Ease endorsement operations for Hyperledger based products (EasyDoser)

Title	A simpler and easy way to handle endorsement policies with Hyperledger Fabric based products
Status	COMPLETED
Difficulty	MEDIUM

Description

Introduction

Endorsement policy controls the approval of a proposal to be executed at various granular levels.
In other words, this is the primary entity which is validated before a transaction is committed.
Endorsement policy can operate at two different granularities:

- Namespace level: They can be set for the whole namespace.
  This is the default approach in which endorsement policies are specified in the chaincode definition,
  which is agreed to by channel members and then committed to a channel
- Individual key level: They can be set for individual state keys called private data collections.
  You can also specify an endorsement policy at the private data collection level,
  which would override the chaincode level endorsement policy for any keys in the private data collection.
  This would further restrict which organizations can write to a private data collection.

Problem Statement

This becomes complex to handle when operating at scale.

Some usecases

1. Complex endorsement policy resolving for namespace level ones
2. Tracking Endorsement policies on large quantity Private data collections each having different endorsement policies
3. Resolving policy for a given object combining namespace level with overiding individual key-level ones.

Additional Information

1. Understanding endorsement policies in Hyperledger Fabric v2.x - https://hyperledger-fabric.readthedocs.io/en/release-2.0/endorsement-policies.html
2. Understanding chaincode - https://hyperledger-fabric.readthedocs.io/en/release-2.0/chaincode4noah.html

Learning Objectives

1. Understanding of hyperledger fabric concepts
2. Learn to manage (write/install/execute) hyperledger smart contracts (chaincode)
3. Good exposure to DLT technologies
4. Understand De-centralised transaction endorsement concepts
5. Gain Hands-on experience with opensource software development

Expected Outcome

1. A library/set of tools implementation thats able to ease endorsement policy handling
2. Good documentation with diagrams in github
3. Unit and integration tests for the implementation

Relation to Hyperledger

- Hyperledger Fabric
- Hyperledger Cello

Education Level

Any

Skills

1. Interest in distributed systems
2. Coding skills required to implement chaincode in golang, nodejs or java
3. Familiarity with bash is a plus
4. Knowledge on container technologies like Docker is also an advantage

Future plans

Integration with hyperledger fabric, explorer projects

Preferred Hours and Length of Internship

Part-time (20 hours a week for 24 weeks starting in summer and ending in fall)

Mentor(s) Names and Contact Info

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Project Results

Github Repository:-

https://github.com/maniankara/hyperledger-easydoser

Youtube Video:-

Blog Post:-

https://medium.com/@abhimanyushekhawat17.as/easydoser-18f6ba7c910d

Presentation:-

Lightening Talk Recording