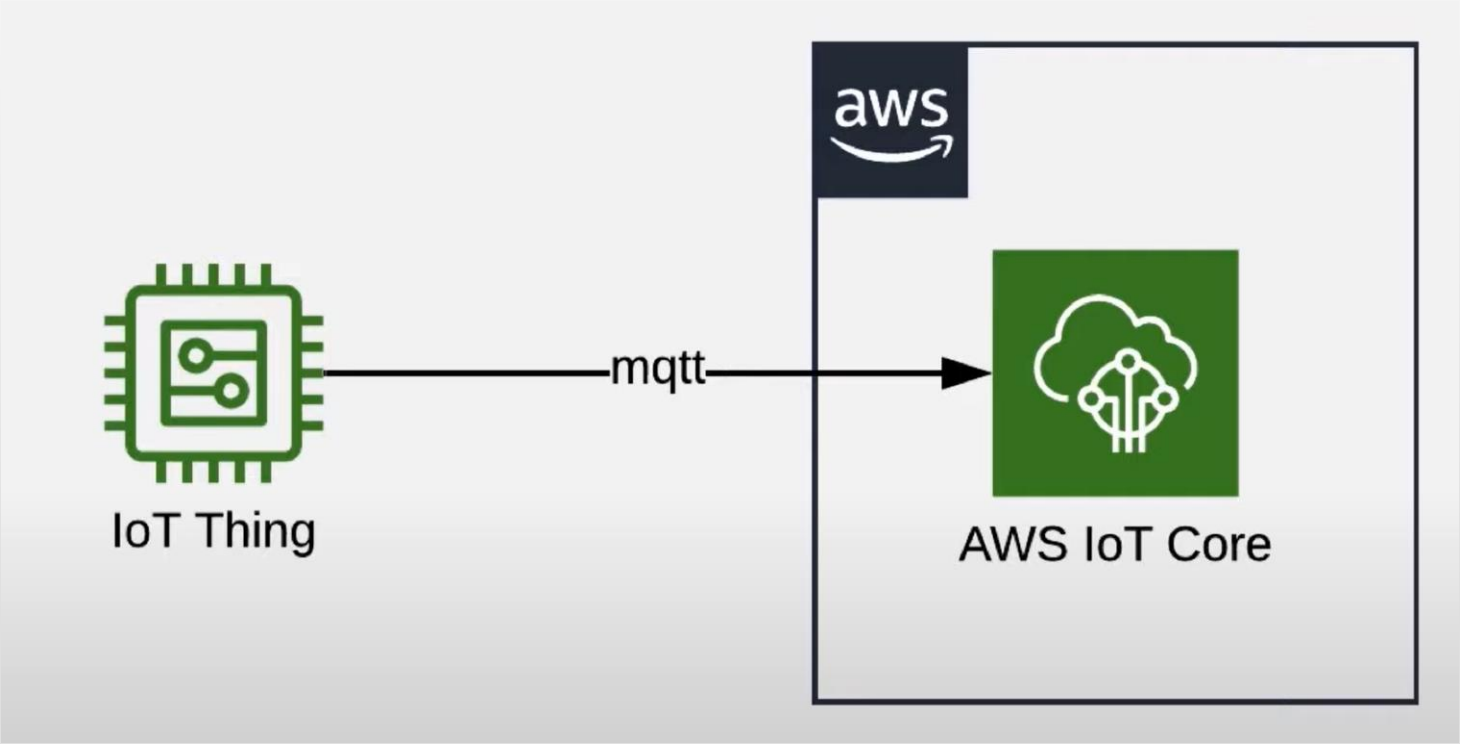
AWS IoT Implementation

Account Setup, Configuration, and Implementation

AWS IoT Overview

- Brief introduction to AWS IoT Core.
- Share AWS IoT Core Resources.
- Mention the ESP AWS IoT SDK.
- Provide the link for setting up the AWS Account setup and related details.
- Steps that we'll take to for the publish/subscribe implementation & testing with the MQTT Test Client → which is the practical goal of this section.


aws
mqtt
IoT Thing
AWS IoT Core

AWS IoT Core Basics & Resources

AWS IoT Core Resources

- About AWS IoT
    - The AWS IoT Core is a platform that connects IoT devices to AWS IoT services. AWS IoT Getting Started and Learn More About AWS IoT.
    - AWS IoT Core includes the device gateway, which hosts the message broker, which connects and processes messages between your IoT devices and the cloud. AWS IoT How it Works.
- About MQTT & AWS IoT
    - MQTT: is a lightweight, publish-subscribe network protocol that transports messages between devices. AWS IoT Device Communication Protocols.
        - More about AWS IoT & MQTT.

Enabling AWS IoT Core Communication on the ESP32

ESP32 AWS IoT Cloud Framework

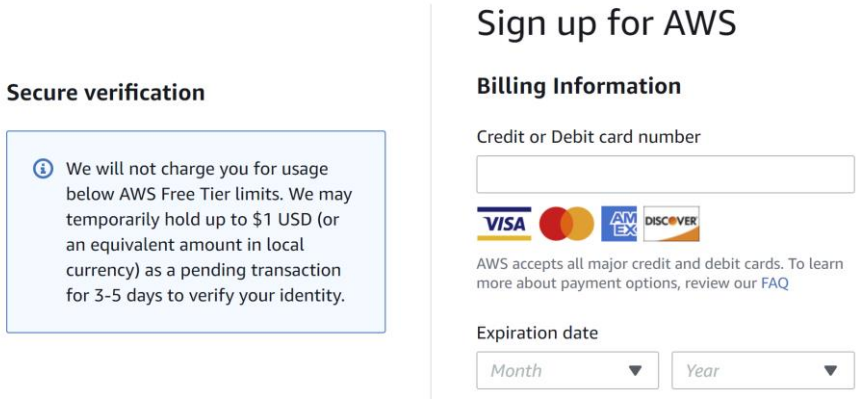
- ESP32 Cloud Frameworks
  - ESP32 Supports multiple cloud frameworks using agents built on top of the ESP-IDF: https://docs.espressif.com/projects/esp-idf/en/latest/esp32/libraries-and-frameworks/cloud-frameworks.html
- AWS IoT
  - Open-source repository for ESP32 based on Amazon Web Services' AWS IoT Device SDK Embedded-C: https://github.com/espressif/esp-aws-iot

Account Setup

Register for AWS Account

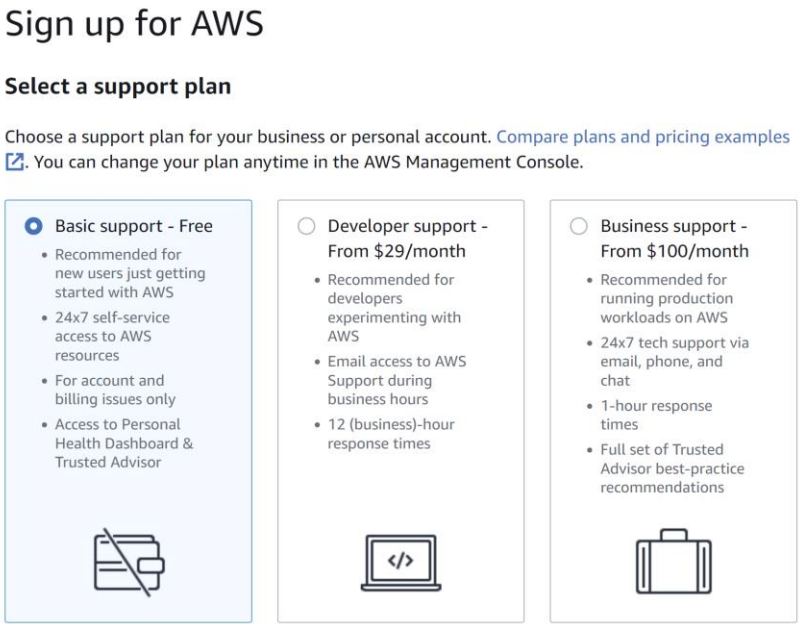
AWS Account Setup

- Sign up for Amazon Web Services
  - Go here, https://aws.amazon.com/iot-core/, to set up your account.
    - Give your email address, account name, confirm it, create a password, enter your name, phone number and address, credit card information (for identity verification purposes) and verify your identity with a phone number as well.



AWS Account Setup

- Choose Basic Support – Free Plan



- Once you're done, you can get to your management console here, https://aws.amazon.com/console/, and go to 'IoT Core'.

Configuration & Implementation

AWS IoT Configuration Steps

- Clone ESP AWS IoT and update the CMakeLists.txt file under the project directory.
- Add template files “aws_iot.c” and “aws_iot.h” and update CMakeLists.txt file under ‘main’.
- Create a “Thing” in AWS.
- Create a policy and attach it to the device (“Thing”) certificate.
- Generate certificates, public key, and private key using AWS IoT’s certificate authority.
- Add the certificates and private key as embedded components.
- Update the source code to accommodate the ‘aws_iot_task’.
- Adjust the partition table to accommodate the increased application size.
- Adjust the sdkconfig to include the ‘Device Data Endpoint’ from your AWS account.
- Subscribe and publish data to and from the AWS Dashboard.

Our Implementation

- Further Details
  - Start the AWS IoT FreeRTOS task from our connected event callback function in the main.c file.
  - Get the RSSI value of the WiFi connection using esp_wifi_sta_get_ap_info(wifi_ap_record_t *ap_info) and publish it to AWS IoT.
  - Publish the temperature and humidity.

Let’s get started!