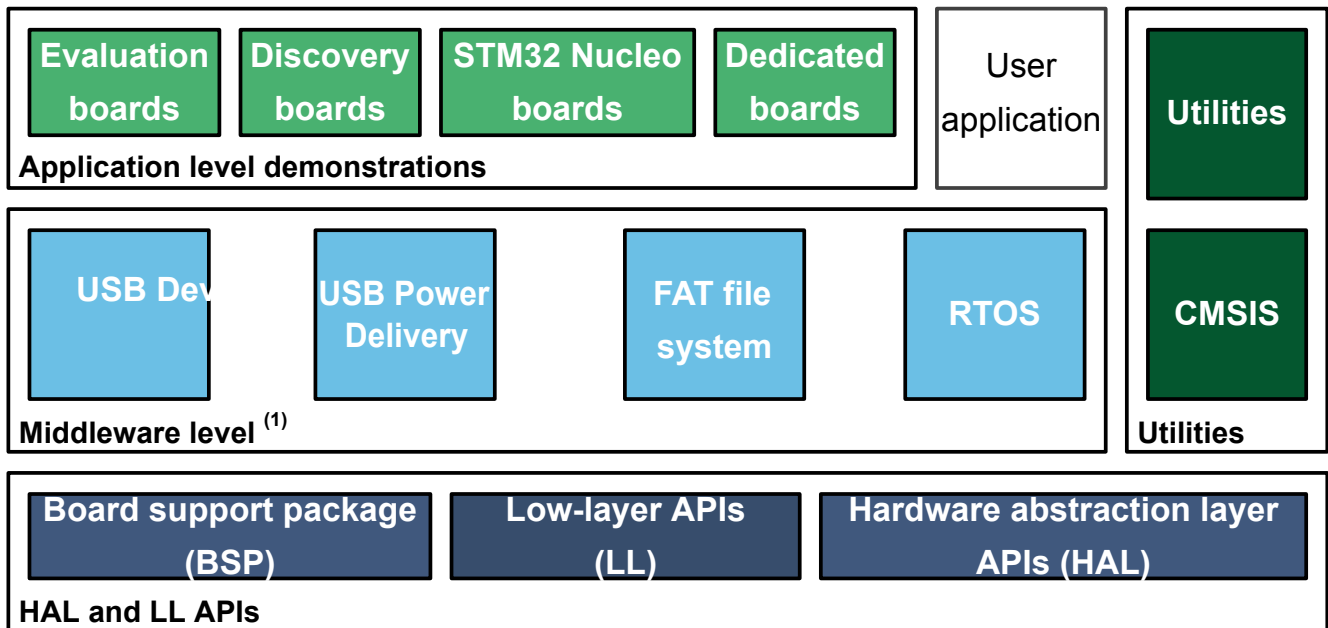


STM32Cube embedded software for STM32G4 series including HAL, LL drivers and dedicated middleware



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

DT61300V1

Product link
STM32CubeG4



Features

- Consistent and complete embedded software that provides hardware abstraction to easily develop end-user firmware
- Maximized portability between all STM32 series supported by STM32Cube
- More than 300 examples and applications for easy understanding, all compatible with STM32CubeMX to facilitate the configuration through a graphical tool.
- HAL and LL APIs, developed in compliance with MISRA C[®]:2012 guidelines, and elimination of possible runtime errors with CodeSecure CodeSonar[®] static analysis tool
- STM32G4 dedicated middleware including USB Device, USB Power Delivery, FAT file system, and RTOS
- Free user-friendly license terms
- Update mechanism with new-release notification capability
- Published on GitHub in addition to www.st.com to propagate bug fixes and improvements faster, open for pull requests and issues to facilitate user contributions and direct feedback

1 Description

STM32Cube is an STMicroelectronics original initiative to improve designer productivity significantly 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 STM32CubeG4 MCU Package composed of the STM32Cube hardware abstraction layer (HAL) and the low-layer (LL) APIs, plus a consistent set of middleware components (RTOS, USB and FAT file system). All embedded software utilities are delivered with a full set of examples running on STMicroelectronics boards.

The STM32CubeG4 embeds specific APIs (such as HRTIMER, a rich set of analog APIs, FMAC and CORDIC mathematical accelerators), that make it particularly tailored for motor control and switched-mode power supply applications.

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 drivers have been developed in compliance with V-Model requirements for design, implementation, and tests. Furthermore, the STMicroelectronics-specific validation process adds a deeper qualification level, such as compliance with MISRA C[®]:2012 guidelines, and elimination of possible runtime errors with the CodeSecure CodeSonar[®] static analysis tool. Reports are available on demand.

The STM32CubeG4 gathers in one single package all the generic embedded software components required to develop an application on STM32G4 microcontrollers. Following STM32Cube initiative, this set of components is highly portable, not only within the STM32G4 series but also to other STM32 series. In addition, the low-layer APIs provide an alternative, high-performance, low-footprint solution to the STM32CubeG4 HAL at the cost of portability and simplicity.

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

2 General information

The **STM32CubeG4** MCU Package runs on STM32 microcontrollers based on the Arm® Cortex® processor.

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2.1 Ordering information

STM32CubeG4 is available for free download from www.st.com.

2.2 What is STM32Cube?

STM32Cube is an STMicroelectronics original initiative to improve designer productivity significantly 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 conception to realization, among which are:
 - **STM32CubeMX**, a graphical software configuration tool that allows the automatic generation of C initialization code using graphical wizards
 - **STM32CubeIDE**, an Eclipse®-based IDE, providing code edition, compilation, programming, and debugging capabilities
 - **STM32CubeCLT**, an all-in-one command-line development toolset with code compilation, board programming, and debug features
 - **STM32CubeIDE for Visual Studio Code (STM32VSCode)**, a complete IDE based on VS Code® platform
 - **STM32CubeProgrammer (STM32CubeProg)**, a programming tool available in graphical and command-line versions
 - **STM32CubeMonitor (STM32CubeMonitor, STM32CubeMonPwr, STM32CubeMonRF, STM32CubeMonUCPD)**, powerful monitoring tools to fine-tune the behavior and performance of STM32 applications in real time
 - **STM32CubeWiSE (STM32CubeWiSEbe, STM32CubeWiSEce, STM32CubeWiSEcg, STM32CubeWiSEre, STM32CubeWiSE8e)**, graphical tools designed to evaluate and test the capabilities of RF radios and protocols (Bluetooth® LE, sub-GHz, IEEE 802.15.4)
- **STM32Cube MCU and MPU Packages**, comprehensive embedded-software platforms specific to each microcontroller and microprocessor series (such as STM32CubeG4 for the STM32G4 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 hardware
 - A consistent set of middleware components such as RTOS, USB Device, USB PD, and FAT file system
 - 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 and MPU Packages with:
 - Middleware extensions and applicative layers
 - Examples running on some specific STMicroelectronics development boards



3 License

STM32CubeG4 is delivered under the [SLA0048](#) software license agreement and its Additional License Terms.

Revision history

Table 1. Document revision history

Date	Revision	Changes
29-Mar-2019	1	Initial release.
26-Mar-2026	2	Updated Features and Description . Added General information and Section 2.2: What is STM32Cube? . Minor text changes.

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