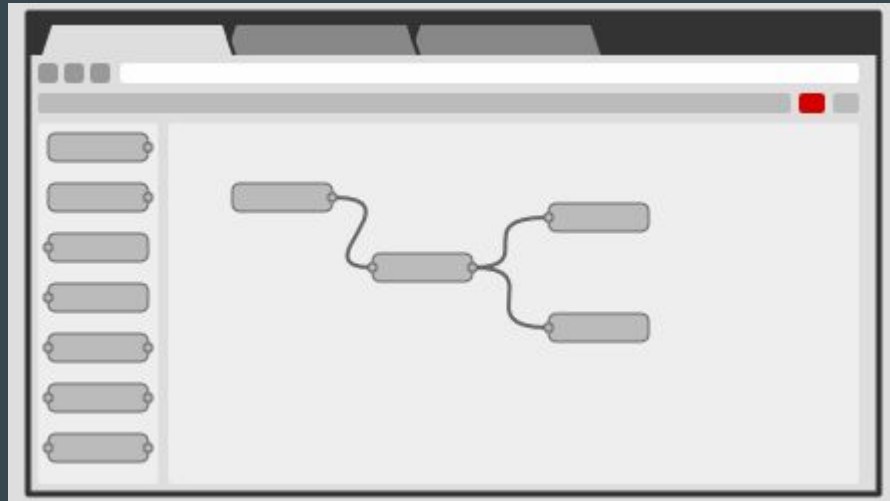# Node-RED

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Connection with ESP32

Content

- Introduction
- Installation
- Editor
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- Node-RED Dashboard
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- Communication with your ESP32
    - Network nodes
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- MQTT Basics

Introduction

- a programming tool for wiring together hardware devices, APIs and online services
- Browser-based flow editing
- Built on Node.js

[1] https://nodered.org/

Installation

- https://nodered.org/docs/getting-started/local

Editor

- https://nodered.org/docs/user-guide/editor/

Writing flows

- https://nodered.org/docs/tutorials/first-flow

Node-RED Dashboard

- https://flows.nodered.org/node/node-red-dashboard

Documentation

- https://nodered.org/docs/
    - Userguide
    - Tutorial
    - Cookbook

Communication with ESP32
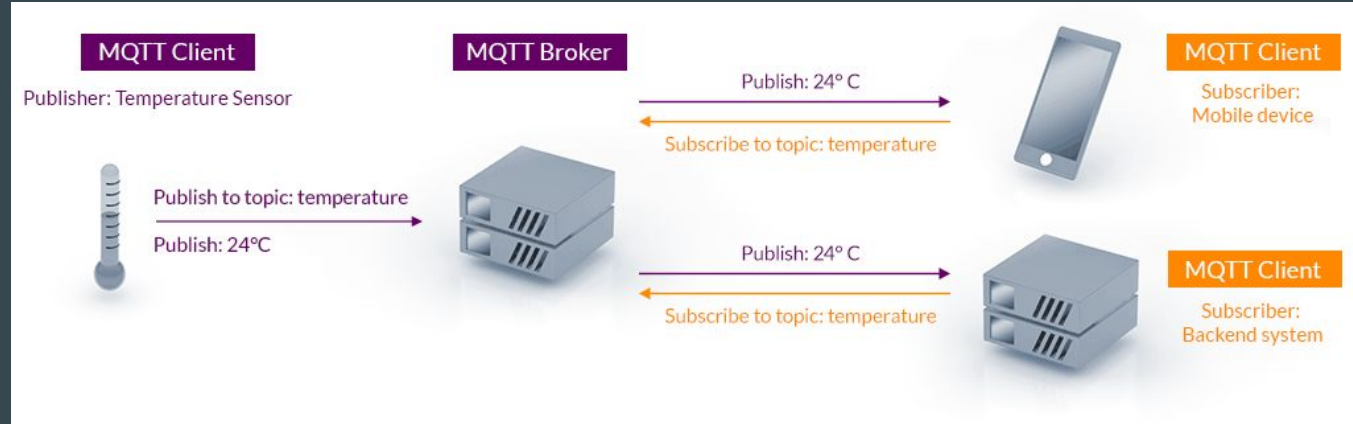
- Nodes in network group

Communication with ESP32

Tasks:

- Install Node-RED environment
- Verify the functionality
    - Inject and debug node interconnection
    - Node-RED Dashboard
    - HTTP requests
    - MQTT communication protocol
- Create Dashboard (GUI) to visualize measured values and control RGB LED and piezo
    - In this application use MQTT communication protocol

MQTT Basics

[2] https://mqtt.org/

- A Publish / Subscribe Architecture
- MQTT broker - a server that receives all messages from the MQTT clients and then routes the messages to the appropriate destination clients.
- MQTT client - any device (from a microcontroller up to a fully-fledged server) that runs an MQTT library and connects to an MQTT broker over a network. Both publishers and subscribers are MQTT clients.
- Topics - specific form of addressing that allows clients to share information.
- QoS - Quality of Service levels (0-2)