



Insight to Action: GigaSpaces In-Memory Computing Product Line

GigaSpaces is introducing a suite of mission-critical application transaction processing and real-time analytics products to provide value to businesses at all levels. The In-Memory Computing Product Line, which now includes InsightEdge, provides two complimentary products: XAP, which delivers data processing at millisecond speed and InsightEdge which enables real-time data analytics. Together, these products integrate a high-performance data grid combined with Apache Spark to provide event streaming and scalable enterprise storage to power a world of fast data applications. The In-Memory Computing Product Line delivers enterprise grade high-availability, security, reliability and real-time performance while dramatically lowering both hardware and operational costs of critical applications and data. GigaSpaces' products have been battle-tested at Tier-1 enterprises in the worlds of Finance, Telecommunications, Transport and Logistics, Healthcare, Insurance and e-Commerce.

The purpose of this document is to map the In-Memory Computing Product Line, illustrating the main use cases for each product and assisting developers and enterprises in determining which tool will best meet their specific needs.



Extreme Transaction
Processing



Fast Data Insights

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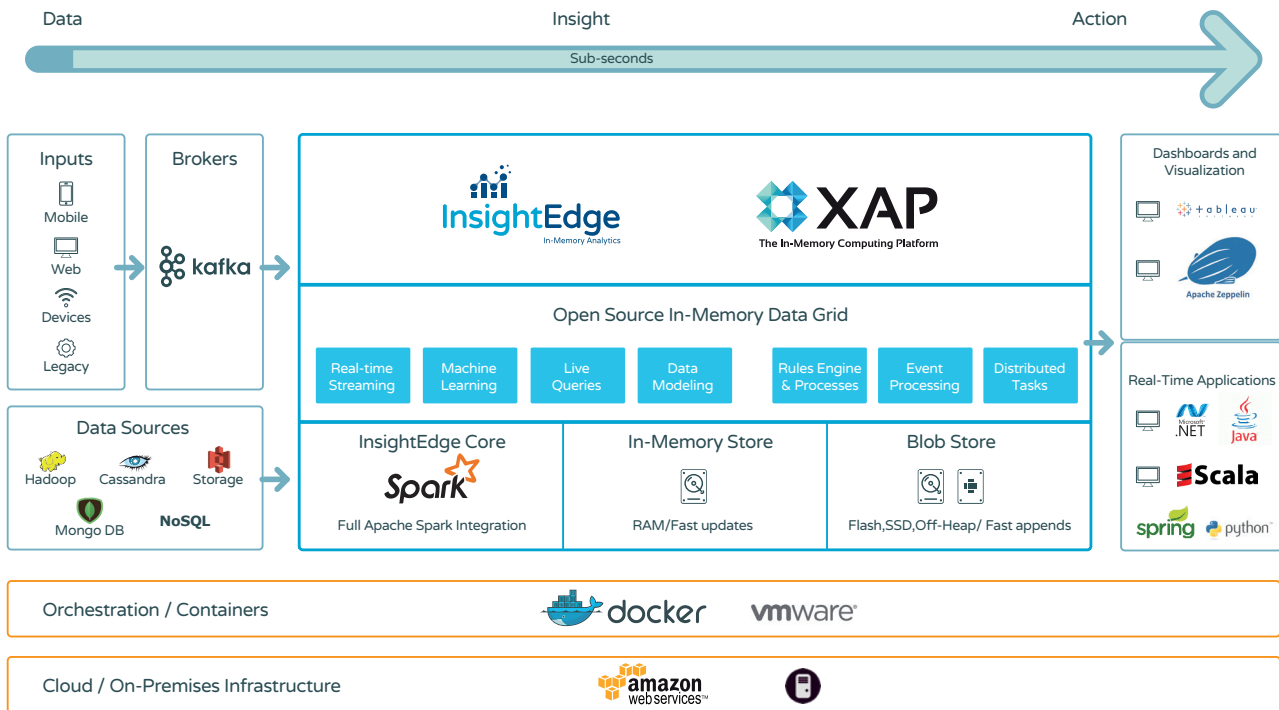
GigaSpaces XAP History

GigaSpaces was the first to promote the use of Space-Based Architecture (SBA) which allowed businesses the opportunity for linear scalability through the co-location of business logic and data in memory. This architecture reduced latency by a factor of ≥ 102 with unlimited scalability, thus heralding the in-memory computing revolution. With the release of InsightEdge, GigaSpaces is establishing another revolutionary paradigm—that of co-locating business analytics with the data source in RAM, enabling true real-time informational results from data sets and streams.

At GigaSpaces, our history proves that we are driven by innovation, as seen below:

- **2000**—GigaSpaces introduced the first high-volume, high-speed cache to the Finance market.
- **2004**—GigaSpaces announced the Enterprise Application Grid.
- **2007**—GigaSpaces announced the eXtreme Application Platform (XAP) which established the first time businesses could co-locate their business logic and processes with data, in memory. This provided a one-hundredfold increase in speed over existing data implementations.
- **2008**—GigaSpaces announced Open Spaces. This was the first Spring framework-based API for building in-memory applications that were ultra-fast, distributed, scalable and fault-tolerant.
- **2010**—XAP runs on Amazon EC2.
- **2014**—XAP MemoryXtend is released thus allowing for the seamless extension of RAM to SSD.
- **2016**—GigaSpaces XAP has matured to become an in-memory computing product line for fast data analytics and high throughput transactions. We open sourced the core data grid engine of XAP to improve time-to-market for innovation and new features.

GigaSpaces IMC Product Line



The core products of the XAP In-Memory Computing Product Line are:

- The Open Source Data Grid
- XAP In-Memory Data Grid
- InsightEdge Fast Data Analytics

The Open Source Data Grid

GigaSpaces has released an open source version of XAP for the developer community. After 16 years of mission-critical deployments within highly complex industries by Fortune 100 enterprises, we have listened to our market and understood the import of including the community in the direction and future of the product.

This new product is designed for anyone seeking to try XAP in their development and staging environments. We have de-coupled the core (which is open source) from the overall data grid product and accelerated contributions to it from specific, vetted developers.

Highlights:

- This edition of XAP is for developers to download.
- XAP Open Source is free for life.
- We are reducing the time-to-market for upstream features.
- XAP users will benefit from a broadened feature set due to market-driven enhancement.

WHAT PARTS OF XAP ARE BEING OPEN SOURCED?

All of the core XAP data grid API will be available for free in the open source edition. The following is a detailed description of what's available:

- **Space Data Models:** POJOs, Document API, Map, JDBC, JPA, and Memcached API
- **Space Operations and Queries:** Space Interface, SQL Queries, Indexing, and Transaction Support
- **Processing:** Events & Messaging, Task Execution, Remoting, and Aggregators
- **Persistence:** Direct Persistence, Async, Pre-Loading, and Hibernate Support
- **In-Memory Data Grid Core:** Clustering, Replication, Partitioning, and Memory Management

Only commercial editions of XAP will provide:

- Management and monitoring features
- High availability, auto-healing (GSM/GSA), and deployment management features
- Security
- GigaSpaces enterprise-grade support
- Multi-data center replication for disaster recovery (XAP Enterprise)
- MemoryXtend for fast initial data load (XAP Enterprise)

I'M AN EXISTING CUSTOMER, WHAT DOES XAP OPEN SOURCE MEAN FOR ME?

Absolutely nothing changes for our commercial customers. Therefore, if you already have a support contract with GigaSpaces, you will continue receiving the same exemplary support services you have come to expect. Existing customers are welcome to either try out the XAP open source edition, or upgrade to Premium/Enterprise Editions.

HOW CAN I CONTRIBUTE TO THE XAP OPEN SOURCE DATA GRID?

All contributions will be evaluated and approved before being added to the open source code base. First, you'll need to have signed the GigaSpaces Contributor Agreement available at <http://xap.github.io>. Once signed and accepted, GigaSpaces will consider accepting pull requests from committers.

WHO IS CONTRIBUTING TO XAP OPEN SOURCE?

Principal contributions to the XAP Open Source code base have been carried out by the GigaSpaces R&D team, who have been building XAP for almost a decade. In addition, an active group of GigaSpaces product engineers, partners, and users have been involved in bug fixes and feature enhancement proposals.

HOW DO I OBTAIN SUPPORT FOR GIGASPACE'S XAP OPEN SOURCE?

XAP Open Source users will enjoy the availability of a development community, comprised of internal GigaSpaces R&D developers as well as public committers, that can address the most critical questions. Users may reach out and engage the community through the channels below:

Developer Forums: <http://ask.gigaspaces.org>

GitHub: <http://xap.github.io>

StackOverflow: [#gigaspaces](#)

E-mail: oss@gigaspaces.com

GigaSpaces XAP 12: Open Source, Premium, and Enterprise

There are three editions of XAP 12: one designed for the developer community and two intended for clients with more complex needs. The distinctions between each edition are outlined below.

The XAP 12 Open Source Edition

This version of XAP is for the open source community to explore. This is a means by which GigaSpaces is looking to provide an independent forum to foster stewardship, open development and collaboration with the developer community.

- **The target market is the developer community.**
- **This edition is geared to acquaint developers with the power of in-memory computing.**
- **Choose XAP 12 Open Source if you're a developer who is looking to test drive XAP while using your own apps.**

XAP 12 Premium Edition

Businesses who opt for the Premium Edition of XAP are already in the process of building an extreme processing application that requires data transactions at millisecond speeds.

Enterprise Monitoring, Operations and Security

XAP is the leading in-memory data grid for mission critical application deployment and data processing featuring high-availability and extremely low-latency. XAP 12 Premium comes with a rich operations and monitoring user experience through a desktop UI, Web-UI, CLI and orchestration API to provide many ways to interface with and monitor the cluster. It also exposes statistics on the different queries running in the cluster and enables IT operations systems to integrate with it for enterprise logging and auditing purposes. XAP 12 Premium features layered roles and privileges, authentication and authorization to support the strict security compliance requirements of enterprises.

Cross-Platform Interoperability

XAP 12 Premium also supports Microsoft .NET, enabling multiplatform development that enables developers the opportunity to add the data processing speed of XAP to their applications. Developers are not tied to working with Java programming as they have the object-oriented languages available to them in .NET.

Business Continuity and SLA

Business continuity features such as high-availability, auto-healing and fault tolerance are provided via our service grid. The service grid provides scalable, highly secure deployment management services as well as application SLA enforcement. Moreover, the service grid monitors the health of running applications in the grid and reacts with appropriate auto-healing processes in the case of immediate failures to ensure continuity.

Local Cache/View

The local caching ability of XAP 12 Premium replicates data grid content on a cache local to client applications. Local caching ensures highly scalable data reads by virtue of making the data grid contents locally accessible to application servers.

XAP 12 Premium features:

- **Built-in security**
- **.NET interoperability right-out-of-the-box**
- **Web UI and monitoring**
- **Local caching**
- **A robust service grid**

XAP 12 Enterprise Edition

The XAP Enterprise Edition includes all the elements of XAP Premium, plus a set of enhanced features unique to XAP Enterprise.

Hybrid Data Storage: RAM and SSD

This version of XAP features the use of hybrid storage which helps to mitigate the cost of a full RAM implementation as solid-state drives become substantially cheaper than RAM. While SSDs are many times faster for data access, hybrid storage harnesses that performance by using RAM to cache commonly-accessed data and SSDs for storing less frequently used data. Hybrid storage reduces heavy demands on resources and converges both historical and real-time data together.

Multi-Data Center Replication

Multiple site replication is the ability to replicate state between different deployed grids, where each grid can also be physically located in a different geographical location. This is especially useful when:

- **Planning for disaster recovery** - In such cases, each of the deployment sites is located far from the other sites (e.g. a different continent so that if one site is completely destroyed or decommissioned other sites are not affected and can continue to operate normally.)
- **Maintaining data locality** - This is done for each site for performance and latency reasons. For example, global trading applications that operate in multiple stock exchanges across the globe need fast access to Global Reference Data, or an application that is deployed on multiple data centers in the cloud with a need to access the Users Profile Data very quickly.

Session Replication and Clustering

This feature provides session replication between remote sites and session sharing between different application servers in real time and in a transparent manner. Session replication can be done between any Java application and any web server. Session replication stores HTTP sessions in the data grid for fault tolerance and high-availability to reduce transaction latency and increase conversion rates.

InsightEdge, Fast Data Analytics for the Insight-Driven Business

InsightEdge is a high performance Spark distribution designed for low latency workloads and extreme analytics processing in one unified solution. With a robust analytics capacity and virtually no latency, InsightEdge provides immediate results.

GigaSpaces' Spark distribution eliminates dependency on Hadoop Distributed File System (HDFS) so as to break through the embedded performance "glass ceiling" of the "stranded" Spark offering. To this, GigaSpaces has added enterprise-grade features, such as high-availability and security. The result is a hardened Spark distribution that is thirty times faster than standard Spark.

The core data grid in XAP, which is the extreme transaction processing engine across Tier-1 organizations, is used in InsightEdge for fast analytics processing. Because of this, XAP and InsightEdge are, organically, part of the same product line. GigaSpaces' InsightEdge enables the co-location of business logic and processes with the data, in memory.

InsightEdge for Transactional Data: Whether for financial trades, market data, shopping carts, fraud detection systems or data marts, InsightEdge provides the clarity to optimize operations.

InsightEdge for Behavioral Data: E-commerce, Clickstream, geospatial and mobile users will benefit from enhanced personalization and shopping recommendations that are instantaneous.

InsightEdge for Edge Data: InsightEdge is the leading facilitator for Edge Analytics and Operational Intelligence. With the onslaught of data emerging from Industrial IoT, device data, sensor and signal streams, InsightEdge provides the means to leverage decentralized analytics at the data source so that time isn't wasted when informational needs are crucial.

Summary

GigaSpaces has expanded the In-Memory Computing Product Line to include enhanced data processing and analytics tools to meet the needs of the market. XAP In-Memory Data Grid is a high performance and extreme transaction processing software platform with a variety of editions from which to choose, based on business requirements. InsightEdge Fast Data Analytics is a high performance and extreme analytics processing engine. Together, the full product line provides enterprises with proven technology for processing of both transactional and analytical data at the speed of business.

Thank You



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