



SELECT SMART DIH
CASE STUDIES



A DIGITAL INTEGRATION HUB SOLUTION

Empowering a Simpler New Way to Digitally Transform Your Organization

MEETING THE CHALLENGES OF CONVENTIONAL IT ARCHITECTURE

The many requirements

On the journey to digital transformation, enterprises are required to rapidly launch multiple new digital applications and services. These digital applications are expected to deliver high performance, elastically scale to support peak usage volumes, and be always-on.

The systems of record

In many cases, these applications rely on multiple systems of record (SoR) for their data. In a conventional architecture, the API services layer is coupled with the SoR, and increases loads on legacy data stores that are required to constantly feed data to power new digital services. While classic cache can offload some transactions from SoR by holding frequently accessed data, it does not store all the relevant data.

The inefficiencies

This architecture's inefficiencies cause innovation to slow-down, as development teams duplicate efforts developing APIs to access data and synchronize with microservices. When new digital services are finally deployed, they are subject to limited SoR performance, scalability and availability.

THE DIGITAL INTEGRATION HUB (DIH) OFFERS A NEW SIMPLER ARCHITECTURE

A new paradigm coined and advocated by Gartner, a Digital Integration Hub architecture decouples digital applications from systems of record. Multi protocol data APIs over unified data models simplify the introduction of new microservices. Data from multiple sources is aggregated into a low-latency high performance data store. This data management layer is synchronized with back-end data stores via decoupled real-time event-based integration patterns.

The GigaSpaces Smart DIH Solution

The Smart DIH is an out-of-the-box DIH solution. Based on GigaSpaces' award-winning distributed in-memory data platform, it includes all the components an organization needs in order to **decouple their digital applications from their SoR, to accelerate innovation.**

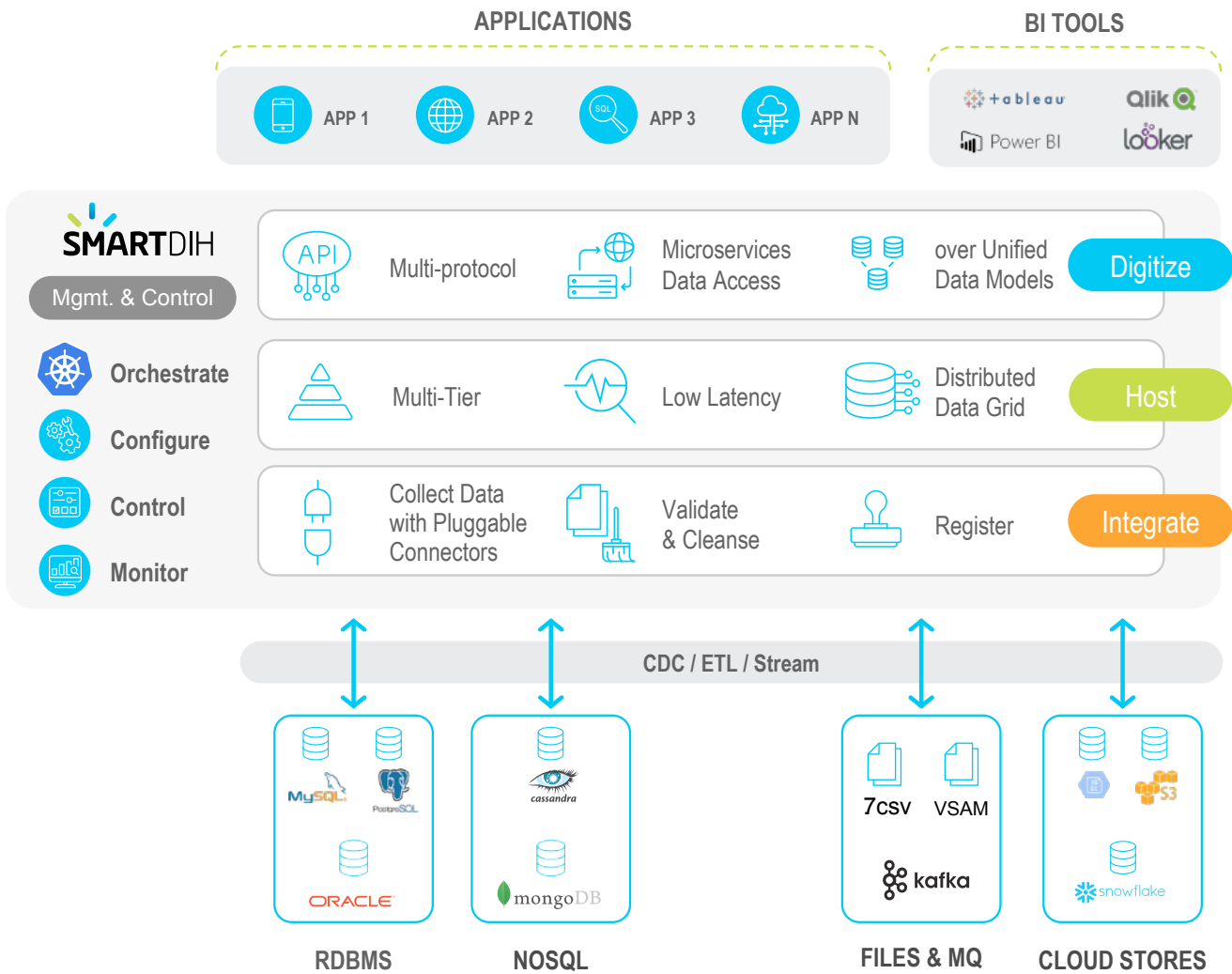


Figure 1: Smart DIH Architecture

MISSION CRITICAL TRADING DATA DISTRIBUTION SYSTEM



99.999%
AVAILABLE



400 APPLICATIONS
20M TRIGGERS/DAY



WORLDWIDE
REPLICATION

About Société Générale

Société Générale is a multinational investment bank and financial services company with over €24B in annual revenue.

The Challenge

Société Générale had 200 applications including pre-trade, risk management, accounting services and more, and needed to grow this number significantly. Each system of record had a different API, making it difficult to get a single view of the data across applications and platforms. Société Générale lacked a single source of data truth. In addition, the existing infrastructure supported only 99% availability, which was not enough to meet the bank's service level agreements.

The Solution

Société Générale implemented InsightEdge Smart DIH as a data store and data processing layer which provides **a single API to 7 systems of record**. The smart in-memory caching module was used to significantly accelerate data access. In addition, the Smart DIH [data replication service](#) provided asynchronous replication in real-time between sites in Paris, NYC, and London.

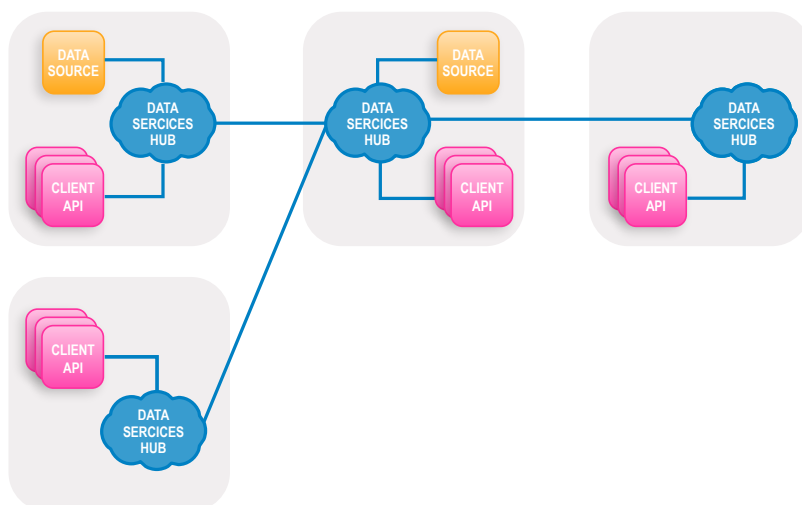


Figure 2: Multi-Region Data Replication at Société Générale

Results

Number of applications connected to Smart DIH grew **from 200 to over 400**

Up to **20 million** daily real-time event triggers sent to applications



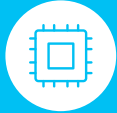
99.999% availability

Hundreds of concurrent internal users

Worldwide real-time data replication

AVANZA BANK

DIGITAL BANKING PLATFORM

 2-MINUTES LOAN APPROVAL	 1200+ MICROSERVICES	 99.999% AVAILABILITY
 REAL-TIME TRADE RECOMMENDATIONS	 6X FASTER TIME TO MARKET	 OVER 22TB IN-MEMORY

About Avanza Bank

The largest stockbroker and brokerage firm in Sweden, Avanza Bank is a digital bank with a customer centric strategy.

The Challenge

Avanza Bank originally had a 3-layer architecture (web, business logic, SQL storage). They experienced major issues with scalability, latency, and availability. For example, one batch process that calculates customer benefits was taking 6 hours to finish in 2010. By 2014 it was taking 18 hours to run this job, which is supposed to run daily.



"GigaSpaces enables us to deliver on our vision of providing a fully digital bank that services our customers solely through high performance personalized retail banking applications."

Peter Strömberg, CIO at Avanza Bank

The Solution

Avanza implemented Smart DIH to replace its legacy SQL relational database. Smart DIH now acts as the bank's single source of truth. Over 22TB of data are stored in-memory.

Results

Agility - Avanza can get a simple microservice **from idea to production within a day**

Performance - microservice mean response time is **1.7 milliseconds**

Time-to-market - new services are developed and launched **6 times faster** than before

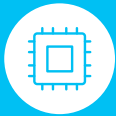
Innovation - number of microservices increased **from 150 to over 1200**

The customer benefits job runtime was reduced **from 18 hours to 10 minutes**

> Figure 3: Scaling for growing number of deals per day and support for spikes

PriceRunner

PRICE COMPARISON FOR MILLIONS OF OFFERS IN MILLISECONDS



OVER **16TB**
IN-MEMORY



100+
MICROSERVICES



5-8 MILLISECOND
RESPONSE TIME



SCALE UP BY **20X** FOR
UNPREDICTABLE BURSTS

About PriceRunner

PriceRunner is a multinational price comparison website with 10 million monthly visits, and 126 million prices update daily.

The Challenge

PriceRunner needed to ensure real-time comparisons for their customers at high peak periods such as the night before Black Friday, when traffic increases between 10-20 times the normal traffic.

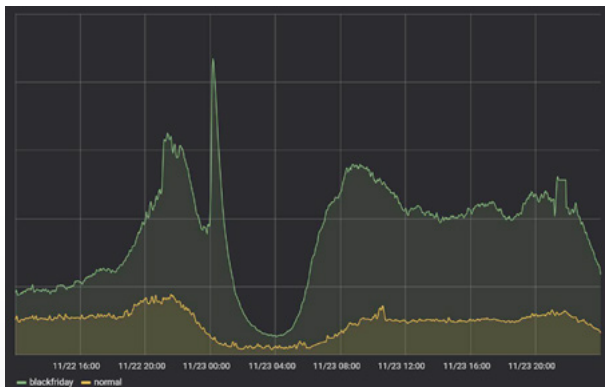


Figure 4: Peak load of 20X normal traffic on Black Friday

Agility Case Study – Launching Covid Features

During the COVID-19 crisis, PriceRunner quickly developed and deployed two new services for their customers to help them find and order in-demand Corona related products such as face masks and hand sanitizer, leveraging the InsightEdge Smart DIH microservices based platform. It took them **2 days(!) from idea to production.**

The Solution

PriceRunner implemented InsightEdge Smart DIH as the primary data source for all PriceRunner applications, with 7 clusters for performance and availability. 200 million merchant offers are retrieved every day into Smart DIH.

Results

Product web page response time reduced **from 700 milliseconds to less than 300**

Ingestion time went from **24 hours to sub second!**

Scale - **no performance impact** during Black Friday, when concurrent sessions reach 500% more than normal day

Agility - between 10-15 features are **released to production every day**



REAL-TIME RAILWAY AND SHIPMENT NOTIFICATIONS



15 MILLION
PINGS /
HOUR



60% MIPS
REDUCTION



100X
PERFORMANCE



2X
MONTHS TO
PRODUCTION

About CSX

CSX is a leading supplier of rail-based freight transportation in North America.

The Challenge

Network Based Classing - a business process that routes railcars through the rail network to their destination and identifies the impact of changes to the network. In order to efficiently and reliably provide accurate train scheduling and up-to-date shipment tracking, CSX was looking for a system to provide real-time insight on a network of 10,000 nodes with over 40,000 business rules. Complex processing and dynamic data modeling prevented CSX from looking for classic database solutions.

Notifications and Subscriptions - a system that provides CSX's over 160 corporate customers with the ability to subscribe to custom notifications alerting them to the progress of their shipments. With some customers consuming thousands of events, such a system must be able to scale for peak loads.

The Solution

The Network Based Classing application leverages Smart DIH to handle 18 requests per second executing very complex logic, while a batch job runs one million transactions in less than 20 minutes. The ability to run simulations faster means planners can try many more different network parameter combinations, optimizing the planned route and reducing overall costs.

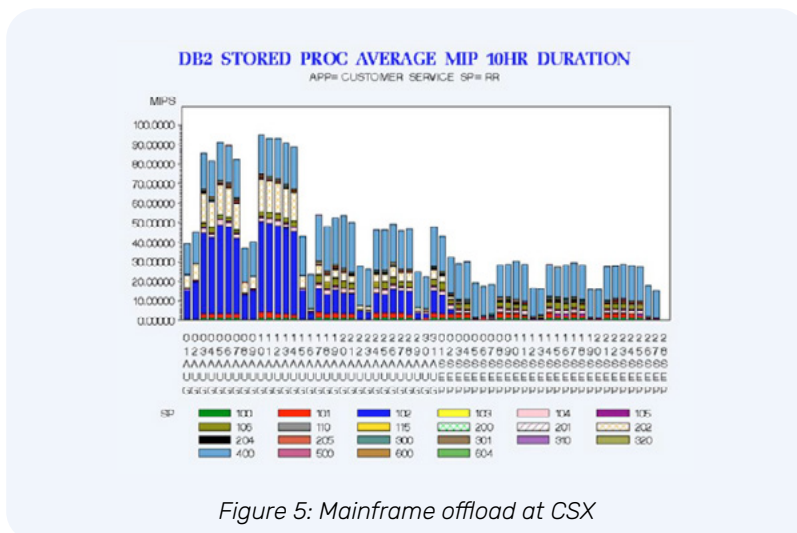
The Notifications and Subscriptions system uses Smart DIH for elastic scalability to handle high loads. This leverages the in-memory data grid to store all notification messages, custom subscription support data.

Results

15 million pings per hour

60% DB2 MIPS reduction

Planning simulation reduced
from 45 minutes to seconds!



ABOUT GIGASPACE

GigaSpaces is building on its historical expertise of redefining in-memory technology to offer one of the market's first Digital Integration Hubs (DIH), the GigaSpaces Smart DIH solution simplifies enterprise's digital transformation with unparalleled speed, performance and scale. Never before has it been this straight-forward to accelerate and scale real-time applications, using any System of Record data, at any load, across any environment. The company continues to offer its award-winning Smart Cache solution as part of its GigaSpaces Smart suite of products.

GigaSpaces offices are located in the US, Europe and Israel with partners such as Cap Gemini and Cognizant around the globe; serving customers such as Morgan Stanley, Bank of America, CSX, Goldman Sachs, Societe Generale, Credit Agricole, American Airlines, Avanza Bank, Avaya, Frequentis, CLSA, Groupe PSA and UBS.

"GigaSpaces' InsightEdge makes you faster and smarter at the speed and scale of business with strengths in transactions, platform, multi-model, customer adoption, development tools, extensibility, and customer support."

The Forrester Wave™: Translytical Data Platforms Q4 2019

300+
Direct Customers

50+/500+
Fortune/Organizations

5,000+
Large installations
in production (OEM)

BENEFITS



EXTREME SPEED AND PERFORMANCE

Ultra-low latency, high-throughput transaction (ACID compliant), and analytical processing at high concurrency to accelerate applications and fuel operational BI and analytics. Colocation of business logic and data in-memory, secondary indexing and server-side aggregations drive unparalleled performance.



EXTREME SCALE

Autonomous linear scaling for transactional and analytical workloads, handles planned and unplanned peak events without performance degradation or downtime, optimizing resource allocation to avoid overprovisioning on-premise and on the cloud.



CLOUD NATIVE

On-premise, cloud, hybrid and multicloud deployments with out-of-the-box, fully agnostic cloud management functionality. One-click installation and automatic provisioning, self-recovery, auto scaling and more are supported.



OPTIMIZED TCO

Unique AIOps functionality delivers autonomous data management including business-policy-driven data tiering, one-click integration with operational databases and automatic indexing to accelerate time-to-market and ensure highest levels of customer experience with an optimized TCO.



ALWAYS-ON

Mature battle-tested enterprise grade platform for mission critical businesses. Highly available with 99.999% reliability and auto-healing. Geo-redundancy and fast data replication for disaster recovery. Data security and consistency is ensured between data centers and data stores including hybrid and multicloud deployments.