Apache Ignite and GridGain Enterprise Data Fabric Training

GridGain brings Apache Ignite to the enterprise. Apache Ignite is a high-performance, integrated and distributed in-memory platform for computing and transacting on large-scale data sets in real-time, orders of magnitude faster than possible with traditional disk-based or flash technologies.

C123-401

This training is designed to provide you with the knowledge required to build high throughput, low latency applications for scaling with Apache Ignite and GridGain Enterprise™ Data Fabric. GridGain Enterprise™ consists of Apache Ignite™ plus premium features to enhance functionality for enterprises.

By completing this training you will learn and gain experience about GridGain Enterprise and Apache Ignite and what they are used for, Learn where and when to deploy Apache Ignite and GridGain Enterprise, Learn how to build applications that run on Apache Ignite and GridGain Enterprise and take advantage of the benefits and Make the right development decisions while using Apache Ignite and GridGain Enterprise.

Audience

Developers
Project Managers
SI Architects

Knowledge Requirements

Java working knowledge
IntelliJ IDE knowledge is a plus

Length

3 Days

Bonus

Plenty of hands-on lab sessions on modifying the Custom applications

Syllabus

GridGain and Apache Ignite Introduction (Day 1)

1. Course Introduction
2. GridGain Introduction
3. Clustering and Caching Concepts
4. Order It Demo Application
5. my first Apache Ignite Application
6. Data Grid and JCache API

Apache Ignite/GridGain API (Day 2)

7. Data Modeling
8. SQL Grid Query
9. SQL Grid DML
10. Transactions
11. Persistence

Apache Ignite/GridGain API (Day 3)

12. Compute Grid
13. Continuous Queries
14. Service Grid
15. Additional API
16. Administration Concerns
17. Summary

HARDWARE AND SOFTWARE REQUIREMENTS

Computer Requirements

- RAM: minimum 6 GB of RAM required for exercises and platform to operate, 8 GB and up recommended.
- Disk Space: At least 16 GB of free disk space
- Internet connection
- User with sufficient privileges for creating environment variables and execute processes
- Windows - Trainees should have a user with Administrator privileges (to edit system files for environment variables)
- Windows OS - Trainees should have write/Execute on root folder of HDD(C:)

Supported Operating Systems

- Windows 7, 8, 10 (64 bit), Mac OS (with JDK 1.8 pre-installed)

Additional Software Requirements

- PDF Reader
- Zip software
- Web Browsers: Mozilla, Chrome, other

classroom HW requirements

- Projector 1024*768 minimum resolution
- White Board
- Erasable Markers
- Desktops or Laptops (see HW Requirements)
- Internet connectivity for all participants
- Electricity outlets for all computers/monitors and other equipment.
- At least 3 electricity outlets next to instructor location.

DAY 1 – GRIDGAIN AND APACHE IGNITE INTRODUCTION

Lesson 1: course Introduction	Lesson: 40 min, Lab: 20 min

- Course Goals and structure
- Introduction and background of the trainer, participants, labs and expectations
- Lab Session (Installation and setup)

Lesson 2: GridGain Introduction	Lesson: 60 min

- GridGain Systems Introduction
- GridGain Fabric Quick Introduction
- Why not standard RDBMS?
- GridGain Components
- Use Cases

Lesson 3: Clustering Concepts	Lesson: 60 min, Lab: 20 min

- Cluster Services and Nodes
- Starting a Cluster
- Node Discovery
- Distributed Cache
- Cache Affinity
- Lab

Lesson 4: Orders IT Demo Application	Lesson: 30 min, Lab: 30 min

- Order IT application presentation
- Use Cases
- Demo
- Lab

Lesson 5: My First Apache Ignite Application	Lesson: 30 min, Lab: 20 min

- Apache Ignite and JCache JSR 107
- My first Apache Ignite Application
- Starting Ignite Locally
- Lab

Lesson 6: Data Grid and Cache API	Lesson: 60 min, Lab: 30 min

- Data Grid and Cache Overview
- Cache Configuration
- Apache Ignite JCache API
- Bulk Operations Example
- Entry Processors
- Lab

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DAY 2 – APACHE IGNITE/GRIDGAIN API

Lesson 7: Data Modeling	Lesson: 90 min, Lab: 60 min

- Replicated vs. Partitioned Cache
- Embedded vs. Referenced
- Partitioned Cache Affinity
- Data Collocation and Affinity
- Affinity Fat Key
- Memory Utilization
- Reducing Network Traffic
- Ignite Atomic Sequence
- Data Access Object Pattern
- Lab

Lesson 8: SQL GRID Query	Lesson: 30 min, Lab: 50 min

- SQL Grid Overview
- Enabling SQL
- SQLQuery
- SQLFieldsQuery
- Distributed Joins
- Additional API and Considerations
- Lab

Lesson 9: SQL Grid DML	Lesson: 10 min, Lab: 20 min

- DML API
- Update
- Delete
- Additional Considerations
- Lab

Lesson 10: Transactions	Lesson: 30 min, Lab: 20 min

- Transaction Overview
- ACID 2PC Transactions
- Isolation Level
- Concurrency Modes
- Example
- Lab

Lesson 11: Persistence API	Lesson: 40 min

- Why Persistence?
- Persistence Basics
- Demo

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DAY 3 – APACHE IGNITE/GRIDGAIN API

Lesson 12: Compute Grid	Lesson: 90 min, Lab: 60 min

- Compute Grid Overview
- Distributed Closures
- Collocate Compute and Data
- Debugging Compute Grid Jobs
- Load Balancing
- Fault Tolerance
- Monitoring Compute Grid
- Lab

Lesson 13: Continuous Queries	Lesson: 30 min, Lab: 50 min

- Continuous Query Overview
- Continuous Query Example
- Lab

Lesson 14: Service Grid	Lesson: 30 min, Lab: 30 min

- Introduction to Service Grid
- Service Proxy
- Deployment Consideration
- Service Grid API
- Lab

Lesson 15: Additional API	Lesson: 50 min

- Streaming API Introduction
- Grid Binary Objects & Class-Free Caches
- Cluster Groups
- SQL Performance Considerations
- Near Cache

Lesson 16: Basic Administration Concerns	Lesson: 40 min

- Performance Tips
- Capacity Planning
- Network Protocols

Lesson 17: Summary	Lesson: 15 min

- Summary
- Wrap up
- Q&A