

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.

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 Capgemini 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.

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.**

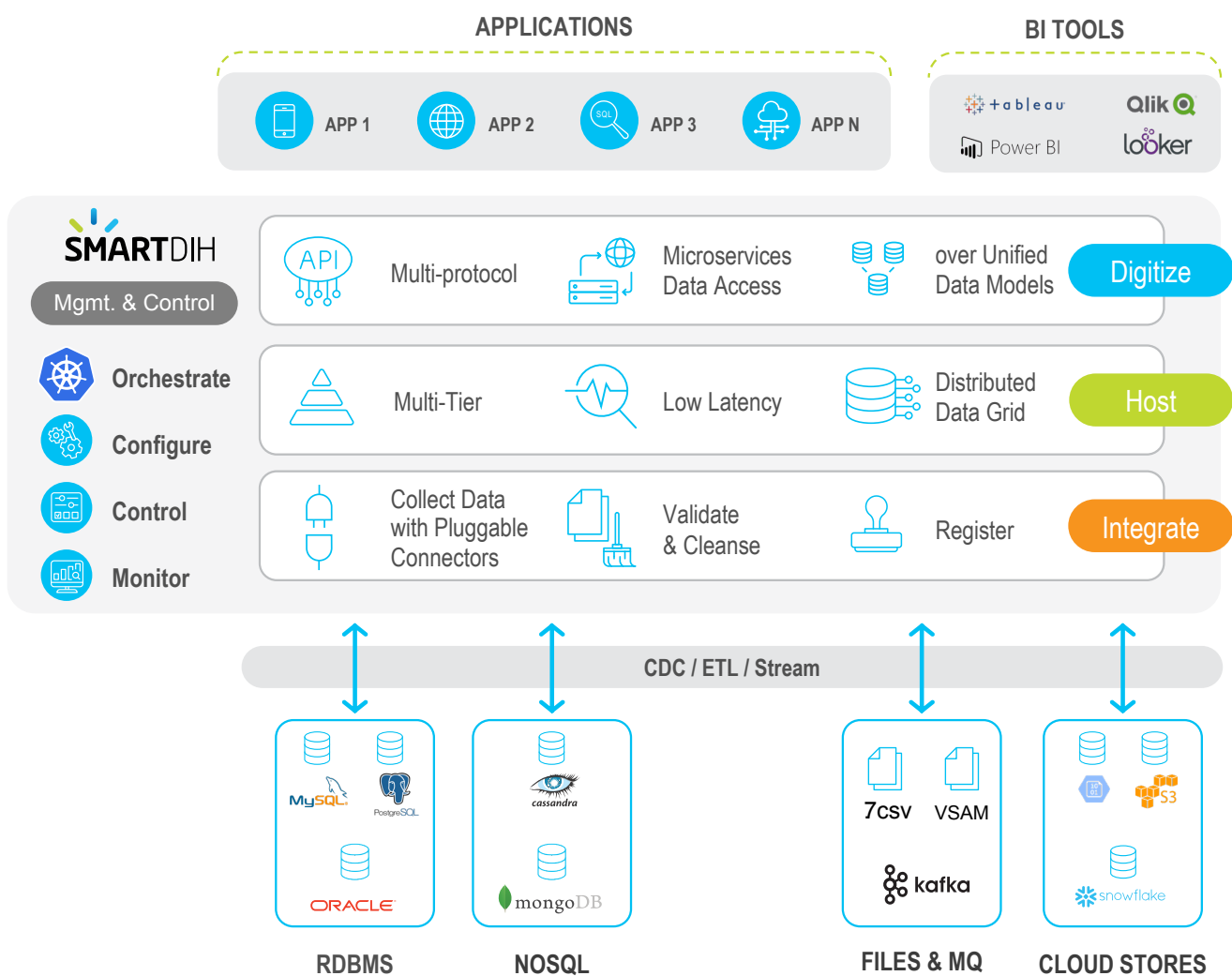
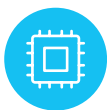


Figure 1: Smart DIH Architecture

GigaSpaces is one of only four named **out-of-the-box DIH solutions** by Gartner analyst Massimo Pezzini

KEY SMART DIH CAPABILITIES



Distributed in-memory data grid

The heart of Smart DIH's data management layer, is a distributed in-memory data grid. It can automatically scale up and out to support peak loads, while delivering the highest performance to power the most demanding real-time digital services.



360 degrees of data integrity & ACID compliance

At the technical level, ACID transactions guarantee data integrity despite errors such as power loss or system failure. At the logical level, data validity logic is applied against a logical schema, and user-controlled cleansing methods are applied. Extreme changes in data volume metrics are detected and alerted upon.



Multi-tiered storage management

The Multi-tier storage solution helps enterprises balance cost and performance by placing the high priority data in a hot storage tier, typically RAM. Lower priority data can be stored in a warm storage tier such as SSD. Data is automatically placed in the appropriate tier based on business rules.



Cross-region data replication

Cross-region replication allows for selective replication of data between locations or even regions. You can replicate between two on-prem data centers, between on-prem and cloud, or between clouds. Meet performance or regulatory requirements using selective data locality. Compression allows to boost performance further while lowering outgoing traffic costs to cloud vendors.



Data APIs for efficient microservices management

Smart DIH offers a selection of modern APIs including JAVA, SQL, .NET, and REST. This simplifies the introduction of new microservices. You can register to change data events, so data is always synchronized between the application and the system of record. Data services are natively hosted on the platform, thus sharing the same management services as the core platform's microservices.



Orchestration with Kubernetes

Data microservices are natively managed within the Kubernetes orchestration. This allows for data segregation, scaling, microservice version management, and software lifecycle management.



Standard deployment topologies

Smart DIH supports multiple deployment topologies: You can deploy on-prem, in the cloud, in a hybrid on-prem & cloud, as well as in multi-cloud topologies. All major cloud platforms are supported.



Event-driven pluggable data connectors

Smart DIH offers pluggable event-driven connectors to systems of record. New and changed data can be captured in real-time via CDC (Change Data Capture) or via data streaming. Scheduled data ingestion events can be captured via ETL tools.



High availability

Beyond the high availability benefits of decoupling between the API layer and the SoR, Smart DIH offers several levels of resiliency to power always-on digital services. Highly available clusters have no single point of failure, and each primary partition has a fully synchronized secondary backup. In addition, each partition has a persistent copy that is written to disk. Finally, a cross-region async service keeps a replication of the original data or a subset of it in a remote location for disaster recovery in the case of a local disaster.



Enterprise grade security

Enterprise grade security standards and services ensure meeting stringent security requirements. These include data and API encryption, authentication and authorization against the organization's IDP, and integration with the organization's vault.



Data governance

In order to meet strict regulatory requirements, such as in the heavily regulated financial services industry, Smart DIH makes data traceable and allows for data monitoring.

YOUR ENTIRE ORGANIZATION BENEFITS

Line of Business

Accelerate innovation -
launch multiple digital
apps faster

Improve customer
experience

Reduce costly system
of record access fees

Developer Teams

Data first approach

Faster and simpler
application development

Less custom coding via
ready-made system
of record connectors

Operations Team

Handle peak loads with
no impact to customer
experience

Enable always-on services
even when systems of
record are down

CASE STUDY - SOCIETE GENERALE

The company

A multinational investment bank and financial services company, with over €24B in annual revenue.

The challenge

Societe Generale 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. Societe Generale 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

Societe Generale implemented Smart DIH as a data store and data processing layer which provides a single API to 7 systems of record. The smart 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, New York, London, and Hong Kong.

RESULTS

- ✓ Number of applications connected to Smart DIH grew from 200 to over 400 applications in less than three years
- ✓ Up to 20 million daily real-time event triggers sent to applications
- ✓ 99.999% availability
- ✓ Hundreds of concurrent internal users
- ✓ Global real-time data replication

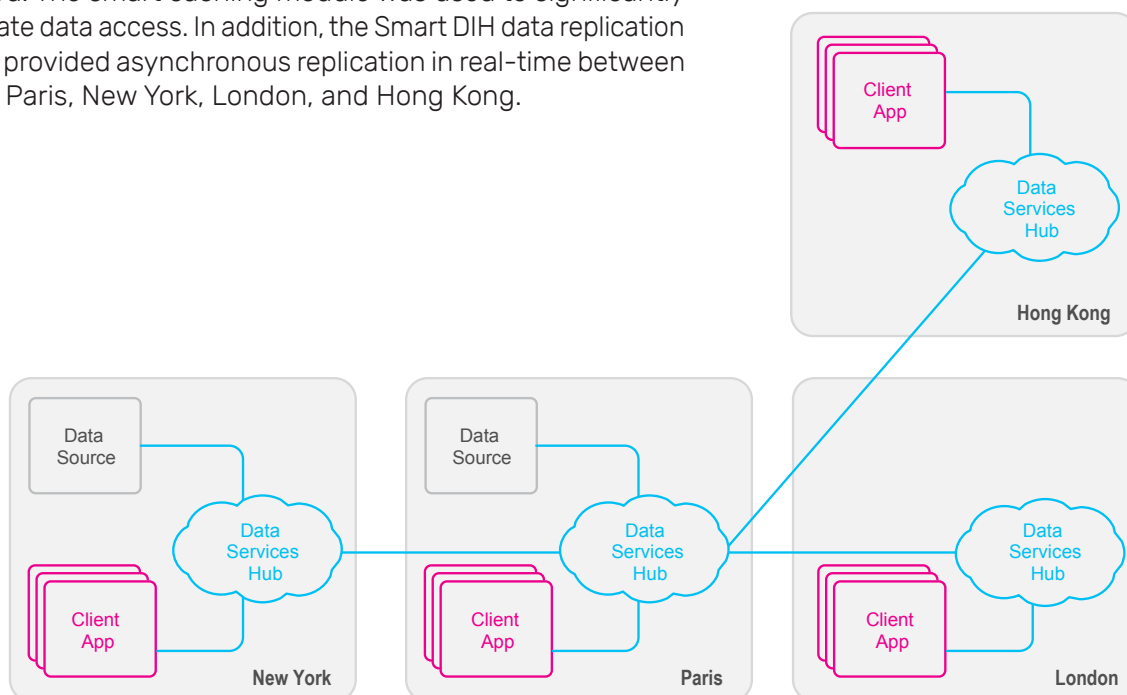


Figure 2: Multi-Region Data Replication at Societe Generale