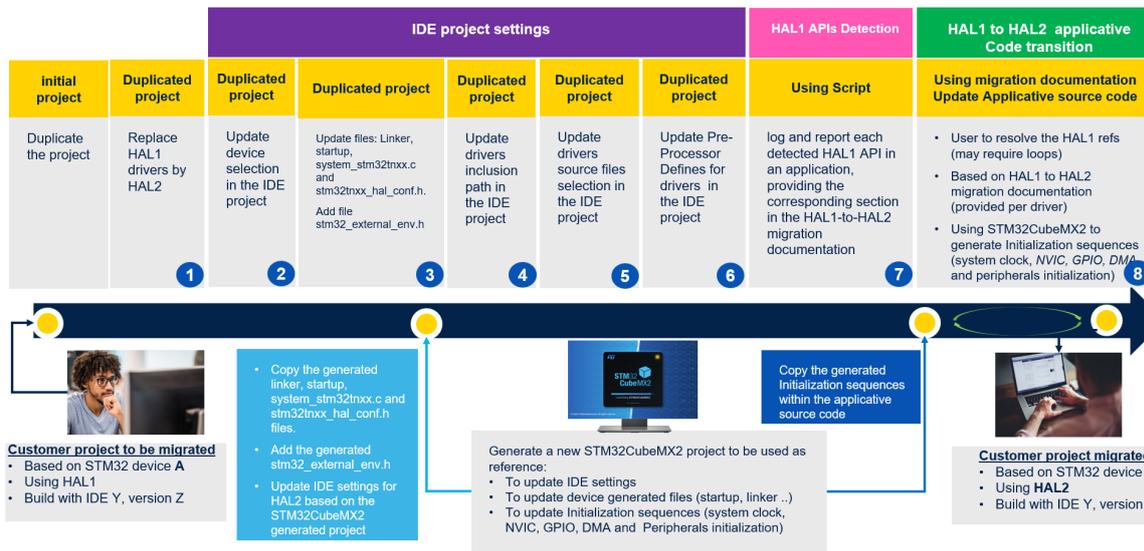


STM32Cube HAL 1 to HAL2 migration tool and guide



Product status

HAL2_MIGRATOR

Features

HAL1 automatic detection script:

- Helps identify parts of the code in an application that have changed between HAL1 and HAL2 and therefore need to be updated. A script is provided to analyze the application and perform the actions in the list below
- Scans user application files to detect all HAL1 APIs, defines, types, functions, and macros
- Generates detailed logs and reports, linking each detected API to the relevant migration documentation
- The HAL1 Automatic Detection Script comes in two versions
 - An executable format for Windows® 11.
 - A Python script to run on multiple platforms, providing insights into the script operations.

HAL1 to HAL2 migration user guide:

- Provides all information required to perform a successful migration, while also explaining why these changes are made to HAL and the improvements they bring.
 - Explains HAL2 architectural concepts
 - Provides exhaustive driver-specific migration rules
 - Includes code snippets and concrete use cases for rapid and accurate migration

Migration example:

- Illustrate how a successful migration looks and how other elements of the STM32Cube ecosystem are leveraged, an example is provided that consists of the following two points:
 - Step-by-step guide to migrating a real project, including IDE settings updates
 - Demonstrates leveraging STM32CubeMX2 for initialization sequence generation

HAL migration checklist:

- Provides guidance and ensures all steps are completed, the HAL Migration Checklist enables users to track their migration progress effectively

Description

With the continuous development of the [STM32Cube](#) ecosystem, a new major version of the embedded software drivers, HAL2, is now available. HAL2 brings several improvements, especially in terms of usability and performance, while preserving the fundamental principles of the [STM32Cube](#) HAL drivers. To achieve these improvements, some breaking changes between HAL1 and HAL2 have been introduced.

To assist with the transition and migration of projects from HAL1 to HAL2, the [STM32Cube](#) HAL1 to HAL2 migration tool and guide offers a comprehensive set of tools and documentation. These resources accelerate the transition, address breaking changes, and provide an API detection script, practical examples, and step-by-step guidance to ensure a smooth, efficient, and error-free upgrade path.

1 General information

HAL2_MIGRATOR supports STM32 products based on the Arm[®] Cortex[®] processor.



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1.1 Ordering information

HAL2_MIGRATOR is available for free download from the www.st.com website.

1.2 License

HAL2_MIGRATOR is delivered under the [SLA0048](#) software license agreement and its Additional License Terms.

2 Migration workflow

The following is a brief description of the general workflow, providing an overview of how to work with the [STM32Cube HAL1 to HAL2 migration tool and guide](#) and how the [STM32Cube ecosystem](#) supports migration from HAL1 to HAL2:

1. Project duplication: Duplicate a project and replace HAL1 drivers with HAL2 equivalents.
2. IDE update: Update device selection, linker/startup files, and include paths for HAL2.
3. API detection: Use the automatic detection script to identify all HAL1 references in the code.
4. Stubbing feature: Optionally stub detected HAL1 APIs for controlled migration and error-free compilation.
5. Documentation reference: For each detected API, refer to the migration documentation and follow the instructions that are provided.
6. Initialization sequence: Use STM32CubeMX2 to generate HAL2 initialization code and update IDE/project settings.
7. Iterative migration: Repeat detection and migration steps as needed, using the checklist to monitor progress.

The migration flow is illustrated in the [cover image](#).

3 Requirements

The following lists the requirements needed for the HAL2_MIGRATOR:

- Python™ 3.8.0 or later is used to edit and run the scripts
- Windows® 11 64-bit is used to execute the code
- STM32CubeMX2 is used to create and configure the project

Revision history

Table 1. Document revision history

Date	Version	Changes
12-Mar-2026	1	Initial release.



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