PRISM: An Edge IoT System for Home Automation
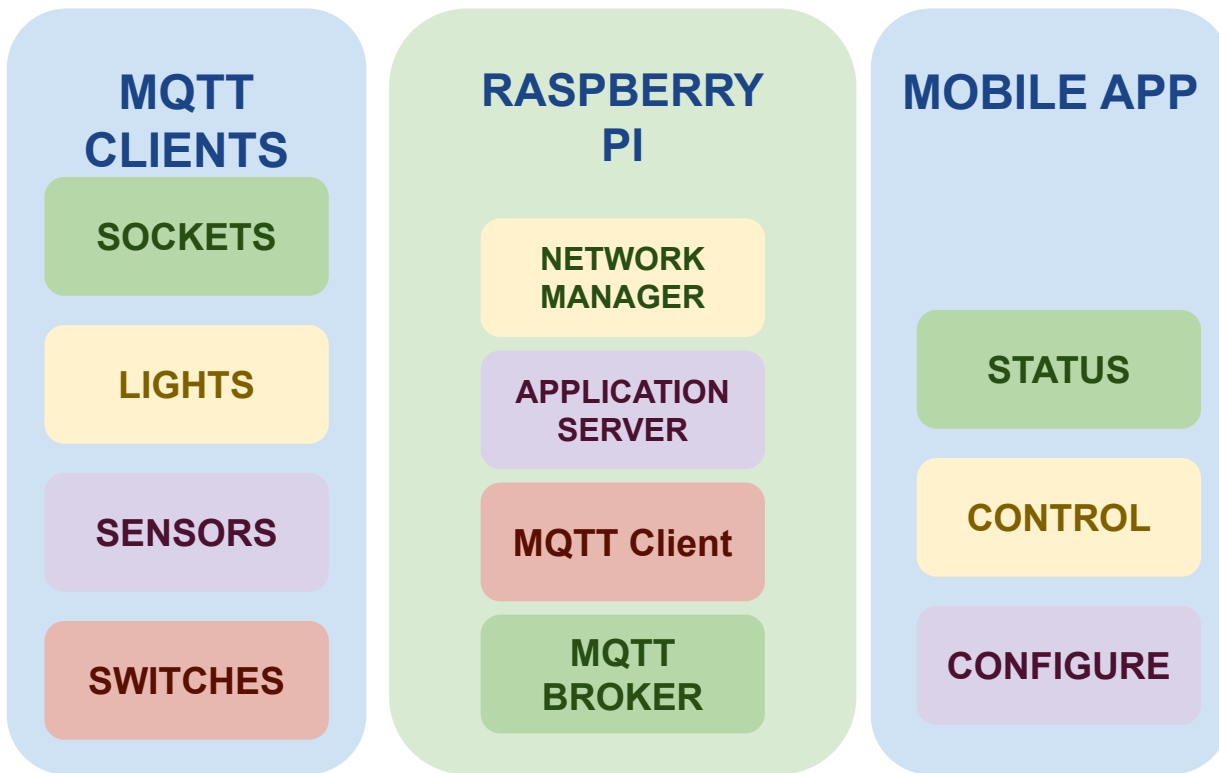
Presentation: XP0.1

rachyon

Introduction

A smart home automation and monitoring solution with focus on security and privacy.
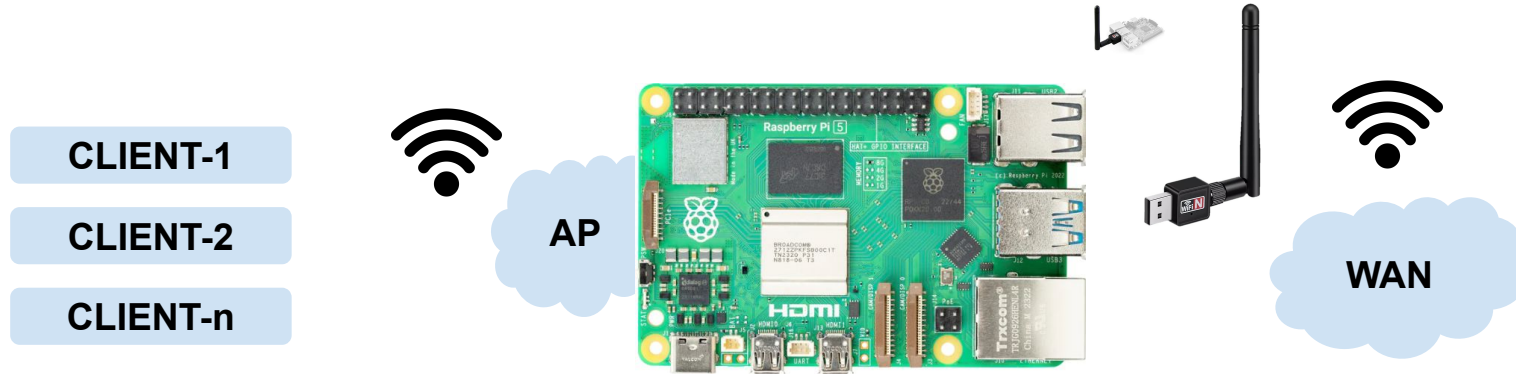
This project makes use of Internet of Things to streamline the monitoring and control of household applications with special care to the user's privacy and security concerns.

Quick Overview -I

MQTT CLIENTS

- SOCKETS
- LIGHTS
- SENSORS
- SWITCHES

RASPBERRY PI

- NETWORK MANAGER
- APPLICATION SERVER
- MQTT Client
- MQTT BROKER

MOBILE APP

- STATUS
- CONTROL
- CONFIGURE

Network Architecture

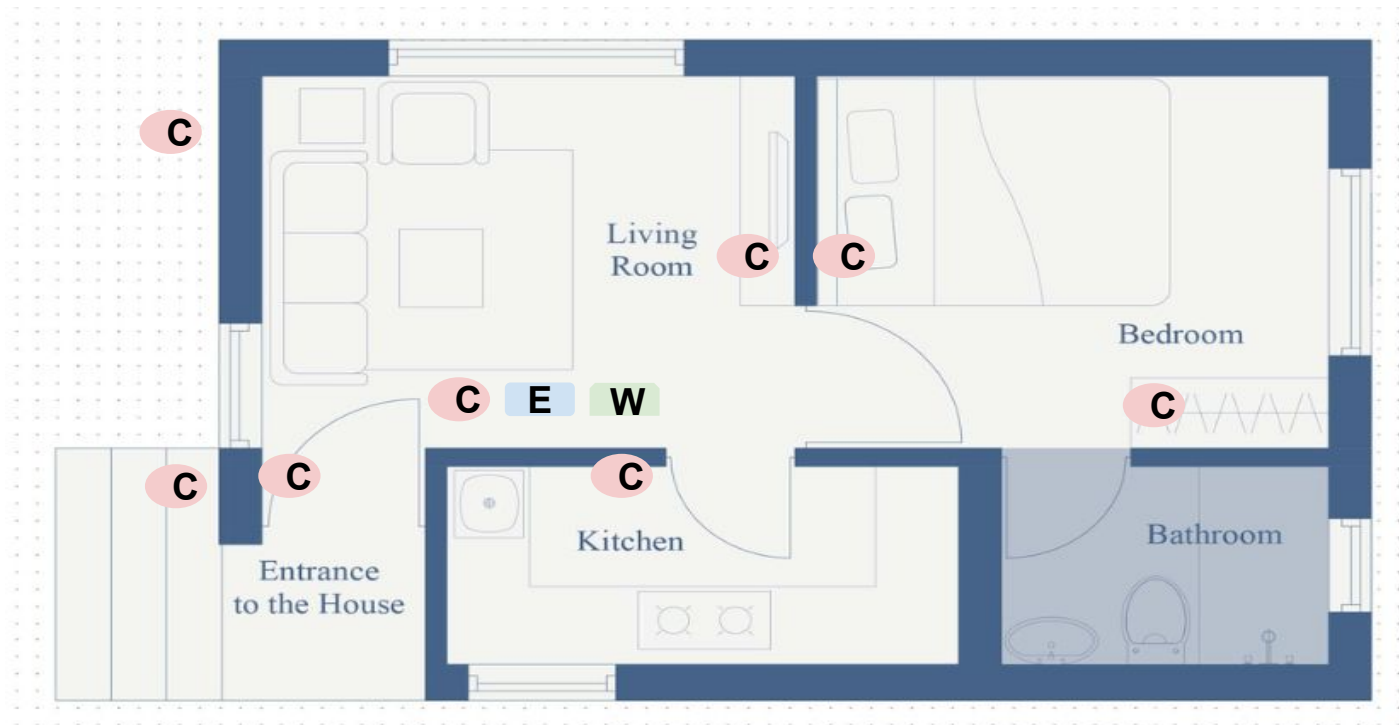CLIENT-1

CLIENT-2

CLIENT-n

AP

WAN

Secure LAN

Home Network

- No Internet Access
- Created by Raspberry pi AP
- Client components connect to it.
- RPi has a reserved IP
- UUID/Passwd based MQTT communication

- Access to Internet
- Raspberry pi connects using USB WiFi Adapter
- Routes the connection for Mobile app Server to access client status
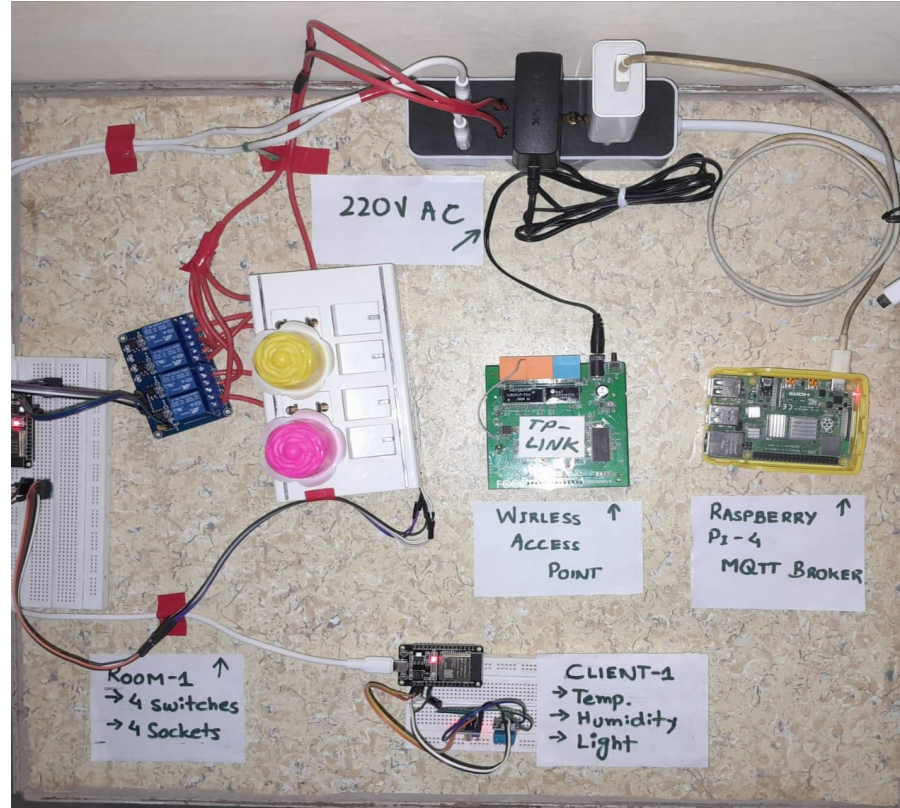
TYPICAL APPLICATION
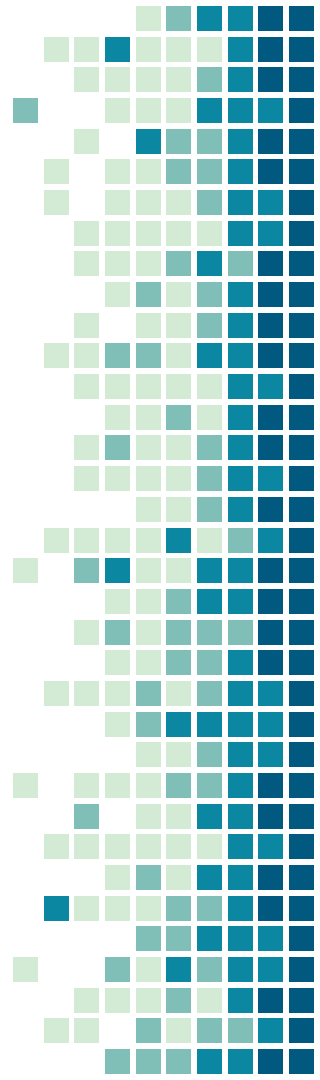
XPO.1 Hardware Setup

- Raspberry pi Central Server
- WiFi Access Point
- Client-1: Sensors
- Client-2: Household switchboard (4-switch, 4-sockets)
- Power Source (220VAC)

Future Plans (XP1.0 and beyond)

XP1.0
- A complete solution for monitoring and controlling switchboards.
- End-to-end network and software stack.
- Approach to a User Configurable, flexible design.
- Off-the-shelf Hardware components

Thank You.....!!!