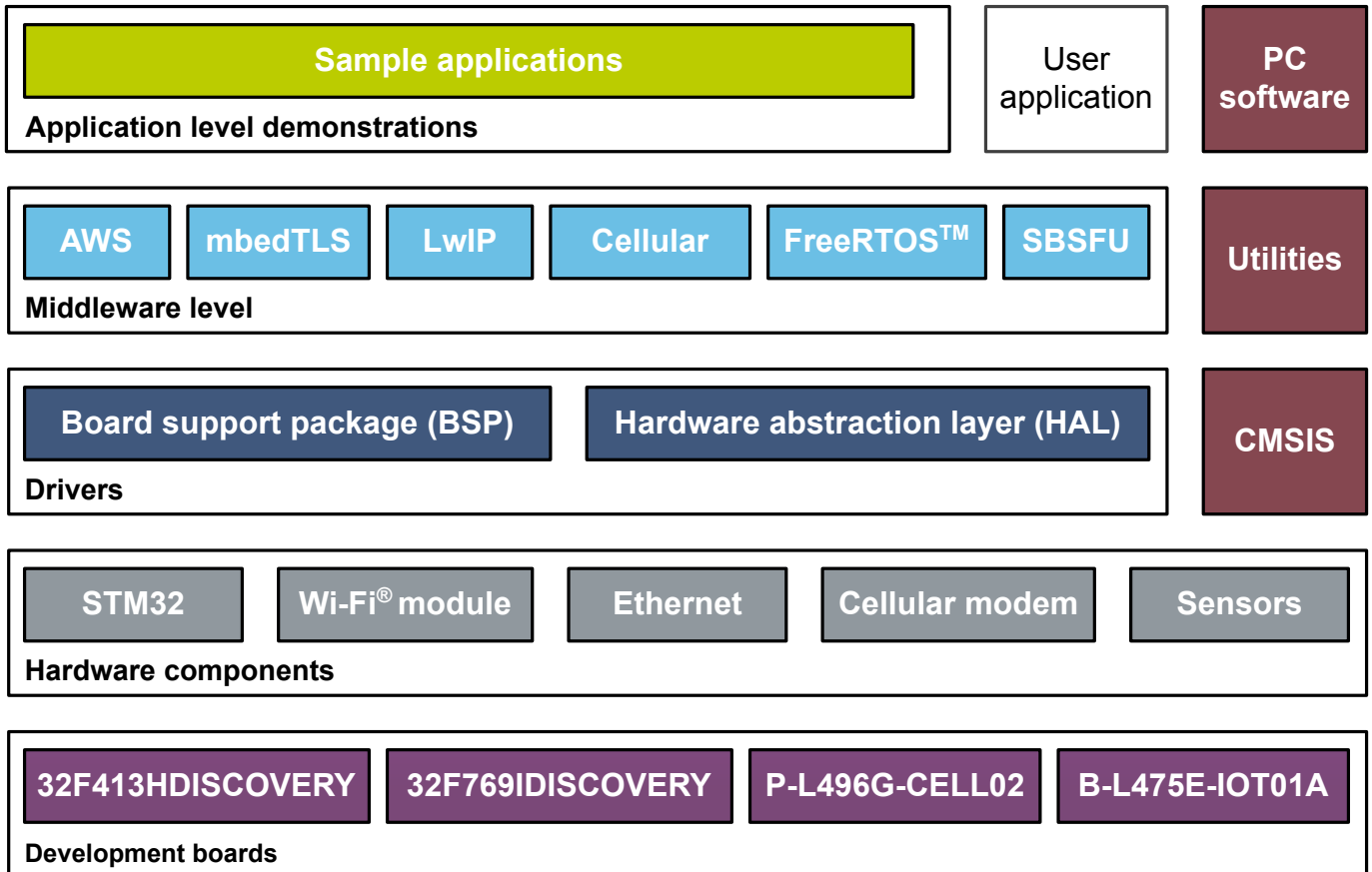


STM32 Amazon Web Services® IoT software expansion for STM32Cube



Product status link

[X-CUBE-AWS](#)



## Features

- Ready-to-run firmware example using cellular, Wi-Fi®, and Ethernet connectivity to support quick evaluation and development of AWS IoT cloud applications
- Board configuration interface
- Secure Boot and Secure Firmware Update
- TLS encryption
- AWS IoT connection, subscribe and publish
- AWS job support
- Connection to STMicroelectronics dashboard for AWS
- Specific features on the [B-L475E-IOT01A](#) board such as measurement of humidity, temperature, 3-axis magnetic data, 3D acceleration, 3D gyroscope data, atmospheric pressure, and time-of-flight

## Description

The [X-CUBE-AWS](#) Expansion Package consists of a set of libraries and application examples for STM32L4 Series, STM32F4 Series, and STM32F7 Series microcontrollers acting as end devices.

[X-CUBE-AWS](#) runs on four platforms. The [B-L475E-IOT01A](#) and [32F413HDISCOVERY](#) boards support Wi-Fi® connectivity with an on-board Inventek module. The [32F769IDISCOVERY](#) board provides a native Ethernet interface. The [P-L496G-CELL02](#) pack includes an STM32L496AGI6-based low-power Discovery board equipped with Quectel's BG96 modem (LTE Cat M1/NB/2G fallback) for cellular connectivity.

For the four platforms, a sample application configures the network connectivity parameters, and illustrates the various ways for a device to interact with AWS IoT Core™. The application shows how a simple client application can connect to Amazon Web Services® (AWS) in order to publish device state and telemetry data, and receive device configuration from the cloud.

It is possible to securely update firmware based on a bootloader derived from the [X-CUBE-SBSFU](#) Expansion Package.

The application handles AWS jobs to control the user LED state remotely from the AWS IoT console, or to trigger remote firmware update.

It connects to the [ST-AWS-Dashboard](#) for easy sensor data visualization and device control.

Device authentication and TLS encryption security features are complemented on the client side by the Secure Boot and Secure Firmware Update features.

The [B-L475E-IOT01A](#) board reports telemetry data such as measurement of humidity, temperature, and atmospheric pressure.

## 1 General information

The X-CUBE-AWS Expansion Package runs on STM32 microcontrollers based on Arm® cores.

*Note:* Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.



### 1.1 Ordering information

X-CUBE-AWS is available for free download from the [www.st.com](http://www.st.com) website.

### 1.2 What is STM32Cube?

STM32Cube is an STMicroelectronics original initiative to significantly improve designer's productivity by reducing development effort, time and cost. STM32Cube covers the whole STM32 portfolio.

STM32Cube includes:

- A set of user-friendly software development tools to cover project development from the conception to the realization, among which:
  - [STM32CubeMX](#), a graphical software configuration tool that allows the automatic generation of C initialization code using graphical wizards
  - [STM32CubeIDE](#), an all-in-one development tool with IP configuration, code generation, code compilation, and debug features
  - STM32CubeProgrammer ([STM32CubeProg](#)), a programming tool available in graphical and command-line versions
  - STM32CubeMonitor-Power ([STM32CubeMonPwr](#)), a monitoring tool to measure and help in the optimization of the power consumption of the MCU
- [STM32Cube MCU & MPU Packages](#), comprehensive embedded-software platforms specific to each microcontroller and microprocessor series (such as STM32CubeL4 for the STM32L4 Series), which include:
  - STM32Cube hardware abstraction layer (HAL), ensuring maximized portability across the STM32 portfolio
  - STM32Cube low-layer APIs, ensuring the best performance and footprints with a high degree of user control over the HW
  - A consistent set of middleware components such as FAT file system, RTOS, USB Host and Device, TCP/IP, Touch library, and Graphics
  - All embedded software utilities with full sets of peripheral and applicative examples
- [STM32Cube Expansion Packages](#), which contain embedded software components that complement the functionalities of the STM32Cube MCU & MPU Packages with:
  - Middleware extensions and applicative layers
  - Examples running on some specific STMicroelectronics development boards

## 2 License

X-CUBE-AWS is delivered under the *Mix Ultimate Liberty+OSS+3rd-party V1* software license agreement (SLA0048).

The software components provided in this package come with different license schemes as shown in [Table 1](#).

**Table 1. Software component license agreements**

Software component	Owner	License
aws-iot-device-sdk-embedded-C	Amazon™	Apache License 2.0
jsmn	Serge A. Zaitsev	MIT
Board support package (BSP)	STMicroelectronics	BSD-3-Clause
Cortex®-M CMSIS	Arm®	BSD-3-Clause or Apache License 2.0 <sup>(1)</sup>
FreeRTOS™	Amazon™	MIT
HAL STM32 L4/F4/F7	STMicroelectronics	BSD-3-Clause
Inventek driver	STMicroelectronics	BSD-3-Clause
LwIP	2001-2004 Swedish Institute of Computer Science	BSD-3-Clause
mbedtls	Arm®	Apache License 2.0
STM32_Cellular	STMicroelectronics	Ultimate Liberty (source release)
STM32_Connect_Library	STMicroelectronics	Ultimate Liberty (source release)
STM32_Secure_Engine	STMicroelectronics	Ultimate Liberty (source release)
Project examples	STMicroelectronics	Ultimate Liberty (source release)

1. Depends on the CMSIS version.

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## Revision history

**Table 2. Document revision history**

Date	Version	Changes
29-Mar-2017	1	Initial release.
16-Oct-2017	2	Updated B-L475E-IOT01 item in <i>Features</i> . Updated <i>Description</i> . Updated <i>License</i> .
2-Jul-2019	3	Updated the entire document for the addition of AWS job support, dedicated online dashboard, cellular connectivity, and Secure Boot and Secure Firmware Update. Added <a href="#">What is STM32Cube?</a> .

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