Lua, NATS & IoT

How to enhance your home

Who am I?

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What do I do?

I mean in my leisure time

- Open source projects:
  - http://tlks.io
  - NATS Lua Client
- Browser Extensions:
  - PlayTo for Chromecast
  - Instazzap for Whatsapp Web
- Internet of Things:
  - NodeMcu Sensors

Project Idea

Where did it come from?

- Started with Lua 6 years ago
  - Game scripting
- 2 years ago
  - Backend scripting
  - Data processing
- 3 months ago
  - NATS client for Lua
- *Let's do something practical with NATS & Lua*
  - *IoT massive data looks cool*

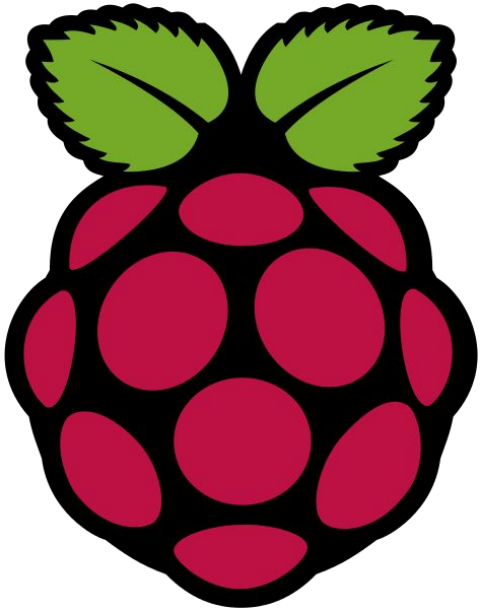
Tecnologies

- Programming Language
  - Lua
- Why Lua?
  - Small: 20.000 lines of C code
  - Portable: Builds in any platform with ANSI C compiler
  - Embeddable & Extensible
  - Fast (if more efficiency is necessary in a critical part it can developed in C)

Tecnologies

- Sensors & Data
  - Hardware: NodeMcu
- Why NodeMcu?
  - Cost: ~7€ / board
  - eLua:
    - Easy developer API
    - Event-Driven Lua
  - Arduino Like: Fast & efficient
  - Small: 5mm * 5mm
  - Integrated Wifi
- What will we use?
  - Lolin (NodeMcu v3 schematic)

Tecnologies



- Sensors & Data
  - Hardware: Raspberry Pi
- Why Raspberry Pi?
  - Cost: ~25€ / board
  - GPIO:
    - Choose the programming language you prefer to interact with it
  - Low-Power Consuming
  - High disk-space and memory
- **WARNING**
  - **This hardware can get ..**
  - **REALLY ..**
  - ***ADDICTIVE !***

Tecnologies

SUPPORTED BY

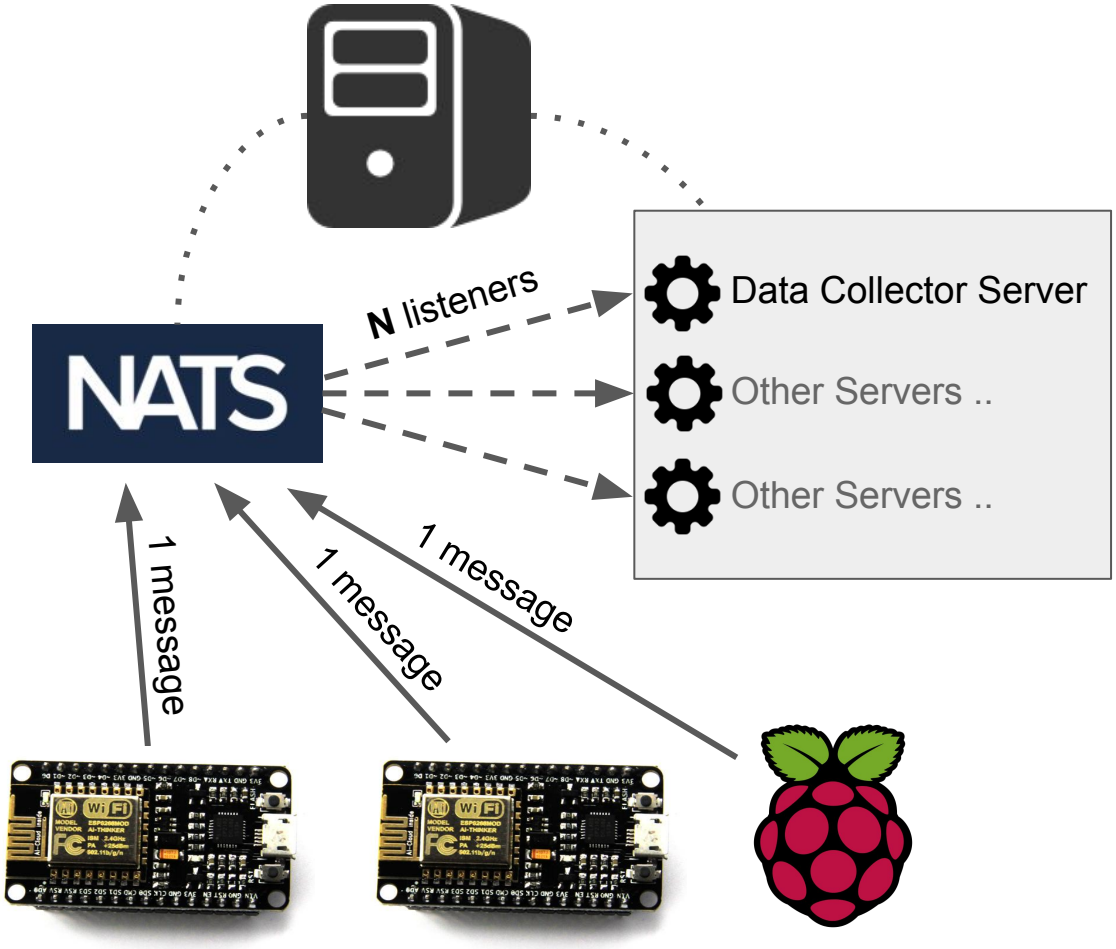
- Messaging Service
  - NATS
- Why NATS?
  - Small & portable
  - Easy to setup & use
  - Powerful: high message delivery rates
  - Reliable: ready for production
  - Extra: The messaging server could even be running in a raspberry pi (keeping the whole IoT architecture “*Green*”)

The Project Layout

The sensors data collected from the NodeMcu and Raspberry Pi is sent to the NATS server.

This data is spread through all the data collector servers.

We are going to use 1 server in the practical example.



Hardware

Little handful devices ahead

- NodeMcu Sensors
  - Light Sensor
  - Noise Sensor
  - Github Repository Link
- Raspberry Pi
  - Temperature Sensor
  - Github Repository Link

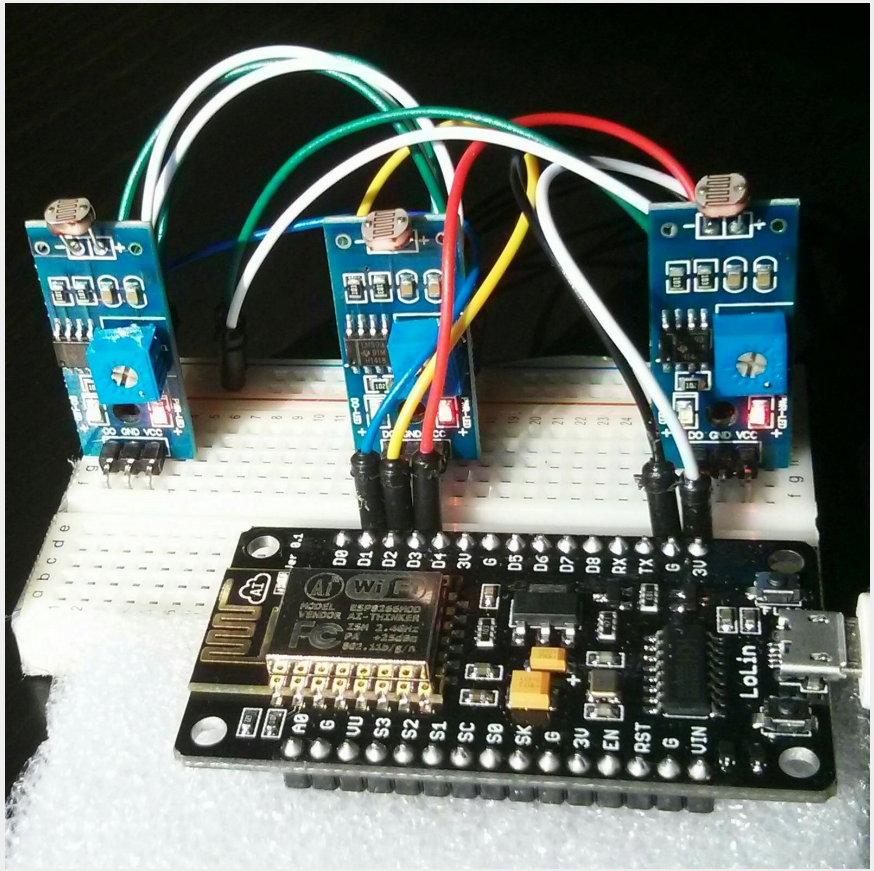
Light Sensor

Components

- NodeMcu
  - Rom: v0.9.6-dev
- 3 x LM393 Light sensor

What does it track?

- 3 different levels of light



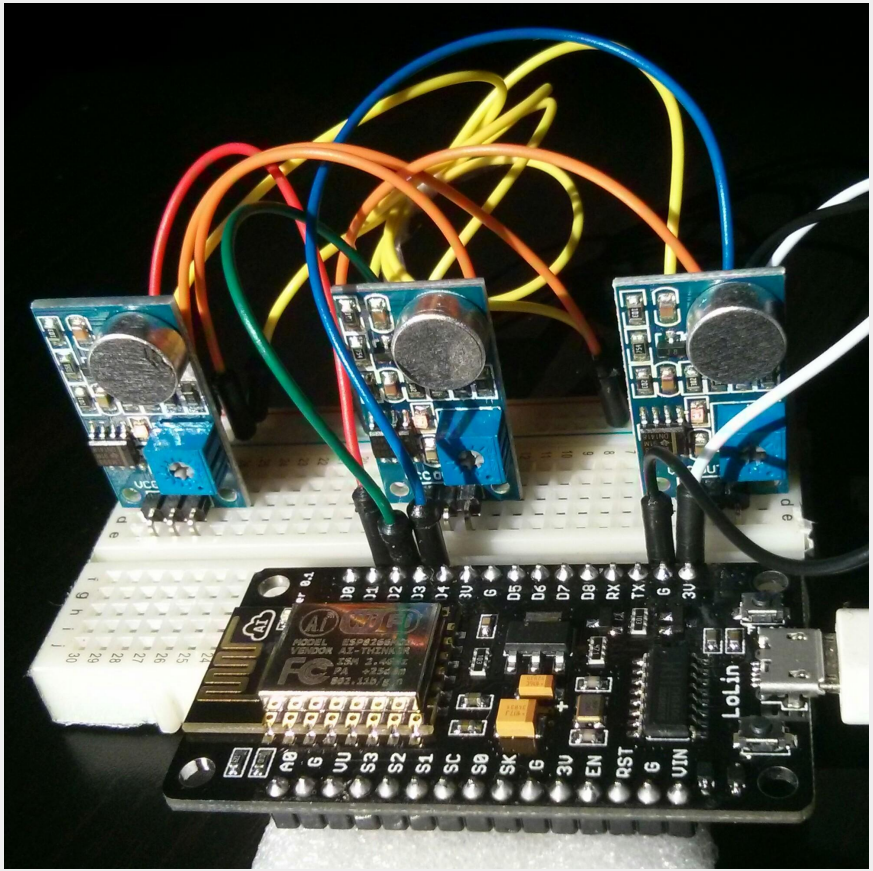
Noise Sensor

Components

- NodeMcu
  - Rom: v0.9.6-dev
- 3 x LM393 Sound sensor

What does it track?

- 3 different levels of sound



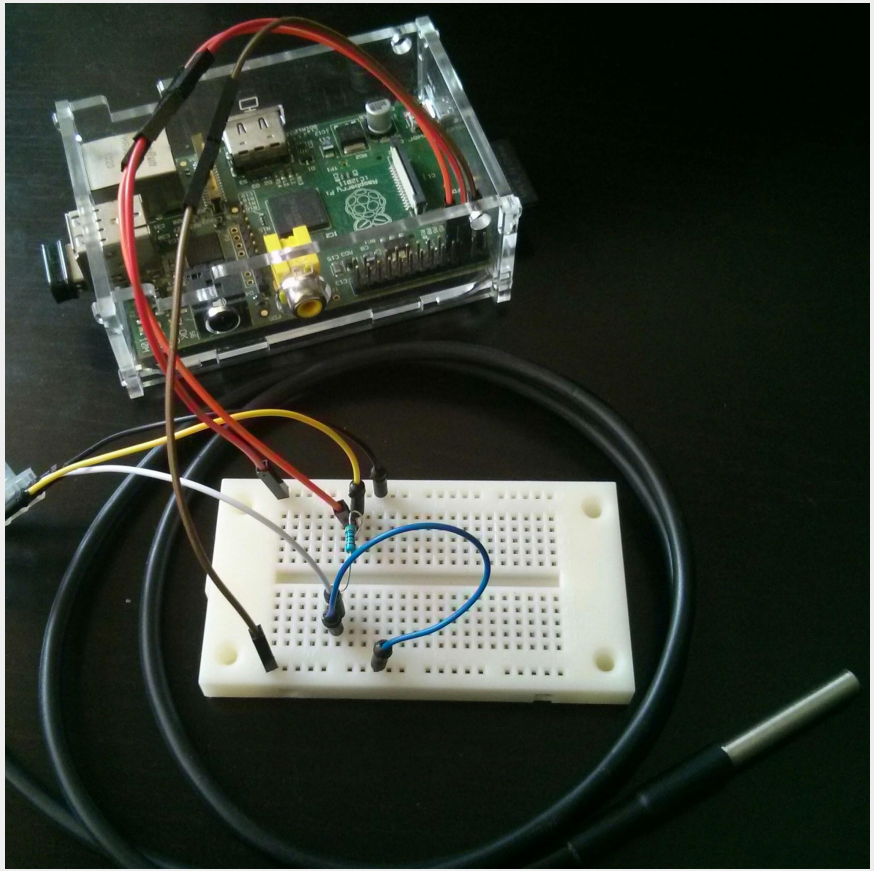
Temperature Sensor

Components

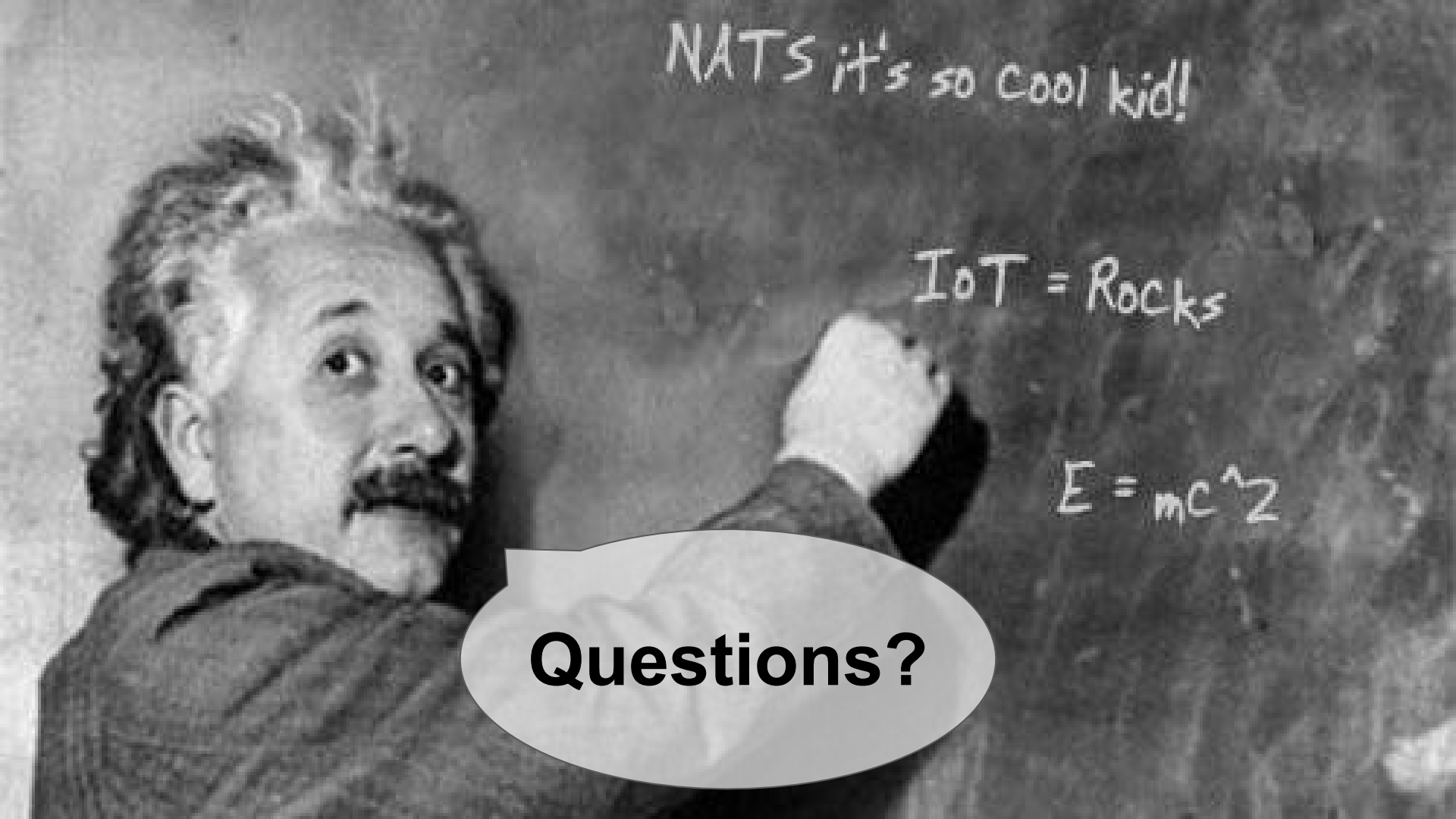
- Raspberry Pi
- 1 x DS18B20 Sensor

What does it track?

- Temperature -55ºC to 120ºC
- Precission: 0,5ºC



Let’s play with them


NATS it's so cool kid!
IoT = Rocks
E = mc^2
Questions?

itnig

NATS

APCERA

Thank you