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Overview

TencentDB for MySQL is a high-performance distributed data storage service developed by Tencent Cloud based on the open-source MySQL database. It enables you to set up, manipulate, and scale relational databases in the cloud more easily.

TencentDB for MySQL has the following features:

- It provides cloud-based data storage service for internet applications.
- It is fully compatible with MySQL protocols and suitable for table-oriented application scenarios. TencentDB for MySQL can be used wherever MySQL is used.
- It offers MySQL cluster service that features high performance, data reliability up to 99.9996%, ease of use, and convenience.
- It integrates various database features such as backup, scaling, and migration. In addition, it is equipped with the new-generation database tool DMC for even more convenient management of databases.

Related Concepts

**Instance**: a TencentDB for MySQL resource in Tencent Cloud.

**Instance type**: a combination of node count, read/write capability, and deployment region for a TencentDB for MySQL instance.

**Read-only instance**: a TencentDB for MySQL instance that can only be read from.

**RO group**: a logical tool used to manage one or more read-only instances. It can meet load balancing requirements in read/write separation scenarios and significantly enhance a database's read load capacity.

**Disaster recovery instance**: a TencentDB for MySQL instance that supports disaster recovery across AZs and regions.

**VPC**: a custom virtual network space that is logically isolated from other resources.

**Security group**: security access control to TencentDB for MySQL instances by specifying IP, protocol, and port rules for instance access.

**Region and AZ**: physical location of a TencentDB for MySQL instance and other resources.
**Tencent Cloud Console**: web-based UIs.

**Related Services**

For more information on how to calculate actual expenses precisely with relevant billing tools, please see [Fees Overview](#) and [Price Calculator](#).

For more information on how to set up in-cloud data services by purchasing TencentDB for MySQL instances, please see [Purchase Process](#) and [Getting Started](#).

For more information on how to migrate data in/off the cloud with the TencentDB for MySQL data migration tool, please see [Data Migration](#).

For more information on how to cleanse and analyze data with the TencentDB for MySQL data subscription tool, please see [Data Subscription](#).

For more information on how to deploy your computing services by purchasing CVM instances, please see [CVM](#).

For more information on how to monitor the running status of your TencentDB for MySQL instances with Cloud Monitor, please see [Cloud Monitor](#).

For more information on how to call TencentCloud APIs to access Tencent Cloud products and services by writing code, please see [TencentCloud API](#).
Advantages

Cost Effectiveness and Ease of Use

Read/Write separation
Read-only instances can be mounted to MySQL. The one-master-multiple-slave architecture allows you to respond to a multitude of business requests with ease. Load balancing-enabled RO groups can be created, helping evenly distribute the load among read-only instances.

Powerful hardware for high performance
NVMe SSD features high IO performance, ensuring smooth reads and writes. One single instance can sustain up to 240,000 QPS with a maximum storage capacity of 6 TB.

High Security

DDoS protection
This feature helps defend against various DDoS attacks, large and small, to ensure business continuity.

Protection against database attacks
Database attacks such as SQL injections and brute force attacks can be blocked efficiently.

High Reliability

Data is stored online in a master/slave architecture, ensuring high data security. Moreover, backup data can be stored for an extended time period, allowing for data recovery in case of a database disaster.

Data encryption
Transparent data encryption (TDE) feature guarantees the security of real-time data and backup data.

**Database audit**
Financial-grade data audit feature helps prevent core data theft, trace non-compliant operations, and locate malicious pulls.

**High Availability**

**Real-Time hot backup**
The dual-server hot backup mechanism supports lossless restoration of data from the last 7–732 days based on data backup and log backup (binlog). Such backups can be retained for 7–732 days.

**Automated disaster recovery**
Automated failure detection and failover are supported. Master/slave switch and failover are imperceptible to users.

**Advantages over Self-Created Databases**

**Easy management of massive databases**
Databases can be managed via command line or console. Batch database management, permission setting, and SQL import are supported.

**Data import, backup, and rollback**
Multiple data import methods are provided for initialization. Data is automatically backed up daily and can be rolled back to any point in time in the last 5 days based on backup files.

**Professional monitoring and alarming**
Multidimensional monitoring and alarming based on custom resource thresholds are supported. You can also download slow query analysis reports and complete SQL running reports.

**Multiple network access methods**
Access to the public network and VPC is supported. You can connect TencentDB instances to your IDC, a private cloud, or other computing resources for deployment in a hybrid cloud conveniently.
Use Cases

Games

Gaming scenarios generally require elastic scaling and fast rollback.

- TencentDB for MySQL features elastic scaling of compute resources, enabling you to increase productivity and deploy game servers in multiple regions in a matter of minutes.
- Its support for rollback and batch operation enables you to restore to any point in time to facilitate gaming rollback.

Internet/Mobile Apps

TencentDB for MySQL can serve as the storage medium of server data in internet and mobile apps. For scenarios where there are more reads than writes, read-only instances can be created for
frequently read databases, which greatly improves the read performance.

Finance

With its database services such as security audit, cross-region disaster recovery, and strong data consistency, TencentDB for MySQL is ideal for storing and processing data of financial transactions and accounts to ensure high security and reliability of financial data.
Ecommerce

TencentDB for MySQL features high performance and rapid Redis reads and writes, enabling you to easily cope with high-concurrency access traffic and business peaks during sales and marketing campaigns.
Regions and AZs

TencentDB data centers are hosted in multiple locations worldwide. These locations are known as regions. Each region contains multiple availability zones (AZs).

Each region is an independent geographic area containing multiple isolated AZs. Separate AZs in the same region are connected via low-latency private networks. Tencent Cloud provides you with the ability to distribute Tencent Cloud resources across different locations. We recommend placing resources in different AZs to eliminate single points of failure which may lead to service unavailability.

Region name and AZ name can most directly embody the coverage of a data center. The following naming convention is used for your convenience:

- A region name is composed of region + city. The region indicates the geographic area that the data center covers, while the city represents the city in or near which the data center is located.
- AZ names utilize the format of city + number.

Region

Tencent Cloud regions are completely isolated. This guarantees the maximum cross-region stability and fault tolerance. When purchasing Tencent Cloud services, we recommend selecting the region closest to your end users to minimize access latency and improve download speed. Operations such as launching or viewing instances are performed at the region level.

Private Network Communication:

- Tencent Cloud resources in different AZs within the same region can communicate with each other over private network. They can also be accessed via private IPs.
- Tencent Cloud products in different regions cannot communicate with each other over the private network by default.
  - By default, CVM instances cannot communicate with each other over the private network across regions or access TencentDB or Cloud Memcached across regions.
  - When a CVM instance is bound to a CLB instance, only the instances in the same region can be selected.
- Tencent Cloud resources in different regions can be accessed over the Internet through public IPs. Tencent Cloud services in VPCs can communicate with each other over Tencent Cloud high-speed network via peering connections, which is more stable and faster than public Internet.
- CLB does not support cross-region traffic forwarding.
The above notes regarding private network communication only applies to resources under the same account. Resources under different accounts are completely isolated.

### Availability Zone

Availability zones (AZs) refer to Tencent Cloud's physical data centers that are in the same region. Each AZ is independently powered and have its own network resources. They are designed to ensure that failures within one AZ can be isolated from other zones, thereby ensuring service availability and business stability, excepting the occurrences of large-scale disasters or major power failures. Users can protect their applications from being affected by failures that occur in a single location by selecting instances in independent AZs.

When launching an instance, you can select any AZ in the specified region. For high reliability, you can adopt a cross-AZ deployment solution to ensure that the service remains available when an instance in a single location fails. Examples of such solutions include [CLB](#) and [EIP](#).

### List of Regions and AZs

Regions and AZs:

#### China

<table>
<thead>
<tr>
<th>Region</th>
<th>Availability Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>South China (Guangzhou) ap-guangzhou</td>
<td>Guangzhou Zone 1 (sold out) ap-guangzhou-1</td>
</tr>
<tr>
<td></td>
<td>Guangzhou Zone 2 ap-guangzhou-2</td>
</tr>
<tr>
<td></td>
<td>Guangzhou Zone 3 ap-guangzhou-3</td>
</tr>
<tr>
<td></td>
<td>Guangzhou Zone 4 ap-guangzhou-4</td>
</tr>
<tr>
<td>East China (Shanghai) ap-shanghai</td>
<td>Shanghai Zone 1 ap-shanghai-1</td>
</tr>
<tr>
<td></td>
<td>Shanghai Zone 2 ap-shanghai-2</td>
</tr>
<tr>
<td></td>
<td>Shanghai Zone 3</td>
</tr>
<tr>
<td>Region</td>
<td>Availability Zone</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
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<td>Shanghai Zone 4</td>
</tr>
<tr>
<td></td>
<td>ap-shanghai-4</td>
</tr>
<tr>
<td>East China (Nanjing) ap-nanjing</td>
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</tr>
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<tr>
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</tr>
<tr>
<td></td>
<td>ap-nanjing-2</td>
</tr>
<tr>
<td>North China (Beijing) ap-beijing</td>
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</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td>ap-beijing-5</td>
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<td>Southwest China (Chengdu) ap-chengdu</td>
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<td></td>
<td>ap-chengdu-1</td>
</tr>
<tr>
<td></td>
<td>Chengdu Zone 2</td>
</tr>
<tr>
<td></td>
<td>ap-chengdu-2</td>
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<td>Southwest China (Chongqing) ap-chongqing</td>
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<tr>
<td>Hong Kong/Macao/Taiwan (Hong Kong, China) ap-hongkong</td>
<td>Hong Kong Zone 1 (Hong Kong nodes cover services in the China regions of Hong Kong, Macao, and Taiwan)</td>
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<tr>
<td></td>
<td>ap-hongkong-1</td>
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<td></td>
<td>Hong Kong Zone 2 (Hong Kong nodes cover services in the China regions of Hong Kong, Macao, and Taiwan)</td>
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<td>ap-hongkong-2</td>
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**Other Countries/Regions**

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<th>Region</th>
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</thead>
<tbody>
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<tr>
<td>Region</td>
<td>Zone Description</td>
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<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Southeast Asia (Singapore)</td>
<td>Singapore Zone 1 (Singapore nodes cover services in Southeast Asia)</td>
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<tr>
<td>Southeast Asia (Bangkok)</td>
<td>Bangkok Zone 1 (Bangkok nodes cover services in Southeast Asia)</td>
</tr>
<tr>
<td>South Asia (Mumbai)</td>
<td>Mumbai Zone 1 (Mumbai nodes cover services in South Asia)</td>
</tr>
<tr>
<td>Northeast Asia (Seoul)</td>
<td>Seoul Zone 1 (Seoul nodes cover services in Northeast Asia)</td>
</tr>
<tr>
<td>Northeast Asia (Tokyo)</td>
<td>Tokyo Zone 1 (Tokyo nodes cover services in Northeast Asia)</td>
</tr>
<tr>
<td>US West (Silicon Valley)</td>
<td>Silicon Valley Zone 1 (Silicon Valley nodes cover services in US West)</td>
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<tr>
<td>US East (Virginia)</td>
<td>Virginia Zone 1 (Virginia nodes cover services in US East)</td>
</tr>
<tr>
<td>North America (Toronto)</td>
<td>Toronto Zone 1 (Toronto nodes cover services in North America)</td>
</tr>
<tr>
<td>Europe (Frankfurt)</td>
<td>Frankfurt Zone 1 (Frankfurt nodes cover services in Europe)</td>
</tr>
<tr>
<td>Europe (Moscow)</td>
<td>Moscow Zone 1 (Moscow nodes cover services in Europe)</td>
</tr>
</tbody>
</table>

Selecting Regions and AZs
When purchasing Tencent Cloud services, we recommend selecting the region closest to your end users to minimize access latency and improve download speed.
High Availability (Multiple AZs)

Multi-AZ deployment protects your database from being affected by database instance failures and AZ outages. For more information, please see Regions and AZs.

The multi-AZ deployment scheme of TencentDB for MySQL guarantees the high availability and failover capability of database instances by combining multiple AZs into a single "multi-AZ".

- No matter whether the TencentDB for MySQL instances in a database cluster are running across multiple AZs or not, each instance has a slave for real-time hot backup to ensure high database availability.
- With multi-AZ deployment, TencentDB for MySQL automatically presets and maintains a sync slave replica in a different AZ.
- The master database instance is synchronously replicated to the slave replica across AZs to provide data redundancy, eliminate I/O freezes, and minimize latency during system backups.

**Supported Regions**

The multi-AZ deployment scheme of TencentDB for MySQL is currently available in Shanghai, Beijing, and Guangzhou regions.

**Multi-AZ Deployment**

1. Log in to the TencentDB for MySQL Console and click Create in the Instance List to enter the purchase page.
2. On the TencentDB for MySQL purchase page, select a supported region, and select a desired slave AZ in the Slave AZ option.

Only certain AZs can be selected as a slave AZ. For more information, please see the purchase page.
3. After confirming that everything is correct, click **Buy Now**. After making the payment, you can return to the instance list to view the newly purchased multi-AZ instance.

**Failover**

TencentDB for MySQL processes failover automatically, so database operations can be resumed as quickly as possible with no administrative intervention required. The master database instance will automatically switch to the slave replica in the slave AZ in the following conditions:

- AZ outage.
- Master database instance failure.
# List of Feature Differences

Last updated: 2020-06-03 14:06:27

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
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<tbody>
<tr>
<td><strong>Version</strong></td>
<td>MySQL 5.5</td>
<td>MySQL 5.6</td>
<td>MySQL 5.6</td>
<td>MySQL 5.7</td>
</tr>
<tr>
<td></td>
<td>MySQL 5.6</td>
<td>MySQL 5.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MySQL 5.7</td>
<td>MySQL 5.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of nodes</strong></td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Specification configuration</strong></td>
<td>Up to 488 GB/6 TB</td>
<td>Up to 488 GB/6 TB</td>
<td>Up to 488 GB/6 TB</td>
<td>Up to 8 GB/1 TB</td>
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<tr>
<td><strong>Upgrading Database Engine</strong></td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>Upgrading to Finance Edition</strong></td>
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<td>Not supported</td>
<td>Not supported</td>
</tr>
<tr>
<td><strong>RO Instance</strong></td>
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<td>Supported (MySQL 5.6 and 5.7)</td>
<td>Supported</td>
<td>Not supported</td>
</tr>
<tr>
<td><strong>DR Instance</strong></td>
<td>Supported (MySQL 5.6 and 5.7)</td>
<td>Supported (MySQL 5.6 and 5.7)</td>
<td>Not supported</td>
<td>Not supported</td>
</tr>
<tr>
<td><strong>Account Management</strong></td>
<td>Supported</td>
<td>Supported</td>
<td>Not supported</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>Setting Instance Parameters</strong></td>
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<td>Supported</td>
<td>Not supported</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>Backup Mode</strong></td>
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<td>Supported</td>
<td>Not supported</td>
<td>Not supported</td>
</tr>
<tr>
<td><strong>Database Rollback</strong></td>
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<td>Supported</td>
<td>Not supported</td>
<td>Not supported</td>
</tr>
<tr>
<td><strong>Data Import</strong></td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Not supported</td>
</tr>
<tr>
<td><strong>Importing SQL Files</strong></td>
<td>Supported</td>
<td>Supported</td>
<td>Not supported</td>
<td>Not supported</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------</td>
<td>-----------------</td>
<td>----------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Security Group</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Not supported</td>
</tr>
<tr>
<td>Monitoring and Alarm</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>Operation Logs</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
</tbody>
</table>

High-Availability Edition

The High-Availability Edition adopts a highly available one-master-one-slave architecture and supports real-time hot backup, automatic detection of failure, and automatic failover. It is ideal for a wide variety of industries such as gaming, internet, IoT, retail, ecommerce, logistics, insurance, and securities.

Its features are highlighted as below:

- It offers two master/slave replication modes: async (default) and semi-sync. The replication mode can be changed on the "Instance Details" tab in the console. You can also upgrade to the Finance Edition (with one-master-two-slave strong sync mode)
- It has a complete set of features including read-only instance, disaster recovery instance, security group, data migration, and multi-AZ deployment. For more information, please see Strengths.
- It can achieve a high availability of up to 99.95%. For more information, please see Service Level Agreement.
- Its data nodes are deployed on powerful hardware devices and its underlying storage uses local NVMe SSD disks with excellent IO performance. Its IOPS can be up to 240,000 (this value is the test result with MySQL's default page size of 16 KB and for your reference only. The actual value is subject to specific configuration, page size, and business load).
Its architecture is as follows:

```
Data sync

Physical server
Master node

Physical server
Slave node

Local SSD
```

### Financial Edition

The former one-master-two-slave High-Availability Edition with strong sync replication has been renamed as the Finance Edition. The edition name of existing one-master-two-slave instances displayed in the console has been updated accordingly.

The Finance Edition adopts a one-master-two-slave architecture (three nodes in total) and supports strong sync replication. It guarantees strong data consistency through real-time hot backup to provide finance-grade reliability and high availability.

- **Master/slave replication mode:** strong sync.
- **It has a complete set of features** including read-only instance, disaster recovery instance, security group, data migration, and multi-AZ deployment. For more information, please see [Strengths](#).
- **It can achieve a high availability of up to 99.99%**. For more information, please see [Service Level Agreement](#).
- **Its data nodes are deployed on powerful hardware devices** and its underlying storage uses local NVMe SSD disks with excellent IO performance. Its IOPS can be up to 240,000 (this value is the test result with MySQL's default page size of 16 KB and for your reference only. The actual value is subject to specific configuration, page size, and business load).
Its architecture is as follows:

![Diagram of TencentDB for MySQL Single-Node High IO Edition]

**Single-Node High IO Edition**

The Single-Node High IO Edition employs a single-physical node architecture with high cost effectiveness. It uses local NVMe SSD disks for underlying storage with excellent IO performance. It is ideal for read-only instances as a means to share the business load in various industries that require read/write separation.

Its architecture is as follows:

- Single-node deployment is susceptible to single points of failure. If only one read-only instance is purchased, it is impossible to ensure high availability for your business, because a failure of the single read-only instance will lead to business interruption.
- As the time it takes to recover a single read-only instance is dependent on the business data volume, fast recovery cannot be guaranteed. As a result, if your business requires high
availability, you are recommended to purchase at least two read-only instances for the RO group.

Basic Edition

The Basic Edition adopts a single-node deployment method and offers extremely high cost effectiveness. Its features are highlighted as below:

- It supports computation-storage separation. If a compute node fails, fast recovery can be achieved by switching to another node. Underlying data is stored in three copies on CBS, which ensures a certain level of data reliability and enables quick data restoration from disk snapshots in case of disk failures.
- It offers over 20 monitoring metrics such as database connection, access, and resource and supports configuring alarm policies as needed. Compared with a self-built CVM-based database, it is more convenient and features a higher cost performance where the cost is 40% lower.
- It uses premium cloud disks as its underlying storage media, making it suitable for 90% I/O scenarios with low costs and stable performance. The specific IOPS calculation formula is \( \text{min} \ 1500 + 8 \times \text{capacity}, \text{max} \ 4500 \).

Its architecture is as follows:

- The Basic Edition is not recommended for a business production environment; instead, it is suitable for personal learning, small websites, non-core small corporate systems, and medium-to-large corporate development and testing.
- As it adopts a single-node architecture, when the node fails, it takes slightly longer to recover than CVM (due to instance startup and data restoration). If your business requires high availability, you are recommended to use the High-Availability Edition or Finance Edition MySQL instances.
Currently, TencentDB for MySQL supports MySQL v5.5, v5.6, and v5.7. For more information on features of each version, see the official documentation. MySQL's official service lifecycle support policies are as shown below:

<table>
<thead>
<tr>
<th>Release</th>
<th>GA Date</th>
<th>Premier Support End</th>
<th>Extended Support End</th>
<th>Sustaining Support End</th>
</tr>
</thead>
<tbody>
<tr>
<td>MySQL Database 5.0</td>
<td>Oct-05</td>
<td>Dec-11</td>
<td>Not Available</td>
<td>Indefinite</td>
</tr>
<tr>
<td>MySQL Database 5.1</td>
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<td>Dec-13</td>
<td>Not Available</td>
<td>Indefinite</td>
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<td>Dec-10</td>
<td>Dec-15</td>
<td>Dec-18</td>
<td>Indefinite</td>
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<td>Feb-18</td>
<td>Feb-21</td>
<td>Indefinite</td>
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<tr>
<td>MySQL Database 5.7</td>
<td>Oct-15</td>
<td>Oct-20</td>
<td>Oct-23</td>
<td>Indefinite</td>
</tr>
<tr>
<td>MySQL Database 8.0</td>
<td>Apr-18</td>
<td>Apr-23</td>
<td>Apr-26</td>
<td>Indefinite</td>
</tr>
</tbody>
</table>

- The extended official support for MySQL v5.0 ended in December 2018. There has been no explicit statement on further support extension, which is possibly because fixing issues takes more time. You are strongly recommended to use a higher version of MySQL.
- MySQL v5.6 and higher no longer support MyISAM storage engine, so you are recommended to use the InnoDB engine which features better and more stable performance.
- Currently, MySQL v5.6 and v5.7 support three replication modes: async, semi-sync, and strong sync. Only async mode is available in MySQL v5.5.
Database Storage Engines

Storage engine of a database refers to the type of tables and determines how tables are stored in computers. Although MySQL supports different types of storage engines, not all of them have been optimized for data restoration and persistence. TencentDB for MySQL features such as point-in-time restoration and snapshot restoration require a restoration-enabled storage engine and are available in the InnoDB storage engine only.

TencentDB for MySQL supports InnoDB by default. It no longer supports the MyISAM and Memory engines in MySQL 5.6 and higher mainly for the following reasons:

- TencentDB for MySQL greatly optimizes the kernels for InnoDB and achieves higher performance.
- MyISAM adopts a table-level locking mechanism, while InnoDB uses a row-level one. Normally, InnoDB features higher write efficiency.

- With the widest lock scope, table-level locking is to lock the entire table that is being manipulated in MySQL.
- With the narrowest lock scope, row-level locking is to lock only the row that is being manipulated in MySQL.

- MyISAM has defects in protecting data integrity, which may lead to data corruption or even loss. Moreover, many of these defects are attributable to design issues and can only be fixed at the cost of compatibility.
- Migration from MyISAM and Memory to InnoDB can be done at low costs by simply changing the code of created tables for most applications.
- MyISAM is giving ground to InnoDB. In the latest MySQL 8.0, all system tables come in the InnoDB type.
- Memory cannot guarantee data integrity. If the instance restarts or experiences master/slave switch, all data in the table will be lost. You are recommended to migrate to InnoDB as soon as possible.

For more information, please see InnoDB Overview and MyISAM Overview.
Database Instance Types

A database instance is a standalone database environment running in Tencent Cloud. It can contain multiple user-created databases and can be accessed using the same tools and applications as those for a standalone database instance.

There are three types of instances available in TencentDB for MySQL:

<table>
<thead>
<tr>
<th>Instance Type</th>
<th>Definition</th>
<th>Architecture</th>
<th>Visible in Instance List</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master instance</td>
<td>An instance that can be read from and written to</td>
<td>• Basic Edition</td>
<td>Yes</td>
<td>A master instance can mount read-only instances and disaster recovery instances for read/write separation and remote disaster recovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• High-Availability Edition</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Finance Edition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read-only instance</td>
<td>An instance that can only be read from</td>
<td>Single-node High IO Edition</td>
<td>Yes</td>
<td>A read-only instance cannot exist on its own; instead, it must be affiliated to a master instance. Its data comes solely from sync with the master instance. Besides, it must reside in the same region as the master instance</td>
</tr>
<tr>
<td>Disaster recovery instance</td>
<td>An instance that supports disaster recovery across AZs and regions</td>
<td>• High-Availability Edition</td>
<td>Yes</td>
<td>A disaster recovery instance is read-only during sync with a master instance. It can actively stop the sync and be promoted to a master instance for read/write access. It must reside in a different region from the master instance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Finance Edition</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Related Information

- For more information on how to create read-only instances and related notes, please see Creating Read-only Instance.
- For more information on how to create and configure RO groups for read-only instances, please see [Managing Read-only Instance](#).
- For more information on how to create disaster recovery instances and related notes, please see [Creating Disaster Recovery Instance](#).
Database Instance Duplication

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Database instance replication means to sync data by configuring one or more backup databases for the server in order to distribute the data in MySQL to multiple systems. TencentDB for MySQL supports three data replication modes:

- "Master" refers to the master database instance, while "Slave" the backup database instance.
- Currently, MySQL v5.6 and v5.7 support three replication modes: async, semi-sync, and strong sync. Only async mode is available in MySQL v5.5.

Async Replication

An application initiates a data update (including insert, update and delete operations) request. After completing the update operation, the Master sends a response to the application immediately, and then replicates the data to the Slave.

During data update, the master does not need to wait for a response from the slave, so the database instance replicated asynchronously often has a higher performance, and slave unavailability will not affect the provision of services by the master. However, as the data is not synced to the slave in real time, if the master fails when a delay occurs on the slave, there is a slight chance of data inconsistency.

Asynchronous replication of Tencent Cloud database for MySQL uses a "One Master, One Slave" architecture.

Semisync replication

An application initiates a data update (including insert, update and delete operations) request. After completing the update operation, the Master replicates the data to a Slave immediately. After receiving and writing the data into relay log (bypassed), the Slave returns success message to the Master. Only after receiving the message from the Slave, the Master can return a response to the application.

Only when an exception occurs with the data replication (a Slave node becomes unavailable or an exception occurs with the network used for data replication), the Master will suspend the response to the application (for about 10 seconds by default in MySQL), and the replication will be downgraded to asynchronous replication. When the data replication returns to a normal state, semisync replication will be restored.
Semi-synchronous replication of Tencent Cloud database for MySQL uses a "One Master, One Slave" architecture.

**Strong Sync Replication**

An application initiates a data update request (i.e., INSERT, UPDATE, or DELETE). After completing the update operation, the master replicates the data to the slave immediately. After receiving and updating the data, the slave **returns a success message to the master**. Only after receiving the message from the slave will the master return a response to the application.

As the data is replicated synchronously from the master to the slave, successful update on the slave must be guaranteed for each update operation on the master. Therefore, strong sync replication can maximize master-slave data consistency. However, the master cannot process an update request until it gets a response from the slave, so slave unavailability can greatly affect the operations on the master.

TencentDB for MySQL uses a one-master-two-slave architecture for strong sync replication. The master can receive the success message as long as either of the two slaves updates the data successfully, preventing the unavailability of a single slave from affecting the operations on the master and improving the availability of the strong sync replication cluster.