STM32Cube command-line toolset release v1.21.0

Introduction

This release note is updated periodically to keep abreast of the STM32Cube command-line toolset (STM32CubeCLT) evolution, problems, and limitations. Check the STMicroelectronics website at www.st.com/stm32softwaretools for the latest version. For the latest release summary, refer to Table 1.

Table 1. STM32CubeCLT v1.21.0 release summary

Type	Summary
Major release	Maintenance of the previous version: • Updated in accordance with STM32CubeIDE v2.1.0 • Update of Clang/LLVM toolchain • Update of GCC to GCC 14 • Update of STM32CubeProgrammer to version 2.22.0 • Update of ST-LINK GDB server to version 7.13.0 • Update of JRE™ to version 21.0.9+10 • Update of STARM-Clang to version 21.1.1 • Support for Apple® Silicon with ARM64 architecture

Customer support

For more information or help concerning STM32Cube command-line toolset, contact the nearest STMicroelectronics sales office or use the ST community at community.st.com. For a complete list of STMicroelectronics offices and distributors, refer to the *www.st.com* webpage.

Software updates

Software updates and all the latest documentation can be downloaded from the STMicroelectronics support webpage at www.st.com/stm32cubeclt.

1 General information

1.1 Overview

The STM32Cube command-line toolset (STM32CubeCLT) is a single package composed of:

- 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 is derived from STM32CubeIDE. It is packaged for command-prompt use by third-party IDEs. The toolset offers a wide range of features to build, program, and debug STM32 MCU applications through the command line. Continuous integration and continuous development can benefit from the reduced CLI toolset package compared to a large bulk IDE package. The STM32CubeCLT targets STM32 32-bit microcontrollers based on the Arm® Cortex®-M processor..

The STM32Cube command-line toolset 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

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1.2 Package content

Table 2. Content of STM32CubeCLT

Name	Description
GNU tools for STM32	The STMicroelectronics patched version of the standard *GNU Tools for Arm Embedded Processors*.
STM32CubeProgrammer (STM32CubeProg)	Reading, writing, and verifying of device memory through both debug interfaces (JTAG and SWD).
ST-LINK GDB server	Application to share the debug interface of a single ST-LINK board.
ST-LINK USB driver	Declaration to the system of the USB interfaces possibly provided by the ST-LINK: *ST Debug*.
`STM32targets.xml` for MCU	Description of each STM32 device.
SVD files for STM32 MCU devices and CORE	Description of each STM32 device register that is dumped while debugging.
CMake	Building of STM32 projects using the command line.
Ninja	Building of STM32 projects using the command line.

1.3 Host PC system requirements

Supported operating systems and architectures

- Windows® 10 and 11, 64 bits (x64)
- Linux®: Ubuntu® LTS 22.04 and LTS 24.04, and Fedora® 43
- macOS® 15 (Sequoia), macOS® 26 (Tahoe)

Note: Windows is a trademark of the Microsoft group of companies.

Linux® is a registered trademark of Linus Torvalds.

Ubuntu® is a registered trademark of Canonical Ltd.

Fedora® is a trademark of Red Hat, Inc.

macOS® is a trademark of Apple Inc., registered in the U.S. and other countries and regions.

Memory and storage

- RAM: 1 Gbyte recommended
- Hard-disk space: 1.7 Gbyte of free space

1.4 Setup procedure

Refer to the *STM32CubeCLT installation guide* (UM3089) available at *www.st.com*.

1.5 Licensing

STM32CubeCLT is delivered under the *SOFTWARE PACKAGE LICENSE AGREEMENT ("AGREEMENT")* (SLA0048).

The open-source and third-party software components used in the development of STM32CubeCLT and their licenses are listed in a zip file available from the product page at STMicroelectronics *www.st.com* website.

Table 3 provides the description of the licenses of additional components in STM32CubeCLT.

Table 3. Complementary component licenses

Name	Version	Copyright	License	Detail
STM32CubeProgrammer (STM32CubeProg)	2.22.0	STMicroelectronics	Proprietary	Refer to the global software license agreement
GNU tools for STM32	14.3.rel1.20251027-0700	STMicroelectronics	Proprietary	Refer to the global software license agreement
ST-LINK GDB server	7.13.0	STMicroelectronics	Proprietary	Refer to the global software license agreement
ST-LINK server for Windows®	2.1.1-2	STMicroelectronics	Proprietary	Refer to the global software license agreement
ST-LINK server for Linux®	2.1.1-2	STMicroelectronics	Proprietary	Refer to the global software license agreement
ST-LINK server for macOS®	2.1.2-1	STMicroelectronics	Proprietary	Refer to the global software license agreement
STLink-USB-Driver	2.0.2	STMicroelectronics	Proprietary	Refer to the global software license agreement
STLink-USB-Driver-lib	-	STMicroelectronics	Proprietary	Refer to the global software license agreement
STARM-Clang	21.1.1	STMicroelectronics	Proprietary	Refer to the global software license agreement
CMake	3.28.1	Kitware, Inc. and Contributors	BSD-3-Clause	Refer to the global software license agreement
Ninja	1.11.1	-	Apache-2.0	Refer to the global software license agreement

2 STM32CubeCLT v1.21.0 release information

2.1 New features

Maintenance of the previous version:

- Updated in accordance with STM32CubeIDE v2.1.0
- Update of Clang/LLVM toolchain
- Update of GCC to GCC 14
- Update of STM32CubeProgrammer to version 2.22.0
- Update of ST-LINK GDB server to version 7.13.0
- Update of JRE™ to version 21.0.9+10
- Update of STARM-Clang to version 21.1.1
- Support for Apple® Silicon with ARM64 architecture

2.2 Fixed issues

No fixed issue to report.

2.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3 Previous release information

3.1 STM32CubeCLT v1.20.0 release information

3.1.1 New features

Maintenance of the previous version:

- Updated in accordance with STM32CubeIDE v2.0.0
- Update of Clang/LLVM toolchain
- Update of GCC to GCC 13
- Update of STM32CubeProgrammer to version 2.21.0
- Update of ST-LINK GDB server to version 7.12.0
- Update of JRE™ to version 21.0.8

3.1.2 Fixed issues

No fixed issue to report.

3.1.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3.2 STM32CubeCLT v1.19.0 release information

3.2.1 New features

- Maintenance of the previous version
- Updated in accordance with STM32CubeIDE v1.21.0
- Support for Clang/LLVM toolchain

3.2.2 Fixed issues

No fixed issue to report.

3.2.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3.3 STM32CubeCLT v1.18.0 release information

3.3.1 New features

- Maintenance of the previous version
- Updated in accordance with STM32CubeIDE v1.21.0

3.3.2 Fixed issues

No fixed issue to report.

3.3.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3.4 STM32CubeCLT v1.17.0 release information

3.4.1 New features

- Maintenance of the previous version
- Updated in accordance with STM32CubeIDE v1.17.0

3.4.2 Fixed issues

No fixed issue to report.

3.4.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3.5 STM32CubeCLT v1.16.0 release information

3.5.1 New features

- Maintenance of the previous version
- Updated in accordance with STM32CubeIDE v1.16.0

3.5.2 Fixed issues

No fixed issue to report.

3.5.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3.6 STM32CubeCLT v1.15.1 release information

3.6.1 New features

Refer to Fixed issues for details about this patch release.

3.6.2 Fixed issues

Fixed an issue with the ST-LINK firmware upgrade concerning the boards with DFU v2 or older in the version 3.14.5 of the ST-LINK GDB server.

3.6.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3.7 STM32CubeCLT v1.15.0 release information

3.7.1 New features

- CMake integration
- Ninja integration
- Versioned STM32CubeCLT installation: the default installation directory contains the version of STM32CubeCLT

3.7.2 Fixed issues

A second installation overwrites the first installation folder.

3.7.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3.8 STM32CubeCLT v1.14.0 release information

3.8.1 New features

- ST-LINK firmware upgrade only via command line
- Signed macOS® installer

3.8.2 Fixed issues

No fixed issues in this release.

3.8.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3.9 STM32CubeCLT v1.13.0 release information

3.9.1 New features

- Aligned with STM32CubeMX v6.9.0
- Added the `STLinkUpgrade` command that launches a graphical utility to update the ST-LINK firmware.
- Added a contextual alert warning the users that the PATH variable is not going to be updated with STM32CubeCLT paths if they choose another location than the default one. This alert allows the users to step back and choose the default location.
- Added the `-j` option to the `STM32CubeCLT_metadata` command to generate a JSON file containing the location of STM32CubeCLT metadata files, such as SVD and STM32 targets, and the other dependencies.

3.9.2 Fixed issues

No fixed issues in this release.

3.9.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3.10 STM32CubeCLT v1.12.1 release information

3.10.1 New features

- Alignment with STM32CubeMX v6.8.1

3.10.2 Fixed issues

- Fixed the issue concerning the deletion of the variable path when installing STM32CubeCLT, which occurred in some cases because of a path length limitation in Windows®

3.10.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3.11 STM32CubeCLT v1.12.0 release information

3.11.1 New features

- Aligned with STM32CubeIDE v1.12.0
- Added the command `STM32CubeCLT_metadata` that returns the path to the STM32CubeCLT metadata files, such as SVD and STM32 targets

3.11.2 Fixed issues

- Corrected the default installation path (dropped the double STM32CubeCLT/STM32CubeCLT)

3.11.3 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

3.12 STM32CubeCLT v1.11.1 release information

3.12.1 New features

The STM32Cube command-line toolset release v1.11.1 is the first release:

- Windows®, Linux®, and macOS® installers
- STM32CubeCLT integrates:
  - STM32CubeProgrammer (STM32CubeProg)
  - GCC complete toolchain with related libraries
  - ST-LINK GDB server with ST-LINK server ability to attach multiple clients
  - ST-LINK USB driver
  - SVD files for all STM32 MCU products

STM32CubeCLT v1.11.1 provides the same tool versions as STM32CubeIDE v1.11.0.

3.12.2 Known problems and limitations

The user must specify the path of `STM32CubeProgrammer/bin` as argument when executing `ST-LINK_gdbserver` as shown in the example below:

```
ST-LINK_gdbserver.exe -cp /c/ST/STM32CubeCLT/STM32CubeCLT/STM32CubeProgrammer/bin
```

Revision history

Table 4. **Document revision history**

Date	Revision	Changes
07-Dec-2022	1	Initial release.
16-Feb-2023	2	Added information related to STM32CubeCLT v1.12.0: • Added *STM32CubeCLT v1.12.0 release information* • Updated *Licensing*
04-Apr-2023	3	Added information related to STM32CubeCLT v1.12.1: • Added *STM32CubeCLT v1.12.1 release information*
05-Jul-2023	4	Added information related to STM32CubeCLT v1.13.0: • Added *STM32CubeCLT v1.13.0 release information* • Updated *Host PC system requirements*
06-Nov-2023	5	Added information related to STM32CubeCLT v1.14.0: • Added *STM32CubeCLT v1.14.0 release information*
13-Mar-2024	6	Added information related to STM32CubeCLT v1.15.0: • Added *STM32CubeCLT v1.15.0 release information*
19-Apr-2024	7	Added information related to STM32CubeCLT v1.15.1: • Added *STM32CubeCLT v1.15.1 release information*
25-Jun-2024	8	Added information related to STM32CubeCLT v1.16.0: • Added *STM32CubeCLT v1.16.0 release information* • Updated *Licensing*
14-Nov-2024	9	Added information related to STM32CubeCLT v1.17.0: • Added *STM32CubeCLT v1.17.0 release information* • Updated *Host PC system requirements* and *Licensing*
19-Feb-2025	10	Added information related to STM32CubeCLT v1.18.0: • Added *STM32CubeCLT v1.18.0 release information* • Updated *Host PC system requirements* and *Licensing*
21-Jul-2025	11	Added information related to STM32CubeCLT v1.19.0: • Added *STM32CubeCLT v1.19.0 release information* • Updated *Licensing*
18-Nov-2025	12	Added information related to STM32CubeCLT v1.20.0: • Added *STM32CubeCLT v1.20.0 release information* • Updated *Host PC system requirements* and *Licensing*
18-Feb-2026	13	Added information related to STM32CubeCLT v1.21.0: • Added STM32CubeCLT v1.21.0 release information • Updated Host PC system requirements and Licensing

Contents

List of tables

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