



HYPERLEDGER

BESU

ConsenSys Joins Hyperledger as a Premier Member

By Hyperledger | September 11, 2019 | Announcements

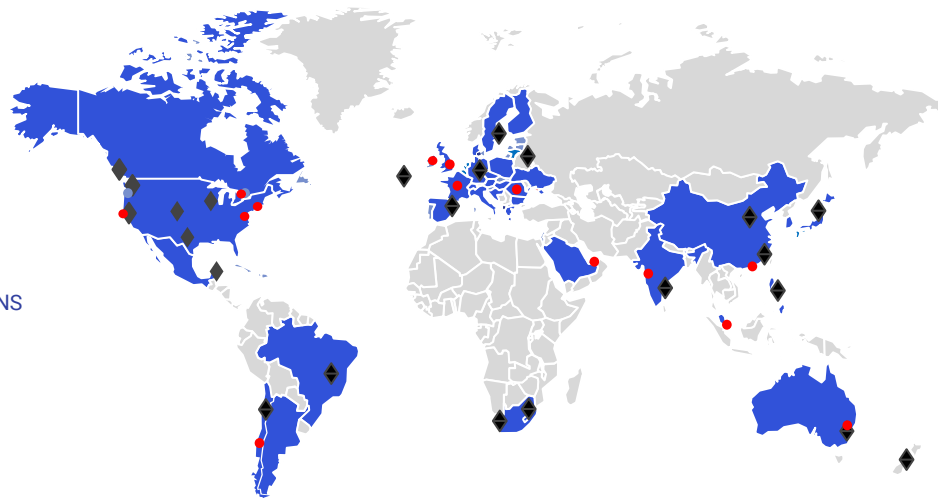
New York and San Francisco, September 11, 2019 — [ConsenSys](#) and [Hyperledger](#) announced today that ConsenSys has become the newest Premier Member of Hyperledger, an open source collaborative effort created to advance cross-industry blockchain technologies, hosted by the Linux Foundation. Additionally, ConsenSys's [PegaSys](#) protocol engineering group submitted its Ethereum client, formerly known as Pantheon, as the project [Hyperledger Besu](#), the first public chain compatible blockchain submission to Hyperledger.

ConsenSys will join a Hyperledger membership made up of 270+ leading companies in finance, banking, IoT, supply chain, manufacturing and technology. ConsenSys' PegaSys [submitted](#) a blockchain framework based on public Ethereum for users to build and run robust, industry-specific applications, platforms and hardware systems to support business transactions. As a member of the Hyperledger community, ConsenSys will explore interoperability across blockchains and help drive standards to support enterprise-grade blockchain environments. Hyperledger Besu will benefit from a global community of Hyperledger developers, technical working groups, and leading open-source governance standards.

About ConsenSys

ConsenSys is the world largest blockchain engineering company.

We are 1,000+ blockchain experts, entrepreneurs, computer scientists, designers, engineers, consultants, and business leaders across 6 continents



■ PROJECT DELIVERY LOCATIONS

● OFFICE LOCATIONS

◆ CONSENSYS PERSONNEL

HOW WE COLLABORATE WITH PARTNERS AND CLIENTS

USE CASE DEVELOPMENT

Helping organization understand blockchain technology & applications

TECHNOLOGY DEVELOPMENT

Delivering business applications and platforms; providing tools and support

TOKEN DEVELOPMENT

Developing token solutions with clients and partners

VENTURE DEVELOPMENT

Co-creating new business models and platforms

OUR SERVICES

Infrastructure	Products	Education	Solutions	Capital
Help grow the ecosystem by building and maintaining core developer tools and clients	Incubate new companies developing decentralized applications on the Ethereum blockchain (current 50 +)	Educate developers and entrepreneurs about Ethereum through training programs	Consult and deliver production ready blockchain solutions for organizations and governments	Provides token services, crypto asset management and venture capital

Working with high profile Enterprise & Government partners



Financial services & asset tokenization



Monetary Authority of Singapore



BNP PARIBAS



Quorum



Tracking, Supply Chain & Workflows



Self-Sovereign Personal Data and KYC



BNP PARIBAS



Certifications & Titles



LVMH



Strategy

دبي الذكية
SMART DUBAI





HYPERLEDGER WEBINAR

Meeting of blockchain minds – Hyperledger Besu, Ethereum & the future of enterprise blockchain

29 April 2020 (Wed)

8:30am (India Standard Time)

11:00am (HK, Singapore, Malaysia Time)

12:00 noon (Korea, Japan time)

1:00pm (Australian Eastern Standard Time)

8:00pm (Pacific Time, 28 April)

11:00pm (Eastern Time, 28 April)



**Brian
Behlendorf**
Exec Director
Hyperledger



Joseph Lubin
Co-founder of
Ethereum and
founder of
ConsenSys

REGISTER

[https://zoom.us/webinar/register/
2915874430530/WN_1zHFWung
Rnqsee_RXsh7nQ](https://zoom.us/webinar/register/2915874430530/WN_1zHFWungRnqsee_RXsh7nQ)



HYPERLEDGER WEBINAR

Hyperledger Besu Asia Pacific Meetup Meet the Maintainers

Architecture, use cases and latest developments in the first Ethereum client blockchain for both public and permissioned chains

April 21, 2020 (Tue)

11:30 AM Indian Standard Time

2 PM China/Singapore/Malaysia Time

3 PM Korea/Japan Time

4 PM Australian Eastern Standard Time



Rob Dawson
Product Lead
PegaSys



Joshua Fernandes
Protocol Engineer
PegaSys



Edmund To
Solutions Architect
ConsenSys



The **most reliable Ethereum** client for Mainnet and private networks



A subscription service including Hyperledger Besu with **vendor support** and enhanced enterprise features

PegaSys is enterprise driven



Delivering Enterprise Ethereum for **mainnet & private chains** and **Ethereum 2.0**

Used by **leading financial institutions** and international consortia



Enterprise grade **vendor support**



Products designed for **easy adoption** and deployment





HYPERLEDGER

BESU

1. Besu is **Ethereum**
2. Besu is **Node Client** software
3. Besu is **private & public** Enterprise



HYPERLEDGER BESU

Features:

- Java
- Open Source (Apache 2.0)
- **Public & permissioned** chains
- Onchain and Offchain **Permissioning**
- Onchain and Offchain **Privacy**
- Simplified deployment and monitoring

1

Scalable

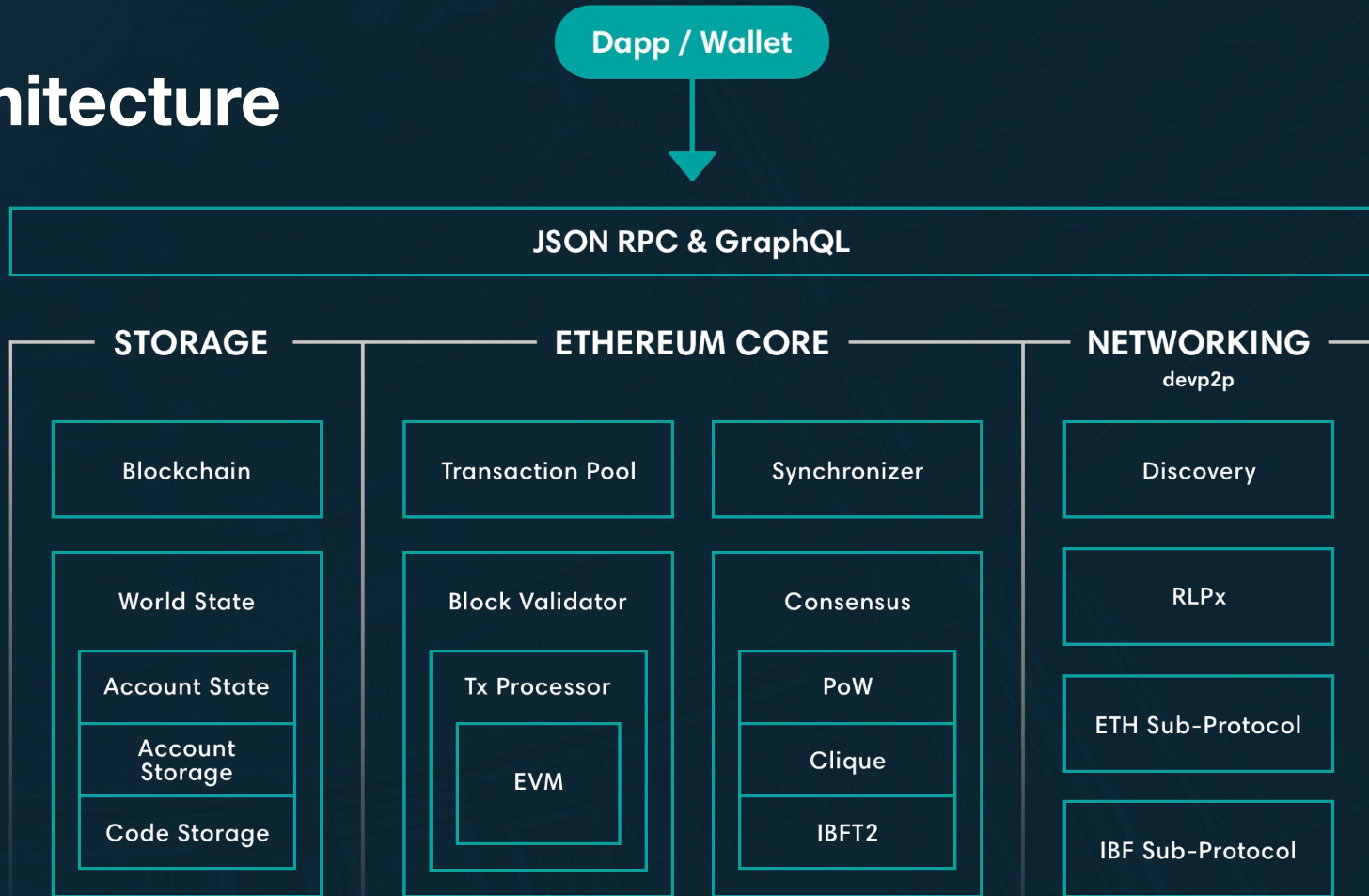
2

Reliable

3

Easy to Deploy

Architecture





Hyperledger Besu is a full implementation of the Ethereum protocol, and is currently used for several nodes on the Ethereum mainnet.

The Ethereum protocol defines:

- The Ethereum Virtual Machine (EVM) execution environment for processing transactions in the Ethereum blockchain
- Storage for persisting data related to transaction execution
- DevP2P peer-to-peer networking for communicating with other Ethereum nodes to synchronize state
- JSON RPC APIs for application developers to interact with the blockchain

-
- Enterprise Ethereum
 - Ethereum for Private Chains
 - 3Ps
 - Privacy
 - Permissioning
 - Performance (Consensus Mechanisms)

Privacy (Orion)

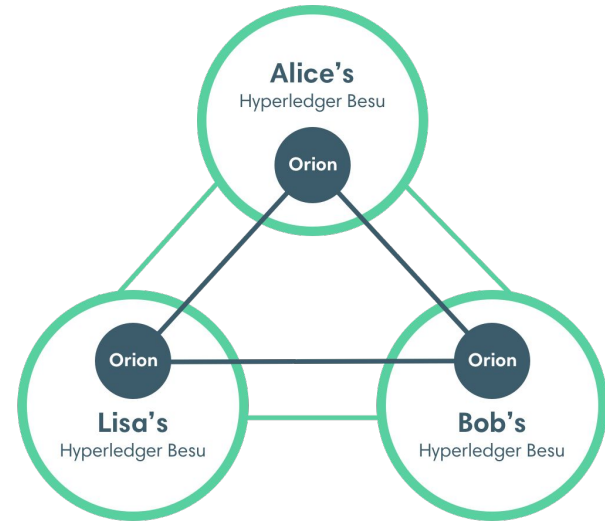


Keep transactions private between the involved participants. Other participants cannot access the transaction content or list of participants.

PegaSys' private transaction manager, Orion, is an implementation of the Enterprise Ethereum Alliance (EEA) privacy standard.

Orion uses off-chain communication and embeds a hash of the private transaction on-chain.

PegaSys have built a new capability called Privacy Groups in Orion to allow multi-company access to a shared private state.





Increase the security of your network. Permissioning allows you to define access at node or account level.

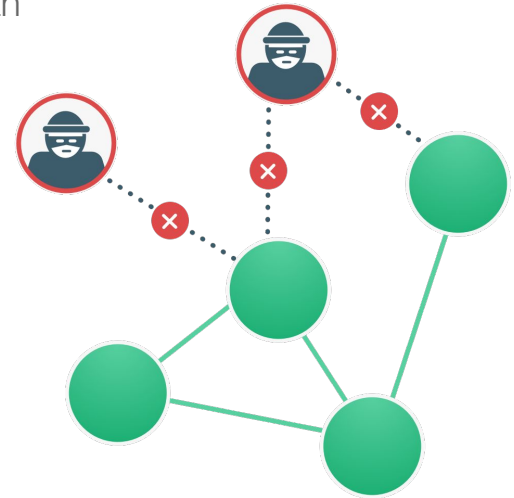
The permissioning feature is smart contract based and can be managed with an easy-to-use dapp.

Node Permissioning

- Use node permissioning to restrict network connections to known participants only.

Account Permissioning

- Restrict the actions an account can perform
- Enforce onboarding or identity requirements
- Suspend accounts
- Blacklist broken contracts





Besu implements a number of consensus protocols, which enable it to run on the Ethereum public network, private and consortium networks, and multi-client test networks such as Rinkeby, Ropsten, and Görli.

Ethash (Proof of Work)

- The consensus protocol of mainnet Ethereum and the Ropsten testnet. Resource-intensive with probabilistic finality.

Clique (Proof of Authority)

- A fast, cross-client capable consensus protocol with high fault-tolerance but without immediate finality.

IBFT 2.0 (Proof of Authority)

- A robust and stable consensus algorithm suitable for enterprise use cases in a private network. IBFT 2.0 grants immediate finality.



Faster, richer querying of Ethereum Data with GraphQL

- The GraphQL API can significantly reduce the overhead of querying blockchain data, reducing requests that require multiple commands per block over the JSON-RPC interface to a single query.
- Also, GraphQL offers a rich ecosystem of tools that developers can use to visualize and adjust their queries, such as GraphiQL.
- The GraphQL interface is implemented as specified in EIP 1767.



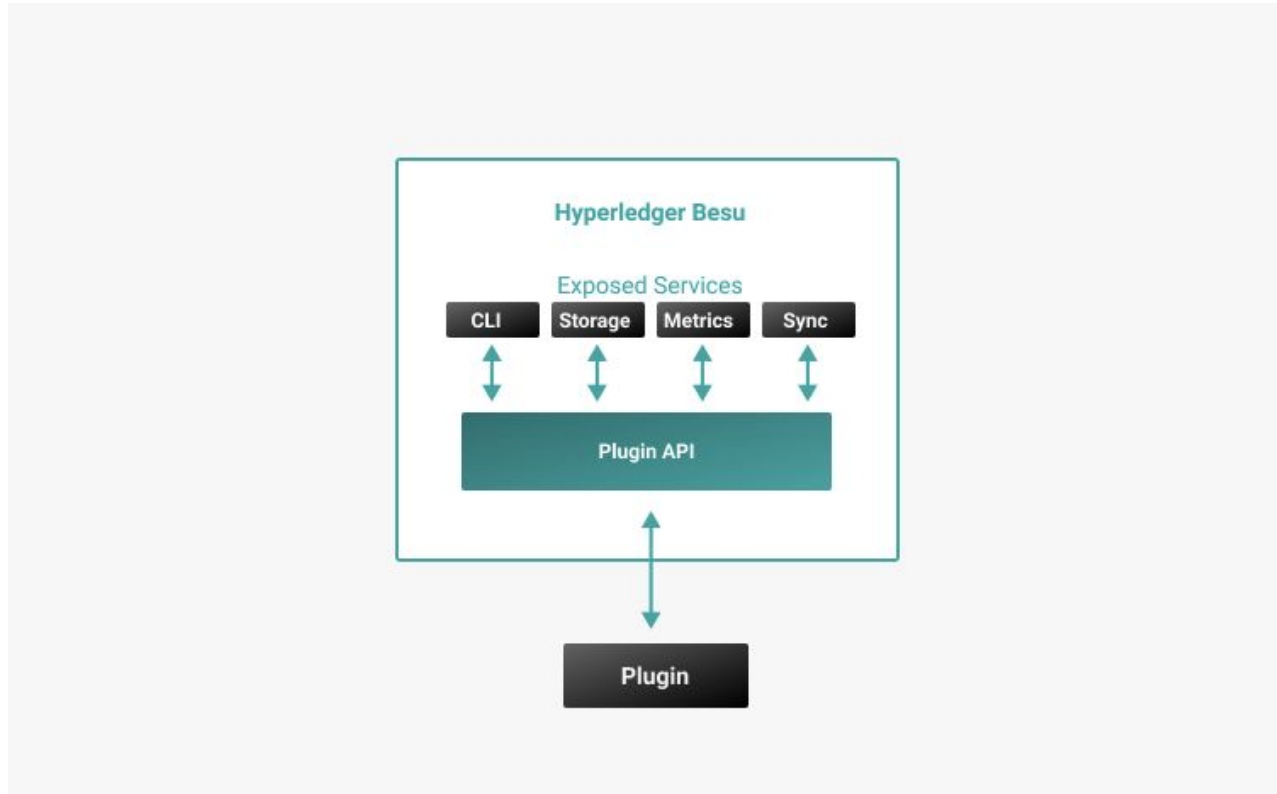


Advanced tooling for monitoring node and network health and performance

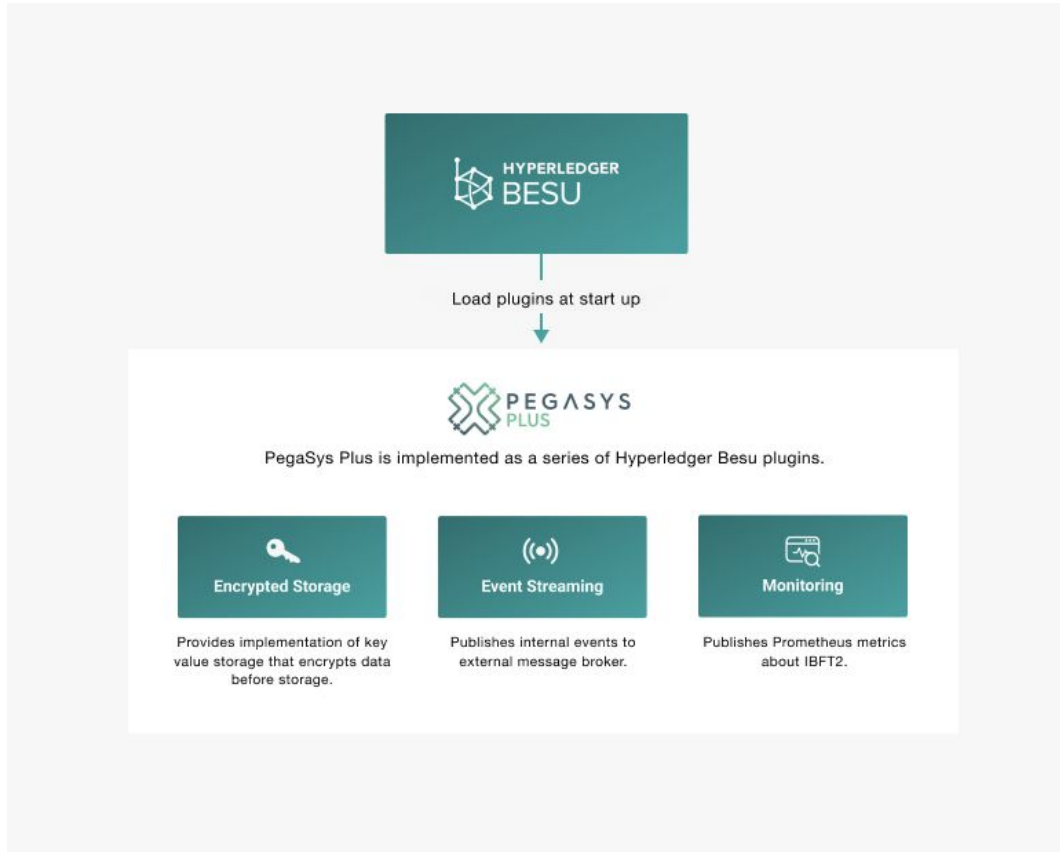
- Besu offers Prometheus monitoring and alerting service to access detailed node and network metrics. You can also visualize the collected data using Grafana dashboards.
- These work well for public and private chains.



Plugin Framework



PegaSys Plus





Ensure uptime by monitoring the health of your consensus mechanism with Advanced Validator Monitoring.

- This feature enables monitoring the health of validator nodes in an IBFT 2.0 network.
- Designed for enterprises and consortiums requiring consistent uptime.
- Validator monitoring connects to the Prometheus service which you can visualize using Grafana dashboards.





Improve scalability and reliability by subscribing to events and setting alerts or automated functions.

- Designed to scale networks and simplify the subscription to your choice of events (smart contract changes, when a new block arrives, chain download progress, new logs etc).
- The streaming events data flows in real-time, is scalable and fault-tolerant using high capacity data pipes.
- This feature is also valuable for a node running on the Ethereum mainnet.





Keep your data secure by encrypting your data at rest using simple configurations

- Add to the native security benefits of blockchain software architecture by encrypting your data when it is most at risk, at rest.
- PegaSys Plus offers configuration options for enterprises to fully encrypt the node's world state storage in-client, preventing malicious actors who gain access to a node on a private network from reading its valuable business data.

Contributing

Contributing:

- [Github](#) (see the [good first issue](#) and [help wanted](#) tags)
- [Documentation](#)
- [RocketChat](#) (channels **besu** & **besu-contributors**).
Needs a [LinuxFoundation](#) account.

Hyperleger Besu Contributor Calls:

- APAC friendly calls are at 0100 UTC (or 9am Beijing, 10am Tokyo, 11am Brisbane, 8pm -1d San Francisco) -- next is the **12 of May**
- EMEA friendly calls are at 1500UTC (or 4pm Paris/Berlin, 10am New York)
- [More info](#)



Deploy Hyperledger Besu nodes with ease using the deployment tool of your choice.

We offer ready-to-use scripts to enable production-ready, highly available networks.

[Ansible](#)

[Docker](#)

[Kubernetes](#)

[Terraform](#)

[AWS](#)

[Azure](#)

Blockchain networks require different types of nodes – validators, bootnodes, and normal network nodes, so you can configure those arrangements easily for your cluster.



Deployment - Getting Started (Sample networks)

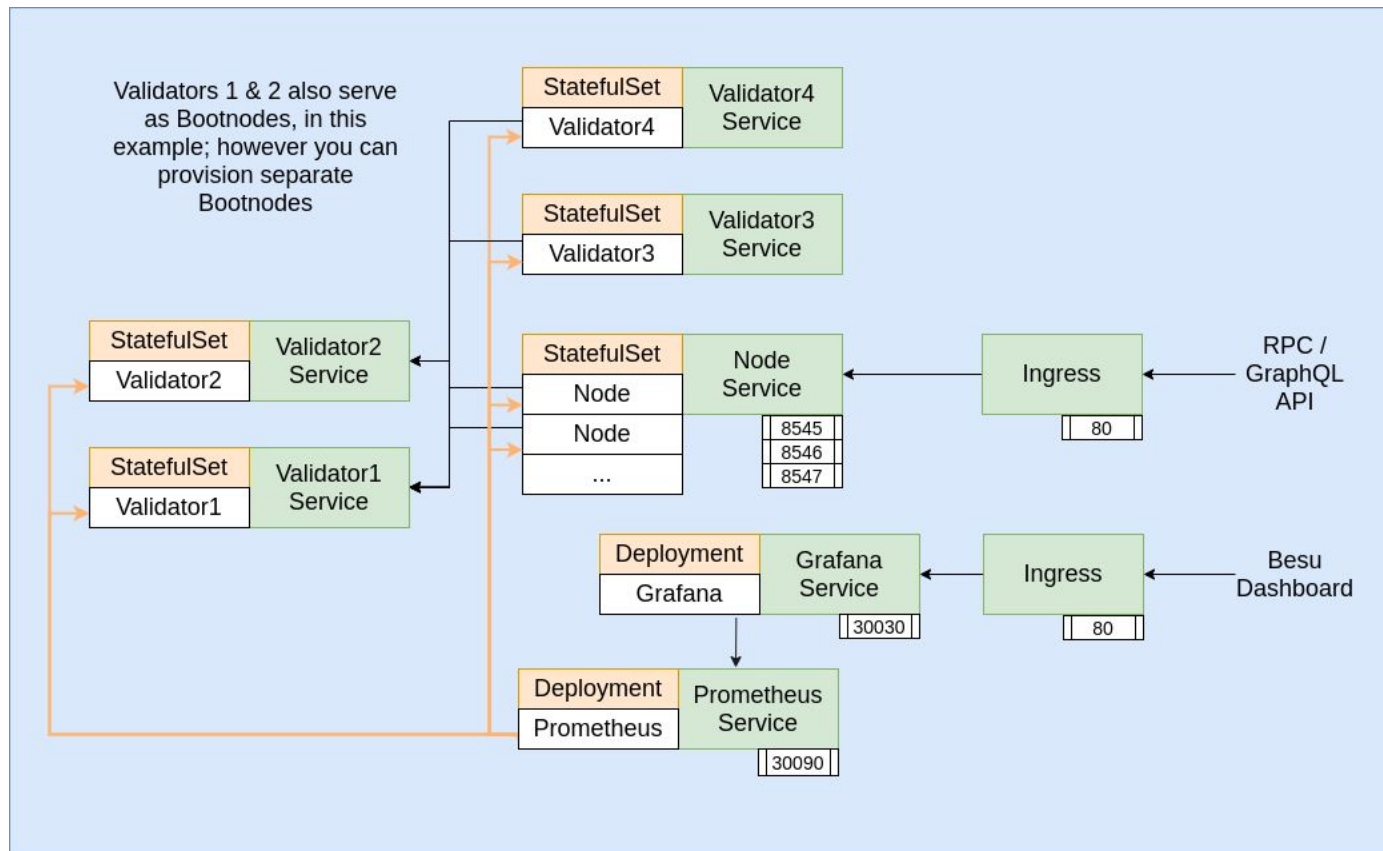
Sample Networks

<https://github.com/PegaSysEng/besu-sample-networks>

- Easy to use
- Run locally - Linux, OSX and Windows
- Dev and Test type of environment
- Get familiar and understand concepts of how it works
- Various use cases i.e privacy, permissioning, DApps
- Tools: docker, docker-compose
- **Demo - nodes, graphs, logs**

Full Production Sample Setup

Besu IBFT2 Helm chart Demo



The Value of Vendor Support

Onboarding

Training to ensure your team knows how to best use the software

Production Guarantees

Support your infrastructure and safeguard against downtime.

Roadmap Planning

Collaboration to ensure product roadmap reflects customer needs

Technical Support

Unblock your engineering with access to responsive technical teams when needed

Example use cases

Hyperledger Besu is industry-agnostic with validated use cases in Banking, Financial Services, Supply Chain and Healthcare.

Payments



Distributed settlement system for unit trusts.



B2B platform for Euro-based payments settled on Ethereum

Capital Markets

Global Top 10 Bank

Municipal bonds trading platform



Debt capital markets issuance and tracking for real estate

Blockchain Networks



National Blockchain Network for Spain with over 460 members.



A global alliance led by IDB Lab to develop the blockchain ecosystem in LAC

L CCHAIN

- Latin America and Caribbean Consortium
- Produces shared blockchain infrastructure for the region
- Currently building blockchain-based solutions to combat the spread of the Coronavirus

Example use cases



Adhara deployed its Token+ product for SA stock exchange ZAR X, to launch the first distributed settlement system in South Africa for unit trusts.

- Using Ethereum, it enables the public to purchase and settle unit trusts directly from fund managers in a secure environment.
- To ensure the regulatory and security needs of their customers, Adhara required a blockchain platform that could deliver on their required SLA for support and evolving technology requirements.
- Adhara partnered with PegaSys, migrating to Hyperledger Besu, and leveraging vendor support and the relationship-driven partner program.

Customer



Administrator



Links of Interest

- Docs
<http://besu.hyperledger.org/>
- Sample networks
<https://github.com/PegaSysEng/besu-sample-networks>
- Kubernetes
<https://github.com/PegaSysEng/besu-kubernetes>
- Github repo
<https://github.com/hyperledger/besu>
- Wiki
<https://wiki.hyperledger.org/display/BESU/Hyperledger+Besu>

Questions