

Modernize MySQL with TiDB

Accelerating Business Growth at Any Scale

Keeping Pace with Exponential Business Growth

In today's digital landscape, IT leaders face significant challenges as they attempt to scale their data infrastructure to meet the demands of modern applications. MySQL, a trusted and widely-used database, often becomes a bottleneck for organizations when dealing with rapidly growing data volumes, high concurrency, and the need for real-time processing.

The monolithic nature of MySQL, while reliable for smaller workloads, struggles to keep pace with the scaling requirements of businesses experiencing exponential growth or those managing complex, data-intensive applications. As a result, teams find themselves implementing cumbersome workarounds like manual sharding and replication, which add layers of complexity, consume valuable developer resources, and increase the risk of system failures.

Even the smallest of IT outages can cause a massive economic impact. IT leaders indicate that the costliest aspects of system downtime are lost revenue, at 53%, lost productivity, at 47% and a negative impact on corporate reputation, at 41%.¹

Highlights

- Overcome MySQL limitations with seamless horizontal scalability
- Ensure 99.999% uptime with enhanced availability and resilience
- Reduce complexity and enable real-time insights
- Achieve significant improvements in query performance
- Handle unpredictable spikes in data traffic and user demand
- Meet stringent security requirements

¹ "The Real Costs Of Planned And Unplanned Downtime," Forrester opportunity snapshot, August 2019.

Maintain Customer Trust and Satisfaction

Database workarounds, though necessary, shift the focus of developers away from innovation and towards maintaining and troubleshooting an increasingly fragile infrastructure. The operational overhead involved in scaling MySQL not only slows down the delivery of new features. It also escalates costs, as more resources are required to manage and support a sprawling database environment. Furthermore, the risk of downtime and data inconsistency grows as the system's complexity increases, creating potential vulnerabilities that impact the entire business.

This situation is particularly problematic in eCommerce, Fintech, and SaaS industries where data integrity, performance, and availability are critical to maintain customer trust and satisfaction.

Unlock the Power of MySQL at Any Scale

To answer the growing demand for a database that scales out beyond MySQL with ACID consistency and no system downtime, TiDB was created.

TiDB addresses the limitations of MySQL by offering an open-source, distributed SQL database that provides MySQL wire compatibility, horizontal scalability, and strong consistency. It decouples compute from storage, allowing each component to scale independently. This approach enables businesses to handle workloads far beyond what a single MySQL node can manage.

TiDB Capabilities

Horizontal Scalability

Enable seamless horizontal scaling by adding more nodes to a cluster without manual sharding, ensuring your database can grow with your business needs.

Strong Consistency

Guarantee ACID compliance across distributed transactions, ensuring data integrity and reliability even in highly concurrent environments.

High Availability, Automatic Failover, and Disaster Recovery

Ensure 99.999% uptime, minimizing planned and unplanned downtime while maintaining continuous operations.

Hybrid Transactional and Analytical Processing (HTAP)

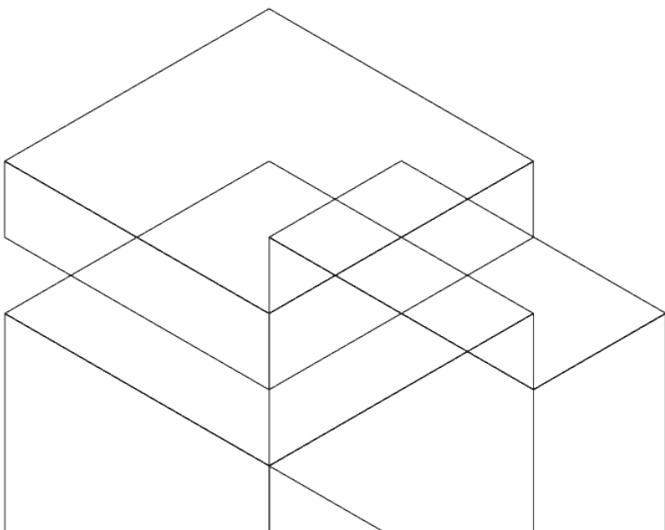
Generate real-time analytics without impacting transaction performance.

MySQL Compatibility

Enable easy migration and integration with existing MySQL-based applications without major changes to the application layer.

Ecosystem Integrations

Provide a flexible and extensible platform for modern data architectures such as Apache Spark, Apache Kafka, and Kubernetes.



TiDB's horizontal scalability is one of its most powerful features, enabling organizations to overcome the limitations of traditional MySQL deployments. Unlike MySQL, which often requires complex and error-prone manual sharding to scale out, TiDB automatically handles data distribution across nodes. This capability allows businesses to scale their databases linearly as their data grows, without the need for disruptive and costly migrations. As a result, companies can maintain high performance and availability even as they handle increasing amounts of data and higher user loads.

Strong consistency in TiDB is achieved through its distributed transactional model, which adheres to ACID properties. This ensures all transactions are processed reliably, regardless of the number of nodes involved. For

industries where data integrity is paramount, such as Fintech and eCommerce, this capability provides peace of mind that all operations will be executed accurately and consistently across the entire database, even under high concurrency.

Finally, TiDB's HTAP capability allows organizations to run both transactional and analytical workloads on the same data set without compromising performance. This dual capability means that businesses no longer need to maintain separate systems for transactions and analytics, reducing both the complexity of their data infrastructure and the latency between data collection and analysis. This real-time insight is invaluable for decision-making processes in dynamic environments where data freshness is critical.

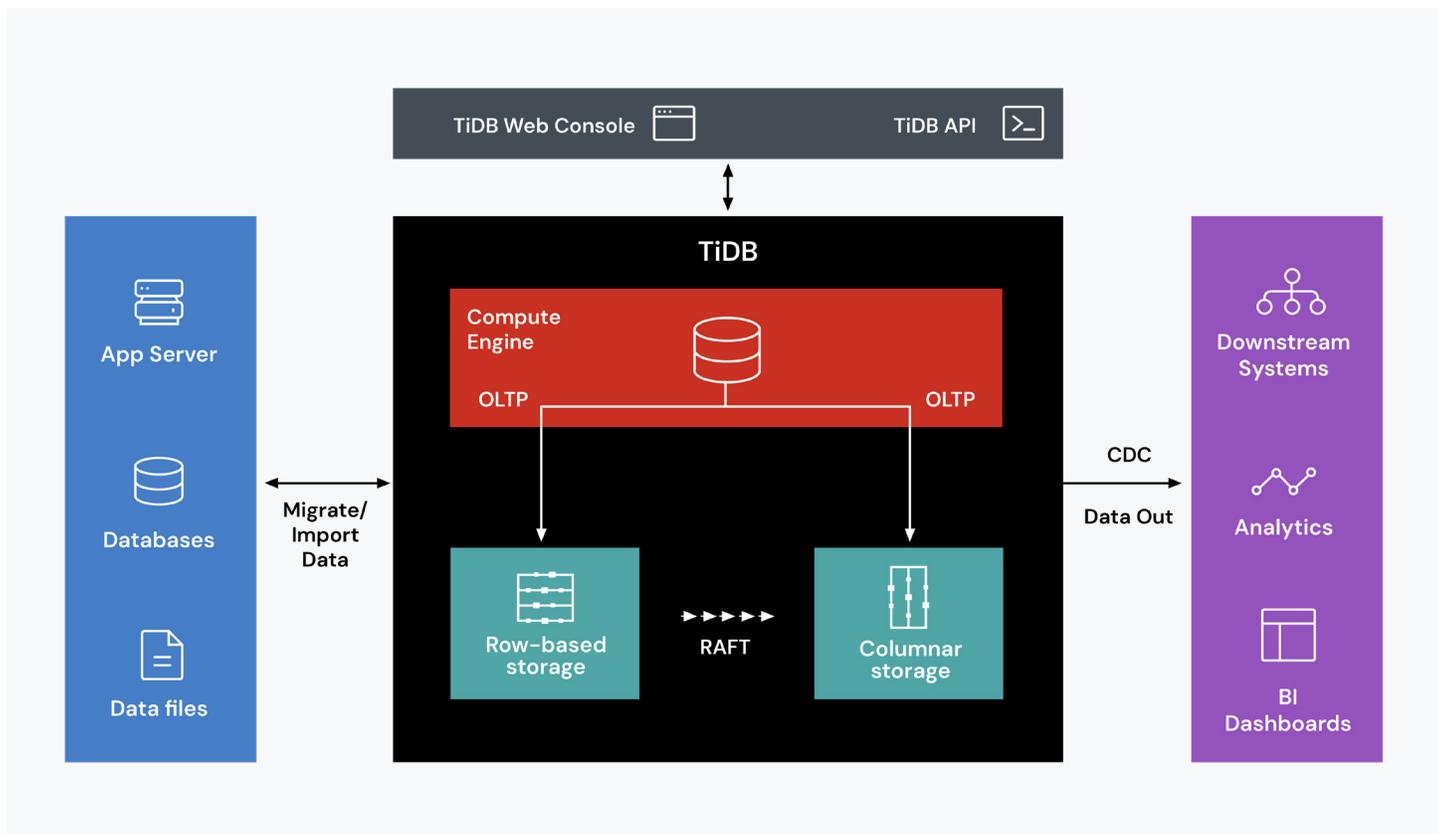


Figure 1. TiDB's architecture.

Success Stories

Many market leaders have successfully modernized their MySQL workloads with TiDB, achieving significant improvements in performance, scalability, and reliability.

Flipkart: One of the largest eCommerce platforms in India, Flipkart, scaled to 1 million queries per second (QPS) with TiDB, allowing them to handle massive traffic surges during sales events.

Bolt: A European mobility company, Bolt enhanced its customer experience by leveraging TiDB to manage real-time data at scale, enabling faster and more reliable service delivery.

Plaid: A financial services company who builds a data transfer network, Plaid adopted TiDB to eliminate planned and unplanned downtime of its MySQL services, lowering operational costs while reducing its system footprint from 270 clusters to 5 clusters.

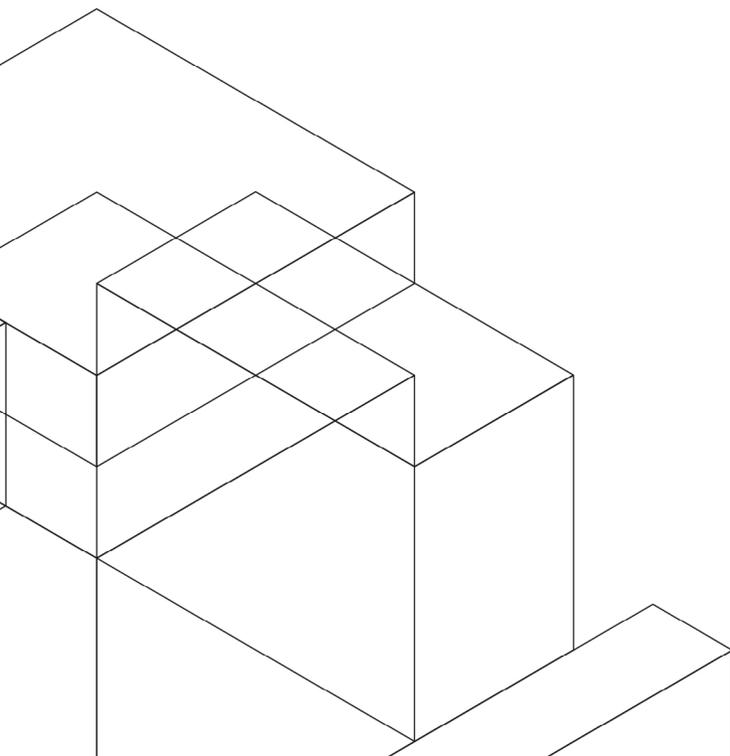
These success stories demonstrate the tangible benefits that TiDB brings to organizations looking to modernize their MySQL workloads and future-proof their data infrastructure.

Scale Your Business Without Limits Now

Scaling your business to meet the demands of modern applications is no longer a challenge with TiDB. Traditional MySQL systems often struggle under the pressure of growing data volumes and high concurrency, leading to complex and costly workarounds like manual sharding. Whether you're dealing with a sudden surge in user activity or a steady increase in data, TiDB ensures your infrastructure can handle the load effortlessly, keeping your operations running smoothly and efficiently.

TiDB's architecture is designed to provide limitless scalability. This ensures your business can expand without hitting the constraints commonly associated with MySQL. By decoupling compute from storage, you can scale out your compute resources to handle more queries or scale up your storage to accommodate larger datasets—all without impacting your application's performance. This capability is particularly valuable for businesses operating in data-intensive industries, where the ability to process and analyze large amounts of data in real-time is a competitive advantage.

With TiDB, businesses can future-proof their data infrastructure with a database solution that not only meets current needs, but also positions the business for future growth. By choosing TiDB, organizations can invest in a solution that supports the business today while preparing for the challenges of tomorrow, all while maintaining the simplicity and reliability to stay focused on what matters most—growing the business.



TiDB Features and Benefits

Features	Benefits
Unlimited Elasticity	Scale out data without the need for manual sharding. Data is automatically sharded into small chunks and distributed across storage nodes, making the system capable of handling massive amounts of data with ease. This elasticity is crucial for businesses that experience unpredictable spikes in traffic or those that are rapidly scaling.
Simplified Data Platform	Lower technical debt with a unified platform for both transactional and analytical workloads. Guarantees strong consistency while simplifying data management. Eliminates the need for separate systems for online transaction processing (OLTP) and online analytical processing (OLAP), reducing complexity and improving efficiency.
Best-in-Class Resiliency	Ensure 99.999% uptime where downtime is not an option. Designed with high availability (HA) and disaster recovery (DR) capabilities. Supports limitless Point-in-Time Recovery (PITR) and multi-AZ failover, making it a reliable choice for mission-critical applications.
Enterprise-Grade Security	Encrypt data both in-flight and at-rest to meet stringent security requirements for modern enterprises. This level of security is essential for industries such as Fintech, Healthcare, and eCommerce, where data protection is paramount.
Hybrid and Multi-Cloud Enabled	Supports public, private, and hybrid cloud deployments. It can be deployed on virtual machines, containers, or bare metal, providing businesses with the flexibility to choose the infrastructure that best meets their needs.
Extensible APIs	Increase productivity with easy integration with existing tech stacks. Offers MySQL wire protocol compatibility and connectors to popular data processing frameworks and orchestration tools. This extensibility makes it easy to tap into the broader data ecosystem.

Summary

Modernizing MySQL with TiDB is a strategic move for businesses looking to overcome the limitations of traditional databases and embrace a future-proof data architecture. TiDB offers the scalability, performance, and resilience modern applications require, enabling businesses to focus on growth and innovation rather than the challenges of database management.

By adopting TiDB, businesses can not only scale their operations seamlessly, but also reduce operational costs, improve developer productivity, and mitigate business risks. With proven migration paths and continuous support, TiDB makes the journey to database modernization both achievable and rewarding.

For More Information

For organizations ready to take the next step in their data evolution, TiDB presents a compelling solution that is ready to meet the demands of today's data-driven world.

To learn more about TiDB, please reach out to one of our experts at www.pingcap.com/contact-us/.

