

Banking at Scale

Ultra-Resilient Core Banking on
YugabyteDB and FYNDNA's
Cloud-Native Platform



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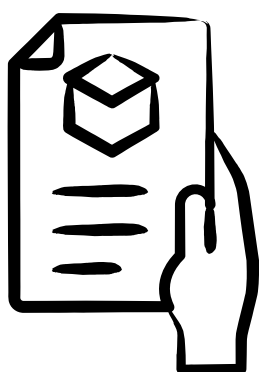
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Executive Summary

Modern Banking, Financial Services, and Insurance (BFSI) institutions are under pressure to deliver always-on services, real-time responsiveness and scalable innovations, all while maintaining regulatory compliance and operational resilience.



FYNDNA, with its composable core banking suite and **YugabyteDB**, an internet-scale distributed SQL database, offer a joint solution that addresses this need head-on.

This white paper outlines how the combined strengths of both platforms help banks transition from legacy monoliths to agile, cloud-native systems that deliver high availability, performance, and business agility without compromise.

02

Why Modern BFSI Needs a New Stack

Across the globe, especially in rapidly digitizing markets like India and Southeast Asia, the demands on banking systems have multiplied.

Payments at scale have reached

3,000+

TPS in Tier 1 banks

and are growing at **25% annually**

10,000+

TPS projected soon

Meanwhile, customer expectations for 24x7 access, instant confirmations, and seamless updates have become non-negotiable

Banks must now reimagine how they design both their application architecture and their data infrastructure to support:

- Zero downtime
(planned and unplanned)
- Real-time throughput
- Horizontal scalability
- Multi-cloud and multi-region readiness

Why Choose FYNDNA?

Composable, Cloud-Native Core
Banking Built for Scale and
Resilience



FYNDNA offers a modular, API-first, cloud-native core banking platform designed to scale effortlessly and adapt to the evolving needs of financial institutions.

Its composable architecture empowers banks to modernize progressively, integrating new capabilities step by step, without the disruption and risk of large-scale 'big bang' migrations.

Each module is designed to scale independently and integrate with existing systems with minimal change to the existing applications, making it less risky for banks operating in complex, hybrid environments.

Banks are loath to make changes as the pressure of high availability and regulatory oversight plays on management. They would be open to progressive transformation over years, replacing their legacy applications while maintaining high availability, and reducing technical debt.

FYNDNA modules efficiently use YugabyteDB's

scalability

data resilience

& bidirectional replication

to yield a

cloud agnostic

highly available

dynamically upgradeable

& performant enterprise banking component

04

Why Choose YugabyteDB?

Resilience, Scale, and a Cloud-Agnostic
Design



YugabyteDB is the high-performance AI-ready, multi-modal, distributed PostgreSQL database designed for cloud-native applications that require resilience, scalability and low latency.

It brings together the best of SQL and NoSQL models while ensuring immediate consistency, native sharding, and multi-region availability.

Built for active/active resilience

YugabyteDB enables two independent instances (in different regions or even different cloud providers) to stay in sync through bidirectional replication. This enables true Active/Active deployments, where both regions are live and processing without risking data inconsistencies.

Tested with FYNDNA for BFSI-grade throughput

75K inserts/sec in single-table scenarios for pricing workloads,
with **<4 ms Latency**

500 payment messages/sec with bidirectional replication

80 transactions/sec sustained during live upgrade to a major release

Architected for growth

With a shared-nothing architecture, YugabyteDB scales linearly, making it ideal for transaction-heavy use cases like payments, pricing, and customer inquiries.

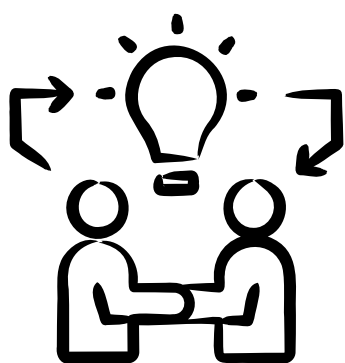
Cloud native

Supports deployment across availability zones, across cloud providers, or hybrid (cloud and on-prem).

05

FYNDNA + YugabyteDB

Solution Highlights



The following pages highlight core solution components where **FYNDNA** and **YugabyteDB** have together driven real-world transformation—empowering financial institutions with scalable, resilient, and modern banking infrastructure.

5.1

FYNDNA ePayments

Component Highlights



ePayments is architected as a modern, cloud-native Payment Hub, designed with two core components: Payment Network Adapter and the Payment Engine.

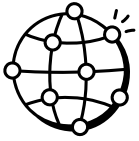
Payment Network Adapter

Focused on network-specific protocols, this layer seamlessly converts external payment messages into an internal standard canonical format, enabling interoperability across diverse geographies and schemes.

Payment Engine

Leveraging the canonical format, the engine orchestrates transaction flows by integrating multiple functional building blocks through Temporal workflow orchestration. This modularity ensures adaptability and faster rollout of new capabilities.

Key Architectural Advantages



Global Network Expansion

Flexible design allows rapid onboarding of new payment networks across markets.



High Availability at Scale

Active-active deployment across multi-cloud and multi-region environments ensures resilience, low latency, high throughput for real-time payments and also reduces cost.



Zero-Disruption Upgrades

Supports continuous integration of third-party applications and updates without downtime, enhancing operational agility.



Phased Migration

Enables controlled cutover from legacy systems by routing a small percentage of traffic to the new hub initially, with gradual ramp-up until complete switchover.

ePayments In Production

High-Performance Digital Payments Engine

43M+

payments/month

Contributing
approximately

~10%

of India's national
IMPS volume

40+

micro-services
in orchestrated
production
environment

- Enterprise Payments Hub (EPH) application is deployed as a microservices architecture application with **multiple YugabyteDB database instances**
- Tested fault tolerance of YugabyteDB database in production **without system downtime with minimal transaction failure**
 - Application behaved normally while bringing down nodes in one zone
 - Similar behavior observed when the node was brought up with data replicated in all zones
- The YugabyteDB database platform version upgrade activity was **successfully conducted for EPH databases** in the bank's production cloud landing zone
 - **Zero downtime** for FYNDNA EPH component
 - **No technical declines** were encountered during the process
- **Hybrid hosting:** Core banking system on-prem, FYNDNA platform on Google Cloud

In Development Environment

For Active/Active
considerations

02

independent deployments of
YugabyteDB were tested

with bidirectional replication
across **02 regions**

~1000

kms apart

Consistent application
behavior observed at

500 TPS

processed by each deployment

with replication
phase lag of

250 ms

Active/Active
architecture across

GCP & AWS

with seamless integration to on-
prem systems

FYNDNA Engineering Enablement

Designed and validated Active/Active architecture in FYNDNA Labs

- Supports normal, failover, and failback modes
- Active/Active framework implements System Monitoring Service (SMS) service deployed in both cloud regions and is interconnected using SMS client
- SMS service interfaces with the application and infrastructure components, namely Kafka and YugabyteDB

Multi-layer monitoring framework:

- Database Monitor: Monitors YugabyteDB health and X-Cluster replication lag
- Message Broker Monitor: Tracks Kafka Cluster status
- Application Monitor: Validates the health of services deployed in GKE (Google Kubernetes Engine)

YugabyteDB Enablement

- Real-time processing across cloud and on-prem environments
- Active/Active setup ensures resilience even across providers
- Scalable to national-level transaction volumes

5.2

FYNDNA StandIn

Component Highlights



StandIn is a high-performance mini-core that ensures seamless digital payment experiences even when the main core banking system is unavailable. Designed for the realities of 24x7 real-time payments, it transparently takes over debit and credit processing during planned or unplanned CBS outages, maintaining balances, authorizing transactions, and queuing them for flushing to CBS once it is online and also for automated reconciliation.

Customers continue to transact without disruption with alerts, notifications, and status updates delivered in real time.

Built on a cloud-native, cloud-agnostic architecture, StandIn combines high concurrency, shared-nothing scalability, and minimal CBS integration to deliver resilience at scale, supporting everything from bulk merchant transactions to salary credits.

With built-in dashboards, reconciliation reports, and regulatory compliance controls, StandIn provides banks with operational continuity, reputational protection, and the confidence to support uninterrupted digital engagement in an always-on payments world.

StandIn on GCP

Fallback Logic for Transaction Continuity

- Enables fallback authorization when core is unavailable
- Real-time logic for select transaction types like domestic payments
- Zero-lock architecture avoids system bottlenecks

FYNDNA Engineering Enablement

- Actor design pattern to serialize transaction processing for high-concurrency accounts
- Supports parallel SAF window for incoming transactions while continuous flushing of parked transactions once core is available

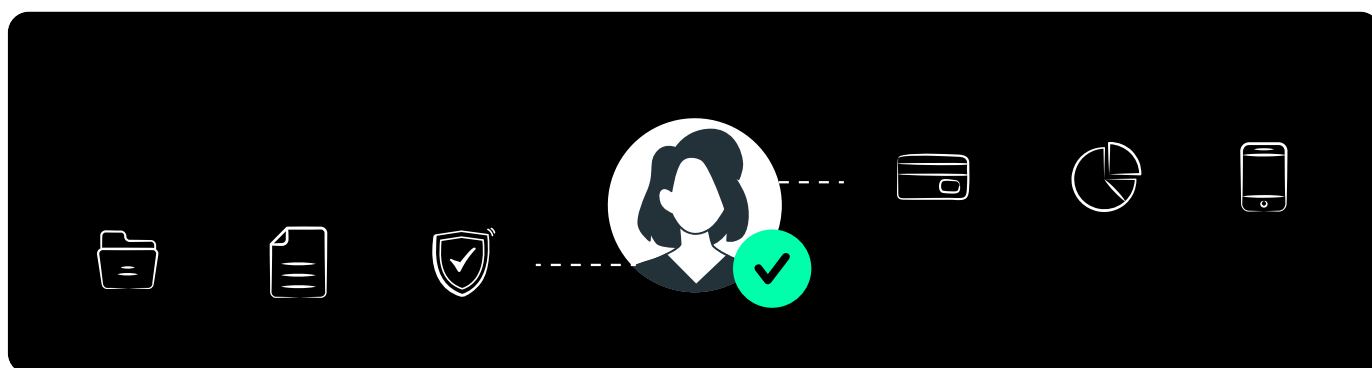
YugabyteDB Enablement

- Shared-nothing resilience
- Ensures uptime in core unavailability scenarios

5.3

FYNDNA eParty

Component Highlights



eParty serves as the single source of truth for all customer and related-party data within the bank. It is built on a flexible, BIAN-aligned data model that can be tailored to geographies, business needs, and regulatory requirements mapping customers, accounts, and related parties while managing PII, consent, and secure storage with confidence.

Smart, configurable onboarding supports both individuals and non-individuals such as corporates, trusts or partnerships, with real-time de-duplication and API-based data verification to reduce errors and rework. Every customer update, from re-KYC, address or contact changes, and minor-to-major transitions to merges or deceased handling is treated as a structured, auditable business process, supported by configurable workflows, alerts, and approval trails.

To put intelligence in the hands of users, eParty offers role-based dashboards such as the RM dashboard, Party 360° view, and compliance workbenches providing contextual insights, targeted actions, and persona-specific KPIs. Intelligent inquiry tools allow users to search and navigate across party attributes, documents, accounts, and relationships with full version history and access controls.

For transformation programs, the platform simplifies migration by accepting both clean and non-standard data, enforcing validation rules, and enabling phased corrections without data loss. Also, in order to minimize change in the eco system, eParty publishes the data to the product processors so that they can continue to function unchanged (by having their own customer tables intact)

Built-in analytics deliver actionable segmentation, from customer and age distribution to employment, demographics, and relationship attributes giving banks a powerful foundation for growth strategies, risk management and personalized offers.

Together, these capabilities ensure cleaner data, lower operational costs and a unified foundation for compliance, customer experience, and digital transformation.

eParty on Azure

Golden Record of the Customer

90M+

customer records
integrated

For

17+

source systems

Smart nudging

engine prompts

for data

completeness and

KYC updates

FYNDNA Engineering Enablement

- Implements CQRS pattern with separate Write and Read repositories
- CQRS allows for database level parameters and tuning options suited for differing performance profiles between Write and Read repositories - operates across Azure, AWS, and Temporal Cloud in production

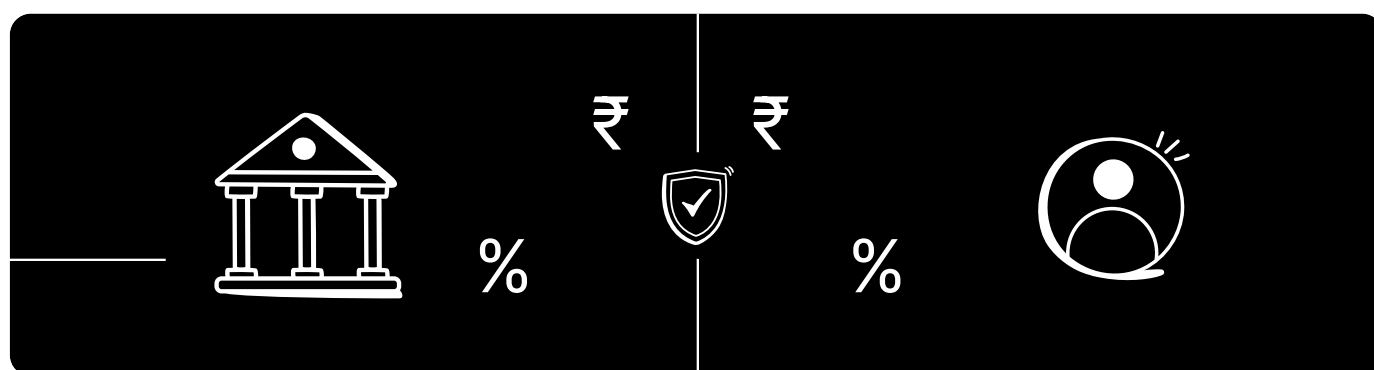
YugabyteDB Enablement

- High-throughput ingestion and low-latency lookups
- Active/Active architecture across cloud providers
- Shared-nothing model ensures horizontal scalability

5.4

FYNDNA ePricing

Component Highlights



ePricing enables Banks to define a distinct price for a customer, using financials, existing portfolio, historical and behavioural attributes. Each of these attributes can be assigned a weight. These weights can differ across customer segments.

The distinct price can be a rate, a fee, a discount, loyalty points, cashback or waiver of charges.

A powerful rule engine supports simple or complex logic, from conditions and decision tables to multi-step rule chains ensuring accuracy across diverse scenarios. Pricing can be flexibly structured through bouquets, discounts and free limits, while account-level negotiations allow tailored agreements for high-value customers.

Every fee can be searched, viewed, and audited with a complete breakdown of how the fee was computed, supported by seamless refund capabilities and approval workflows.

Operational safeguards, such as what-if simulations, reduce rollout risks, while open APIs expose fee inquiries to self-service channels including digital and conversational platforms. With built-in analytics, ePricing gives banks the ability to monitor performance, predict revenue impact and deliver clear, customer-ready pricing that builds trust while optimizing profitability.

ePricing on GCP

Intelligent, High-Scale Pricing Engine

100M+

daily transactions processed

SLA reduction from 7 hours to

03 hours

600+

products pricing simplified
to **83**

Real-time hierarchy pricing for

~1M

corporate accounts

FYNDNA Engineering Enablement

- Online as well as batch-based charge computation for configurable events
- Built on top of Spring Batch framework supporting configurable orchestration of batch programs
- Implements ingestion of master and transactional data files
- Generation of extracts for charging by CBS as part of the charge computation and recovery cycle

YugabyteDB Enablement

75K

inserts/sec tested with
<4ms latency



Shared storage
enables linear scaling

06

Next Steps

Banks today are expected to be always-on digital platforms, delivering real-time, personalized, and compliant experiences at internet scale.

When deployed together, **FYNDNA** and **YugabyteDB** offer composable, cloud-native core banking modules.

Together, we enable banks to:

- Modernize incrementally
- Handle exponential growth in data and transactions
- Deliver real-time services
- Stay resilient by design

What you can do next:

- Book a joint discovery session
- Conduct a reference architecture review



Connect with us to explore how we can help future-proof your core banking infrastructure. Write to us at info@fyndna.com