Embracing the Service Consumption Shift in Banking

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ING
Legacy of a systemic bank

- ING is more than 40 years old
- Basic banking services (customer information, payments systems) run on mainframe
- Mainframes are used by other applications hence making migration complex
Increasing demand for performance and scalability

• Internet Mobile load increases 25% per year
• Browser to Mobile migration showed a 7 fold increase of interactions.
• Open Banking: PSD2 and API’s exposed to intermediaries (fintechs), scrape data on behalf of the customer.
• Our actual middleware integration results in 200-300 ms. latency.
• Attempts to scale up vertically failed.
“Empowering people to stay a step ahead in life and in business”

Customers : 36 Million
Primary relationships : 10 Million
Our strategy

Purpose
Empowering people to stay a step ahead in life and in business.

Customer Promise
Clear and Easy | Anytime, Anywhere | Empower | Keep Getting Better

Strategic Priorities
1. Earn the primary relationship
2. Develop analytics skills to understand our customers better
3. Increase the pace of innovation to serve changing customer needs
4. Think beyond traditional banking to develop new services and business models

Enablers
Simplify & Streamline | Operational Excellence | Performance Culture | Lending Capabilities
Why In-Memory platforms?

- Resilient
- Performant
- Scalable
- Open source (Apache Ignite) with professional support (Gridgain)
- Java
- Promising
IMC applications in ING

• SEPA Direct Debit (compute and data grid)
• MultiBank Customer Reporting (compute and data grid)
• Real Time Gateway (compute grid)
• ShieldING (data grid)
• GGaaS
SEPA DD

• Europe-wide Direct Debit system
• Allows merchants to collect payments from accounts
• A Direct Debit authorizes someone (Creditor) to collect payments from your account (Debtor) when they are due
• Direct debits are typically used for recurring payments, such as credit card and utility bills

• Offer aggressive commercial cut-off times which also means more payments to be processed in less time
• Offering seamless and easy integration with different digital channels & platforms
• Offer services via PSD2 platform
SEPA DD

Payment Initiation
*Data Streamer & Data Grid*

Business Validations
*Business Validations*
*Distributed Compute Grid*

Computations and Aggregations
*Computations and Aggregations*
*Distributed tasks using compute Grid*

Custom Capability REST APIs
*Custom Capability REST APIs*
*Client Nodes & Cache Query*

XML ISO 20022
*XML ISO 20022*
*PAIN 008*

Kafka

Intermediary cache

Payment streamer & validator

Transaction streamer & validator

Permanent caches

Capabilities API

Client applications

14 months history
*1.000.000.000 transactions*

5000 files
*5000 files*

16M transactions
*16M transactions*

Peak day
*Peak day*
**MultiBank Customer Reporting**

- Sends to corporate customers the list of their daily transactions
- Full list of transactions received in several folios from payment engines (mt942)
- Folios need to be merged
- Summary of day received in final file (mt940)
- Existing application
  - Based on complex and deprecated vendor framework
  - Not originally designed for distributed processing
  - Not extensible/flexible
**MBCR**

- New version should not impact existing environments
- In-memory compute grid to parse, validate and merge folios
- In-memory data grid to store transaction information
- Caches with different roles
  - Data processing
  - Viewing data
- Reasonable load at start but will dramatically increase in short term
Real Time Gateway

- Instant Payment initiative, real time (debit and credit have to be done within 5s)
- Banks need to connect to a new common router: STET
- No system to connect internal payment application to STET
- Transforms PACS (ISO 20022) into internal COBOL format and vice-versa
RTG

- Ignite event bus to move data from one state to the next
- Implementation based on Ignite topics
- Intensive use of affinity co-location
- In-memory computations for message validation and transformation
ShieldING is a set of standardized resilient data services with clear utility (fit for purpose) and warranty (fit for use).

ShieldING focuses on “creating information once (information centric), consuming information everywhere (service centric) on a shared platform.

Layer in front of the mainframe with different patterns for different use cases.

In depth presentation from Lieven Merckx
https://www.youtube.com/watch?v=b0Cd52IGWyY
GGaaS

**GridGain as a Service**

- Ready made GridGain server node to be deployed in the ING private cloud
- Based on a docker
- Security
  - Secured Administrative Web Console
  - Default Encryption / Authentication / Authorization connections between nodes
- Monitoring
  - Logging send to ELK stack via Kafka
  - “is alive” services
  - Generic dashboard
- Native Persistence Store
  - SAN disk used by the grid
Take away

• Change of mind-set compared to basic server & DB architecture
• Still new, not a lot of IMC engineers available on the job market
• Exploring different use cases
• Used also for applications with a low load
• Attractive technology
• Lots of potential

• Still evolving
  • Multi tenancy issues
  • Not adapted for orchestration
  • Service grid need improvements
Want to join our decision shapers?

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