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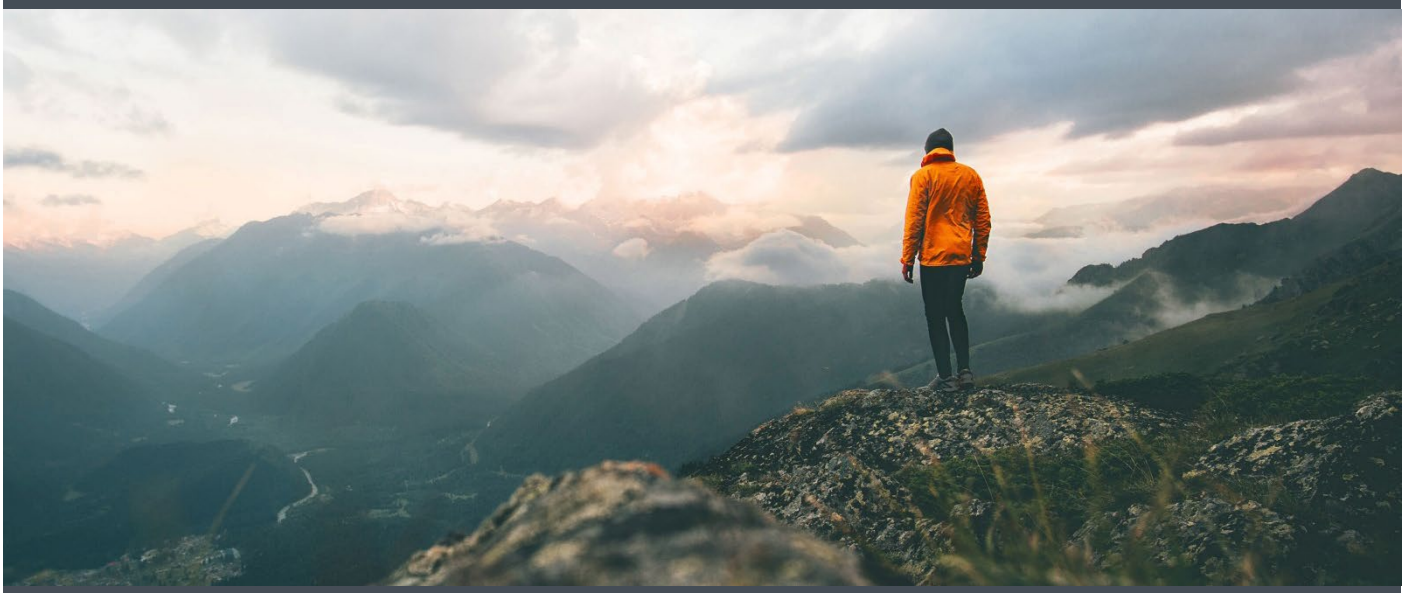

Finxact at Scale in the Cloud

DELIVERING MODERN BANKING PROCESSES THROUGH EVENT STREAMS AND APIs

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Overview

FINXACT MEETS THE PROCESSING CAPACITY NEEDS OF THE LARGEST FINANCIAL INSTITUTIONS AND BRANDS

Compelling digital financial experiences and real-time money movement are more easily supported by next-generation, cloud-native core solutions, but many large financial institutions are running on cores that are decades old, batch rather than real-time, deployed on mainframes and extremely rigid. What those traditional cores have demonstrated, however, is the ability to handle huge volumes of transactions, as measured by a historical performance metric called TPS, or transactions per second.

The Finxact team was recently asked by multiple Tier 1 financial institutions to demonstrate that its cloud-native core platform could meet or exceed the benchmark of 22,000 average transactions per second (TPS) – a benchmark that's typical of one of the most performant mainframe cores still in use by many large financial institutions in the U.S. Finxact not only met but exceeded the target, achieving an average TPS of 23,620 in an active/active cloud environment.

More importantly, Finxact achieved 51,381 API calls per second in an active/active environment where the API calls consisted of a blend of inquiries, updates and transactions. This blend more closely reflects contemporary core processing needs, accommodating a variety of requests from a broad ecosystem of products, channels and gateways.

This paper succinctly describes the testing methodology and the performance results for Finxact measured as TPS, API requests per second, and API response times. Results are reported for both active/passive and active/active environments against an account volume of 70 million accounts.

About Finxact

Finxact is a financial services platform for the business of banking, fintech and embedded finance.

It delivers real-time continuous processing, offers 100 percent open APIs, and is both cloud-native and cloud-agnostic.

Event-driven microservices architecture eliminates the day-end window.

Extensibility enables users to evolve Finxact to meet their unique needs.

Finxact accounts can be comprised of multiple positions representing multiple asset types.

Finxact is designed to support the success of the largest financial institutions, corporate brands and the nimblest of fintechs.

Elasticity on Demand

Finxact is delivered in a SaaS (software as a service) model and deployed in the public cloud. It is therefore elastic and can accommodate virtually unlimited demand. The significance of a cloud deployment is not purely scale, because that has no predetermined limits, but rather efficient scale, achieved through horizontal scalability. What financial institutions pay is proportional to the business value they realize as they add more accounts on Finxact.

Finxact has horizontal scalability. Horizontal scalability is a method of increasing the capacity or performance of a system by adding more identical resources, such as servers or nodes, to the existing infrastructure. In the context of cloud computing, it means expanding the system by adding more virtual machines or cloud instances to distribute the load and improve performance. The primary goal of horizontal scalability is to handle increased demand or workloads by simply adding more resources horizontally.

Performance Testing Methodology

TAILORED TO REPRESENT REAL-WORLD PROCESSING DEMANDS

Tests of the performance of Finxact are conducted on a continual, ongoing basis to ensure that the solution meets the needs of even the largest clients.

Finxact is an API-first system. As a result, all functions are available via API (application programming interfaces), including financial transactions. Finxact performs a number of benchmark tests in order to project how the system will perform in various real-world scenarios.

The test results described in this paper are the results of two specific tests. The TPS-centric test used the financial transaction API exclusively. The API-centric test used a blend of inquiries and updates, and the ratio between the two was approximately 70 percent/30 percent, respectively. Note that the API-centric test included financial transactions to demonstrate the ability to handle user-driven activity concurrently with payment activity.

The tests measured transactions processed per second (TPS) and API requests handled per second (API per second). Also measured was the duration or response time – how long the API requests take.

Results are reported for both active/passive and active/active environments against an account volume of 70 million accounts.

Each major Finxact release undergoes rigorous performance testing, focusing on the daily and monthly business functions of our clients to guarantee that each release either meets or surpasses prior results.

On a regular basis, we conduct large-scale tests in the 50, 70, and 100 million position range, modeling our largest clients' account bases and position configurations. These tests stress the system to its maximum capacity over extended periods. This practice assists our performance team in identifying potential bottlenecks within the system, whether current or future, as volumes grow increasingly larger.

Notes on Terminology

Transactions Per Second (TPS)

TPS is the metric used to measure the throughput of the financial transaction API in Finxact. This API delivers an isolated instruction to post a transaction against an account's balance.

APIs Per Second

APIs per second (also sometimes referred to as requests per second) is the number of API (application programming interface) calls that can be made or handled per second, where the API requests contain a blend of inquiries, updates and transactions. This metric is crucial for understanding the performance and scalability of various APIs used in production applications such as payment gateways, consumer mobile apps and back-office servicing apps.

API Response Time

API response time is the duration it takes to process a request and return a response to the client. It is one of the most common performance metrics used to evaluate the efficiency of an API. It is measured in milliseconds in the results reported here.

Active/Passive

The core is deployed in two geographical regions. All traffic is handled by one region, and data is synchronized to the standby region. If the primary active region should become unavailable, the passive region would be promoted to the primary active region.

Active/Active

The core is deployed in two geographical regions where requests can be routed and serviced by either region.

Performance Testing Results

ROBUST TRANSACTION HANDLING AND RESPONSE TIME

Measurements in an active / active environment

>51,000
API Requests / Second

>23,000
Transactions / Second

API response time for API-centric tests

4 milliseconds

Recently, Finxact's performance was tested in both active/passive and active/active cloud environments. The benchmark results for 70 million accounts show distinct performance characteristics for the two environments.

In the active/passive setup, the performance in TPS-centric tests, measured as transactions per second (TPS), was 14,625, with a response time for the Finxact transaction-specific API of 22 milliseconds.

In API-centric testing, which consisted of a blend of inquiries and updates and included some financial transactions, Finxact delivered 20,416 APIs per second with an API response time of 1 millisecond. These results highlight a reliable system with low-latency response times.

In contrast, the active/active environment exhibits higher average TPS for the transaction-specific Finxact API at 23,620 with an API response time of 28 milliseconds. In API-centric testing in the active/active environment, Finxact delivered 51,381 APIs per second with an API response time of 4 milliseconds.

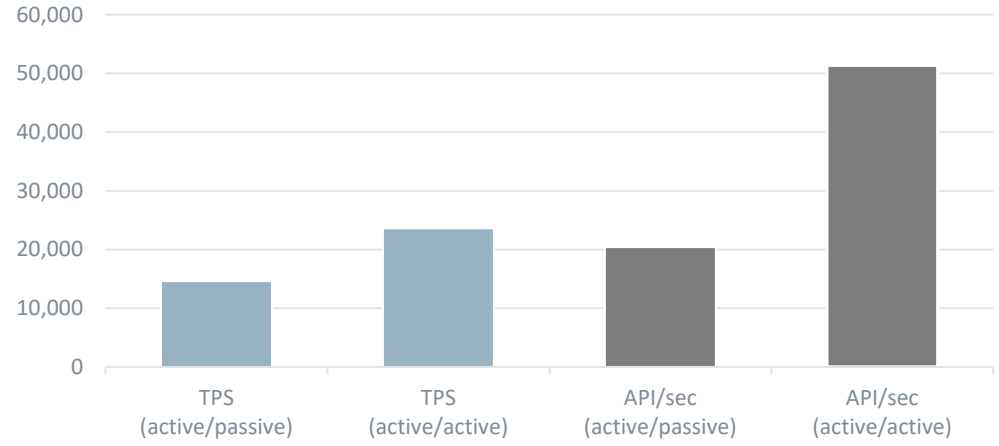
These results demonstrate the trade-off between redundancy and performance optimization in the two configurations.

These benchmark results were achieved using a test database and routing algorithm, so while indicative of performance of the system, it does not represent an individual customer's results.

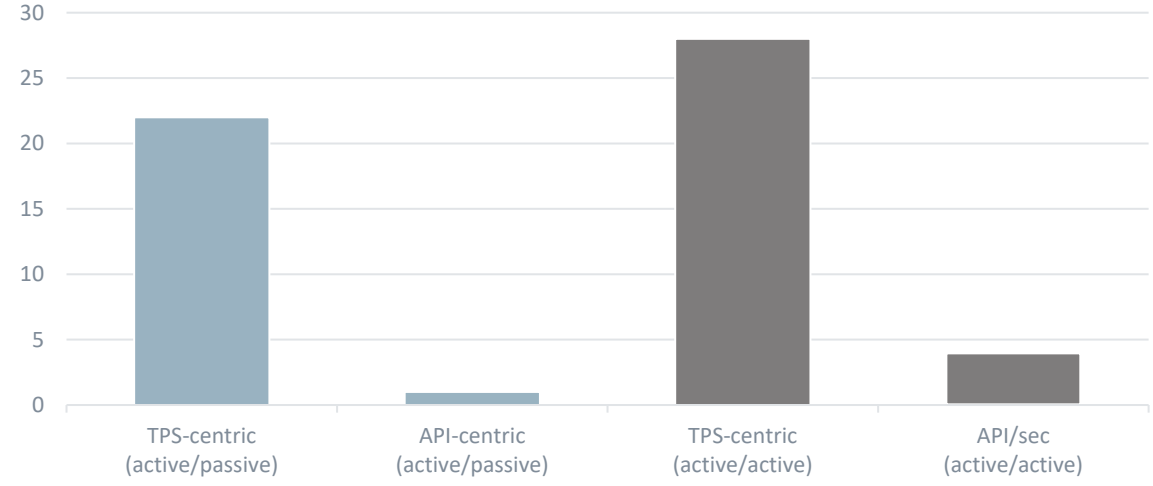
70 Million Accounts

	TPS	API per second	API response time
ACTIVE/PASSIVE	14,625		22 ms
ACTIVE/PASSIVE		20,416	1 ms
ACTIVE/ACTIVE	23,620		28 ms
ACTIVE/ACTIVE		51,381	4 ms

Processing 70 Million Accounts



API Response Times in Milliseconds



Conclusion

PROVEN ABILITY TO DELIVER PROCESSING CAPACITY AT SCALE

The results of performance benchmark tests of Finxact in active/passive and active/active cloud environments demonstrate that this solution is more than capable of handling the transaction processing requirements of a financial institution holding 70 million accounts or positions, meeting or besting the historical benchmarks for processing power established by mainframe legacy systems. In other words, Finxact can support the processing requirements of the very largest banks in the U.S. – even those with trillions of dollars in assets.

Finxact delivers this processing capability while also giving its users the agility, flexibility and openness of a next-generation solution, positioning financial institutions to deliver differentiating products and digital experiences.

ABOUT FINXACT

Finxact is a next-gen core platform engineered to support the scale and performance requirements of the largest U.S.-based financial institutions. Its cloud-native core banking system provides 100% accessibility to all data and functions via a robust set of modern APIs, empowering financial institutions and their partners to rapidly deliver new experiences by creating products on demand and seamlessly integrating new services as needed. Learn more at www.finxact.com. Finxact is a Fiserv company.

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“In order to compete, you have to have something competitive.”

—FRANK SANCHEZ, CEO AND FOUNDER

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