BEMOSS and Its Enhanced Applications

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Outline

Current Motor Interface

- Using command `nmap -sn 192.168.1.0/24` to perform ping scan
- Command `arp -a` dumps ARP (Address Resolution Protocol) cache
- Unable to use command `sudo nmap -sn 192.168.1.0/24`
- User input not accepted in VOLTTRON log terminal

Current Motor Interface

Figure: Use of `arp` command

Current Motor Interface

- Parse arp output with regex
- Retrieve IP and mac address of Raspberry Pi
- Remove ':' delimiters from MAC address
- Regex in URL mapping to devicedata_view only searches for a-z, A-Z, and 0-9

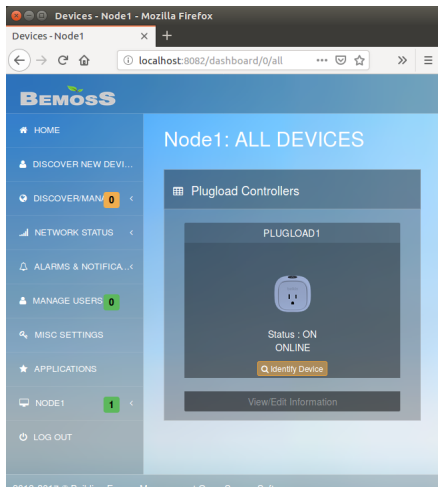# Current Motor Interface
Problems

- Device model, vendor name, username, and password of Pi not easily accessible
- Hardcoded in json file
- Password must be encrypted
- RPi script paths must be specified on BEMOSS host machine

Current Motor Interface
Demo

Play video

Improved Motor Interface

Figure: Identify device widget

- Implement device identify behavior
- Requires querying the device for information
- Must find a way of checking the status of the remote XBee module
- Toggle visually noticeable device variable twice with pause in between
  - On motor: status
- Replace plugload image with motor image

Improved Motor Interface

- Raspberry Pi remote GPIO server
- Control GPIO pins over the Internet
- gpiozero or pigpio python libraries
- Only requires IP address, no login credentials
- Start server with `pigpiod` (pigpio daemon)
- Option -n allows only specified hosts to connect
    - Example: `sudo pigpiod -n "IP ADDRESS"`

Plans

- Find new device to implement with BEMOSS
- Possibly a sensor
- Implement PID control algorithm with motor to control speed

Any questions?