Fabric-sdk-py

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# HIP identifier

Hyperledger fabric Python SDK

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# Abstract

Fabric-sdk*-py* is a Python based SDK library for the [Hyperledger fabric](https://github.com/hyperledger/fabric) [1] project. This SDK will follow the guidance of the SDK WG. Users can use it in Python program to interact with the fabric through RESTful APIs or gRPC, e.g., checking status, or operating (deploy, invoke, query, etc.) chaincode. Fabric-sdk-*py* targets to support both development and production environments, as well as for simple testing.

# Context

Initial focus of the Hyperledger fabric project was on delivering a Nodejs SDK. Those with an interest for SDKs that supported other programming languages were advised to make a proposed contribution.

The implementation is motivated by Python libraries including: [docker-py](https://github.com/docker/docker-py) [2] and [requests](https://pypi.python.org/pypi/requests/) [3].

# Motivation

Currently the main ways to interact with a hyperledger cluster including:

* Fabric CLI commands: This is easy for human users, while not that extensible for programing.
* REST API or gRPC: This is good for programming, while too much low-level details for usage, which may easily introduce additional efforts and mistakes.

Python is a very popular language, rating rank top-5 in [TIOBE index](http://www.tiobe.com/tiobe_index) [4] and [Github Trend](https://github.com/blog/2047-language-trends-on-github) [5]. It is much easier for Python developers to use such a client SDK. Currently only a Nodejs client SDK implementation is available. The addition of a Python client SDK would enable Python developers to develop applications for Hyperledger fabric.

# Status

The work is started in April, 2016, and has been employed and evaluated in several web services. Currently it is still under development, and the latest source code is at [Github](https://github.com/yeasy/hyperledger-py) [6].

Several todo tasks include:

1. Support grpc beside restful APIs following the guidance of the SDK WG, where we can let users choose according to their requirements.
2. Enhance the supports for more APIs.
3. Potentially support other projects besides fabric, such as the sawtooth-lake (need more discussion).

# Solution

Fabric-sdk-py now maintains two branches: restful and grpc. We may adjust according to the guidance of the SDK WG.

The restful branch leverages the Python requests library to make REST API call to the hyperledger fabric cluster.

The grpc branch utilizes the grpc client to interact with the hyperledger fabric.

Existing code will keep compatible with main stable version of Python, including Python 2.6, 2.7, 3.3 and 3.4.

The current license is Apache License v2.0.

# Effort and resources

Currently one person (Baohua Yang, IBM Research) is committed part-time to developing and maintaining the project. This is not the main thrust of his research however. To realize its full potential, other developers or test engineers will need to become involved.

# How to

The project will be hosted at github.

Currently we have some basic test cases. More test cases will be added.

The CI is tracked by [travis-ci](https://travis-ci.org/) [7], while the ci tests are managed by [tox](https://pypi.python.org/pypi/tox) [8].

Documentation is well written, with README, and code documentation. Users can easily take usage of the code based on several real adoptions and deployment cases.

# References

1. “Hyperledger fabric project”, <https://github.com/hyperledger/fabric>.
2. “Docker-py project”, <https://github.com/docker/docker-py>.
3. “Python requests project”, <https://pypi.python.org/pypi/requests>.
4. “TIOBE index”, <http://www.tiobe.com/tiobe_index>.
5. “Github Trend 2015”, <https://github.com/blog/2047-language-trends-on-github>.
6. “Hyperledger-py”, <https://github.com/yeasy/hyperledger-py>.
7. “Travis CI”, <https://travis-ci.org>.
8. “Tox”, <https://pypi.python.org/pypi/tox>.

# Closure

The current version only supports [Core API](https://github.com/hyperledger/fabric/blob/master/docs/API/CoreAPI.md), in the future it needs to add implementations for other rest APIs and native grpc interfaces following the guidance of the SDK WG. The project will succeed if people use this within their Python code, and find it useful. We can use some acknowledgements page to track projects that integrate this code in their implementations.

# Acknowledgement

Thanks for all the insightful comments from reviewers.

### [Srderson](https://github.com/srderson)

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