


# Hyperledger Cacti Home

Project	 <b>HYPERLEDGER CACTI</b>
Status	<b>GRADUATED</b>
CII Badge	<a href="#">blocked URL</a>
Description	<p>Hyperledger Cacti is a plugin-based framework which aims to provide developers with an abstraction over protocol specific implementations and enabling interoperability.</p> <p>This enables solutions to adapt to new protocols and make transactions involving multiple public and/or permissioned ledgers more easily.</p>

## Key Characteristics

### What is Hyperledger Cacti?

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

Cacti 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 Cacti?

- 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 Cacti 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 Cacti 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 Cacti should allow you to use all the features which the protocol enables.
  - Horizontal Scalability: Cacti should never be the bottleneck of all the networks involved. IE: If 2 networks can do 100tps, Cacti should be able to handle 200

### What are Cacti current features?

- **Connectors** for different blockchain protocols
  - Hyperledger Besu, Hyperledger Fabric, (WIP for Corda, Geth, and Quorum)
- **Atomic transfers** across ledgers
  - HTLCs for Ether, ERC20 (WIP Fabtoken)
- **Decoupled identity**
  - JWT, (WIP OpenAPI)
- **Metrics**
  - Prometheus and Grafana based monitoring of the individual plugins

## Getting Involved

You are invited to get involved with the Cacti 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 Cacti](#) (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](mailto:cactus@lists.hyperledger.org)
  - [subscribe](#)
  - [messages](#)

### Chat (for questions and ephemeral discussions)

Questions are welcome and best asked in Hyperledger Discord. [Learn more about Hyperledger Discord here](#), get the invite and check out one of the many Cacti project channels.

## Meetings

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

## How can I collaborate?

To see a guide on how to use Hyperledger Cacti, 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 Cacti's 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.

78 Open

0 Closed

Query: `state=open&labels=good-first-issue`

- >  
tools/docker/supabase-all-in-one container does not buildbuggood-first-issuegood-first-issue  
300-advanced  
#3099 opened Mar 15, 2024 by [rwat17](#)  
3
- >  
feat(openapi): java clients for packages affected by openapi buggood-first-issuehelp wantedDev  
eloper\_ExperienceHacktoberfestgood-first-issue-400-expert  
#2970 opened Jan 05, 2024 by [jagpreetsinghsasan](#)  
3
- >  
build: upgrade all test infrastructure container images to ubuntu-dind@v24.0.7good-first-issuede  
pendenciesSecurityHacktoberfestgood-first-issue-400-expertP3  
#2853 opened Oct 30, 2023 by [petermetz](#)  
17
- >  
fix(weaver): resource incorrect permission assignmentgood-first-issueSecurityHacktoberfestgood  
-first-issue-200-intermediateP4Weaver  
#2769 opened Oct 11, 2023 by [jagpreetsinghsasan](#)  
2
- >  
fix(weaver): improper resource access authorizationgood-first-issueSecurityHacktoberfestgood-  
first-issue-300-advancedP4Weaver  
#2768 opened Oct 11, 2023 by [jagpreetsinghsasan](#)  
0
- >  
fix(test-tooling): use of hardcoded passwordgood-first-issueSecurityHacktoberfestgood-first-  
-issue-200-intermediateTestsP4  
#2766 opened Oct 11, 2023 by [jagpreetsinghsasan](#)  
3
- >  
fix(plugin-htlc-coordinator-besu): missing HSTS Headergood-first-issueSecurityHacktoberfestgood  
-first-issue-400-expertP3  
#2763 opened Oct 11, 2023 by [jagpreetsinghsasan](#)  
3
- >  
fix(connector-quorum/weaver): remove/encrypt sensitive datagood-first-issueQuorumSecurityHa  
cktoberfestP3Weaver  
#2762 opened Oct 11, 2023 by [jagpreetsinghsasan](#)  
0
- >  
tools(connector-besu): fix CVE-2022-21190 CVE-2023-36665 CVE-2022-2421buggood-first-  
issueBesuSecurityHacktoberfestgood-first-issue-400-expertP2  
#2745 opened Oct 05, 2023 by [zondervancalvez](#)  
4
- >  
perf(github): add knob/flag to manually override CI skipgood-first-issueDeveloper\_ExperienceTri  
age\_NeededPerformanceHacktoberfestgood-first-issue-300-advancedTestsP3backlog  
#2679 opened Sep 10, 2023 by [petermetz](#)  
0
- >  
style(cmd-api-server): fix Unexpected any linter W in getOrCreateWebServices()good-first-issue  
API\_ServerHacktoberfestgood-first-issue-300-advancedP5backlog  
#2676 opened Sep 10, 2023 by [petermetz](#)  
3
- >  
ci(actionlint): fix the errors produced by the ActionLint toolbuggood-first-issueNice-to-Havedepen  
denciesDeveloper\_ExperienceHacktoberfestgood-first-issue-400-expertTestsP4backlog  
#2651 opened Aug 31, 2023 by [petermetz](#)  
0
- >

- docs(devcontainer): add trivy and its VSCode Extension documentation good-first-issue SecurityD  
 eveloper Experience good-first-issue-400-expert P3  
 #2650 opened Aug 31, 2023 by petermetz  
 0
- >  
 ci: break up ci.yaml into smaller workflow files - use workflow calls good-first-issue Developer Exp  
 erience Hacktoberfest good-first-issue-400-expert P3 backlog  
 #2639 opened Aug 24, 2023 by petermetz  
 7
- >  
 build(weaver): eliminate need for package-local.json manifests good-first-issue dependencies Dev  
 eloper Experience good-first-issue-400-expert P3 Weaver  
 #2601 opened Aug 10, 2023 by petermetz  
 3
- >  
 ci(weaver): ensure yarn cache is populated by build-dev good-first-issue Performance good-first-  
 issue-400-expert Tests P2 Weaver  
 #2600 opened Aug 10, 2023 by petermetz  
 0
- >  
 build(deps): persistently bump word-wrap from 1.2.3 to >=1.2.5 bug good-first-issue dependencies  
 Security Hacktoberfest good-first-issue-400-expert P2  
 #2569 opened Jul 24, 2023 by petermetz  
 0
- >  
 test(cmd-api-server): fix install-basic-plugin-ledger-connector-quorum-0-7-0 bug good-first-issue A  
 PI\_Server Hacktoberfest good-first-issue-400-expert Tests P2  
 #2545 opened Jul 08, 2023 by petermetz  
 0
- >  
 refactor(plugin-htlc-eth-besu): stop using the deprecated api.encodePacked good-first-issue Besu  
 Security Hacktoberfest good-first-issue-300-advanced P4  
 #2531 opened Jul 02, 2023 by petermetz  
 2
- >  
 build(api-client): fix tsc errors of @types/jsonwebtoken verify call bug good-first-issue dependencies  
 Security Developer Experience Hacktoberfest good-first-issue-400-expert P3  
 #2523 opened Jun 28, 2023 by petermetz  
 0
- >  
 buid(tsc): re-enable useUnknownInCatchVariables typescript compiler enhancement good-first-  
 issue Security Developer Experience Hacktoberfest good-first-issue-400-expert P2  
 #2463 opened Jun 16, 2023 by petermetz  
 3
- >  
 docs(examples/supply-chain-app): print correct web host in the CLI logs bug documentation good-  
 first-issue good-first-issue-300-advanced P2  
 #2390 opened Apr 12, 2023 by petermetz  
 5
- >  
 ci(all-nodejs-packages-publish): restrict job trigger pattern to semver bug good-first-issue depende  
 ncies Security Developer Experience Hacktoberfest good-first-issue-200-intermediate P3 Weaver  
 #2385 opened Apr 11, 2023 by petermetz  
 0
- >  
 build(deps): ensure persistent bump of openssl from 0.10.32 to 0.10.48 good-first-issue dependen  
 cies Security Keychain good-first-issue-300-advanced P3 bus  
 #2365 opened Apr 04, 2023 by petermetz  
 3
- >  
 ci(github): address Warning: The `save-state` command is deprecated good-first-issue dependenc  
 ies Triage\_Needed Hacktoberfest good-first-issue-400-expert Tests P2  
 #2361 opened Apr 03, 2023 by petermetz  
 4
- >  
 perf(ci): only publish artifacts on git version tags of main good-first-issue SPIKE dependencies Dev  
 eloper Experience Performance Hacktoberfest good-first-issue-400-expert P2  
 #2360 opened Mar 31, 2023 by petermetz  
 0
- >  
 test(connector-iroha): fix flaky http 400 run-transaction-endpoint-v1.test.ts bug good-first-issue Hac  
 ktoberfest good-first-issue-400-expert iroha Flaky-Test-Automation Tests P4  
 #2343 opened Mar 24, 2023 by petermetz  
 0
- >  
 chore(lint): enable ESLint for ./weaver/ good-first-issue Developer Experience Triage\_Needed Hac  
 ktoberfest good-first-issue-300-advanced P3 Weaver  
 #2308 opened Feb 27, 2023 by petermetz  
 0

- >  
build(dev-container): add gpg signing key support enhancement good-first-issue Developer\_Experience Hacktoberfest good-first-issue-400-expert P4  
#2209 opened Nov 21, 2022 by petermetz  
0
- >  
tools(besu-all-in-one): fix CVE-2022-37734 bug good-first-issue Nice-to-Have dependencies Security Hacktoberfest good-first-issue-400-expert P5  
#2182 opened Nov 01, 2022 by petermetz  
0
- >  
build(plugin-keychain-memory-wasm): upgrade OpenAPI generator to 5.2.1 good-first-issue dependencies Developer\_Experience Hacktoberfest Keychain good-first-issue-400-expert P4 rust  
#2181 opened Oct 31, 2022 by petermetz  
2
- >  
fix(test-tooling): rustc container memory is not defined bug good-first-issue help wanted Hacktoberfest good-first-issue-400-expert Flaky-Test-Automation Tests P4  
#2104 opened Jun 30, 2022 by petermetz  
0
- >  
fix(security): vulnerabilities found in corda-4-6-all-in-one bug good-first-issue Corda dependencies Security Hacktoberfest good-first-issue-300-advanced P4  
#2065 opened Jun 01, 2022 by zondervanvalvez  
2
- >  
fix(security): vulnerabilities found in corda-4-8-all-in-one bug good-first-issue Corda dependencies Security dependent good-first-issue-300-advanced P4  
#2064 opened Jun 01, 2022 by zondervanvalvez  
6
- >  
fix(security): vulnerabilities found in corda-4-7-all-in-one bug good-first-issue Corda dependencies Security good-first-issue-300-advanced P4  
#2063 opened Jun 01, 2022 by zondervanvalvez  
1
- >  
fix(security): vulnerabilities found in besu-all-in-one bug documentation good-first-issue Besu Security Hacktoberfest good-first-issue-300-advanced P4  
#2055 opened Jun 01, 2022 by zondervanvalvez  
1
- >  
developer experience: test ledgers documentation enhancement good-first-issue Developer\_Experience Hacktoberfest good-first-issue-400-expert P3  
#1924 opened Mar 14, 2022 by RafaelAPB  
3
- >  
docs: add org.opencontainers.image.description label to all images documentation enhancement good-first-issue Nice-to-Have Developer\_Experience good-first-issue-400-expert P4  
#1657 opened Dec 14, 2021 by petermetz  
0
- >  
refactor: use new node protocol imports good-first-issue dependencies Developer\_Experience good-first-issue-200-intermediate P5  
#1654 opened Dec 14, 2021 by petermetz  
8
- >  
fix(docs/examples): cockpit Enabled default value confusion bug documentation good-first-issue help wanted API\_Server Nice-to-Have dependencies Developer\_Experience Hacktoberfest good-first-issue-400-expert Tests P4  
#1653 opened Dec 13, 2021 by petermetz  
0
- >  
test(jest): fix jest-haste-map: Haste module naming collisions good-first-issue Nice-to-Have dependencies Developer\_Experience Performance Hacktoberfest good-first-issue-400-expert Tests P5  
#1645 opened Dec 08, 2021 by petermetz  
1
- >  
ci: custom check for package module.main.types,etc. enhancement good-first-issue dependencies Developer\_Experience Hacktoberfest good-first-issue-400-expert P4  
#1644 opened Dec 08, 2021 by petermetz  
1
- >  
ci: enable caching of container image builds enhancement good-first-issue help wanted dependencies Developer\_Experience Hacktoberfest good-first-issue-400-expert Flaky-Test-Automation Tests P2  
#1567 opened Nov 23, 2021 by petermetz  
0
- >

- test: stabilize cactus-plugin-htlc-eth-besu-erc20 openapi validation - refundV1 bug good-first-issue help wanted Nice-to-Have Besu Security Hacktoberfest good-first-issue-400-expert Flaky-Test-Automation Tests P4  
#1528 opened Nov 10, 2021 by petermetz  
0
- >  
test: fix flake in install-basic-plugin-ledger-connector-fabric-0-7-0.test.ts bug good-first-issue help wanted API\_Server Nice-to-Have dependencies Developer\_Experience Hacktoberfest good-first-issue-400-expert Flaky-Test-Automation Tests  
#1495 opened Nov 02, 2021 by petermetz  
0
- >  
test(connector-corda): fix flaky deploy-cordapp-jars-to-nodes test bug good-first-issue help wanted Corda Hacktoberfest good-first-issue-400-expert Flaky-Test-Automation Tests  
#1485 opened Oct 27, 2021 by petermetz  
0
- >  
test(connector-corda): fix flaky v4.7 test bug good-first-issue help wanted Corda dependencies Developer\_Experience Hacktoberfest good-first-issue-400-expert Flaky-Test-Automation Tests  
#1473 opened Oct 22, 2021 by petermetz  
2
- >  
test(connector-corda): fix flaky v4.8 test bug good-first-issue help wanted Corda Developer\_Experience Hacktoberfest good-first-issue-400-expert Flaky-Test-Automation Tests  
#1469 opened Oct 21, 2021 by petermetz  
0
- >  
fix(key-converter): Files needs to migrated from Tape to Jest bug good-first-issue help wanted Nice-to-Have dependencies Developer\_Experience Hacktoberfest good-first-issue-400-expert  
#1461 opened Oct 18, 2021 by awadhana  
1
- >  
feat: support for M1 macs (arm64) documentation enhancement good-first-issue SPIKE Nice-to-Have dependencies Developer\_Experience Hacktoberfest good-first-issue-400-expert  
#1438 opened Oct 05, 2021 by jsladerman  
9
- >  
docs: add cross-references to BUILD.md and CONTRIBUTING.md documentation enhancement good-first-issue Hacktoberfest good-first-issue-100-expert vGHC-OSD  
#1394 opened Oct 01, 2021 by Nancy8  
0
- >  
test(connector-besu): fix missing multi-party all-in-one ledger image caching bug good-first-issue help wanted Nice-to-Have dependencies Developer\_Experience Performance Hacktoberfest good-first-issue-400-expert P3  
#1386 opened Sep 28, 2021 by petermetz  
0
- >  
fix(plugin-htlc-eth-besu): error handling get-status-endpoint bug good-first-issue API\_Server Besu Developer\_Experience Hacktoberfest dependent good-first-issue-300-advanced  
#1383 opened Sep 24, 2021 by petermetz  
1
- >  
fix(plugin-htlc-eth-besu): error handling get-single-status-endpoint bug good-first-issue Besu Developer\_Experience Hacktoberfest good-first-issue-300-advanced  
#1382 opened Sep 24, 2021 by petermetz  
1
- >  
fix(plugin-htlc-eth-besu-erc20): error handling in get-single-status-endpoint bug good-first-issue API\_Server Besu Developer\_Experience good-first-issue-300-advanced  
#1380 opened Sep 24, 2021 by petermetz  
1
- >  
fix(plugin-htlc-eth-besu-erc20): error handling in get-status-endpoint bug good-first-issue API\_Server Besu Developer\_Experience good-first-issue-300-advanced  
#1379 opened Sep 24, 2021 by petermetz  
1
- >  
[EPIC] fix: error handling in REST API endpoints bug documentation good-first-issue API\_Server Developer\_Experience Hacktoberfest Core\_API Epic good-first-issue-400-expert  
#1378 opened Sep 24, 2021 by petermetz  
0
- >  
fix(iroha-connector): make compareAndSetAccountDetail accept correct parameters bug good-first-issue Developer\_Experience Significant\_Change Hacktoberfest dependent good-first-issue-300-advanced iroha P5  
#1265 opened Aug 21, 2021 by hanxu12  
1
- >

- feat(iroha-connector): make Iroha AIO a single node setup with an in-memory database  
 #1264 opened Aug 21, 2021 by hanxu12  
 0
- >
- feat(iroha-connector): replace iroha docker AIO healthcheck with curling the iroha metric page  
 #1263 opened Aug 21, 2021 by hanxu12  
 0
- >
- fix(iroha-connector): fix and test Iroha command Call Engine  
 #1256 opened Aug 20, 2021 by hanxu12  
 0
- >
- feat(connector-iroha): implement gRPC TLS communication for Iroha connector  
 #1251 opened Aug 20, 2021 by hanxu12  
 1
- >
- docs(ci): debugging on CI server through ssh with VScode debugger  
 #1245 opened Aug 19, 2021 by Leeyoungone  
 0
- >
- refactor(containers): migrate all images to ubuntu-22.04  
 #1211 opened Aug 12, 2021 by petermetz  
 0
- >
- refactor(cmd-api-server): migrate from convict to yargs  
 #1200 opened Aug 10, 2021 by petermetz  
 2
- >
- test(test-tooling): fix flaky corda-test-ledger boot hangs  
 #1159 opened Jul 22, 2021 by petermetz  
 1
- >
- feat(keychain-google-sm): bootstrap README.md  
 #1096 opened Jun 28, 2021 by jagpreetsinghsasan  
 2
- >
- feat(test-tooling): flag to omit contract deployment in Fabric AIO container  
 #887 opened Apr 29, 2021 by petermetz  
 0
- >
- docs(examples): carbon accounting microk8s deployment files  
 #860 opened Apr 24, 2021 by petermetz  
 2
- >
- meta: categorize good first issues by experience level  
 #811 opened Apr 18, 2021 by petermetz  
 0
- >
- feat(consortium-indy): support consortium database indy backend  
 #675 opened Mar 16, 2021 by petermetz  
 0
- >
- fix(connector-fabric): mandate ssh host key verification  
 #663 opened Mar 12, 2021 by petermetz  
 0
- >
- Containerize connector plugins  
 #545 opened Feb 05, 2021 by petermetz  
 0
- >
- build(docker): support ARM64  
 #481 opened Jan 13, 2021 by petermetz  
 0

- >  
[build\(npm\): post version script to sync openapi specs](#) [documentation](#) [good-first-issue](#) [Nice-to-Have](#)  
[dependencies](#) [Developer Experience](#) [Hacktoberfest](#) [good-first-issue-300-advanced](#)  
 #479 opened Jan 13, 2021 by [petermetz](#)  
 0
- >  
[build\(api-client\): generate java, go clients](#) [enhancement](#) [good-first-issue](#) [Nice-to-Have](#) [dependencies](#)  
[Developer Experience](#) [Hacktoberfest](#) [P4](#)  
 #393 opened Nov 20, 2020 by [petermetz](#)  
 8
- >  
[test\(test-tooling\): dummy consortium definition generator](#) [enhancement](#) [good-first-issue](#) [Nice-to-Have](#) [Developer Experience](#) [Hacktoberfest](#)  
 #316 opened Oct 15, 2020 by [petermetz](#)  
 0
- >  
[test: migrate from test runner tap to jest](#) [bug](#) [good-first-issue](#) [Nice-to-Have](#) [dependencies](#) [Hacktoberfest](#) [good-first-issue-200-intermediate](#) [Tests](#) [P4](#) [backlog](#)  
 #238 opened Jul 24, 2020 by [petermetz](#)  
 5

Hyperledger Cacti 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 Cacti is heading please see the Whitepaper and Design Principles below!

## Documentation

- [Whitepaper](#)
- [Original Design Principles Google Doc](#)

## Project Management

Hyperledger Cacti uses [GitHub Issues](#) to track work items.

## Repositories

Hyperledger Cacti 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



[Rafael Belchior](#)

[Draft: Quarterly Report 2024 Q1 Hyperledger Cacti](#) updated Apr 18, 2024 [view change](#)



[Ramakrishna V](#)

[Draft: Quarterly Report 2024 Q1 Hyperledger Cacti](#) commented Apr 18, 2024  
[Draft: Quarterly Report 2024 Q1 Hyperledger Cacti](#) updated Apr 18, 2024 [view change](#)

## Space contributors

- [Rafael Belchior](#) (1 day ago)
- [Ramakrishna V](#) (1 day ago)
- [Peter Somogyvari](#) (7 days ago)
- [David Boswell](#) (210 days ago)
- [Sean W. Bohan](#) (259 days ago)
- ...

Peter Somogyvari  
2024-04-17 Cacti Maintainers Agenda created Apr 12, 2024



Rafael Belchior  
2024-04-10 Cacti Maintainers Agenda created Apr 05, 2024