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From data to discovery: Exploring the intersection of distributed database and AI

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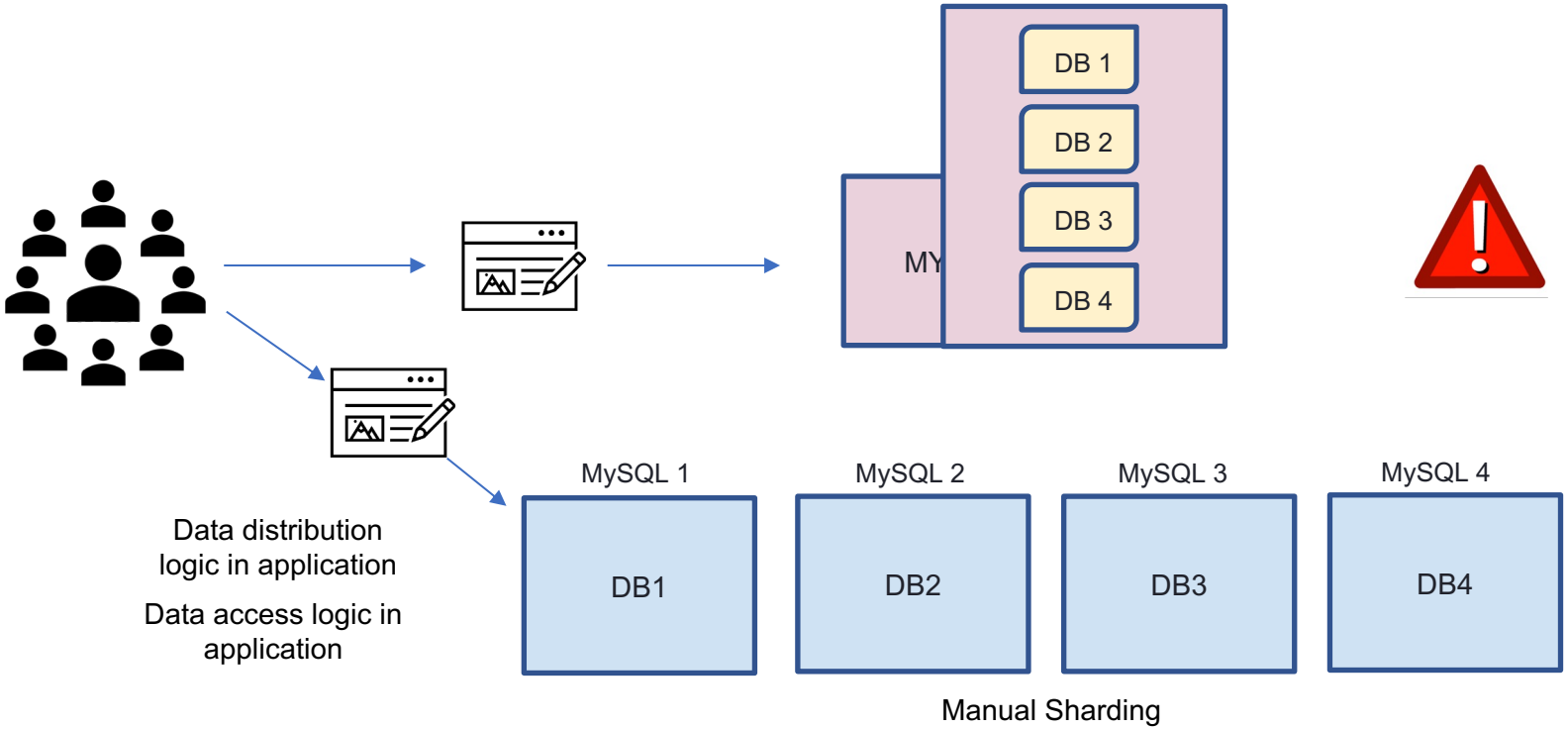
Data Growth: A challenge



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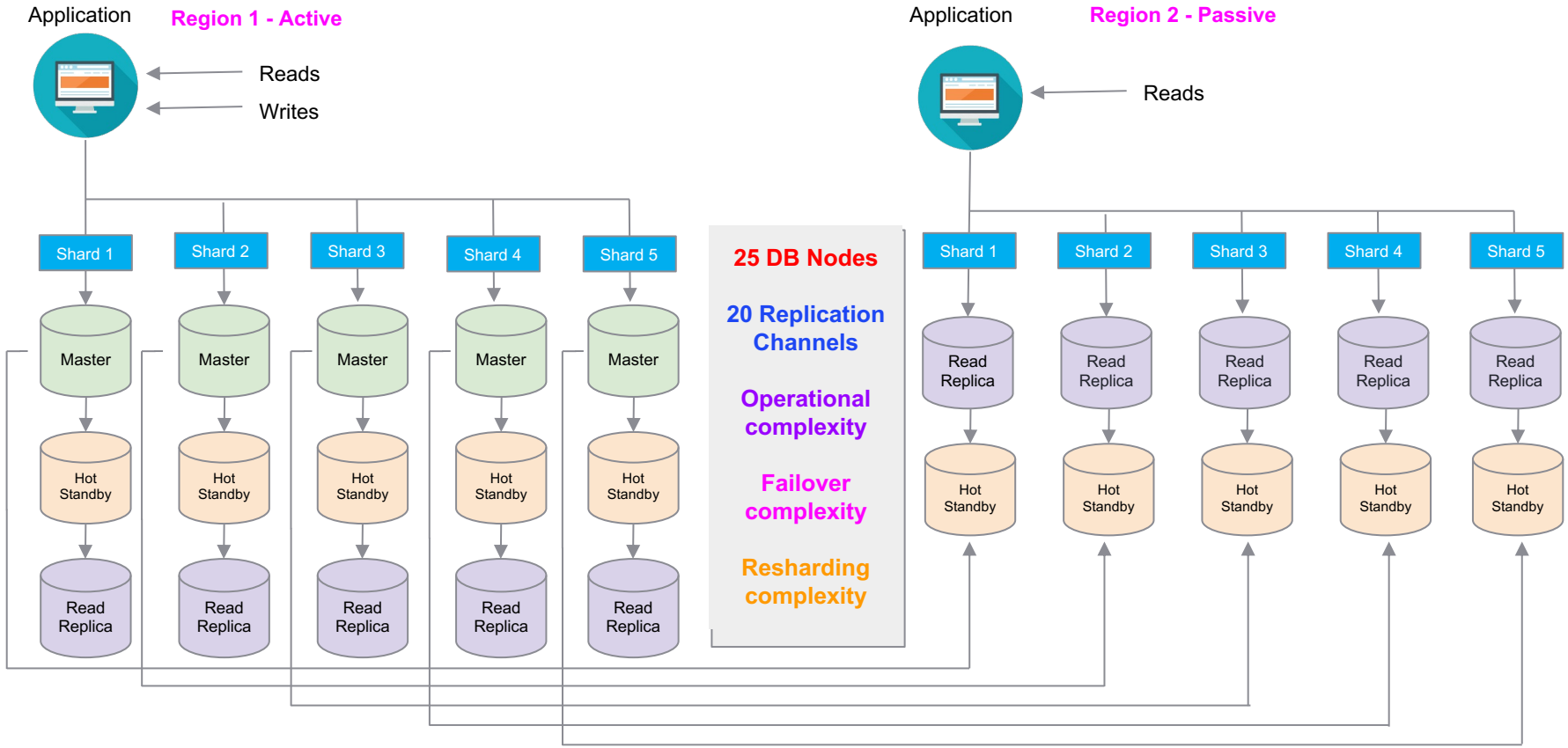
Intent to grow creates Complexity



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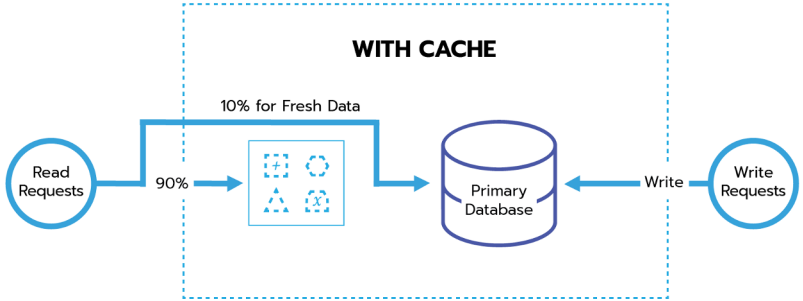
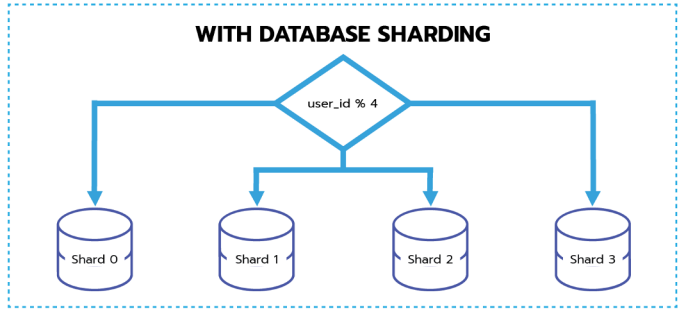
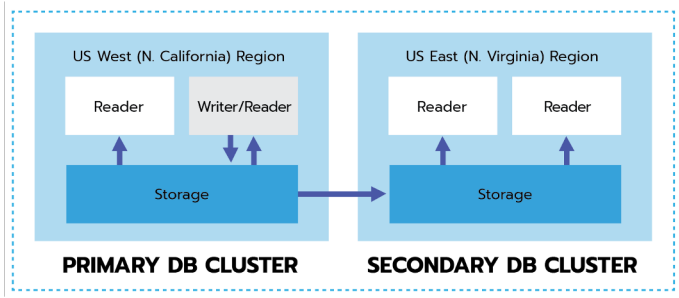
Ways to Scale



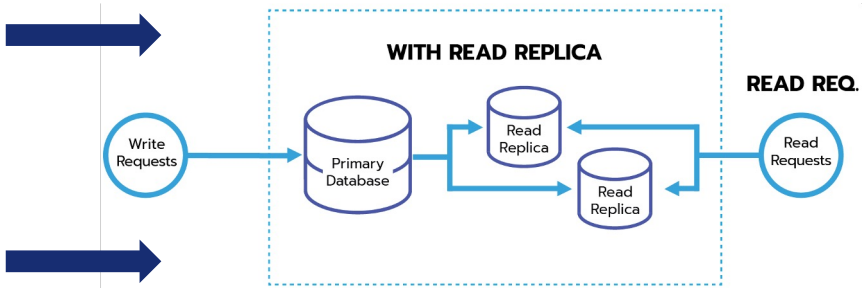
Caching Layer



Sharding



Primary Secondary Replication



Separated Read-Write

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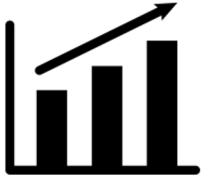
Single Node Database Limitations



Scalability

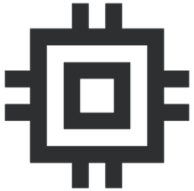
Unstable performance when scaling write-intensive applications.

High Availability

Setting up HA requires careful planning & configuration. The replication can result in lag, potential data inconsistencies

Real-Time Analytics

Analytical queries can impact transactional processing



Handle Modern applications

Adapting to cloud native architecture poses challenges to traditional, monolithic systems like MySQL

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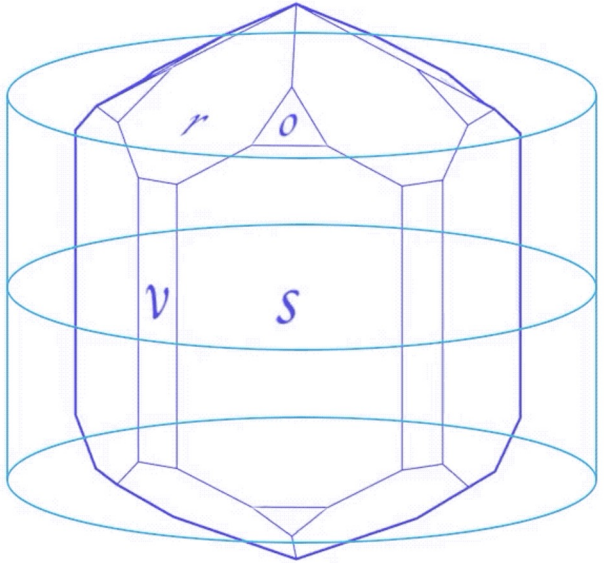
Introducing TiDB

The most advanced, open source, distributed SQL database for modern applications.



Scalable. Versatile. Titanium (Ti) Reliable.

34K+ GitHub Stars | 3K+ Adopters | 800+ Contributors | 5K+ Slack Users

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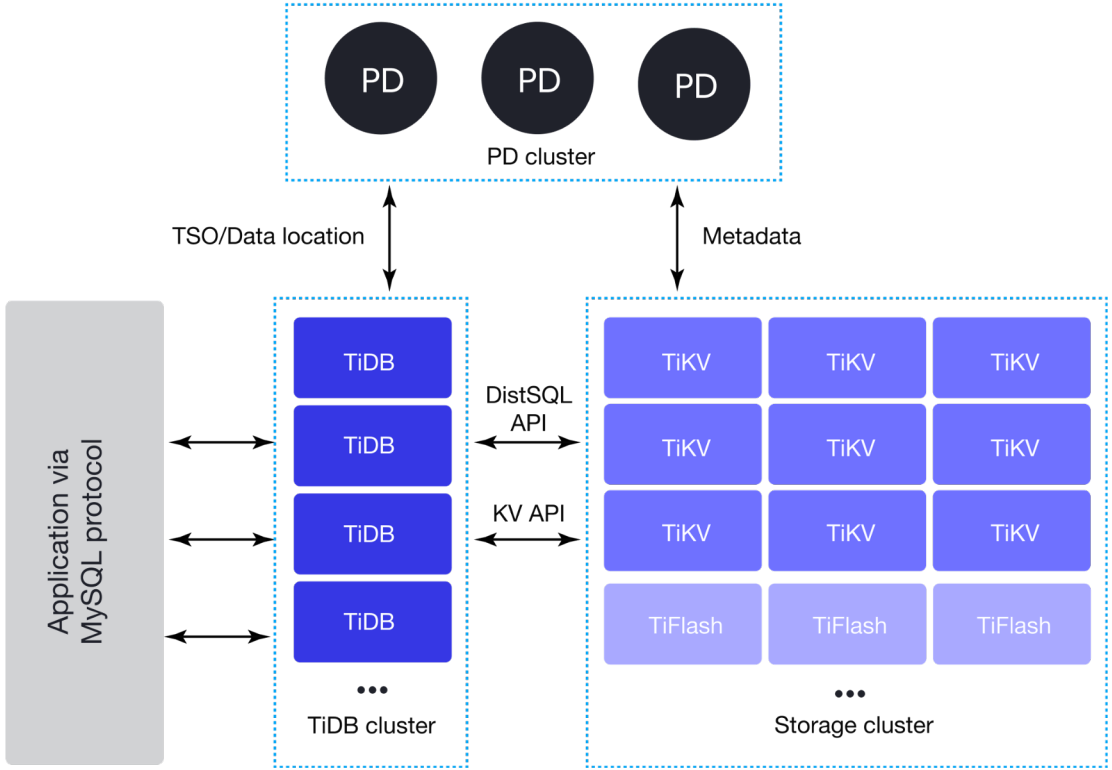
What Makes TiDB So Advanced?



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The Advantages of TiDB

Horizontal Scaling

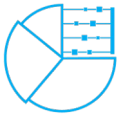
Grants total transparency into data workloads without manual sharding.

High Availability

Guarantees auto-failover and self-healing for continuous access to data.

Mixed Workloads

Streamlined tech stack makes it easier to produce real-time analytics.



MySQL Compatibility

Enjoy the most MySQL compatible distributed SQL database on the planet.

Multi-Cloud

Deploy database clusters anywhere in the world.

Open Source

Unlock business innovation with a database that's 100% open source.

Robust Security

Protect data with enterprise-grade encryption both in-flight and at-rest.

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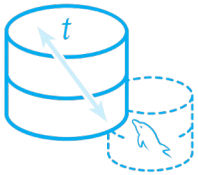
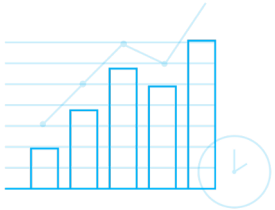
Top Use Cases for TiDB



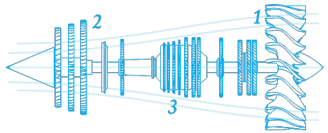
MySQL Alternative

Migrate to a more affordable and elastic MySQL alternative that supports real-time analytics right out of the box.



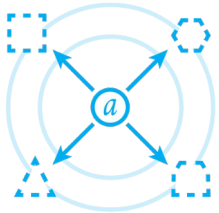
Real-Time Analytics

Enable your business to process and query new data as it's created to guide decision making, enhance resource utilization, and improve customer experiences.



Application Modernization

Boost developer productivity with a modern, distributed SQL database that offers true elastic scale and relentless reliability combined with mixed workload processing.



Tech Stack Unification

Reduce costs and system complexity with a unified data stack that can replace traditional relational databases, NoSQL databases, and lightweight data warehouses.

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Target Verticals: Suitability and Why

Fintechs especially Crypto / P2P	**Gaming** especially Social Gaming	**Logistic**	**SaaS**	**E-Commerce**
Suitability: ★★★★★	**Suitability:** ★★★★½	**Suitability:** ★★★★½	**Suitability:** ★★★★	**Suitability:** ★★★★
• TiDB is battle tested in money related scenarios due to high resilience and consistency • Very simple architecture for scalability and real-time insights • Usually they don't pay much attention building tech team as other verticals	• Fast pace and release new game titles very often (mobile gaming) • Cares a lot about real-time insights • Need to be prepared for user growth • Used a lot in billing	• Cares a lot about real-time insights • Top players have large volume of data • Engineering teams' skill level is slightly weaker than DNB companies with same scale	• Scalability and multi-tenancy • Need either gather user data from multiple sources into one or need to serve all users in fewer number of database instances to decrease maintenance cost • Operational dashboard / analytics is a must for most of them	• Scalability is one of the most important things for them • Better performance is better customer experience for them • Various new scenarios everyday cause trouble in maintaining and GTM
China Construction Bank PINGAN Group Paypay Square-Cash App	NetEase Games GAEA Colopl Kunlun	ZTO Express Ninja Van Dehlivery	Patsnap Streak Databricks	Flipkart Shopee

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Scaling TiDB To 1 Million QPS

A Flipkart journey

Sachin Japate · Follow
Published in Flipkart Tech Blog · 9 min read · Jul 10

304 1

Mammoth Performance
in Throughput & Latency

1,070,000
ops per second (consistent reads)
Latency: **4.82ms** P95 | **7.43ms** P99

123,000
ops per second (writes)
Latency: **6.1ms** P95 | **13.1ms** P99

Real Numbers from Flipkart!

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Vectorized Query Execution

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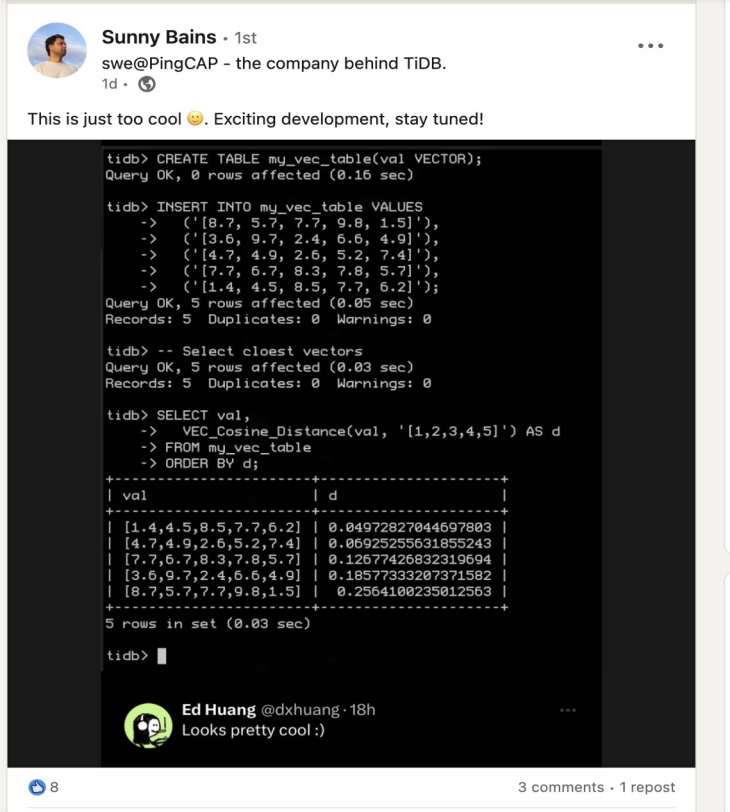
TiDB and AI



Vector databases make it easier for machine learning models to remember previous inputs, allowing machine learning to be used to power search, recommendations, and text generation use-cases.

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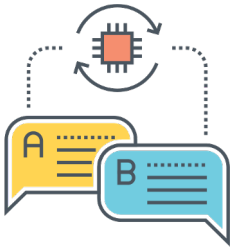
Some Vector Use Cases

Recommendation Engines

Used by E-Commerce, content streaming platforms, personalized marketing. Vector offers similarity calculations



NLP Processing

Sentiment Analysis, text classification, documents similarity. Facilitates efficient text search, clustering

Fraud Detection

Used in cybersecurity, financial services, fraud prevention. This is possible with pattern recognition & similarity search

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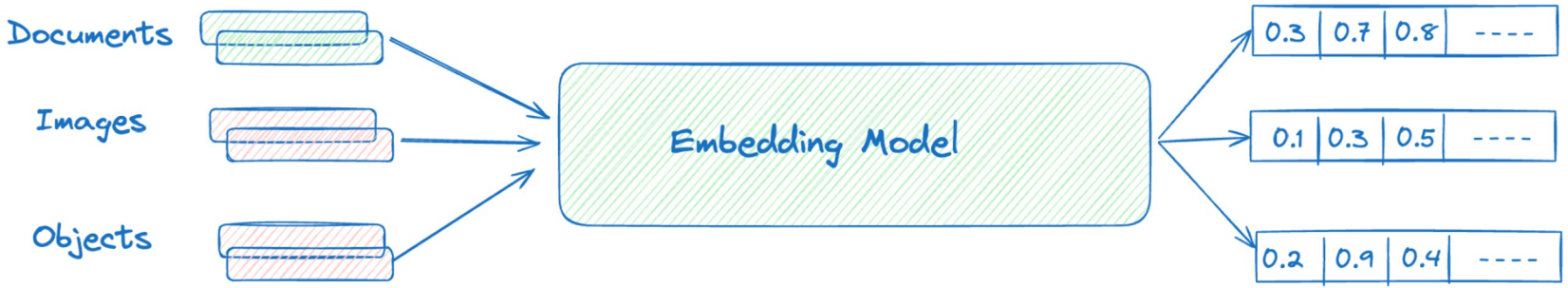
Embedding and Vector



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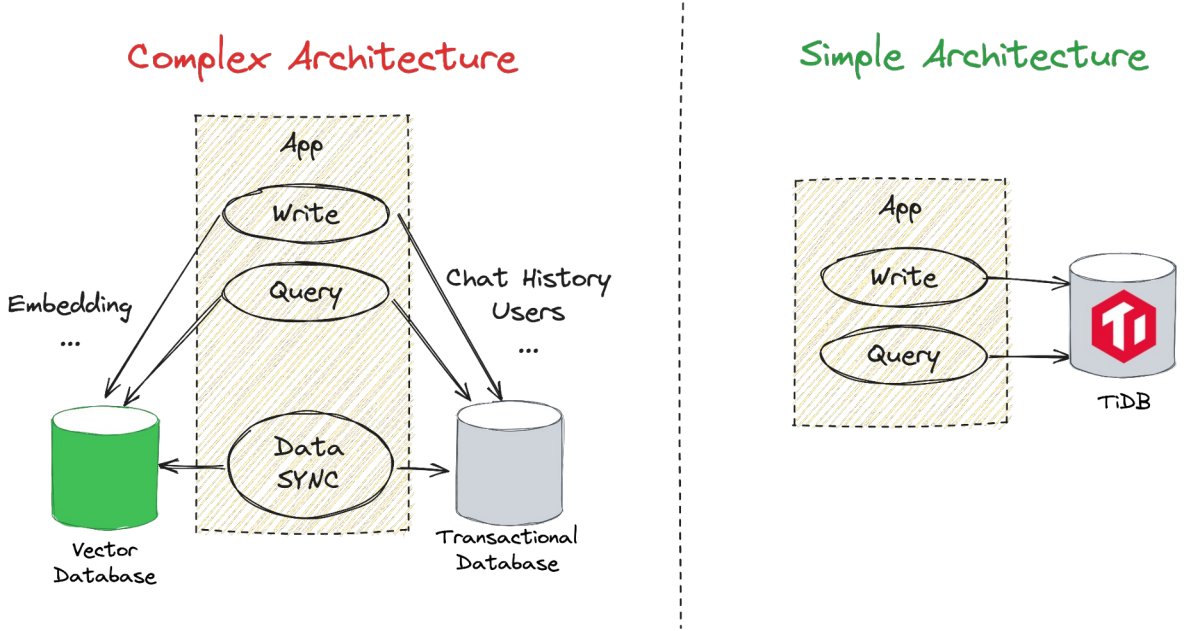
Distributed TiDB and Vector together!

MySQL+Vector DB(multiple round trip) -> TiDB(single round trip)



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Trusted by Global Innovation Leaders

Global Top Lighthouses

Top Fintech in the World

E-commerce and DNB Lighthouses

TiDB Cloud

is hosted on aws

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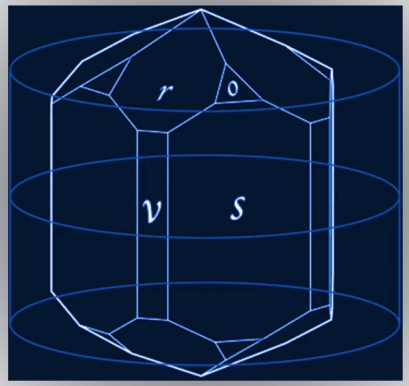
TiDB Serverless *Hosted on AWS*

The Revolutionary Serverless Database

https://tidbcloud.com



*Every developer has a **FREE & scalable** database*

Autopilot Scaling

Zero Downtime

Cost Efficiency

Easy to Use

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Thank You!