Apache ServiceComb (Incubating) Community Roadmap

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2018-10-12
Biography

Huawei open-source technology expert

Apache ServiceComb project initiator

Apache member

Participated in the development of multiple Apache projects. Worked as the member and committer of Apache Camel, Apache CXF, Apache ServiceMix, and Apache RocketMQ PMC.

Previously worked at Red Hat, IONA, and Travelsky.
Contents

• Challenges to Microservice Development
• ServiceComb Project Introduction
• ServiceComb Community Development History
• Latest ServiceComb Roadmap
Challenges to Microservice Architectures

- Problems in distributed systems
  - Service registration and discovery
  - Fault tolerance and failbreak
  - Flow control and fallback

- O&M problems
  - Dynamic configuration management
  - System monitoring
  - Route management
Current Microservice Framework

Service framework

Service Mesh
ServiceComb: Open-Stack Microservice Solution

Public Cloud
- Service security
- Governance UI
- Automated deployment
- Monitoring and O&M

Interconnection with industry solutions

Smooth cloud migration

ServiceComb Microservice Solution
- Java programming (POJO/SpringMVC/JAX-RS)
- Golang Programming
- Service Mesh
- Fallbreak and fault tolerance
- Flow control
- Load balancing
- Token authentication
- Edge service
- Service contract
- Microservice scaffolding
- Saga transaction consistency
- Dynamic configuration
- Service registration
- Distributed tracing
- Service measurement

Communications protocols (REST & RPC)

Open-source ecosystems
- Dubbo
- SpringBoot
- Apollo
- Zipkin
- Skywalking
- SpringCloud
- Istio
- Prometheus
- K8s
ServiceComb Project Introduction

- **Java Chassis**
  - A high-performance microservice framework that provides functions such as service registration discovery, dynamic configuration management, flow control, fallback, fault tolerance, and failbreak

- **Service Center**
  - A high-performance and high availability service registration center based on ETCD

- **Saga**
  - A solution to eventual consistency of microservice transactions
  - Provides a centralized transaction coordinator that coordinates transaction invoking between microservices to ensure final transaction consistency.

https://github.com/apache?q=incubator-servicecomb
ServiceComb Java Chassis Architecture

- **Programming model**: (Spring MVC, JAXRS, POJO...)
- **Communications model**: (Serialization, Transfer Protocol)
- **Running model**: Service discovery, Fallbreak, Load balancing, Configuration, Tracing, ...
- **Service contract**: (OpenAPI)
Development and O&M Based on Service Contracts
Support for Asynchronization

- Provides the asynchronous kernel based on Vertx.
- Supports synchronous invoking mode while delivering high performance.
- Separates communication threads from service processing threads.
- Controls the operation-level thread pool and supports the isolation warehouse.
- Supports multiple asynchronous programming interfaces.
  - CompletableFuture
  - RxJava
  - Reactive Stream
  - ...

![Diagram showing support for asynchronization with event loops and thread pools](image-url)
Distributed Service Call Tracing

- Supports standard distributed call tracing (Zipkin V1 and V2).
- Supports the extension of customized call tracing by using @span.
Distributed Transaction Consistency
Distributed Transaction Consistency
Solution for Eventual Consistency of Distribution Transactions

Distributed transaction coordinator

Saga

Transaction

Try

Confirm

Cancel

Do

Cancel

Do

Cancel

TCC

Transaction

Try

Confirm

Cancel

Do

Cancel

Do

Cancel
ServiceComb Development Roadmap

http://www.aleanjourney.com/2016/05/5-steps-for-creating-lean-roadmap.html
ServiceComb (Before Apache Incubating)

Service Center Java Chassis 0.1.0
Official open-source version

Service Center Java Chassis 0.2.0
Support for Zuul
Spring Boot starter
Service center optimization

Service Center Java Chassis 0.3.0
Support for Zipkin
Support for span customization
Optimized sample examples

Service Center Java Chassis 0.4.0
Service center upgrade

Service Center Java Chassis 0.5.0
Edge services
System metrics
Asynchronous call API

Saga 0.0.1
Centralized Saga prototype

Saga 0.0.2
Saga invocation supports condition judgment.

Most developers are Huawei employees; 10 emails per month on Mailing List; 2 external users
ServiceComb (Apache incubating)

Service Center Java Chassis 1.0.0-m1
- Supports the Dev development mode.
- Integrated with external configuration centers.
- Supports metric monitoring.
- Supports the asynchronous programming model.
- Supports Zipkin V2.

Service Center Java Chassis 1.0.0-m2
- Optimized ETCD elastic scaling.
- Optimized the edge service gateway.
- Supports file stream upload and download.
- Supports customized log access.

Service Center Java Chassis 1.0.0
- Official version
- Automatically generates scaffold projects.
- Supports the HTTP2 protocol.
- Supports customized ping mechanisms.

Service Center Java Chassis 1.1.0

Saga 0.1.0
- Distributed Pack prototype

Saga 0.2.0
- Supports Spring Boot 2.x.

Saga 0.3.0
- Optimized the background performance.
- Supports multiple distributed coordination mechanisms.
- Supports multi-language framework Omega.

10+ external long-term contributors, 180 mails per month on Mailing List, and 20 external users
ServiceComb Development Roadmap in the Near Future

Asynchronous programming interfaces
- Further extension based on Vertx
- AsyncRestTemplate
- CompletableFuture
- RxJava

Service center
- Multi-DC support
- Support for the hybrid cloud architecture
- Support for both client self-registration and platform registration

Service Mesh
- Multi-language microservice support
- Accessing base services
- Monitoring management interconnection

Ecosystem support
- Support for Java 9 and 10
- Support for Spring Boot 2.0
- Scaffold application
- Spring development system convergence

Microservice management
- Open-source configuration center
- Interconnection with multiple monitoring systems
- Service governance system integration

Microservice transaction coordinator
- Management console
- Server HA
- Pack supporting multiple coordination modes
- Synchronous and asynchronous event support
How to Join the ServiceComb Community

• Online
  • Follow the ServiceComb WeChat assistant and join the WeChat group to communicate with others.
  • Official Website: http://servicecomb.incubator.apache.org/
  • Video Lectures: http://www.itdks.com/member/organizer/261
  • Mailing List: dev@servicecomb.apache.org
  • Feedback: https://issues.apache.org/jira/projects/SCB
  • Gitter Address: https://gitter.im/ServiceCombUsers/Lobby
  • Project Address: https://github.com/apache?q=incubator-servicecomb

• Offline
  • Targeted workshop
  • Irregular offline meetup
Thank you.

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