

# Fast, Reliable, and Secure: How YugabyteDB Powers Trading and Settlement

## Trading and Settlement

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Trading platforms enable the buying and selling of financial instruments such as stocks, bonds, options, futures, and cryptocurrencies. From retail brokerages serving individual investors to institutional platforms handling massive block trades, these systems must accept orders, match buyers with sellers, execute trades, confirm transactions, settle funds, and maintain accurate positions. All this under strict regulatory timeframes and with absolute accuracy.

Settlement systems handle the post-trade processes: clearing, custody, recordkeeping, and final transfer of securities and cash.

## The Challenge

Trading and settlement platforms operate under extraordinary constraints:

- **Sequential processing at scale:** Market opens trigger a flood of queued orders that must be processed in strict sequence. Systems must handle hundreds of thousands of orders within regulatory timeframes (often just minutes)
- **Intraday spikes:** Trading volumes vary wildly. Quiet periods are interrupted by sudden spikes from major news events, earnings announcements, or market volatility
- **Strong consistency requirements:** Order books, position tracking, and settlement records must be accurate and up-to-date. Stale data leads to erroneous trades and regulatory violations
- **Regulatory oversight:** Trading platforms are subject to intense regulatory scrutiny. Audit trails must be complete and immutable, and reporting requirements are extensive
- **Low latency for competitive advantage:** Milliseconds matter in trading as faster execution wins customers and market share
- **Multi-asset support:** Modern platforms handle diverse asset classes, each with unique settlement rules, margin requirements, and regulatory constraints
- **Change data capture needs:** Real-time risk management, compliance monitoring, and market data distribution require instant visibility into all trading activity
- **High availability imperative:** Trading platform downtime during market hours results in massive revenue loss, regulatory fines, and permanent reputation damage

Traditional databases struggle to manage the write-heavy workloads and burst patterns inherent to trading. PostgreSQL and MySQL reach performance ceilings, as NoSQL databases sacrifice the consistency and relational capabilities that trading systems require.

# Why Choose YugabyteDB for Trading and Settlement?

YugabyteDB is purpose-built to meet the demanding requirements of trading and settlement platforms:

## Massive Write Scalability

Trading systems are write-heavy during market hours. YugabyteDB scales write performance horizontally and adds nodes to handle higher order volumes. Process hundreds of thousands of orders per minute without performance degradation.

## Sequential Processing at Scale

While YugabyteDB distributes data, it maintains strong consistency and supports serializable isolation. Sequential order processing requirements are met without sacrificing distributed performance; orders execute in the correct sequence, and position calculations remain accurate.

## Burst Performance

Trading volumes are unpredictable, but YugabyteDB handles sudden spikes with ease. Elastic clusters can scale up during market hours and scale down during quiet periods, optimizing costs while maintaining performance.

## Active-Active for Zero Downtime

Trading platforms cannot afford outages during market hours. YugabyteDB's multi-region active-active architecture ensures that even data center failures don't disrupt trading. Automatic failover happens in seconds, so order processing can continue without interruption.

## Strong Consistency for Correctness

Position tracking, margin calculations, and settlement records require strong consistency. YugabyteDB's ACID guarantees ensure that positions are accurate, margin calls are correct, and settlement records balance perfectly, even with concurrent trading activity across multiple instruments.

## Rich SQL for Complex Queries

Trading platforms require sophisticated queries, including position valuations across portfolios, risk aggregations by asset class, performance attribution, and regulatory reporting. YugabyteDB's full SQL support, joins, and aggregations enable these complex analytical queries without forcing teams into rigid NoSQL data models.

## Built-in CDC for Real-Time Systems

Real-time risk management, compliance monitoring, and market data dissemination require instant visibility into trades. YugabyteDB's native Change Data Capture streams every trade, order modification, and settlement to downstream systems without impacting production database performance.

## Multi-Cloud Deployment

Avoid vendor lock-in and enhance resilience by deploying across AWS, Azure, and GCP simultaneously. If one cloud provider experiences an outage, trading continues on the others. Geographic distribution also enables low-latency order routing for global institutional clients.

## Audit Trail Compliance

Regulatory requirements mandate complete and immutable audit trails. YugabyteDB's transaction logging, point-in-time recovery, and backup capabilities ensure that every trade, every order modification, and every settlement can be reconstructed for compliance reviews and dispute resolution.

## Get Started Today

Ready to modernize your bill pay workloads? YugabyteDB offers multiple deployment options:

- **YugabyteDB Aeon:** Fully managed in our cloud or bring-your-own-cloud database-as-a-service with automated operations, monitoring, and support.
- **YugabyteDB Anywhere:** Self-managed enterprise platform for deploying across your own infrastructure. Delivered on-premises, cloud, or hybrid environments.
- **Open Source:** Download and run YugabyteDB's open-source version for development, testing, or production.



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