



HYPERLEDGER

BLOCKCHAIN TECHNOLOGIES FOR BUSINESS

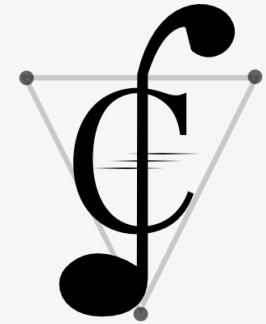
Hyperledger Cello

Overview and Roadmap

Baohua Yang
June 19, 2017

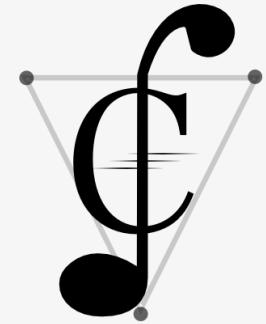
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- What
- Key features
- Architecture and Design
- Roadmap
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- Q&A



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What is Cello

Blockchain Service Provision and Operation

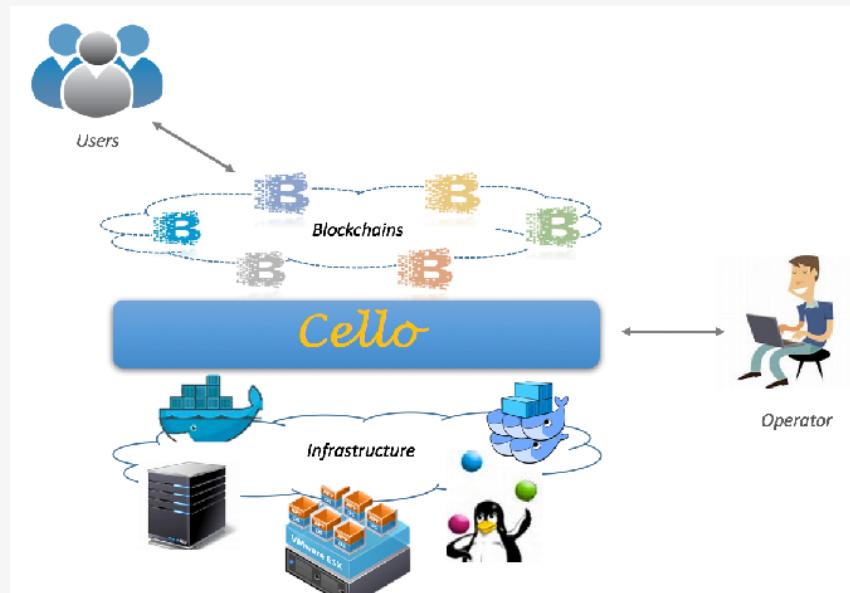
- Meet challenges to deploy blockchain networks
- Feel difficult to manage a running blockchain
- Hope to monitor/analyze what happens inside the blockchain
- Wanna focus on app development, no care of chain operation



What is Cello

Cello offers

- Quickly manage multiple blockchain instances with simple clicks
- Schedule resources among various resource pools
- Monitor chain health status automatically
- Analyze the running status/log/data for chains



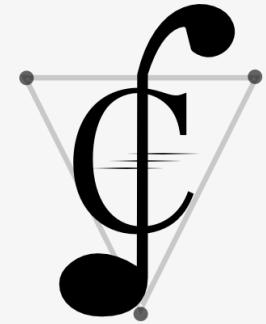
What is Cello

Brief History

- Accepted as a Hyperledger project at Jan, 2017
- Supported and contributed by committers from IBM, Intel, Soramitsu, Huawei, Cloudsoft
- 300+ commits
- Python, Javascript

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Key features

Manage the lifecycle of blockchains

- Create
- Config
- Use
- Health check
- Delete

Cello Dashboard

Overview System Status Hosts Active Chains

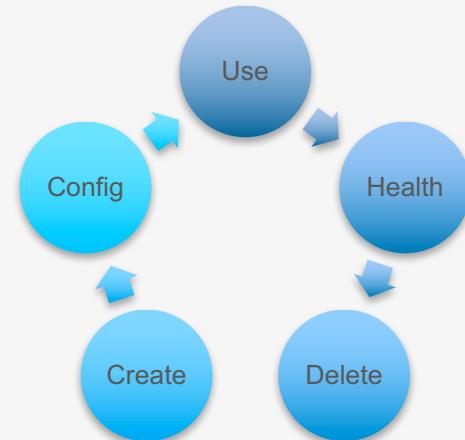
Inused Chains Release History About

Chains active: 15

Name	Type	Status	Health	Size	Host	Actions
compute3_0	noops	running	OK	4	582d7ec2f113a90255082ded	<input type="button" value="Start"/> <input type="button" value="Stop"/> <input checked="" type="button" value="Restart"/> <input type="button" value="Delete"/> <input type="button" value="Release"/>
compute3_1	p2p/batch	running	OK	6	582d7ec2f113a90255082ded	<input type="button" value="Start"/> <input type="button" value="Stop"/> <input checked="" type="button" value="Restart"/> <input type="button" value="Delete"/> <input type="button" value="Release"/>
compute3_2	p2p/batch	running	OK	4	582d7ec2f113a90255082ded	<input type="button" value="Start"/> <input type="button" value="Stop"/> <input checked="" type="button" value="Restart"/> <input type="button" value="Delete"/> <input type="button" value="Release"/>
compute3_3	p2p/batch	running	OK	6	582d7ec2f113a90255082ded	<input type="button" value="Start"/> <input type="button" value="Stop"/> <input checked="" type="button" value="Restart"/> <input type="button" value="Delete"/> <input type="button" value="Release"/>
compute3_4	noops	running	OK	4	582d7ec2f113a90255082ded	<input type="button" value="Start"/> <input type="button" value="Stop"/> <input checked="" type="button" value="Restart"/> <input type="button" value="Delete"/> <input type="button" value="Release"/>
compute3_5	p2p/batch	running	OK	6	582d7ec2f113a90255082ded	<input type="button" value="Start"/> <input type="button" value="Stop"/> <input checked="" type="button" value="Restart"/> <input type="button" value="Delete"/> <input type="button" value="Release"/>
compute3_6	noops	running	OK	6	582d7ec2f113a90255082ded	<input type="button" value="Start"/> <input type="button" value="Stop"/> <input checked="" type="button" value="Restart"/> <input type="button" value="Delete"/> <input type="button" value="Release"/>
compute3_7	p2p/batch	running	OK	4	582d7ec2f113a90255082ded	<input type="button" value="Start"/> <input type="button" value="Stop"/> <input checked="" type="button" value="Restart"/> <input type="button" value="Delete"/> <input type="button" value="Release"/>
compute3_8	p2p/batch	running		4	582d7ec2f113a90255082ded	<input type="button" value="Start"/> <input type="button" value="Stop"/> <input checked="" type="button" value="Restart"/> <input type="button" value="Delete"/> <input type="button" value="Release"/>
compute3_9	p2p/batch	running	OK	4	582d7ec2f113a90255082ded	<input type="button" value="Start"/> <input type="button" value="Stop"/> <input checked="" type="button" value="Restart"/> <input type="button" value="Delete"/> <input type="button" value="Release"/>

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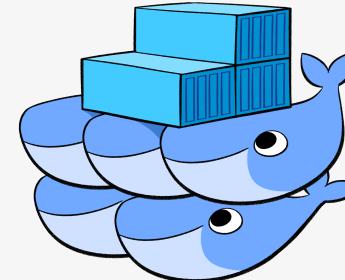
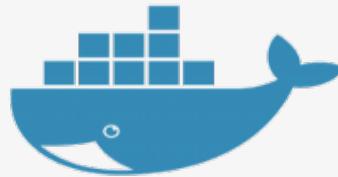
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Key features

Support Various Infrastructure as the Resource Pool

- Docker Host
- Docker Swarm
- Kubernetes (under development)
- And More in Future

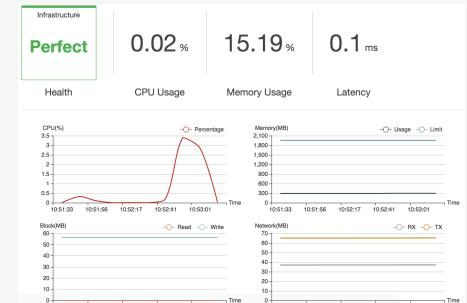
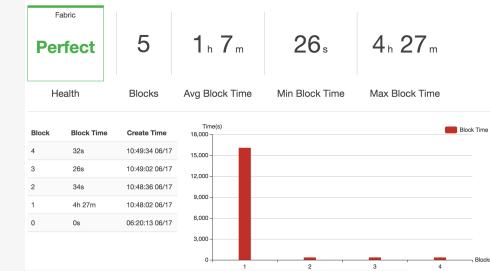
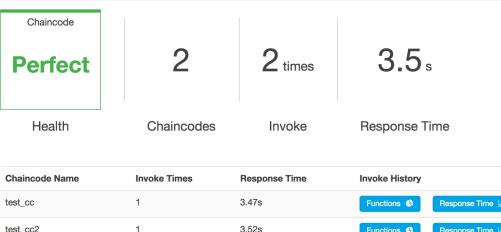
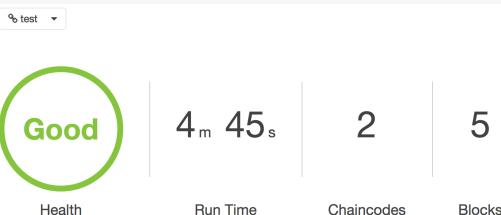


kubernetes

Key features

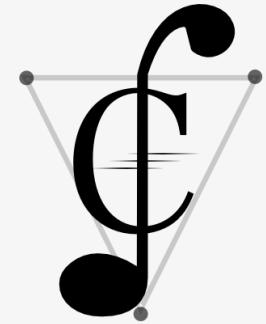
Support Monitor & Analysis

- Chain Status
- System Utilization
- Network Latency
- Log messages
- Chaincode Operation Analysis



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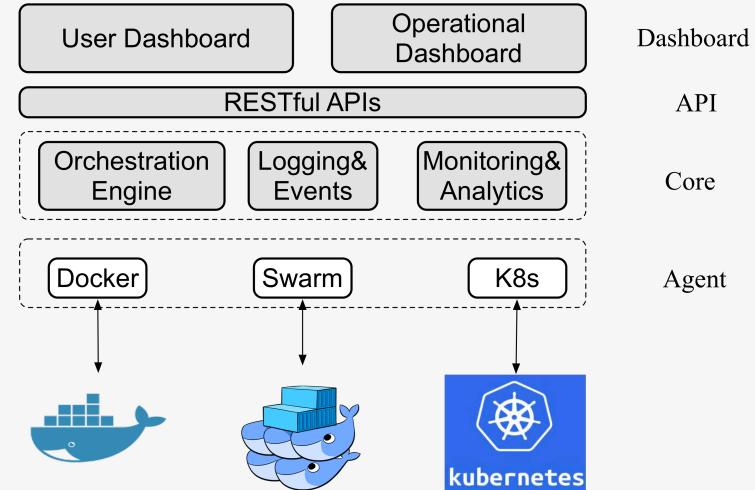
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Architecture and Design

4 Layers

- Dashboard: Web frontend
- API: RESTful APIs
- Core: Orchestration implementation
- Agent: Drivers for various infrastructures



Architecture and Design

Dashboard layer

- Basic theme and React theme
- User dashboard
- Operational dashboard
- HTML+CSS+JavaScript

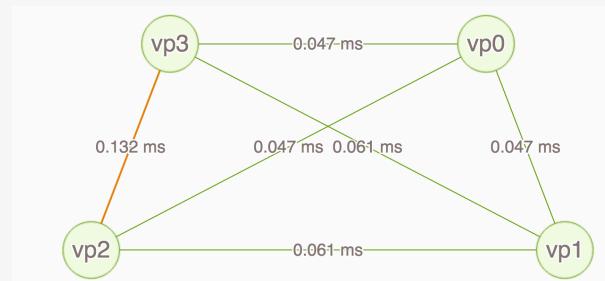
Celio Dashboard

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compute3_3	pbt/batch	running	OK	6	582d7ec2f113a90255082ded	Actions
compute3_4	noops	running	OK	4	582d7ec2f113a90255082ded	Actions
compute3_5	pbt/batch	running	OK	6	582d7ec2f113a90255082ded	Actions
compute3_6	noops	running	OK	6	582d7ec2f113a90255082ded	Actions
compute3_7	pbt/batch	running	OK	4	582d7ec2f113a90255082ded	Actions
compute3_8	pbt/batch	running	OK	4	582d7ec2f113a90255082ded	Actions
compute3_9	pbt/batch	running	OK	4	582d7ec2f113a90255082ded	Actions

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Architecture and Design

API layer

- Use Flask as the lightweight API framework
- Cluster APIs: apply, release, start, stop, restart, list
- Host APIs: create, delete, fillup

Architecture and Design

Core layer

- Orchestrate the blockchain in the resource pool
- Collect log, event, running status data
- Cello-analytics will do analytics on the data

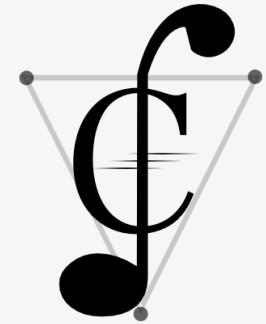
Architecture and Design

Agent layer

- In Cello, each type of resource cluster is a “Host”
- Docker/Swarm: Employ standard Docker API
- Kubernetes: Employ Kubernetes API

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Roadmap

Support Fabric v0.6
Support Docker Host
Support Swarm
Operational Dashboard
System Monitoring

Support Fabric v1.0
Support Kubernetes
User Dashboard
Advanced Scheduling
Log Analytics
More Blockchain Types

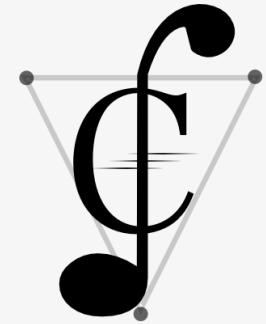


June 2017

Dec 2017

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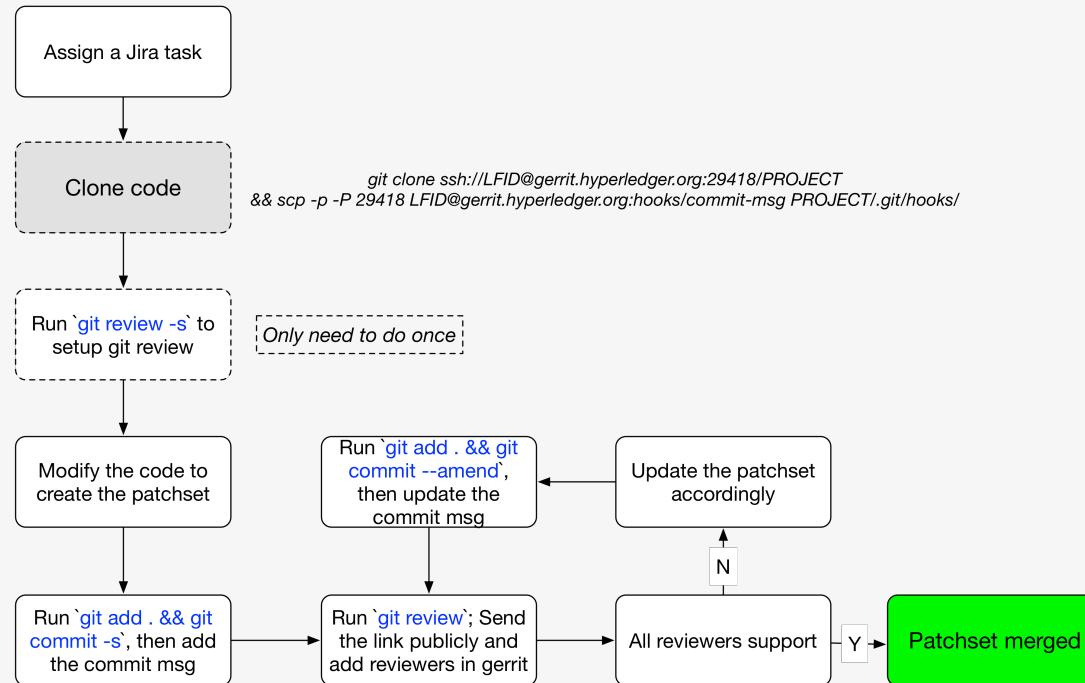


How to contribute

Process

- Assign a task from Jira
- Clone the code and create a new branch naming with the task ID
- Create patchsets, git commit and git review
- Send patchset link to rocketchat or mail-list for review

How to contribute



How to Contribute

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How to contribute

Useful channels

- Wiki: <https://wiki.hyperledger.org/projects/cello>
- Mail-list: hyperledger-cello@lists.hyperledger.org
- RocketChat: <https://chat.hyperledger.org/channel/cello>
- Jira Task Board: <https://jira.hyperledger.org/projects/CE>
- Gerrit: <https://gerrit.hyperledger.org/r/#/admin/projects/cello>



Question?

