

# Mission Critical Data: Accurate, Available, Secure

The retail industry is rapidly undergoing digital transformation as consumers look online first for shopping and trends. Keeping up with disruption requires rethinking how business gets done. E-commerce giants like Amazon.com along with new models leveraging flash sales, personalizations and subscriptions pose an existential threat. Omni-channel strategies and 360-degree customer views are steps on the pathway to new hybrid business models that power today's award-winning customer experiences. Intelligent supply chains help other brick-and-mortar bright spots, including bargain retail and food, continue to grow.

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 multi-store and multi-branch environments, especially in real time
- **Availability and reliability:** Making critical data available to retail e-commerce systems 24x7 as well as brick and mortar locations without sacrificing reliability or performance
- **Data flexibility:** Evolving your data models to support new business initiatives such as flash sales, holiday specials, same-day deliveries etc
- **Security and governance:** Securing data in the age where customer data breaches are fast becoming the norm

Thus far, enterprises have been forced to cobble together solutions combining traditional SQL systems, the early NoSQL databases and queuing 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 Retail industry. We explore some of the specific use cases in the following section.

## FAUNA TRANSFORMS RETAIL & E-COMMERCE APPLICATIONS

FaunaDB is used by retail and e-commerce market leaders to address some of the most critical business problems. Some of these applications include:

### LOYALTY AND REWARDS PROGRAMS

Finding new customers is considerably more expensive than appealing to existing customers. Five-star experiences driving customer loyalty and retention today include mobile ordering and payments, status notifications and advance access to new products. Rewards beyond purchasing, such as those for fitness and educational activities, keep customers engaged around the clock. Worldwide, always-on, interactive loyalty experiences require financial correctness, just like the scalable distributed ledgers used by the banking industry. FaunaDB's ACID transactions commit across all regions, so your data can live nearby your users to deliver the most responsive end-user experience. Temporal snapshotting and data retention allow for intelligent change management and auditing, relieving technical burdens so developers can focus on delighting your loyal customers.

### INVENTORY, CATALOG, LOGISTICS

When retailers embrace logistics as a core competency they can enable new experiences like in-store pickup and delivery, as well as take advantage of cost-saving opportunities like just-in-time inventory. Tracking shipments, returns, subscription schedules and invoices requires transactional consistency and is simplified with FaunaDB's support for historical and event queries. Dynamic pricing, special offers and catalog updates benefit from FaunaDB's flexible document schemas, taking the friction out of trying new things. FaunaDB's event-driven interfaces keep analytical engines up-to-date with changes as they happen, so your operational systems can seamlessly feed the rest of your data ecosystem.

### 360-DEGREE CUSTOMER IDENTITY

With national brick-and-mortar retailer market values down by over 50% in the last decade, reinventing the customer experience is key to competing against Amazon. Hybrid retailers are breaking new ground with award winning online-first brands like Bonobos, bolstered by local retail presence. Best-of-breed identity management features are supported natively by FaunaDB: automatic role provisioning for fine grained access control, password management and REST access to consistent ACID transactions. Shared identity management services are simplified by FaunaDB's support for multi-tenancy coupled with capabilities such as scalability, QoS-based resource scheduling and hybrid Cloud deployments, enabling all your applications to interact with a common customer identity repository.

### RETAIL BRANCH SECURITY

Hewlett Packard Enterprise and Zynstra found that despite the huge IT workload associated with addressing retail branch security updates and data backups on a daily and weekly basis, only one-third of administrators felt confident that their branch networks were secure. With breach attempts a daily occurrence and the cost of leaks growing, it doesn't make sense to keep branch data in an ad-hoc collection of individual databases. FaunaDB's global replication and multi-tenant workload isolation mean you can support your entire enterprise with one geographically distributed cluster,

moving your most sensitive data from relatively unsecured branch IT to centrally managed shared services. FaunaDB's multi-tenant architecture allows you to create independent data environments for each branch, including object-level access control rules and custom schema objects. Each branch can have multiple tiers of access via hierarchical containers, allowing them to control workload priority and access within their environment while securely isolating them from other branches

## PAYMENT PROCESSING

Mobile payments are growing at 80% per year, and are on track to include half the population by 2020, according to Business Insider. Backend complexity continues to grow, driven by new opportunities and new compliance requirements, while customers expect real-time, lightweight payment solutions. The entire payments stack benefits from FaunaDB's transactional integrity, from tracking credit authorization and declines via an upstream processor's API, to running core payment infrastructure, to providing event feeds to payment and fulfillment partners. FaunaDB's powerful query language is suited to express transactional logic across complex and varying data, taking the pain out of working with multiple payment methods and systems.

## CONCLUSION

FaunaDB is built from ground up to address the database challenges that prevent retail and e-commerce innovation. It blends the transactional benefits of traditional SQL systems with the scalability of NoSQL systems, while introducing new innovations that dramatically simplify the lives of both developers and operations. Available as a managed cloud solution 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 the foundation for your digital transformation.

Please reach us at [priority@fauna.com](mailto:priority@fauna.com) for details or get started today at [www.fauna.com](http://www.fauna.com). Expect more from your database.