Apache Dubbo (Incubating)
---Present and Future
What’s Dubbo
A high performance RPC framework

Open Sourced Project Incubating at Apache
Dubbo ['dʌbəʊ] is a java based RPC framework first open-sourced by Alibaba at 2011. Donated to Apache at 2017.

A high performance RPC framework
Based around the idea of defining a service, specifying the methods that can be called remotely with their parameters and return types.

Beyond RPC: rich features for service governance
Provides features for managing microservices: automatic service registration & discovery, fault tolerance, load balancing, traffic management...

Production-tested and Proven At Scale
Wildly adopted in internet companies and financial organizations in production for years, including Alibaba, JingDong, Kaola, Qunar, etc.
How Dubbo Works
A high performance RPC framework

1. **Export**
   Provider export services at a specified port.

2. **Service Register**
   Provider register service metadata to registry.

3. **Subscribe**
   Consumer subscribe services it interests from Registry.

4. **Service Discover**
   Registry pushes service instances to Consumer

5. **Invoke**
   Consumer select a service provider, start remote call.

6. **Monitor**
   Monitor collect and display invoke statistics.

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Why Maintain Dubbo
The reason we restart maintain Dubbo

Strategy
Alibaba announced the development strategy of embracing Open Source at Yunqi Con. 150+ Open Source projects, ranking top 10. 170K+ total stars

Community
Dubbo was widely adopted by organizations. There are plenty of requirements and issues reported by community.

Eco-System
Around Dubbo, we can create a thriving ecosystem, a one-stop micro service governance solution.

Feedback
Ideas from community can inspire us; Community can also benefit from our experience in large-scale cluster and service management.
Stars increased

77% Since re-maintain at 2017–07, we have seen the Stars, Forks and Watches increased by 7428, 3072 and 745 respectively.

Ranked 11th in Java category at Github, 2000 UV/day. At OSC 2017, Druid, FastJson, Dubbo, RocketMq has been voted to the list of 「China's most popular open source software TOP20」.

Now Dubbo is an incubating project at Apache.

18K STAR
12K FORK
3K WATCH
According to a survey recently. Dubbo user can be classified into three types: Internet companies, traditional companies embracing Internet, Companies providing Internet solutions. Dubbo have Apache PPMC from Dangdang, Qunar, Weidian and Alibaba.
The Dubbo team plans to hold several meetups in Beijing, Shanghai, Shenzhen and Hangzhou. The ideas and speakers be discussed and selected from community.

If you are using Dubbo, please let us know: https://github.com/apache/incubator-dubbo/issues/1012
Current Status
What have we done

Upgrade dependencies to the latest version: Spring, ZK, Hessian, Netty, Javassist, Validator, etc.

Meet requirements in community: REST, Spring Boot, Hessian, QOS, etc.

Docs and Website
dubbo.apache.org enrichs with quick start, docs, samples, community;
Rewrite docs using gitbook.

Releases
Keep a relatively quick release cycle, within 11 month:
- 7 maintaince releases.
- 3 feature releases.

Community

Apache
Donated to Apache, we expect more developers and organizations get involved in the community.
Roadmap

01. Microservices: Lightweight, polyglot, REST, Spring Boot

02. Cloud Native: Spring Cloud, Service Mesh

03. Eco-System: build a one-stop ecosystem around Dubbo

04. Performance always comes first Challenges from large-scale clusters
Modularization
The communication layer and service management layer are highly coupled to each other.

Fault Tolerant
Make Dubbo applications more stable by introducing short-circuit, isolation and flow-control policies. Latency-aware LoadBalance policies.

Service Metadata
Metadata need classified by purpose: service maintenance, remote call, dynamic properties. Big pressure for Registry and User when stored in one URL.

Extremely large-scale clusters
Meet the challenges of large scale clusters: service discovery, memory footprint and addresses, CPU, etc.

Traffic Routing
Provides more routing policies: condition, script, enabling argument routing, zone-aware routing, canarying, and more.

Asynchronism
Promote overall throughput and CPU utilization of distributed systems: asynchronous API, Reactive, Stream
Roadmap
Eco-System — SPI Extension

API
- Spring XML
- Annotation
- Java Config
- Spring Boot
- Spring Cloud
- Reactive
- Fluent API

registry
- ZK
- broadcast
- eureka
- etcd
- CS
- hazelcast
- Apollo
- Diamond
- Archaius

cluster
- Failsafe
- Failover
- Failfast
- Hystrix
- Random
- Least Active
- Random Robin
- Weight
- Consistent Hash
- Latency
- Script
- Canary
- Args
- Zone-aware
- Intelligent

protocol
- Hessian
- Redis
- HTTP
- JsonRPC
- REST
- Avro
- Thrift
- gRPC
- JMS

serialize
- JSON
- Java
- Hessian2
- FST
- kryo
- Protobuf
- netty
- netty4
- XIO
- HTTP
- QUIC
- HTTP2
- Dubbo
- Dubbo3
- Thrift
- Rx

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Roadmap
Eco-System — Polyglot, Diversity, ...

- PHP CLIENT
- JAVA CLIENT
- HTTP CLIENT
- NODE CLIENT
- PY CLIENT

- DUBBO SERVICE
- DUBBO SERVICE
- DUBBO SERVICE

- SERVICE DISCOVERY
- MOCK SERVER
- TEST SERVER
- SWAGGER SERVER
- DUBBO ADMIN
- METRICS/TRACE
- AUTH SERVICE

- GATEWAY/SIDECAR

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Service Mesh
Low level platforms are providing more capabilities that usually exist in higher level frameworks like Dubbo. Dubbo core itself can be more lightweight and Dubbo Mesh integrate with low level platforms as a data panel.

Polyglot
Developers can use any language in a cloud environment. A sidecar solution integrating service governance capabilities can easily support multi-languages. And this is a problem both Dubbo and Spring Cloud faces.
Phase 1: Preparation
Spend nearly **3 months in total**. With 1 champion, 4 mentors. 1 week for proposal preparation, discussed and voted for 72h respectively, entered Incubating after 3 binding votes.

Phase 2: Incubating
**This phase will take 8+ months.** Asset transfer and community building are the most important part, Remember the Apache way: community over code

Phase 3: Graduation
We will pass the maturity evaluation and then **vote for graduation**.