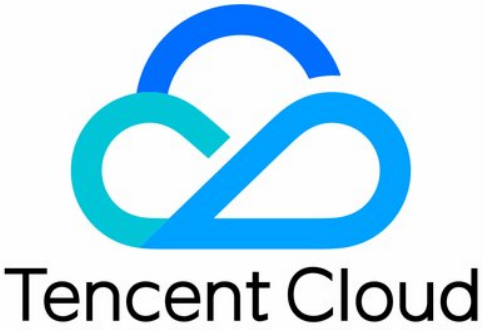
TencentDB for SQL Server

Product Intro



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Contents

Product Intro
Overview

Last updated: 2024-09-06 15:01:06

TencentDB for SQL Server is licensed by Microsoft to continuously provide you with the latest features, so you can avoid any risks arising from unauthorized software use. It features out-of-the-box usage, high stability, reliability, and security, elastic scaling, data security protection, and failover in seconds, allowing you to focus on application development.

> **Note**
> As one of the earliest commercial database products, SQL Server supports complex SQL queries with excellent performance. Thanks to its comprehensive support for applications based on the Windows .NET Framework, it is widely used in such fields as government services, finance, healthcare, retail, education, and gaming.

Deployment Architecture

TencentDB for SQL Server supports two deployment architectures:

Single-node (formerly Basic Edition)

It is deployed on a single node and based on premium cloud disks, with computing and storage separated.

Two-node (formerly High Availability/Cluster Edition)

- SQL Server 2008 R2, 2012, 2014, 2016 Enterprise/Standard: The primary/replica architecture of a two-node instance consists of one primary database and one mirror database deployed across racks/AZs.
- SQL Server 2017, 2019 Enterprise/Standard, 2022 Enterprise: The primary/replica architecture of a two-node instance adopts the Always On architecture, including one primary and one replica deployed across racks/AZs by default.

Isolation policy

- TencentDB for SQL Server single-node (cloud disk) and two-node (cloud disk) instances are deployed based on CVM, where each instance has dedicated CPU, memory, and disk resources in one CVM instance and different instances are completely isolated from each other.

- TencentDB for SQL Server two-node (local disk) instances are deployed based on local physical machines. Each physical machine sustains multiple instances and adopts isolation policies to ensure the complete isolation between different instances with dedicated CPU, memory, and disk resources.
  In addition, TencentDB for SQL Server also implements corresponding data isolation policies in multiple dimensions such as account, region, AZ, and network.

Product Architecture
Single-node (formerly Basic Edition)

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TencentDB for SQL Server supports two deployment architectures: single-node and dual-node. This document describes the single-node architecture.

Supported Versions

SQL Server 2008 R2,2012,2014,2016,2017,2019,2022 Enterprise.

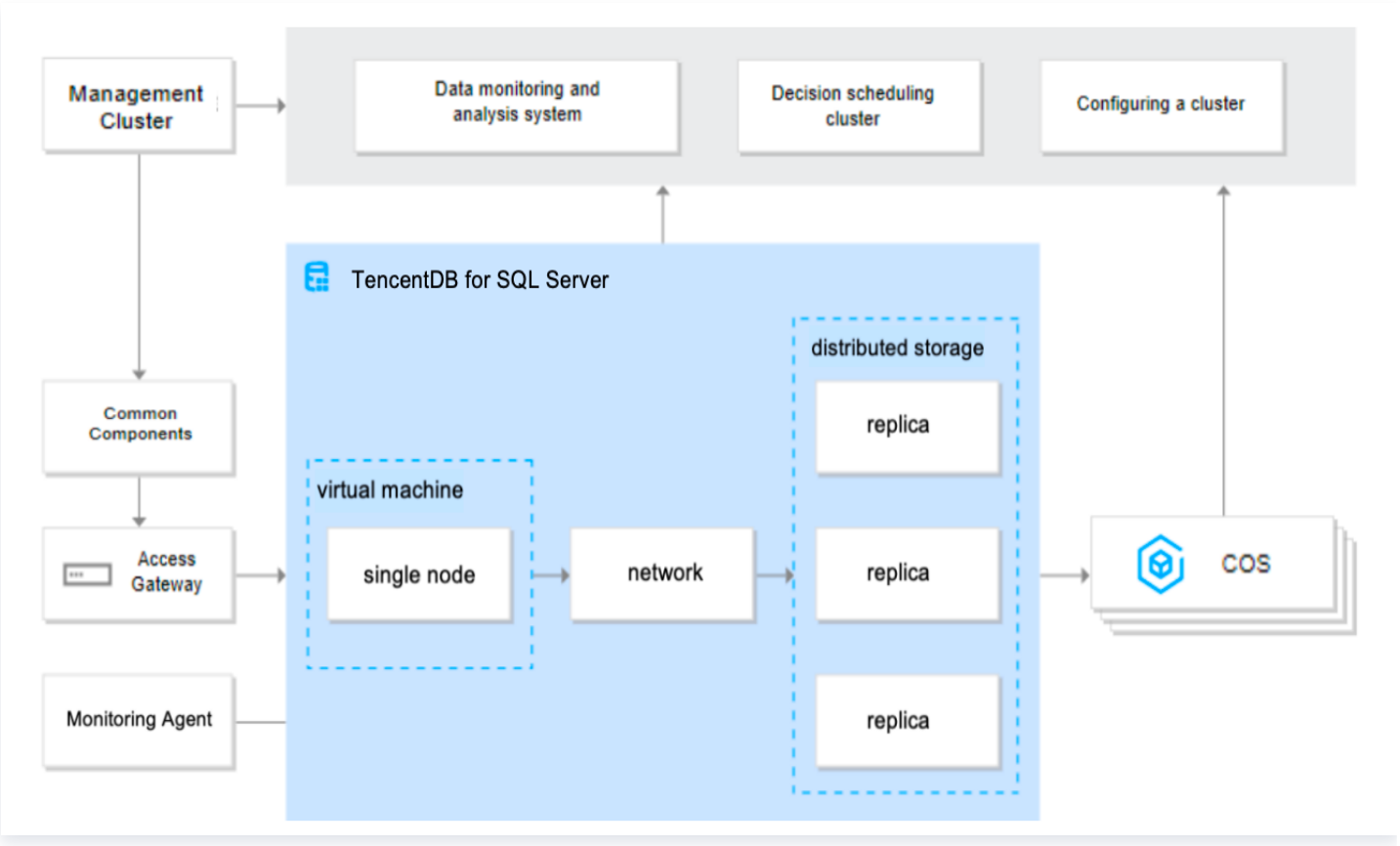
Architecture

The single-node adopts a single-node deployment method, offering extremely high cost effectiveness. Its features are highlighted below:

- 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 cloud disks, ensuring a certain level of data reliability and enabling quick data restoration from disk snapshots in case of disk failures.
- Offers over 20 monitoring metrics such as database connection, access, and resource usage, and supports configuring alarm policies as needed. Compared to a self-created CVM-based database, a single-node instance is more convenient and cost-effective, saving on expenditure. Deployed on a CVM instance, it also provides better database performance than a user-built one.
- The single-node uses high-performance cloud disks as the underlying storage medium, suitable for 90% of I/O scenarios, providing high quality at a low price with stable performance.

Note

- The single-node is suitable for personal learning, ISV software for small and medium-sized enterprises (such as finance, CRM, ERP clients), web applications, non-core small systems, and test environments.
- As the single-node adopts a single-node architecture, when the node fails, it takes a slightly longer time to recover than a CVM instance (due to instance startup and data restoration).
- For businesses requiring high availability, it is recommended to use dual-node (formerly high-availability and cluster edition) instances.



Two-Node (Formerly High Availability/Cluster Edition)

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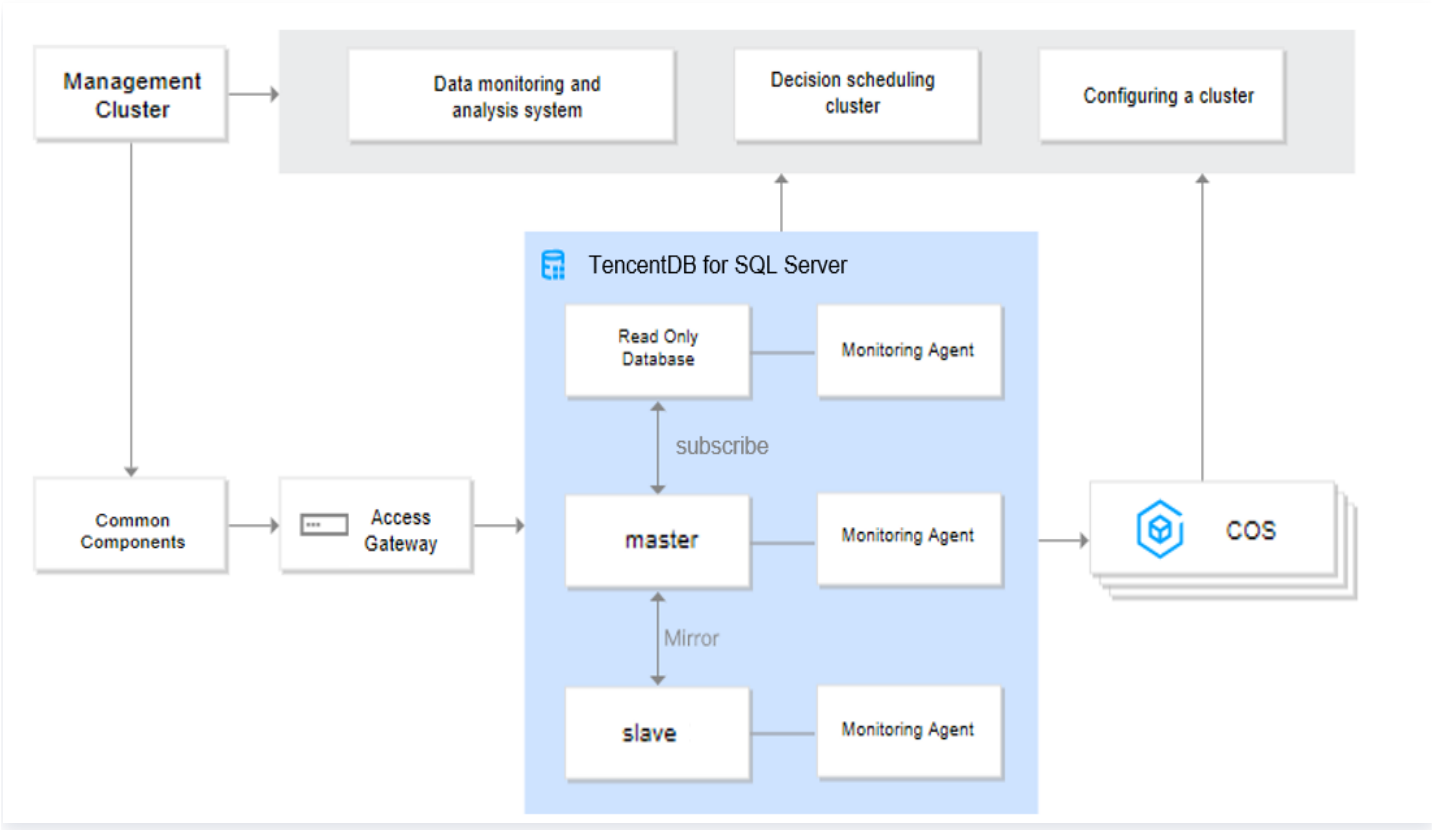
TencentDB for SQL Server supports versions SQL Server 2008 R2, 2012, 2014, 2016, 2017, 2019 Enterprise for dual-node local disk instances, and versions SQL Server 2008 R2, 2012, 2014, 2016, 2017, 2019, 2022 Enterprise for dual-node cloud disk instances. There are differences in the master-slave architecture among these versions, which are divided into the following two scenarios.

Situation 1

For SQL Server 2008 R2, 2012, 2014, 2016 Enterprise, the primary-backup architecture of a two-node instance consists of a primary and a mirror (Mirror) SQL Server database deployed across racks/AZs. Each database has a corresponding monitoring agent that monitors the database in real time through heartbeat.

- Tencent Cloud Management Cluster: Consists of independently deployed Decision Scheduling Cluster and Configuration Cluster. As the management and scheduling center of the cluster, it mainly manages database node groups, Access Gateway Cluster, and the normal operation of COS.
- COS provides the data disaster recovery and cold data backup services.
- Access Gateway Cluster: Provides a unique external IP. If a data node switches, the IP for user connection to the instance will not change.
- Read-only instances are extended through the publish/subscribe model.

> **Note**
> The Mirror has a complete copy of the data but does not provide read/write services. It synchronizes data by receiving update logs from the Principal, allowing snapshot creation for reporting. In a mirror cluster, Principal and Mirror data synchronization depends on transaction logs. SQL Server transaction logs are at the database level, not the instance level, with each database having its own transaction log. SQL Server mirroring is implemented at the database level.



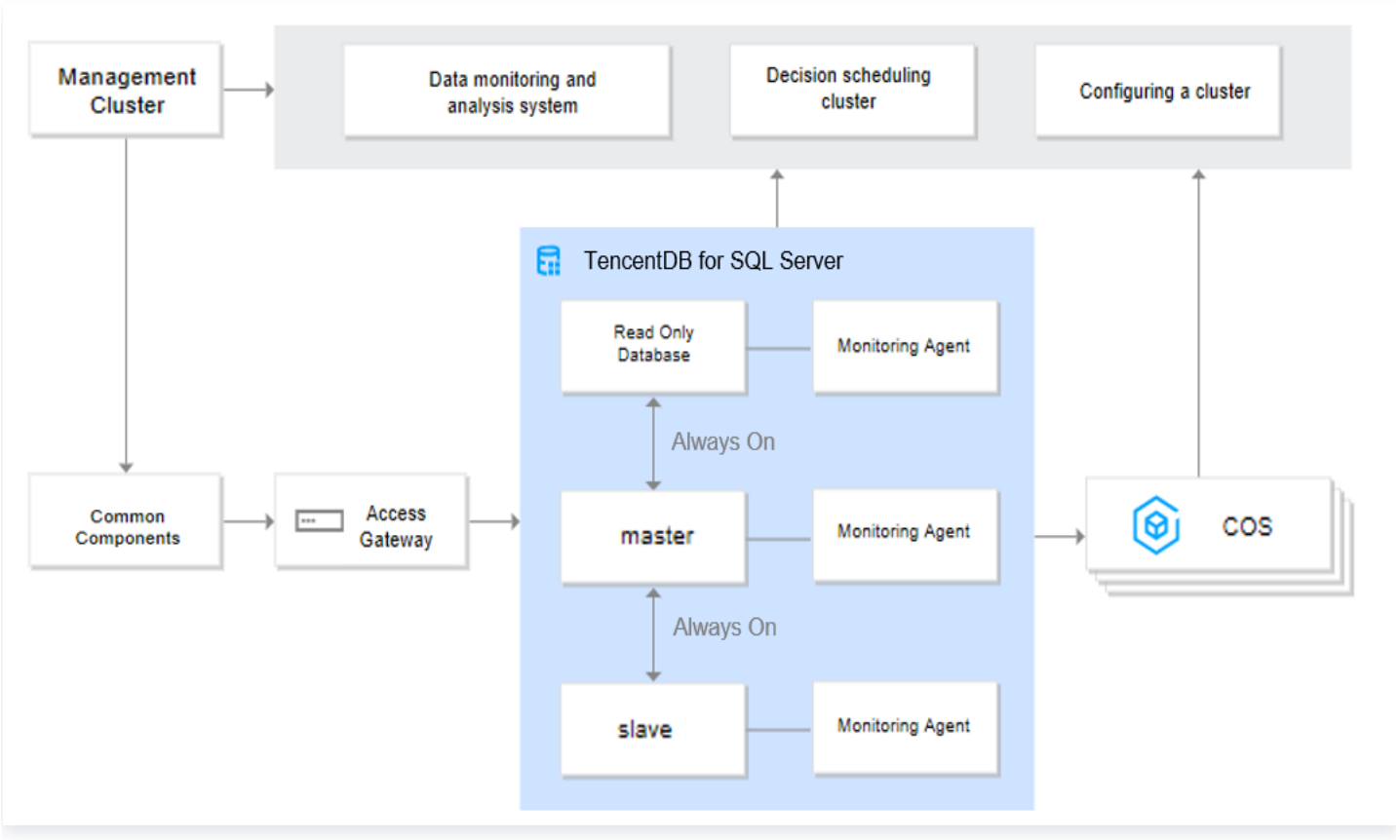
Situation 2

For SQL Server 2017, 2019, and 2022 Enterprise, the two-node instance's primary-backup architecture uses the Always On architecture (including one primary and one backup) deployed across racks/AZs. Each database has a corresponding monitoring agent that monitors the database in real time through heartbeat.

- Tencent Cloud Management Cluster: Consists of independently deployed Decision Scheduling Cluster and Configuration Cluster. As the management and scheduling center of the cluster, it mainly manages database node groups, Access Gateway Cluster, and the normal operation of COS.
- COS provides the data disaster recovery and cold data backup services.
- Access Gateway Cluster: Provides a unique external IP. If a data node switches, the IP for user connection to the instance will not change.

> **Note**
> The basic synchronization process of Always On: The Primary node's log (Commit, Log Block Write) is flushed from the Log Cache to the disk. Simultaneously, the Log Capture of the Primary node sends the log to all other Replica nodes. The

corresponding node's Log Receive thread flushes the received log from the Log Cache to the disk. Finally, the Redo Thread applies these logs to the data files.



Strengths

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Genuine Authorization

Licensed by Microsoft, TencentDB for SQL Server continuously provides you with the latest features, helping you avoid the risks of using unauthorized software and enhancing the trustworthiness of your business in competitive markets.

Stable and Reliable

TencentDB for SQL Server delivers a 99.9996% data reliability and 99.95% service availability. Its primary/replica two-node database architecture allows for switching from a faulty instance to a healthy one in a matter of seconds and enables automatic backup, so the database can be restored to a previous time point through rollback.

Excellent Performance

TencentDB for SQL Server uses enterprise-grade PCI-E SSDs to deliver an industry-leading I/O throughput, outperforming self-built databases and supporting commercial-grade high-volume concurrent business requests.

Easy Management

Various management tasks can be finished with ease in the Tencent Cloud console or SQL Server Management Studio (SSMS), such as database management, permission configuration, and monitoring and alarming. This eliminates your concerns over database installation and Ops.

Performance Monitoring

Dozens of key metrics can be viewed in the console, such as the number of connections and requests, disk I/O, and buffer hit rate, helping you comprehensively monitor database conditions and accurately understand the database load and system health.

System alarming

User-defined resource threshold alarms are supported to help you discover database exceptions timely and resolve potential system problems quickly.

TencentDB for SQL Server's strengths over self-built SQL Server

Feature	TencentDB for SQL Server	Self-Built SQL Server
Service availability	Please refer to the Service Level Agreement.	You have to guarantee the service availability and set up primary/replica replication and RAID capabilities on your own.
System security	Anti-DDoS is supported, and various database security vulnerabilities are fixed in time. The data security meets all mainstream national and international security standards.	You have to deploy security services and fix vulnerabilities on your own at high costs. Security compliance is not guaranteed, and the security requirements cannot be quickly met.
Database performance	High-performance devices, excellent performance, TPM of up to 4.5 million. For more information, see Performance Test Report.	General devices without optimization and fine-tuning are used.
Software and hardware investment	No hardware or software investment is required, and the service is pay-as-you-go.	Database servers are costly.
System hosting	There are no hosting fees.	The hosting fees are high.
Deployment and scaling	The out-of-the-box service can be quickly deployed and elastically scaled.	You have to purchase hardware devices, host them in data centers, and deploy them on your own. You also have to solve stability problems and set up many supporting modules and management tools, which require heavy investments in technology and take a long period of time.
Resource utilization	The service is billed by the actual usage and supports elastic scaling to ensure a high resource utilization.	You have to consider traffic spikes, and the resource utilization is low.

Data disaster recovery	Primary/replica replication and backup are configured by default. Both intra-region and cross-region disaster recovery schemes are supported, such as multi-AZ deployment and cross-region backup.	You have to find the backup storage space and regularly verify whether backups can be restored, which cost more money and time.
Control and management services	Comprehensive cloud-based instance lifecycle management capabilities are available for various objects, including monitoring and alarming, backup and restoration, instance, database, account, network, parameter, and log.	All control capabilities require user construction.
Procurement costs	Instances are priced transparently and even more cost-effective than CVM.	In addition to instances, you also have to set up disaster recovery, monitoring, and management systems on your own at totally uncontrollable costs.
License	Official licenses from Microsoft continuously provide you with the latest features, eliminating your need to purchase additional licenses.	Pirated services lead to legal risks, while official licenses are expensive.
Ops costs	No need for user maintenance. Tencent Cloud provides quality service with a 24/7 professional team for large customers.	You have to hire dedicated DBAs for database maintenance, which incurs high labor costs.

TencentDB for SQL Server's high availability/disaster recovery capabilities

TencentDB for SQL Server provides disaster recovery capabilities at different levels, including instance, server, data center, AZ, and region, to ensure the business continuity on healthy systems with the minimum data loss in case of natural disasters, device failures, and maloperations. Backup is the basis of all disaster recovery systems and the last line of defense in the high data availability architecture. TencentDB for SQL Server features rich backup capabilities, ensuring that the data can be restored quickly even after a total system crash to guarantee the business continuity as much as possible.

TencentDB for SQL Server provides instances in various architectures with guaranteed high availability:

- **Two-node (formerly high-availability/cluster edition) instance**
  - SQL Server 2008 R2, 2012, 2014, 2016 Enterprise/Standard: The primary/replica architecture of a two-node instance consists of one primary SQL Server database and one mirror database, deployed across racks/AZs, supporting automatic HA switch within seconds.
  - SQL Server 2017, 2019 Enterprise/Standard, 2022 Enterprise: The primary/replica architecture of a two-node instance adopts Always On technology to build a high-performance, highly available, highly reliable, and easy-to-maintain SQL Server cluster architecture across racks/AZs, providing automatic HA switch within seconds.
- **Single-node (formerly Basic Edition) instance**
  The underlying layer is deployed in a CVM instance, with storage and compute separated. High-performance cloud disks with triple replication at the underlying layer prevent data loss. In extreme cases, if an instance fails, a new instance is started to restore the data from the original instance using data and log backups. The specific restoration time depends on the data volume. The servers of the two database instances are usually located on the same physical machine.

For intra-region disaster recovery, TencentDB for SQL Server provides multi-AZ deployment capabilities. Different AZs in the same region are interconnected over the private network, and failures can be isolated between AZs. For instances in the primary/replica two-node architecture, the primary and replica instances can be deployed in different AZs in the same region (for example, one primary instance in the primary AZ and one replica instance in the replica AZ). This improves the business continuity and guarantees the data availability in case of instance failures or AZ disconnections. You can also manually switch between the primary and replica instances in the console to verify the business robustness. Switches within the same AZ and between different AZs are imperceptible to the application.
For remote disaster recovery, cross-region backup capabilities are offered to store backup files in another region. You can set the cross-region backup retention period and multiple backup regions. After a cross-region backup policy is enabled, the instance backup files will be automatically stored in the target region. In this way, if an instance in a region fails, you can restore its backup files in the remote region to a new instance there for guaranteed business continuity. You can also create a cross-region cluster through a cross-region read-only instance, sync data between the primary and read-only instance, switch your business to a remote read-only instance if the region of the primary instance fails. By doing so, you can implement the high availability of database restoration and meet the requirements for data availability and security, remote backup and restoration, remote disaster recovery, long-term data archive, and regulation compliance.

In addition, TencentDB for SQL Server also has rich backup capabilities to guarantee the data security and prevent data loss or corruption. Specifically, you can configure automatic backup, manual backup, data backup, log backup, backup file format (unarchived files or archive file), instance backup, and multi-database backup. You can also customize the backup policy, backup retention period (7-1,830 days), and backup cycle.
Moreover, TencentDB for SQL Server comes with comprehensive disaster recovery capabilities at both the data and business management layers. Cross-region disaster recovery for databases is meaningful only if the business also features cross-region disaster recovery. However, cross-region distributed deployment of the business inevitably causes the split-brain problem. At the business management layer, the business is deployed in three AZs (two intra-region AZs and one remote AZ) to ensure the business continuity. Before an actual failover occurs, the system will always check whether the database sync status (database sync system table) is normal to avoid faulty failover.

Application Scenario

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Ecommerce, O2O, and tourism

TencentDB for SQL Server provides stable and high-performance database solutions for transaction and order systems based on Microsoft C# and ASP.NET. It is specially optimized for flash sales scenarios to break through the performance bottleneck during high-concurrency update of hotspot data.

Finance

TencentDB for SQL Server offers a high-availability primary/replica architecture and automated failover at the second level for core application databases for fund transactions, transfers, and accounting in banking, insurance, securities, funds, and internet finance that require extremely high data security.
It supports data encryption, network isolation, and access control to ensure data security and provides flexible data backup and restoration solutions to satisfy high data reliability requirements.

Games

Adapted to the characteristics of the gaming industry, TencentDB for SQL Server provides powerful elastic scalability of resources and enables deployment of databases for region-specific game servers in just minutes. Its high-availability primary/replica architecture and high-security linkage implement automated imperceptible failover for data rollback with higher stability and efficiency. All these advantages help deliver a smoother gaming experience to large numbers of online players.

Mobile work

TencentDB for SQL Server supports quick deployment of mobile work platforms such as office automation (OA), enterprise resource planning (ERP), and sales management, where the data is stored in cloud-based databases in Tencent Cloud's secure subnets for protection by multiple measures and improved reliability.

Data warehouse and data analytics platform

TencentDB for SQL Server helps you create a cloud-based data warehouse and data analytics platform with SQL Server's built-in business intelligence, IT dashboards and collaboration with SharePoint.

Regions and AZs

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Region

Overview

A region is the physical location of an IDC. In Tencent Cloud, regions are fully isolated from each other, ensuring cross-region stability and fault tolerance. We recommend that you choose the region closest to your end users to minimize access latency and improve access speed.

Characteristics

- Networks across different regions are completely isolated. Cloud products from different regions **cannot communicate through the internal network by default**.
- Cloud products located in different VPCs can communicate via CCN, which provides a faster and more stable connection.
- CLB currently supports traffic forwarding within the same region by default, binding to a cloud database in the local region. By enabling the cross-region binding feature, CLB can support cross-region binding with cloud databases.

Availability Zone

Overview

Availability Zones (AZs) refer to Tencent Cloud's physical data centers in the same region, independently powered and networked. They are designed to ensure that failures in one AZ do not affect others, except in cases of large-scale disasters or major power failures, keeping user businesses continuously online. By selecting instances in independent AZs, users can protect applications from single-location failures.

Characteristics

Cloud products in the same region but different availability zones, and under the same VPC, can communicate through the internal network, allowing direct access via internal IP.

> **Note:**
> Private network interconnection refers to the interconnection of resources under the same account. Resources under different accounts are completely isolated on the private network.

China

Region	Availability Zone
South China (Guangzhou) ap-guangzhou	Guangzhou Zone 1 (sold out) ap-guangzhou-1
	Guangzhou Zone 2 (sold out) ap-guangzhou-2
	Guangzhou Zone 3 ap-guangzhou-3
	Guangzhou Zone 4 (sold out) ap-guangzhou-4
	Guangzhou Zone 6 ap-guangzhou-6
	Guangzhou Zone 7 ap-guangzhou-7
South China (Shenzhen Finance) ap-shenzhen-fsi	Shenzhen Finance Zone 1 (only for financial institutions and enterprises to submit a ticket for application) ap-shenzhen-fsi-1
East China (Shanghai) ap-shanghai	Shanghai Zone 1 (sold out) ap-shanghai-1
	Shanghai Zone 2 ap-shanghai-2
	Shanghai Zone 3 ap-shanghai-3
	Shanghai Zone 4 ap-shanghai-4
	Shanghai Zone 5 ap-shanghai-5
East China (Nanjing) ap-nanjing	Nanjing Zone 1 ap-nanjing-1
	Nanjing Zone 2 ap-nanjing-2

East China (Shanghai Finance) ap-shanghai-fsi	Shanghai Finance Zone 1 (only for financial institutions and enterprises to submit a ticket for application) ap-shanghai-fsi-1
North China (Beijing) ap-beijing	Beijing Zone 1 ap-beijing-1
	Beijing Zone 2 ap-beijing-2
	Beijing Zone 3 ap-beijing-3
	Beijing Zone 4 ap-beijing-4
	Beijing Zone 5 ap-beijing-5
	Beijing Zone 6 ap-beijing-6
	Beijing Zone 7 ap-beijing-7
Southwest China (Chengdu) ap-chengdu	Chengdu Zone 1 ap-chengdu-1
	Chengdu Zone 2 ap-chengdu-2
Southwest China (Chongqing) ap-chongqing	Chongqing Zone 1 ap-chongqing-1
North China (Beijing Finance) ap-beijing-fsi	Beijing Finance Zone 1 (only for financial institutions and enterprises to submit a ticket for application) ap-beijing-fsi-1
Hong Kong (China), Macao (China), and Taiwan (China)(Hong Kong, China) ap-hongkong	Hong Kong Zone 1 (Hong Kong (China) node covers Hong Kong (China), Macao (China), and Taiwan (China)) ap-hongkong-1
	Hong Kong Zone 2 (Hong Kong (China) node covers Hong Kong (China), Macao (China), and Taiwan (China)) ap-hongkong-2

	Hong Kong Zone 3 (Hong Kong (China) nodes cover Hong Kong (China), Macao (China), and Taiwan (China)) ap-hongkong-3

Other countries and regions

Region	Availability Zone
Southeast Asia (Singapore) ap-singapore	Singapore Zone 1 (Singapore nodes cover Southeast Asia) ap-singapore-1
	Singapore Zone 2 (Singapore nodes cover Southeast Asia) ap-singapore-2
	Singapore Zone 3 (Singapore nodes cover Southeast Asia) ap-singapore-3
	Singapore Zone 4 (Singapore nodes cover Southeast Asia) ap-singapore-4
Southeast Asia (Jakarta) ap-jakarta	Jakarta Zone 1 (Jakarta nodes cover Southeast Asia) ap-jakarta-1
	Jakarta Zone 2 (Jakarta nodes cover Southeast Asia) ap-jakarta-2
Southeast Asia (Bangkok) ap-bangkok	Bangkok Zone 1 (Bangkok nodes cover Southeast Asia) ap-bangkok-1
	Bangkok Zone 2 (Bangkok nodes cover Southeast Asia) ap-bangkok-2
South Asia (Mumbai) ap-mumbai	Mumbai Zone 1 (Mumbai nodes cover Southeast Asia) ap-mumbai-1
	Mumbai Zone 2 (Mumbai nodes cover Southeast Asia) ap-mumbai-2
Northeast Asia (Seoul) ap-seoul	Seoul Zone 1 (Seoul nodes cover Northeast Asia) ap-seoul-1
	Seoul Zone 2 (Seoul nodes cover Northeast Asia) ap-seoul-2

Northeast Asia (Tokyo) ap-tokyo	Tokyo Zone 1 (Tokyo nodes cover Northeast Asia) ap-tokyo-1
	Tokyo Zone 2 (Tokyo nodes cover Northeast Asia) ap-tokyo-2
US West (Silicon Valley) na-siliconvalley	Silicon Valley Zone 1 (Silicon Valley nodes cover services in West US) na-siliconvalley-1
	Silicon Valley Zone 2 (Silicon Valley nodes cover services in West US) na-siliconvalley-2
East US (Virginia) na-ashburn	Virginia Zone 1 (Virginia nodes cover services in East US) na-ashburn-1
	Virginia Zone 2 (Virginia nodes cover services in East US) na-ashburn-2
Europe (Frankfurt) eu-frankfurt	Frankfurt Zone 1 (Frankfurt nodes cover services in Europe) eu-frankfurt-1
	Frankfurt Zone 2 (Frankfurt nodes cover services in Europe) eu-frankfurt-2
South America (São Paulo) sa-saopaulo	São Paulo Zone 1 (São Paulo nodes cover services in South America) sa-saopaulo-1

Availability Zones supported by each architecture version

China

Region	Availability Zone	Cloud Disk Edition Single Node	Cloud Disk Edition Dual Node	Cloud Disk Edition RO	Local Storage Dual Node	Local Storage RO
Guangzhou	Guangzhou Zone 3	✓	×	×	✓	✓

ap-guangzhou	ap-guangzhou-3					
	Guangzhou Zone 6 ap-guangzhou-6	✓	✓	✓	✓	×
	Guangzhou Zone 7 ap-guangzhou-7	✓	✓	✓	✓	×
Shanghai ap-shanghai	Shanghai Zone 2 ap-shanghai-2	✓	✓	✓	✓	✓
	Shanghai Zone 3 ap-shanghai-3	✓	×	×	✓	✓
	Shanghai Zone 4 ap-shanghai-4	✓	✓	✓	✓	✓
	Shanghai Zone 5 ap-shanghai-4	✓	✓	✓	✓	×
Nanjing ap-nanjing	Nanjing Zone 1 ap-nanjing-1	✓	✓	✓	✓	✓
	Nanjing Zone 2 ap-nanjing-2	✓	✓	✓	✓	✓

Beijing ap-beijing	Beijing Zone 1 ap-beijing-1	×	×	×	✓	✓
	Beijing Zone 2 ap-beijing-2	✓	×	×	✓	✓
	Beijing Zone 3 ap-beijing-3	✓	✓	✓	✓	✓
	Beijing Zone 4 ap-beijing-4	✓	×	×	×	×
	Beijing Zone 5 ap-beijing-5	✓	×	×	✓	✓
	Beijing Zone 6 ap-beijing-6	✓	✓	✓	✓	×
	Beijing Zone 7 ap-beijing-7	✓	✓	✓	✓	×
Chengdu ap-chengdu	Chengdu Zone 1 ap-chengdu-1	✓	✓	✓	✓	×
	Chengdu Zone 2 ap-chengdu-2	✓	✓	✓	✓	×
Chongqing	Chongqing Zone 1	✓	✓	✓	✓	×

ap-chongqing	ap-chongqing-1					
Hong Kong (China) ap-hongkong	Hong Kong Zone 1 ap-hongkong-1	×	×	×	✓	✓
	Hong Kong (China) Zone 2 ap-hongkong-2	✓	✓	✓	✓	✓
	Hong Kong Zone 3 ap-hongkong-3	×	✓	✓	✓	×

Asia Pacific

Region	Availability Zone	Cloud Disk Edition Single Node	Cloud Disk Edition Dual Node	Cloud Disk Editio n RO	Local Storage Dual Node	Local Storag e RO
Mumbai ap-mumbai	Mumbai Zone 1 ap-mumbai-1	×	✓	✓	×	×
	Mumbai Zone 2 ap-mumbai-2	×	✓	✓	×	×
Singapor e	Singapore Zone 1	✓	×	×	×	×

ap-singapore	ap-singapore-1					
	Singapore Zone 2 ap-singapore-2	✓	×	×	×	×
	Singapore Zone 3 ap-singapore-3	×	✓	✓	×	×
	Singapore Zone 4 ap-singapore-4	×	✓	✓	×	×
Jakarta ap-jakarta	Jakarta Zone 1 ap-jakarta-1	✓	×	×	×	×
Bangkok ap-bangkok	Bangkok Zone 1 ap-bangkok-1	✓	×	×	×	×
	Bangkok Zone 2 ap-bangkok-2	✓	×	×	×	×
Seoul ap-seoul	Seoul Zone 1 ap-seoul-1	✓	✓	✓	✓	×
	Seoul Zone 2 ap-seoul-2	✓	✓	✓	×	×
Tokyo	Tokyo Zone 1	✓	✓	×	✓	×

ap-tokyo	ap-tokyo-1					
	Tokyo Zone 2 ap-tokyo-2	✓	✓	×	✓	×

Europe and Americas

Region	Availability Zone	Cloud Disk Edition Single Node	Cloud Disk Edition Dual Node	Cloud Disk Edition RO	Local Storage Dual Node	Local Storage RO
Virginia na-ashburn	Virginia Zone 1 na-ashburn-1	×	✓	✓	×	×
	Virginia Zone 2 na-ashburn-2	×	✓	✓	×	×
Frankfurt eu-frankfurt	Frankfurt Zone 1 eu-frankfurt-1	×	✓	✓	×	×
	Frankfurt Zone 2 eu-frankfurt-2	×	✓	✓	×	×
Silicon Valley na-siliconvalley	Silicon Valley Zone 1 na-siliconvalley-1	×	✓	✓	✓	×

	Silicon Valley Zone 2 na-siliconvalley-2	×	✓	✓	✓	×
Sao Paulo sa-saopaulo	São Paulo Zone 1 sa-saopaulo-1	×	✓	✓	×	×

Special Note for Financial Zone

A compliance zone customized for regulatory requirements in the financial industry. It features high security and high isolation. Please refer to Introduction to the Financial Zone.

Selection of Regions and AZs

- The region where the cloud database is located, and the geographical location of both you and your target users.
  It is recommended that you select the region closest to your customers when purchasing a cloud database to reduce access latency and improve access speed.
- The relationship between servers and other cloud products.
  It is recommended that you choose other cloud products in the same region and availability zone to facilitate communication via the intranet, reduce access latency, and improve access speed.
- Considerations for high business availability and disaster recovery.
  Even in scenarios with only one VPC, it is recommended to deploy your business across different availability zones to ensure fault isolation between zones and achieve cross-availability zone disaster recovery.
- There may be network communication delays between different availability zones. It is necessary to evaluate based on actual business needs to find the optimal balance point between high availability and low latency.
- If you need to access hosts in other countries and regions, it is recommended to use cloud databases in those specific countries and regions. If you create a cloud database in China, accessing hosts in other countries and regions will result in high access latency and is not recommended.

Resource Location Description

This describes which Tencent Cloud resources are global, which are region-specific without distinguishing availability zones, and which are based on availability zones.

Resources	Resource ID Format <Resource Abbreviation>-8 digits and characters	Type	Description
User Account	No limit	Globally Unique	Users can access resources worldwide with the same account.
SSH Key	skey-xxxxxxxx	Available across all regions	Users can use SSH keys to associate with CVM instances in any region under their account.
CVM Instance	ins-xxxxxxxx	Can only be used within a single availability zone in a single region	Users can only create CVM instances in specific availability zones.
Custom Image	img-xxxxxxxx	Available across multiple AZs in a single region	Users can create instances from custom images and use them across different AZs in the same region. If you need to use the image in other regions, use the 'Copying Image' feature to copy the custom image to other regions.
Elastic IP	eip-xxxxxxxx	Available across multiple AZs in a single region	Elastic IP addresses are created in a specific region and can only be associated with instances in the same region.

Security Group	sg-xxxxxxxx	Available across multiple AZs in a single region	Security groups are created in a specific region and can only be associated with instances in the same region. Tencent Cloud automatically creates three default security groups for users.
CBS	disk-xxxxxxxx	Can only be used in a single AZ within a single region	Users can only create CBS in a specific AZ and attach it to instances in the same AZ.
Snapshot	snap-xxxxxxxx	Available across multiple AZs in a single region	After creating a snapshot for CBS, users can use the snapshot for other operations (such as creating CBS) in the same region.
CLB	clb-xxxxxxxx	Available across multiple AZs in a single region	CLB can bind CVMs in different AZs within the same region for traffic forwarding.
VPC	vpc-xxxxxxxx	Available across multiple AZs in a single region	VPC is created in a specific region, and resources belonging to the same VPC can be created across different AZs.
Subnet	subnet-xxxxxxxx	Can only be used in a single AZ	Users cannot create subnets across AZs.

		within a single region	
Route Table	rtb-xxxxxxxx	Available across multiple AZs in a single region	When users create a route table, they need to specify a specific VPC, thus following the location attributes of the VPC.

Related Operations

TencentDB for SQL Server supports cross-AZ instance migration. For detailed information, refer to Cross-Availability Zone Migration.

Engine and Version

Last updated: 2024-09-06 17:50:25

This document introduces the database engines and versions supported by TencentDB for SQL Server.

Region	Database Version
Chinese mainland , Hong Kong (China)	2008R2 Enterprise 2012 Enterprise 2014 Enterprise 2016 Enterprise 2017 Enterprise 2019 Enterprise 2022 Enterprise
Other countries and regions	2008R2 Enterprise 2012 Standard,2012 Enterprise 2014 Standard,2014 Enterprise 2016 Standard,2016 Enterprise 2017 Standard,2017 Enterprise 2019 Standard,2019 Enterprise 2022 Enterprise

Features and Differences

Last updated: 2024-09-06 17:50:41

This document introduces the feature overview and differences of various TencentDB for SQL Server editions.

Feature Overview and Differences for Various Editions

Module	Feature	Two-node (formerly High Availability and Cluster Edition)	Single-node (formerly Basic Edition)
Version	-	2008R2 Enterprise 2012 Standard/Enterprise 2014 Standard/Enterprise 2016 Standard/Enterprise 2017 Standard/Enterprise 2019 Standard/Enterprise 2022 Enterprise	2008R2 Enterprise 2012 Enterprise 2014 Enterprise 2016 Enterprise 2017 Enterprise 2019 Enterprise 2022 Enterprise
Lifecycle	Creating an instance	Supported	Supported
	Restarts an instance		
	Auto-renewal		
	Changing Billing Mode		
	Terminate an instance		
	Create a read-only instance		
	Publish/Subscribe		

	Upgrading/Downgrading Specifications		
	Disk Expansion/Reduction		
	Version upgrade		
	Architecture upgrade		
Instance Attributes	Viewing the list of instances	Supported	Supported
	Viewing instance details		
	Renaming an instance		
	Modifying instance remarks		
	Setting Instance Tag		
	Managing Maintenance Time		
	Project Management		

Service availability	High Availability Methods	• Versions SQL Server 2008 R2/2012/2014/2016 Enterprise and SQL Server 2012/2014/2016 Standard adopt Mirror HA version • SQL Server 2017/2019/2022 Enterprise adopts Always On high availability	Compute Node Migration + Disk Snapshot
	Cross-AZ Content Disaster Recovery	Supported	Not supported
	Intra-region disaster recovery	Supported	Not supported
	Removing Read-Only Instances	Supported	Not supported
	Migrating across AZs	Supported	Not supported
Backup and Restoration	Full backup	Supported	Supported
	Data Backup		
	Incremental backup		
	Log backup		
	Scheduled Backup		

Manual Backup	
Packaging Backup	
Single-Database Backup	
Instance Backup	
Multi-Database Backup	
Custom Backup Policy	
Restore by Backup Set	
Restore by Point-in-Time	
Restore by User Backup Set	
Rollback to Current Instance	
Rollback to Existing Instance (Same Region)	

	Rollback to Existing Instance (Cross-Region)		
	Backup Download		
	Executing Backup Task for Instance	• Versions SQL Server 2008 R2/2012/2014/2016 Enterprise, SQL Server 2012/2014/2016 Standard not supported • Versions SQL Server 2017/2019/2022 Enterprise supported	Not supported
Monitoring and Alarms	Resource Monitoring	Supported	Supported
	Engine monitoring		Supported
	Second-level monitoring		Not supported (1-minute granularity)
	Custom Monitoring Strategy	Not supported	Supported
	Alarm Metrics	Supported	Supported
Account management	Creating and Deleting Accounts	Supported	Supported

	Standard account		
	Privileged account		
	Special Permissions Account		
	Privileged Account	Not supported	Supported
Database management	Create a database	Supported	Supported
	Dropping a Database		
	Cloning Database		
	Database Authorization		
	Setting Change Data Capture (CDC)		
	Setting Change Tracking (CT)		
	Shrinking Database		
Data security	Security Group	Supported	Supported

	Database Audit	Not supported yet	Not supported
	Network Encryption		
	TDE Encryption	Supported	Supported
	SSL encryption	Supported	Supported
Data channel	Data sync	Not supported yet	Not supported yet
	Homogeneous Data Migration	Supported	Supported
	Heterogeneous Data Migration	Not supported	Not supported
	Publish/Subscribe	Supported	
Log management	Error Log	Not supported	Not supported
	Slow Logs	Supported	Supported
	Viewing running logs	Not supported	Not supported
	Blocking and Deadlock Events	Versions SQL Server 2012/2014/2016/2017/2019/2022 Enterprise supported	Versions SQL Server 2012/2014/2016/2017/2019/2022 Enterprise supported
Parameter	Parameter	Supported	Supported

management	Update		
	Parameter History		
	Parameter Template	Not supported	Not supported
Performance	Expert Service	Supported	Supported
	Resource analysis	Not supported	Not supported
	Engine Analysis		
Network	Classic Network	Supported	Supported
	Virtual Private Cloud (VPC)		
	Public Network Address	Supported	Supported

Instance type

Last updated: 2024-09-06 17:50:54

As the minimum management unit in TencentDB for SQL Server, a database instance is a database environment running independently in Tencent Cloud and represents an independent TencentDB for SQL Serve instance. You can create, modify, and delete instances in the console and create and manage multiple databases in each instance.
This document describes TencentDB for SQL Server database instance types.

Instance types and descriptions

Instance type	Overview	Use Instructions
Standalone instance - single-node (formerly Basic Edition) instance	• A single database node architecture is adopted, which is very cost-effective. • Computing and storage are separated, and the underlying data is stored in three replicas in cloud disks. • A Basic Edition node is deployed in a CVM instance, which has a higher database performance than self-built databases. • Premium cloud disk is used as the underlying storage media, suitable for 90% I/O scenarios with a stable performance.	This instance type is suitable for personal learning, ISV software for small and medium-sized enterprises, web applications, and non-core small corporate systems. If a standalone instance fails, it takes a slightly longer time to recover than a CVM instance.
Primary/Replica instances - two-node (formerly High Availability/ Cluster Edition) instances	Versions SQL Server 2008R2/2012/2014/2016 Enterprise, SQL Server 2012/2014/2016 Standard, consisting of a master and a mirror SQL Server database. Adopts a classic primary/replica architecture where the specifications of each node in the primary and replica instances are consistent. The primary and replica are deployed across racks/availability zones, with each database corresponding to a set of monitoring agents that monitor the database through heartbeat in real-time. Supports high availability across	• Replica instances improve the instance reliability. When a primary instance is created, a replica instance will be created at the same time, which will be invisible to users. • When the primary instance fails, primary-replica switch will be automatically triggered, and the database client will be disconnected

	availability zones (AZs), with the primary AZ and secondary AZ not in the same AZ. COS: Provides data disaster recovery services with cold backup data. Tencent Cloud Management Cluster: Comprising independently deployed decision scheduling clusters and configuration clusters, it serves as the management and scheduling center of the cluster, mainly managing the database node group, access gateway cluster, and normal operations of the COS.	momentarily. Therefore, the database client needs to support reconnection. • The data synchronization mode between SQL Server primary and replica instances prioritizes performance, with asynchronous mode as the default for both primary to replica and master instance to read-only instance. If needed, you can submit a ticket to request a change to synchronization mode.
	Versions SQL Server 2017/2019/2022 Enterprise adopt the Always On architecture (including one primary and one replica), supporting the addition of up to five read-only instances to build a cluster mode with higher availability, reliability, and scalability. The primary and replica are deployed across racks/availability zones, with each database corresponding to a monitoring agent that monitors the database through heartbeat in real time.	This instance type is suitable for industry application scenarios, such as gaming, healthcare, medicine, internet, IoT, retail, ecommerce, logistics, insurance, securities, media, technical service, and automobile.
RO Instance - read-only instance	A single-node instance (without a backup machine) that can support read requests. Read-only instances cannot exist alone; each read-only instance belongs to an RO group and must be bound to a master instance (dual-node) for use. The RO group is a read-only instance group with the CLB feature.	• A read-only instance is standalone. When the physical server fails or a database replication exception occurs, it will take a long time (subject to the data volume) for the instance to recover. • For business scenarios with a strong

		dependency on read-only requests, we recommend that you create multiple read-only instances to share the read pressure.

Note
You can create and manage various types of instances through the TencentDB for SQL Server Console .

Documentation

- Engine and Versions
- Feature Overview and Differences

Instance specifications Specification Type

Last updated: 2024-09-06 17:51:34

This document describes TencentDB for SQL Server instance specification types.

> **Note**
> Currently, TencentDB for SQL Server only supports dedicated instance.

Specification Type	Description
Dedicated Instance	• The purchased instance has exclusive access to the CPU, memory, and disk resources, featuring long-term stability. • Instances deployed with local disks are not affected by the activities of other instances on the physical machine. Instances deployed with cloud disks are considered dedicated cloud databases. • A dedicated instance with the highest configurations can monopolize a physical machine and all of its resources.

Primary Instance Specifications

Last updated: 2024-09-06 17:51:47

This document describes the latest specifications of TencentDB for SQL Server primary instances.

> **Note:**
> The memory defined in the specifications of single-node (formerly Basic Edition) instances of cloud disk edition and two-node (formerly High Availability/Cluster Edition) instances of cloud disk edition includes the memory used by the TencentDB management services, database services, and underlying operating system. Therefore, the displayed available memory of an instance is smaller than the actual memory defined in the instance specification.

TencentDB for SQL Server primary instance

Instance type	Version	Storage class	CPU and Memory	Storage capacity
Single-node (formerly Basic Edition)	2008 R2 Enterprise 2012 Enterprise 2014 Enterprise 2016 Enterprise 2017 Enterprise 2019 Enterprise 2022 Enterprise	Balanced SSD cloud disk Enhanced SSD Premium Cloud Storage	2-core 4 GB	20GB – 32000GB
			2-core 8 GB	
			2-core 16 GB	
			4-core 8 GB	
			4-core 16 GB	
			4-core 32 GB	
			8-core 16 GB	
			8-core 32 GB	
			8-core 64 GB	
			12-core 24 GB	
			12-core 48 GB	

			12-core 96 GB	
			16-core 32 GB	
			16-core 64 GB	
			16-core 128 GB	
			24-core 48 GB	
			24-core 96 GB	
			24-core 192 GB	
			32-core 64 GB	
			32-core 128 GB	
			32-core 256 GB	
			48-core 96 GB	
			48-core 192 GB	
			48-core 384 GB	
			64-core 128 GB	
			64-core 256 GB	
			64-core 512 GB	

		SSD	2-core 4 GB	100GB - 32000GB
			2-core 8 GB	
			4-core 8 GB	
			4-core 16 GB	
			8-core 16 GB	
			8-core 32 GB	
			16-core 32 GB	
			16-core 64 GB	
			16-core 128 GB	
			24-core 48 GB	
			24-core 96 GB	
			32-core 64 GB	
			32-core 128 GB	
			32-core 256 GB	
			48-core 96 GB	
			48-core 192 GB	
			64-core 128 GB	
			64-core 256 GB	

Two-node (formerly High Availability/ Cluster Edition)	2008 R2 Enterprise 2012 Enterprise 2014 Enterprise 2016 Enterprise 2017 Enterprise 2019 Enterprise 2022 Enterprise	Premium local SSD	1-core 2 GB	10GB - 3000GB
			1-core 4 GB	
			1-core 8 GB	
			2-core 16 GB	
			4-core 32 GB	
			8-core 64 GB	
			12-core 96 GB	
			16-core 128 GB	10GB - 8000GB
			24-core 192 GB	10GB - 6000GB
			32-core 256 GB	
			48-core 384 GB	
			64-core 512 GB	
			90-core 720 GB	
		Balanced SSD CBS Enhanced SSD CBS	2-core 4 GB	20GB - 32000GB
			2-core 8 GB	
			2-core 16 GB	
			4-core 8 GB	
			4-core 16 GB	
			4-core 32 GB	
			8-core 16 GB	
			8-core 32 GB	

			8-core 64 GB
			12-core 24 GB
			12-core 48 GB
			12-core 96 GB
			16-core 32 GB
			16-core 64 GB
			16-core 128 GB
			24-core 48 GB
			24-core 96 GB
			24-core 192 GB
			32-core 64 GB
			32-core 128 GB
			32-core 256 GB
			48-core 96 GB
			48-core 192 GB
			48-core 384 GB

			64-core 128 GB	
			64-core 256 GB	
			64-core 512 GB	
			80-core 160 GB	
			80-core 320 GB	
			96-core 192 GB	
			96-core 384 GB	

Read-Only Instance Specifications

Last updated: 2024-09-06 17:52:01

In TencentDB for SQL Server, you can create one or more read-only instances and use them to sustain high numbers of database reads, so as to implement auto scaling of read capabilities and alleviate pressure on the database. This document describes the specifications and configurations of read-only instances.

> **Note:**
> When creating a read-only instance, the storage capacity of the read-only instance must be greater than or equal to the storage capacity of the master instance.

TencentDB for SQL Server read-only instance

Version	Storage class	CPU and Memory	Storage capacity
2008 R2 Enterprise 2012 Enterprise 2014 Enterprise 2016 Enterprise 2017 Enterprise 2019 Enterprise 2022 Enterprise	Premium local SSD	1-core 2 GB	10GB - 3000GB
		1-core 4 GB	
		1-core 8 GB	
		2-core 16 GB	
		4-core 32 GB	
		8-core 64 GB	
		12-core 96 GB	
		16-core 128 GB	10GB - 8000GB
		24-core 192 GB	10GB - 6000GB
		32-core 256 GB	
		48-core 384 GB	
		64-core 512 GB	
		90-core 720 GB	
	General Purpose SSD CBS	2-core 4 GB	20GB - 32000GB
		2-core 8 GB	

Enhanced SSD CBS	2-core 16 GB
	4-core 8 GB
	4-core 16 GB
	4-core 32 GB
	8-core 16 GB
	8-core 32 GB
	8-core 64 GB
	12-core 24 GB
	12-core 48 GB
	12-core 96 GB
	16-core 32 GB
	16-core 64 GB
	16-core 128 GB
	24-core 48 GB
	24-core 96 GB
	24-core 192 GB
	32-core 64 GB
	32-core 128 GB
	32-core 256 GB
	48-core 96 GB
	48-core 192 GB
	48-core 384 GB
	64-core 128 GB
	64-core 256 GB
	64-core 512 GB

		80-core 160 GB	
		80-core 320 GB	
		96-core 192 GB	
		96-core 384 GB	

Storage class

Last updated: 2024-09-06 17:52:16

This document describes the storage types of TencentDB for SQL Server and their uses cases, including premium local SSD, balanced SSD cloud disk, enhanced SSD cloud disk, SSD cloud disk, and premium cloud disk.

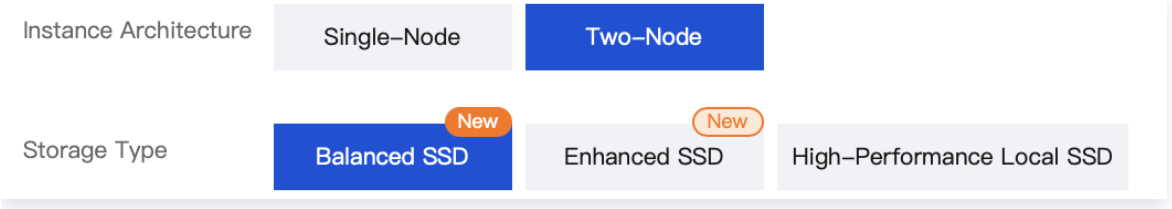
Storage type description

Storage class	Description	Applicable Instance Architecture	Applicable Scenario
Premium local SSD	It is a high I/O local disk storage type, which has an excellent I/O throughput. A 90-core 720 GB MEM TencentDB for SQL Server instance can sustain up to 4.5 million TPM.	Two-node (formerly High Availability/Cluster Edition)	Business scenarios that have extremely high requirements for storage I/O performance and high-availability architecture at the application layer, such as online games, ecommerce, ERP software services, video live streaming, and media.
Balanced SSD cloud disk	It is an entry-level all-flash block storage product provided by Tencent Cloud and highly cost-effective.	• Two-node (formerly High Availability/ Cluster Edition) • Single-node (formerly Basic Edition)	Medium applications with high requirements for data reliability and standard requirements for performance, such as web/app servers, business logical processing, KV services, as well as basic database services.
Enhanced SSD	It is based on Tencent Cloud's latest storage engine, NVMe SSD storage media and the latest	• Two-node (formerly High Availability/	Business scenarios that have extremely high requirements for storage I/O

	network infrastructure. It employs a three-copy distributed mechanism to provide high-performance storage with low latency, high random IOPS, high throughput I/O, and data availability up to 99.9999999% (nine nines).	Cluster Edition) • Single-node (formerly Basic Edition)	performance and high-availability architecture at the application layer, such as online games, ecommerce, ERP software services, and video live streaming.
SSD	All-flash cloud disk storage type with NVMe SSD as the storage media. It adopts a three-copy distributed storage mechanism to provide low-latency and high-throughput I/O capabilities with a high random IOPS and 99.9999999% (nine nines) data security.	Single-node (formerly Basic Edition)	Application scenarios such as I/O-intensive applications and small and medium relational databases.
Premium Cloud Storage	It is a hybrid storage type. It adopts the cache mechanism to provide a high-performance SSD-like storage, and employs a three-copy distributed mechanism to ensure data reliability.	Single-node (formerly Basic Edition)	Small and medium application scenarios that require high data reliability and moderate performance, such as web/app servers, business logic processing, and small and medium websites.

Storage type selection

You can select the storage type after selecting the instance architecture on the SQL Server purchase page.



Storage type comparison

Storage class	I/O Performance	Maximum Disk Capacity (GB)
Premium local SSD	Low I/O latency and higher I/O throughput than cloud disk	6000
Balanced SSD cloud disk	Medium I/O throughput	32000
Enhanced SSD	Ultra high I/O throughput	32000
SSD	Excellent I/O throughput	32000
Premium Cloud Storage	Stable I/O performance	32000

Common Concepts

Last updated: 2024-09-06 17:52:27

This document describes the common concepts of TencentDB for SQL Server to help you better understand and use it.

- **Database Instance**
  A database instance (Database Instance) is a database server (Database Server), in which one or more databases (Database) can be created, and each database can have one or more tables.
- **Primary Instance and Replica Instance**
  For High Availability and Cluster Edition instances, the node your business accesses is called the primary instance, and the data of the primary instance is synced to another node called the replica instance.
  You can access only the primary instance, while the replica instance exists only as a backup and does not provide business access. When the primary instance fails, a primary-replica switch, imperceptible to applications, will be performed, and only a momentary disconnection may occur during the switch.
- **Read-Only Instance**
  A read-only instance elastically expands the read capacity and mitigates the database pressure. In scenarios with many read requests but only a few write requests, a single instance may not be able to handle the read load, which may even affect the business. In such cases, you can create one or multiple read-only instances to meet the high number of database reads and increase application throughput.
- **Tencent Cloud Console**
  A web-based user interface.
- **Region**
  A region refers to the geographical area of the physical data center. In general, a TencentDB for SQL Server instance and a CVM instance should be in the same region to achieve the best access performance.
- **Availability Zone (AZ)**
  An availability zone is a physical location within a region with independent power supply and network resources. There are no substantial differences between different AZs in the same region.
- **Multi-AZ**
  A physical location created by combining multiple AZs in the same region.
- **RO Group**
  A collection of read-only instances is called an RO group.

- **Billing Mode**
  The billing mode of an instance resource, which can be annual and monthly subscription or pay-as-you-go.
- **Pay-as-you-go**
  A postpaid billing mode, where you apply for resources for on-demand use and are charged based on the actual usage upon settlement.
- **Annual and Monthly Subscription**
  A prepaid billing mode, where users pay a lump sum for a month, several months, or several years based on their cloud resource usage needs.
- **Instance Type**
  Classified by deployment architecture into Single Node (Original Basic Edition) and Dual Node (Original High Availability/Cluster Edition).
- **Single Node (Original Basic Edition)**
  TencentDB for SQL Server Single Node (Original Basic Edition) instance is also known as a standalone instance, featuring a single database node with separated computing and storage, offering high cost performance.
- **Dual Node (Original High Availability/Cluster Edition)**
  A dual-node instance consisting of a primary and a standby node. When the primary instance fails, it will automatically switch to the standby instance.
  Among them, the dual-node instances of versions 2008 R2 Enterprise, 2012 Enterprise, 2014 Enterprise, and 2016 Enterprise consist of a primary and a mirrored SQL Server database, with cross-rack/cross-AZ deployment. Each database corresponds to a set of monitoring agents that monitor the database in real-time through heartbeats.
  The dual-node instances of versions 2017 Enterprise, 2019 Enterprise, and 2022 Enterprise adopt the Always On architecture (including a primary and a standby node), with primary and standby nodes deployed across racks/AZs. Each database corresponds to a set of monitoring agents that monitor the database in real-time through heartbeats.
- **Engine Version**
  Compatible database versions, currently supporting: 2008 R2 Enterprise, 2012 Enterprise, 2014 Enterprise, 2016 Enterprise, 2017 Enterprise, 2019 Enterprise, 2022 Enterprise.
- **Specification**
  The resource configuration of each node, for example, 2 cores 16GB.
- **Hard Drive**
  The primary storage device in a computer, used for storing data.
- **General-purpose SSD CBS**
  A Tencent Cloud product designed based on a new generation storage engine, built on all NVMe SSD storage media and the latest network infrastructure. It employs a triple-replication distributed mechanism to provide low-latency, high random IOPS, high

throughput I/O capabilities, and up to 99.9999999% data reliability. Suitable for scenarios requiring extremely high storage I/O performance and high availability at the application layer, such as online games, e-commerce, ERP software services, live broadcasting, etc.

- **Enhanced SSD CBS**
  An entry-level, all-flash block storage product launched by Tencent Cloud. It offers a high cost-performance advantage and is suitable for medium-sized applications requiring high data reliability and medium performance, such as Web/App servers and business logic processing.
- **High-performance local SSD**
  A high I/O local disk storage type.
- **SSD CBS**
  It is an all-flash cloud disk storage type with NVMe SSD as the storage media. It adopts a three-copy distributed storage mechanism to provide low-latency and high-throughput I/O capabilities with a high random IOPS and 99.9999999% (nine nines) data security.
- **High-performance Cloud Disk**
  It is a hybrid storage type. It provides high-performance storage capabilities close to SSD through the cache mechanism and adopts a three-copy distributed mechanism to ensure the data reliability.
- **Affiliated Project**
  Used for categorizing and managing instance resources.
- **Tag**
  A cloud resource management tool provided by Tencent Cloud. You can classify, search, and aggregate cloud resources with common characteristics from different dimensions, making it easy to manage resources in the cloud.
- **Maintenance Time**
  To ensure the stability of cloud database instances, the backend system will periodically maintain the instances within a set timeframe. You can set your own acceptable maintenance time, preferably during off-peak periods, to minimize the impact on your business.
- **Security Group**
  Controls secure access to instances by specifying the IP, protocol, and port rules for entry.
- **Network**
  Consists of several nodes and the links connecting these nodes, representing many objects and their interactions. Currently only supports VPC (VPC) for performance and security considerations.
- **Intranet Address**
  Within a user's VPC network, assigned to the database for supporting read and write requests, includes IP and port.

- **Port**
  Port, refers to the ports inside a computer or within a switch/router.
- **Database**
  A collection of organized, shared, centrally managed, and large amounts of data stored in a computer for a long time.
- **Database Account**
  The username used to log in to manage the database.
- **Character set**
  A mapping relationship or encoding rule, including a coded character set and character encoding. The code points corresponding to a character set are mapped into binary sequences so that they can be stored and processed by a computer.
- **CVM**
  Cloud Virtual Machine (CVM) is a scalable computing service provided by Tencent Cloud.
- **SSMS**
  SQL Server Management Studio (SSMS) is an integrated environment to manage any SQL infrastructure.
- **Alarm policy**
  You can create alarms to stay informed of the status changes of certain metrics. The specific metrics will be monitored for a certain period of time, and alarm notifications will be sent by WeChat, SMS, email, phone, and Enterprise WeChat at specified intervals based on the given threshold.
- **Publish/Subscribe**
  Business data replication and synchronization. You can create, change, and delete publish and subscribe servers in the TencentDB for SQL Server console.
- **Recycle bin**
  A place where terminated instances are stored before elimination. Such instances can be restored.
- **Backup**
  Data is stored separately or as a file copy to tackle possible unexpected situations such as file or data loss or corruption.
- **Automatic Backup**
  Automatically saving data periodically by setting the backup time and cycle.
- **Regular Backup**
  Automatic backups include regular backups and scheduled backups with different backup retention policies. For regular backups, you can set the backup retention period and time by week, and you should back up your data at least twice a week.
- **Scheduled Snapshot**
  Automatic backups include regular backups and scheduled snapshots with different

backup retention policies. A scheduled snapshot is a more flexible backup policy on the basis of regular automatic backup. It supports setting the number of retained backups by month, quarter, or year and does not need to retain additional new backups. However, its retention period is different from (longer than) that of a regular backup.

- **Manual Backup**
  Supports creating backup files manually at any time.
- **Data Backup**
  Refers to backing up one or more databases within an instance, or backing up all databases of an entire instance.
- **Log Backup**
  The system automatically generates log backups (log files), backs up the logs every 30 minutes, and uploads them to cloud storage. Log files can be downloaded.
- **Backup Strategy**
  You can choose between instance backup and multi-database backup. Instance backup backs up all databases of an entire instance, while multi-database backup lets you select specific databases for backup.
- **Configure Backup Task**
  Used to set the global variables for manual and scheduled backups, supporting the selection and configuration of backup formats (single database backup or packaged backup) and primary or secondary instance backup.
- **Backup File Format**
  It is used to set whether the instance's backup file is a packaged backup file or a single database backup file.

Network environment

Last updated: 2024-09-06 17:52:38

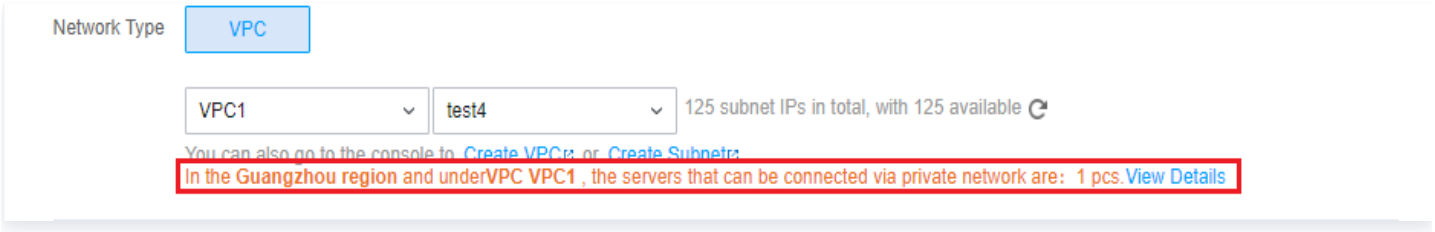
TencentDB for SQL Server supports VPC.

Network Restrictions

- Networks across different regions are completely isolated. Cloud products from different regions **cannot communicate through the internal network by default**.
- Cloud products located in different VPCs can communicate via CCN, which provides a faster and more stable connection.
- CLB currently supports traffic forwarding within the same region by default, binding to a cloud database in the local region. By enabling the cross-region binding feature, CLB can support cross-region binding with cloud databases.
- TencentDB for SQL Server currently does not support public network IP. Users in need can utilize SSH2 port mapping to connect to instances over the Internet for configuration and management. Please refer to Connecting to Instances.
- When purchasing TencentDB for SQL Server, it is recommended to select the same region as the CVM to reduce access latency.

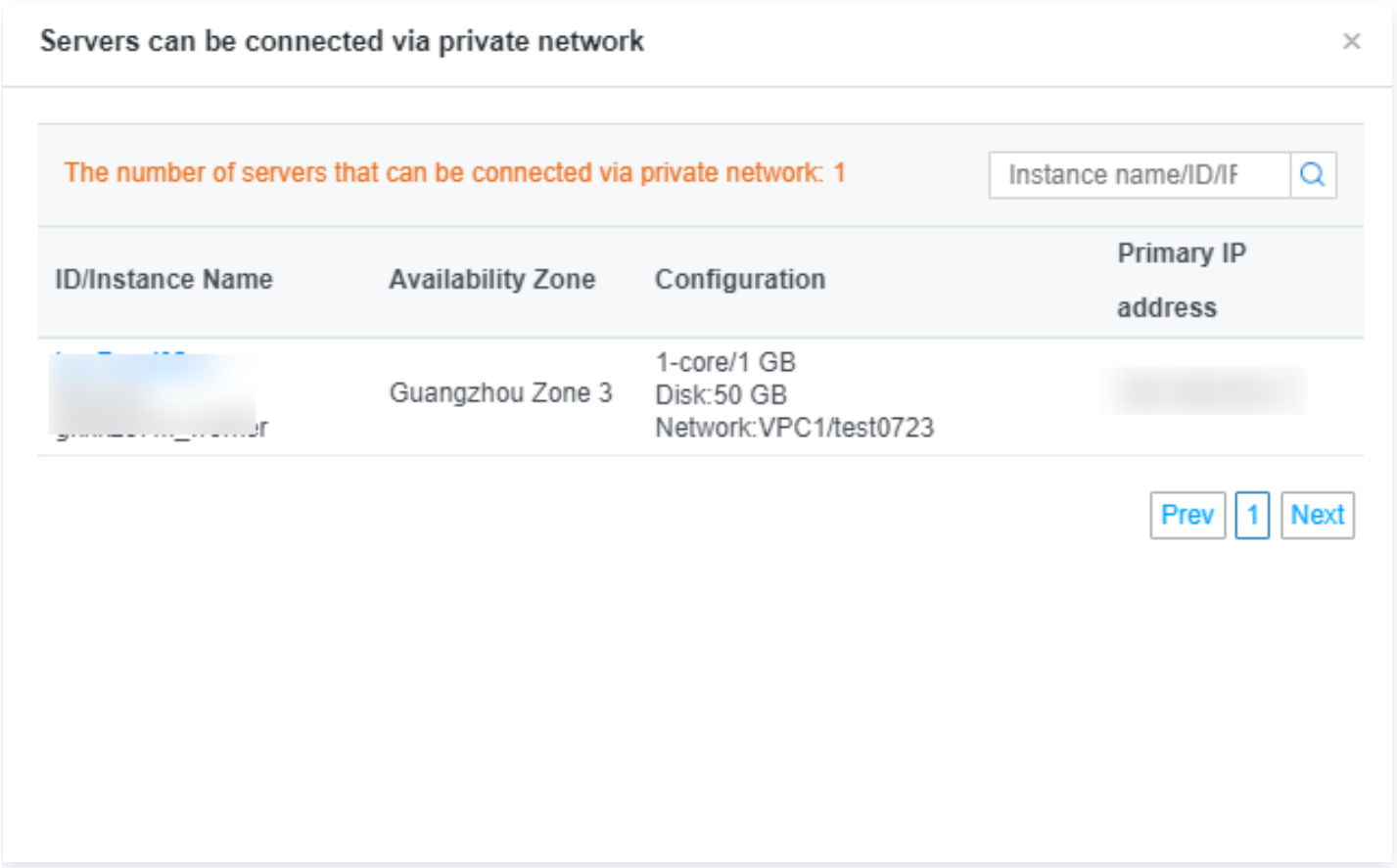
Network Connectivity Detection

Use the network connectivity detection tools provided on the TencentDB for SQL Server purchase page to check whether the selected region/availability zone and network type have CVMs that can communicate internally with TencentDB for SQL Server.



Click **View Details** to see information of CVMs connected to the internal network, including ID/Instance Name, Availability Zone, Configuration (CPU, Memory, Disk, Network), Primary IP Address, and search functionality to help users quickly identify CVMs that can communicate

internally with TencentDB for SQL Server.



License Statement

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License Included

Tencent Cloud can provide CDB | TDSQL instances with "**License Included**". The price of a "License Included" model includes a SQL Server software license, underlying hardware resources, and TencentDB management features, so you don't need to purchase a Microsoft SQL Server license separately.
When using a License Included database, you can directly pay fees based on instance specifications and usage duration without considering hardware and licensing costs. High fixed costs are converted to smaller variable costs, reducing your IT Costs.

Note

- Purchasing TencentDB for SQL Server does not mean you have purchased a long-term Microsoft SQL Server license contract; therefore, you should not use the TencentDB license outside of this service. For more information, see Microsoft Volume Licensing Service Provider Usage Rights.
- The basic price of TencentDB for SQL Server does **not include** Microsoft Original Factory Service and Tencent Cloud Original Factory Service.