# GNU tools for STM32 patch list

| Patch | Description | Affected component | Category | Use case | Affects target binary? |
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| Fix for long path issues on Windows | Windows has a limit of the number of characters in paths to files. This fix allows up to 248 characters in paths to GCC tool chain binaries and up to 4096 chars for all files processed by the GCC tools. Without the patch the latter limit is about 150 characters. | gcc, make, busybox | OS limitation | Run gcc, make, busybox | No |
| Provide newlib string function compatible with all platforms | Adds aliases for **newlib** string functions. Enables the functions to be called on all target platforms without changing the target source code. Useful for unit testing of target source code on Windows. | newlib | Target platform compatibility | Execution and unit test of target binary | No |
| Provide compatibility with IAR EW projects | Adds pre-processor symbol __FILE_NAME__ which is used in IAR EW. Will be required for import of IAR EW projects. | gcc | IAR EW project compatibility | Import of IAR EW project | No |
| Enable debugging of functions in target libraries libg or libg_nano | Updates the GCC build scripts for libg and libg_nano in **newlib**, so that debug symbols are not stripped. | newlib | Debug limitation | Debug of target binary | No |
| Correct stack usage for functions with inline assembler | Required by Stack Analyzer advanced debug function in CubeIDE. | gcc | Debug limitation | Debug of target binary | No |
| Reduce newlib code size by 10-30% | Updates the GCC build scripts for **newlib** to use -Os instead of -O2. Beneficial in most embedded projects. | newlib | Code size | Build and load target binary | Yes, reduced flash size |
| Enable user config of malloc() pagesize in newlib | Provides the ability to set the page size used when allocating memory in malloc(). Done by implementing sysconfig. Without the fix, the default page size is 4 Kbyte which may consume a lot memory in some applications. Applies to the build of the C standard library **newlib**. | newlib | Data size | Build and execute target binary | Yes, reduced RAM size |

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| Prepare for calculation of cyclomatic complexity | Provides the ability to calculate cyclomatic complexity of the target source code processed by GCC. The patch is available in the GCC code base. It is a preparation for future added functionality in CubeIDE. | gcc | Functional enhancement | Calculations of cyclomatic complexity of target source code | No |
| Include librdimon-v2m.a in delivery for both newlib variants | Support rdimon on Cortex-A by including librdimon-v2m.a for the newlib nano | newlib | Code size | Support newlib nano version of library | Yes, reduced flash size |
| Correctly mark returned block as used | The malloc() function in newlib-nano did not properly mark allocated block as used under certain conditions. Fixed. | newlib | Functional enhancement | Build and execute target binary | Yes |
| Generate _newlib_version.h | Solves GCC11 regression issue with _newlib_version.h not containing valid C expressions. | newlib | Thread safety | Build and execute target binary | Yes |
| Added -nostdlibc++ | Added flag to disable linkage of libstdc++ | gcc | Code size | Build and execute target binary | Yes |
| Improve stack unwinding for Cortex-M targets in GDB | Solves some of the issues unwinding the stack on Cortex-M33 with TrustZone enabled. | gdb | Debug limitation | Run gdb | No |