

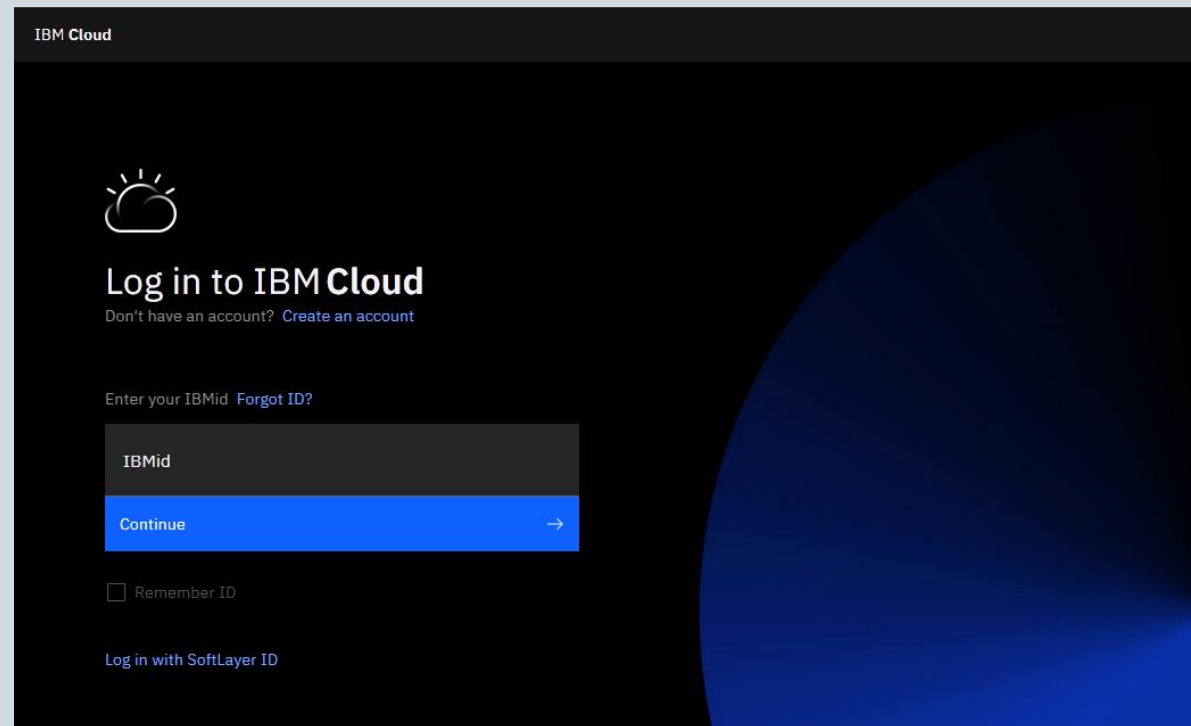
The background of the slide is a light gray color. It is decorated with a network of white lines that connect various circular icons. These icons represent different types of Internet of Things (IoT) devices and services, including a blender, headphones, a printer, a washing machine, a computer monitor, a car, a game controller, a lamp, a shopping bag, a cloud with a download arrow, a document, a lawnmower, a clock, a microwave, a fan, a camera, a smartphone, a laptop, a telephone, and a person. The icons are scattered across the slide, with some appearing inside the central text box and others outside it.

Utilização da IBM Cloud para Internet das Coisas

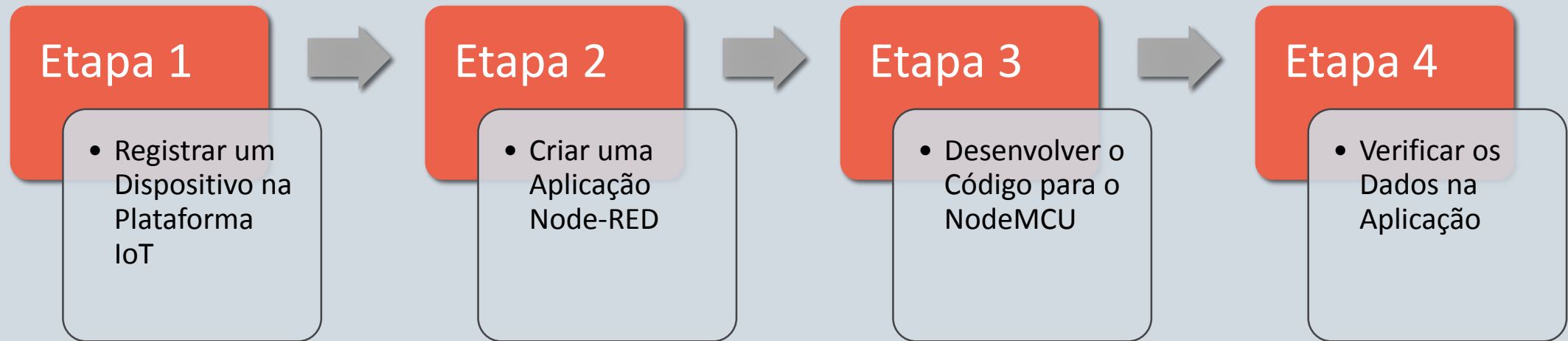
FÁBIO BRITO

Objetivo

Realizar o envio de sinais de temperatura através de um microcontrolador para a plataforma em Cloud da IBM



Procedimento



Visão geral do projeto

Dispositivo:	NodeMCU com Módulo Wifi ESP8266 ESP-12F
Sensor:	Módulo do sensor de Umidade e Temperatura DHT11
Plataformas:	Plataforma IoT (IBM Cloud) Node-RED App (IBM Cloud)
Comunicação:	Protocolo MQTT
Testes:	MQTTBox

Registro do Dispositivo

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Browse Devices

All Devices Diagnose

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID

	Device ID	Status	Device Type	Class ID	Date Added
>	D1	Disconnected	sensortemp	Device	Sep 9, 2020 2:06 PM

Plataforma IoT IBM Cloud

Registro do Dispositivo

Device Credentials

You registered your device to the organization. Add these credentials

Organization ID	bfzzmh
Device Type	sensortemp
Device ID	D1
Authentication Method	use-token-auth
Authentication Token	1z+H*A2hTbaykh1NHh

Dados do dispositivo

The API key has been added.

Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the API key to generate a new authentication token.

Generated Details

API Key	a-bfzzmh-5v9rsqqer2
Authentication Token	fmpfj)cBX8RA&TKhew

API Key Information

Description	-
Role	Standard Application
Expires	Never

Informações de autenticação

Aplicação Node-RED

Node-RED on IBM Cloud

Node-RED

Flow-based programming for the Internet of Things

Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways.

This instance is running as an IBM Cloud application, giving it access to the wide range of services available on the platform.

More information about Node-RED, including documentation, can be found at nodered.org.

[Go to your Node-RED flow editor](#)

[Learn how to customise Node-RED](#)

Aplicação

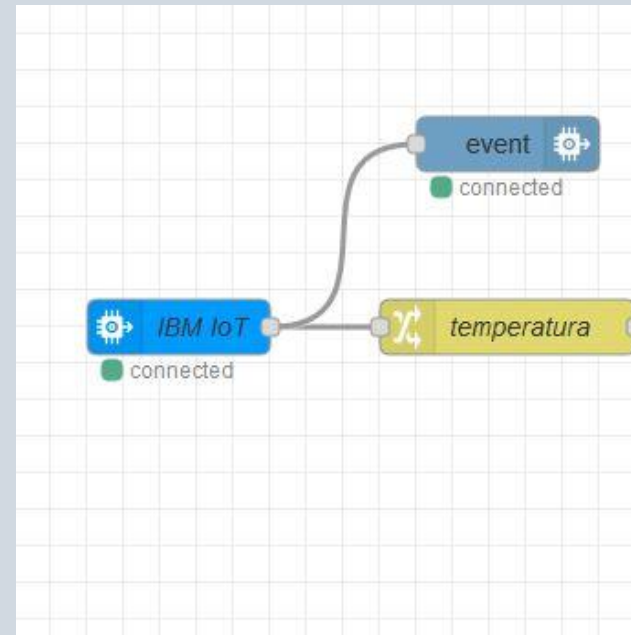
Aplicação Node-RED



node-red-contrib-ibm-watson-iot
Utilizado para conexão com o Quickstart

node-red-contrib-scx-ibmiotapp
Utilizado para conexão com o dispositivo registrado

Nodes usados para comunicação



Flow básico da Aplicação

Testes MQTTBox

Configurações cliente MQTT

Client Id = a: {Organization ID}:{Device ID}

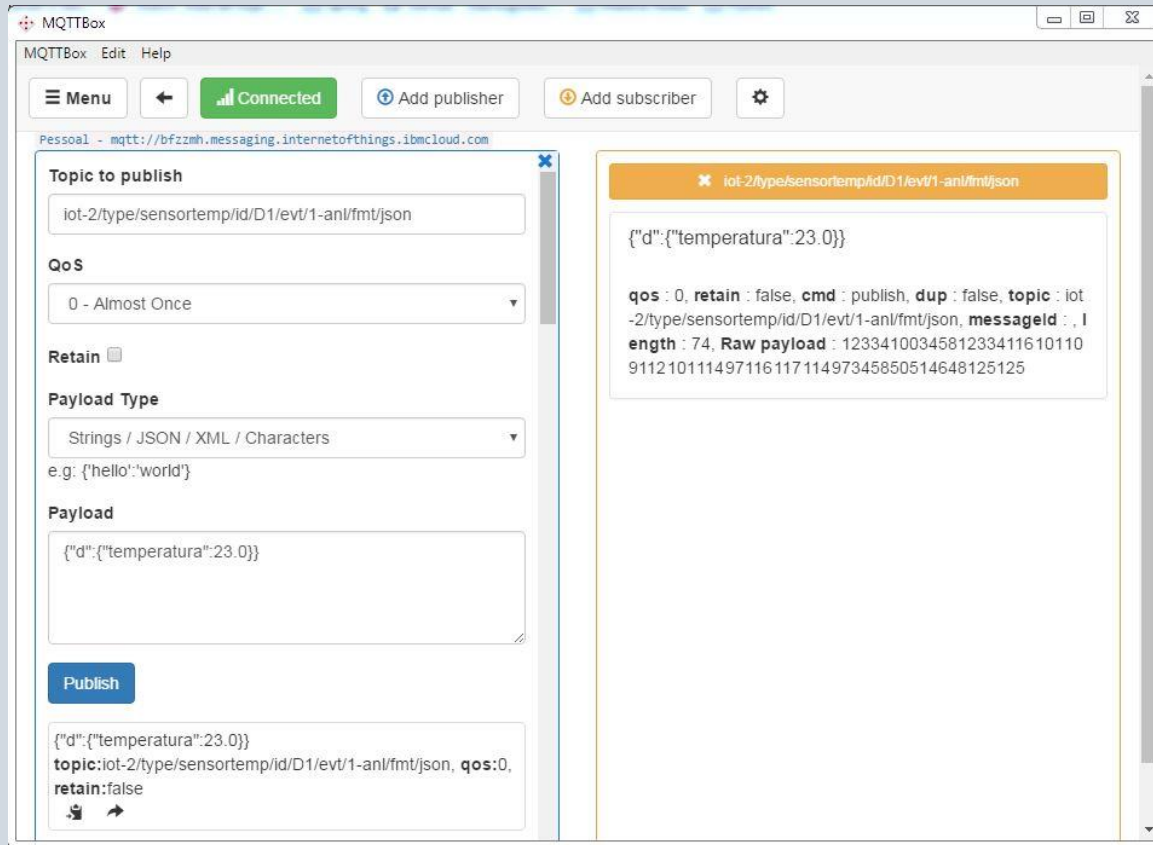
Username = {API Key}

Password = {API Authentication Token}

Host =

{OrgID}.messaging.internetofthings.ibmcloud.com

Testes MQTTBox



Publicação e inscrição no tópico

Tópico para publicação:
iot-2/type/{DeviceType}/id/{DeviceID}/evt/1-anl/fmt/json

Formato do Payload: JSON

```
{  
  "d":{  
    "temperatura":23.0  
  }  
}
```

Testes MQTTBox

▼

■

D1

Disconnected

sensortemp

Device

Sep 9, 2020 2:06 PM

Identity

Device Information

Recent Events

State

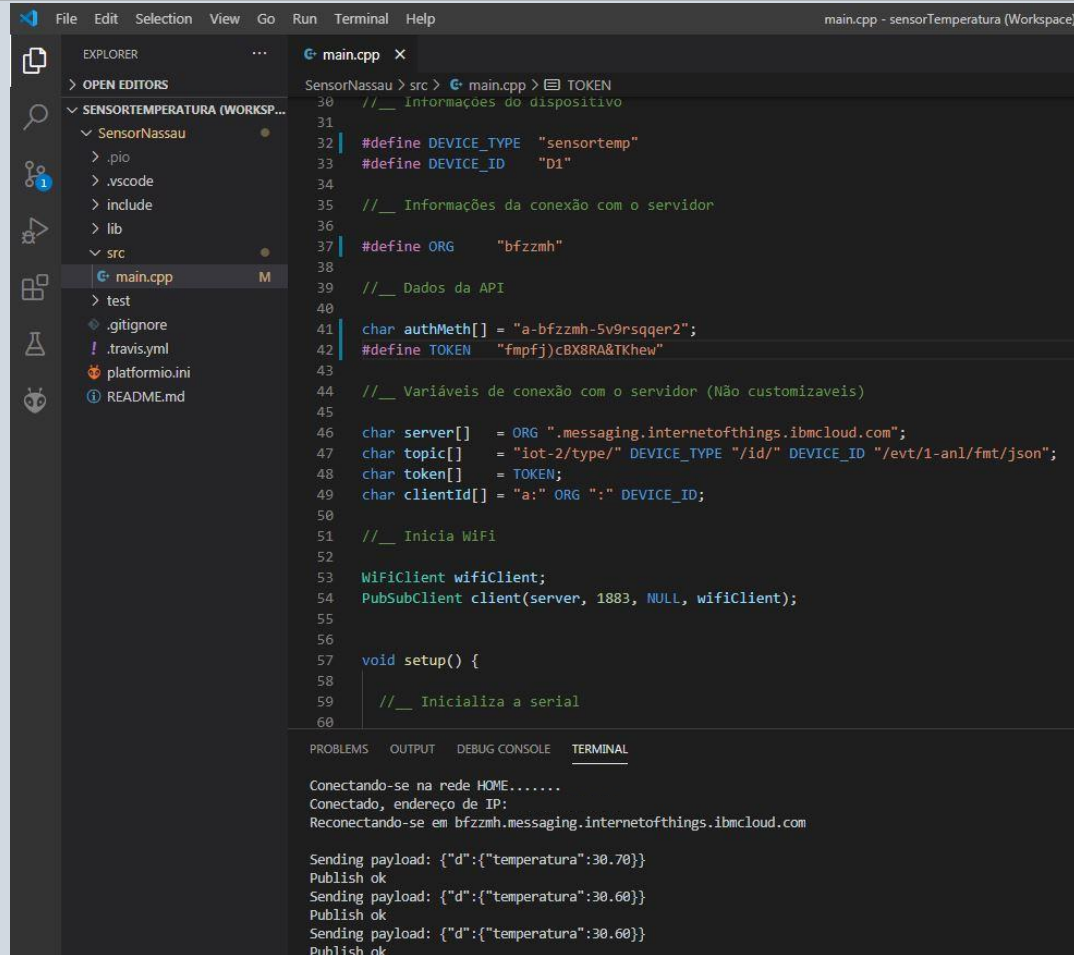
Logs

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
1-anl	{"d":{"temperatura":23}}	json	a few seconds ago
1-anl	{"d":{"temperatura":23}}	json	a few seconds ago
1-anl	{"d":{"temperatura":23}}	json	a few seconds ago
1-anl	{"d":{"temperatura":23}}	json	a minute ago
1-anl	{"d":{"temperatura":23}}	json	4 minutes ago

Informação recebida no IBM Cloud

Upload do Código



```
File Edit Selection View Go Run Terminal Help
main.cpp - sensorTemperatura (Workspace)

EXPLORER
> OPEN EDITORS
< SENSORTEMPERATURA (WORKSP...
  < SensorNassau
    < .pio
    < .vscode
    < include
    < lib
    < src
      < main.cpp M
    < test
  < .gitignore
  < ! .travis.yml
  < platformio.ini
  < README.md

main.cpp
30 //__ Informações do dispositivo
31
32 #define DEVICE_TYPE "sensortemp"
33 #define DEVICE_ID "D1"
34
35 //__ Informações da conexão com o servidor
36
37 #define ORG "bfzzmh"
38
39 //__ Dados da API
40
41 char authMeth[] = "a-bfzzmh-5v9nsqger2";
42 #define TOKEN "fmpfj)cBX8RA&TKhew"
43
44 //__ Variáveis de conexão com o servidor (Não customizáveis)
45
46 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
47 char topic[] = "iot-2/type/" DEVICE_TYPE "/id/" DEVICE_ID "/evt/1-anl/fmt/json";
48 char token[] = TOKEN;
49 char clientId[] = "a:" ORG ":" DEVICE_ID;
50
51 //__ Inicia WiFi
52
53 WiFiClient wifiClient;
54 PubSubClient client(server, 1883, NULL, wifiClient);
55
56
57 void setup() {
58
59 //__ Inicializa a Serial
60
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

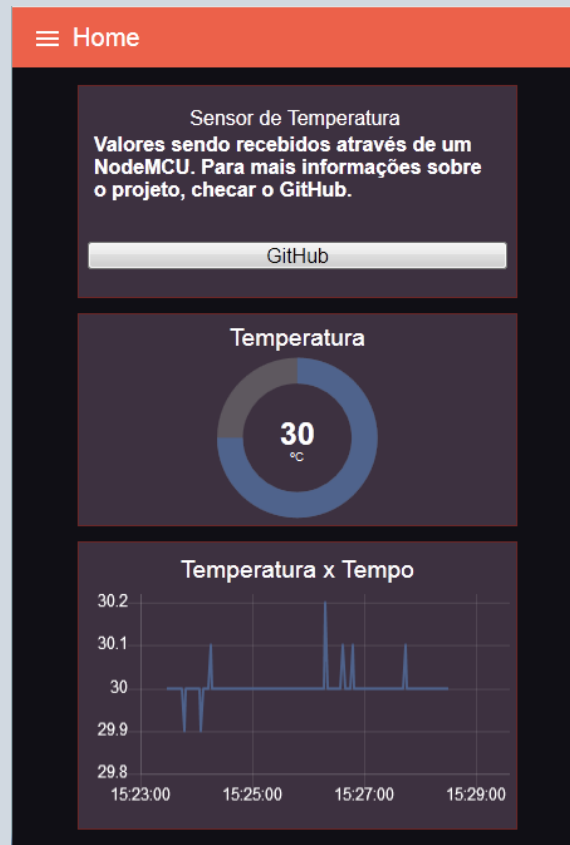
Conectando-se na rede HOME.....
Conectado, endereço de IP:
Reconectando-se em bfzzmh.messaging.internetofthings.ibmcloud.com

Sending payload: {"d":{"temperatura":30.70}}
Publish ok
Sending payload: {"d":{"temperatura":30.60}}
Publish ok
Sending payload: {"d":{"temperatura":30.60}}
Publish ok

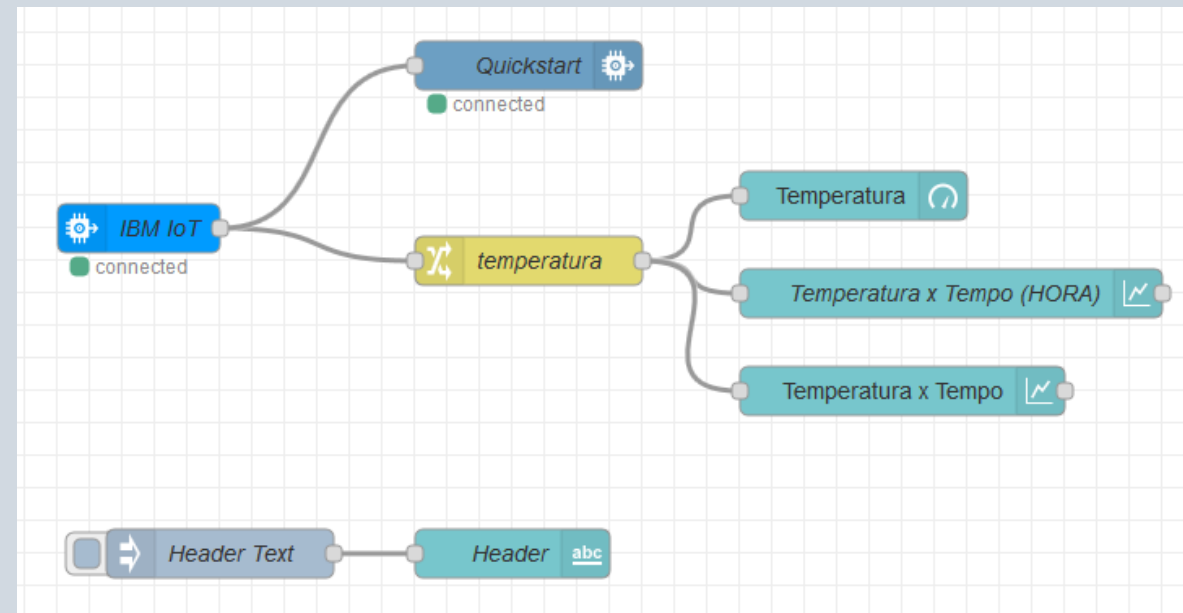
Envio de informações através do Visual Studio

*Código completo em: github.com/fabiobritoo/sensornassau

Aplicação



Aplicação



Flow final da aplicação

ID Quickstart: 67393942.1dd02

Link da Aplicação: <https://sensortemperatura.mybluemix.net/ui/>

Aplicação

≡ Gráfico

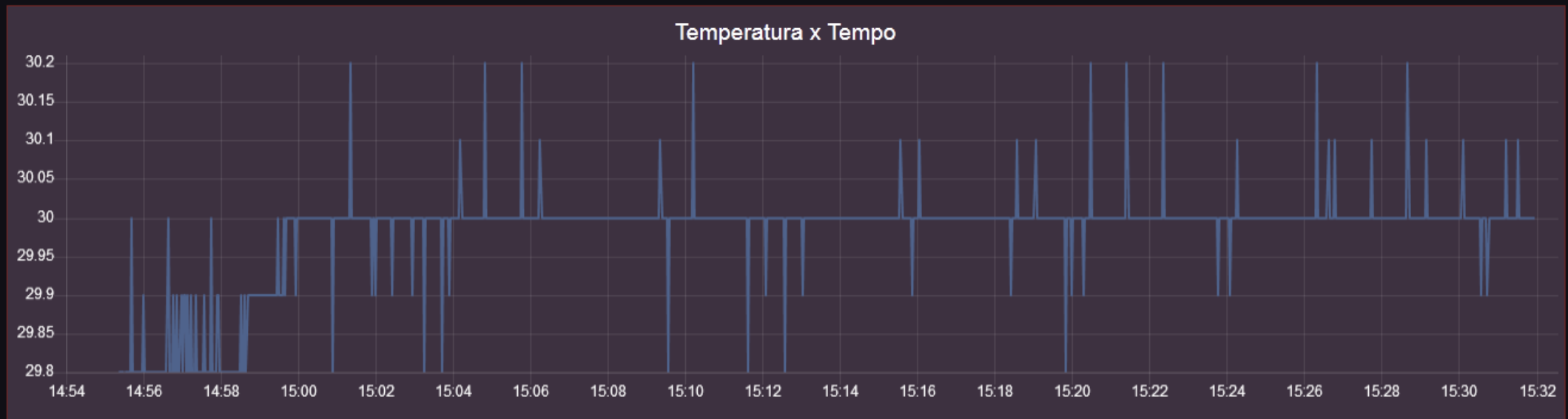


Gráfico da última hora de medições