NAME OF THE TASK

UKNF_Reporting Ledger

SOLUTION BACKGROUND

Financial institutions have a special nature and position because they process our funds for various purposes: our settlements, investments, insurance, etc. The role of supervision is to ensure the safety of the financial market and of individual entities. For this reason, financial institutions are required to provide the supervisory authority with a range of information that is used in analytical activities. These data include, among others, financial data, quantitative and qualitative data, information on fraud, etc.

What is equally important, reporting takes place in different ways, different communication channels are used and different periods are used in which data is sent. We would like to meet the expectations of regulated entities and to simplify and automate certain processes as much as possible, which will allow to optimize the activities required by law.

DESCRIPTION AND CHARACTERISTICS OF THE TASK

Your task will be to create a project based on Hyperledger Fabric. The task will be to prepare a Hypeledger environment with at least 2 organizations that are connected through a channel based on Private Data Collections with a supervisor through which, through a modular API, you can send data specified in the API, saved in the database of the supervisory authority. The API should enable two-way communication. Additionally, the solution should take into account the possibility of adding additional external participants who could join the network as an entity downloading data to their own separate database.

EXPECTED RESULTS

In the first place, the task should contain all components that are inseparable elements of the Hyperledger Fabric network*. Blockchain is a database that safely stores data in blocks. Another important element is selecting the data that is crucial to save in blocks and the rest that will be saved only in Word State. The next elements to be assessed will be the ways of visualizing the results. In the Hyperledger Fabric network there are many possibilities of presenting data, eg Grafana, Blockchain Explorer, Website, application. The possibility of expanding the blockchain network with additional organizations, channels, Chaincode will also be taken into account.

WHAT ARE THE BENEFITS OF THIS SOLUTION?

The benefits that such a solution can give are as follows:

For financial market entities: possibility of reducing compliance costs, ease of reporting, better communication with the supervisory authority, limiting the risk of regulatory sanctions.

For the supervisory authority: higher level of digitization, data in a machine-readable format, the possibility of using modern tools for advanced analytics (e.g. AI), the target state is the possibility of exchanging data in close to real time, a standardized solution for the market.

PREPARATION FOR THE TASK

To solve the task, it is necessary to prepare the Hyperledger Fabric network. You can do it yourself or use the material we have prepared: ***How to prepare the environment for the task***

Configuration files and an example database can be downloaded from here: click

Presentation of the task ENG

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I. **Network requirements (version 2.X)**
   - https://github.com/hyperledger/fabric-samples
   - https://hyperledger-fabric.readthedocs.io/en/release-2.2/prereqs.html

II. **The network should include:**
   - Certificate Authority
   - MSP (ACL, Create end user identity, Configure Hyperledger Fabric for hardware security module)
   - minimum 2 organization
   - polices (for all organization)
   - couchDB
   - channels
   - private data collections
   - ordering services protocol-based consensus **RAFT**
   - peers
   - tls
   - discovery node
   - world state
   - profiles

III. **Chaincode**
   - programming language (preferences: Nodejs / Golang)
   - state interaction through function (GET, PUT, DELETE)
   - perform queries in accordance with the assumptions of the task
   - Define assets with key-value pairs
   - Implement attribute-based access control
   - ledger state initialization
   - invoke Smart Contracts from CLI
   - send test transactions

- send a transaction history inquiry
- invoke a transaction using the transaction class (stateful)
- registration of event handlers directly related to channels

IV. Application

- the application should read reports from the internal database via API and transfer selected data (freedom and creativity) to the HLF network

V. External network artifacts for network monitoring

- prometheus
- grafana
- blockchain explorer
- couchDB
- preview of reports on the website