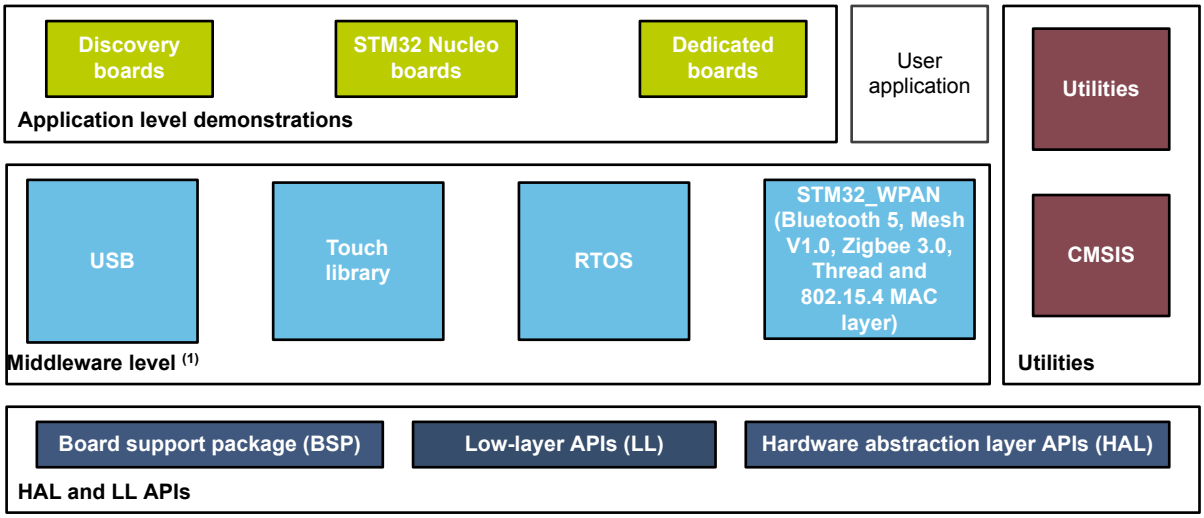
STM32Cube embedded software for STM32WB Series including LL/HAL drivers, Bluetooth® 5, Mesh V1.0, Zigbee and Thread® libraries, RTOS, touch sensing



(1) The set of middleware components depends on the product Series.

Product status link
STM32CubeWB

Features

- Consistent and complete embedded software offer that frees the user from dependency issues
- Maximized portability between all STM32 series supported by STM32Cube
- Hundreds of examples for easy understanding
- High quality HAL using CodeSonar® static analysis tool
- High quality low-layer APIs (LL) using CodeSonar® static analysis tool
- STM32WB-specific middleware: USB Device, STMTouch (STM32 touch sensing library), STM32_WPAN (Bluetooth® 5 profiles and services, OpenThread services, 802.15.4 MAC services), FatFS and FreeRTOS™ kernel
- STM32WB Bluetooth® 5 and HCI stacks, Mesh V1.0 compliant with Bluetooth® SIG release
- ZigBee® 3.0 stack and clusters
- OpenThread stack
- 802.15.4 MAC
- Free user-friendly license terms
- Update mechanism with new-release notification capability

1 Description

STM32Cube is an STMicroelectronics original initiative to make developer' life easier by reducing development effort, time and cost. STM32Cube covers the whole STM32 portfolio.

STM32Cube includes STM32CubeMX, a graphical software configuration tool that allows the generation of C initialization code using graphical wizards.

It also comprises the STM32CubeWB MCU Package composed of the STM32Cube hardware abstraction layer (HAL) and the low-layer (LL) APIs, a consistent set of middleware components such as USB Device, STMTouch, STM32_WPAN (Bluetooth® 5 profiles and services, OpenThread and 802.15.4 MAC services), FatFS and FreeRTOS™ kernel, plus Bluetooth® 5 and Mesh V1.0 profiles and services, ZigBee® 3.0 stack and clusters, OpenThread, Concurrent Bluetooth® 5/Thread®, HCI and 802.15.4 MAC connectivity services. All embedded software utilities are delivered with a full set of examples running on STMicroelectronics boards.

The STM32Cube HAL is an STM32 embedded software layer that ensures maximized portability across the STM32 portfolio, while the LL APIs make up a fast, light-weight, expert-oriented layer which is closer to the hardware than the HAL. HAL and LL APIs can be used simultaneously with a few restrictions.

Both the HAL and LL APIs are production-ready and have been developed in compliance with CodeSonar®, MISRA C®:2012 guidelines and ISO/TS 16949. Furthermore, STMicroelectornics specific validation processes add a deeper-level qualification.

The STM32CubeWB gathers in one single package all the generic embedded software components required to develop an application on STM32WB microcontrollers. Following STM32Cube initiative, this set of components is highly portable, not only within the STM32WB Series but also to other STM32 Series. In addition, the low-layer APIs provide an alternative, high-performance, low-footprint solution to the STM32CubeWB HAL at the cost of portability and simplicity.

HAL and LL APIs are available in open-source BSD license for user convenience.

2 License

STM32CubeWB 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.

A set of application projects implementing all the middleware components is also provided in the STM32CubeWB MCU Package.

Table 1. Software component license agreements

Software component	Owner	License
Board Support Package (BSP)	STMicroelectronics International N.V.	BSD 3-Clause
Cortex®-M CMSIS v4.5.0	Arm®	BSD 3-Clause
FreeRTOS™ kernel	Copyright (C) 2017 Amazon.com, Inc. or its affiliates	MIT
STM32WB HAL/LL APIs	STMicroelectronics International N.V.	BSD 3-Clause
Application projects	STMicroelectronics International N.V.	SLA0044
Example projects	STMicroelectronics International N.V.	BSD 3-Clause
Demonstration projects	STMicroelectronics International N.V.	SLA0044
STM32 touch sensing library	STMicroelectronics International N.V.	SLA0044
STM32 USB Device library	STMicroelectronics International N.V.	SLA0044
FatFS	STMicroelectronics International N.V.	SLA0044
	ChaN	FatFS License(1)
Utilities (CPU - Fonts - Log)	STMicroelectronics International N.V.	BSD 3-Clause
STM32WB Bluetooth® HCI	STMicroelectronics International N.V.	SLA0044
STM32WB Bluetooth® stack	STMicroelectronics International N.V.	SLA0044
BLE Mesh V1.0 stack	STMicroelectronics International N.V.	SLA0044
ZigBee® stack	Exegin	SLA0044
ZigBee® clusters	Exegin	SLA0044
ZigBee® specific services	STMicroelectronics International N.V.	SLA0044
STM32WB 802.15.4 MAC	STMicroelectronics International N.V.	SLA0044
STM32WB Bluetooth®/Thread® concurrent stack	STMicroelectronics International N.V.	SLA0044
	Copyright (c) 2016, The OpenThread Authors	
ST OpenThread binary stack	STMicroelectronics International N.V.	SLA0044
	Copyright (c) 2016, The OpenThread Authors	
STM32WB Bluetooth® profiles and services	STMicroelectronics International N.V.	SLA0044
OpenThread core	STMicroelectronics International N.V.	SLA0044
OpenThread stack	Copyright (c) 2016, The OpenThread Authors	BSD 3-Clause

1. *The FatFS License is a business friendly and permissive open source license.*

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

3 Ordering information

The STM32CubeWB is available for free download from *www.st.com*.

Revision history

Table 2. **Document revision history**

Date	Version	Changes
18-Feb-2019	1	Initial release.
19-Mar-2020	2	Removed STM32Cube trademark. Added Mesh V1.0 and Zigbee stack and clusters. Changed all Ultimate Liberty licenses into SLA0044 in Section 2 License.