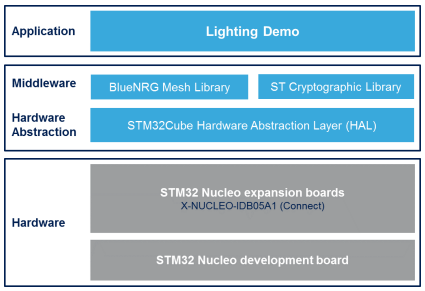
X-CUBE-BLEMESH1

Data brief

Mesh over Bluetooth low energy software expansion for STM32Cube



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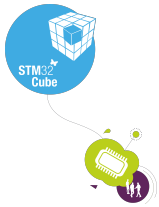

Product summary	
Mesh over Bluetooth low energy software expansion for STM32Cube	X-CUBE-BLEMESH1
Bluetooth low energy expansion board based on SPBTLE-RF module for STM32 Nucleo	X-NUCLEO-IDB05A1
STM32 Nucleo development board	STM32 Nucleo

Features

- Complete software to build Mesh network with Bluetooth low energy (BLE) nodes, extending network coverage to large areas up to 32767 nodes and 126 hops
- Use of BLE enabled smartphones to monitor and control multiple BLE nodes via proxy protocol and legacy BLE GATT connectivity
- Two-layer security, thanks to 128-bit AES CCM encryption and 256-bit ECDH protocol, ensuring protection against multiple attacks, including Replay, Bit-Flipping, Eavesdropping, Man-in-the-Middle and Trashcan
- Supported models include vendor model, partial configuration model, and samples for on-off and level generic models
- Sample implementation available on the X-NUCLEO-IDB05A1 expansion board connected to a NUCLEO-L152RE, NUCLEO-L476RG, or NUCLEO-F401RE development board
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms

Description

The X-CUBE-BLEMESH1 expansion software package for STM32Cube runs on the STM32 and provides easy-to-use networking APIs based on a Mesh profile library and a BLE stack.

The expansion is built on STM32Cube software technology to ease portability across different STM32 microcontrollers.

The software lets you easily create your own application for extending BLE Mesh networks (by offering a ready-to-use Mesh core library), a complete set of compatible APIs, and a lighting reference design demo application running on the X-NUCLEO-IDB05A1 expansion board connected to a NUCLEO-L152RE, NUCLEO-L476RG or NUCLEO-F401RE development board.

1 Detailed description

1.1 What is STM32Cube?

STMCube™ is designed by STMicroelectronics to reduce development effort, time and cost across the entire STM32 portfolio.

STM32Cube version 1.x includes:

- STM32CubeMX, a graphical software configuration tool that allows the generation of C initialization code using graphical wizards.
- A comprehensive embedded software platform specific to each series (such as the STM32CubeF4 for the STM32F4 series), which includes:
  - the STM32Cube HAL embedded abstraction-layer software, ensuring maximized portability across the STM32 portfolio
  - a consistent set of middleware components such as RTOS, USB, TCP/IP and graphics
  - all embedded software utilities with a full set of examples

1.1.1 How does this software complement STM32Cube?

This 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 X-NUCLEO-IDB05A1 expansion board and the middleware BLE Mesh library.

The drivers abstract low-level details of the hardware and allow the middleware components and applications to access data in a hardware independent fashion.

The package also includes a sample lighting application that the developer can use to start experimenting with the Mesh library code. To this aim, mobile apps for Android and iOS are available on the respective stores letting you provision, un-provision, create groups and control nodes in the Mesh network using your own BLE enabled smartphone.

Revision history

Table 1. Document revision history

Date	Version	Changes
20-Jun-2018	1	Initial release.