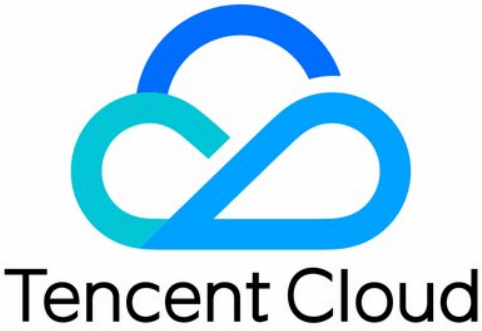
TencentDB for MySQL

Troubleshooting

Product Documentation



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Troubleshooting Connections Overview

Last updated：2023-12-27 17:17:06

This section introduces potential causes and processing for TencentDB for MySQL instance connection failures, helping you quickly locate the root cause of such failures.

I. Utilizing the One-Click Connection Check Tool to Locate the Cause and Implementing Corresponding Actions

When encountering connection issues related to either private network or public network connection to TencentDB for MySQL instances, it is advisable to prioritize the One-Click Connection Check Tool to locate the underlying cause.
In the event of a private network connection failure, please refer to Using the One-Click Connection Check Tool to Locate the Cause.
In the event of a public network connection failure, please refer to Using the One-Click Connection Check Tool to Locate the Cause.

II. Self-Check and Processing

If the One-Click Connection Check Tool fails to locate the cause and resolve the issue, you can conduct a self-check and process according to the following scenarios.

Scenario	Possible Causes	Processing
Private Network Connection Failure	The password is incorrect.	Click here.
	The CVM and MySQL instances are in the same region but belong to different VPC networks.	Click here.
	The CVM and MySQL instances are in different regions and belong to separate VPC networks.	Click here.
	The configuration for CVM security group is incorrect.	Click here.
	The configuration of MySQL security group is incorrect.	Click here.

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	The database account has restricted the access to specific host addresses.	Click here.
	The connection command is incorrect.	Click here.
	The IP and port in the command line or configuration file are incorrect.	Click here.
	The MySQL instance's disk is full; maximum connections have been reached; the timeout parameter setting is incorrect; a master/slave switch is undergoing, or other possible issues.	Click here.
	The MySQL instance is in isolation. It can be restored from the Recycle Bin.	-
	The CVM instance is in isolation or shut down. It can be restored or powered on through the Console.	-
Public Network Connection Failure	The password is incorrect.	Click here.
	The configuration for CVM security group is incorrect.	Click here.
	The configuration of MySQL security group is incorrect.	Click here.
	The database account has restricted the access to specific host addresses.	Click here.
	The connection command is incorrect.	Click here.
	The IP and port in the command line or configuration file are incorrect.	Click here.
	The MySQL instance's disk is full; maximum connections have been reached; the timeout parameter setting is incorrect; a master/slave switch is undergoing, or other possible issues.	Click here.
	The MySQL instance is in isolation. It can be restored from the Recycle Bin.	-
	The CVM instance is in isolation or shut down. It can be restored or powered on through the Console.	-
CCN Connection Failure	The password is incorrect.	Click here.
	The database account has restricted the access to specific host addresses.	Click here.

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	The connection command is incorrect.	Click here.
	The IP and port in the command line or configuration file are incorrect.	Click here.
	The route table is not enabled.	Click here.
	The MySQL instance's disk is full; maximum connections have been reached; the timeout parameter setting is incorrect; a master/slave switch is undergoing, or other possible issues.	Click here.
	The MySQL instance is in isolation. It can be restored from the Recycle Bin.	-
	The CVM instance is in isolation or shut down. It can be restored or powered on through the Console.	-
	The LIGHTHOUSE instance is in isolation or shut down. It can be restored or powered on through the Console.	-
DMC Connection Failure	The database account has restricted the access to specific host addresses.	Click here.
	The password is incorrect.	Click here.

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Private Network Connection Failure

Last updated：2023-12-27 10:34:49

##Symptom

Failed to connect a CVM instance to a TencentDB for MySQL instance through the private network address.

Note:

There are various methods to connect to a TencentDB for MySQL instance, including connecting through private network, public network, or CCN, each requiring different connection conditions. For instance, if you attempt to connect to TencentDB for MySQL instance through a public network but you entered the instance's private network address in the command line, the connection will fail. Similarly, if you are using a Lighthouse instance to connect directly to TencentDB for MySQL without going through CCN, the connection will also fail. Therefore, in case of a connection failure, we recommend you first refer to the connection methods and application scenarios in Getting Started > Connecting to MySQL Instances > Overview to check whether you are adopting a proper connection method.

Causes

Possible Causes	Description
Password Issues	The password is incorrect.
Network Issue 1	The CVM and MySQL instances are in the same region but belong to different VPC networks.
Network Issue 2	The CVM and MySQL instances are in different regions and belong to separate VPC networks.
Security Group Configuration Issue 1	The configuration for CVM security group is incorrect.
Security Group Configuration Issue 2	The configuration of MySQL security group is incorrect.
Issues related to the host addresses authorized by the account	The database account has restricted the access to specific host addresses.
Connection Syntax	The connection command is incorrect.

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Issues	
IP and Port Issues	The IP and port in the command line or configuration file are incorrect.
MySQL Instance Issues	The MySQL instance's disk is full; maximum connections have been reached; the timeout parameter setting is incorrect; a master/slave switch is undergoing, or other possible issues.
MySQL Instance Operating Status Issues	The MySQL instance is in isolation. It can be restored from the Recycle Bin.
CVM Instance Status Issues	The CVM instance is in isolation or shut down. It can be restored or powered on through the Console.

Solution

1. **Locate the cause through a check tool.**
The TencentDB console provides a one-click connection check tool to help locate the possible causes of connection failures, allowing you to, based on the prompts, make modifications before reconnecting to the instance.
2. **Self-Check**
If the One-Click Connection Check tool fails to locate the problem, or if you require solutions to the potential causes, you may locate the cause by yourself according to the following failure causes.

Processing Steps

I. Utilizing the One-Click Connection Check Tool to Locate the Cause and Implementing Corresponding Actions

1. Log in to the TencentDB for MySQL console, choose the instance to be checked, and click the instance ID to access the instance management page.
2. On the instance management page, select **Connection Check** > **Private Network Check**.
Note:
To distinguish between private and public network addresses, please refer to the basic information on the instance details page.
3. Add the CVM instance that will access the MySQL instance.
4. After the addition, click **Start Check**. A check report will be generated once the check task is completed.
5. Based on the check report, locate the issue, make adjustments according to the recommendations, and then reconnect to MySQL.

Check Items	Exception Handling

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MySQL Instance Status	It is detected that your MySQL instance has been terminated. You can restore it from the Recycle Bin.
CVM Instance Status Issues	It is detected that your CVM instance has been terminated. You can restore it from the Recycle Bin.
	It is detected that your CVM instance has been powered off. If you wish to continue to use this CVM instance, please proceed to the console to start the CVM instance.
The CVM and MySQL instances are under the same VPC.	It is detected that your CVM and MySQL instances are not under the same VPC network segment. The CVM needs to be placed in the same VPC in the same region as MySQL. Please refer to Network Issues to modify the VPC.
CVM Security Group Policy	It is detected that the outbound rule of the security group bound to your CVM instance has blocked the IP port access. Please refer to Incorrect CVM Security Group Configuration to release the IP port access.
MySQL Security Group Policy	It is detected that the inbound rule of the security group bound to your MySQL instance has blocked the IP port access. Please refer to Incorrect MySQL Security Group Configuration to release the IP port access.

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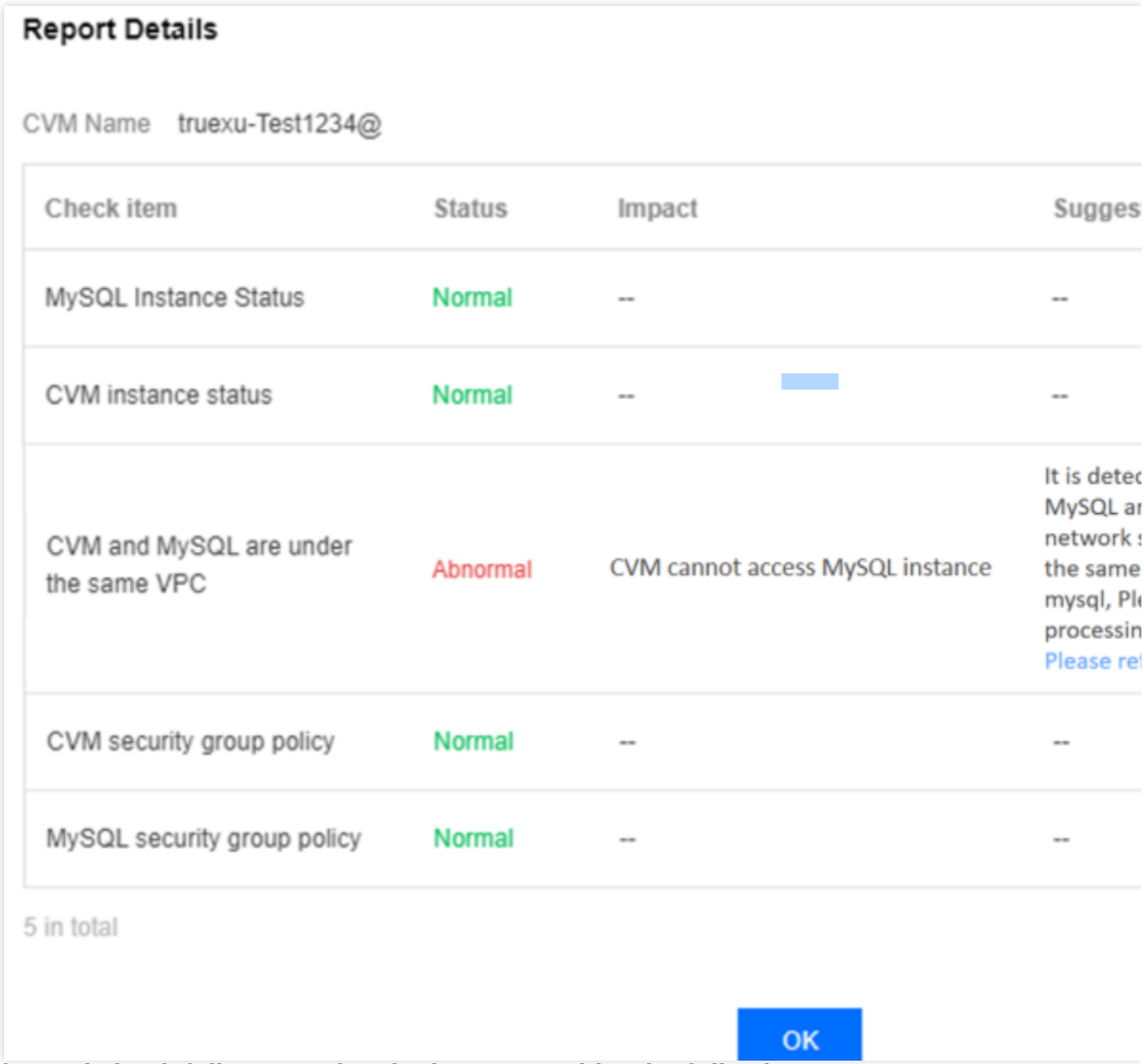

II. If the tool check fails to resolve the issue, consider the following causes.

Password issue: The password is incorrect.

If the password used during the connection is incorrect, you can either reset your password or create a temporary account with necessary permissions to log in the database.

Network issue 1: CVM and MySQL are in the same region but under different VPC networks.

By default, both the CVM and MySQL instances are under the VPC network and can directly interconnect via a private network when they are under the same VPC. If they are in the same region but different VPCs, you could migrate MySQL to the VPC where the CVM resides, enabling intercommunication between CVM and MySQL. For the operations, please refer to Switching Networks.

Network issue 2: The CVM and MySQL are in different regions and are under different VPC networks.

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If the CVM and MySQL are in different regions and are under different VPC networks, the CVM cannot connect to MySQL directly through the private network. We recommend using a CVM in the same VPC as MySQL for connection. If there is no CVM instance in the same region as MySQL, you can create a new CVM instance that is in the same region and VPC network as MySQL on the CVM purchase page.

Security group configuration issue 1: The CVM security group configuration is incorrect.

To use a CVM to connect to MySQL, you need to configure outbound rules in the CVM's security group.**When the outbound rule target is not set to 0.0.0.0/0 and the protocol port is not set to ALL**, you need to add the private IP and port of the MySQL into the outbound rules.
1. Log in to the Security group console, click the name of the security group to access the details page of the security group assigned to the CVM.
2. On the **Outbound Rules** tab, click **Add Rule**.
Select MySQL(3306) for "Type", input your MySQL's private IP address(range) for "Destination", and set "Policy" to Allow.

Security group configuration issue 2: The MySQL security group configuration is incorrect.

If you want to connect a specified CVM to the MySQL instance, you need to set up inbound rules in the MySQL security groups. **If the inbound rule source is not set to 0.0.0.0/0 and the protocol port is not set to ALL**, you need to add the IP and port of the CVM into the inbound rules.
1. Log in to the Security group console and click the security group name to enter the details page of the security group bound to the MySQL.
2. Navigate to the **Inbound Rules** tab and click **Add Rule**.
Provide the IP address(range) that should be allowed to connect and the port information (e.g., MySQL internal port) to be released. Select "Allow" to release the IP port access. Select MySQL(3306) for "Type"; input your CVM's private IP address(range) for "Source"; and set "Policy" to Allow.

****Issues related to the host addresses authorized by account: The database account has restricted the access to specific host addresses.**

In addition to the security group, subnet, and other network environment restrictions, the database account is also subject to constraints imposed by the MySQL account system itself. If a database account specifies certain host addresses, connections from other addresses to MySQL will be denied. You can enhance the security of your database connection by using the TencentDB for MySQL console to modify the host addresses authorized by the database account.
1. Log in to the TencentDB for MySQL console, select an instance ID from the instance list to enter the instance management page.
2. Navigate to **DMC** > **Account Management**, locate the account for which host modification is required, and in the **Operation** column, choose **More** > **Modify Host**.

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3. In the pop-up dialog box, enter the new host address and click **OK** to modify the host address authorized to the account.

Note:

The host address can be an IP or `%` (indicating no limits on the IP range). Multiple hosts should be separated using a line break, space, or the symbols `; , |` .

Example 1: Entering

Example 2: Entering 10.5.10.%, indicates that the clients within the 10.5.10.%IP range are allowed to use this account to connect to the database.

Connection syntax issue: The connection command is incorrect.

Please verify the correctness of the connection command. Please refer to the standard command for private network connections:

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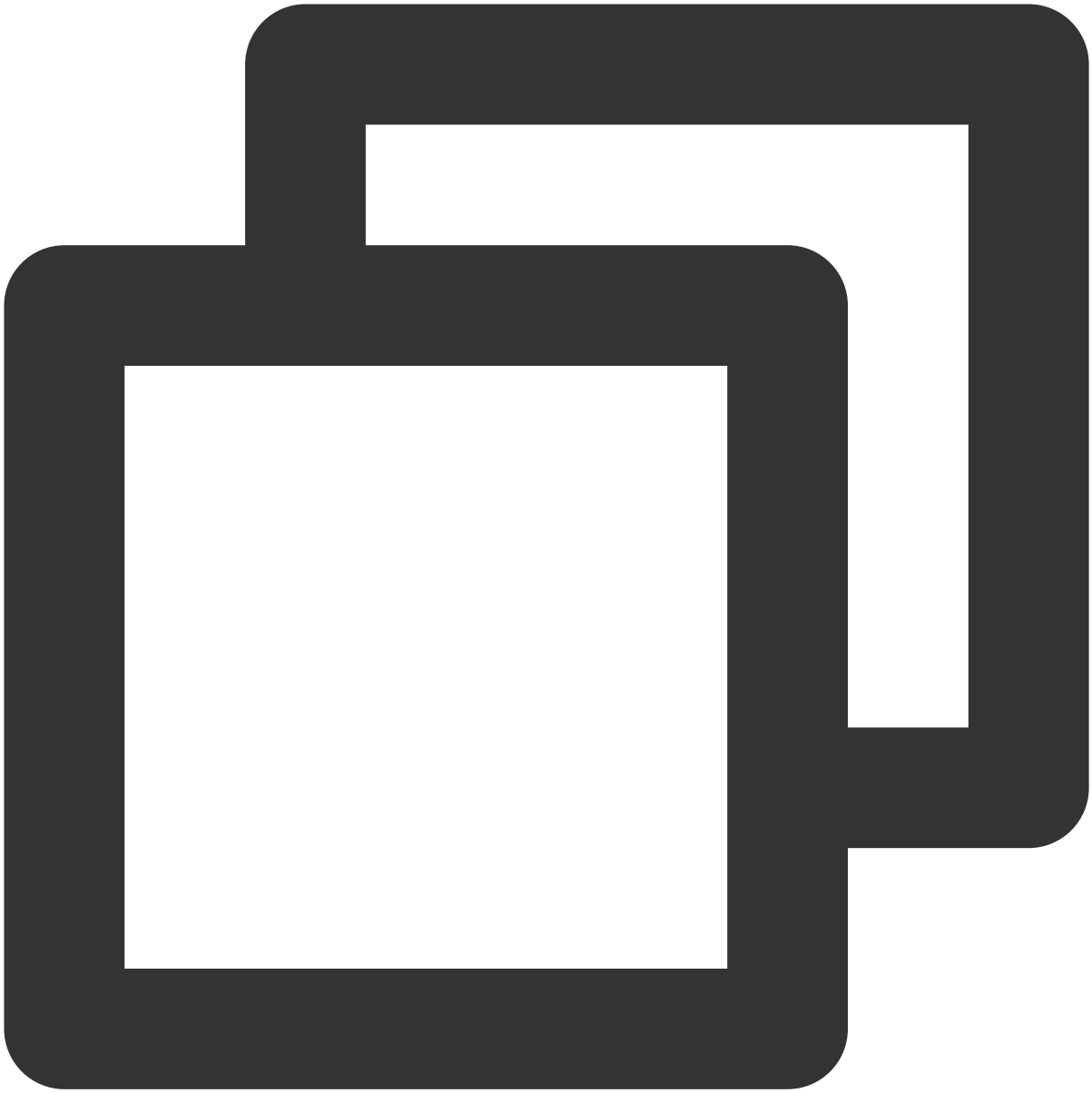

```
mysql -h <internal IP address> -u <username, default is root> -P <port number, defa
```

<Private network IP address>: Replace it with the private network address of your target MySQL instance, which can be viewed on the instance details page in the TencentDB for MySQL console.

Note:

The default port for MySQL is 3306.

When the port number is 3306, the <Internal IP Address> should be replaced with the IP address only. For instance, if the private network address is 10.16.0.11:3306, you should simply input 10.16.0.11.

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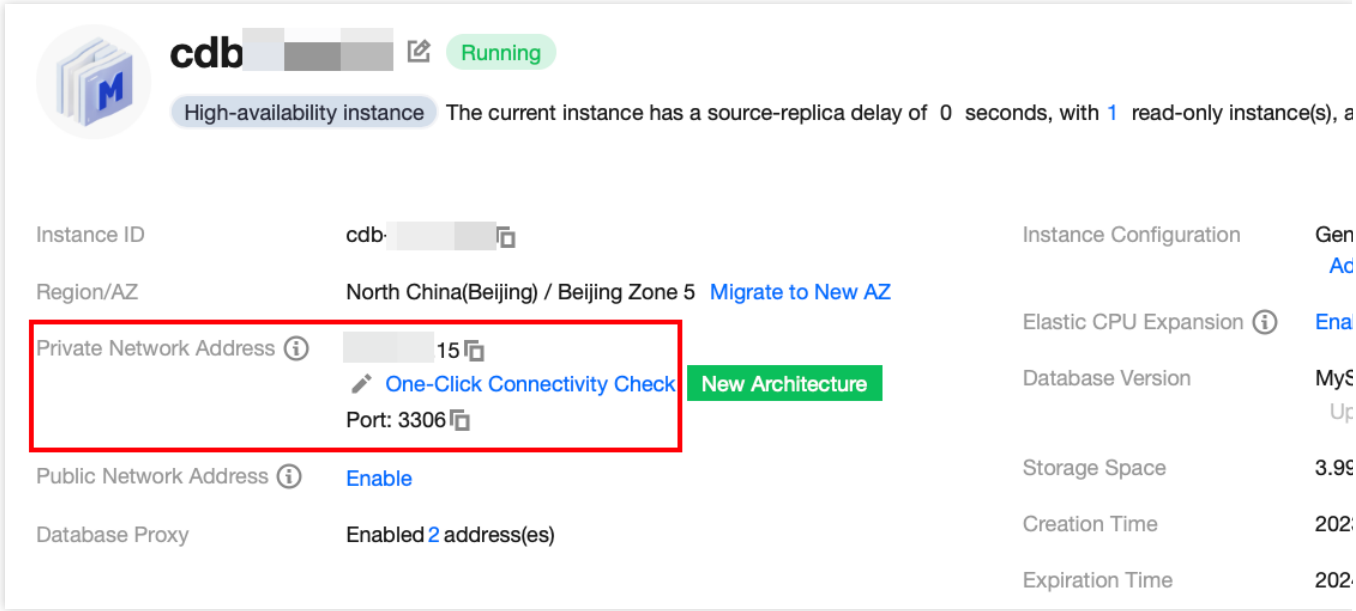
<username, default is root>: Replace it with the account name of your target MySQL instance. The default account name is `root` .

IP and port issue: The IP address or port in the command line or configuration file is incorrect.

When attempting to connect to the database using commands, please ensure that the private network IP and port number of the instance are correct. These details can be accessed from the instance details page in the TencentDB for MySQL console.



MySQL instance issue: The MySQL instance's disk is full. The maximum connections have been reached. The timeout parameter setting is incorrect. A master/slave switch is undergoing.

If the MySQL instance disk is full, it may affect database connectivity. It's recommended to expand the disk capacity. For the procedure, please refer to Adjusting Database Instance Specification.

When the error message "ERROR 1040(00000): Too many connections" is displayed, it indicates that the maximum number of connections for the current CDB instance has been reached. Common causes and solutions are as follows:

i. If there are too many sleep threads, it's advised to decrease the values of the wait_timeout and interactive_timeout parameters via the console. For details, please refer to Setting Instance Parameters.

ii. If there are few sleep threads and no slow query accumulation, it's suggested to increase the value of the max_connections parameter via the console. For details, please refer to Setting Instance Parameters.

Check whether the MySQL instance is in a "master-slave switch state", as connection attempts will fail if the MySQL instance is in the middle of a master-slave switch. After the switch has completed, connect using the command again.

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Public Network Connection Failed

Last updated：2023-12-27 10:36:15

Symptom

Failed to connect to an instance via the MySQL public network address from a CVM or third-party application.

Note:

There are various methods to connect to a TencentDB for MySQL instance, including connecting through private network, public network, or CCN, each requiring different connection conditions. For instance, if you attempt to connect to TencentDB for MySQL instance through a public network but you entered the instance's private network address in the command line, the connection will fail. Similarly, if you are using a Lighthouse instance to connect directly to TencentDB for MySQL without going through CCN, the connection will also fail. Therefore, in case of a connection failure, we recommend you first refer to the connection methods and application scenarios in Getting Started > Connecting to MySQL Instances > Overview to check whether you are adopting a proper connection method.

Causes

Possible Causes	Description
Password Issues	The password is incorrect.
Security Group Configuration Issue 1	The configuration for CVM security group is incorrect.
Security Group Configuration Issue 2	The configuration of MySQL security group is incorrect.
Issues related to the host addresses authorized by the account	The database account has restricted the access to specific host addresses.
Connection Syntax Issues	The connection command is incorrect.
IP and Port Issues	The IP and port in the command line or configuration file are incorrect.
MySQL Instance Issues	The MySQL instance's disk is full; maximum connections have been reached; the timeout parameter setting is incorrect; a master/slave switch is undergoing, or other

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	possible issues.
MySQL Instance Operating Status Issues	The MySQL instance is in isolation. It can be restored from the Recycle Bin.
CVM Instance Status Issues	The CVM instance is in isolation or shut down. It can be restored or powered on through the Console.

Solution

1. **Locate the cause through a check tool.**
The TencentDB console provides a one-click connection check tool to help locate the possible causes of connection failures, allowing you to, based on the prompts, make modifications before reconnecting to the instance.
2. **Self-Check**
If the One-Click Connection Check tool fails to locate the problem, or if you require solutions to the potential causes, you may locate the cause by yourself according to the following failure causes.

Processing Steps

I. Utilizing the One-Click Connection Check Tool to Locate the Cause and Implementing Corresponding Actions

1. Log in to the TencentDB for MySQL console, choose the instance to be checked, and click the instance ID to access the instance management page.
2. On the instance management page, navigate to **Connection Check** > **Public Network Check**.
Note:
To distinguish between private and public network addresses, please refer to the basic information on the instance details page.
3. Add public network servers that access this MySQL instance.
4. After the addition, click **Start Check**. A check report will be generated once the check task is completed.
5. Based on the check report, locate the issue, make adjustments according to the recommendations, and then reconnect to MySQL.

Check Items	Exception Handling
MySQL Instance Status	It is detected that your MySQL instance has been terminated. You can restore it from the Recycle Bin.
Public network access status	It is detected that your MySQL instance does not enable the public network access. To enable public network access, please refer to Enabling Public Network Access.

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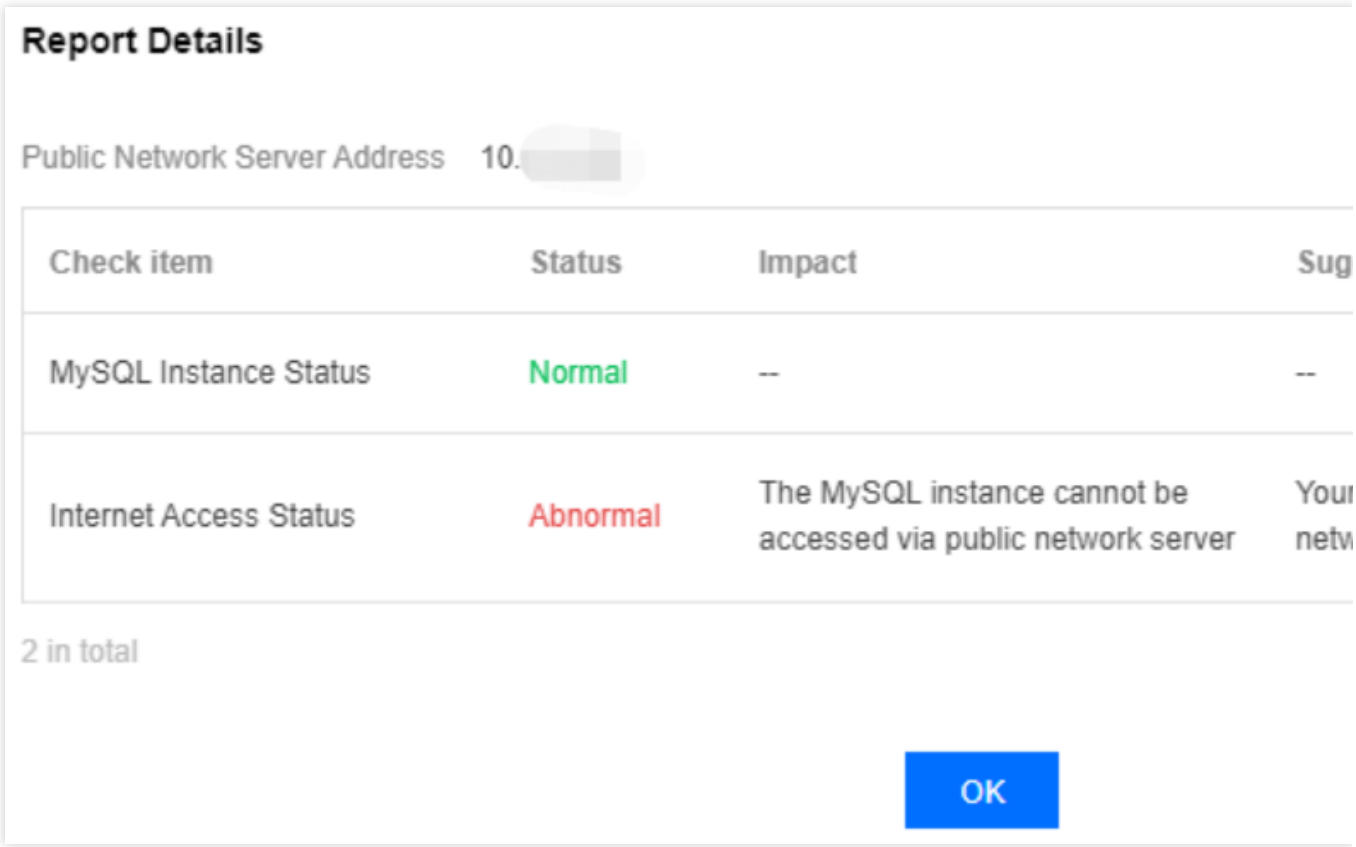

II. If the tool check fails to resolve the issue, consider the following causes.

Password issue: The password is incorrect.

If the password used during the connection is incorrect, you can either reset your password or create a temporary account with necessary permissions to log in the database.

Security group configuration issue 1: The CVM security group configuration is incorrect.

To use a CVM to connect to MySQL, you need to configure outbound rules in the CVM's security group.**When the outbound rule target is not set to 0.0.0.0/0 and the protocol port is not set to ALL**, you need to add the private IP and port of the MySQL into the outbound rules.

1. Log in to the Security group console, click the name of the security group to access the details page of the security group assigned to the CVM.
2. Choose the **Outbound Rules** tab and click **Add Rule**. Choose MySQL(3306) for the "Type", enter your MySQL's private IP address(range) for "Destination", and select "Allow" for "Policy".

Security group configuration issue 2: The MySQL security group configuration is incorrect.

To connect a specific CVM to a MySQL instance, you must configure inbound rules in the MySQL's security group.**When the inbound rule source is not set to 0.0.0.0/0 and the protocol port is not set to ALL**, you need to add the CVM's IP and port into the inbound rules.

1. Log in to the Security group console and click the security group name to enter the details page of the security group bound to the MySQL.

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2. Choose the **Inbound Rules** tab and click **Add Rule**.Enter the IP addresses you wish to allow for connection as well as the required port information (MySQL's private port), select "Allow" to release the IP port access.
For "Type", select MySQL(3306); for "Source", enter your CVM's public IP address(range); for "Policy", select "Allow".

****Issues related to the host addresses authorized by account: The database account has restricted the access to specific host addresses.**

In addition to the security group, subnet, and other network environment restrictions, the database account is also subject to constraints imposed by the MySQL account system itself. If a database account specifies certain host addresses, connections from other addresses to MySQL will be denied. You can enhance the security of your database connection by using the TencentDB for MySQL console to modify the host addresses authorized by the database account.

1. Log in to the TencentDB for MySQL console, select an instance ID from the instance list to enter the instance management page.
2. Navigate to **DMC** > **Account Management**, locate the account for which host modification is required, and in the **Operation** column, choose **More** > **Modify Host**.
3. In the pop-up dialog box, enter the new host address and click **OK** to modify the host address authorized to the account.

Note:

The host address can be an IP or `%` (indicating no limits on the IP range).Multiple hosts should be separated using a line break, space, or the symbols `; , |` .
Example 1: Entering
Example 2: Entering 10.5.10.%, indicates that the clients within the 10.5.10.%IP range are allowed to use this account to connect to the database.

Connection syntax issue: The connection command is incorrect.

Please verify the correctness of the connection command. Please refer to the standard command for a public network connection:

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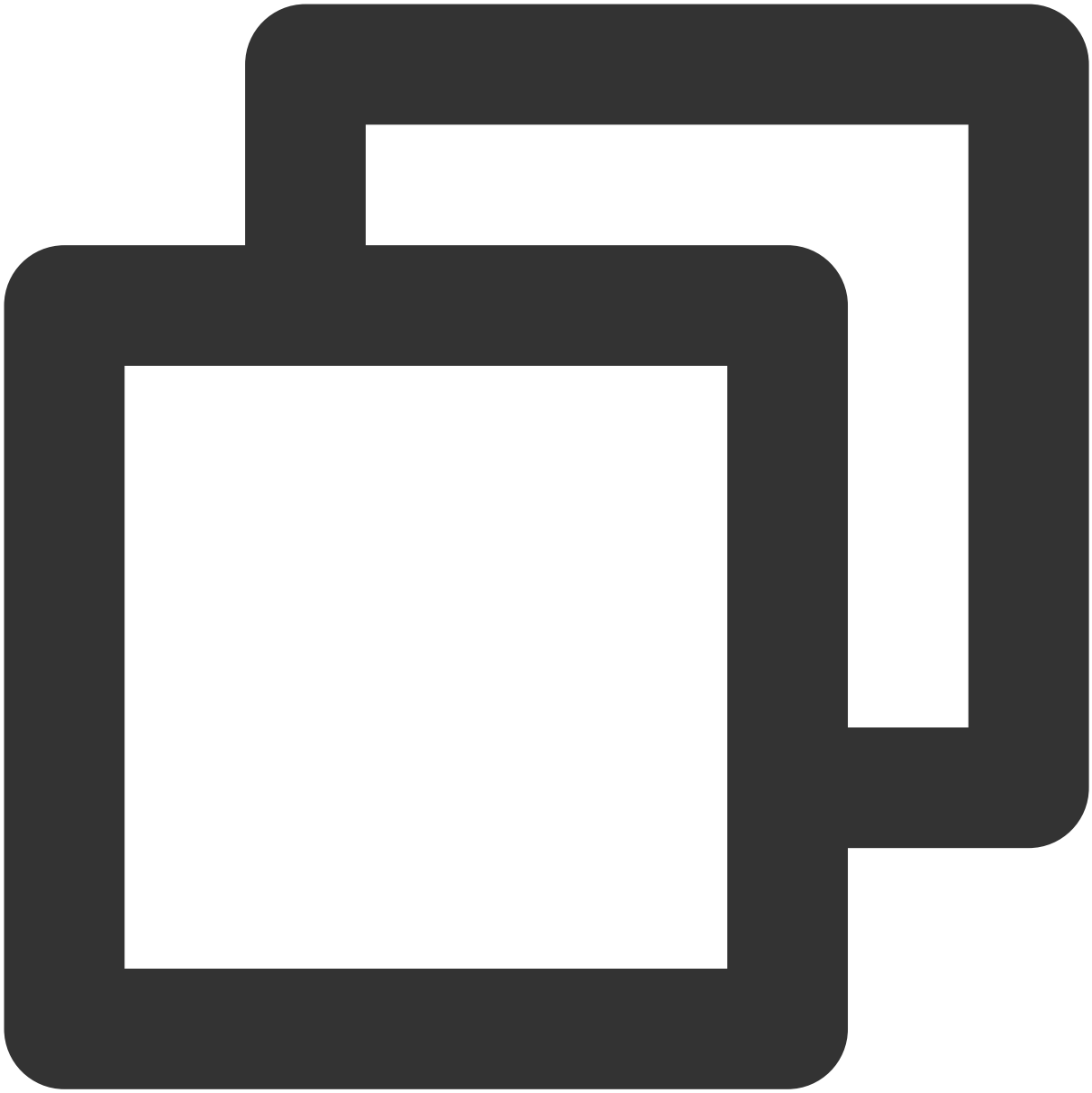

```
mysql -h <public IP address> -u <username, default is root> -P <public port number>
```

<public IP address>: Replace it with the public network address of the target TencentDB for MySQL instance, which can be viewed on the instance details page in the TencentDB for MySQL console.

<username, default is root>: Replace it with the account name of your target MySQL instance. The default account name is `root` .

<public port number>: Replace it with the public port number of the target MySQL instance, which can be viewed on the instance details page in the TencentDB for MySQL console.

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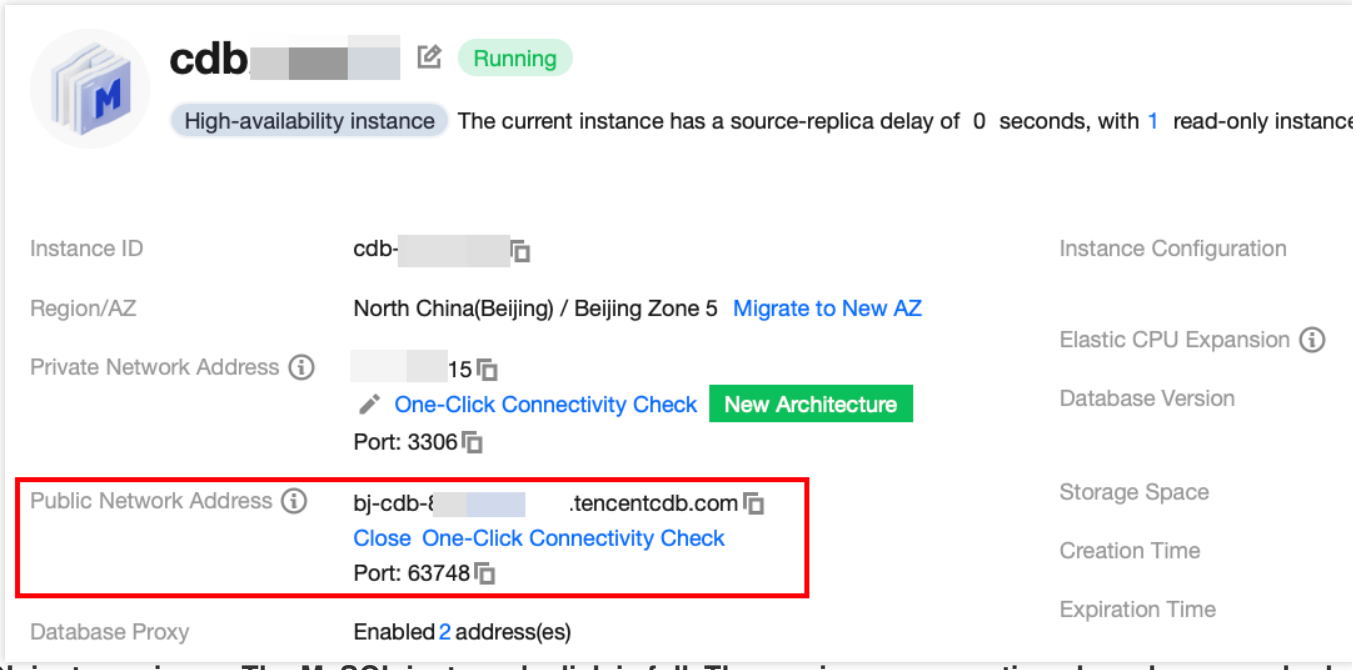
IP and port issue: The IP address or port in the command line or configuration file is incorrect.

When attempting to connect to the database using a command, ensure that the public IP and port number of the instance are correct. These can be viewed on the instance details page in the TencentDB for MySQL console.



MySQL instance issue: The MySQL instance's disk is full. The maximum connections have been reached. The timeout parameter setting is incorrect. A master/slave switch is undergoing.

If the MySQL instance disk is full, it may affect database connectivity. It's recommended to expand the disk capacity. For the procedure, please refer to Adjusting Database Instance Specification.

When the error message "ERROR 1040(00000): Too many connections" is displayed, it indicates that the maximum number of connections for the current CDB instance has been reached. Common causes and solutions are as follows:

i. If there are too many sleep threads, it's advised to decrease the values of the wait_timeout and interactive_timeout parameters via the console. For details, please refer to Setting Instance Parameters.

ii. If there are few sleep threads and no slow query accumulation, it's suggested to increase the value of the max_connections parameter via the console. For details, please refer to Setting Instance Parameters.

Check whether the MySQL instance is in a "master-slave switch state", as connection attempts will fail if the MySQL instance is in the middle of a master-slave switch. After the switch has completed, connect using the command again.

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CCN Connection Failure

Last updated：2023-12-27 10:37:22

Symptom

Failed to connect to a TencentDB for MySQL instance through its private network address from a CVM or LIGHTHOUSE.

Note:

There are various methods to connect to a TencentDB for MySQL instance, including connecting through private network, public network, or CCN, each requiring different connection conditions. For instance, if you attempt to connect to TencentDB for MySQL instance through a public network but you entered the instance's private network address in the command line, the connection will fail. Similarly, if you are using a Lighthouse instance to connect directly to TencentDB for MySQL without going through CCN, the connection will also fail. Therefore, in case of a connection failure, we recommend you first refer to the connection methods and application scenarios in Getting Started > Connecting to MySQL Instances > Overview to check whether you are adopting a proper connection method.

Causes

Possible Causes	Description
Password Issues	The password is incorrect.
Issues related to the host addresses authorized by the account	The database account has restricted the access to specific host addresses.
Connection Syntax Issues	The connection command is incorrect.
IP and Port Issues	The IP and port in the command line or configuration file are incorrect.
CCN Network Issues	The route table is not enabled.
MySQL Instance Issues	The MySQL instance's disk is full; maximum connections have been reached; the timeout parameter setting is incorrect; a master/slave switch is undergoing, or other possible issues.

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MySQL Instance Operating Status Issues	The MySQL instance is in isolation. It can be restored from the Recycle Bin.
CVM Instance Status Issues	The CVM instance is in isolation or shut down. It can be restored or powered on through the Console.
LIGHTHOUSE Instance Status Issues	The LIGHTHOUSE instance is in isolation or shut down. It can be restored or powered on through the Console.

Solution

For CCN connection, since there is no one-click connectivity check tool available, we recommend you follow the subsequent instructions for self-check and troubleshooting.

Self-Check and Troubleshooting

Password issue: The password is incorrect.

If the password used during the connection is incorrect, you can either reset your password or create a temporary account with necessary permissions to log in the database.

****Issues related to the host addresses authorized by account: The database account has restricted the access to specific host addresses.**

In addition to the security group, subnet, and other network environment restrictions, the database account is also subject to constraints imposed by the MySQL account system itself. If a database account specifies certain host addresses, connections from other addresses to MySQL will be denied. You can enhance the security of your database connection by using the TencentDB for MySQL console to modify the host addresses authorized by the database account.

1. Log in to the TencentDB for MySQL console, select an instance ID from the instance list to enter the instance management page.
2. Navigate to **DMC** > **Account Management**, locate the account for which host modification is required, and in the **Operation** column, choose **More** > **Modify Host**.
3. In the pop-up dialog box, enter the new host address and click **OK** to modify the host address authorized to the account.

Note:

The host address can be an IP or `%` (indicating no limits on the IP range). Multiple hosts should be separated using a line break, space, or the symbols `; , |` .

Example 1: Entering

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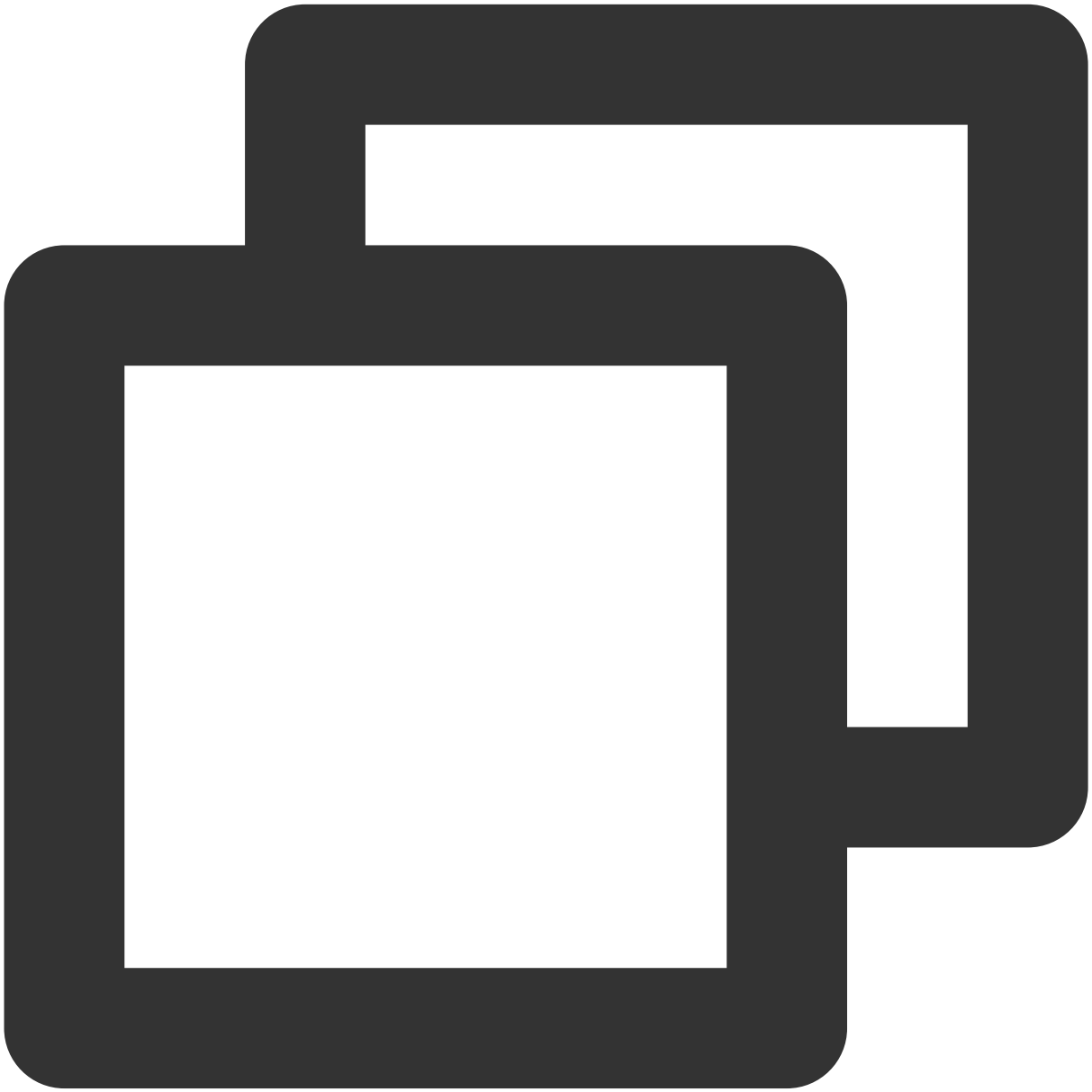
Example 2: Entering 10.5.10.%, indicates that the clients within the 10.5.10.%IP range are allowed to use this account to connect to the database.

Connection syntax issue: The connection command is incorrect.

Please verify the correctness of the connection command. Please refer to the standard command for a public network connection:



```
mysql -h <private IP address> -u <username, default is root> -P <private port numbe
```

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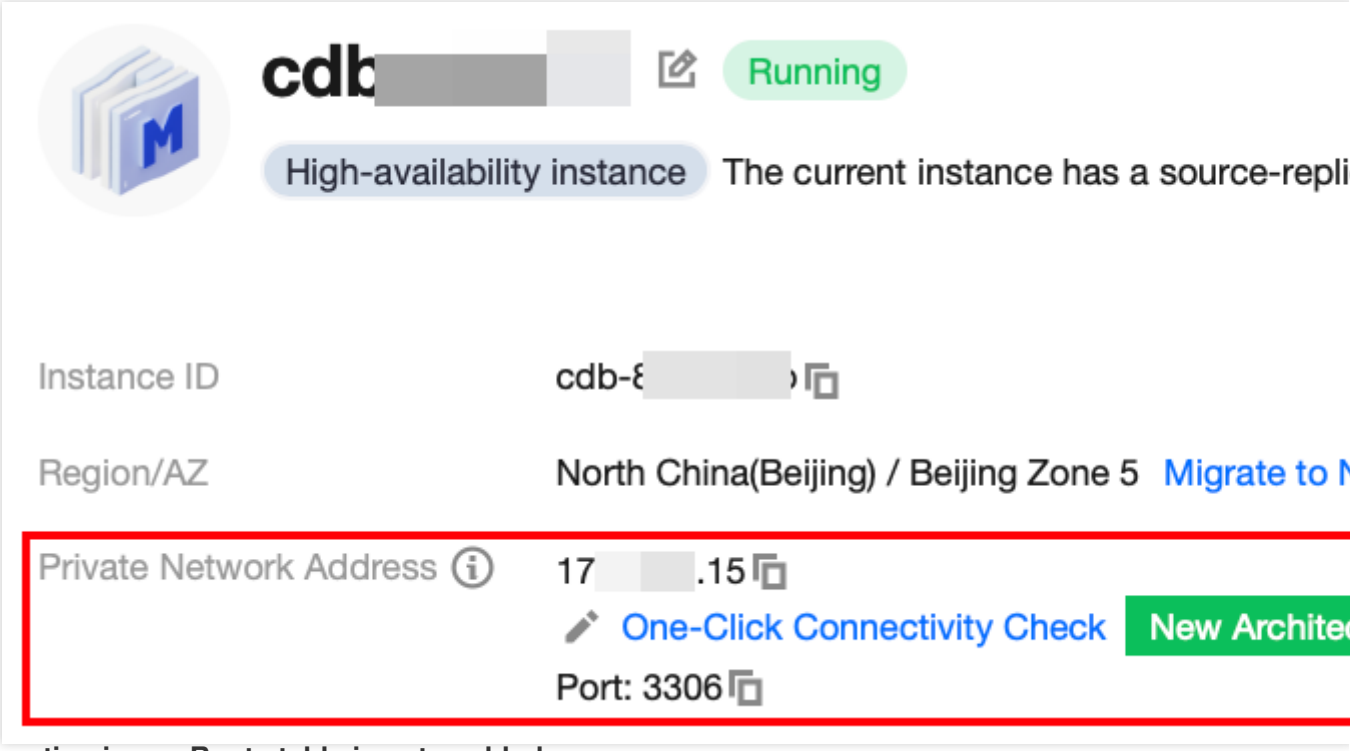
<Private network IP address>: Replace it with the private network address of your target MySQL instance, which can be viewed on the instance details page in the TencentDB for MySQL console.
<username, default is root>: Replace it with the account name of your target MySQL instance. The default account name is `root`.
<Private port number>: Replace the port number with the private port number of your target MySQL instance. The default is 3306, but if it has been changed, please use the adjusted port number.

IP and port issue: The IP address or port in the command line or configuration file is incorrect.

When attempting to connect to the database using commands, please ensure that the private network IP and port number of the instance are correct. These details can be accessed from the instance details page in the TencentDB for MySQL console.



CCN pouting issue: Route table is not enabled.

Before you connect to the database via CCN, you need to establish interconnectivity between LIGHTHOUSE and the private network of the CCN instance. Then, under the CCN instance, you must add the network address of the target MySQL's VPC. If the routing towards the network segment of the target MySQL's VPC is not enabled in the route table under the CCN instance, connection cannot be established. You need to enable the corresponding routing and reconnect.

MySQL instance issue: The MySQL instance's disk is full. The maximum connections have been reached. The timeout parameter setting is incorrect. A master/slave switch is undergoing.

If the MySQL instance disk is full, it may affect database connectivity. It's recommended to expand the disk capacity. For the procedure, please refer to Adjusting Database Instance Specification.

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When the error message "ERROR 1040(00000): Too many connections" is displayed, it indicates that the maximum number of connections for the current CDB instance has been reached. Common causes and solutions are as follows:
i. If there are too many sleep threads, it's advised to decrease the values of the wait_timeout and interactive_timeout parameters via the console. For details, please refer to Setting Instance Parameters.
ii. If there are few sleep threads and no slow query accumulation, it's suggested to increase the value of the max_connections parameter via the console. For details, please refer to Setting Instance Parameters.
Check whether the MySQL instance is in a "master-slave switch state", as connection attempts will fail if the MySQL instance is in the middle of a master-slave switch. After the switch has completed, connect using the command again.

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DMC Connection Failure

Last updated：2023-12-27 10:38:22

Symptom

Failed to connect to TencentDB for MySQL via the DMC platform.

Causes

Possible Causes	Description
Issues related to the host addresses authorized by the account	The database account has restricted the access to specific host addresses.
Password Issues	The password is incorrect.

Self-Check and Troubleshooting

Issues related to the host addresses authorized by the account: The database account has restricted the access to specific host addresses.

Please make sure you have authorized all IPs accessing the DMC server in this region within the host restriction of the account you are logging into. For details about how to authorize IPs, please refer to Modifying Host Addresses with Access Permissions. Alternatively, you can directly use '%' to allow all IPs and only use the security group to limit the origin of database access.

Password issue: The password is incorrect.

If the IP is authorized but the issue persists, your account password may be incorrect. Please re-enter the correct password. You can also reset the password or create a temporary account that meets your requirements..

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`Unknown MySQL server host` (110 or 11004) Error During MySQL Instance Connection

Last updated：2023-08-10 14:49:16

Issue Description

When you try to connect to a TencentDB for MySQL instance at its public network address, the system prompts `Unknown MySQL server host`.

```
[mysql@[illegible] ~]$ mysql -uroot -p -h'gz-[illegible].sql.tencentcdb.com' -P58812
Enter password:
ERROR 2005 (HY000): Unknown MySQL server host 'gz-[illegible].sql.tencentcdb.com' (2)
```

Common Causes

The public network address is incorrect.

Solutions

Check whether the public network address of the instance is enabled and correctly entered.

Troubleshooting

1. Log in to the TencentDB for MySQL console and click the ID of the target instance in the instance list to enter the instance details page.
2. In the **Public Network Address** configuration item on the instance details page, check whether the public network address is enabled.

- If so, proceed to step 3.
- If not, click **Enable** after **Public Network Address** and then proceed to step 3.

> Note：

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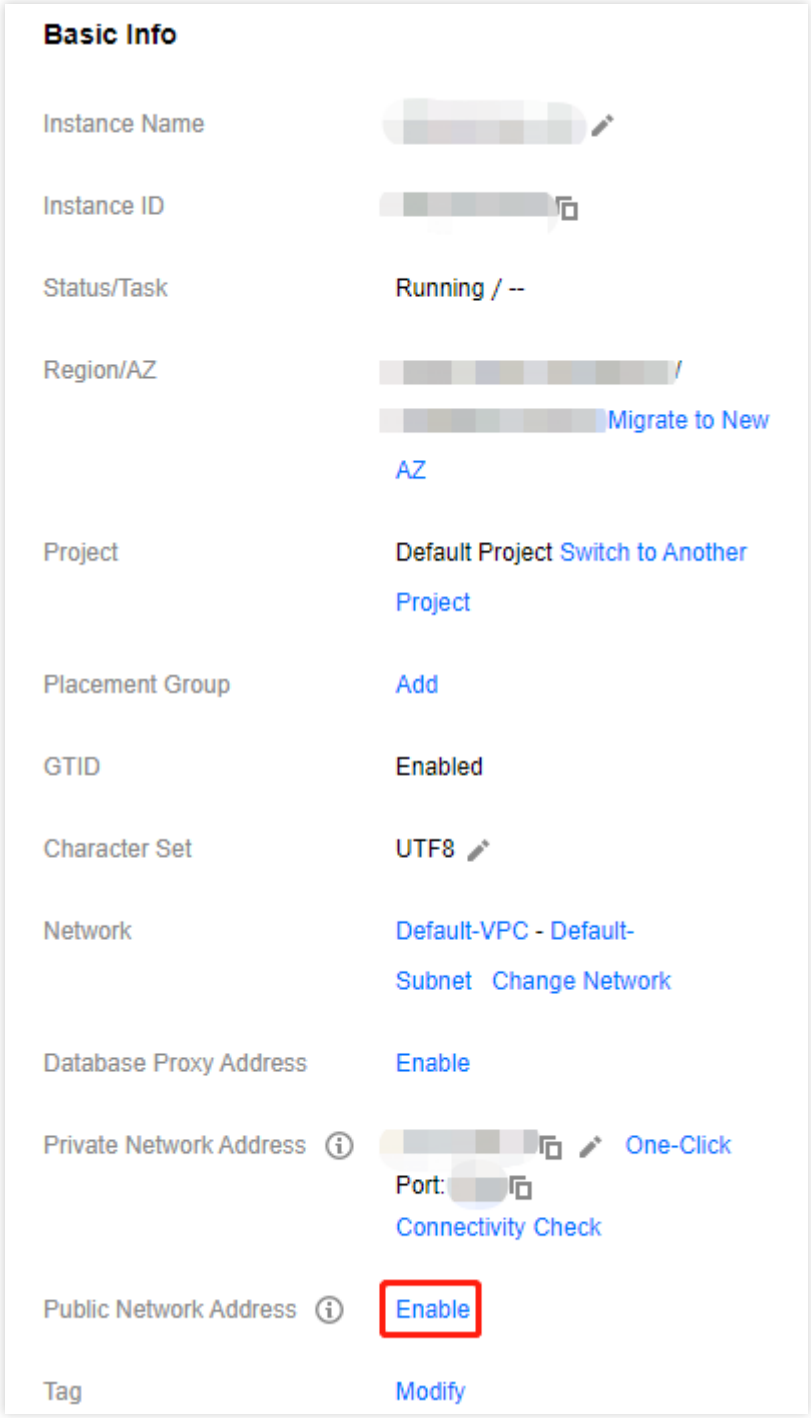
- If the **Basic Info** section displays the public network address and port, the public network address has been enabled.
- For more information on the restrictions on enabling the public network address, see Connecting to MySQL Instance.



3. Check whether the public network address entered on the client is the same as that of the instance.

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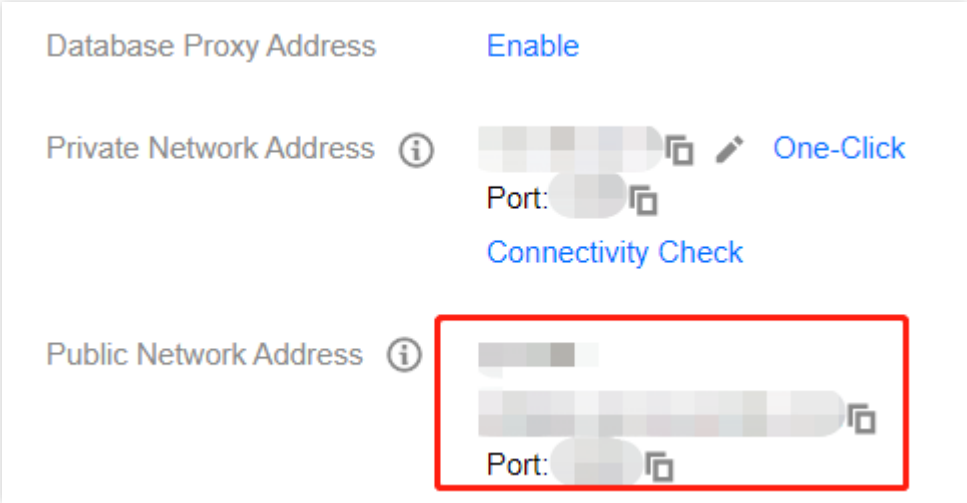
- If so, proceed to step 4.
- If not, copy the **Public Network Address** as shown in the red box in the screenshot below, paste it on the client, and then proceed to step 4.



4. Ping the public network address and check whether the DNS resolution is normal.

- If so, the specific network latency will be returned, and the troubleshooting ends.
- If not, the `Unknown host` error will be returned. In this case, submit a ticket for assistance.

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`Access denied for user 'XXX'@'XXX'` Error During MySQL Instance Connection

Last updated：2023-08-10 15:19:09

Issue Description

When you try to connect to a TencentDB for MySQL instance, the system prompts `ERROR 1045 (28000): Access denied for user 'XXX'@'XXX'` .

```
[mysql@[redacted]-01 ~]$ mysql -utest -p -h10.[redacted].11 -P3306
Enter password:
ERROR 1045 (28000): Access denied for user 'test'@'10.[redacted].9' (using password: YES)
```

Common Causes

1. The username is incorrect.
2. The host name is incorrect.
3. The password is incorrect.

Solutions

Check whether the username, host, and password are correct.

Troubleshooting

1. Log in to the TencentDB for MySQL console and click the ID of the target instance in the instance list to enter the instance management page.
2. On the instance management page, select **Database Management** > **Account Management** and check whether the account name and host name match.

> Note：
> If the account name and host name do not match, you can proceed as follows:

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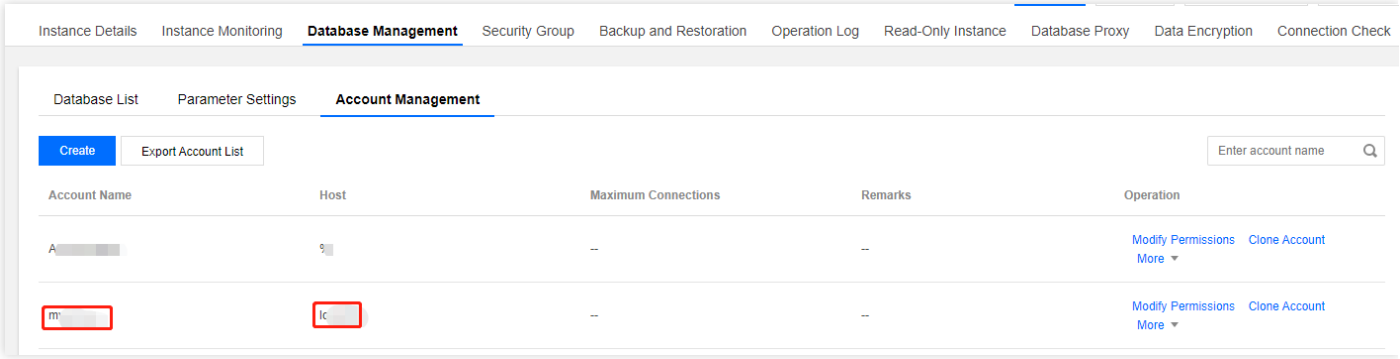
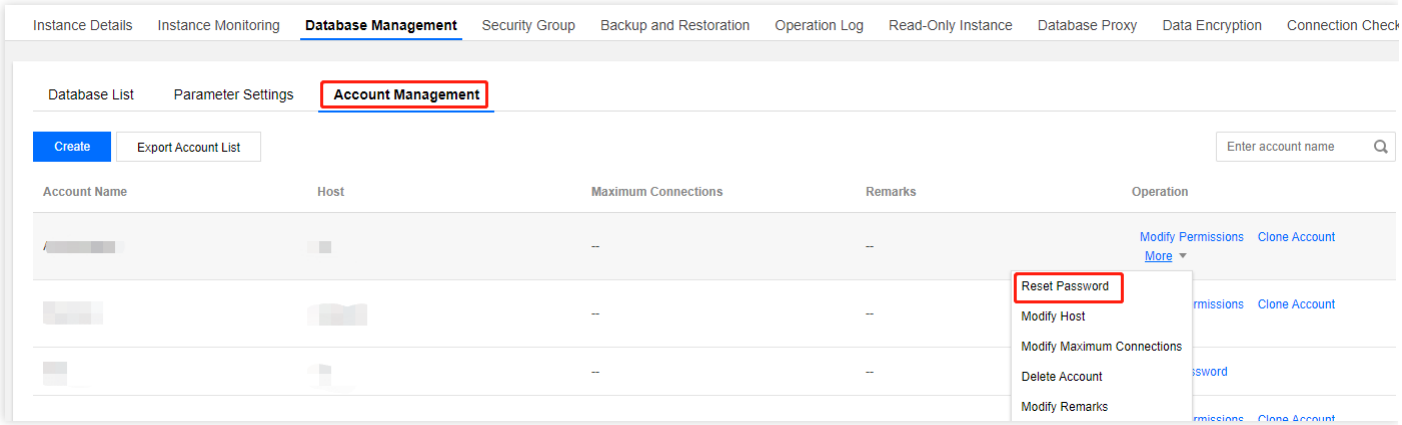
- Method 1: check whether the host has another account name, and if so, use that account name and the corresponding password for login.
- Method 2: add the IP address of the current host under the current account name. To clone the account, click **Clone Account** in the **Operation** column of the account, change the **Host** parameter value to the IP address of the host you need to log in to in the **Clone Account** pop-up window, and click **OK**.



3. Try again and make sure that the entered password is correct. If you forgot the password, you can find the account for which to reset the password and select **More** > **Reset Password**.



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Performance
High CPU Utilization

Last updated：2023-08-09 16:28:53

Issue Description

When the CPU utilization of a TencentDB for MySQL exceeds 80%, the service response may slow down or time out, or the database cannot be connected.

You can view the CPU utilization of a TencentDB for MySQL instance on the instance monitoring page in the TencentDB for MySQL console or in the DBbrain console.

> Note：
> When the CPU utilization gets too high, we recommend you increase the CPU specification first as instructed in Adjusting Database Instance Specification to ensure normal business operations. Subsequently, you can refer to this document for troubleshooting and optimization.

Impact

If MySQL's CPU utilization remains high for a prolonged time, the overall performance of the database will be severely compromised, and under extreme circumstances, instances may be hung.

When the HA system detects such an issue, it will trigger a source-replica switch to maintain the high availability of your business. During the switch, instances are usually unavailable for less than 60 seconds. If the switch occurs during peak hours, business stability and continuity will be seriously affected.

To protect your business from being affected by CPU resource shortage, we recommend that you optimize the application or upgrade the CPU resources for the instance with a high CPU utilization. A source-replica switch is accompanied by a disconnection lasting for just seconds; therefore, for persistent connections, your application should have a reconnection mechanism.

Common Causes

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MySQL's CPU resources are mainly used by system threads and user threads. Therefore, if CVMs are for exclusive use by your TencentDB for MySQL instances, you can solve most of the issues just by focusing on the two types of threads.

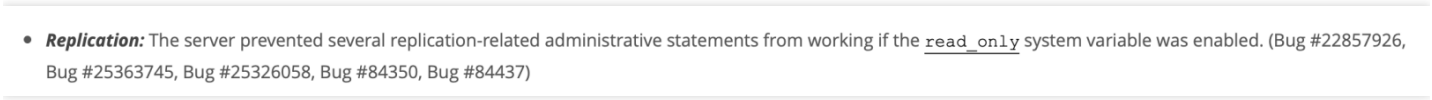
User threads

In most cases, busy user threads are caused by slow queries, heavy computation, and high QPS (queries per second).

- **Slow queries**
  Querying that involves ORDER BY, GROUP BY, temp tables, joins, etc. is so inefficient that the computation of a single SQL statement takes much longer CPU time.
- **Heavy computation**
  Heavy computation is caused just by huge amounts of data.
- **High QPS**
  CPU time is prolonged just by a high QPS. For example, if a four-core server sustains a high QPS of 20,000 to 30,000, the total CPU time can be very long even when the CPU time of a single SQL statement is short.

System threads

In a production environment, system thread issues are less frequent. In general, the CPU utilizations of multiple system threads are rarely too high or close to 100% at the same time as long as the CVM has at least four available CPU cores. However, there are a few bugs that may affect the CPU utilization, as shown in the figure below:


- ***Replication:*** The server prevented several replication-related administrative statements from working if the `read_only` system variable was enabled. (Bug #22857926, Bug #25363745, Bug #25326058, Bug #84350, Bug #84437)

Solutions

As most CPU issues are caused by busy user threads, the following sections focus on the solutions to high CPU utilization caused by user threads.

- Slow queries: To identify and optimize slow queries, we recommend DBbrain. For more information, see Slow queries.
- Heavy computation: To solve the high CPU utilization issue caused by huge amounts of data, see Heavy computation.
- High QPS: To solve the high CPU utilization issue caused by too many access requests, see High QPS.

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Troubleshooting

Slow queries

Use DBbrain to identify and optimize the SQL statements which cause a high CPU utilization:

- **Exception diagnosis (recommended)**: This feature detects and diagnoses exceptions 24/7 and provides optimization suggestions in real time. For more information, see Method 1 (recommended). Use the exception diagnosis feature to troubleshoot database exceptions.
- **Slow SQL analysis**: This feature analyzes slow SQL statements of the current instance and provides optimization suggestions. For more information, see Method 2. Use the "slow SQL analysis" feature to troubleshoot SQL statements that lead to high CPU utilization.
- **Audit log analysis**: This feature performs in-depth analysis on SQL statements and provides optimization suggestions based on TencentDB audit data (full SQL). For more information, see Method 3. Use the "audit log analysis" feature to troubleshoot SQL statements that cause high CPU utilization.

In MySQL, slow query time (`long_query_time`) is set to 10 seconds by default. After a performance issue occurs, if no slow query is found, we recommend you adjust the parameter value to 1 second 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, we recommend you upgrade the CPU configuration so as to improve the overall performance of the database.

Heavy computation

When MySQL handles huge amounts of data, its CPU utilization can be high, even if the indexes and query execution plans work well. Moreover, such an issue can still occur at a low concurrency due to MySQL's one-thread-per-connection feature

Generally, there are two common solutions:

- Enable read/write separation. Run this type of queries on a read-only replica node where the business access pressure is low.
- Optimize your program to split a large SQL query into smaller ones.

High QPS

- Upgrade CPU specification to improve the overall database performance.
- Use read-only instances to share the load of the source instance.
- Optimize query statements to enhance efficiency.

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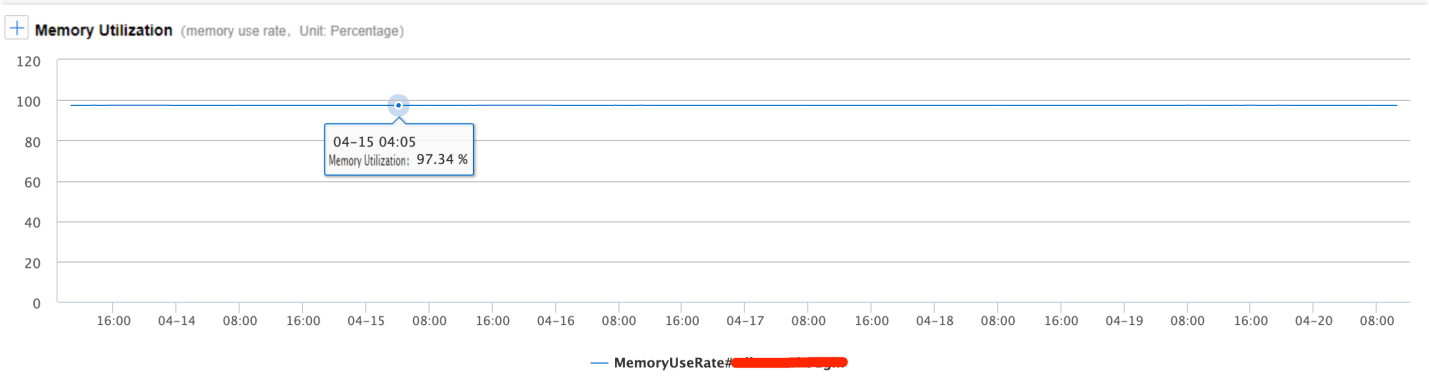
High Memory Utilization

Last updated：2023-08-09 16:20:09

Issue Description

A TencentDB for MySQL instance experiences a sudden surge or a continuous growth in memory utilization. You can view specific memory utilization monitoring data in the following chart:



After a sudden surge or a steady slow growth, the memory utilization reaches an unhealthy level of more than 96% and fluctuates slightly. In this case, the memory utilization may trigger custom TCOP memory alarms many times.

Impact

Inefficient SQL statements or improper database parameters can cause the memory utilization to increase. An unexpected business peak may cause OOM (out of memory) of two-node and three-node TencentDB for MySQL instances, and when the instances are unavailable due to OOM, a source-replica switch will be triggered. During the switch, instances are usually unavailable for less than 60 seconds. If the switch occurs during peak hours, business stability and continuity will be seriously affected.

Solutions

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.
  Some special SQL statements or field types may cause the muliti-alloacation of cache to a single threadTherefore, all OOM exceptions are caused by the private memory of each connection. The risk of high memory utilization can

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be mitigated by limiting database connections and optimizing inefficient SQL statements. If this doesn't work, you can upgrade the memory configuration to improve the overall concurrency and stability of the database. For more information on memory parameters, see Memory Allocation.

Troubleshooting

1. Optimize slow SQL statements to reduce the session-level private memory usage. You can use DBbrain to analyze slow SQL statements.
2. Reduce invalid persistent connections by downgrading the connection pool configuration or concurrency level on the program side without affecting the business.You can use DBbrain to view the current session information.
3. Monitor memory utilization (optional and applicable to MySQL 5.7 and above): enable the performance schema feature, and query memory information from tables whose name starts with "memory_summary" in the performance_schema database. For example, the memory_summary_global_by_event_name table records global memory utilization.
4. After optimization, upgrade the configuration of your TencentDB for MySQL instance.

Note：

- During the upgrade, your business can operate normally. After the upgrade, there will be a momentary disconnection. Make sure that your business has a reconnection mechanism.
- To protect your business from being affected by insufficient memory or CPU resources, configure alarm policies for instance resources which help you identify potential resource shortage in advance. For more information, see Alarm Policies (TCOP).

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High Number of Slow Queries

Last updated：2023-08-09 16:12:02

Issue Description

When a slow query problem occurs, it is usually accompanied by the simultaneous surge of multiple monitoring metrics, such as CPU utilization and the number of slow queries.

Note：
You can view the instance CPU utilization and slow queries in the **Instance Management** > **Instance Monitoring** on the instance management page
As shown in the figure above, when the slow query problem occurred, the CPU utilization suddenly increased to 150%, and the slow query metric also surged.

Common Causes

Generally, this is because that the execution efficiency of SQL statements is not high enough, which causes a large number of requests to accumulate in TencentDB for MySQL. There are two common causes:

- Cause 1: The SQL statements didn't use indexes or used inefficient indexes.
- Cause 2: The QPS pressure exceeded the load limit of the current instance.

Solutions

There are different solutions for the two possible causes:

- Solution 1: Optimize the SQL statements to improve their execution efficiency. For more information, see measure 1.
- Solution 2: Improve the configuration of the TencentDB for MySQL instance. For more information, see measure 2.

Troubleshooting

Measure 1: Optimize SQL statements

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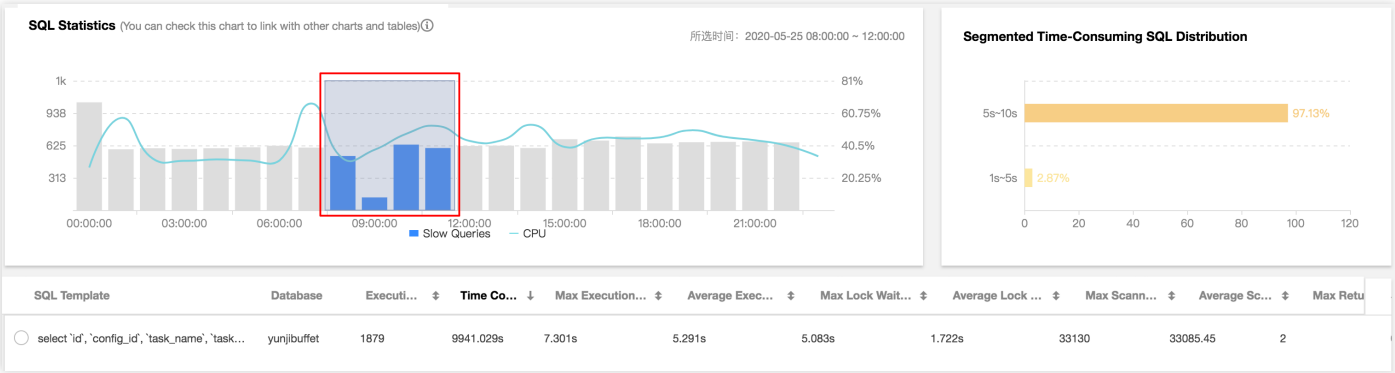
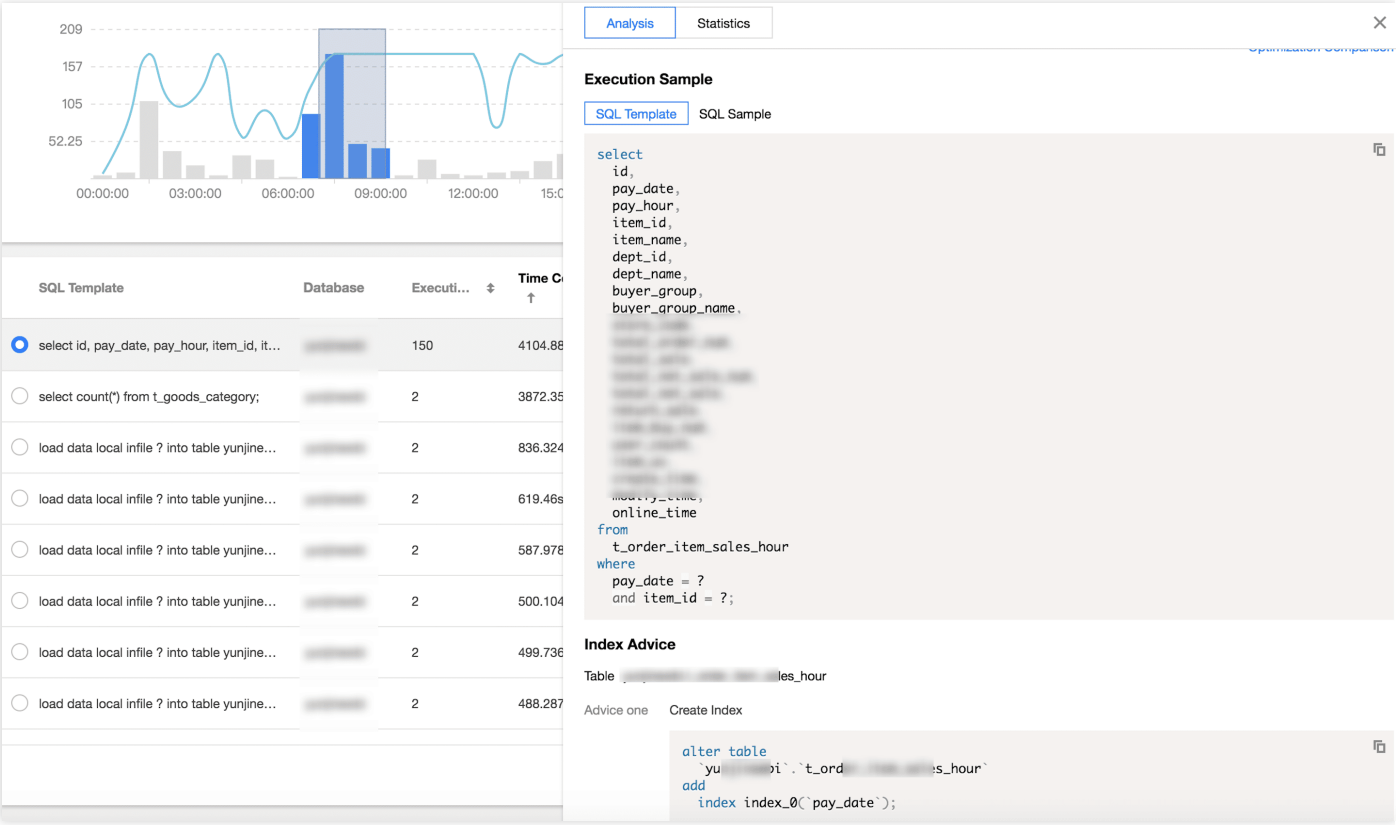
You can directly use DBbrain to optimize slow queries, which will analyze the SQL statements and give advice for adding indexes.

1. Log in to the DBbrain console and select **Performance Optimization** on the left sidebar. On the displayed page, select a database at the top and select the **Slow SQL Analysis** tab.
2. You can click a single time period or drag to select multiple time periods for slow queries in the **SQL Statistics** bar chart, and the aggregated SQL template and execution information will be displayed below, such as the number of executions, total execution duration, scanned rows, and returned rows.



3. Click an aggregated SQL template, and specific SQL analysis and statistics will be displayed on the right. You can view the corresponding index advice.



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Measure 2: Improve the TencentDB for MySQL instance configuration

View the QPS stress test result of each specification, compare it with the QPS data of the current instance, and adjust the corresponding MySQL CPU and memory specifications.

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Instance Data Sync Delay

Last updated：2023-08-09 15:56:09

Issue Description

TencentDB for MySQL utilizes open-source MySQL's native binlog replication technology for default replicas, disaster recovery instances, and read-only instances. Therefore, there may be a delay during async or semi-sync data replication.

Impact

- If a replica node has a delay, the source-replica switch cannot be completed promptly. In this case, the business may take some time to return to normal.
- 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 the read business has a high requirement for data consistency, you can set a read-only instance removal policy to automatically remove a read-only instance from the read-only instance group (RO group) when its delay with the source instance exceeds the specified threshold. However, once the read-only instance is removed, the business cannot access it through the RO group.

Common Causes

- **No primary key or secondary index**
  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 replica node applies the binlog. If the binlog is 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.
  For detailed solutions, see No primary key or secondary index.

- **Large transactions**
  A large transaction refers to a transaction performing INSERT, UPDATE, DELETE, REPLACE operations on millions of rows of data, or a single SQL statement modifying millions of rows of data, whose execution time exceeds 30 seconds.
  When the source instance executes DML operations involving massive volumes of data, a large number of binlogs

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will be transferred to the replica instance, which needs the same time consumed by the source instance to complete corresponding transactions, leading to data delays in the replica instance. For detailed solutions, see Large transactions

- **DDL operations**
  As users' queries are run at the read-only node, if the read-only node is running a very time-consuming query, the query will block the DDL operations from the source node until the query completes, resulting in data delays at the read-only node. For detailed solutions, see DDL operations.

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

- **The "Waiting for table metadata lock" error**
  A running large transaction or an uncommitted transaction blocks DDL operations, resulting in blocking all operations on this table.
  For detailed solutions, see The "Waiting for table metadata lock" error.

Troubleshooting

No primary key or secondary index

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 **Space Analysis** tab.

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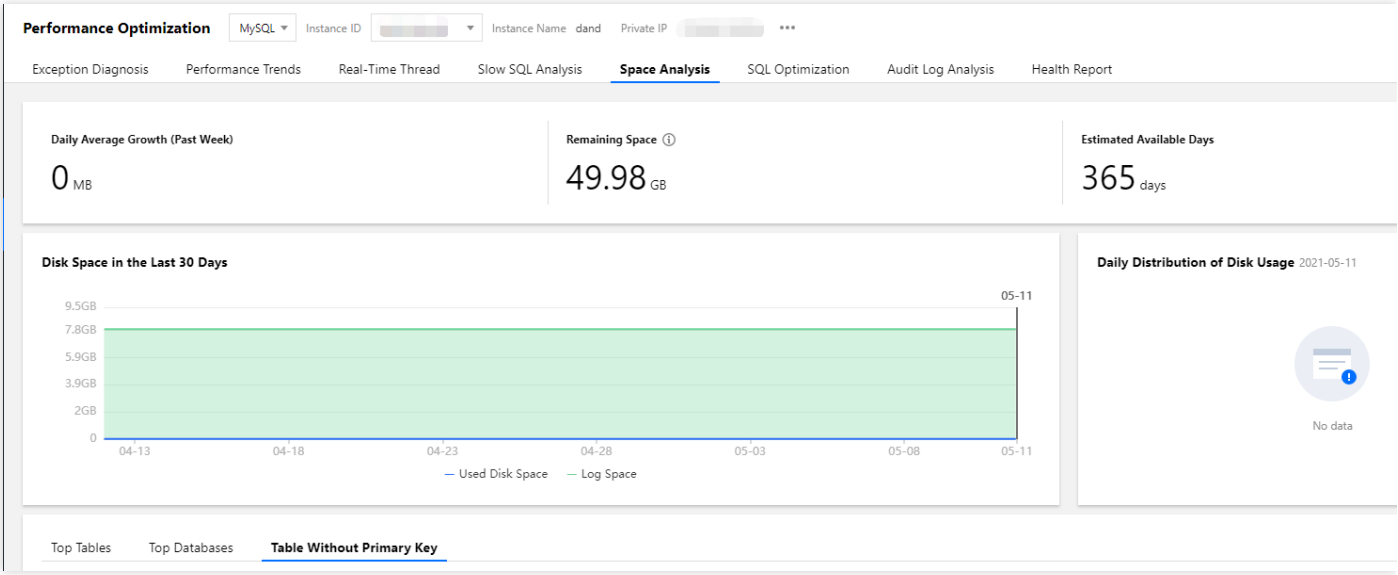
2. On the **Table Without Primary Key** tab, click a table to view its fields and indexes.



> Note：
> The list of tables without a primary key is automatically refreshed once a day and can be manually refreshed.

3. Create a primary key for the table without a primary key listed in Step 2. If the primary key cannot be created, we recommend that you create a secondary index on a column with a high cardinality.

Large transactions

1. Log in to the DBbrain console and select **Monitoring & Alarm** > **Exception Alarm** on the left sidebar. On the displayed page, select a database type and region at the top, and select **Replication delay by transaction** from

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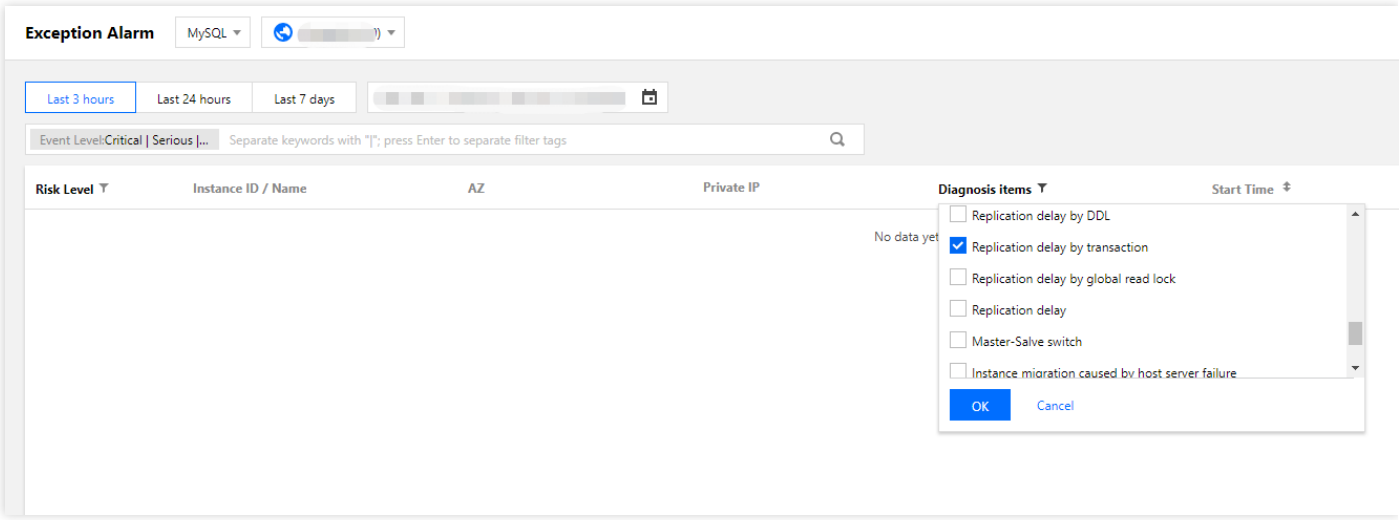
the drop-down list of the **Diagnosis items** column to filter large transaction alarms.

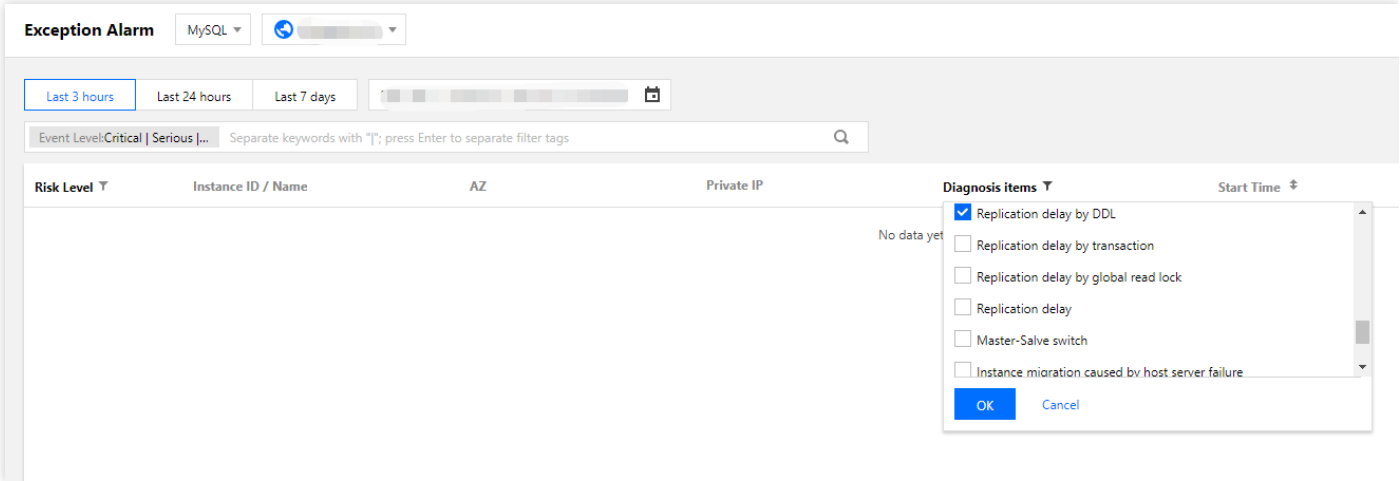


2. Split a large transaction into smaller ones by using the WHERE clause to restrict the amount of data processed by each SQL statement.

> Note：
> After the large transactions are located in DBbrain and split into smaller ones, the read-only nodes can run the smaller transactions quickly to avoid data delays.

DDL operations

1. Log in to the DBbrain console and select **Monitoring & Alarm** > **Exception Alarm** on the left sidebar. On the displayed page, select a database type and region at the top, and select **Replication delay by DDL** from the drop-down list of the **Diagnosis items** column to filter DDL alarms.



2. Click **Details** in the **Operation** column to enter the event details page for troubleshooting.

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- Event Details: Include the **Diagnosis Items**, **Time Range**, **Risk Level**, **Duration**, and **Overview**.
- Description: Includes problem snapshots and performance trends of the exception or health inspection event.
- Intelligent Analysis: Analyzes the root cause of the performance exception to help you locate the specific operation.
- **Optimization Advice**: provides optimization advice, including but not limited to SQL optimization (index and rewrite), resource configuration optimization, and parameter fine-tuning.

Lower instance specifications

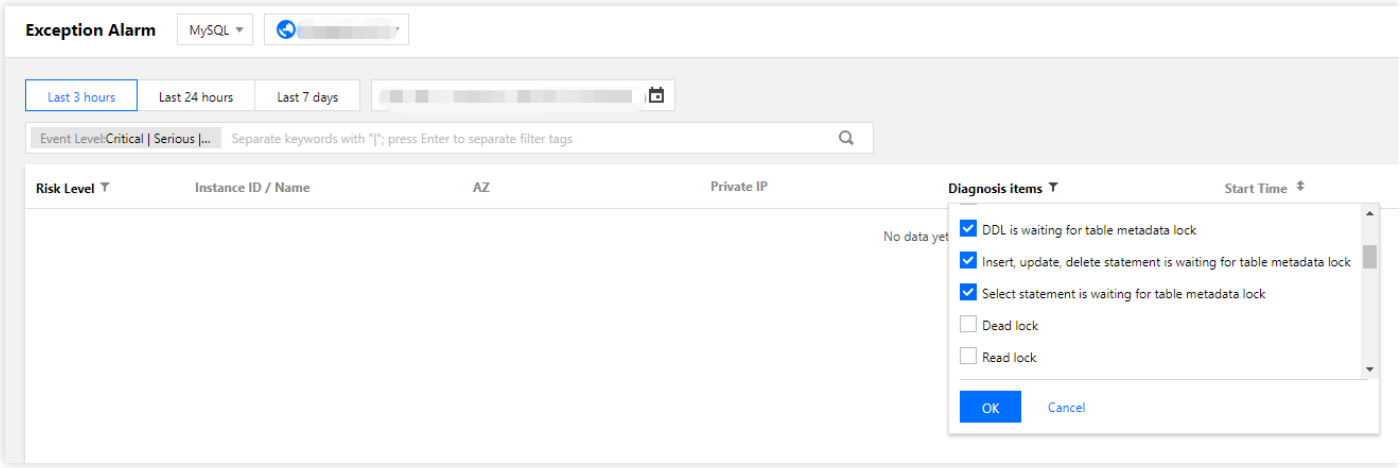
1. We recommend that the specification of a read-only or disaster recovery instance be larger than that of the source instance. You can view the instance specification in the instance list in the TencentDB for MySQL console.
2. If the load of a read-only instance is too high due to a large number of analytical businesses, you can upgrade its configurations or optimize inefficient SQL statements.

- For more information about SQL statement optimization, see SQL Optimization.
- For more information about instance configuration upgrade, see Adjusting Database Instance Specification.

The "Waiting for table metadata lock" error

We recommend that you use DBbrain to diagnose your business and instances to locate large transactions based on monitoring metrics such as the slow query metric.

1. Log in to the DBbrain console and select **Monitoring & Alarm** > **Exception Alarm** on the left sidebar. On the displayed page, select a database type and region at the top, and select the following items from the drop-down list of the **Diagnosis Items** column to filter large transaction alarms.



2. Take the solutions below to solve different issues:

- If a running large transaction blocks DDL operations, resulting in blocking all operations on this table, you can kill the transaction according to its ID provided in the DBbrain exception diagnosis result.

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- If an uncommitted transaction blocks DDL operations, resulting in blocking all operations on this table, you can kill the transaction according to its ID provided in the DBbrain exception diagnosis result, check your program, and commit transactions in a timely manner.
- In an explicit transaction, a failed operation (e.g., querying a non-existing field) was performed on the table; at this moment, the transaction does not begin but the lock obtained by the failed statement is still held. You can kill the session according to its ID provided in the DBbrain exception diagnosis result.

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Failure to Enable Case Insensitivity

Last updated：2022-04-13 11:10:35

Issue Description

Failed to enable case insensitivity. An error was reported as follows:

Parameter Name	Original Value	New Value	Status	Note
lower_case_table_names	0	1	Failed	Invalid value is 1, and the table or database name for the current instance is uppercase.

Note：
If the database version is 8.0, you can only choose whether to enable case sensitivity for table names when creating an instance on the purchase page. You cannot modify the `lower_case_table_names` parameter after creating the instance.

Common Causes

Database or table names contain uppercase letters.

Troubleshooting

Check whether all of the database and table names of the instance are lowercase, convert uppercase names (if any) to lowercase ones, and modify the `lower_case_table_names` parameter.

Note：
Modifying `lower_case_table_names` will cause the database restart.

- Check if there are uppercase table names

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```
select table_schema,table_name from information_schema.tables where table_schem
a not in("mysql","information_schema") and (md5(table_name)<>md5(lower(table_na
me)) or md5(table_schema)<>md5(lower(table_schema)));
```

- Check if there are uppercase database names

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

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