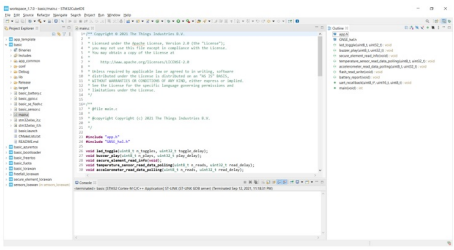


STM32Cube Command Line Toolset User Manual

UM3088
STM32Cube command-line toolset quick start guide
User manual

Contents

Introduction

This document is a brief guide for users to get started quickly with STM32CubeCLT, the STMicroelectronics command-line toolset for STM32 MCUs.
STM32CubeCLT offers all the STM32CubeIDE facilities packaged for command-prompt use by third-party IDEs, or continuous integration and continuous development (CD/CI).

The streamlined single STM32CubeCLT package includes:

- CLI (command-line interface) versions of ST tools like toolchain, probe connection utility, and flash memory programming utility
- Up-to-date system view descriptor (SVD) files

- Any other IDE relevant metadata STM32CubeCLT allows:
- Building a program for STM32 MCU devices using an enhanced GNU toolchain for STM32
- Programming STM32 MCU internal memories (flash memory, RAM, OTP, and others) and external memories
- Verifying the programming content (checksum, verification during and after programming, comparison with file)
- Automating the STM32 MCU programming
- Debugging applications through the interface of STM32 MCU products, which provides access to MCU internal resources using basic debug features

General information

The STM32CubeCLT command-line toolset for STM32 MCUs provides tools to build, program, run, and debug applications targeting STM32 microcontrollers based on the Arm® Cortex® -M processor.
Note:
Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.

Reference documents

- Command-line toolset for STM32 MCUs (DB4839), STM32CubeCLT data brief
- STM32CubeCLT installation guide (UM3089)
- STM32CubeCLT release note (RN0132)

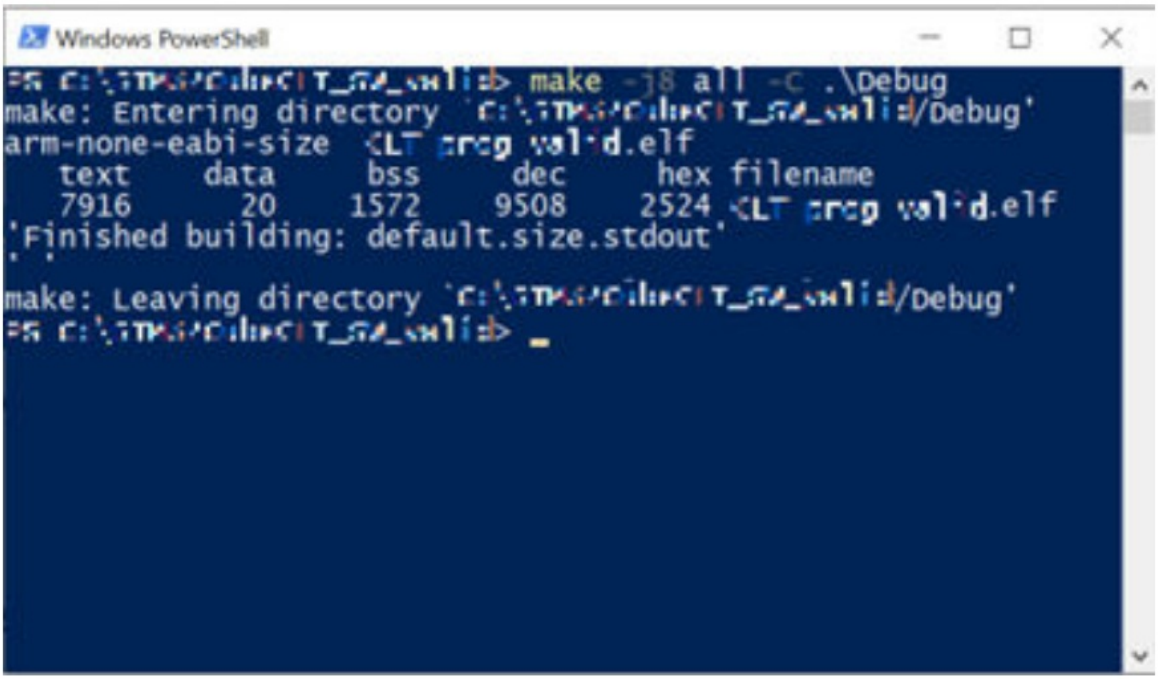
Screenshots in this document
The screenshots provided in Section 2, Section 3, and Section 4 are only examples of the tool usage from a command prompt.
The integration in third-party IDEs or the use in CD/CI scripts is not illustrated in this document.

Building

The STM32CubeCLT package contains the GNU tools for STM32 toolchain to build a program for an STM32 microcontroller. A Windows® console window example is shown in Figure 1.

1. Open a console in the project folder.
2. Execute the following command to build the project: > make -j8 all -C .\Debug

Figure 1. Build output



Note: The make utility might require a separate installation step.

Board programming

The STM32CubeCLT package contains the STM32CubeProgrammer (STM32CubeProg), which is used to program the build obtained previously into the target STM32 microcontroller.

1. Make sure that the ST-LINK connection is detected
2. Select the project folder location in the console window
3. Optionally, erase all the flash memory content (refer to Figure 2): > STM32_Programmer_CLI.exe -c port=SWD freq=4000 -e all
4. Upload the program file to the 0x08000000 flash memory address (refer to Figure 3): > STM32_Programmer_CLI.exe -c port=SWD freq=4000 -w .\Debug\YOUR_PROGRAM.elf 0x08000000

Figure 2. Flash memory erase output

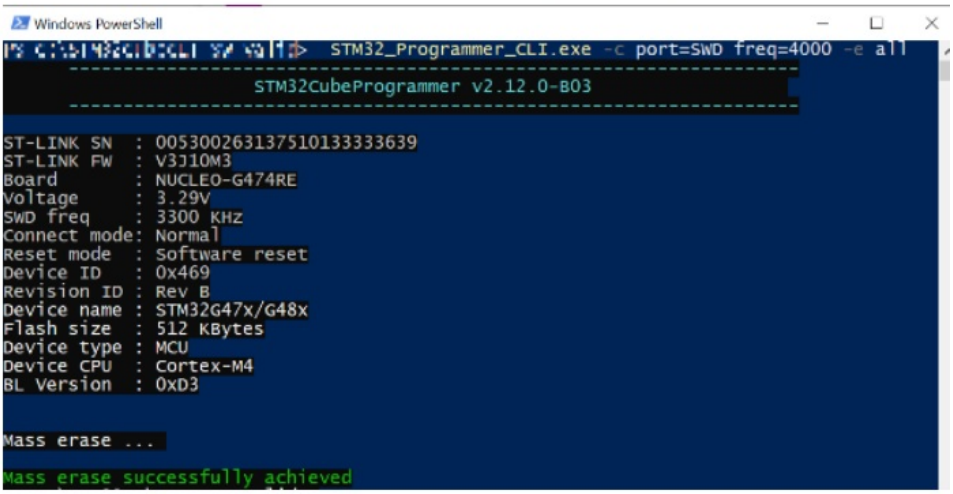
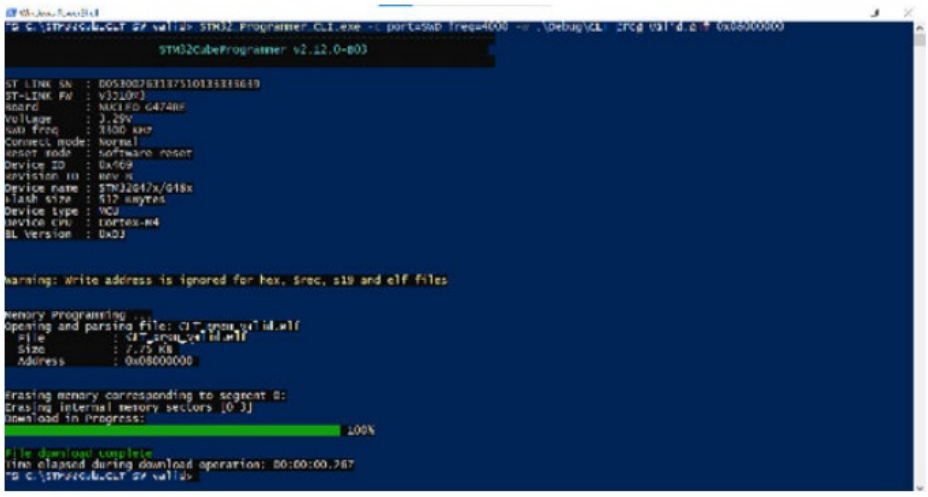


Figure 3. Program upload output



Debugging

In addition to the GNU tools for STM32 toolchain, the STM32CubeCLT package contains also the ST-LINK GDB server. Both are needed to start a debug session.

1. Start the ST-LINK GDB server in another Windows® PowerShell® window (refer to Figure 4): > ST-LINK_gdbserver.exe -d -v -t -cp C:\ST\STM32CubeCLT\STM32CubeProgrammer\bin
2. Use the GNU tools for STM32 toolchain to start the GDB client in the PowerShell® window:

   > arm-none-eabi-gdb.exe

   > (gdb) target remote localhost:port (use the port indicated in the GDB server opened connection)

   The connection is established and GDB server session messages are displayed as shown in Figure 5. It is then possible to run GDB commands in the debug session, for instance to reload an .elf program using GDB: > (gdb) load YOUR_PROGRAM.elf

Figure 4. **GDB server output**

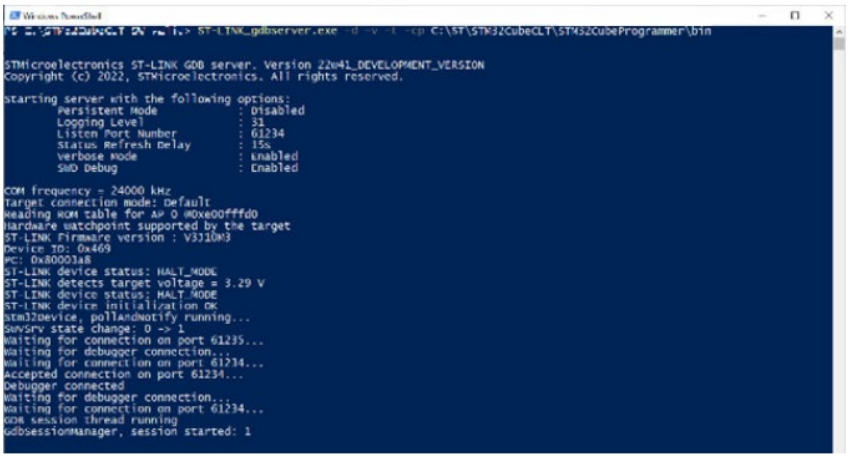
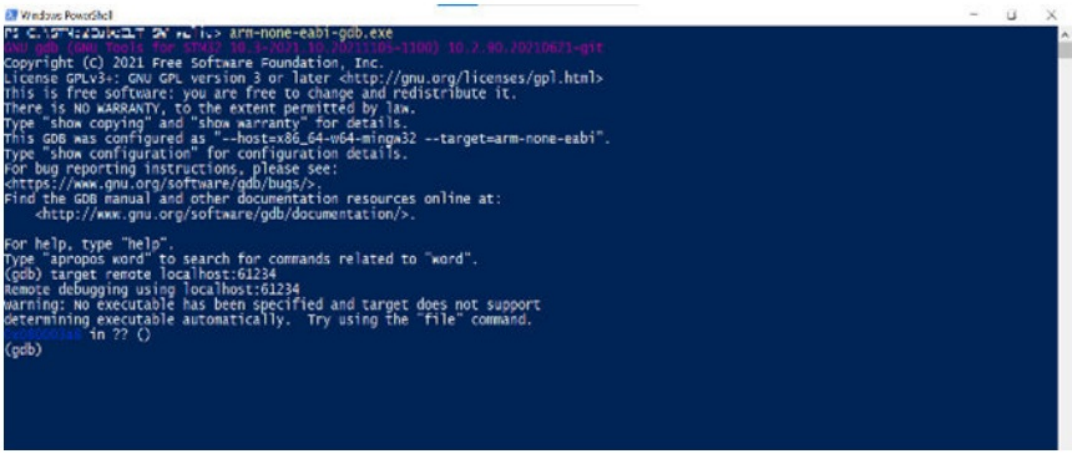


Figure 5. **GDB client output**



Revision history

Table 1. Document revision history

Date	Revision	Changes
16-Feb-23	1	Initial release.

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Documents / Resources

	ST STM32Cube Command Line Toolset [pdf] User Manual UM3088, STM32Cube Command Line Toolset, STM32Cube, Command Line Toolset, Toolset

References

- STMicroelectronics: Our technology starts with you
- STMicroelectronics Trademark List - STMicroelectronics
- STM32CubeCLT - STM32CubeCLT is a toolset for third-party integrated development environment (IDE) providers, allowing the use of STMicroelectronics proprietary tools within their own IDE frameworks. - STMicroelectronics
- STM32CubeIDE - Integrated Development Environment for STM32 - STMicroelectronics
- STM32CubeProg - STM32CubeProgrammer software for all STM32 - STMicroelectronics