# Firmware upgrade for ST-LINK, ST-LINK/V2, ST-LINK/V2-1, and STLINK-V3 boards

## About this release note

This release note contains information about the latest firmware versions for ST-LINK, ST-LINK/V2, ST-LINK/V2-1, and STLINK-V3 boards. It can be used to identify the version of the firmware currently running and, if necessary, upgrade the firmware through the USB port.

STSW-LINK007 is the part number of the firmware upgrade application for ST-LINK, ST-LINK/V2, ST-LINK/V2-1, and STLINK-V3.

**Table 1. ST-LINK board firmware upgrade release summary**

| Type | Summary |
|---|---|
| Minor release | ST-LinkUpgrade.exe 3.17.10 and STLinkUpgrade.jar 3.17.10:<br>• Added support for $I^2C$ repeated start feature on the bridge interface (STLINK-V3SET, STLINK-V3MODS, and STLINK-V3PWR) |

## Customer support

For more information or help concerning ST-LINK, ST-LINK/V2, ST-LINK/V2-1 and STLINK-V3 boards, contact the nearest STMicroelectronics sales office. For the 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/en/development-tools/stsw-link007.

# 1 Host PC system requirements

PC and compatible running with:

- Windows® 10 and 11 (x64), Linux® (x64), and macOS® 64-bit operating systems

The application requires to install the Java Runtime Environment 7u51 (or more recent). On the Windows® operating system, the ST-LINK board requires to install a dedicated USB driver (STSW-LINK009). If the STSW-LINK009 driver is not installed by the used toolset, it can be downloaded from the *www.st.com* website.

On Linux®, the application relies on `libusb-1.0`, which must be installed separately. For instance, on Ubuntu®, this is done through the command `sudo apt-get install libusb-1.0`.

On Linux®, users must be granted rights for accessing the ST-LINK USB devices. To do that, it might be necessary to install one of the packages (depending on the Linux® version) provided into `AllPlatforms/StlinkRulesFilesForLinux`.

*Note: STLINK-V3 boards can be recognized by Windows® since Windows® 10 without any driver installation. However, ST-LINK driver installation is required for previous ST-LINK generations.*

The ST-LINK boards feature an STM32 32-bit microcontroller based on the Arm® Cortex®-M processor.

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## 1.1 Licensing

STSW-LINK007 is delivered under the *Mix Ultimate Liberty+OSS+3rd-party V1* software license agreement (SLA0048).

## 1.2 ST-LINK firmware naming rules

There is a multiplicity of ST-LINK firmware, because of the multiplicity of hardware boards and functionalities. For details about the firmware naming convention, refer to *Overview of ST-LINK derivatives* (TN1235).

# 2 Change in ST-LinkUpgrade.exe 3.17.10 and STLinkUpgrade.jar 3.17.10

- On STLINK-V3PWR, upgrade the firmware to the version V4J7B3P6.
- On STLINK-V3SET and STLINK-V3MODS, upgrade the firmware to the version V3J17M10B6S1.
- On STLINK-V3 boards and STLINK-V3MINIE, upgrade the firmware to the version V3J17M10.
- On ST-LINK/V2-1 boards, upgrade the firmware to the version V2J47M34 (STM32) or V2M34S7 (STM8).
- On ST-LINK/V2 boards, upgrade the firmware to the version V2J47S7.
- On ST-LINK boards, upgrade the firmware to the version V1J13S4.

**Enhancements and corrections**

- On STLINK-V3SET, STLINK-V3MODS, and STLINK-V3PWR boards:
  - Added the support for the $I^2C$ repeated start feature on the bridge interface
- On STLINK-V3PWR board:
  - Changed the default attribute for memory access to *"cacheable"* for STM32L5, STM32U5, STM32U3, and STM32WBA targets. The debugging/programming tools, such as STM32CubeProgrammer (STM32CubeProg), might later overwrite this default attribute.
- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Added the support for drag-and-drop programming on new and near-future STM32 targets.

# 3 Known problems and limitations

## 3.1 Limitations with drag-and-drop programming and mass storage interface

- The ST-LINK mass storage interface (allowing the target application drag-and-drop programming) might sometimes be problematic for the host PC (because of company policy or incompatibility with some host application). It might also impact the target application startup because of the connection attempt by the ST-LINK to identify the target (readout protection or secure initialization sequences for instance). In case of issue, the ST-LINK mass storage interface can be disabled by updating the firmware with STLinkUpgrade (first activate the [**change type**] checkbox, then select the firmware without mass storage, and ultimately launch the update). The operation is reversible.
- In some cases, the activation of the readout protection on the STM32 target might prevent the application from running. For instance on STM32G0316-DISCO, where the ST-LINK firmware is not able to generate a target power cycle when required. In this case, either do not activate the readout protection, or disable the ST-LINK mass storage interface. This can be done by updating the firmware with STLinkUpgrade (first activate the [**change type**] checkbox, then select the firmware without mass storage, and ultimately launch the update). The operation is reversible.
- Applications programmed through the mass-storage interface (drag-and-drop to disk) must fulfill both constraints listed below. The applications that do not respect one of these constraints are not programmed through the mass storage interface but can be programmed through other tools, such as STM32CubeProgrammer (STM32CubeProg):
  - A stack pointer value (the first entry of the vector table) in the range of the microcontroller RAM range
  - A reset vector value (the second entry of the vector table) in the range of the microcontroller flash memory range
- On STLINK-V3SET, STLINK-V3MINIE, and STLINK-V3MINI, the STM32 target flash memory programming with drag-and-drop action requires the target to be connected to the STLINK-V3SET, STLINK-V3MINIE, or STLINK-V3MINI (SWD/JTAG link) *before* the STLINK-V3SET, STLINK-V3MINIE, or STLINK-V3MINI is plugged to the host (USB cable). Moreover, this functionality is not available for STM8 targets.
- On ST-LINK/V2-1 and STLINK-V3 boards, the support of `.hex` files drag-and-drop programming relies on an artificial increase of the virtual mass storage disk size.
  Consequently, this size is made much bigger than the size of the real flash memory, making it possible to drop a file larger than the target flash memory without warning from the mass storage host driver. In that case, the whole flash memory can be programmed before the error is detected and reported by the ST-LINK.
  The `.hex` file format constraints for safe drag-and-drop programming are:
  - Max line byte count: 0x20
  - flash memory address in ascending order (ordered section)
  - Address range: flash memory base address 0x08000000 to 0x08000000 + flash memory size
  - The programming is done by 128-byte blocks (0xFF is programmed in case of unaligned block address)
  - Linux®/macOS®/Windows® DOS line termination (LF, CR, CRLF)

## 3.2 Limitations with the bridge feature

- On STLINK-V3SET and STLINK-V3MODS, limitations on the SPI bridge interface:
  - *STLINK as SPI slave*: mode not supported
  - Limited full-duplex support (cannot simultaneously send and receive, but sequentially)
- On STLINK-V3SET and STLINK-V3MODS, limitations on the $I^2C$ bridge interface:
  - *STLINK as $I^2C$ slave*: mode not supported
  - Digital Noise Filter (DNF): not tested
  - 10-bit addressing: not tested

- On STLINK-V3SET and STLINK-V3MODS, limitations on the CAN bridge interface:
  - Only standard and loopback modes supported
  - The Rx CAN message buffer is limited to:
    - 100 CAN messages in the CAN API (STLINK-V3 and STLINK-V3PWR)
    - 50 CAN or CAN FD messages per FIFO in the FDCAN API (STLINK-V3PWR)

## 3.3 Limitations with STLINK-V3PWR

- The STLINK-V3PWR board must be connected to a powerful USB port. In such a condition, the LED USB is green. If this is not the case, try another USB port. Refer to the user manual *Source measurement unit (SMU) and debugger/programmer for STM32 microcontrollers* (UM3097) for details.
- On STLINK-V3PWR, an event on the TGI pin while no power acquisition is in progress might break the communication with the STM32CubeMonitor-Power (STM32CubeMonPwr) application.

## 3.4 Other limitations

- On targets running at low CPU frequencies (less than 250 kHz), the SWD clock frequency must also be reduced for correct communication.
- The SWD maximum clock frequency (4 MHz approximately) is not functional on targets powered under 2.8 V. Such targets must use a lower SWD clock frequency (to configure from the toolset using the ST-LINK).
- ST-LINK (V1) boards are not supported on the Linux® and macOS® operating systems. Only ST-LINK/V2, ST-LINK/V2-1, and STLINK-V3 boards can be updated from these operating systems.
- On STLINK-V3 boards, high SWD and JTAG frequencies are sensitive to the target connection environment; In case of communication issues, firstly try to reduce such frequencies in the settings of the tool being used.
- The error message *"`Unexpected device ID for ST-Link micro. Don't know how to upgrade`"* probably means an attempt to run on an STLINK-V3 board an STLinkUpgrade version too old for the board. Try with a more recent version of STLinkUpgrade.
- On STLINK-V3 boards in high-performance mode, the minimum baud rate for Virtual COM port is 2931 bauds.
- STLINK-V3 boards do not function on USB FS ports, but require at least USB HS ports.

# 4 Release information for previous releases

## 4.1 Summary of changes in ST-LinkUpgrade.exe 3.16.9 and STLinkUpgrade.jar 3.16.9

- On STLINK-V3PWR, upgrade the firmware to the version V4J6B2P6.
- On STLINK-V3SET and STLINK-V3MODS, upgrade the firmware to the version V3J16M9B5S1.
- On STLINK-V3 boards, STLINK-V3MINI, and STLINK-V3MINIE, upgrade the firmware to the version V3J16M9.
- On ST-LINK/V2-1 boards, upgrade the firmware to the version V2J46M33 (STM32) or V2M33S7 (STM8).
- On ST-LINK/V2 boards, upgrade the firmware to the version V2J46S7.
- On ST-LINK boards, upgrade the firmware to the version V1J13S4.

**Enhancements and corrections**

- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Added the support for drag-and-drop programming on new and near-future STM32 targets.
- On ST-LINK/V2, ST-LINK/V2-1, and STLINK-V3 boards:
  - Changed the default attribute for memory access to *"cacheable"* for STM32L5, STM32U5, STM32U3, and STM32WBA targets. The debugging/programming tools, such as STM32CubeProgrammer (STM32CubeProg), might later overwrite this default attribute.

## 4.2 Summary of changes in ST-LinkUpgrade.exe 3.16.8 and STLinkUpgrade.jar 3.16.8

- On STLINK-V3PWR, upgrade the firmware to the version V4J6B2P6.
- On STLINK-V3SET and STLINK-V3MODS, upgrade the firmware to the version V3J16M8B5S1.
- On STLINK-V3 boards, STLINK-V3MINI, and STLINK-V3MINIE, upgrade the firmware to the version V3J16M8.
- On ST-LINK/V2-1 boards, upgrade the firmware to the version V2J46M32 (STM32) or V2M32S7 (STM8).
- On ST-LINK/V2 boards, upgrade the firmware to the version V2J46S7.
- On ST-LINK boards, upgrade the firmware to the version V1J13S4.

**Enhancements and corrections**

- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Added support for drag-and-drop programming on new and near-future STM32 targets
  - Applied corrections to the drag-and-drop programming feature:
    - Corrected the incorrect management of dual-bank flash memory by STM32WBA65I-DK1
    - Fixed the regression introduced in V2J45M31 for the STM32G07xxx microcontrollers
    - Improved the detection of incorrect stack pointer values in the application to issue a "file format" error for some targets, especially the STM32H5 microcontrollers
- On STLINK-V3 boards with level shifters (STLINK-V3MINIE, STLINK-V3SET with B-STLINK-VOLT or B-STLINK-ISOL):
  - Fixed the issue where the JTAG connection with the target fails after ST-LINK power-up, unless an SWD connection is attempted before
- Added libraries and updated the application for the macOS® ARM64 system (tested only on macOS® 14.5 Sonoma)

## 4.3 Summary of changes in ST-LinkUpgrade.exe 3.16.7 and STLinkUpgrade.jar 3.16.7

- On STLINK-V3PWR, upgrade the firmware to the version V4J6B2P6.
- On STLINK-V3SET and STLINK-V3MODS, upgrade the firmware to the version V3J16M7B5S1.

- On STLINK-V3 boards, STLINK-V3MINI, and STLINK-V3MINIE, upgrade the firmware to the version V3J16M7.
- On ST-LINK/V2-1 boards, upgrade the firmware to the version V2J46M31 (STM32) or V2M31S7 (STM8).
- On ST-LINK/V2 boards, upgrade the firmware to the version V2J46S7.
- On ST-LINK boards, upgrade the firmware to the version V1J13S4.

**Enhancements and corrections**

- On STLINK-V3PWR:
  - Added CAN FD support by the Bridge interface
- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Added the support for drag-and-drop programming on new and near-future STM32 targets
    Caution: For the boards based on the STM32WBA65xx microcontroller, see the *Known problems and limitations* chapter.
- On STLINK-V3SET:
  - Corrected the fact that the `GETSTART.HTM` file was missing in the virtual mass storage disk on recently produced boards
- Updated the STLinkUSBDriver librairies for Linux® and macOS®, for use with libusb 1.0.22 or more recent
- Added a macOS® dedicated application (digitally signed package for STLinkUpgrade Java® application) in the `MacOS` subfolder. It requires that Python™ 3 and JRE™ are installed previously if they are not natively present. The previous Java® application can still be launched on macOS® as before, but it does not contain the digital signature and notarization.

## 4.4 Summary of changes in ST-LinkUpgrade.exe 3.15.7 and STLinkUpgrade.jar 3.15.7

- On STLINK-V3PWR, upgrade the firmware to the version V4J5B1P6.
- On STLINK-V3SET and STLINK-V3MODS, upgrade the firmware to the version V3J15M7B5S1.
- On STLINK-V3 boards, STLINK-V3MINI, and STLINK-V3MINIE, upgrade the firmware to the version V3J15M7.
- On ST-LINK/V2-1 boards, upgrade the firmware to the version V2J45M31 (STM32) or V2M31S7 (STM8).
- On ST-LINK/V2 boards, upgrade the firmware to the version V2J45S7.
- On ST-LINK boards, upgrade the firmware to the version V1J13S4.

**Enhancements and corrections**

- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Added the support for drag-and-drop programming on new and near-future STM32 targets, especially the NUCLEO-WB09KE

## 4.5 Summary of changes in ST-LinkUpgrade.exe 3.15.6 and STLinkUpgrade.jar 3.15.6

- On STLINK-V3PWR, upgrade the firmware to the version V4J5B1P5.
- On STLINK-V3SET and STLINK-V3MODS, upgrade the firmware to the version V3J15M6B5S1.
- On STLINK-V3 boards, STLINK-V3MINI, and STLINK-V3MINIE, upgrade the firmware to the version V3J15M6.
- On ST-LINK/V2-1 boards, upgrade the firmware to the version V2J45M30 (STM32) or V2M30S7 (STM8).
- On ST-LINK/V2 boards, upgrade the firmware to the version V2J45S7.
- On ST-LINK boards, upgrade the firmware to the version V1J13S4.

**Enhancements and corrections**

- Addition of the support for enhanced STLINK-V3EC boards
- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Addition of the support for drag-and-drop programming on new and near-future STM32 targets

- On ST-LINK/V2 and STLINK-V3 boards, and STLINK-V3PWR:
  - Modification for SWD multidrop support
- Fix of a regression appeared in STLinkUpgrade.jar 3.14.5 with ST-LINK/V2 boards:
  - *"Unexpected flash size for ST-Link Micro. Don't know how to upgrade."*

## 4.6 Summary of changes in ST-LinkUpgrade.exe 3.14.5 and STLinkUpgrade.jar 3.14.5

- On STLINK-V3PWR, upgrade the firmware to the version V4J4B1P5.
- On STLINK-V3SET and STLINK-V3MODS, upgrade the firmware to the version V3J14M5B5S1.
- On STLINK-V3 boards, STLINK-V3MINI, and STLINK-V3MINIE, upgrade the firmware to the version V3J14M5.
- On ST-LINK/V2-1 boards, upgrade the firmware to the version V2J44M29 (STM32) or V2M29S7 (STM8).
- On ST-LINK/V2 boards, upgrade the firmware to the version V2J44S7.
- On ST-LINK boards, upgrade the firmware to the version V1J13S4.

**Enhancements and corrections**

- On STLINK-V3 boards, and STLINK-V3PWR:
  - Fix of a regression (introduced in V3J13 and V4J3) with SWV trace management (possible acquisition stop after some time)
- On STLINK-V3PWR:
  - Automatic calibration accuracy improvement
  - Automatic range selection improvement in case of periodic oscillations across thresholds
  - Fixes around error management
- On STLINK-V3 boards:
  - Rework of MCO clock selection, with new possible choices (HSE/4 and HSE/5)
- On STLINK-V3MODS:
  - Customization of mass storage volume name allowed (excluding STMicroelectronics reserved names; currently: starting with *"STLINK"*, *"NUCLEO"*, *"NOD"*, *"EVA"*, and *"DIS"*)
- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Addition of the support for drag-and-drop programming on new and near-future STM32 targets

## 4.7 Summary of changes in ST-LinkUpgrade.exe 3.13.4 and STLinkUpgrade.jar 3.13.4

- On STLINK-V3PWR, upgrade the firmware to the version V4J3B1P4.
- On STLINK-V3SET and STLINK-V3MODS, upgrade the firmware to the version V3J13M4B5S1.
- On STLINK-V3 boards, STLINK-V3MINI, and STLINK-V3MINIE, upgrade the firmware to the version V3J13M4.
- On ST-LINK/V2-1 boards, upgrade the firmware to the version V2J43M28 (STM32) or V2M28S7 (STM8).
- On ST-LINK/V2 boards, upgrade the firmware to the version V2J43S7.
- On ST-LINK boards, upgrade the firmware to the version V1J13S4.

**Enhancements and corrections**

- On STLINK-V3PWR:
  - Correction against unexpected behavior on TGI event (loss of USB communication).
- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Correction against unexpected level on T_VCP_RX (5 ms low), during VCP configuration, when no pull-up is present on the line.
    Regression since V2J38M27 / V3J8M3B5 versions.

## 4.8 Summary of changes in ST-LinkUpgrade.exe 3.12.3 and STLinkUpgrade.jar 3.12.3

- On STLINK-V3PWR, upgrade the firmware to the version V4J2B1P4 (minimal recommended version).
- On STLINK-V3SET and STLINK-V3MODS, upgrade the firmware to the version V3J12M3B5S1.
- On STLINK-V3 boards, STLINK-V3MINI, and STLINK-V3MINIE, upgrade the firmware to the version V3J12M3.
- On ST-LINK/V2-1 boards, upgrade the firmware to the version V2J42M27 (STM32) or V2M27S7 (STM8).
- On ST-LINK/V2 boards, upgrade the firmware to the version V2J42S7.
- On ST-LINK boards, upgrade the firmware to the version V1J13S4.

**Enhancements and corrections**

- On STLINK-V3PWR:
  - Correction against possible unexpected overcurrent protection event during target power-up
  - Correction against possible overvoltage on OUT at first power acquisition start
  - Correction against LED OUT wrong state during calibration and armed trigger
- On STLINK-V3 boards:
  - Activated weak pull-up on T_JTDO when JTAG communication is used, for robustness
- On ST-LINK/V2, ST-LINK/V2-1, and STLINK-V3 boards:
  - Prepared support for SWD multidrop

## 4.9 Summary of changes in ST-LinkUpgrade.exe 3.11.3 and STLinkUpgrade.jar 3.11.3

- On STLINK-V3SET and STLINK-V3MODS, upgrade the firmware to the version V3J11M3B5S1.
- On STLINK-V3 boards, STLINK-V3MINI, and STLINK-V3MINIE, upgrade the firmware to the version V3J11M3.
- On ST-LINK/V2-1 boards, upgrade the firmware to the version V2J41M27 (STM32) or V2M27S7 (STM8).
- On ST-LINK/V2 boards, upgrade the firmware to the version V2J41S7.
- On ST-LINK boards, upgrade the firmware to the version V1J13S4.

**Enhancements and corrections**

- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Added the management of 16-byte UUID board identification in preparation of future boards
  - Fixed issue: COM LED not blinking during some commands
- On STLINK-V3 boards:
  - Fixed the wrong state of the SWDIO pin after the end of the debug session in cases with level shifters
  - Fixed the MCO change to a nondefault value ignored on some STLINK-V3E boards
- On ST-LINK/V2-1 boards:
  - Fixed the regression in the `mbedId` management on some Nucleo boards produced before 2014

## 4.10 Summary of changes in ST-LinkUpgrade.exe 2.6.0 and STLinkUpgrade.jar 3.4.0

- On STLINK-V3SET and STLINK-V3MODS, upgrade firmware to the version V3J10M3B5S1.
- On STLINK-V3 boards, STLINK-V3MINI, and STLINK-V3MINIE, upgrade firmware to the version V3J10M3.
- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J40M27 (STM32) or V2M27S7 (STM8).
- On ST-LINK/V2 boards, upgrade firmware to the version V2J40S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Enhancements and corrections**

- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Added the support for drag-and-drop programming on new and near-future STM32 targets.
  - Improved the power off sequence. Deinit the target pin inputs earlier during the power off sequence on boards where ST-LINK manages the target power.
  - Added the support for the future STLINK-V3E hardware evolution. Clarified an STLinkUpgrade error message from *"Unexpected device ID for ST-Link micro. Don't know how to upgrade."* to *"STLink hardware probably too recent for this upgrade version. Please, use new tool version from st.com."*.
- On STLINK-V3 boards:
  - Fix data loss on VCP-RX (ST-LINK UART Tx) at a baud rate lower than 2400 Bd. Data is no more truncated when sending more than 65 bytes of data from the PC (USB) to the target (UART) at a low UART baud rate. Refer to the *STLINK-V3SET debugger/programmer for STM8 and STM32* user manual (UM2448) for details on the UART baud rates supported by STLINK-V3.

## 4.11 Summary of changes in ST-LinkUpgrade.exe 2.5.7 and STLinkUpgrade.jar 3.3.7

- On STLINK-V3SET and STLINK-V3MODS, upgrade firmware to the version V3J9M3B5S1.
- On STLINK-V3 boards and STLINK-V3MINI, upgrade firmware to the version V3J9M3.
- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J39M27 (STM32) or V2M27S7 (STM8).
- On ST-LINK/V2 boards, upgrade firmware to the version V2J39S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Enhancements and corrections**

- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Allowed read access to DBGMCU_DBG_AUTH_DEVICE register as required by the RDP regression sequence on STM32U5xxxx devices
  - Added support for drag-and-drop programming on new STM32 targets

## 4.12 Summary of changes in ST-LinkUpgrade.exe 2.5.6 and STLinkUpgrade.jar 3.3.6

- On STLINK-V3SET and STLINK-V3MODS, upgrade firmware to the version V3J8M3B5S1.
- On STLINK-V3 boards and STLINK-V3MINI, upgrade firmware to the version V3J8M3.
- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J38M27 (STM32) or V2M27S7 (STM8).
- On ST-LINK/V2 boards, upgrade firmware to the version V2J38S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Enhancements and corrections**

- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Added command providing information about SWV reachable frequencies to host applications
  - Fixed drag-and-drop programming failure on STM32WB5xxx microcontrollers when the SP value is in SRAM2 memory ranges
  - Modified target initialization sequence for mass storage disk configuration: after a failing first attempt, try a power-reset sequence

- On STLINK-V3 boards:
  - Possibility to enable/disable the mass storage interface. If the mass storage interface is disabled (through STLinkUpgrade GUI), the STLINK-V3 board enumerates as a new STLink USB device, which may not be recognized/usable by old tool versions (such as for IAR Systems® IAR Embedded Workbench®, Keil® MDK-ARM, or STMicroelectronics STM32CubeIDE or STM32CubeProgrammer (STM32CubeProg)).
    In that case it is necessary to update to a more recent tool version or to enable back the mass storage interface.
    For support on Linux®, the installation of updated ST-Link rules files must be done before disabling the mass storage interface. The installation package is provided in subdirectory `AllPlatforms/StlinkRulesFilesForLinux`.
  - Increased SWV buffer size
  - Minor correction on USB descriptors
- On ST-LINK/V2 and ST-LINK/V2-1 boards:
  - Changed access flags for better management of variables in cache through Cortex®-M7 AXI bus

## 4.13 Summary of changes in ST-LinkUpgrade.exe 2.5.5 and STLinkUpgrade.jar 3.3.5

- On STLINK-V3SET and STLINK-V3MODS, upgrade firmware to the version V3J7M3B5S1.
- On STLINK-V3 boards and STLINK-V3MINI, upgrade firmware to the version V3J7M3.
- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J37M27 (STM32) or V2M27S7 (STM8).
- On ST-LINK/V2 boards, upgrade firmware to the version V2J37S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

### Enhancements and corrections

- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Added support for drag-and-drop programming on new STM32 targets or near future new STM32 targets
  - Robustness enhancement for target reset after drag-and-drop programming in case the hardware reset is not effective
  - Correction of a bad management of USB zero-length packet on Virtual COM port OUT endpoint
- On STLINK-V3 boards:
  - Correction of issue on STLINK-V3-BRIDGE CAN bus, ST-LINK bricks after receiving 100 messages
  - STLINK-V3-BRIDGE SPI: configuration of pull-up/pull-down according to CLK_polarity

## 4.14 Summary of changes in ST-LinkUpgrade.exe 2.5.4 and STLinkUpgrade.jar 3.3.4

- On STLINK-V3SET and STLINK-V3MODS, upgrade firmware to the version V3J7M2B4S1.
- On STLINK-V3 boards and STLINK-V3MINI, upgrade firmware to the version V3J7M2.
- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J37M26 (STM32) or V2M26S7 (STM8).
- On ST-LINK/V2 boards, upgrade firmware to the version V2J37S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

### Enhancements and corrections

- On ST-LINK/V2, ST-LINK/V2-1 and STLINK-V3 boards:
  - Enhanced robustness in case of wrong initialization sequence from the host PC (when several access ports are accessed) and JTAG communication WAIT status
  - Updated sequence for target internal register access (check against attempt while the core is running)
- On ST-LINK/V2-1 and STLINK-V3 boards:
  - Added support for drag-and-drop programming of `.hex` files (refer to *Section 3: Known problems and limitations* for the conditions of use)
  - Display of STMicroelectronics firmware version string into file `details.txt`

- On STLINK-V3E boards:
  - Possibility added to choose the MCO clock output from ST-LINK to target among 3 values. The default value (HSI / 2 = 8 MHz) can be changed through STLinkUpgrade applications to HSE / 3 = 8.33 MHz (for better clock accuracy) or cut off. The operation is reversible. In case of a switch to 8.33 MHz, the target application must be updated accordingly: a factor × (24 / 25) must be applied in the PLL configuration in order to keep the clock tree unchanged behind (for instance, if PLLN = 400, set PLLN = 384). Moreover the `HSE_VALUE` constant commonly defined into `stm32xxx_hal_conf.h` must be changed to value 8333333.
    This possibility does not concern the STLINK-V3 standalone boards (STLINK-V3SET, STLINK-V3MINI and STLINK-V3MODS).

## 4.15 Summary of changes in ST-LinkUpgrade.exe 2.5.3 and STLinkUpgrade.jar 3.3.3

- On STLINK-V3SET and STLINK-V3MODS, upgrade firmware to the version V3J6M2B4S1.
- On STLINK-V3 boards and STLINK-V3MINI, upgrade firmware to the version V3J6M2.
- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J36M26 (STM32) or V2M26S7 (STM8).
- On ST-LINK/V2 boards, upgrade firmware to the version V2J36S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Enhancements and corrections**

- On STLINK-V3SET:
  - Shortcut (`GETSTART.htm`) added in the mass-storage disk pointing to a dedicated webpage on *www.st.com*
  - Change in SPI bridge read command for better interaction with STM32 bootloader: send zeroes instead of dummy data when reading
- On STLINK-V3 boards:
  - Maximum size of a single memory-access command done in 8-bit mode increased from 64 bytes to 512 bytes
  - Update for the support of STLINK-V3MODS
- On ST-LINK/V2-1 and STLINK-V3 boards, added a `GetBoardIdentifiers` command

## 4.16 Summary of changes in ST-LinkUpgrade.exe 2.5.2 and STLinkUpgrade.jar 3.3.2

- On STLINK-V3SET, upgrade firmware to the version V3J5M2B3S1.
- On STLINK-V3 boards, upgrade firmware to the version V3J5M2..
- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J35M26 (STM32) or V2M26S7 (STM8).
- On ST-LINK/V2 boards, upgrade firmware to the version V2J35S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Enhancements and corrections**

- On ST-LINK/V2, ST-LINK/V2-1 and STLINK-V3 boards, enhanced robustness in case of wrong initialization sequence from host PC and SWD communication WAIT status.
- On ST-LINK/V2-1 boards and STLINK-V3SET, enhanced Virtual COM port and mass storage USB interfaces behaviour after PC reboot.
- On STLINK-V3 boards, fixed regression appeared in V3J4M2: used space of mass storage virtual disk wrongly computed if the target flash memory size is over 1.5 Mbyte.
- On ST-LINK/V2-1 boards for STM8, fixed issue with STM8 drag-and-drop programming potentially not working on boards with SWIM pin reconfigured.
- On ST-LINK/V2-1 boards ,Virtual COM port internal buffer increased from 512 bytes to 204 bytes for upstream (target to ST-LINK).

## 4.17 Summary of changes in ST-LinkUpgrade.exe 2.5.1 and STLinkUpgrade.jar 3.3.1

- On STLINK-V3SET, upgrade firmware to the version V3J4M2B3S1.
- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J34M25 (STM32) or V2M25S7 (STM8).

- On ST-LINK/V2 boards, upgrade firmware to the version V2J34S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**New feature**

- Manage the flash memory drag-and-drop programming on STM32L552 and STM32L562 microcontrollers when Arm® TrustZone® for Armv8-M is enabled.

**Enhancements and corrections**

- On STLINK-V3SET, the baud rate for the Virtual COM port can exceed 12 MHz.
- On STLINK-V3SET, improved SWV (Serial Wire Viewer) and Virtual COM port performance (reduced the probability of data loss).
- On STLINK-V3SET, reduced the ST-LINK consumption when in idle state.

## 4.18 Summary of changes in ST-LinkUpgrade.exe 2.5.0 and STLinkUpgrade.jar 3.3.0

- On STLINK-V3SET, upgrade firmware to the version V3J3M2B3S1.
- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J33M25 (STM32) or V2M25S7 (STM8).
- On ST-LINK/V2 boards, upgrade firmware to the version V2J33S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**New features**

- Added the possibility to hide the mass-storage interface on ST-LINK/V2-1 and STLINK-V3 boards (requires to update the ST-LINK USB driver: STSW-LINK009 on Windows®, `49-stlinkvxxx.rules` files on Linux®). Moreover, it might be also necessary to update the host application so that it identifies correctly this new ST-LINK version, especially on Linux® and macOS®.
- On STLINK-V3SET, allows the replacement of the mass-storage interface by a second Virtual COM port (VCP2), using the Bridge UART signals of the MB1440B.CN9 connector. This VCP2 implements hardware-flow control (CTS/RTS) if the signals are physically connected to the target. The hardware-flow control can be disabled by removing the physical connection of signals to the target. It cannot be disabled by software (the hardware-flow control configuration parameter available in some hyperterminal applications has no effect on Virtual COM port).

**Corrections**

- Fixed some instabilities during mass-storage disk refresh after drag-and-drop programming on ST-LINK/V2-1 and STLINK-V3 boards.
- Immediately report error (if any) after a memory-access command done in 8-bit mode to an STM32 target.
- Fixed an issue with some targets (STM32L4x2, STM32G0x1): an application programmed by drag and drop to a fully erased target does not start immediately (power-down sequence required to make it run).
- Virtual COM port reception is no more started with default parameters at ST-LINK startup, but waits for host command.
- On STLINK-V3SET, fixed a possible loss of data in the Virtual COM port downstream (host to target).
- The STLINK-V3SET can enumerate on Windows® 10 without any specific USB driver installation; however, the USB driver installation is still required for older ST-LINK versions, or for STLINK-V3SET on older versions of Windows®.

## 4.19 Summary of changes in ST-LinkUpgrade.exe 2.4.12 and STLinkUpgrade.jar 3.2.12

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J32M22 (STM32) or V2M22S7 (STM8).
- On ST-LINK/V2 boards, upgrade firmware to the version V2J32S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Correction**

- Fixed mass storage interface issue with NUCLEO-8L152R8 and NUCLEO-8S208RB on Windows® 10 (operating system files corrupting the STM8 flash memory). Currently, a binary file dropped into the mass storage virtual disk is programmed into the STM8 flash memory only if it starts with code 0x82 and if the following 3 bytes (reset vector value) point to an address in flash memory.

## 4.20 Summary of changes in ST-LinkUpgrade.exe 2.4.11 and STLinkUpgrade.jar 3.2.11

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J31M21 (STM32) or V2M21S7 (STM8).
- On ST-LINK/V2 boards, upgrade firmware to the version V2J31S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Correction (for STM32 debug with ST-LINK/V2-1 and ST-LINK/V2)**

- Fixed wrong management of STM32 target hardware reset pin by firmware V2J30M21 in SWD mode.

## 4.21 Summary of changes in ST-LinkUpgrade.exe 2.4.10 and STLinkUpgrade.jar 3.2.10

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J30M21 (STM32) or V2M21S7 (STM8).
- On ST-LINK/V2 boards, upgrade firmware to the version V2J30S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Corrections (for ST-LINK/V2-1 only)**

- Bugfix against mass storage disk refresh loop after drag and drop on Windows® 10.
- Bugfix against SWV issues (Serial Wire trace through SWO pin).

## 4.22 Summary of changes in ST-LinkUpgrade.exe 2.4.9 and STLinkUpgrade.jar 3.2.9

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J30M20.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J30S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Corrections (for ST-LINK/V2-1 only)**

- Bugfix against random refresh of mass storage disk after drag and drop on Linux®.
- Bugfix of wrong link in `mbed.htm` file (mass storage interface) for NUCLEO-L4A6ZG.
- Implemented change request: display `fail.txt` if the dropped application has wrong vector values (stack pointer and reset).
- Manage drag-and-drop flash memory programming whatever the value of the single/dual bank Option Byte on the microcontroller providing it.
- Increased USB FIFO size for Virtual COM port (direction host to ST-LINK) from 8 bytes to 16 bytes.

## 4.23 Summary of changes in ST-LinkUpgrade.exe 2.4.8 and STLinkUpgrade.jar 3.2.8

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J30M19.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J30S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Corrections (for ST-LINK/V2-1 only)**

- Allow application to run even if the readout protection is set on the target microcontroller and the MCO signal from ST-LINK is connected to the target microcontroller (case of the NUCLEO-L073RZ for instance).

- Allow application to run immediately when powered externally to the ST-LINK (Evaluation boards), or when power configuration is set in *charger* position (case for some Discovery boards). In previous releases, a 2-second timeout was awaited in such situations.

## 4.24 Summary of changes in ST-LinkUpgrade.exe 2.4.5 and STLinkUpgrade.jar 3.2.5

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J29M18.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J29S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Corrections (for ST-LINK/V2 and ST-LINK/V2-1)**

- Correction against sporadic failure during the initialization of the debug session on STM32L0xx microcontrollers.

**Corrections (for ST-LINK/V2-1 only)**

- Correction against drag-and-drop programming issue on STM32L432 of an application with initial stack pointer located into RAM2 segment @0x2000 C000.
- Correction against the presence of multiple `fail.txt` files on mass storage disk, after failing drag-and-drop programming on Evaluation boards.

## 4.25 Summary of changes in ST-LinkUpgrade.exe 2.4.2 and STLinkUpgrade.jar 3.2.2

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J28M18.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J28S7.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Corrections (for ST-LINK/V2-1)**

- Add up to 20 Kbytes in virtual mass storage for disk size compared to the target flash memory size, to have enough space after the host wrote some system files (for instance in a Windows® 10 environment).
- Application on NUCLEO-L452RE did not run automatically after application programming through drag-and-drop.
- The file `fail.txt` was missing on the virtual mass storage disk when the target STM32 was readout protected.

## 4.26 Summary of changes in ST-LinkUpgrade.exe 2.4.0 and STLinkUpgrade.jar 3.2.0

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J28M16.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J28S6.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Corrections (for ST-LINK/V2-1)**

- Fixed file `fail.txt` missing in some cases after target communication failure.
- Fixed issue with mass storage disk on Windows® 10 version 1607.
- Reworked the refresh sequence of the mass storage disk after drag-and-drop programming.
- Modified the description size of the USB Virtual COM port.

## 4.27 Summary of changes in ST-LinkUpgrade.exe 2.3.30 and STLinkUpgrade.jar 3.1.0

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J27M15.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J27S6.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Corrections**

- Fixed a regression, which made the V2J26M15 not functional on few host systems.

- Failing boards may be recovered either by upgrading the firmware to V2J27M15 from another host, not presenting the incompatibility with the V2J26M15, or by forcing manually the upgrade mode of the board, when possible. For instance on Nucleo-64 boards, make a little shortcut between RST and SB11 pads behind the board. In this way, firmware may be upgraded afterwards, even on host presenting the incompatibility with the V2J26M15. On other ST-LINK/V2-1 boards, refer to the schematics of the board to find how to reset the STM32F103CB microcontroller (solder bridge on the STM_RST signal).

## 4.28 Summary of changes in ST-LinkUpgrade.exe 2.3.28 and STLinkUpgrade.jar 3.0.7

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J26M15.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J26S5.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Enhancement**

- Virtual COM port latency reduced from 5 ms to 1 ms (approximatively average values) in the target Tx / ST-LINK/V2-1 Rx direction.

**Corrections**

- On ST-LINK/V2-1 Discovery boards and Nucleo boards, the target application is now able to run even if the target read-out protection is set. It is the case on ST-LINK/V2-1 of the Evaluation boards, but only if the ST-LINK/V2-1 USB cable is not connected to any enumerating host.
- On all ST-LINK/V2-1 boards, the target application is now able to run even if the ST-LINK/V2-1 is either not connected to an USB host, or is powered through a USB charger (or through a not-enumerating USB host).
- Removed risk of loosing the Virtual COM port interface if reprogramming the application (by drag-and-drop) while the Virtual COM port is intensely used. Fixed wrong contents of `mbed.html` file in some cases (wrong shortcut to *ST unknown board* page).

## 4.29 Summary of changes in ST-LinkUpgrade.exe 2.3.27 and STLinkUpgrade.jar 3.0.6

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J25M14.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J25S4.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Enhancements**

- Fixed USB communication failures on Mac OS X 10.11 after ClearFeature (ENDPOINT_STALL).
- Removed risk of lockups when using the Virtual COM port intensively in both directions (Rx/Tx) simultaneously.

Large applications are now fully programmed through drag-and-drop on Evaluation boards (on Evaluation boards, applications with sizes greater than the target flash memory memory size minus 4 Kbytes were not totally programmed).

## 4.30 Summary of changes in ST-LinkUpgrade.exe 2.3.26 and STLinkUpgrade.jar 3.0.5

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J25M13.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J25S4.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Enhancement**

- Implementation of retry loops for better behavior in case of noisy SWD communication.

**New features**

- Added support for NUCLEO-F410RB, NUCLEO-F446RE and NUCLEO-L011K4 boards.

- Added support for 32F746GDISCOVERY and 32F469IDISCOVERY boards.

## 4.31 Summary of changes in ST-LinkUpgrade.exe 2.3.24 and STLinkUpgrade.jar 3.0.3

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J24M11.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J24S4.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

### Correction

- Bugfix SWV not working with V2J23Mx firmware on some recent PCs.

### New features

- Provided a command for JTAG clock frequency selection.
- Added support for the management of the 32L053DISCOVERY and 32F3348DISCOVERY boards.
- Added support for STM32F746.

## 4.32 Summary of changes in ST-LinkUpgrade.exe 2.3.21 and STLinkUpgrade.jar 3.0.0

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J23M10.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J23S4.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

### Corrections

- Bugfix: mass storage interface badly connecting on OS X® Yosemite operating system.
- Modification of the flash memory programming algorithm for the STM32F4 Series, STM32F7 Series and STM32L4 Series.
- Added check against the validity of the application, when it is programmed through the mass storage interface (validity algorithm based on Reset and Stack Pointer values in the vector table).
- Set default SWCLK to 4 MHz for better performance.

### New features

- Added support for recent boards (NUCLEO-F070RB, NUCLEO-L073RZ and NUCLEOL476RG).
- Added support for Linux® and Mac OS X® operating systems (see Section 1 for details).

## 4.33 Summary of changes in ST-LinkUpgrade.exe 2.3.16

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J23M6.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J23S4.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

### Corrections

- In the Virtual COM port, suppressed a possible delay in data reception by the host (like a cache-flush issue).
- In the Virtual COM port, suppressed a possible communication failure during data emission by the host, on some USB 3 ports.
- Modified the mass storage interface enumeration after a programming of the target application, reducing the risk to lose the VCP communication during such operation.
- Suppressed one target reset sequence during the power-on sequence.
- Modified SWD communication to reduce the noise generated by SWD signals.

## 4.34 Summary of changes in ST-LinkUpgrade.exe 2.3.14

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J22M5.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J22S4.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**New functionalities**

- Added support for NUCLEO-F411RE.
- Added command for SWCLK frequency selection.

## 4.35 Summary of changes in ST-LinkUpgrade.exe 2.3.11

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J21M5.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J21S4.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Corrections**

- Set NRST pin high, when exiting the firmware update mode.

## 4.36 Summary of changes in ST-LinkUpgrade.exe 2.3.10

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J20M4.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J20S4.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Corrections**

- Suppressed *high-speed device* notification, when plugging to a non-high-speed USB port or to a USB 3 port.
- Keep the Virtual COM port session valid (if any opened), when reprogramming the application.
- Fixed potential lockup condition in SWV trace management and Virtual COM port management.

## 4.37 Summary of changes in ST-LinkUpgrade.exe 2.3.7

- On ST-LINK/V2-1 boards, upgrade firmware to the version V2J19M3.
- On ST-LINK/V2 boards, upgrade firmware to the version V2J19S4.
- On ST-LINK boards, upgrade firmware to the version V1J13S4.

**Correction**

- Fixed the issue about the application sometimes not running after being programmed (STM32Fxx targets, programmed through a *Save As* action with long filename).

## Revision history

Table 2. **Document revision history**

| Date | Revision | Changes |
|---|---|---|
| 13-Feb-2014 | 1 | Initial release. |
| 14-Apr-2014 | 2 | Added content for new version 2.21.4. |
| 02-June-2014 | 3 | Added content for new version 2.21.5. |
| 10-July-2014 | 4 | Added content for new version 2.22.5. |
| 22-Sept-2014 | 5 | Added content for new version 2.23.6. |
| 02-April-2015 | 6 | Added content for new version 2.23.7. |
| 25-May-2015 | 7 | Added content for new version 2.24.11. |
| 09-Nov-2015 | 8 | Added content for new version 2.25.13. |
| 11-Dec-2015 | 9 | Added content for new version 2.25.14. |
| 26-Jan-2016 | 10 | Added content for new version 2.26.15. |
| 07-Mar-2016 | 11 | Added content for new version 2.27.15. |
| 28-Sep-2016 | 12 | Title and content changes to cover the firmware update for ST-LINK, ST-LINK/V2 and ST-LINK/V2-1 boards. |
| 04-Jan-2017 | 13 | Added *Section 2: Changes in ST-LinkUpgrade.exe 2.4.2 and STLinkUpgrade.jar 3.2.2*. |
| 13-Sep-2017 | 14 | Updated *Section 2: Changes in ST-LinkUpgrade.exe 2.4.5 and STLinkUpgrade.jar 3.2.5*. |
| 17-Jan-2018 | 15 | Updated *Section 2: Changes in ST-LinkUpgrade.exe 2.4.8 and STLinkUpgrade.jar 3.2.8*. |
| 26-Mar-2018 | 16 | Updated *Section 2: Changes in ST-LinkUpgrade.exe 2.4.9 and STLinkUpgrade.jar 3.2.9*. |
| 27-Apr-2018 | 17 | Updated *Section 2: Changes in ST-LinkUpgrade.exe 2.4.10 and STLinkUpgrade.jar 3.2.10*. |
| 14-Jun-2018 | 18 | Updated *Section 2: Changes in ST-LinkUpgrade.exe 2.4.11 and STLinkUpgrade.jar 3.2.11*. |
| 27-Sep-2018 | 19 | Updated *Section 2: Changes in ST-LinkUpgrade.exe 2.4.12 and STLinkUpgrade.jar 3.2.12*. |
| 24-Jan-2019 | 20 | Document scope extended to STLINK-V3:<br>• Updated document title and *About this release note*<br>• Updated *Section 1: Host PC system requirements*<br>• Updated *Section 2: Changes in ST-LinkUpgrade.exe 2.5.0 and STLinkUpgrade.jar 3.3.0*<br>• Added STLINK-V3SET entries to *Section 3: Known problems and limitations* |
| 30-Apr-2019 | 21 | Updated *Section 2: Changes in ST-LinkUpgrade.exe 2.5.1 and STLinkUpgrade.jar 3.3.1*. |
| 27-Sep-2019 | 22 | Updated *Section 2: Changes in ST-LinkUpgrade.exe 2.5.2 and STLinkUpgrade.jar 3.3.2*. |
| 30-Jan-2020 | 23 | Updated document format.<br>Updated *Section 2 Change in ST-LinkUpgrade.exe 2.5.3 and STLinkUpgrade.jar 3.3.3* and *Section 3 Known problems and limitations*. |
| 11-May-2020 | 24 | Updated *Section 2 Change in ST-LinkUpgrade.exe 2.5.4 and STLinkUpgrade.jar 3.3.4* and *Section 3 Known problems and limitations*. |
| 07-Jan-2021 | 25 | Updated *Section 2 Change in ST-LinkUpgrade.exe 2.5.5 and STLinkUpgrade.jar 3.3.5*. Updated the software license agreement in *Licensing*. |

| Date | Revision | Changes |
|---|---|---|
| 06-May-2021 | 26 | Updated *Section 2 Change in ST-LinkUpgrade.exe 2.5.6 and STLinkUpgrade.jar 3.3.6*. Updated *Section 3 Known problems and limitations*. |
| 17-Nov-2021 | 27 | Updated *Section 2 Change in ST-LinkUpgrade.exe 2.5.7 and STLinkUpgrade.jar 3.3.7*. Updated *Section 3 Known problems and limitations*. Updated *Section 1 Host PC system requirements*. |
| 12-Jun-2022 | 28 | Updated *Section 2 Change in ST-LinkUpgrade.exe 2.6.0 and STLinkUpgrade.jar 3.4.0*. Updated *Section 3 Known problems and limitations*. |
| 10-Mar-2023 | 29 | Updated *Section 2 Change in ST-LinkUpgrade.exe 3.11.3 and STLinkUpgrade.jar 3.11.3*. Added *ST-LINK firmware naming rules*. |
| 23-Mar-2023 | 30 | Updated *Section 2 Change in ST-LinkUpgrade.exe 3.12.3 and STLinkUpgrade.jar 3.12.3*. |
| 24-Jul-2023 | 31 | Updated *Section 2 Change in ST-LinkUpgrade.exe 3.13.4 and STLinkUpgrade.jar 3.13.4*. |
| 16-Jan-2024 | 32 | Updated *Section 2: Change in ST-LinkUpgrade.exe 3.14.5 and STLinkUpgrade.jar 3.14.5*. |
| 04-Apr-2024 | 33 | Updated *Section 2: Change in ST-LinkUpgrade.exe 3.15.6 and STLinkUpgrade.jar 3.15.6*. |
| 05-Jul-2024 | 34 | Updated *Section 2: Change in ST-LinkUpgrade.exe 3.15.7 and STLinkUpgrade.jar 3.15.7*. |
| 10-Jan-2025 | 35 | Updated *Section 2: Change in ST-LinkUpgrade.exe 3.16.7 and STLinkUpgrade.jar 3.16.7*. |
| 23-Apr-2025 | 36 | Updated *Section 2: Change in ST-LinkUpgrade.exe 3.16.8 and STLinkUpgrade.jar 3.16.8*. Reorganized *Section 3: Known problems and limitations*. |
| 04-Jul-2025 | 37 | Updated *Section 2: Change in ST-LinkUpgrade.exe 3.16.9 and STLinkUpgrade.jar 3.16.9*. |
| 11-Dec-2025 | 38 | Updated Section 2: Change in ST-LinkUpgrade.exe 3.17.10 and STLinkUpgrade.jar 3.17.10. |

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