Mission Critical Data: Accurate, Available, Secure

The financial services industry is rapidly undergoing digital transformation as consumers become more mobile and global. Be it the myriad of points of customer interaction, round-the-clock nature of consumer behavior, or the massive volume of transactions being processed—financial services systems are under duress as they try to keep up with their consumers. Additionally, these systems are under constant pressure to innovate, evolve, and connect with customers in new and interesting ways in order to stay competitive.

Unfortunately, the pace of innovation is often gated by the underlying infrastructure. Of all components in the stack, databases often create the largest bottleneck.

Some key database related challenges include:

- Enforcing data consistency: Ensuring strong consistency of data in a heavily distributed environment, especially in real time
- Availability and reliability: Making critical data available to global business systems 24x7 without sacrificing reliability or performance
- Data flexibility: Evolving your data models to support the new features required by your business model
- Security and governance: Securing data in the age where a breach is a matter of when, not if

Thus far, enterprises have been forced to cobble together solutions combining traditional SQL systems, the early NoSQL databases, and queueing middleware to create a data layer to address some of these challenges. But that limits innovation.

INTRODUCING FAUNADB

TRANSACTIONAL NOSQL DATABASE FOR MISSION CRITICAL DATA

FaunaDB is a NoSQL database that combines the transactional correctness of a relational database with the flexibility and scalability of NoSQL systems. It is designed to simplify development of distributed applications while making database operations dramatically easier.

The core capabilities of FaunaDB include:

- Transactionality: ACID transactions commit across all replicas, enabling mission critical applications to migrate from mainframes to scalable compute nodes
- Interface flexibility: Document-relational model makes it easy to store and query data in the format best suited to its use
- Row-level security: Object level access control so that your database can model your application rules in order to simplify your stack or provide defense in-depth
- Horizontal scalability: Add and remove nodes without interrupting application service within the same site or across global data centers
- Fault tolerance / reliability: Designed for the webscale era, FaunaDB continues processing transactions even as nodes fail
- Temporality: A snapshot based storage engine retains historical data for a configurable period and permits correction of data errors in snapshots

- Multi-tenancy: Secure and QoS-based workload isolation ensures data and connections can't interfere with one another

- Operational simplicity: Runs anywhere you can run a JVM with built-in cluster management and replication to eliminate the pain of traditional database operations

The combination of these capabilities make FaunaDB the best platform to modernize applications in the Financial Services industry. We explore some of the specific use cases in the following section.

FAUNA TRANSFORMS FINANCIAL APPLICATIONS

FaunaDB is used by leading financial services companies to address some of the most critical business problems. Some of these applications include:

MASTER DATA MANAGEMENT

Integrity is paramount for entity and securities master data. Consolidation, cleansing, governance, and sharing all depend on transactional logic to enforce trusted schema rules. Data quality becomes even more critical when the data is trusted by multiple sources. By consolidating and cleansing data in real time new data can be verified as it's created, eliminating data quality problems at the source. Transactionality is critical when the flow of business depends on the master data repository being the source of truth. FaunaDB's multi-tenancy allows shared services to benefit from the highest quality data. Allowing applications to transact with the system of record directly eliminates errors and lag introduced by copying to downstream systems. FaunaDB's event-driven interfaces keep analytical engines up-to-date with changes as they happen, allowing for real-time alerts.

DISTRIBUTED FINANCIAL LEDGER

Venture investment in blockchain and distributed ledger technology will surpass $1B in 2018. Distributed ledgers allow participants at different sites tomaintain shared transaction logs. They can function as the backbone for funds transfer clearing houses or for any other dataset that requires consistent state across replicas. A blockchain is one way of achieving a distributed ledger that is focused on untrusted counterparties and nonrepudiation. However, ledger applications running among trusted participants in an existing legal framework have more to gain from using a distributed transactional database like FaunaDB than a byzantine consensus protocol like blockchain. FaunaDB's programmable access control and functional query language simplify smart contract development. Temporal snapshotting and data retention enable intelligent change management and auditing. Plus, FaunaDB's transaction engine runs across geographically distributed nodes, so each participant in your ledger validates updates as they occur.

CUSTOMER CONFIDENTIALITY

Maintaining a screen between service teams operating on behalf of different customers is a core professional obligation. To do this you need to identify and prioritize flows of sensitive information and set policies around access, usage, and distribution. FaunaDB's multi-tenant architecture allows you to create independent data environments for each customer, including object level access control rules and custom schema objects. Each customer's environment can have multiple tiers of access via hierarchical containers, allowing customers to control workload priority and access within their environment while securely isolating them from other customers.

CUSTOMER IDENTITY 360

The banking industry spends over $1B annually on IAM solutions designed to build customer trust, secure transactions, and to reduce waste, fraud, and abuse. When more than one-quarter of customer support calls to banks are about forgotten passwords, robust identity resolution requires correlating something someone knows (a PIN) with something they have (a card), as well as with their biometrics and geolocation. Identity-as-a-service and multi-factor authentication allow markets to include previously unbanked customers. In a complex landscape with distributed intake points from signup kiosks to master branches, each of which may have their own verification and risk management processes, getting a centralized view of how each customer's

identity was verified is a key challenge. Historical queries across different document types can establish the provenance of any given identity. FaunaDB's multi-tenancy supports shared services so that applications can all interact with a common customer identity repository.

FRAUD PREVENTION

Experian notes that consumer debt fraud rates are around 1.5% for first-party fraud and 0.5% for third-party fraud, accounting for around 25% of consumer bad debt write-off and billions of dollars lost. A complete solution requires models of fraudulent behavior, machine learning to detect suspicious activity, inline decision support to hold or release transactions, analytics to update fraud prediction models, and case management to handle false-positives, loss recovery, and settlement. FaunaDB's powerful query language is uniquely suited to express transactional logic across complex and varying data, making it the ideal database for inline rules engines, feature gathering for machine learning, and enterprise case management. Parts of your fraud detection pipeline can use eventually consistent streaming architectures, but transactional capabilities are required to move from detection to prevention and close the door on fraud.

ACCOUNTS PAYABLE

Cash application can be labor intensive and time sensitive with complexity that grows with each vendor and country supported. Automated payments promise to streamline controller workflows and solutions must provide a historical view across many different formats. FaunaDB's flexible documents mean you can preserve the shape of inbound data even while using it in transactional logic, reducing the cost to implement broad ecosystem support. Temporal queries can audit history, run complex reports on point-in-time snapshots, or alert you about entity and account changes.

CONCLUSION

FaunaDB is built from ground up to address the database challenges that prevent enterprise innovation. Available as a managed cloud as well as on-premises deployment, FaunaDB is infrastructure agnostic, multi-cloud, and easy to get started with. Funded by leaders like GV (formerly Google Ventures), Point72 Ventures, Capital One Growth Ventures and others, Fauna is a foundation for your digital transformation.

Please reach us at **priority@fauna.com** for details or get started today at **www.fauna.com**. Expect more from your database.