Apache Ignite - In-Memory Data Fabric

Ultimate Speed and Scale for Transactions and Analytics

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Agenda

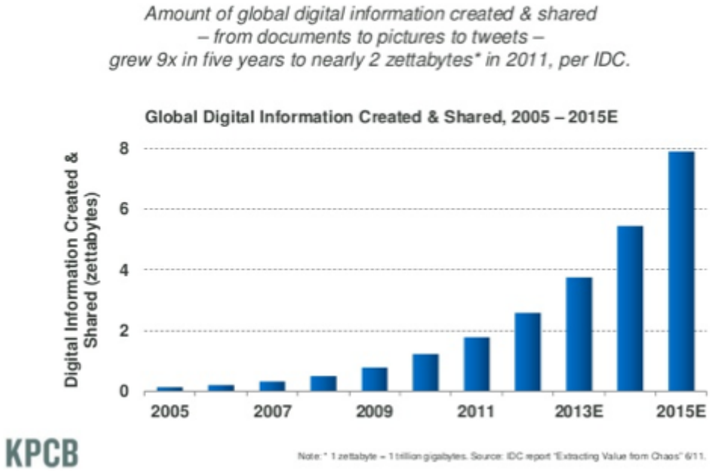
- Why In-Memory Computing?
- **In-Memory Data Fabric**
  - Advanced Clustering
  - In-Memory Compute Grid
  - In-Memory Data Grid
  - In-Memory Service Grid
  - In-Memory Streaming & CEP
  - Plug-n-Play Hadoop Accelerator
- Customer Use Cases
- Q & A

Why In-Memory

Gartner

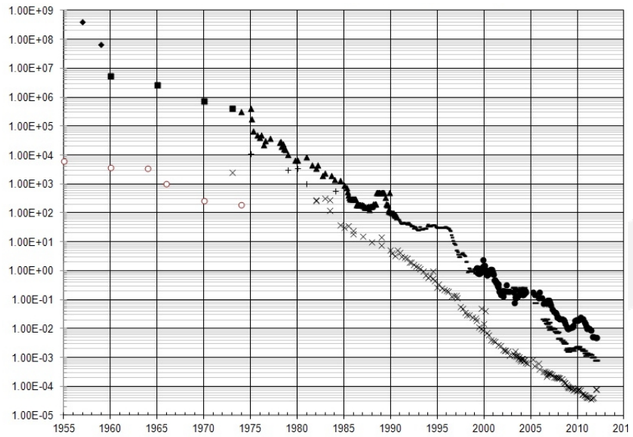
"In-memory computing will have a long term, disruptive impact by radically changing users' expectations, application design principles, product architectures, and vendor strategies."

Data Growth



Less than 2 zetabytes in 2011, 8 in 2015

DRAM Cost, $



Cost drops 30% every 12 months

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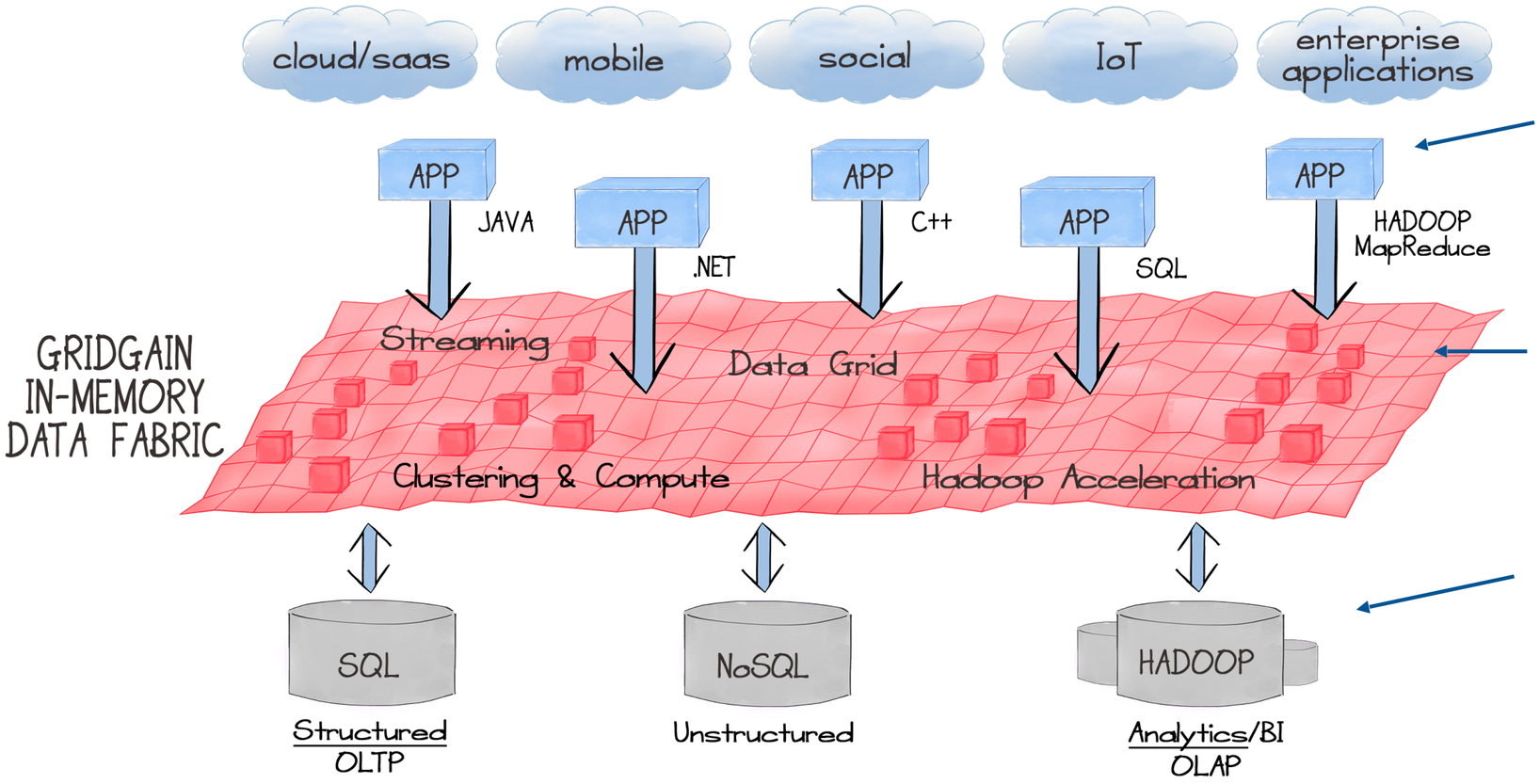
In-Memory Data Fabric

Strategic Approach to IMC



- Supports Applications of various types and languages

- Open Source – Apache 2.0
- Simple Java APIs
- 1 JAR Dependency
- High Performance & Scale
- Automatic Fault Tolerance
- Management/Monitoring
- Runs on Commodity Hardware

- Supports existing & new data sources
- No need to rip & replace

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In-Memory Data Fabric

Main Capabilities

Performance

- High Throughput
- Low Latencies

Scalability

- Add Cluster Members (cores)
- Add Memory (RAM)

High Availability

- Data Backups
- Datacenter Replication

Transactions

- Fully ACID Compliant
- Optimistic & Pessimistic

Persistence

- SQL, NoSQL, Hadoop

Security

- Authentication
- Authorization
- Tracing & Auditing

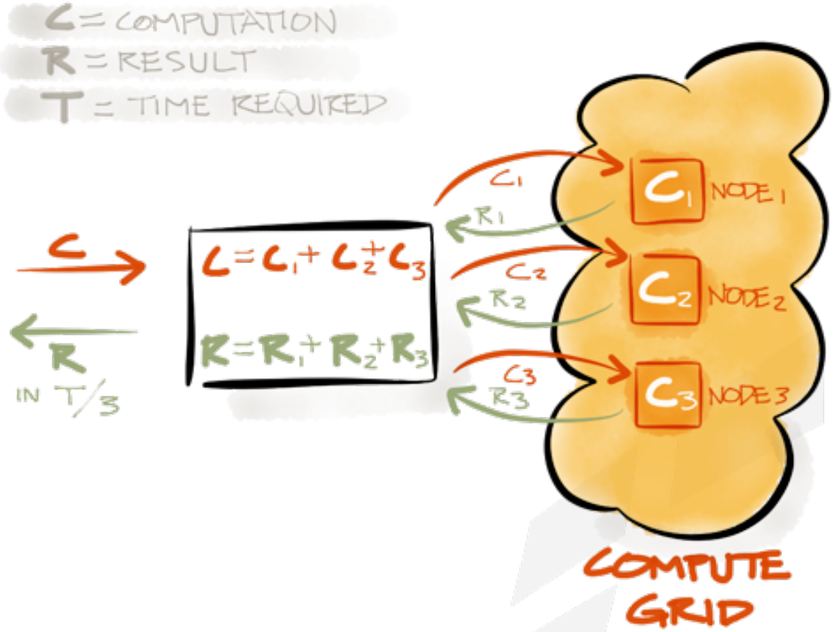
In-Memory Data Fabric

Advanced Clustering

- Ease of Getting Started
  - Automatic Discovery
- Any Environment
  - Public Cloud
  - Private Cloud
  - Hybrid Cloud
  - Local Laptop
- Zero-Deployment
  - Auto-Deploy Code
- Full Cluster Management
- Pluggable Design

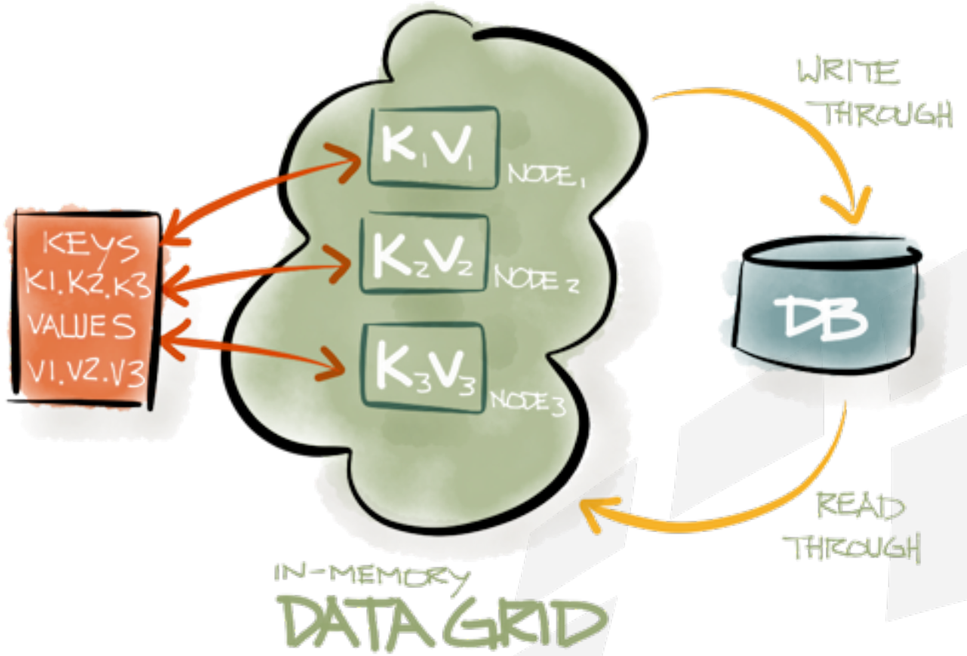
In-Memory Compute Grid

- Direct API for MapReduce
- Zero Deployment
- Cron-like Task Scheduling
- State Checkpoints
- Load Balancing
- Automatic Failover
- Full Cluster Management
- Pluggable SPI Design



In-Memory Data Grid

- Distributed In-Memory Key-Value Store
- Replicated and Partitioned data
- TBs of data, of any type
- On-Heap and Off-Heap Storage
- Highly Available In-Memory Replicas
- Automatic Failover
- Distributed ACID Transactions
- SQL queries and JDBC driver
- Collocation of Compute and Data



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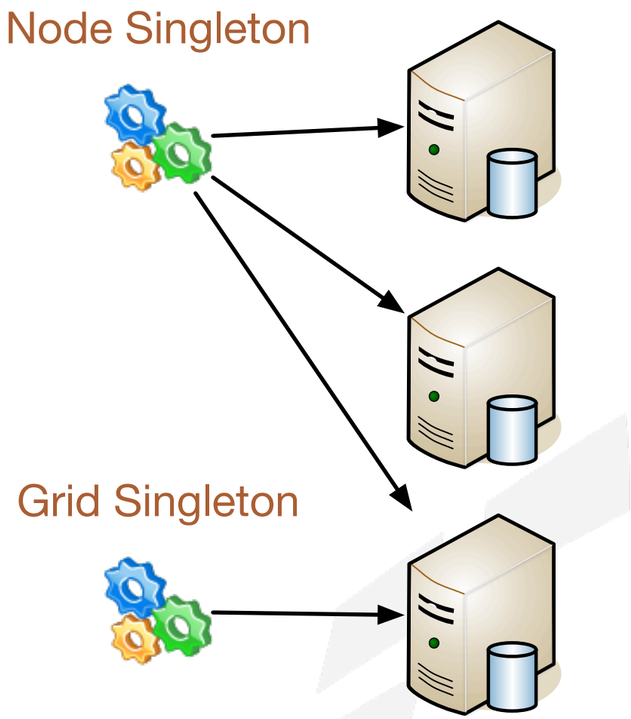
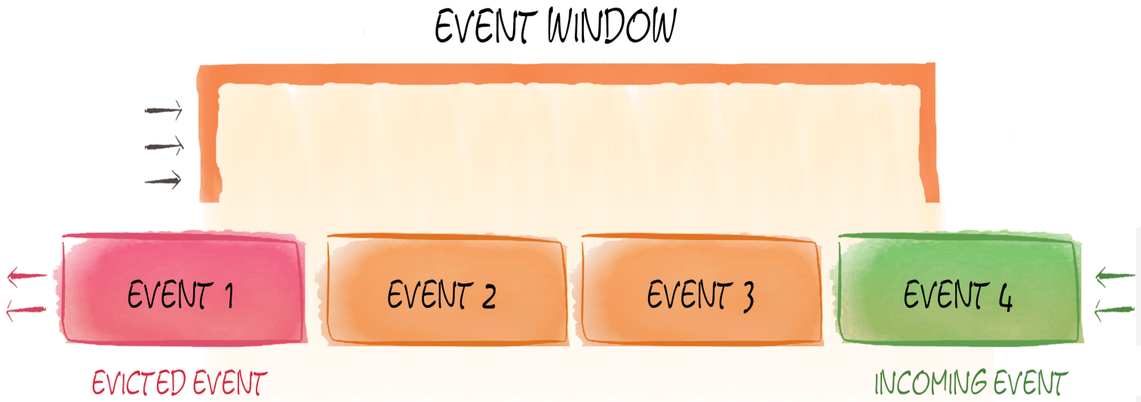
In-Memory Service Grid

- Distribute Any Data Structure
  - Available Anywhere on the Grid
  - Automatic Remote Access via Proxies
- Controlled Deployment
  - Support for Cluster Singleton
  - Support for Node Singleton
  - Support for Custom Topology
  - Load Balanced
- Guaranteed Availability
  - Auto Redeployment in Case of Failures



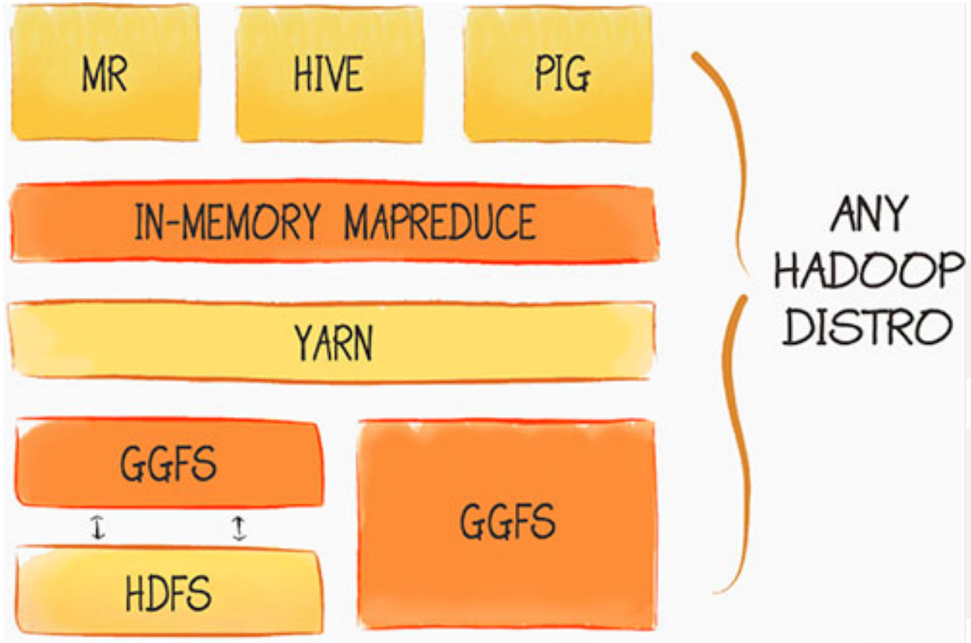
In-Memory Streaming and CEP

- Streaming Data Never Ends
- Branching Pipelines
- Pluggable Routing
- Sliding Windows for CEP/Continuous Query
- Real Time Analysis



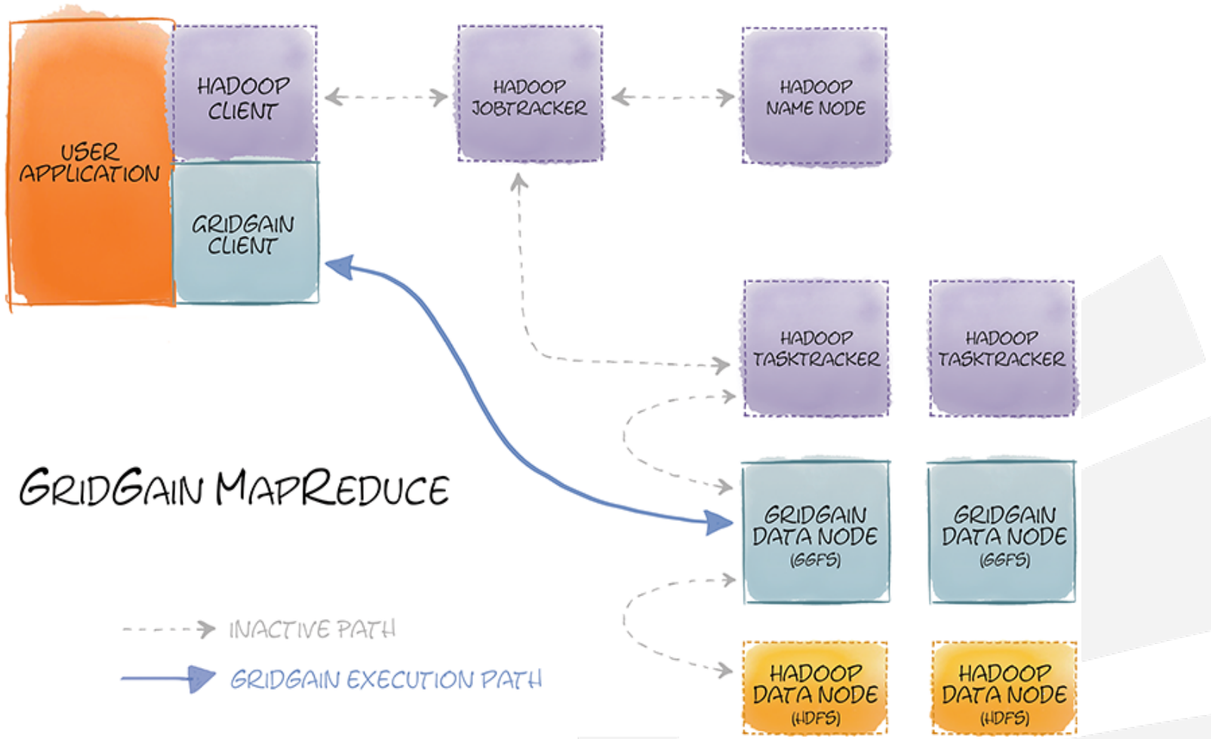
In-Memory Hadoop Accelerator

- Plug and Play installation
- 10x to 100x Acceleration
- In-Memory Native MapReduce
- In-Process Data Colocation
- GGFS In-Memory File System
- Pure In-Memory
- Read-Through from HDFS
- Write-Through to HDFS
- Sync and Async Persistence

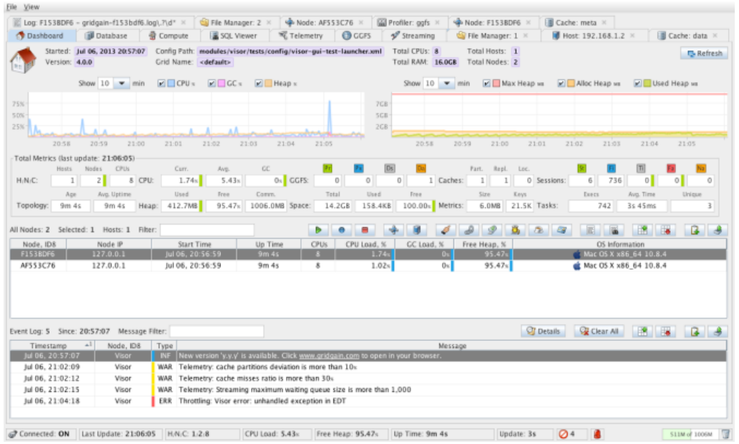


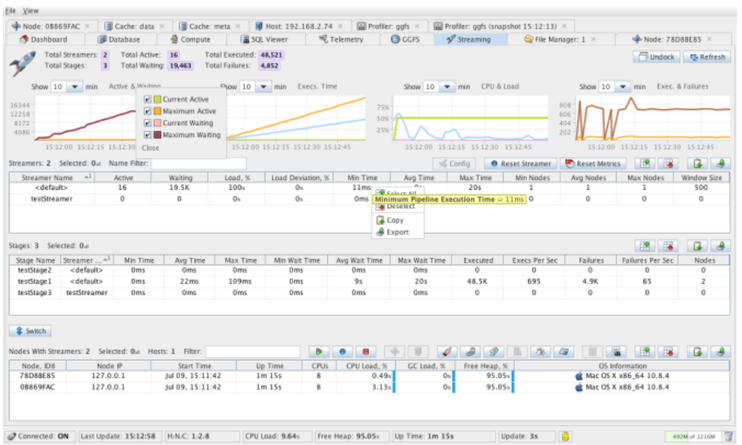
In-Memory Hadoop Accelerator

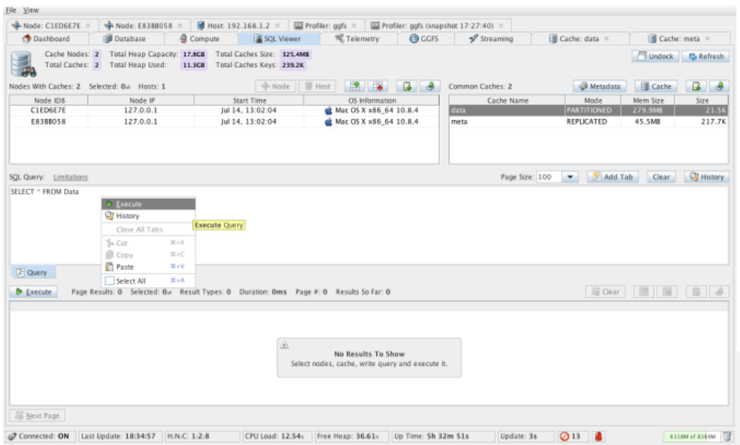
- In-Memory Native Performance
- Zero Code Change
- Use existing MR code
- Use existing Hive queries
- No Name Node
- No Network Noise
- In-Process Data Colocation
- Eager Push Scheduling

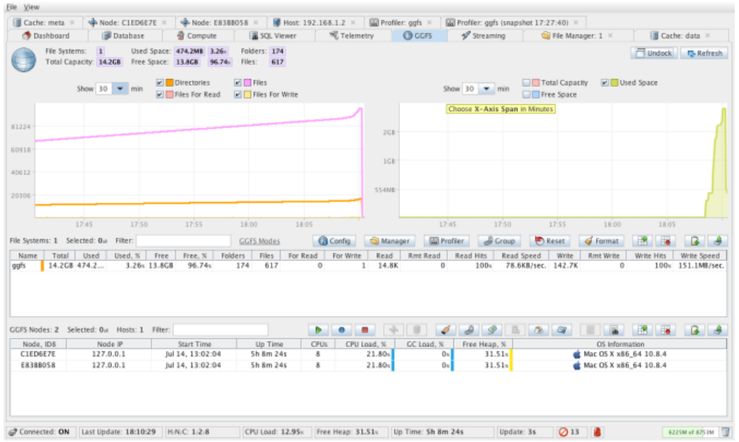


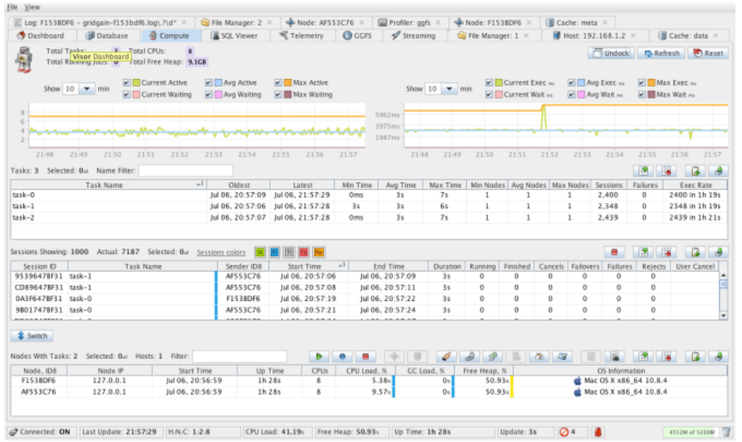
Management & Monitoring

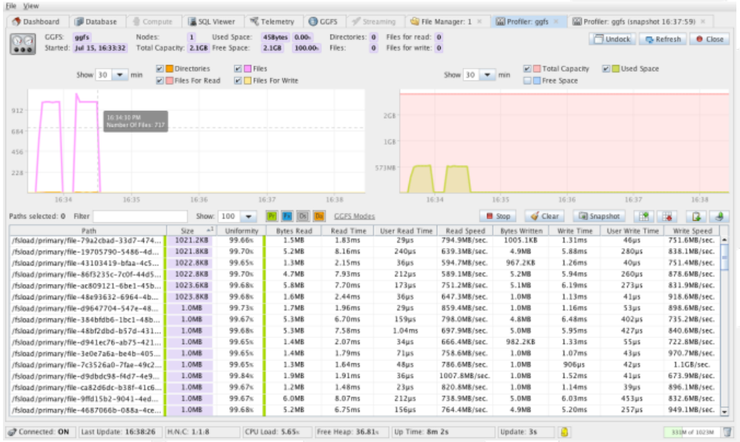












✶ *Enterprise Edition Only*

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Customer Use Cases

Automated Trading Systems
Real time analysis of trading positions & market risk. High volume transactions, ultra low latencies.

Financial Services
Fraud Detection, Risk Analysis, Insurance rating and modeling.

Online & Mobile Advertising
Real time decisions, geo-targeting & retail traffic information.

Big Data Analytics
Customer 360 view, real-time analysis of KPIs, up-to-the-second operational BI.

Online Gaming
Real-time back-ends for mobile and massively parallel games.

SaaS Platforms & Apps
High performance next-generation architectures for Software as a Service Application vendors.

boku
citi
markit
SBERBANK
RingCentral
CHRONOTRACK SYSTEMS
SONY
THOMSON REUTERS

Use Case: SBERBANK

Largest bank in Eastern Europe, and the third largest in Europe

- Open tender won by GridGain
  - Goal: Real-time risk and leverage reporting on their global financial trading portfolio
  - Performed a detailed evaluation and software assurance test
  - Delivered best performance, scale and high availability

1 Billion
Transactions per Second

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10 Dell R610 servers
1 TB Memory

< $25K

ANY QUESTIONS?

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