Workplan

For Research Project: Cybersecurity Considerations for Blockchain Systems

October 30, 2020

Objective

The objective of this project is to assess levels of cybersecurity risks of blockchain-based systems.

Overall Approach

Develop a "*Monitoring Client*" on a selected IoT device to monitor and log the following information:

- **Log device states and feature set** such as manufacturer, hardware features, software features, version number, etc.,
- **Monitor and log handshaking sequences**, as defined by the respective communication protocols used to connect with the network, such as security key lengths, encryption and signature algorithms, refresh periods, initialization vectors and similar cryptographic-relevant parameters.

These device parameters/attributes will be logged and stored as hashes with cryptographic access.

Design Approach

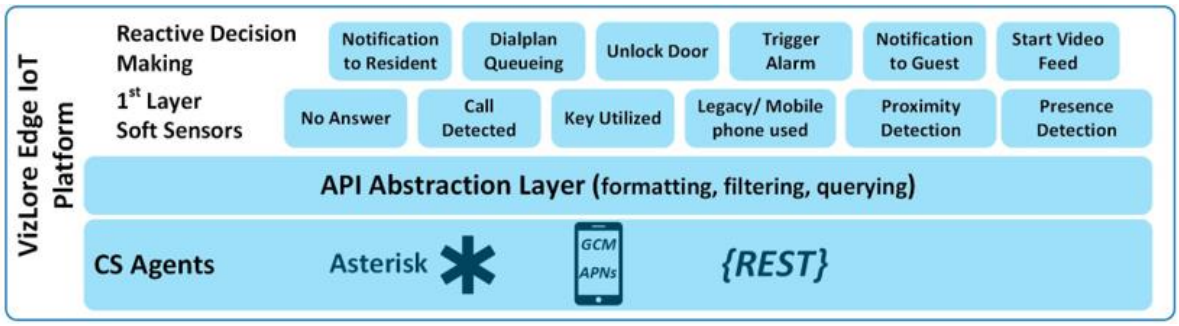
Develop a light-weight "Monitoring Client" on the selected device that uses REST API for writing/storing data mission critical data and security data to the Hyperledger Fabric infrastructure.

Development Environment

VizLore Hyperledger Fabric Agents should support aarch64 architecture, protocol stack, and development environment.

VizLore Edge IoT Controller Protocol Stack

The selected IoT controller device functional decomposition and protocol stack are shown below.



The monitoring client is to be developed and integrated smoothly in this environment.

Note: The controller/client is not intended to be an active blockchain node but rather a client with access to blockchain ledger.

Schedule

The following tasks and corresponding schedule is suggested:

Task	Description	Duration
1	Set up the aarch64 development environment	1 week
2	Study the Edge IoT controller device and understand its capabilities	1 week
3	Design a light-weight monitoring client using REST API	2 weeks
4	Code the monitoring client	2 weeks
5	Test and Optimize the client	1 week
6	Document the work and provide a detailed report	1 week

The work is expected to be completed in about 8 weeks.