Decentralized Identity + Interoperability: Connecting Credo (Agent Framework Javascript) with Hyperledger Besu, Cardano, Cheqd, Hyperledger AnonCreds, and OIDC4VC

Time:
- Thursday February 8, 2024 at 8AM Pacific to Noon

Deck Slides:
Hyperledger Dec...ty Workshop.pdf

Recording:

Description:
The Hyperledger implementation of self-sovereign identity (SSI) is traditionally associated with CL AnonCreds verifiable credential format, Hyperledger Aries exchange protocols based on DIDComm and a Hyperledger Indy ledger as a verifiable data registry (VDR). These are mature technologies used in production systems. Hyperledger Indy and CL AnonCreds played a key role in shaping self-sovereign identity before the establishment of various other SSI standards and specifications.

Nowadays such specifications as W3C VC, OpenID for Verifiable Credentials (OIDC4VC), SD-JWT and others gain increasing attention due to plans for adoption by European Digital Identity Architecture and Reference Framework, NIST, DHS etc. Moreover, although Indy Ledger is a great and proven VDR option for permissioned cases, nowadays permissionless proof-of-stake ledgers can be a reasonable alternative, as well as other distributed ledger technologies (DLT) from the Hyperledger family.

The main goal of the workshop is to invalidate a misconception that Hyperledger Aries SSI projects can only work with CL AnonCreds, DIDComm and Indy Ledger. We are going to apply Credo (Agent Framework Javascript) for issuance and verification of Verifiable Credentials in W3C format, use OIDC4VC for credentials exchange, and leverage external permissionless ledgers as a VDR. Moreover, we are going to show a synergy between two graduated Hyperledger projects: Aries and Besu. It will be done by means of a new Indy-Besi effort and repo.
This workshop will be livestreamed and recorded.

Prerequisites:

For the hands-on, we are going to use a Gitpod profile, which you can log into through your GitHub account.

- Join GitPod here
- We ask all participants to make sure that they have at least a few hours of workspace usage in their Gitpod profile to participate in the hands-on. You can check this using this link: https://gitpod.io/billing
- Recommended browsers: Chrome or Firefox.

Agenda:

The planned agenda consists of three main parts:

Presentation:
- Decentralized Identity (SSI) Overview
- Overview of SSI standards involved into demonstration (W3C VC, CL AnonCreds, OICD4VC, Aries, etc.)
- Overview of SSI frameworks involved into demonstration (Hyperledger Indy, Agent Framework JavaScript, Hyperledger Besu, cheq, Cardano, etc.)

Demo:
- Non-Indy VDR + CL AnonCreds: Hyperledger AFJ + Cardano as VDR
- Non-Indy VDR + W3C VC: Hyperledger AFJ + cheq as VDR
- OICD4VC in Hyperledger AFJ

Hands-on:
- Non-Indy VDR + CL AnonCreds: Hyperledger AFJ + Hyperledger Besu (Indy Ledger 2.0) as VDR
- Non-Indy VDR + W3C VC: Hyperledger AFJ + Hyperledger Besu (Indy Ledger 2.0) as VDR

Links

Workshop Wiki Page:
https://wiki.hyperledger.org/pages/viewpage.action?pageId=113311983

GitPod:
https://gitpod.io/

GitPod workspace creation:

Hyperledger:

- Hyperledger Identity SIG
  https://wiki.hyperledger.org/display/IWG
- Hyperledger Aries Wiki page
  https://wiki.hyperledger.org/display/aries
- Hyperledger AnonCreds Wiki page
  https://wiki.hyperledger.org/display/ANONCREDS
- Hyperledger Besu Wiki Page
  https://wiki.hyperledger.org/display/besu
- Hyperledger Indy Wiki page
  https://wiki.hyperledger.org/display/indy
- Hyperledger Aries Framework Javascript 0.4.0 Workshop
  https://youtube.com/live/bza4il9l1tw

OWF Credo

- Credo (Agent Framework Javascript) GitHub
  https://github.com/openwallet-foundation/credo-ts
Credo (Agent Framework Javascript) Docs
https://github.com/openwallet-foundation/credo-ts-docs

W3C
Verifiable Credentials @ W3C
https://www.w3.org/TR/vc-data-model
Decentralized Identifiers @ W3C
https://www.w3.org/TR/did-core/
DID Methods
https://www.w3.org/TR/did-spec-registries/#did-methods

Trust Over IP
https://trustoverip.org/toip-model/

Cardano-AnonCreds
https://github.com/roots-id/cardano-anoncreds

Agent Framework Javascript

Indy - Besu VDR

Credo
https://github.com/openwallet-foundation/credo-ts
https://github.com/hyperledger/aries-framework-javascript

Aries BiFold
https://github.com/hyperledger/aries-mobile-agent-react-native

AnonCreds & AnonCreds Spec
https://github.com/hyperledger/anoncreds-spec
https://github.com/hyperledger/anoncreds-rs

W3C VC Representation Support
https://hyperledger.github.io/anoncreds-spec/#w3c-verifiable-credentials-representation

W3C Verifiable Credential
https://www.w3.org/TR/vc-data-model/ (W3C Recommendation 2022)
https://www.w3.org/TR/vc-data-model-2.0 (W3C Working Draft)

Aries RFCS
https://github.com/hyperledger/aries-rfcs

DIDComm
DIDComm v1: https://github.com/hyperledger/aries-rfcs/tree/main/concepts/0005-didcomm
DIDComm v2: https://identity.foundation/didcomm-messaging/spec/v2.0/
List of DIDComm Protocols:
https://didcomm.org

Aries Interop
Profile V1
Hyperledger Aries Interop Profile V2

OpenID Connect For VCs (OIDC4VC)
1.1 Authentication: SIOPv2 https://openid.bitbucket.io/connect/openid-connect-self-issued-v2-1_0.html
1.2 Presentation: OIDC4VP
https://openid.bitbucket.io/connect/openid-4-verifiable-presentations-1_0.html
2.0 Issuance: OIDC4VCI
https://openid.bitbucket.io/connect/openid-4-verifiable-credential-issuance-1_0.html

Cardano & SSI
https://github.com/IntersectMBO/cardano-node

AFJ-Cardano Extension:
https://github.com/roots-id/cardano-anoncreds

Atala Prism:
https://atalaprism.io/

OpenEnterpriseAgent:
https://github.com/hyperledger-labs/open-enterprise-agent

Cheqd
https://github.com/cheqd/cheqd-node

Hyperledger Besu:
https://github.com/hyperledger/besu
Besu Good First Ticket: https://github.com/hyperledger/besu/issues?q=is%3Aissue+is%3Aopen+label%3A%22good+first+issue%22
Indy-Besu: https://github.com/hyperledger/indy-besu

DSR
www.dsr-corporation.com
www.dsr-iot.com
https://www.linkedin.com/company/dsr-corporation/