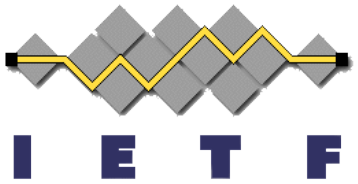

Secauth Scope, players & use cases

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Authentication Purposes

- **Authentication might be used for two different purposes:**
  - Authentication of a user via end system to a service
    - Example use cases
      - User wants to check its bank account
      - User wants to connect to internet via a hotspot
  - Authentication of a device/apps/service (mobile phone, etc.) to another service/virtual device
    - Example use cases
      - Hotspot needs to be authenticated in SDN controller
      - Mobile node needs to be authenticated after movement to a new place when using Mobile IP(MIP)

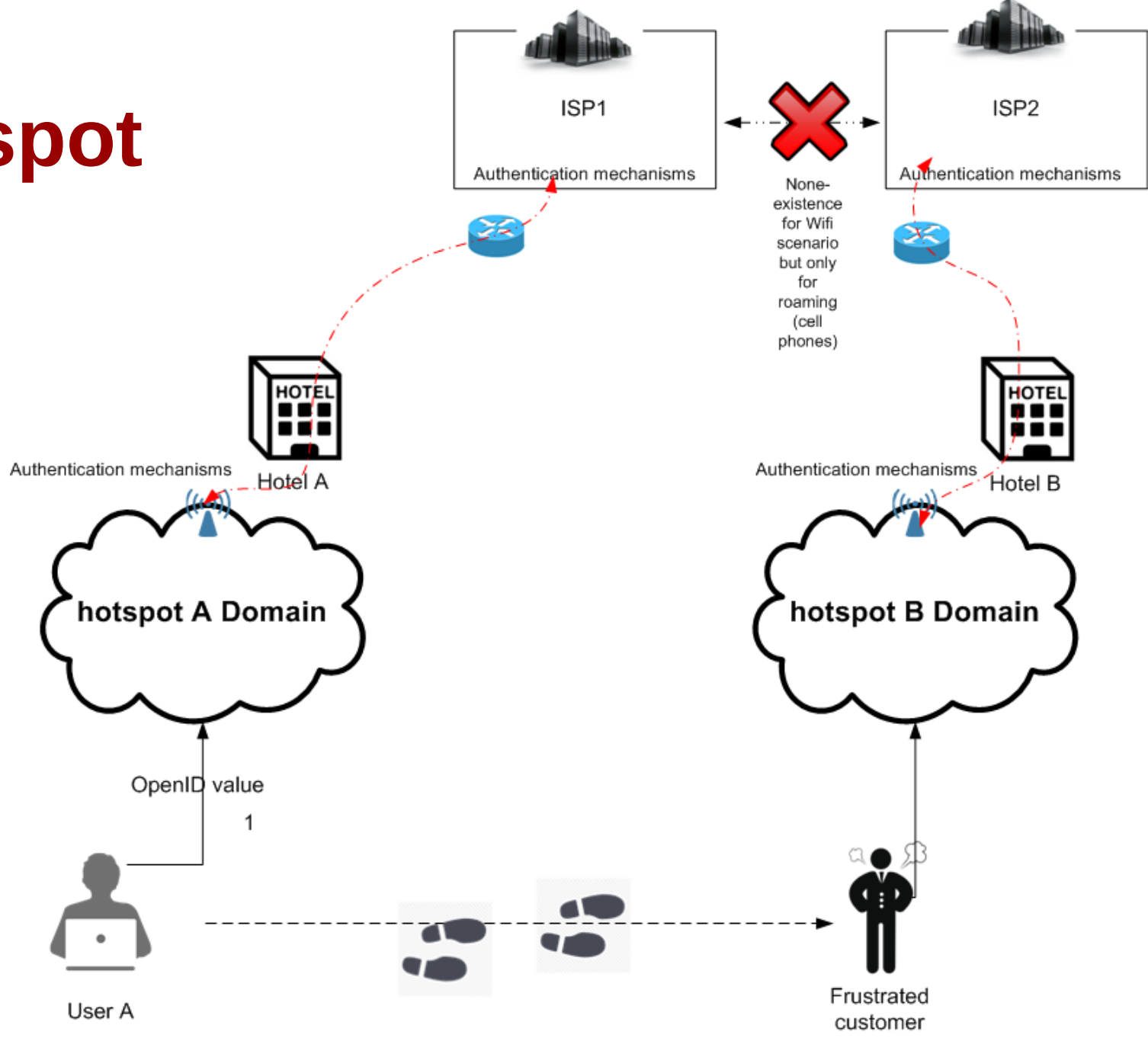
Scope & Authentication Mechanisms

Scope	User Authentication/Authorization	Device/App/service Authentication
Single administrative domains	RADIUS, Diameter, Oauth (authorization)	DANE (might be…)
Multiple administrative domains under the control of single entity	ABFAB (federation authentication), RADIUS proxy + EAP	Diameter MIP (RFC 4004)
Cross domains (multiple entities)	Only a few implementation available but no protocol	

Use case 1 - Hotspot

This is the hotspot authentication scenario in non-virtualization environment

Use case 1: user A (via end system) wants to move from Hotel A to Hotel B. he already filled out A form to access to wifi in hotel A.
He doesn't want to repeat this process
And wants everything to be done
Automatically. Hotel B closed many ports
On its firewall so he cannot continue its
Conference call in wifi B.
User a is frustrated!



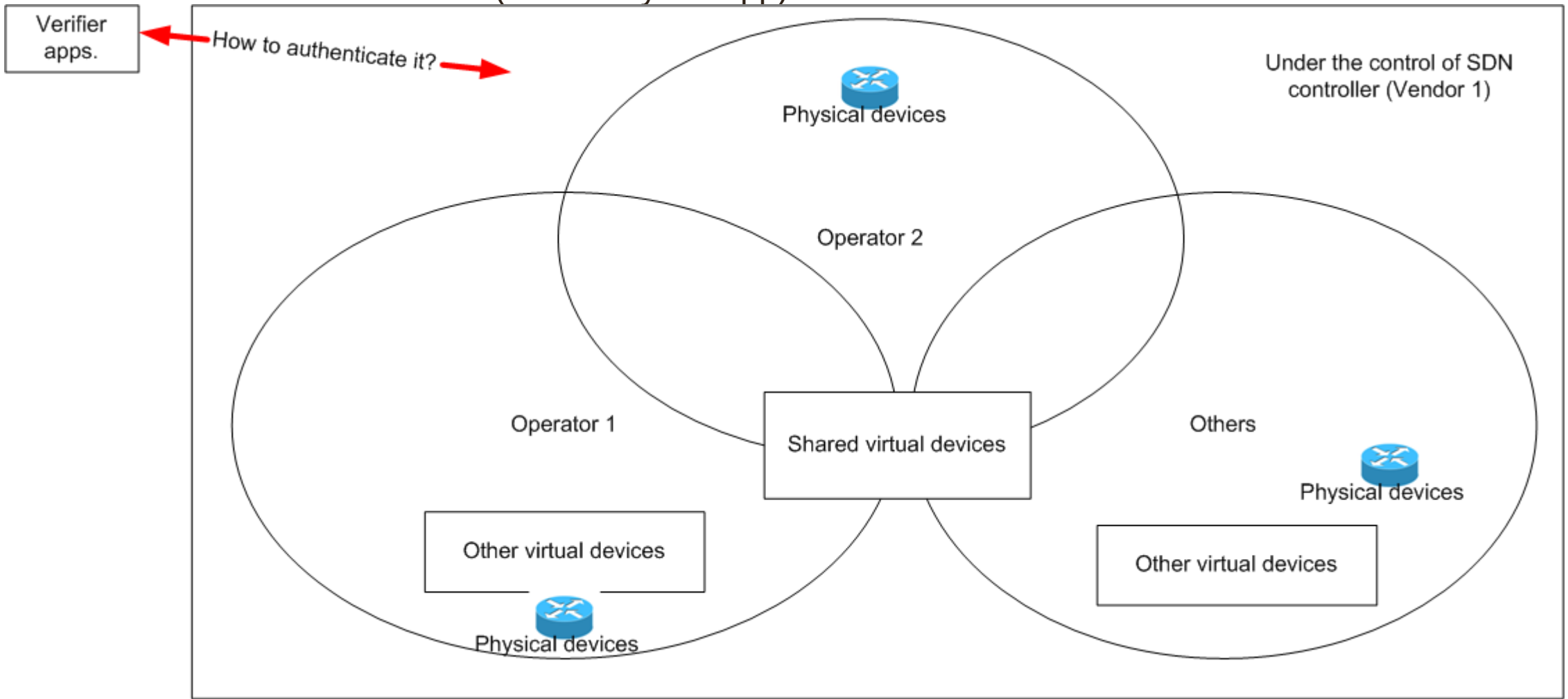
Upcoming future and virtualized infrastructure

- **Assumption**
  - Virtualization environment
    - Network devices either physical or virtual supports OpenFlows, eflows, etc.
      - Their role is more forwarding the traffic but not decision maker
    - Software defined Network (SDN) solution are implemented and supported by different vendors
    - Decision maker on networks for each network devices is a/many SDN controller(s)

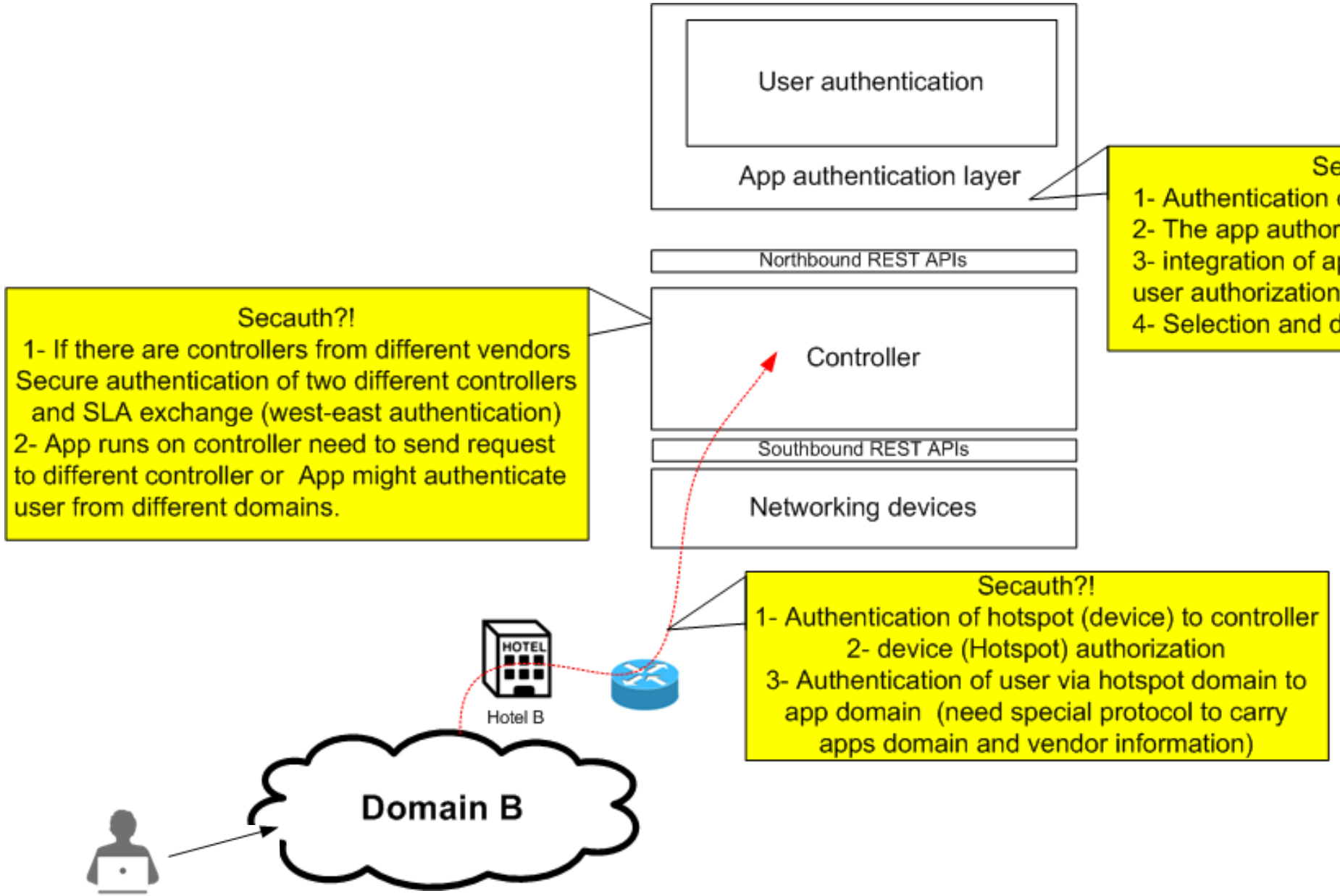
- **There are two different Scope for use case 1:**
  1. Both hotspot are under the control of different SDN controller for a vendor
  2. Each hotspot are controlled different SDN controller from different vendors

Use case 1 – Having different domains on each controller

- **Assumption**
  - Each SDN controller provided by a vendor might control several devices that is related to different operators
  - Each Operators/third party companies also might have different level of access control (policy) to let an authenticated user (verified by the app) to access some resources via this network.



Use case 1 using SDN - secauth possible scope



Apps can be either authentication/authorization apps or Have any other functions

What is missing & Secauth scope

- **User authentication**
  - Can use RADIUS as an app or any other approaches BUT might need to exchange policy information to controller via this authentication app. Controller has no information about user but might have information about app.
- **App authentication**
  - Authentication of app on controller and then authorization of this app to access some network resources
- **Controllers authentication**
  - Authentication of controllers from different vendors or same vendors and exchange of policy information (east-west authentication)
- **Device authentication**
  - Authentication of hotspot to controller so that it can access to its right policy and applications

In last slide the places where secauth can be used are defined…

(cross links between hotspot, controller and apps)

Players

- **Companies**
  - **Producer of authentication/authorization apps**
- **Operators**
  - **Verification of third party apps and letting them access to network devices under their control**
- **Vendors**
  - **Provider of SDN solutions**
- End users/end systems
  - Demand for this service

Use case 2: verification of SIP device

- Alice uses its IP phone to contact someone. There are several SIP proxy on the way. All SIP proxy needs to be configured in order to authenticate Alice's phone to connect to another person. All these SIP proxy servers can control via an app runs on a SDN controller since these SIP proxy servers are all also virtualized components, all configuration can be propagated on all devices.

Use case 3: Home device configuration

- **Scenario 1: Alice needs to control its home gateway and add new rules so that she can access a device inside her home network. Alice only needs to access to the controller app on clouds (another use case for end system authentication similar to user authentication in hotspot scenario)**
  - Authentication of end system to controller app
  - Authentication of controller app to home device so that Alice can apply changes