

Integrate Solidity VM (from Hyperledger Burrow) to Hyperledger Iroha

Title	Integrate Solidity VM (from Hyperledger Burrow) to Hyperledger Iroha transaction and query pipeline
Status	PROJECT COMPLETED
Difficulty	HIGH

Description

Since Hyperledger Iroha is moving toward its final release, the team of maintainers would like to have someone to help integrate Solidity VM from Hyperledger Burrow. In order to support the vision of Iroha as a simple and straightforward platform we want to build a visual language over Solidity in the future, similarly to Lego Mindstorm EV3 or Scratch environment:

[blocked URL](#)

We want users to be able to create decentralized applications securely and hassle-free.

Additional Information

None

Learning Objectives

Intern would get experience in virtual machines, Hyperledger Iroha internals, C++ and other technologies.

Expected Outcome

Integrated HL Burrow VM to Iroha

Relation to Hyperledger

Hyperledger Iroha

Hyperledger Burrow

Education Level

Nothing special.

Skills

Former experience with C++. Would be nice to have Solidity and VM skills/experience.

Future plans

Build a visual programming language over the integrated virtual machine.

Preferred Hours and Length of Internship

Full- or part-time.

Mentor(s) Names and Contact Info

Andrei Lebedev, andrei@soramitsu.co.jp, Soramitsu

Mentee Name and Contact Info

Ivan Tyulyandin, ivan.tyulyandin@gmail.com, SPbU, [Ivan Tyulyandin](#)

Project Plan

The main purpose of this internship is to create an environment for smart contracts. Hyperledger Iroha developers would like to try different smart contract engines. One of them is Ethereum Virtual Machine from Hyperledger Burrow project. Intern [Ivan Tyulyandin](#) is working on the integration of it into Iroha.

Completed tasks:

- ✓ Add interaction with Burrow EVM using CGO and Golang compiler *buildmode* option 15 Jul 2019
 - ✓ Add new command inside Iroha to pass parameters to Burrow VM 17 Jun 2019
 - ✓ Develop a wrapper to connect Iroha and Burrow EVM 15 Jul 2019
 - ✓ Write EVM storage inside the wrapper
- ✓ Simulate EVM storage structure inside Iroha Postgres 05 Aug 2019
 - ✓ Develop C API to get data from Iroha
 - ✓ Implement interaction between Burrow EVM and Postgres in the wrapper using the C API.
- ✓ Tests and integration 23 Aug 2019
 - ✓ Tests for the new command and data processing inside it 17 Jun 2019
 - ✓ Tests for interaction between Iroha and Burrow VM 12 Aug 2019
 - ✓ Integration tests 23 Aug 2019

Since Burrow is written in Golang, there is the option to compile the source code of EVM (which is part of the Burrow project) into static library and C header file. It will be possible to use the header and the library inside Iroha C++ code. At this step, all data related to EVM is stored inside the wrapper.

Next milestone is to remove the EVM data storage from the wrapper to Iroha Postgres. It will let users perform queries about EVM state from Iroha.

Next steps (keep working on them):

- More integration tests (ERC-20 for example)
- User guide

Summary Report



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