



Release Note for Arm GNU-A Toolchain

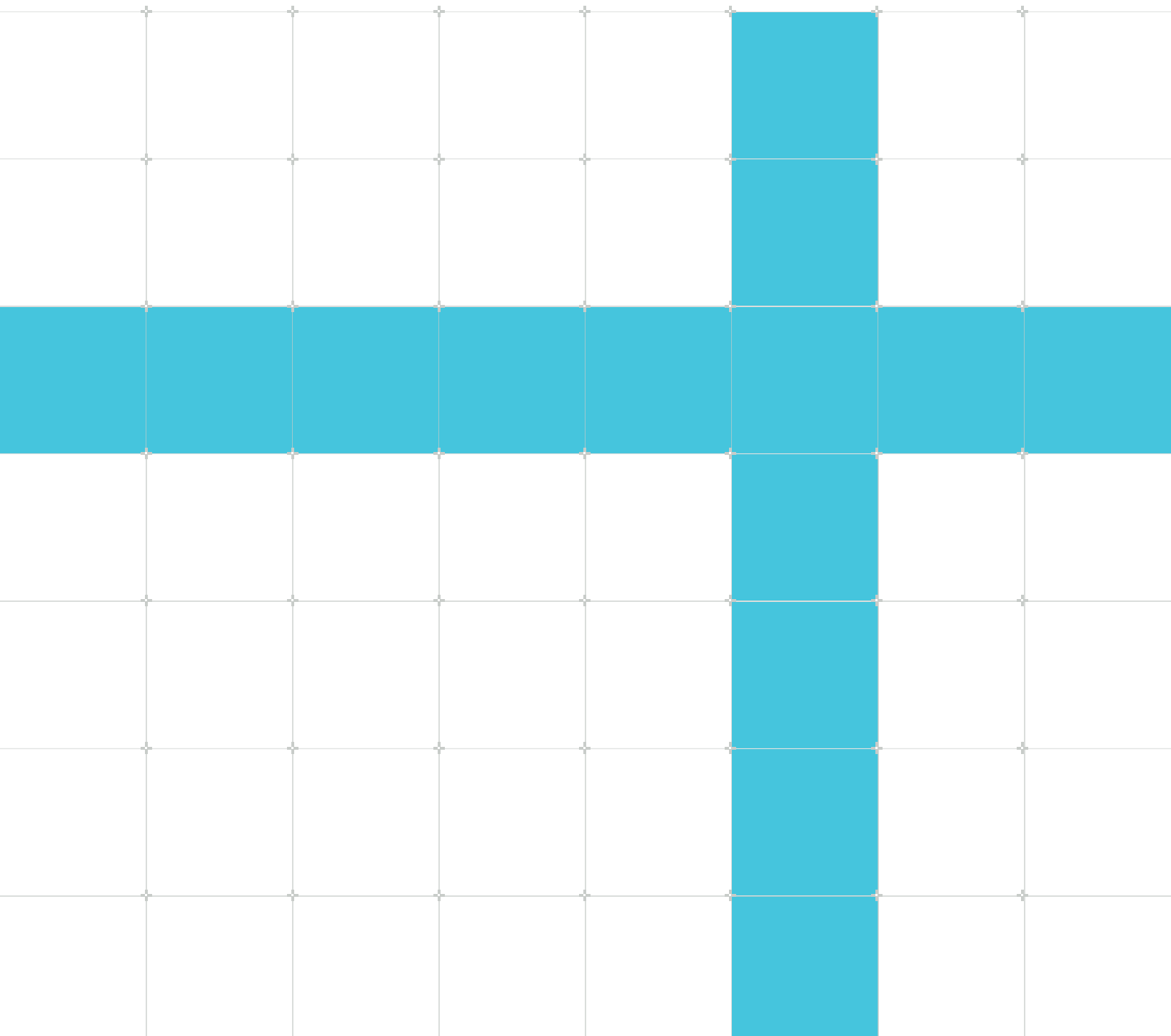
10.3-2021.07

Non-Confidential

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Issue 01

109388_10.3-2021.07_01_en



Release Note for Arm GNU-A Toolchain

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Release information

Document history

Issue	Date	Confidentiality	Change
10.3_2021.07-01	29 July 2021	Non-Confidential	10.3-2021.07 release
10.2_2020.11-01	27 November 2020	Non-Confidential	10.2-2020.11 release
9.2_2019.12-01	19 December 2019	Non-Confidential	9.2-2019.12 release
8.3_2019.03-01	29 March 2019	Non-Confidential	8.3-2019.03 release
8.3_2019.02-01	4 March 2019	Non-Confidential	8.3-2019.02 release
8.2_2019.01-01	15 January 2019	Non-Confidential	8.2-2019.01 release
8.2_2018.11-01	23 November 2018	Non-Confidential	8.2-2018.11 release
8.2_2018.08-01	31 August 2018	Non-Confidential	8.2-2018.08 release

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1. Release Note for Arm GNU-A Toolchain 10.3-2021.07

Version 10.3-2021.07. Released July 29, 2021.

Description

GNU 10.3 cross-toolchain for the A-profile processors

Features

This release includes the following features:

- Based on GCC 10.3 (See <https://gcc.gnu.org/gcc-10/changes.html> for details).
- Supported targets on Windows(x86_64): AArch64 (bare-metal and Linux), AArch32 (bare-metal, Linux hard-float)
- Supported targets on Linux(x86_64): AArch64 (bare-metal, Linux, Linux big-endian), AArch32 (bare-metal, Linux hard-float)
- Supported targets on Linux(AArch64): AArch64 (bare-metal), AArch32 (bare-metal, Linux hard-float)

Changes since Arm release GCC 10.2-2020.11

This release contains the following changes since Arm release GCC 10.2-2020.11:

- Bumped binutils to version 2.36.1.
- Bumped glibc to version 2.33.
- Bumped newlib to a version from May 2021.
- Fixed the security vulnerability described in <https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2021-3420>.
- The toolchain executables for Windows host are signed with SHA2.
- Fixed issue https://sourceware.org/bugzilla/show_bug.cgi?id=25235 where forward-referencing ADR instructions were generating wrong offsets in Thumb code.
- Fixed issue https://gcc.gnu.org/bugzilla/show_bug.cgi?id=95253 where the toolchain on Windows host generated incorrect paths in the output dependency file.
- Fixed issue https://gcc.gnu.org/bugzilla/show_bug.cgi?id=97236 where wrong code might be generated for Aarch64 targets when using -O3 optimization.
- Fixed an issue where files opened in binary mode on AArch64 might be incorrectly handled.

Content

This release includes the following items:

GCC 10.3	Repository: git://gcc.gnu.org/git/gcc.git Revision: 098ef5a86d3547127be59aa0f8da7725f4121864 Release note Sources provided in release source tar ball.
glibc 2.33	Repository: git://sourceware.org/git/glibc.git Revision: 58b90461ae100c95e0bc53d29d2187bad290ecaf Release note
binutils 2.36.1	Repository: git://sourceware.org/git/binutils-gdb.git Revision: a7eb3ff36cebc093af6658049e03d63579dade86 Release note
GDB 10.2	Repository: git://sourceware.org/git/binutils-gdb.git Revision: abbf09189720ddc14fe71d0afdfa7653b8c67b5d GDB-with-python support for Python 2.7.6 (x86_64 builds). GDB-with-python support for Python 2.7.13 (mingw-w64-i686 builds). Release note
libexpat 2.2.5	Repository: https://github.com/libexpat/libexpat.git Revision: Release note
Linux Kernel	Repository: git://git.kernel.org/pub/scm/linux/kernel/git/stable/linux-stable.git Revision: v4.20.13 Release note
libgmp 4.3.2 libisl 0.15 libmpfr 3.1.6 libmpc 1.0.3 libiconv 1.15	Sources provided in release source tar ball.

Known dependencies

Known dependencies are as follows:

- GDB's Python support requires Python compiled with UCS-4 support (built with `-enable-unicode=ucs4`) for Linux (x86_64) and Windows hosts.
- GDB's Python support requires [Python DLL dependencies](#) for Windows host.
- Toolchains dedicated for Windows host require [mingw-w64 library](#), a complete runtime environment for GCC.

- The following executables in the Windows hosted toolchains:
 - aarch64-none-linux-gnu-dwp.exe
 - aarch64-none-linux-gnu-ld.gold.exe
 - arm-none-linux-gnueabi-hf-dwp
 - arm-none-linux-gnueabi-hf-ld.gold.exe

have additional dependencies on the following dlls:

- libwinpthread-1.dll
- libgcc_s_sjlj-1.dll
- libstdc++-6.dll
- libgcc_s_dw2-1.dll

You can obtain the required dlls from the MinGW-W64 GCC-8.1.0 packages from [SourceForge](https://sourceforge.net/projects/mingw-w64/):

- i686-posix-sjlj
- i686-posix-dwarf

The GNU Toolchains

The package names of the released GNU toolchain binaries have the following naming convention:

```
gcc-arm-<Release Version>-<Host>-<Target Triple>.tar.xz
```

Toolchain Package Name	Host OS	Target Description
gcc-arm-10.3-2021.07-aarch64-aarch64-none-elf.tar.xz	AArch64 Linux	AArch64 ELF bare-metal target.
gcc-arm-10.3-2021.07-aarch64-arm-none-eabi.tar.xz	AArch64 Linux	AArch32 bare-metal target.
gcc-arm-10.3-2021.07-aarch64-arm-none-linux-gnueabi-hf.tar.xz	AArch64 Linux	AArch32 target with hard float.
gcc-arm-10.3-2021.07-mingw-w64-i686-arm-none-eabi.tar.xz	Windows	AArch32 bare-metal target.
gcc-arm-10.3-2021.07-mingw-w64-i686-aarch64-none-elf.tar.xz	Windows	AArch64 ELF bare-metal target.
gcc-arm-10.3-2021.07-mingw-w64-i686-arm-none-linux-gnueabi-hf.tar.xz	Windows	AArch32 target with hard float.
gcc-arm-10.3-2021.07-mingw-w64-i686-aarch64-none-linux-gnu.tar.xz	Windows	AArch64 GNU/Linux target.
gcc-arm-10.3-2021.07-x86_64-aarch64-none-elf.tar.xz	x86_64 Linux	AArch64 ELF bare-metal target.
gcc-arm-10.3-2021.07-x86_64-aarch64-none-linux-gnu.tar.xz	x86_64 Linux	AArch64 GNU/Linux target.
gcc-arm-10.3-2021.07-x86_64-aarch64_be-none-linux-gnu.tar.xz	x86_64 Linux	AArch64 GNU/Linux big-endian target.
gcc-arm-10.3-2021.07-x86_64-arm-none-eabi.tar.xz	x86_64 Linux	AArch32 bare-metal target.
gcc-arm-10.3-2021.07-x86_64-arm-none-linux-gnueabi-hf.tar.xz	x86_64 Linux	AArch32 target with hard float.

Host requirements

The host requirements are as follows:

Description	Requirement	Host OS identifier in the toolchain package name
Linux on 64-bit Arm (AArch64)	These toolchains are built on and for Ubuntu 18.04 on AArch64, and will likely also be useable on OS versions: - later than Ubuntu 18.04 - RHEL8	aarch64

Description	Requirement	Host OS identifier in the toolchain package name
Windows on 64-bit x86 (x86_64)	Windows 10	mingw-w64-i686
Linux on 64-bit x86 (x86_64)	These toolchains are built on and for RHEL7 on x86_64, and will likely also be useable on OS versions: - RHEL8 - Ubuntu 14.04 or later	x86_64

Released files

This release contains the following files:

gcc-arm-*.tar.xz	Toolchain binaries
gcc-arm-src-snapshot-*.tar.xz	Toolchain sources
gcc-arm-src-snapshot-*.manifest.txt	Text manifest file with list of remote repositories for toolchain
gcc-arm-*.abe-manifest.txt	Input files for Linaro ABE build system.
*.asc	MD5 checksum files for sources and binaries

Installation instructions

Extract XZ compressed release archive using TAR archiving utility:

```
$ tar -xJf <toolchain binary> -C <destination directory>
```

```
Example for Linux(x86_64) hosted for AArch64 Linux target
$ tar -xJf gcc-arm-10.3-2021.07-x86_64-aarch64-linux-gnu.tar.xz -C /path/to/
destination/directory
```

Compute and check MD5 checksum of XZ compressed release archives using md5sum utility:

```
$ md5sum --check gcc-arm-10.3-2021.07-x86_64-aarch64-linux-gnu.tar.xz.asc
gcc-arm-10.3-2021.07-x86_64-aarch64-linux-gnu.tar.xz: OK
```

The prebuilt binary bundles can be un-tarred and executed in place. Assuming a RHEL6 host. Unpack the Linux cross toolchain:

```
$ mkdir install-lnx
$ tar x -C install-lnx -f <filename>.tar.xz
$ PATH=`pwd`/install-lnx/<filename>/bin:$PATH
```

Known issues

This release has the following known issues:

- When you decompress the windows packages, the decompression requests permission to overwrite certain files. This is because the files have similar names with different case, which are treated as identical names on a Windows host. You can choose to overwrite the files with identical names.

- When using the toolchains dedicated for the Windows host, if you invoke the compiler from the installed toolchain's bin directory and you use the `-flto` option without using the `-c` option, then the linker generates this error message:

```
error: lto-wrapper failed
collect2.exe: error: ld returned 1 exit status
```

To avoid this error message, you must invoke the compiler from any directory other than the installed toolchain's bin directory.

Ask questions

For any questions, please use the [Arm Communities forums](https://community.arm.com/developer/tools-software/tools) (<https://community.arm.com/developer/tools-software/tools>).

Report bugs

Please report any bugs via the [Linaro Bugzilla](https://bugs.linaro.org/) (<https://bugs.linaro.org/>).