Extend Hyperledger Fabric to Support EVM Contract and Web3 Toolings

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show of hands

how many of you...

• are familiar Blockchain?

• have written a DApp on Ethereum?

• have written application on Hyperledger Fabric?
• What is EVM
• Why are we supporting it
• How to use it
• How it’s done
• Demo
• Future work
What is EVM?
• Turing-complete stack-based virtual machine
• execute bytecode compiled from high-level languages
• contract-oriented language, e.g. Solidity, Vyper
• bounded by limited gas supply
• reduce attack surface
why are we supporting it?
“Should I learn another contract-oriented language?”

– Developer from Ethereum
Fabric

Hyperledger Cello

Ethereum

Hyperledger EXPLORER

Embark

remix

swarm

ens

TRUFFLE

ethereum name service

...
Fabric

Docker

chaincode

Ethereum

bytecode

EVM
Ethereum Ecosystem
What if…

How it’s done
previous work

• EVM is a spec

• go-ethereum is under LGPL-3.0, which we cannot use directly

• luckily, Hyperledger Burrow has its own implementation of EVM spec, under Apache 2.0

• Sawtooth has already leveraged that lib to support evm bytecode execution, i.e. seth

• shoutout to Burrow team for their generous support!
Demo

VOTE DAPP
USER1

FAB PROXY
USER1

Installs & Interacts with Contract

FABRIC NETWORK

VOTE DAPP
USER2

FAB PROXY
USER2

Interacts with the Contract
Future Work

- Fabric EVM experimental support in Fabric 1.2
- Fab Proxy in Fabric 1.3
- Introduction of events in Smart Contracts
- Looking into Adding Native Accounts
References

• Fabric Chaincode EVM Repo: https://github.com/hyperledger/fabric-chaincode-evm

• Deploy Fabric + EVM to IBM Kubernetes Service: https://github.com/swetharepakula/fabric-evm-ibm-container-service

• POC Proxy: https://github.com/swetharepakula/fabric-chaincode-evm

• Fabric EVM Demo: http://fabric-evm-demo.mybluemix.net/

• IBM Code: https://ibm.biz/BdZWzT
Thanks!
Any Questions?