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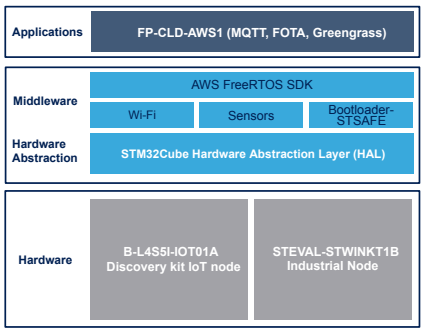
FP-CLD-AWS1

Data brief

STM32Cube function pack for IoT sensor node with telemetry and device control applications for Amazon AWS Cloud



STM32 Open Development Environment

STM32 Cube

Product summary	
STM32Cube function pack for IoT node with Wi-Fi and sensors, connected to Amazon AWS IoT cloud	FP-CLD-AWS1
STM32L4+ Discovery kit IoT node, low-power wireless, BLE, NFC, Wi-Fi	B-L4S5I-IOT01A
STWIN SensorTile Wireless Industrial Node development kit and reference design for industrial IoT applications	STEVAL-STWINKT1B
Cloud Amazon-based web application for asset tracking	DSH-ASSETRACKING
Applications	IoT for Smart Home and City IoT for Smart Industry Predictive Maintenance Healthcare

Features

- Complete firmware to safely connect an IoT node with sensors and actuators to Amazon AWS IoT via Wi-Fi
- Middleware libraries featuring the Amazon AWS FreeRTOS SDK, Wi-Fi and transport-level security (mbedTLS)
- Ready-to-use binaries to connect the IoT node to a web dashboard running on Amazon AWS services for sensor data visualization
- Sample implementation available for the STEVAL-STWINKT1B wireless industrial node and the B-L4S5I-IOT01A STM32L4+ Discovery kit IoT node
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms

Description

FP-CLD-AWS1 is an STM32Cube function pack that lets you safely connect your IoT node to an Amazon AWS IoT service so you can transmit sensor data and receive commands from AWS-based cloud applications.

The package integrates the AWS FreeRTOS IoT device SDK middleware with APIs to simplify interaction between STM32-based devices and the Amazon AWS IoT services.

A companion AWS-based web dashboard (DSH-ASSETRACKING) is available to quickly evaluate the firmware package functions for comprehensive sensor data visualization and device control.

This software integrates the X-CUBE-SBSFU and the STSAFE-A110 to implement a Secure Boot (Root of Trust services) solution and a Secure Firmware Update solution allowing you to safely update the AWS program from the AWS console. It fully supports security and protocol requirements to interface an IoT node with AWS cloud.

This software together with our suggested combinations of STM32 and ST devices can be used to develop complete sensor-to-cloud applications for a broad range of smart home, smart industry, robotics, predictive maintenance, appliances, building automation, healthcare, defense or navigation.

1 Detailed description

1.1 What can you do with STM32Cube function packs?

STM32Cube function packs leverage the modularity and interoperability of STM32 Nucleo and X-NUCLEO boards together with STM32Cube and X-CUBE software to create function examples for some of the most common use cases of different application technologies.

These software function packs are designed to exploit the underlying STM32 ODE hardware and software components as much as possible to best satisfy the requirements of final user applications.

Moreover, function packs may include additional libraries and frameworks that are not present in the original X-CUBE packages, thus enabling new functionalities allowing real and usable system for developers.

1.2 What is STM32Cube?

STM32Cube is a combination of a full set of PC software tools and embedded software blocks running on STM32 microcontrollers and microprocessors:

- STM32CubeMX configuration tool for any STM32 device; it generates initialization C code for Cortex-M cores and the Linux device tree source for Cortex-A cores
- STM32CubeIDE integrated development environment based on open-source solutions like Eclipse or the GNU C/C++ toolchain, including compilation reporting features and advanced debug features
- STM32CubeProgrammer programming tool that provides an easy-to-use and efficient environment for reading, writing and verifying devices and external memories via a wide variety of available communication media (JTAG, SWD, UART, USB DFU, I2C, SPI, CAN, etc.)
- STM32CubeMonitor family of tools (STM32CubeMonRF, STM32CubeMonUCPD, STM32CubeMonPwr) to help developers customize their applications in real-time
- STM32Cube MCU and MPU packages specific to each STM32 series with drivers (HAL, low-layer, etc.), middleware, and lots of example code used in a wide variety of real-world use cases
- STM32Cube expansion packages for application-oriented solutions

1.3 Detailed description

The proposed software is based on the STM32CubeHAL hardware abstraction layer for the STM32 microcontroller. The package extends STM32Cube by providing a board support package (BSP) for the Wi-Fi and the sensor expansion boards. The drivers abstract low-level details of the hardware and allow the middleware components and applications to access and control sensor data and Wi-Fi communication interface in a hardware-independent manner.

The package includes the Amazon FreeRTOS SDK middleware with APIs for easy interaction of the Sensortile wireless industrial node or the Discovery Kit for IoT node with Amazon web services (AWS). You can use it to prototype end-to-end IoT applications by registering your board with the AWS IoT cloud platform and easily start to transmit and receive sensor data and commands in real time. A web dashboard based on Amazon AWS is also provided free of charge to facilitate the evaluation of the function pack.

Revision history

Table 1. Document revision history

Date	Version	Changes
27-Mar-2017	1	Initial release.
08-Oct-2018	2	Updated all content to reflect FP-CLD-AWS1 package 2.0.0 release.
01-Mar-2019	3	Updated cover page image, features and product summary table.
30-Jul-2019	4	Added P-L496G-CELL02 and X-NUCLEO-IKS01A3 compatibility information. Updated Section 1.2 What is STM32Cube?.
10-Dec-2020	5	Added STEVAL-STWINKT1B compatibility information. Updated cover page image, features, product summary table and description.