viettel
IDC

Datasheet

VIETTEL DATABASE SERVICE



Vietnam's Leading Data Center and Cloud Computing Service Provider
Website: https://viettelidc.com.vn/
Hotline: 1800 8088

OVERVIEW

Viettel Database Service (vDBS) by Viettel IDC is a Platform-as-a-Service (PaaS) solution that empowers enterprises to deploy, manage, and operate database systems automatically. It ensures safety, stability, and high performance without the need for a dedicated, in-depth Database Administrator (DBA) team.

The service supports various popular Database Management Systems (DBMS) such as MySQL, MariaDB, PostgreSQL, MongoDB, Redis, and Cassandra. It caters to a wide range of needs, from traditional applications to microservices, AI/ML, IoT, and modern data analytics.

Customers can deploy their databases on the cloud automatically and rapidly, with unlimited scalability whenever needed.

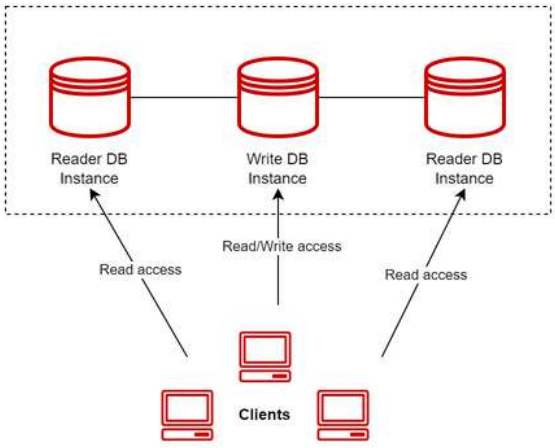


Image 1: Main components of Viettel Database Service

vDBS complies with numerous standards and certifications for Cloud services in Vietnam (G-Cloud) as well as international standards (ISO 9001:2015 - Quality Management System, ISO 27001:2013 - Information Security Management System, ISO 27017:2015 - Information Security Controls for Cloud Services, etc.).

HIGHLIGHTS

1. Comprehensive Automation
- Instant Provisioning: Deploy databases in minutes.
- Auto-Scaling: Automatically expands storage and manages backups.
- Zero-Ops: Operate large-scale systems efficiently without specialized DBAs.

2. Service Continuity (High Availability)
- Resilience: Primary/Standby architecture with automatic failover.
- Rapid Recovery: Fast restoration from hardware or system failures.
- Data Integrity: Point-in-Time Recovery (PITR) to any specific second.

3. High-Level Security
- Data Encryption: Options for data encryption at rest.
- Secure Transmission: TLS/SSL encryption for data in transit.

4. Optimized Performance
- Flexible Scaling: Scale CPU/RAM/Storage independently.
- Load Balancing: Read Replicas to offload read traffic.
- Observability: Slow Query Insight for performance tuning.

5. Ecosystem Integration
- Seamless Ops: Integrated with Kubernetes (K8S) and CI/CD pipelines.
- Unified Management: Backup to Object Storage; centralized Logging & Monitoring.
- Migration: Easy migration from On-premise or International Clouds to IDC.

KEY FEATURES

Automated Deployment & Self-Service

- Rapid Provisioning: Create Databases in minutes.
- Full Control: Manage versions (major/minor), accounts, and configs.
- Auto Health Check: Continuous monitoring of Database/Agent status.
- Live Resize Storage: Expand capacity with zero downtime.

High Performance & Optimization

- Resource Scaling: Flexible CPU/RAM scaling on demand.
- Auto Storage Scaling: Automatically adjusts storage as data grows.
- Traffic Management: Connection Pooling & Database Proxy.
- Deep Insights: Slow Query Insight & Performance Monitoring.
- Workload Tuning: Optimized for OLTP, Web, or Reporting.

Enterprise-Grade Security

- End-to-End Encryption: At rest (Backup) and in transit (TLS/SSL).
- Access Control: Firewall, Security Groups, IP Whitelisting, and RBAC.
- Auditability: Comprehensive logs of all user activities.

IDC Cloud Ecosystem Integration

- Kubernetes Ready: Native integration with K8S Service.
- Storage & Network: Backup to Cloud Object Storage; connects via Monitoring/Logging/VPC.
- Migration Support: Seamless transition from other Clouds or On-premise.

Supported DBMS

- Relational Database: MySQL (5.7.x, 8.0.x), MariaDB (10.5.x, 10.6.x), PostgreSQL (12.x, 15.x)
- Document Database: MongoDB (6.x)
- In-Memory Database: Redis (6.0.x, 6.2.x)
- Distributed Database: Cassandra (3.11.x, 4.1.x)
- Model Standalone, Replication, Cluster

High Availability & Data Recovery

- Architecture: Primary/Standby with auto-failover; Sync/Async replication.
- Read Replicas: Distribute read loads effectively.
- Backup Strategy: On-Demand or Scheduled (Daily/Hourly); Local or S3 storage.
- Efficiency: Encrypted/Compressed backups with auto-scaling storage.
- Alerting: Notifications for backup status.

Centralized Monitoring – Observation – Alerting

- Real-time metrics: CPU, RAM, latency, connection.
- Slow Query Log/Error Log/General Log.
- User operation history (Audit Trails).
- Automated monitoring alerts via Email/SMS/Slack/Telegram.
- Backup/Restore/Replication status tracked in real-time.

Flexible Connectivity

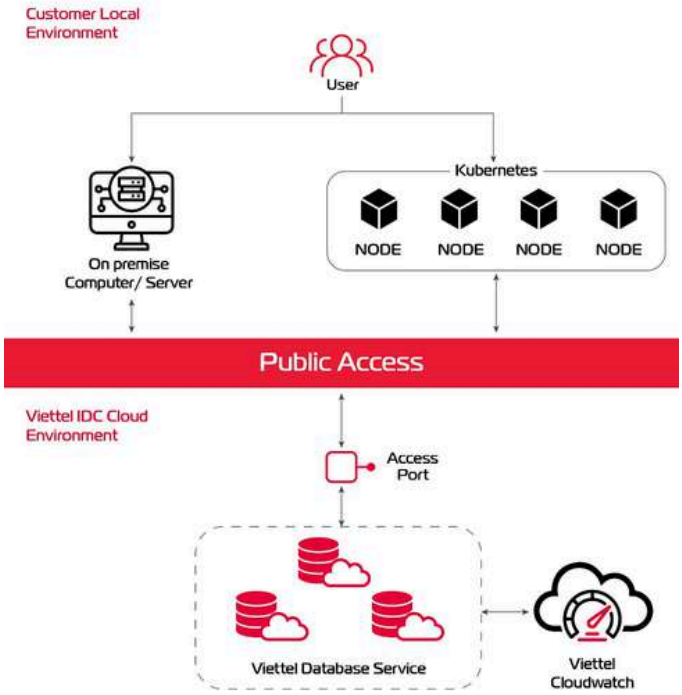
- Public or Private connection model depending on enterprise needs.
- Private VPC/Subnet ensures absolute safety. Public Access when deploying hybrid / multi-cloud environments.
- Integrated Database Proxy helps optimize connections.

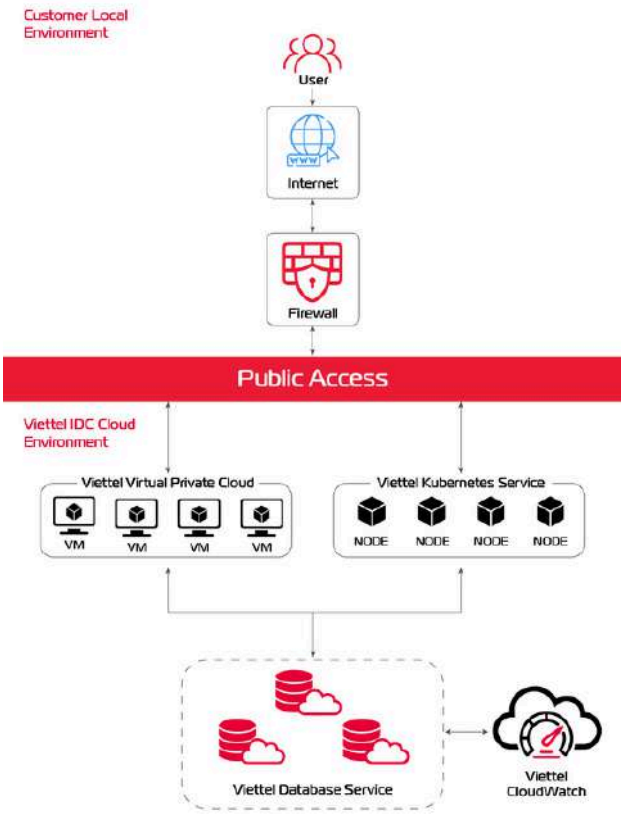
CONNECTIVITY MODELS

Public Access

Enterprises deploy independent services and information systems that connect directly to the vDBS database via a Public Access Port quickly and simply.

This model helps shorten deployment time, reduce operating costs, and is suitable for applications operating in multi-environments (on-premise, other cloud, or SaaS).





Private Access

Enterprises apply vDBS by deploying system services within the same VPC Network environment privately, developing in combination with Viettel Virtual Private Cloud (vVPC), Viettel Open Kubernetes Service (VOKS), Viettel Cloud Server (vCS)... to connect to the cloud database.

Thereby, increasing the security capability and performance of the system.

USE CASES

Running Core Business Systems

Suitable for: Banking, finance, insurance, telecommunications, ERP/CRM of enterprises needing:

- Primary/Standby HA, automatic failover.
- Automatic backup & recovery, PITR, On-Demand Backup.
- Encrypt/Compress Backup, Backup Local or Object Storage.
- Automated monitoring alerts (Database health, Disk, Connection, Slow query).
- Flexible resource expansion (CPU/ RAM/ Storage, Live Resize Storage).

Web/Mobile Applications wanting to "run fast – low ops"

Suitable for: E-commerce webs, public service portals, internal apps, startups.

- Create Database in minutes, templates optimized according to MySQL/PostgreSQL/MariaDB.
- Database Proxy helps manage connections for web/mobile.
- Auto Scaling backup capacity & Live Resize Storage when data increases.
- Public connection model for systems placed at Local/Other Cloud.

Microservice Applications running on Kubernetes

Suitable for: Microservice systems, APIs, digital platforms.

- Relational Database Group (MySQL, PostgreSQL, MariaDB) + NoSQL (MongoDB, Redis, Cassandra).
- Private connection from Kubernetes to Database via separate VPC/Subnet.
- Read Replica, Database Proxy distribute read load for many services.

Store cache, session, high-speed queue with Redis

Suitable for: Systems with large traffic, needing to reduce load on main Database.

- Redis In-memory Database is provided as a separate engine.
- Rapidly deploy use cases: session store, cache, rate-limit, lightweight queues.
- Monitor CPU/RAM, connection of Redis + automatic alerts.

Big Data, IoT, Log with Cassandra/MongoDB

Suitable for: Log collection systems, IoT, analytics, event streaming.

- Cassandra (distributed, masterless) for large write data, distributed.
- MongoDB 6.0 for flexible document data.
- Auto Scaling backup capacity, Encrypt/Compress Backup for large data.

Dev/Test Environment synced with Production but low cost

Suitable for: Development teams, QA, UAT.

- On-Demand Backup + Restore to new instance to clone Prod data.
- Live Resize Storage, scale up/down flexibly.
- Turn On/Off instance according to schedule to save costs.

Migrating systems from On-Prem / Other Cloud to vDBS

Suitable for: Enterprises leaving old DC, international Cloud, or wanting to optimize costs.

- International Cloud -> Viettel IDC Cloud
- Domestic Cloud -> Viettel IDC Cloud
- On-premise Database -> Viettel IDC
- Hybrid/multi-cloud environments

PERFORMANCE REPORT

MySQL

MySQL v5.7, Standalone

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	703,290	281,316	9,344.74	584.05	682.31
2 vCPU, 4 GB RAM	50	200,000	400	784,500	313,800	10,428.86	651.81	611.04
4 vCPU, 8 GB RAM	50	200,000	400	1,385,230	544,092	18,419.12	1,151.19	329.19
8 vCPU, 16GB RAM	50	200,000	400	1,645,140	658,056	21,861.06	1,366.32	291.70

MySQL v5.7, Replication

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	747,520	299,008	9,935.68	620.98	289.16
2 vCPU, 4 GB RAM	50	200,000	400	947,070	378,828	12,557.89	784.87	287.88
4 vCPU, 8 GB RAM	50	200,000	400	1,267,660	507,064	16,844.33	1,052.77	211.91
8 vCPU, 16GB RAM	50	200,000	400	1,778,190	711,276	23,674.64	1,477.98	168.24

MySQL v5.7, Clustering

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	528,670	149,006	7,004.34	437.76	910.79
2 vCPU, 4 GB RAM	50	200,000	400	559,370	164,720	7,409.81	463.11	850.16
4 vCPU, 8 GB RAM	50	200,000	400	616,920	179,456	8,174.35	510.88	783.01
8 vCPU, 16GB RAM	50	200,000	400	628,550	201,928	8,325.79	520.35	766.18

PERFORMANCE REPORT

MySQL

MySQL v8.0, Standalone

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	718,500	287,400	9,555.09	597.19	672.48
2 vCPU, 4 GB RAM	50	200,000	400	851,690	340,676	11,283.38	705.21	565.17
4 vCPU, 8 GB RAM	50	200,000	400	975,280	390,112	12,984.31	811.52	491.22
8 vCPU, 16GB RAM	50	200,000	400	1,177,999	471,199	16,391.00	1,181.82	315.72

MySQL v8.0, Replication

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	484,020	193,608	6,436.76	402.3	589.95
2 vCPU, 4 GB RAM	50	200,000	400	795,510	318,204	10,525.86	657.87	390.19
4 vCPU, 8 GB RAM	50	200,000	400	921,830	368,732	12,254.62	765.91	291.23
8 vCPU, 16GB RAM	50	200,000	400	1,344,370	537,748	17,894.44	1,118.4	264.76

MySQL v8.0, Clustering

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	680,070	233,439	9,424.64	589.04	676.13
2 vCPU, 4 GB RAM	50	200,000	400	738,070	260,776	10,226.83	639.18	624.32
4 vCPU, 8 GB RAM	50	200,000	400	800,410	265,939	11,096.41	693.5	575.92
8 vCPU, 16GB RAM	50	200,000	400	863,930	298,145	11,970.88	748.18	533.78

PERFORMANCE REPORT

MariaDB

MariaDB v10.5, Standalone

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	732,080	292,832	9,732.19	608.26	361.78
2 vCPU, 4 GB RAM	50	200,000	400	839,920	335,968	11,121.56	695.11	334.93
4 vCPU, 8 GB RAM	50	200,000	400	1,320,200	528,080	17,563.57	1,097.72	258.28
8 vCPU, 16 GB RAM	50	200,000	400	1,867,550	747,020	24,841.52	1,552.59	181.89

MariaDB v10.5, Replication

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	749,560	299,824	9,963.44	622.71	312.69
2 vCPU, 4 GB RAM	50	200,000	400	853,260	341,304	11,335.46	708.47	277.55
4 vCPU, 8 GB RAM	50	200,000	400	920,530	368,212	12,178.17	761.14	225.86
8 vCPU, 16 GB RAM	50	200,000	400	1,534,460	613,784	20,399.25	1,274.95	166.36

MariaDB v10.5, Clustering

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	847,900	298,442	11,265.90	704.12	567.45
2 vCPU, 4 GB RAM	50	200,000	400	917,130	321,377	12,189.78	761.85	524.39
4 vCPU, 8 GB RAM	50	200,000	400	927,670	333,610	12,302.46	772.65	513.83
8 vCPU, 16 GB RAM	50	200,000	400	949,220	329,688	12,615.76	788.48	506.82

PERFORMANCE REPORT

MariaDB

MariaDB v10.6, Standalone

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	1,032,190	412,876	13,733.24	858.33	215.09
2 vCPU, 4 GB RAM	50	200,000	400	1,204,120	481,648	16,011.08	1,000.70	213.65
4 vCPU, 8 GB RAM	50	200,000	400	1,766,420	706,568	23,503.08	1,468.94	167.92
8 vCPU, 16 GB RAM	50	200,000	400	2,366,720	946,688	31,507.28	1,969.2	121.34

MariaDB v10.6, Replication

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	892,530	357,012	11,862.12	741.38	255.89
2 vCPU, 4 GB RAM	50	200,000	400	1,123,180	449,273	14,941.58	933.86	230.54
4 vCPU, 8 GB RAM	50	200,000	400	1,422,980	569,192	18,925.57	1,182.85	216.10
8 vCPU, 16 GB RAM	50	200,000	400	1,631,150	652,460	21,704.73	1,356.55	198.09

MariaDB v10.6, Clustering

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	400	877,630	309,536	11,677.12	729.82	546.16
2 vCPU, 4 GB RAM	50	200,000	400	899,230	317,064	11,950.11	746.88	534.42
4 vCPU, 8 GB RAM	50	200,000	400	925,110	337,008	12,222.44	771.40	531.47
8 vCPU, 16 GB RAM	50	200,000	400	984,630	342,985	13,079.84	817.49	488.47

PERFORMANCE REPORT

PostgreSQL

PostgreSQL v12.0, Standalone

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	100	693,126	198,011	8,223.02	411.1	238,82
2 vCPU, 4 GB RAM	50	200,000	100	771,302	220,360	9,152.57	457.62	214,94
4 vCPU, 8 GB RAM	50	200,000	100	1,159,438	331,231	13,781.94	688.02	166,45
8 vCPU, 16 GB RAM	50	200,000	100	1,265,362	361,501	15,036.33	751.76	136,65

PostgreSQL v12.0, Replication

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	100	625,618	178,733	7,414.66	370.71	260.96
2 vCPU, 4 GB RAM	50	200,000	100	791,196	226,041	9,381.54	469.07	206.24
4 vCPU, 8 GB RAM	50	200,000	100	962,948	275,082	11,441.52	571.98	162.92
8 vCPU, 16 GB RAM	50	200,000	100	1,026,606	293,268	12,191.44	609.48	158.9

PERFORMANCE REPORT

PostgreSQL

PostgreSQL v15.0, Standalone

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	100	783,986	223,972	9,301.59	465.04	208.12
2 vCPU, 4 GB RAM	50	200,000	100	916,286	261,761	10,863.96	543.15	176.3
4 vCPU, 8 GB RAM	50	200,000	100	984,844	281,365	12,392.88	585.16	152.19
8 vCPU, 16 GB RAM	50	200,000	100	1,278,690	365,293	15,175.67	758.67	127.58

PostgreSQL v15.0, Replication

Instance type	Number of tables	Number of rows in a single table	Number of concurrent threads	Number of read queries	Number of write queries	QTS	TPS	Average latency (ms)
2 vCPU, 2 GB RAM	50	200,000	100	693,126	198,011	8,223.02	411.1	232.95
2 vCPU, 4 GB RAM	50	200,000	100	771,302	220,360	9,152.57	457.62	211.57
4 vCPU, 8 GB RAM	50	200,000	100	1,159,438	331,231	13,781.94	688.02	139.25
8 vCPU, 16 GB RAM	50	200,000	100	1,265,362	361,501	15,036.33	751.76	127.57

WHY CHOOSE VIETTEL IDC?

- **Leading unit in the field of cloud computing technology**

Viettel - CHT Co., Ltd. (trading name: Viettel IDC) established in 2008 - the pioneer cloud computing service provider with the most diverse ecosystem in Vietnam with the mission of providing a trusted platform for customers to create, breakthrough, and digitally transform comprehensively.
Viettel IDC's product range includes 50+ services spanning many needs from computing, storage, connectivity to graphics processing, monitoring...

- **International Standard Infrastructure**

Infrastructure located at Viettel IDC Data Centers meets TIA-942 Rated 3 Constructed Level, international certifications ISO 9001: 2015, 50001: 2018, security and information safety certifications: ISO 27001: 2013, 27017:2015 (specialized for Cloud services) and PCI DSS ensuring compliance with the strictest customer criteria regarding infrastructure, service quality, and information safety and security.
Advantages of multi-site infrastructure spanning North Central South of Viettel IDC help customers easily choose suitable regions to conveniently connect with other services in the ecosystem, minimizing transmission latency.



- **Modern technology, suitable for trends**

Viettel IDC commits to applying modern, best technologies for Customers.
With the principle of innovation as the guideline, we select & deploy top quality technologies, continuously updating the latest technology trends and solutions not only for Viettel Open Kubernetes Service but for the entire product and service ecosystem.

- **Experienced team of experts and engineers**

The 24/7 technical support team along with a massive number of engineers and experts with an average of more than 5 years of experience, superior seniority, and deep knowledge spanning many different technology fields will help solve Customer problems in the most comprehensive and effective way.