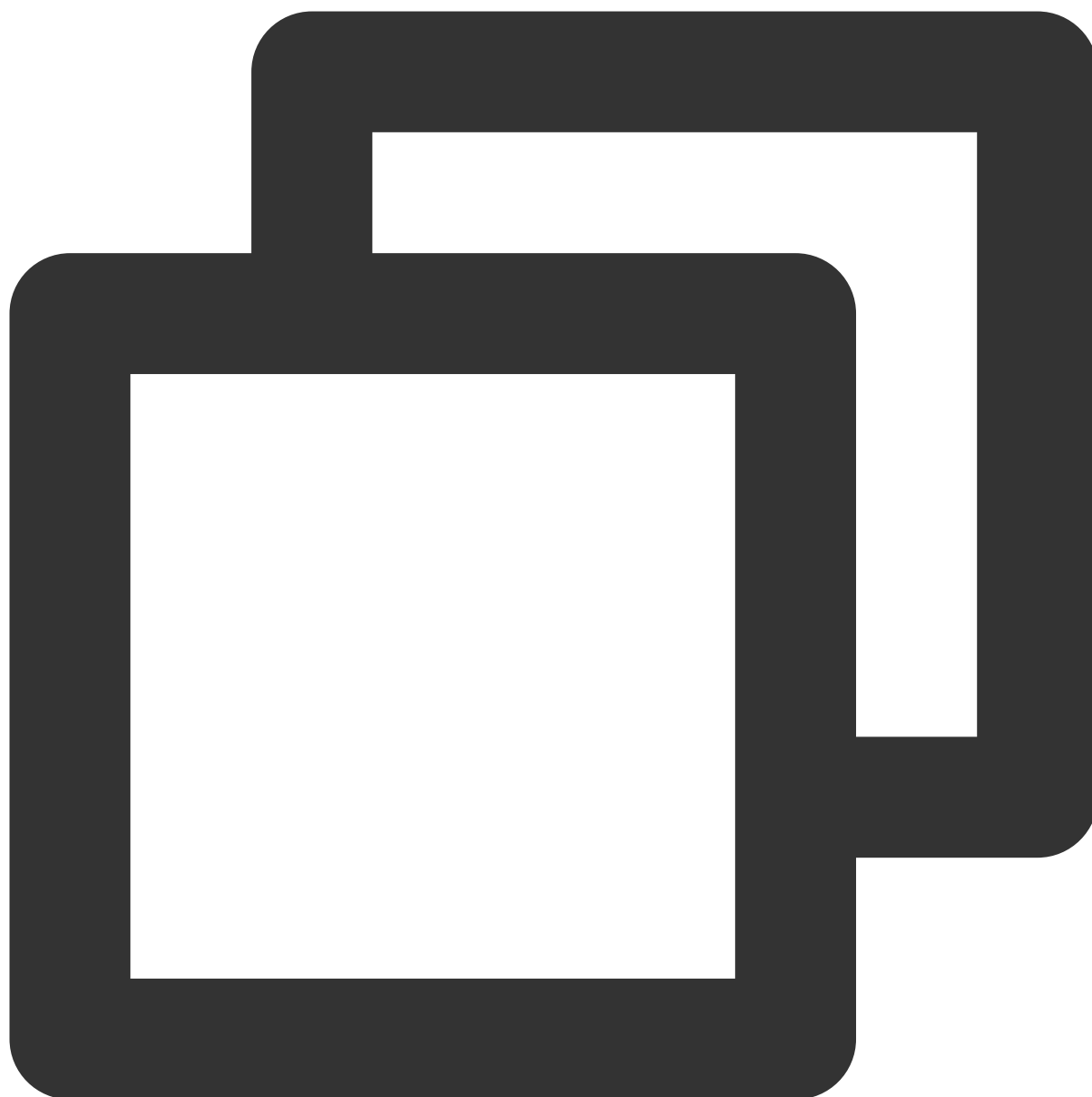


```
show variables where variable_name in ('innodb_buffer_pool_size','innodb_log_buffer
```

**Note:**

innodb\_additional\_mem\_pool\_size is not supported in v5.7.

The following parameters are the query results of how the shared memory is allocated in an instance with 1,000 MB memory (below is the configuration of the test instance):



```
1.  +-----+-----+
2.  | Variable_name          | Value      |
3.  +-----+-----+
4.  | innodb_additional_mem_pool_size | 8388608    |
5.  | innodb_buffer_pool_size   | 524288000  |
6.  | innodb_log_buffer_size    | 67108864   |
7.  | key_buffer_size           | 16777216   |
8.  | query_cache_size          | 0           |
9.  +-----+-----+
10.
11. 5 rows in set (0.01 sec)
```

**Parameter description:****innodb\_buffer\_pool\_size**

It is the most important buffer area in InnoDB and also a major means to compensate physical data files through memory. For TencentDB for MySQL, it usually takes up 50-80% memory of an instance (1,000 MB\*0.5=500 MB as shown in the above sample). This area mainly includes information such as data pages, index pages, undo pages, insert buffers, adaptive hash indexes, lock information, and data dictionaries. In SQL read/write operations, you should first manipulate buffer\_pool rather than physical data files and then write back to data files through checkpoint or other mechanisms. This space can help improve database performance and accelerate SQL operations, but it may slow down failover.

**innodb\_log\_buffer\_size**

It is mainly used to store redo logs and takes up 64 MB in TencentDB for MySQL. InnoDB will first write redo logs here and refresh them back to redo log files at a certain frequency. This space doesn't need to be large, because the buffer there is usually refreshed to redo logs at a relatively high frequency. Specifically, it will be refreshed for master thread (once every second), upon transactions committing, and when its available space is less than 1/2.

**innodb\_additional\_mem\_pool\_size**

It is mainly used to store some data structures within InnoDB and is uniformly set to 8 MB in TencentDB for MySQL. Generally, when applying for memory in buffer\_pool, you also need to apply for space to store the object's structural information in additional memory. The size of this part is primarily dependent on the number of tables. The more tables, the larger the space should be.

**key\_buffer\_size**

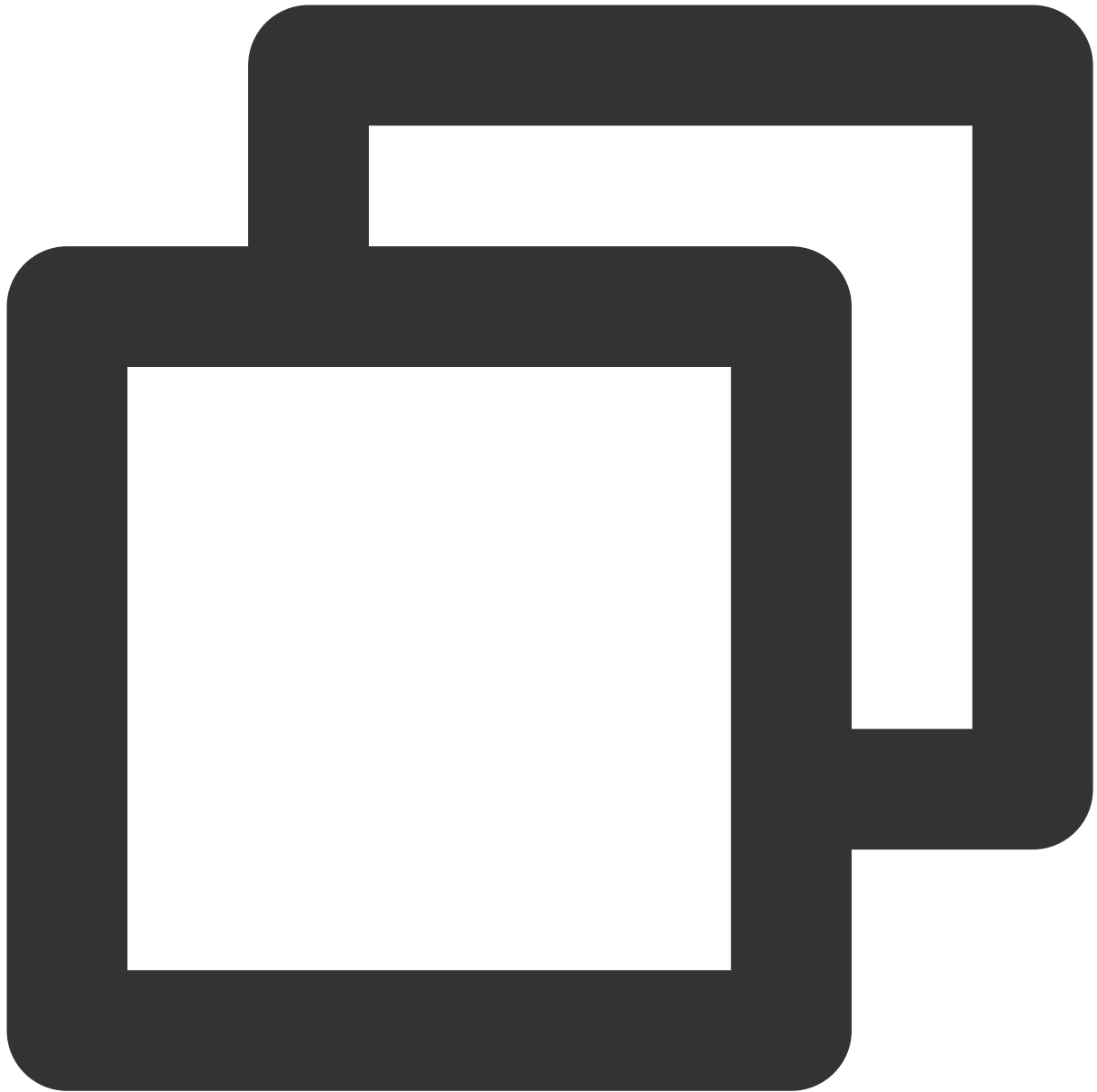
It is an important buffer area of MyISAM tables and mainly used to store MyISAM table keys. It is uniformly set to 16 MB for all instances. Unlike InnoDB tables, MyISAM tables store index cache in key\_buffer and data cache in the operating system memory. As TencentDB for MySQL uses MyISAM, this part should be allocated with a certain amount of space.

**query\_cache\_size**

It is used to cache query results to reduce the overhead of SQL parsing and execution. The caching feature of this part is disabled in TencentDB for MySQL. It is mainly suitable for application scenarios where there are more reads than writes, because it caches results based on the hash values of SQL statements and becomes invalid once table data changes.

## Private Memory

Run the following command to query how the session private memory in the sample is allocated:



```
show variables where variable_name in ('read_buffer_size','read_rnd_buffer_size','s
```

The query result is displayed as follows (below is the configuration of the test instance):





```
1.  +-----+
2.  | Variable_name      | Value      |
3.  +-----+
4.  | binlog_cache_size   | 32768      |
5.  | join_buffer_size    | 262144     |
6.  | read_buffer_size    | 262144     |
7.  | read_rnd_buffer_size | 524288     |
8.  | sort_buffer_size    | 524288     |
9.  | tmp_table_size      | 209715200  |
10. +-----+
11. 6 rows in set (0.00 sec)
```

**Parameter description:****read\_buffer\_size**

It stores the cache of sequential scans separately. When a thread scans data sequentially, it will first scan the buffer space to avoid causing more physical reads.

**read\_rnd\_buffer\_size**

It stores the cache of random scans separately. When a thread scans data randomly, it will first scan the buffer space to avoid causing more physical reads.

**sort\_buffer\_size**

All the SQL statements that need to execute ORDER BY and GROUP BY will be allocated with sort\_buffer to store the immediate results of the sorting operations. During sorting, if the storage size exceeds sort\_buffer\_size, a temporary table will be generated on the disk to complete the operation.

**join\_buffer\_size**

MySQL only supports the nested-loop join (NLJ) algorithm. The processing logic is to jointly search in one row of the driving table and the non-driving table, where the latter can be placed in join\_buffer without having to access buffer\_pool that has a concurrence protection mechanism.

**binlog\_cache\_size**

It is used to cache the thread's binlogs. Before a transaction is committed, its log will be stored in binlog\_cache. After the transaction is committed, its binlog will be refreshed back to the binlog file on the disk for persistent storage.

**tmp\_table\_size**

Different from the above session-level buffer, this parameter can be modified in the console. It refers to the size of a temporary in-memory table. If the temporary table created by the thread exceeds the specified size, it will be converted to a MyISAM temporary table on the disk.

# Ops

Last updated : 2024-07-24 09:30:21

## What should I do when a problem with pt-online-schema-change occurs in TencentDB for MySQL?

TencentDB for MySQL v5.6 and higher supports Online DDL. To protect your business from being affected by table locking, you are recommended to change the table structure in v5.5 by using open-source tools such as pt-online-schema-change. However, you may encounter problems when using pt-online-schema-change to change the TencentDB for MySQL table structure through CVM.

Common error message:

```
Use of uninitialized value $host in string eq at /usr/local/percona-toolkit-3.0.3/bin/pt-online-schema-change line 4284.
```

[View the corresponding source code:](#)



```
sub _find_slaves_by_processlist {
  my ( $self, $dsn_parser, $dbh, $dsn ) = @_;

  my @slaves = map {
    my $slave      = $dsn_parser->parse("h=$_", $dsn);
    $slave->{source} = 'processlist';
    $slave;
  }
  grep { $_ }
  map {
    my ( $host ) = $_->{host} =~ m/^(^[^:]+):/;
```

```
if ( $host eq 'localhost' ) {  
    $host = '127.0.0.1'; # Replication never uses sockets.  
}  
$host;  
} $self->get_connected_slaves($dbh);  
  
return @slaves;  
}
```

As the code suggests, processlist cannot get the slave information it is looking for, because TencentDB has processed the information related to account replication.

**Solution:**

Add the following parameter so that pt-osc can be used without checking the slave status.

```
--recursion-method=none
```

## What should I do if "Specified key was too long" is displayed during data import to TencentDB?

### Cause:

TencentDB for MySQL returns the error message "Specified key was too long" when you import XXXX.sql file to the TencentDB for MySQL instance on the CVM command line.

The error message "ERROR 1071 (42000): The error information that Specified key was too long and max key length is 767 bytes" indicates that the index field exceeds 767 bytes and is too long.

For the InnoDB storage engine, the maximum length of multi-column index is as follows:

The maximum length of a single index column is 767 bytes and the total length of all columns should not be greater than 3,072 bytes.

For the MyISAM storage engine, the maximum length of multi-column index is as follows:

The maximum length of a single index column is 1000 bytes and the total length of all columns should not be greater than 1000 bytes.

### Note:

In fields such as  $768/2=384$  double-bytes or  $767/3=255$  three-bytes, GBK is double-byte, UTF8 is three-byte, and UTF8MB4 is four-byte.

In MySQL v5.6 and higher, all MyISAM tables are automatically converted to InnoDB table. Therefore, with the MyISAM storage engine, a self-built database may contain combined index column of more than 767 bytes in length; however, due to the use of the MyISAM storage engine, the same table creation statement that can run in the self-built database won't work in MySQL v5.6 or higher.

### Solution:

1. Modify the length of index columns in the erroneous rows in the backup file.

Common erroneous row:

```
create table test(test varchar(255) primary key) charset=utf8;
```

-- Success

```
create table test(test varchar(256) primary key) charset=utf8;
```

-- Failure

```
ERROR 1071 (42000) :Specified key was too long; max key length is 767 bytes
```

2. You can use TencentDB v5.5 where MyISAM won't be automatically converted into InnoDB.

### What should I do if an error occurs with "select \* from XX into outfile xxxx"?

For the sake of platform security, file permission is unavailable, and data cannot be exported through "select into outfile". You are recommended to export the data in another way.

### What should I do if emojis inserted into a TencentDB for MySQL become garbled?

Check whether the TencentDB for MySQL instance, client, and connection to the instance all use or support the utf8mb4 character set.

To store an emoji in an instance, you need to follow the steps below.

1. Set the character set of the instance to utf8mb4. You can log in to the TencentDB for MySQL console and modify the `character_set_server` parameter.

#### Note:

Modifying this parameter will restart the database; therefore, you are recommended to back up your data in advance to prevent any loss.

2. The client of your application should use the utf8mb4 character set for the outputted string.

3. When creating a connection to your application, you should specify the executed character set. Take the common JDBC connection for example:

MySQL Connector/J v5.1.13 or higher should be used. Below is the sample code:



```
String query = "set names utf8mb4";  
stat.execute(query);
```

# Data Migration

Last updated : 2024-07-24 09:30:53

## SQL File Import and Export

### How do I import a local SQL file into a TencentDB for MySQL instance?

#### Note:

Only two-node and three-node TencentDB for MySQL instances support importing SQL files.

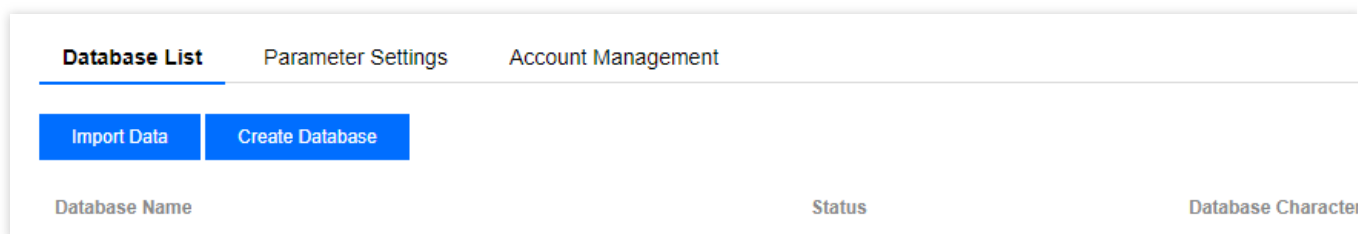
1. Log in to the [TencentDB for MySQL console](#) and click an instance ID to enter the management page.
2. Select **Database Management** > **Database List** > **Import Data**. Select the file to be imported and the target database and click **OK** to import the data.

#### 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 data import is supported. If there is obsolete data in the database, clear the data first before the import operation.

A single file does not exceed 10 GB. The file name only allows letters, digits, and underscores.



For more information, see [Importing SQL Files](#).

### How do I export data from a database?

To export backup data, click an instance ID in the [console](#) to enter the management page and select the **Backup and Restoration** tab for download.

To export real-time data, you can purchase a [read-only instance](#), connect to it, and then use `mysqldump` to get real-time data.

## Migration with DTS

### What is the fastest way to migrate a 7 GB database to a TencentDB for MySQL instance?

We recommend you connect the database to be migrated by using [DTS](#) for data sync.



## Intra-Region Instance Data Sync

### How do I sync real-time data in two instances with an intra-city active-active solution?

You can purchase [disaster recovery instances](#) in the console.

# Features

Last updated : 2024-07-24 09:31:30

## What preparations do I need to use TencentDB for MySQL?

Before using TencentDB for MySQL, you need to consider the two questions:

Is a database a good choice for your application? For example, if your business scenario involves frequent access to a small amount of key-value data, you should consider .

Is your database appropriately designed? For example, you should consider splitting a table with obvious query hotspots or high data volume into multiple tables.

## How does TencentDB for MySQL manage MySQL?

You don't need to worry about the daily maintenance and adjustment of MySQL, which is taken care of by the Ops system of TencentDB.

In case of an exception with MySQL, the Ops system can immediately identify the issue and notify the Ops team.

Developers will not need to make any changes.

## Is TencentDB for MySQL based on physical machines?

Yes.

## Can TencentDB for MySQL help me split databases and tables?

No, because the standards for splitting databases and tables are subject to your specific business logic.

## What is the difference between used capacity and occupied capacity in TencentDB for MySQL?

Used capacity: Includes only MySQL's data directories but not logs such as binlog, relaylog, undolog, errorlog, and slowlog.

Occupied capacity: Includes MySQL's data directories and logs such as binlog, relaylog, undolog, errorlog, and slowlog.

## Does TencentDB for MySQL have any buffer during task execution?

### Question:

If multiple SQL statements are sent to TencentDB for execution within a very short period of time, will TencentDB for MySQL run them one by one or crash? What is the maximum number of allowed concurrent connections?

### Answer:

A TencentDB for MySQL instance works in the same way as a self-built MySQL instance. Whether concurrently executed statements will cause a crash depends on system resources and SQL statements themselves.

When the number of connections reaches the limit ( `max_connections` ), the instance will not provide services normally. This happens generally for the following reasons:

There are too many null sessions caused by bugs in the business application;

Frontend access goes far beyond the instance's processing capability;

A long-running connection takes up MySQL resources exclusively, resulting in a large number of blocked access requests.

## What are the precautions for using TencentDB for MySQL?

For more information, see [Use Limits](#).

## How do I enable or disable the read-only permission to the default replica of a TencentDB for MySQL instance?

The default replica cannot be read from or written to. It is primarily used for high-availability switchover.

## Which monitoring metrics of the instance should I pay attention to?

CPU utilization, memory utilization, and disk space utilization. You can configure alarms as needed, and when you receive alarms, you can take corresponding measures to resolve them. For more information, see [Alarm Policies \(Cloud Monitor\)](#)

## Does TencentDB for MySQL support replica access?

For database security purposes, TencentDB for MySQL doesn't allow you to read from or write to the replica. This allows you to, for example, quickly switch to the replica when the source fails.

If you need greater read/write capability, consider upgrading the instance configuration or purchasing a [read-only instance](#).

## What if I need to use the MyISAM database engine?

You can use MySQL v5.5 to support MyISAM. However, we recommend that you choose a higher version like MySQL v5.7. This is because the InnoDB engine in higher versions can provide row-level locking with a finer granularity, deliver higher write performances, guarantee data integrity, and avoid data loss in case of database failure.

## Does TencentDB for MySQL support cross-region access?

Cross-region access is unavailable for instances in VPCs by default, as VPCs in different regions are isolated from each other. We recommend that you purchase TencentDB for MySQL instances in the same region as your CVM instances to enable local data access, which guarantees high service speed and stability.

## Why can't I grant a user the "file" permission?

The "shutdown" and "file" permissions are unavailable to root users now, so a root user cannot create users with all permissions. Refer to the following commands for authorization:



```
grant SELECT,INSERT, UPDATE, DELETE, CREATE, DROP, ALTER on *.* to 'myuser'@'%' ide
```

### How do I change the TencentDB for MySQL region?

Region change is not supported for the time being. You can use [DTS](#) to migrate data between instances in different regions. DTS supports real-time data sync. After data migration is completed, the source instance can be returned in a self-service manner.

### What takes up the instance capacity?

User data (excluding backup data), the data needed for the instance to run (including the system database, database logs, indexes, etc.), and the binlogs generated by MySQL databases.

### How many databases can I run in an instance?

The maximum number of databases and tables you can create in a TencentDB for MySQL instance depends on MySQL. For more information, see [MySQL's official documentation](#).

### Can single-node instances be upgraded to two-node or three-node instances?

No. Currently, only two-node instances can be upgraded to three-node instances.

### Does the pay-as-you-go to monthly subscription billing mode change affect the database service?

No. The change only involves billing modes.

### Why can't I convert InnoDB to MyISAM?

Probably because the instance is running MySQL v5.6 or v5.7 which only support InnoDB. To support MyISAM, use MySQL v5.5.

### Is there a limit to the number of read-only groups I can create?

By default, up to 5 read-only groups can be created for a source instance.

### Can I use Canal to pull binlogs from TencentDB for MySQL?

Yes. Pay attention to the following when using Canal:

The CVM instance where Canal is deployed and the TencentDB for MySQL instance must be in the same VPC.

You need to create a TencentDB for MySQL database account used for data sync and grant permissions correctly.

You need to set the following TencentDB for MySQL database parameters: `binlog_row_image=FULL` and `binlog_format=ROW`.

### Are TencentDB for MySQL instances deployed on physical machines or CVMs?

TencentDB for MySQL instances are deployed in physical clusters with the virtualization technology. Different from physical clusters, CVM instances are mainly used to provide a scalable cloud computing service.

### Does cloning have any impact on the original instance?

No, because TencentDB clones an instance by pulling the backup data. After cloning is completed, the original instance can be used normally, or terminated if you don't need it any more.

# Console Operations

Last updated : 2024-07-24 09:32:17

## How long does it take to create a TencentDB for MySQL instance?

It generally takes less than 10 minutes to create a TencentDB instance. The time it takes to create read-only replicas is subject to the data volume of the source instance. The larger the data volume, the longer the time.

If it takes longer to create an instance, there may be something wrong. Please [contact us](#).

## How do I return a database?

You can log in to the [TencentDB for MySQL console](#) and select **More > Terminate/Return** or **Terminate/Return & Refund** in the **Operation** column in the instance list to return an instance. For more information, please see [Terminating Instance](#).

## What if a TencentDB for MySQL instance is terminated?

When an instance is returned, it will be retained in the recycle bin for a period of time. A pay-as-you-go instance will be retained for 1 day. During this period, you can go to the recycle bin and restore the instance.

## What if I accidentally delete an account or forget the password?

If you delete an account accidentally, you can log in to the [TencentDB for MySQL console](#), click an instance ID to enter the instance management page, and create an account by clicking **Database Management > Account Management > Create** or by using an SQL statement. For more information, please see [Creating an Account](#).

If you forget the root password, find the corresponding account in **Database Management > Account Management** and click **More > Reset Password** in the **Operation** column. For more information, please see [Resetting Password](#).

The above operations can also be performed through the [ModifyAccountPassword](#) API.

## What is the maximum number of connections to TencentDB for MySQL? How do I modify it?

You can view the maximum number of connections to TencentDB for MySQL in the console. If the number of connections gets too high, you are recommended to locate the cause and solve the problem first instead of directly increasing the maximum value.

Log in to the [TencentDB for MySQL console](#), click an instance ID to enter the instance management page, select **Database Management > Parameter Settings**, and modify the `max_connections` parameter.

## Why is the value of max\_connections always displayed as 1,000 rather than the actual number of current maximum connections in MySQL instance monitoring?

`max_connections` represents the allowed maximum connections (1-100,000) in instance monitoring. Number of open connections means the number of connections available at the current moment, a value that changes in real time.

## How can I get to know that the disk capacity is insufficient?

The monitoring center oversees the disk capacity of a TencentDB instance. When the disk utilization is over 90%, SMS and email alarms will be triggered. You can configure alarm recipients in Cloud Monitor to receive such alarms. (For more information on how to configure, see [Alarm Policies \(Cloud Monitor\)](#)).

## How do I modify the case sensitivity of table name after a TencentDB for MySQL instance is initialized?

You need to adjust the `lower_case_table_names` parameter of the database.

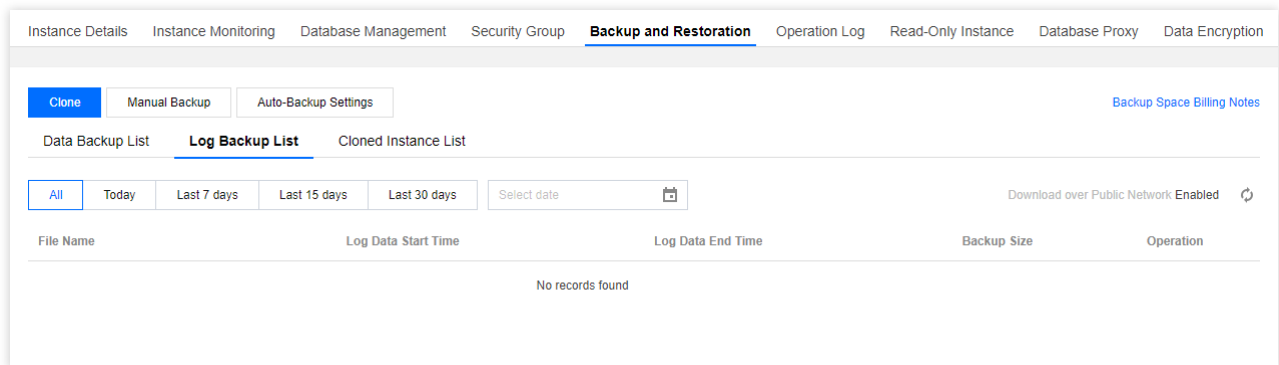
Log in to the [TencentDB for MySQL console](#), click the instance ID to enter the instance management page, select **Database Management > Parameter Settings**, and modify the `lower_case_table_names` parameter ( `0` : case-sensitive, `1` : case-insensitive).

# Logs

Last updated : 2022-03-07 22:29:00

## How do I view binlogs?

Log in to the [TencentDB for MySQL console](#) and click an instance ID/name to access the management page. On the **Backup and Restoration > Log Backup List** tab, locate the desired binlog and click **Download** to view it.



## Why does my instance have no binlog?

Probably because data is written slowly into the binlog, which, accordingly, has not been split yet. A non-split binlog will not be displayed in the TencentDB for MySQL console.

The procedure of displaying binlogs in the MySQL console is as follows:

1. When the binlog grows to 256 MB, it is split.
2. The split binlog is uploaded to COS.
3. The uploaded binlog is displayed in the MySQL console.

The whole procedure takes about three minutes.

You can log in to the database and run the `flush logs` command, and then check the binlog in the MySQL console three minutes later.

## How do I view the latest binlog?

Log in to the database and run the `flush logs` command, and then check the binlog in the TencentDB for MySQL console three minutes later.

## How do I back up binlogs?

The binlog is automatically backed up every day. To set the log backup retention period, you can log in to the TencentDB for MySQL console and click an instance ID/name to access the management page. On the **Backup and Restoration > Log Backup List** tab, click **Auto-Backup Settings** and set the log backup retention period in the pop-up dialog box.



# Event

## Test Exception Event

Last updated : 2024-06-18 14:44:39

This document introduces the events related to test exceptions and corresponding handling suggestions when using TencentDB for MySQL.

**Note:**  
For guidelines on setting event alarms, see [Set Event Alarm](#).

### Test Exception Events and Handling Suggestions

Chinese Name of Event	English Name of Event	Event Type	Dimension	Recovery Concept Availability	Event Description	Solution
Exception in Primary Node Service Test	MasterHealthCheckError	Exception Event	TencentDB for MySQL instance dimension	No	The primary instance may be unable to determine the current primary instance node service status as active due to high load, maximum number of connections reached, runtime exceptions, network fluctuations, etc.	The instance may be affected by the primary instance. 1. If the primary instance is in the Master state, even if the primary instance recovers, the switch will not be activated. 2. If the primary instance is in the Slave state, even if the switch recovers, the primary instance will not be recorded.

Primary Node Service Test Exception Recovery	MasterHealthCheckRecovery	Recovery event	TencentDB for MySQL instance dimension	No	Recovery after the database primary node encounters a service exception.	The : (Mas on th node and i norm
Replica Node Service Test Exception	SlaveHealthCheckError	Exception Event	TencentDB for MySQL instance dimension	No	The replica instance might be unable to determine the current replica instance node service status as active due to high load, the maximum number of connections reached, runtime exceptions, and network fluctuations, etc.	Node numt can t incre proba 1. If y Slave it ind node 2. If y Slave it ind node is be
Replica Node Service Test Exception Recovery	SlaveHealthCheckRecovery	Recovery event	TencentDB for MySQL instance dimension	No	1. Recovery after the database replica node encounters a service exception. 2. The original primary node is	1. Th (Slav the d has t now 2. Th (Mas on th prim: recov oper:

					abnormal. After the primary- replica switchover, the originally abnormal primary node is recovered as the replica node.	
--	--	--	--	--	--	--

# Database audit

Last updated : 2024-03-26 16:02:22

## How is the audit billed?

Database audit is billed by the volume of stored audit logs on an hourly basis. The usage duration shorter than one hour is calculated as one hour. For billing details, see [Database Audit Billing Overview](#).

## How can I disable the audit after it is enabled?

Log in to the [TencentDB for MySQL console](#), locate the target instance on the Audit Instance page, then choose **More** > **Disable** in the operation column.

<div>Enable Database Audit</div> <div>Disable Database Audit</div> <div>Modify Audit Rule</div> <div>Modify Audit Service</div>						
<input type="checkbox"/>	Instance ID / Name	Audit Status ▾	Audit Mode ▾	Log Retention Period	Stored Log Size	Audit Rule
<input type="checkbox"/>	<div><div>cdb-<div></div></div><div>cdl-<div></div></div></div>	Enabled	Full Audit	Total storage period: 30 day(s) Frequent access storage period: 7 day(s) Infrequent access storage period: 23 day(s)	Total storage size: 0 MB Frequent access storage size: 0 MB Infrequent access storage size: 0 MB	--
						Default project

### Note :

Once the service is disabled, the associated audit policies, logs, and files of the instance will be erased and are irretrievable. Please save the relevant logs and files beforehand.

## How long can audit data be retained?

Audit data can be retained for 7 days to 5 years. You can set the retention period when enabling audit in the [TencentDB for MySQL console](#). After enabling audit, you can also modify the retention duration by clicking **More** > **Edit Audit Service** in the operation column on the Audit Instance page.

# API 2.0 to 3.0 Switch Guide

Last updated : 2024-07-24 09:33:56

TencentDB for MySQL fully upgraded the API service to v3.0 on January 1, 2018. Due to the fact that API 2.0 has a higher access latency and is more complicated to use, technical support has been discontinued for API 2.0, which will be deactivated on March 31, 2023.

We recommend you upgrade to TencentDB for MySQL API 3.0 as soon as possible to avoid affecting your business. You can refer to the API 2.0 and 3.0 comparison table below, where you can find the new APIs you need to upgrade and complete the upgrade accordingly.

## List of APIs switched from v2.0 to v3.0

API 2.0	API 3.0	API 3.0 Documentation	Input Parameter Change
DescribeCdbInstances	DescribeDBInstances	Queries the list of instances. For more information, see <a href="#">DescribeDBInstances</a> .	In order to make the API easier to use, some parameters have been changed as described in <a href="#">DescribeDBInstances</a> .
QueryCdbStatisticsInfo	GetAppStat	This API has been disused. To get the instance monitoring information, call `GetMonitorData`. For more information, see <a href="#">GetMonitorData</a> .	No changes.
DescribeDBInstancesV3	DescribeDBInstances	Queries the list of instances. For more information, see <a href="#">DescribeDBInstances</a> .	No changes.
GetCdbExportLogUrl	GetDownloadUrl	type = slowlog_day: Queries slow logs. For more information, see <a href="#">DescribeSlowLogs</a> . type = errlog_day: Queries the error logs of an instance. For more information, see <a href="#">DescribeErrorLogData</a> .	In order to make the API easier to use, some parameters have been changed as described in: <a href="#">DescribeSlowLogs</a> . <a href="#">DescribeErrorLogData</a> . <a href="#">DescribeBackups</a> . <a href="#">DescribeBinlogs</a> .

		<p>type = coldbackup: Queries the list of data backups. For more information, see <a href="#">DescribeBackups</a>.</p> <p>type = binlog: Queries the list of log backups. For more information, see <a href="#">DescribeBinlogs</a>.</p>	
RenewCdb	RenewDBInstance	Renews a TencentDB instance. For more information, see <a href="#">ModifyNameOrDescByDpld</a> .	In order to make the API easier to use, some parameters have been changed as described in <a href="#">ModifyNameOrDescByDpl</a>