Hyperledger Cactus Home

<table>
<thead>
<tr>
<th>Project</th>
<th>HYPERLEDGER CACTUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>INCUBATION</td>
</tr>
<tr>
<td>CII Badge</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Hyperledger Cactus is a plugin based framework which aims to provide developers with an abstraction over protocol specific implementations, and enabling interoperability. This enables solutions to more easily adapt to new protocols, and make transactions involving multiple public and/or permissioned ledgers.</td>
</tr>
</tbody>
</table>

Key Characteristics

What is Hyperledger Cactus?

Cactus is a pluggable enterprise-grade framework to transact on multiple distributed ledgers without introducing yet another competing blockchain. An SDK of SDKs

Cactus aims to provide Decentralized, Adaptable and Secure Integration to and between Blockchain Networks. It's aims to cover as many protocols as possible through an extensible plugin architecture where new protocols or functionality can be added by creating new plugins.

Why should I use Cactus?

- To address blockchain fragmentation; Allow developers to connect and perform transactions across different blockchain networks.
- Save (distributed) app developers from re-inventing the wheel; Simplify secure interactions with blockchain nodes using a standardized interface across protocols.
- Lower risk of adopting blockchain by businesses; Abstract your app layer from the blockchain protocol, allowing developers to easily change the blockchain protocol being used and reducing risks of your app being obsolete.

What are Cactus Design principles?

- **Key principles:**
  - Plugin architecture: Maximize flexibility and future-proofing through plug-in architecture
  - Secure by Default: Avoid needing explicit action from users to have a secure Cactus deployment.
  - Toll Free: Users should not be required to use tokens for transactions & Operators should not be required to take a cut of individual transactions.
  - Low Impact Deployment: Do not interfere with or impede existing network requirements.
- **Additional principles:**
  - Wide Support: Support as many blockchain protocols as possible, and constantly support new ones.
  - Prevent Double Spending: Whenever two networks are interacting with each other ensure that there is no double spend whenever possible.
  - Preserving Ledger Features: Using Cactus should allow you to use all the features which the protocol enables.
  - Horizontal Scalability: Cactus should never be the bottleneck of all the networks involved. IE: If 2 networks can do 100tps, Cactus should be able to handle 200

What are Cactus current features?

- Connectors for different blockchain protocols
  - Hyperledger Besu, Hyperledger Fabric, (WIP for Corda, Geth, and Quorum)
- Atomic transfers across legers
  - HTLCs for Ether, ERC20 (WIP Fabtoken)
- Decoupled identity
  - JWT, (WIP OpenAPI)
- Metrics

Getting Involved

You are invited to get involved with the Cactus project. Here are some ways you can get started.

1. Join one of our pair programming calls
   a. North America Morning/Europe Evening
   b. Asia-Pacific Morning /Europe Morning
2. Instructions on building Cactus (the framework itself)
3. Join communication channels and introduce yourself and ask questions (details below)
4. Grab a good first issue based on your level of experience /technical area(s) of expertise or interests:
   a. All Good First Issues
   b. Climate Action SIG Specific Good First Issues
   c. Level 100 - Introductory Good First Issues
   d. Level 200 - Intermediate Good First Issues
   e. Level 300 - Advanced Good First Issues
   f. Level 400 - Expert Good First Issues

Communication

Mailing List

- cactus@lists.hyperledger.org
- subscribe
- messages

Chat (for questions and ephemeral discussions)

- #cactus

Meetings

https://lists.hyperledger.org/g/cactus/calendar

Calendar of Public Meetings
How can I collaborate?

To see a guide on how to use Hyperledger Cactus, take a look at the links below in the Documentation section. Keep in mind that this is currently being updated so please write us through the different means listed in the Communication section.

If you want to collaborate in Cactus’ development, you can pick an issue directly from Github – we’ve linked to some good first issues below that are good places to start for new contributors. If you need extra guidance, contact us through the chat or join one of our meetings and we can help you.

Prometheus and Grafana based monitoring of the individual plugins

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<table>
<thead>
<tr>
<th>Issue</th>
<th>Title</th>
<th>Status</th>
<th>Labels</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>#858</td>
<td>feat(connector-fabric): pre-signed transactions support</td>
<td>Open</td>
<td>GFI_Climate_Action_SIG Hacktoberfest Security enhancement good-first-issue good-first-issue-300-advanced</td>
<td>petermetz</td>
</tr>
<tr>
<td>#860</td>
<td>docs(examples): carbon accounting microk8s deployment files</td>
<td>Open</td>
<td>Developer_Experience GFI_Climate_Action_SIG Hacktoberfest dependencies documentation good-first-issue good-first-issue-400-expert</td>
<td>petermetz</td>
</tr>
<tr>
<td>#912</td>
<td>feat(keychain-aws-secretmanager): create aws secret manager plugin</td>
<td>Open</td>
<td>Developer_Experience Keychain good-first-issue good-first-issue-200-intermediate</td>
<td>jagpreetsinghsasan</td>
</tr>
<tr>
<td>#885</td>
<td>refactor(core-api): discontinue the PluginAspect enum</td>
<td>Open</td>
<td>Core_API good-first-issue good-first-issue-200-intermediate</td>
<td>petermetz</td>
</tr>
<tr>
<td>#916</td>
<td>feat(connector-fabric): external chain code deployment</td>
<td>Open</td>
<td>Fabric Hacktoberfest Triage_Needed enhancement good-first-issue good-first-issue-300-advanced</td>
<td>petermetz</td>
</tr>
<tr>
<td>#931</td>
<td>fix(cmd-api-server): TLS for tests on NodeJS 16</td>
<td>Closed</td>
<td>good-first-issue good-first-issue-300-advanced</td>
<td>petermetz</td>
</tr>
</tbody>
</table>
feat(connector-fabric): private data collections support

```
feat(connector-fabric): private data collections support
- Fabric
- GFI_Climate_Action_SIG
- enhancement
- good-first-issue
- good-first-issue-300-advanced

#857 opened Apr 24, 2021 by petermetz
```

fix(cmd-api-server): OpenAPI spec validation missing from plugin REST endpoints

```
fix(cmd-api-server): OpenAPI spec validation missing from plugin REST endpoints
- API_Server
- Core_API
- Hacktoberfest
- bug
- good-first-issue
- good-first-issue-200-intermediate

#847 opened Apr 23, 2021 by petermetz
```

meta: categorize good first issues by experience level

```
meta: categorize good first issues by experience level
- Developer_Experience
- good-first-issue

#811 opened Apr 18, 2021 by petermetz
```

feat(ci): support debugging on CI server through ssh

```
feat(ci): support debugging on CI server through ssh
- Developer_Experience
- Hacktoberfest
- Nice-to-Have
- documentation
- enhancement
- good-first-issue
- help wanted

#717 opened Mar 24, 2021 by petermetz
```

feat(consortium-indy): support consortium database indy backend

```
feat(consortium-indy): support consortium database indy backend
- Core_API
- Hacktoberfest
- enhancement
- good-first-issue

#675 opened Mar 16, 2021 by petermetz
```

fix(connector-fabric): mandate ssh host key verification

```
fix(connector-fabric): mandate ssh host key verification
- Fabric
- Hacktoberfest
- Security
- bug
- good-first-issue

#663 opened Mar 12, 2021 by petermetz
```

refactor: obtain output from TSC repo linter

```
refactor: obtain output from TSC repo linter
- Developer_Experience
- Hacktoberfest
- Nice-to-Have
- Triage_Needed
- enhancement
- good-first-issue
- help wanted

#662 opened Mar 12, 2021 by petermetz
```

test(examples): puppeteer GUI tests for supply chain frontend

```
test(examples): puppeteer GUI tests for supply chain frontend
- Developer_Experience
- Hacktoberfest
- Nice-to-Have
- dependencies
- enhancement
- good-first-issue
- good-first-issue-300-advanced

#650 opened Mar 10, 2021 by petermetz
```

docs(contributing.md): explicit recommendation for avoiding global
dependencies
> chore(deps): upgrade to openapi generator 2.2.6
> Containerize connector plugins
> docs(contributing.md): explain watch script
> ci: add fuzzer tests for our APIs
> feat(openapi): add cactus OAS extension
> build(docker): support ARM64
> build(npm): post version script to sync openapi specs
> build(openapi-generator): swap local JDK to container

#585 opened Feb 16, 2021 by petermetz
#584 opened Feb 16, 2021 by petermetz
#545 opened Feb 05, 2021 by petermetz
#521 opened Jan 29, 2021 by petermetz
#495 opened Jan 15, 2021 by petermetz
#489 opened Jan 14, 2021 by petermetz
#481 opened Jan 13, 2021 by petermetz
#479 opened Jan 13, 2021 by petermetz
#463 opened Jan 09, 2021 by petermetz
ci(release-automation): make release issuance atomic

> build(api-client): generate java, go clients

> refactor: discontinue dedicated HTTP listeners (ExpressJS apps) for web service plugins

> docs(readme): CII Best Practices badge 100% completion

> refactor(core-api): discontinue web service plugin aspect

> feat(api-server): publish API server docker image

> build: start using cspell for grammar in code

> test(test-tooling): dummy consortium definition generator

> feat(plugin-ledger-connector-burrow): add connector
Hyperledger Cactus is currently undergoing a major refactoring effort to enable the desired to-be architecture which will enable plug-in based collaborative development to increase the breadth of use cases & Ledgers supported.

For a better understanding of where Hyperledger Cactus is heading please see the Whitepaper and Design Principles below!

**Documentation**

- Whitepaper
- Original Design Principles Google Doc

**Project Management**

Hyperledger Cactus uses GitHub Issues to track work items.

**Repositories**

Hyperledger Cactus uses GitHub for source code control.

- Main repo

**History**

- Approved by the TSC on 30 APR 2020
- Proposal the TSC voted on

Recent space activity  Space contributors
Takuma Takeuchi commented May 12, 2021

Haissam Badih commented May 11, 2021

Takuma Takeuchi
Hyperledger Cactus Home commented May 10, 2021

Peter Somogyvari
2021-05-10 Cactus Maintainers Agenda - Planning Session updated May 10, 2021 • view change

Peter Somogyvari
2021-04-05 Meeting notes updated May 07, 2021 • view change

2021-05-10 Cactus Maintainers Agenda - Planning Session created May 03, 2021

• Takuma Takeuchi (6 days ago)
• Peter Somogyvari (8 days ago)
• Ry Jones (19 days ago)
• Hart Montgomery (20 days ago)
• David Boswell (22 days ago)
• ...