

SkyWalkingProposal

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⚠️ **FINAL** ⚠️

This proposal is now complete and has been submitted for a [VOTE](#).

Abstract

Skywalking is an APM (application performance monitor), especially for microservice, Cloud Native and container-based architecture systems. Also known as a distributed tracing system. It provides an automatic way to instrument applications: no need to change any of the source code of the target application; and an collector with an very high efficiency streaming module.

Proposal

The goal of this proposal is to bring the existing [Skywalking](#) codebase and existing developers and community into the Apache Software Foundation (ASF) in order to build a global, diverse and self-governed open source community in APM field.

This project started in Open Source on [GitHub](#) about more than 2 years ago. Beginning with a small SDK and collector. So far the [OpenSkywalking](#) governs the project through the PMC and Committer Team.

[OpenSkywalking](#) is submitting this proposal to donate the Skywalking sources code and associated artifacts (documentation, web site content, wiki, etc.) to the Apache Software Foundation Incubator under the Apache License, Version 2.0. These artifacts are currently available on [GitHub](#) at <https://github.com/OpenSkywalking> and include:

- Skywalking: The java sniffer(agent) for collecting data, and collector for analysing and persistence.
- Skywalking-UI: The web UI for skywalking APM

Voted on submitting the proposal to the Incubator. [Check here](#)

Background

Micro-service, Cloud Native and container-based architecture system are becoming more and more popular, so the traditional monitoring, like application loggings, can provide less information because of the distributed isolates the relations. Based on the [Google Dapper paper](#), many tracing systems born. The [OpenSkywalking](#) organisation was created with Skywalking made based on tracing, but not just tracing, it adds additional value by reducing the sniffer (agent) cost, analysis and visualization.

In 2015, Skywalking project started, when service-oriented architecture became popular. At first, skywalking provided a very simple SDK, and collected data into a HBASE cluster. After we opened on the [GitHub](#), the community gives the feedbacks about how difficult to maintain a HBase cluster, even harder than the applications under monitored. So, in 2.x 2016, skywalking provided a self-designed storage, and update the SDK to a javaagent with supporting auto-instrumentation. Then since 2017, more and more contributors joined, we set up the PMC team and committer team. Skywalking evolved to an APM, and more and more features provided since then.

Rationale

Skywalking includes these primary parts:

1. Provide an auto-instrument sniffer, which is based on Javaagent and collects events and traces happened inside JVM, with little CPU/Memory cost.
2. An extendable tracing data protocol suit with gRPC and HTTP implementations, is compatible for other language agent or SDK.
3. Provide Collector, which accepts the tracing data protocol suit, and does the analysis and aggregation inside for detecting the relationships among applications and services, generating the metrics, and alerting.
4. Provided our own UI, which visualizes the topological graph of related applications and services, trace stack, metrics and alerting.

Also, Skywalking team is passionate about community cooperations. Skywalking is a supported tracer and member of <http://opentracing.io>. Also we take part in the [TraceContext Specs](#), which is about tracing context propagation format. The founder of the project, Sheng Wu, is the member of these organizations,

There is a strong need for an open, easy-to-use APM towards helping today's [DevOps](#) people to monitor their running systems, while also being easy and transparent to maintain and modify. The Skywalking has been an hot open source project in [GitHub](#). We feel that by moving to Apache it will help us work in a more global and open way, presenting the project as a commercial friendly but vendor neutral technology. Under Apache's strong governance and existing processes, hope is also to make the Skywalking releases more reliable, as is crucial for monitoring systems running in any Application Zone.

Initial Goals

Our initial goals are to bring Skywalking into the ASF. The most important things are following ASF's governance module, and integrating with Apache development process. Also moving the existing codebase to an Apache git repository.

Current Status

Meritocracy

Skywalking was originally created by [Sheng Wu](#), himself in May 2015, and opened in [GitHub](#) in Nov. 8th, 2015. The project now has committers and users from many companies. The newer committers of the project are guided by the existed PMC and Committer Team members, by reviewing and discussing with them. When they are ready, PMC will start a vote to promote him/her to become a member of PMC and Committer Team. Also after the founder, Sheng Wu, joined Huawei in 2017, Huawei [DevCloud](#) decided to contribute and support the project. So he personally leads the interested developers, and helps them to join the community quickly and efficiently. Now we have set Huawei Devcloud Contributor Team for them. Contributions are always welcomed, highly valued. A lot of energy is allocated to ensure help to all wishing to contribute.

Community

[OpenSkywalking](#) is supported by 5 companies: Huawei, shurenyun.com, dangdang.com, tydic, nutz.cn, which are both contributing to the project and also used it in product, also provide many important feedbacks from their actual scenarios. The contributors, who can provide employer information, are from **Huawei DevCloud Team**, **Tydic**, **Oneapm** (APM vendor), **Alibaba Cainiao**, **dangdang.com**, **cloudwise** (APM vendor), **jd.com**, **cig.cn**, **hecom.cn**, and **www.suixingpay.com**.

Core Developers

The core developers are a diverse group of experienced open source developers and team leaders.

- [PMC members](#)
- [Committer Team members](#)

Known Risks

The project is well known in global tracing and APM field, and live more than 2 years. We are not sure there exists a risk, but definitely have a challenge for us. So far, the contributors, committers and confirmed product use cases are all from China.

Language and Culture

Concerns have been raised about language challenges and, as is typical for developers not strong in english, aware that the community can be shy in a debate or disagreement when english is used. Having looked through the project's history this concern can be seen to be minor. The commitlog is in english, and so are the tickets and the pull requests. The website and documentation is equally both english and chinese. The community has been strict upon itself to ensure it became and stays so. The use of chinese should not be seen as a problem, it is a multilingual world, but it is important that english speakers feel included and able to contribute freely to the project without having to ask for translations. To deal with poor or broken english it's important that a gentler and inclusive community is fostered.

Orphaned products

The contributors and community cooperation brings the project from a small concept into a real APM system. So far, many companies, e.g. Huawei [DevCloud](#), dangdang.com, tydic, jd.com, have their own independency contribute team for Skywalking. So this is not risk of any signs of orphaned or abandoned code.

Inexperience with Open Source

The founder of the project, Sheng Wu, is an open source lover. He has contributed for these open source projects: [OpenTracing-Specification](#), [OpenTracing-Java](#), Motan, Hprose, [OpenTracing specification-zh](#), and [apache/incubator-rocketchmq](#).

Hongtao Gao, our committer team member, is the major maintainer of [sharding-jdbc](#) and [elastic-job](#) since 2014.

The project are following these two experienced open source people's guidance. And glad to learn from the Apache Way.

Homogenous Developers

The confirmed contributors list: <https://github.com/OpenSkywalking/Organization/blob/master/README.md#contributors>. As mentioned above in the [Community](#) section.

Reliance on Salaried Developers

First of all, most members of the PMC and Committer Team, are paid by their employers (Huawei, Tydic, dangdang.com and OneAPM) to contribute to this project. But we have to say, many of them have more than one employer in the past 3 years contribution, but the contributions are never stopped. We don't just depend on salaried contributors only. Skywalking itself and the distributed tracing field are very attractive and important for every company the contributors work in, and they have no reason to stop them. Contributions and new committers are expected.

Relationships with Other Apache Products

HBase was used as a backend before being rewritten, and that [ZooKeeper](#), httpcomponents, log4j and junit are used. Also we are considering all java projects, especially big data technology, e.g. Hadoop, Hbase, Cassandra.

A Excessive Fascination with the Apache Brand

The ASF has a strong brand, and that brand is in itself attractive. Skywalking will benefit from world wide collaboration and use cases. The Apache brand will be duly respected and honored in regards to marketing and publicity. Further more, with the help of Incubator PMC, we will make every effort to follow the rules and policies of the ASF.

Documentation

- <https://github.com/OpenSkywalking/skywalking/tree/master/docs>
- <https://github.com/OpenSkywalking/skywalking/wiki>

Initial Source

The project consists of two distinct codebases: the server and the UI. These have existed as separate git repositories.

- <https://github.com/OpenSkywalking/skywalking>
- <https://github.com/OpenSkywalking/skywalking-ui>

Source and Intellectual Property Submission Plan

The project is under Apache Licensed 2.0 already. As soon as Skywalking is approved to join Apache, we can transfer of source code to the Apache Foundation. There is no legal issue. All source artifacts (code and documentation) will be assigned copyright to the ASF. Currently all artifacts are copyright to 'OpenSkywalking Organization', so effort in this process pertains mostly to obtaining the individual and corporation contributor agreements (ICLAs and CCLAs) from all the existing PMC and committers. It is also understood that the SGA will be signed so to hand over the copyright to ASF. This has been made clear with the whole [SkyWalking](#) community [here](#).

External Dependencies

- Byte-buddy (Apache 2.0)
- gRPC (Apache 2.0)
- netty (Apache 2.0)
- guava (Apache 2.0)
- elasticsearch (Apache 2.0)
- H2 Driver (MPL 2.0 or EPL 1.0)
- Zookeeper Client (Apache 2.0)
- disruptor (Apache 2.0)
- junit (MPL)
- mockito (MIT)
- powermock (Apache 2.0)
- Spring (Apache 2.0)
- gson (Apache 2.0)
- httpcomponents (Apache 2.0)
- log4j (Apache 2.0)
- vis (Apache 2.0)
- webjars-bootstrap (Apache 2.0)
- animate.css (MIT)
- jquery (js.foundation)
- jquery-ui (js.foundation)
- jsView (MIT)
- metisMenu (MIT)
- d3 (BSD-3)
- echarts (BSD-3)
- [DataTables](#) (MIT)
- requirejs (MIT)
- vue (MIT)

Required Resources

Mailing Lists

- private@skywalking.incubator.apache.org (moderated subscriptions)
- commits@skywalking.incubator.apache.org
- dev@skywalking.incubator.apache.org

Git Repositories

- <https://github.com/apache/incubator-skywalking.git> (gitbox)
- <https://github.com/apache/incubator-skywalking-ui.git> (gitbox)

Issue Tracking

The community would like to continue using [GitHub](#) Issues. This appears now possible with ASF projects.

Continuous Integration tool

- Jenkins

Initial Committers

- Sheng Wu, , wusheng6@huawei.com
- Yongsheng Peng, , pengys@tydic.com
- Xin Zhang, , zhangxin@oneapm.com
- Hongtao Gao, , gaohongtao@dangdang.com
- Yang Bai, , jixian.by@cainiao.com
- Kai Wang, , wangkia01@dangdang.com
- Yuntao Li, , liyuntao@huawei.com
- Sheng Wang, , marco.wang@huawei.com
- Dongxue Si, , ilucky.si@cloudwise.com
- Kewei Zhang, , zhang_kw@suixingpay.com

Affiliations

- Huawei: Sheng Wu, Yuntao Li, Sheng Wang
- Tydic: Yongsheng Peng
- OneAPM: Xin Zhang
- dangdang.com: Hongtao Gao, Kai Wang
- Alibaba Cainiao: Yang Bai
- Cloudwise: Dongxue Si
- suixingpay.com: Kewei Zhang

Champion

- Michael Semb Weaver, mck@apache.org

Voted for skywalking Incubator champion. [Check here](#)

Mentors

- Michael Semb Weaver, mck@apache.org
- Luke Han, lukehan@apache.org
- Willem Ning Jiang, ningjiang@apache.org

Skywalking received a lot helps from Michael Semb Weaver about this proposal and Apache way. Set face-to-face meeting with three Apache members: Luke Han, Nicolas Hedhman, Willem Ning Jiang. They helps us a lot.

Sponsoring Entity

We are requesting the Apache Incubator to sponsor this project.