TencentDB for MySQL
FAQs
Product Documentation
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Impact of Sync Delay

The default slave databases, disaster recovery instances, and read-only instances of TencentDB for MySQL use MySQL's native binlog replication technology and may experience delays during async or semi-sync data replication.

- If a slave database has a delay, master/slave instance switch cannot be completed promptly. In this case, the business may not be restored to normal quickly.
- If a disaster recovery instance has a delay, it cannot be promoted to a master instance before the heaped binlogs run out. During this period, business continuity will be affected.
- If a read business has relatively high requirements for data consistency, a delay-triggered removal policy can be configured for the read-only group, so that when the master-slave delay exceeds the configured threshold, the corresponding read-only instance will be removed automatically and hence cannot be accessed by the read business.

Solution for Sync Delay

You can view the master-slave delay using the monitoring function. If the delay time is greater than 0, the instances are experiencing a data delay. Common reasons include:

No Primary Key or Secondary Index

Cause
When DML operations (e.g., delete, update, and insert) are performed on big tables, the rows to be modified will be retrieved based on the primary key or secondary index when the binlog application is executed in the slave databases. If binlogs are in the row format and the corresponding table has no primary key or secondary index, a large number of full-table scans will be caused, slowing down the binlog application and leading to data delays.

Solution
• Create primary keys for all tables; if a primary key cannot be created for a table, it is recommended to create a secondary index for columns with high cardinality.
• It is recommended to use the `truncate` command to delete all records of the table.

**Large Transactions**

**Cause**
When the master instance executes DML operations involving massive volumes of data, a large number of binlogs will be transferred to the slave database, which needs the same time consumed by the master instance to complete corresponding transactions, leading to data delays in slave database.

**Solution**
It is recommended to divide large transactions into smaller ones and use the `where` condition to limit the volume of data to be processed at a time. This can help the slave database complete transactions quickly, thereby avoiding data delays in slave database.

**DDL Operations**

**Cause**
Similar to large transactions, in case of prolonged execution duration of DDL operations in the master instance, the slave database will take the same or even more time to perform the operations, which may jam up DDL operations.

**Solution**
It is recommended to perform DDL operations during off-hours. If DDL operations are jammed due to the queries of disaster recovery and read-only instances, you can kill the relevant sessions directly to restore master-slave data sync.

**Lower Instance Specification**

**Cause**
For read-only and disaster recovery instances, lower specifications than that of the master instance and higher loads will result in data delays.

**Solution**
It is recommended to make sure that the specifications of read-only and disaster recovery instances are higher than that of the master instance. If their loads are too high due to a large amount of analytical businesses, you need to upgrade the instances to appropriate configurations or optimize low-performance SQL statements.
**OPS**  
Last updated: 2019-11-20 16:29:57

**What if 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:

  ```perl
  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 { 1 } map {
          my ( $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 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 1,000 bytes and the total length of all columns should not be greater than 1,000 bytes.

For 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 error rows:
   ```
   create table test(test varcahr(255) primary key)charset=utf8;
   -- Success
   create table test(test varcahr(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 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 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 by logging in to the TencentDB for MySQL Console and modifying the `character_set_server` parameter.

   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);
   ```

Modifications of Common Parameters and Effect

TencentDB for MySQL has been optimized on the basis of official default values in MySQL. After purchasing an instance, you are still recommended to configure the following parameters properly based on your business scenarios.

**character_set_server**

- Default value: LATIN1
- Whether restart is required: Yes
- Role: It is used to 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 the generally used international coding 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 totally 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 so as to ensure that the client and the server use the same character set, which can prevent garbled text and unnecessary restarts.

**lower_case_table_names**

• Default value: 0
• Whether restart is required: Yes
• Role: 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), and the default value is 0.
• Recommendation: TencentDB for MySQL is case-sensitive by default. Please configure this parameter properly based on your business needs and using habits.

**sql_mode**

• Default value:

```
NO_ENGINE_SUBSTITUTION (v5.6), ONLY_FULL_GROUP_BY, STRICT_TRANS_TABLES, NO_ZERO_IN_DATE, NO_ZERO_DATE, ERROR_FOR_DIVISION_BY_ZERO, NO_AUTO_CREATE_USER, NO_ENGINE_SUBSTITUTION (v5.7)
```

• Whether restart is required: No
• Role: 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 in v5.6 is **NO_ENGINE_SUBSTITUTION**, which means that if the used storage engine is disabled or not compiled, an error will be thrown; in v5.7, the default value is **ONLY_FULL_GROUP_BY, STRICT_TRANS_TABLES, NO_ZERO_IN_DATE, NO_ZERO_DATE, ERROR_FOR_DIVISION_BY_ZERO, NO_AUTO_CREATE_USER, 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 mode. **NO_ZERO_IN_DATE** indicates whether the month and day of a date can contain 0 and is subject to the status of the strict mode.
- **NO_ZERO_DATE** means that dates in the database cannot contain zero date and is subject to the status of the strict mode.
- **ERROR_FOR_DIVISION_BY_ZERO** means that in strict mode, if data is divided by 0 during the INSERT or UPDATE process, an error rather than a warning will be generated, while in non-strict mode, NULL will be returned.
- **NO_AUTO_CREATE_USER** prohibits GRANT from creating a user whose password is empty.
- **NO_ENGINE_SUBSTITUTION** means that if the used storage engine is disabled or not compiled, an error will be thrown.
• Recommendation: As different SQL modes support different SQL syntax, you are recommended to configure them properly based on your business needs and development habits.

**long_query_time**

• Default value: 10
• Whether restart is required: No
• Role: It is used to define the time threshold for slow queries, with the default value as 10s. If the query execution take 10s or longer, the execution details will be recorded in the slow log for future analysis.
• Recommendation: As business scenarios and performance sensitivity vary, you are recommended to set the value properly for future performance analysis.
Backup

Common Issues

Last updated: 2020-06-19 16:14:30

How is backup capacity billed?

TencentDB for MySQL offers a certain amount of backup capacity free of charge based on the region, which is equivalent to the sum of storage capacity of all high-availability edition and finance edition instances (including master and disaster recovery instances) in the region.

For pricing details about backup capacity exceeding the free tier, see TencentDB for MySQL Price Calculator.

How can I reduce the backup capacity cost?

- Delete manual backups that are no longer used (you can do so via "Instance Management" > "Backup and Restore" page in TencentDB for MySQL Console).
- 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).

The rollback feature relies on the backup cycle and retention days of data backup and log backup (binlog). The rollback time for instance data will be affected if you reduce the automatic backup frequency and retention period. Please configure them properly as needed.

- Reduce the retention period of data and log backups for non-core businesses (7-day retention period can meet the requirements in most scenarios).

<table>
<thead>
<tr>
<th>Business Scenario</th>
<th>Recommended Backup Retention Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core businesses</td>
<td>7-732 days</td>
</tr>
<tr>
<td>Non-core and non-data businesses</td>
<td>7 days</td>
</tr>
<tr>
<td>Archive businesses</td>
<td>7 days. We recommend that you manually back up data based on business needs and delete it promptly after use.</td>
</tr>
</tbody>
</table>
### Business Scenario

<table>
<thead>
<tr>
<th>Recommended Backup Retention Period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Testing businesses</strong></td>
</tr>
<tr>
<td>7 days. We recommend that you manually back up data based on business needs and delete it promptly after use.</td>
</tr>
</tbody>
</table>

### How do I configure automatic backup?

You can configure it on the instance backup and restore page in TencentDB for MySQL Console.

![Backup settings](image)

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

TencentDB for MySQL instances are fully backed up on a daily basis. For more information, see Backup Mode. You can also back up data by the following methods:

- Use mysqldump.
- Use a third-party tool, such as Navicat Premium.
- Log in to phpMyAdmin and click Export on the navigation bar at the top.

### How do I restore or migrate a basic edition instance backup?

- Basic edition instance only supports snapshot backup. For more information, please see 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 for download. Note that the download address should be placed inside a pair of single quotation marks (`'`) for the program to identify.

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

No. We recommend that you use DTS to migrate a MySQL instance.

**How do I delete backup data?**

- Automatic backup data cannot be deleted manually.
- Manual backup data can be deleted manually in the MySQL console.
  i. Log in to the TencentDB for MySQL Console, click an instance name to enter the management page, and select the **Backup and Restore** tab.
  ii. Click **Delete** in the "Operation" column in the backup list.

**How do I cancel a backup task?**

A running backup task cannot be canceled.

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

We recommend that you copy the download address on the instance backup and restore page in 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 high-speed download over the private network.

```
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 deleted automatically and cannot be downloaded or restored.

- We recommend that you configure a backup retention period based on business needs or download the backup files locally via TencentDB for MySQL Console.
- You can also manually back up instance data in the console. Manual backup will be retained permanently.

```
Manual backup will also take up the backup capacity. Please use the backup capacity properly to avoid extra fees.
```
Can I disable data and log backups?

No. However, you can reduce the backup frequency and delete manual backup no longer used via TencentDB for MySQL Console to lower the capacity usage.

Why cannot I initiate a manual backup task?

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

Why cannot I logically back up and download by tables?

After the backup feature was upgraded, both logical and physical backup adopt the new compression algorithm, and some download features may be 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 cannot 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 using the original tar tool. Instead, xbstream and qpress are required.

For details about how to unpack/decompress with xbstream and qpress, please see Restoring Database from Physical Backup and Restoring Database from Logical Backup.

```bash
qpress -d test_import_57_backup_20181114115236.sql.qp
```

The complete backup file can be obtained, such as test_import_57_backup_20181114115236.sql.

### How do I download xbstream and qpress?

- xbstream is a subprogram of Percona XtraBackup. To use it, you need to install Percona XtraBackup from binaries or `yum` repositories.
- Download qpress [here](http://www.quicklz.com/) and extract the qpress binary files by running the tar command:

  ```bash
  tar -xzf qpress-1.2.0.tar.gz
  ```

  For more information on XtraBackup and qpress installation, see [Restoring Database from Physical Backup](https://intl.cloud.tencent.com/document/product/236/31910).

### How do I view binlogs in MySQL?

- Download binlogs from the console locally to, for example, the CVM instance.
- View them using the mysqlbinlog command. For the local server to view binlogs, MySQL v5.6 requires mysqlbinlog v3.4 or higher.

### How do I sync real-time data in two instances with an intra-city active-active architecture configured?
Failure Reasons

Last updated: 2020-02-20 12:31:37

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. Please regulate the number of tables reasonably and control the number of tables in a single instance to no more than 1 million.

Large transactions caused by non-primary key tables

Cause analysis

When there is no primary key table in the instance and the binlog is in row format, when a sql updates / deletes a large amount of data, playback on the slave machine will cause a large transaction, resulting in the backup thread unable to acquire the lock, resulting in backup failure.

Treatment scheme

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

```sql
select TABLE_SCHEMA, TABLE_NAME, TABLE_TYPE, ENGINE, TABLE_ROWS from information_schema.tables where (table_schema, table_name) not in (select table_schema, table_name from information_schema.columns where COLUMN_KEY='PRI') and table_schema not in ('sys', 'mysql', 'information_schema', 'performance_schema');
```

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

```sql
alter table table_name add primary key(`column_name`);
```
Parameter Modifications
Last updated : 2020-04-01 16:46:13

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

- **In the TencentDB for MySQL Console**
  
  In the TencentDB for MySQL Console, click the instance name to enter the management page, and select **Database Management > Parameter Settings**. Common variables include:

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

- **In the phpMyAdmin Console**
  
  Log in to the TencentDB for MySQL instance through phpMyAdmin and click **Variables** on the top...
menu. Click **Edit** next to the variable to be modified in the variable list, modify it, and click **Save**.

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

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

No Chinese characters are supported in TencentDB for MySQL for the time being.

**How do I enable the scheduler function in TencentDB for MySQL?**

In the **TencentDB for MySQL Console**, click the instance name to 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 name to 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 name to enter the management page, select **Database Management > Parameter Settings**, and modify the `group_concat_max_len` parameter.

**How do I locate the SQL statement for full table scan in TencentDB for MySQL?**

The statement for full table scan is not recorded by default. To do so, set the `log_queries_not_using_indexes` parameter to "ON" on the **Parameter Settings** page in the.
TencentDB for MySQL Console. Note: do not keep it on for too long.

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

The default character set in TencentDB for MySQL is the same as that in MySQL: LATIN1 (i.e., ISO-8859-1). You can change the server-side character set of a database. Currently, four character sets are supported: LATIN1, GBK, UTF8, and UTF8MB4.

Even though TencentDB supports changing the default character set, you are recommended to explicitly specify the table encoding format 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 default MySQL character set and how to change it, please see [Use Limits](#). You can change the character set in the TencentDB Console.
Rollback

Last updated: 2020-06-09 11:19:15

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.

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?

Rollback

Last updated: 2020-06-09 11:19:15
You can query rollback progress and log during rollback in real time. For more information, please see Data Rollback.
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 UTF8. When writing a program to connect to the instance, you need to execute the following statements before storing Chinese data:

```sql
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 sleep threads. It is recommended to lower the values of wait_timeout and interactive_timeout in the console.
- Slow logs heaped up. The long_query_time parameter is 10s by default. It is recommended to change it to 1-2s and then observe slow logs.
- If there are few sleep threads and no slow logs heaped up, it is recommended to increase 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 heaped up. Please check for slow logs and full table scans in the instance monitor, then conduct analysis and optimization by referring to slow logs (which can be downloaded in the console). If no slow logs are found and there are only full table scans in the monitor, change the value of long_query_time to 1-2s and then analyze slow logs after using TencentDB for MySQL for a while.
• If no slow logs heaped up, please check the memory utilization in the instance monitor. If it is much higher than the instance specification and the disk read/write count increases significantly, there is a bottleneck in the memory, and it is recommended to upgrade the memory.
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_size','innodb_additional_mem_pool_size','key_buffer_size','query_cache_size');
```

```
in 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):

<table>
<thead>
<tr>
<th>Variable_name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>innodb_additional_mem_pool_size</td>
<td>8388608</td>
</tr>
<tr>
<td>innodb_buffer_pool_size</td>
<td>524288000</td>
</tr>
<tr>
<td>innodb_log_buffer_size</td>
<td>67108864</td>
</tr>
<tr>
<td>key_buffer_size</td>
<td>16777216</td>
</tr>
<tr>
<td>query_cache_size</td>
<td>0</td>
</tr>
</tbody>
</table>
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:

```sql
show variables where variable_name in ('read_buffer_size','read_rnd_buffer_size','sort_buffer_size','join_buffer_size','binlog_cache_size','tmp_table_size');
```

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.
High CPU/Memory Utilization

High CPU Utilization

Cause
During the use of MySQL, the CPU utilization reaches or even exceeds 100%. This issue is mainly caused by a high number of inefficient SQL statements (most likely) or row locking conflicts (unlikely) in the database.

Risk
If MySQL's CPU utilization remains at 100% for a prolonged time, the overall performance of the database will be severely compromised. Under extreme circumstances, instances may be hung. When the HA monitor detects such an issue, it will trigger the master/slave switchover to help maintain the high availability of your business. During the switch, your business will be unavailable for a very short period of time (generally less than 60 seconds). If the switch occurs during peak hours, business stability and continuity may be seriously affected.

To protect your business from being affected by CPU resource shortage, you are recommended to perform business optimization on the instances with high CPU utilization or upgrade the CPU resources. The master/slave switchover in an instance is accompanied by an interruption lasting for just seconds; therefore, for persistent connections, your application should have a reconnection mechanism.

Solution
High CPU utilization in MySQL is generally related to the presence of inefficient SQL statements. Therefore, targeted optimization of such statements can work out in most cases.

In MySQL, slow query time (long_query_time) is set to 10s by default. After a performance issue occurs, if no slow query is found, it is recommended to adjust the parameter value to 1s and then observe whether there are slow queries in a business cycle, and if yes, optimize the slow queries accordingly. After the parameter is adjusted, if still no slow queries are found but the CPU utilization remains high, you are recommended to upgrade the CPU configuration so as to improve the overall performance of the database.

High Memory Utilization

Cause
Memory is an important performance parameter for TencentDB for MySQL. It is not uncommon to see the memory utilization reach or even exceed 100% due to the presence of inefficient SQL statements.
and lack of database optimization.

**Risk**

If your high availability edition MySQL database encounters the above problem, it may even trigger an OOM event which will trigger the master/slave switchover. During the switch, your business will be unavailable for a very short period of time (generally less than 60 seconds). If the switch occurs during peak hours, business stability and continuity may be seriously affected.

To protect your business from being affected by high memory utilization, you are recommended to perform business optimization on the instances with high memory utilization or increase the memory size. The master/slave switch in an instance is accompanied by an interruption lasting for just seconds; therefore, for persistent connections, your application should have a reconnection mechanism.

**Solution**

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 allocated by the system 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 risk of high memory utilization can be mitigated by limiting database connections and optimizing inefficient SQL statements. If this doesn't work, you can upgrade the memory configuration so as to improve the overall concurrence and stability of the database. For more information on memory parameters, see [Memory Allocation Issues](#).

- During the upgrade, your business can operate normally. After the upgrade, there will be a switchover accompanied by an interruption lasting for just seconds. Please make sure that your business has a reconnection mechanism.
- Currently, you cannot modify the memory parameter in the TencentDB for MySQL Console. If the innodb_buffer_pool_size is set too small, the disk write load may be high which will compromise the overall performance of your database.
- To protect your business from being affected by insufficient MySQL memory or CPU resources, please configure an appropriate resource alarm policy for your instance. By doing so, you can identify potential resource shortage in advance. For more information, see [Alarming Service](#).
What preparations do I need to make before using TencentDB for MySQL?

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

- Is a database suitable for your application? For example, for scenarios with small data volume, high access traffic, and key-value storage, a memory-level persistent storage service is recommended.
- 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 care 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 identify it and notify the OPS personnel immediately, and you don't need to make any changes.

Is there a physical machine behind TencentDB for MySQL?

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 occupied capacity and used capacity in TencentDB for MySQL?

The capacity actually used by your data and the capacity occupied by log data such as binlogs are calculated separately. The occupied capacity displayed in the TencentDB for MySQL Console equals the used capacity.

Does TencentDB for MySQL have any buffer during task execution?

**Q:**
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?

**A:**
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 upper limit (max_connections), the instance will basically not able to provide services properly. This is generally caused by 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 connection which is executed for too long takes up MySQL resources exclusively, resulting in a large number of blocked access requests.

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

For specific precautions, see [Use Limits](#).

**How to apply for enabling or disabling the read-only permission to the default standby database of TencentDB for MySQL?**

Instead of providing external access, the default standby database is primarily used for high-availability switchover.

**Does TencentDB for MySQL support slave database access?**

For the sake of database security (for example, when the master instance fails, you can quickly switch to the slave database), TencentDB for MySQL doesn't allow you to read from or write to the slave database.

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

**How to 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 if a TencentDB for MySQL instance is terminated?**

After termination, a monthly subscribed instance will be retained in the recycle bin for 7 days, and a pay-as-you-go instance for 1 day. During the retention period, terminated instances can be recovered from the recycle bin.

**What if I accidentally delete an account or forgot the password?**

- If an account is deleted accidentally, click [Database Management](#) > [Account Management](#) > [Create Account](#) on the instance management page or create an account using an SQL
statement.

- If the password is forgotten, find the corresponding account in Database Management > Account Management and reset the password in Reset Password.
  The above operations can also be performed through TencentCloud API.

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

You can use MySQL v5.5 which supports MyISAM. Even so, you are recommended to choose a higher version like MySQL v5.7, as the InnoDB engine can provide finer-grained row-level locking, deliver a higher write performance, 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 in VPC by default, as VPCs in different regions are isolated from each other. You are recommended to purchase TencentDB for MySQL instance in the same region as your CVM instances, so that local access can be enabled for data, which guarantees high service speed and stability.
Data Migration
Last updated: 2020-06-09 11:19:15

How do I import a local SQL file into a TencentDB for MySQL instance?
1. Log in to the TencentDB for MySQL Console and click an instance name to enter the management page.
2. Select Database Management > Database List > Data Import. Select the file to be imported and the target database and click OK to import the data.

A single SQL file to be imported should be no more than 2 GB in size. The filename can only contain letters, digits, and underscores.

How do I export data from a database?
- To export backup data, click an instance name in the console to enter the management page and select the Backup and Restore 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.

What is the fastest way to migrate a 7 GB database to a TencentDB for MySQL instance?
You are recommended to directly connect your source database by using the data migration feature for data sync.

How do I achieve sync of real-time data in two instances in a local dual-backup architecture?
For this purpose, you can purchase disaster recovery instances in the console.
What is the difference between read-only, slave, and disaster recovery instances?

- Read-only instance: it only allows the read operation and is deployed in the same region as the master instance. A master instance can have up to 5 read-only instances.
- Slave instance: it is used to back up the database and deployed in the same region as the master instance. A master instance can have 1 or 2 slave instances.
- Disaster recovery instance: it provides cross-AZ and cross-region disaster recovery capabilities. A master instance can have up to 1 disaster recovery instance.

Can a TencentDB for MySQL read-only instance connect to the public network?

Read-only instances can connect to both public and private networks.

How often does a TencentDB for MySQL master instance sync data with a disaster recovery instance?

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

Can a temporary instance be added to TencentDB for MySQL?

Currently not supported.

Why does instance upgrade fail?

If the number of tables in a single instance exceeds one million, upgrade may fail and database monitoring may be affected. Please make sure the number of tables in a single instance is no more than one million.
How do I upgrade the Kernel minor version?

TencentDB for MySQL supports automatic Kernel minor version upgrade. The upgrade can add new features, improve the performance, and fix issues. It will be triggered automatically in the following scenarios:

- **Scenario 1:** when a severe bug or security vulnerability occurs in TencentDB for MySQL, the system will upgrade the database Kernel minor version during the maintenance window and send upgrade notifications through Message Center and SMS.
- **Scenario 2:** when an instance undergoes database version upgrade or configuration adjustment, it will be upgraded to the latest Kernel minor version.

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 Accessing TencentDB for MySQL from Linux CVM.

   **Private network access:**
   ```bash
dbuser@dbuser:~$ mysql -h hostname -u username -p
   ```

   **Public network access:**
   ```bash
dbuser@dbuser:~$ mysql -h [TencentDB IP] -P[TencentDB port number] -uroot -p
   ```

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

   ```bash
dbuser@dbuser:~$ mysql -h hostname -u username -p -e "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)
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.

**Private Network Connectivity Check**

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

1. Log in to the [TencentDB for MySQL Console](#), select the instance to be troubleshot, and select the Connectivity Check tab on the instance management page.
2. When troubleshooting a private network connectivity issue, click **Add a CVM instance that accesses this instance** to add a CVM instance accessing this TencentDB for MySQL instance.

   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 peering connection.

3. After the addition, click **Start Check** and a check report will be generated after the check is completed.
4. In the "Status" 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 **Exceptional**, it means that the CVM instance cannot access the TencentDB for MySQL instance over the private network. In this case, see the **Suggestion** in the exceptional check item for solution. For more information, see *FAQs About Instance Connectivity Issues*. 

### Public Network Connectivity Check
If you encounter a connectivity issue when accessing a TencentDB for MySQL instance from a server over the public network, you can use the connectivity checker provided in the TencentDB for MySQL Console to easily troubleshoot the issue.

1. Log in to the TencentDB for MySQL Console, select the instance to be troubleshot, and select Connectivity Check > Public Network Check on the instance details page.
2. When troubleshooting a public network connectivity issue, click Add a public network server that accesses this instance to add a server accessing this TencentDB for MySQL instance.
3. After the addition, click Start Check and a check report will be generated after the check is completed.

4. In the "Status" 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 Exceptional, it means that the server cannot access the TencentDB for MySQL instance over the public network. In this case, see the Suggestion in the exceptional
check item for solution. For more information, see FAQs About Instance Connectivity Issues.

<table>
<thead>
<tr>
<th>Check Item</th>
<th>Status</th>
<th>Impact</th>
<th>Handling suggestions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MySQL Instance Status</td>
<td>Normal</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Internet Access Status</td>
<td>Abnormal</td>
<td>The MySQL instance cannot be accessed via public network. Please refer to here for processing.</td>
<td>Your MySQL instance does not enable public network. Please refer to here for processing.</td>
</tr>
</tbody>
</table>

2 in total
Connection and Login

My CVM and TencentDB for MySQL instances are deployed in the same region, how to connect to MySQL?

In this case, please use the private network for access. For more information on the connection method, see Accessing a MySQL Database.

My CVM and TencentDB for MySQL instances are deployed in different regions, how to connect to MySQL?

In this case, please use the public network for access. For more information on the connection method, see Public Network Access.

How to troubleshoot connection issues in TencentDB?

If a connection or login issue occurs on your TencentDB instance, use telnet first to verify the network and port connectivity of the instance and then log in to it via the command line in CVM:

```
mysql -h [instance IP] -P[instance port] -uroot -p[instance password]
```

The following are common errors and solutions:

1. 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 as instructed here. If the error persists after you enter the correct information again, check whether restrictions are imposed on the IP accessing your instance in "TencentDB for MySQL Console" > "Instance" > "Account Management".

2. If "ERROR 1040(00000):Too many connections" is displayed, it means that the number of current connections to the instance exceeds the limit. Common reasons and solutions are as follows:
   i. There are too many sleep threads. It is recommended to lower the values of wait_timeout and interactive_timeout in the console.
   ii. Slow logs heaped up. The long_query_time parameter is 10s by default. It is recommended to change it to 1-2s and then observe slow logs.
iii. If there are few sleep threads and no slow logs heaped up, it is recommended to increase the value of the max_connections parameter in the console.

3. 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 again, check the security group policies of the instance in the console to verify whether CVM has the permission to access TencentDB. For more information, see TencentDB Security Group.

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

5. 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.
Instance Disconnection

Last updated: 2019-12-30 15:45:40

Different Network Types

If the networks of a CVM instance and a TencentDB for MySQL instance are of different types, the former cannot access the latter directly over the private network.

The CVM instance uses a VPC, while the TencentDB for MySQL instance uses the basic network

- Solution 1 (recommended): Switch the TencentDB for MySQL instance from basic network to VPC.

  - After the switch, both instances must reside in the same VPC before they can interconnect over the private network.
  - The switch from basic network to VPC is irreversible.
  - After the switch, VPC access will take effect immediately. The original basic network access will be retained for 24 hours; therefore, other instances associated to the TencentDB for MySQL instance should be migrated to VPC within 24 hours so as to guarantee uninterrupted access.

- Solution 2: Purchase a new CVM instance that resides in the basic network (the existing CVM instance cannot be migrated from VPC to basic network). However, VPC is more secure than basic network and thus highly recommended.

- Solution 3: Connect the CVM instance to the public network address of the TencentDB for MySQL instance. This solution has poor performance, security, and stability, so you are recommended to use VPC.

The CVM instance uses the basic network, while the TencentDB for MySQL instance uses a VPC

- Solution 1 (recommended): Migrate the CVM instance from basic network to VPC. For more information on directions, see CVM Migration Sample.

  - After the switch, both instances must reside in the same VPC before they can interconnect over the private network.
  - You need to unbind private/public network CLB instances and ENIs and release auxiliary IPs of the primary ENI before migration and bind them again after migration.
The CVM instance will be restarted during migration. Do not perform other operations on it. Check the instance status after migration and verify whether private network access and remote login work properly.

- The switch from basic network to VPC is irreversible. After the switch to a VPC, the CVM instance cannot communicate with Tencent Cloud services in basic network.
- Solution 2: Use Classiclink.
- Solution 3: Connect the CVM instance to the public network address of the TencentDB for MySQL instance. This solution has poor performance, security, and stability, and you are recommended to use VPC.

**Different VPCs**

By default, the CVM and TencentDB for MySQL instances can interconnect over the private network only if they are in the same VPC. If they are in different VPCs, interconnection over the private network can be achieved in the following ways:

- Solution 1 ([recommended](#)): Migrate the TencentDB for MySQL instance to the VPC where the CVM instance resides.
  For more information on directions, see [Network Switch](#) for TencentDB for MySQL.
- Solution 2: Create a peering connection between the two VPCs.
  Otherwise, the instances can only interconnect over the public network, which has poor performance, security, and stability.

**Incorrect Security Group Configuration**

If the security group of the CVM instance and the TencentDB for MySQL instance are incorrectly configured, the former cannot access the latter directly over the private or private network.

**The security group of the CVM instance is incorrectly configured**

To enable the CVM instance to access the TencentDB for MySQL instance over the private network, you need to configure an outbound rule in the security group of the CVM instance. **If the destination of the outbound rule isn't 0.0.0.0/0 and the protocol port isn't ALL**, the private IP and port of the TencentDB for MySQL instance should be added to the rule.

1. Go to the [security group](#) page in the CVM Console and click the name of the CVM-bound security group to enter its details page.
2. On the **Outbound Rules** tab, click **Add Rule**.
   Enter your IP address (or range) and port to be opened (private network address of the TencentDB for MySQL instance) and select "Allow". 
The security group of the TencentDB for MySQL instance is incorrectly configured

To enable the CVM instance to access the TencentDB for MySQL instance over the private or public network, you need to configure an inbound rule in the security group of the TencentDB for MySQL instance. **If the source of the inbound rule isn't 0.0.0.0/0 and the protocol port isn't ALL,** the private or public client IP and port of the CVM instance should be added to the rule.

1. Go to the security group page in the CVM Console and click the name of the TencentDB for MySQL-bound security group to enter its details page.
2. On the Inbound Rules tab, click Add Rule.
   Enter the allowed IP address (or range) and port to be opened (private network port of the TencentDB for MySQL instance) and select "Allow".

- 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.
- For public network access to the TencentDB for MySQL instance, port 3306 of the instance should be opened in the inbound rule of the security group.
- In addition, the public client IP address should be added to the inbound rule of the security group.
Prohibition of Ping Command

Last updated: 2020-06-29 17:10:04

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
    
    ![Normal network access](image)

  - Exceptional network access
    
    ![Exceptional network access](image)
**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](#).
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 instances is subject to the data volume of the master 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 promptly.

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?

After return, a pay-as-you-go instance will be retained in the recycle bin for 1 day. During the retention period, terminated instances can be recovered from the recycle bin.

What if I accidentally delete an account or forgot the password?

- If you delete an account accidentally, you can log in to the TencentDB for MySQL Console, click an instance name to enter the instance management page, and create an account by clicking Database Management > Manage Account > Create Account or by using an SQL statement. For more information, please see Creating Account.

- If you forgot the root password, find the corresponding account in Database Management > Manage Account and reset password. For more information, please see Resetting Password.

The above operations can also be performed through TencentCloud 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 name 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 in instance monitoring. You can customize the maximum value up to 10,240. **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 space of a TencentDB instance. When the disk utilization is over 90%, SMS and email alarms will be triggered. To receive such alarms, you only need to configure alarm recipients in Cloud Monitor. (For more information on how to configure, please see **Alarming Feature**).

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 name 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).