Release Note for GNU Arm Embedded Toolchain

9-2020-q2-update

Issue 2020-q2-update
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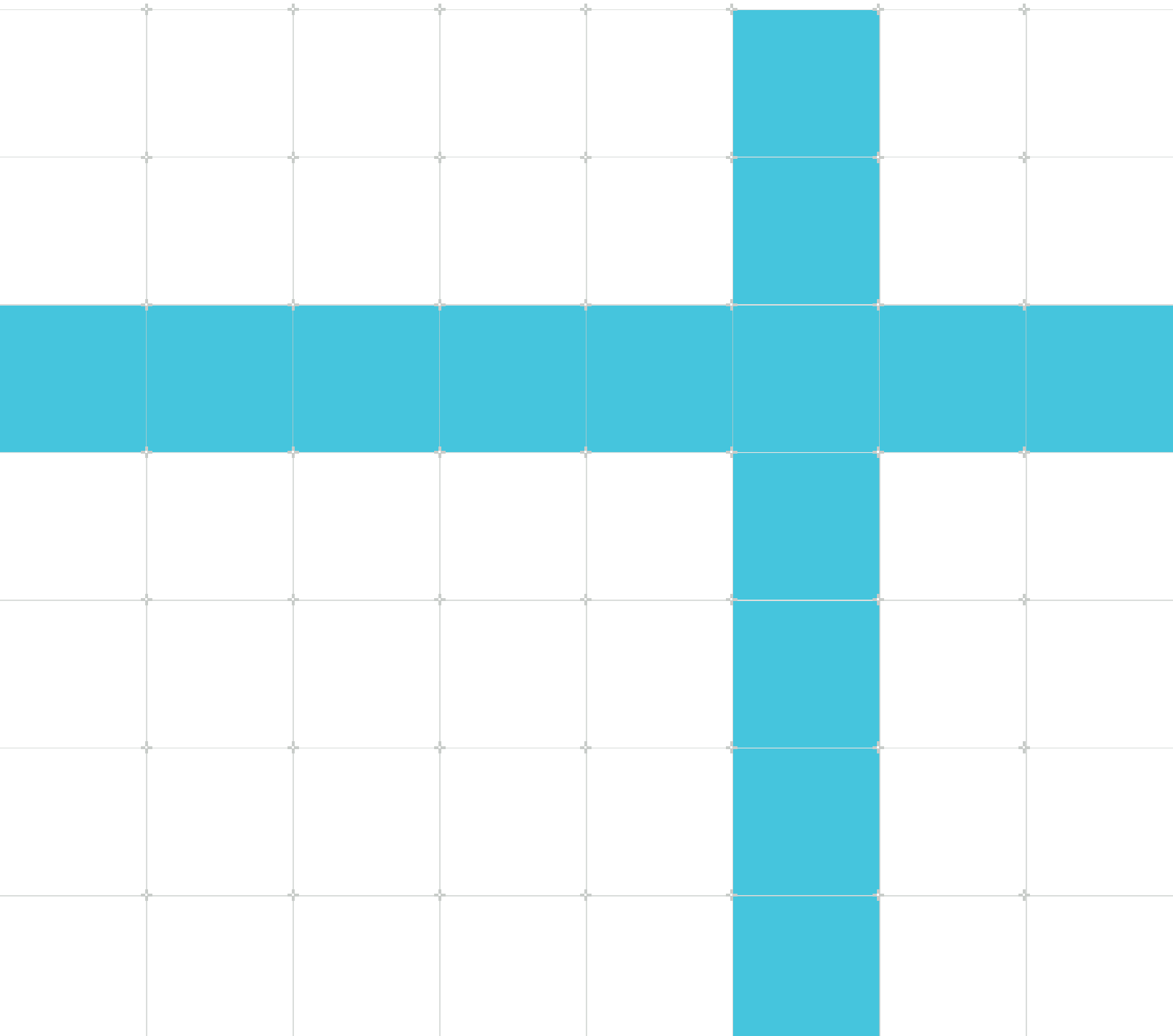

Release Note for GNU Arm Embedded Toolchain

Release information

Document history

Issue	Date	Confidentiality	Change
9-2020-q2-update	30 June 2020	Non-Confidential	9-2020-q2-update Release
10-2020-q2-preview	29 June 2020	Non-Confidential	10-2020-q2-preview Release
9-2019-q4-major	6 November 2019	Non-Confidential	9-2019-q4-major Release
8-2019-q3-update	10 July 2019	Non-Confidential	8-2019-q3-update Release
8-2018-q4-major	20 December 2018	Non-Confidential	8-2018-q4-major Release
7-2018-q2-update	27 June 2018	Non-Confidential	7-2018-q2-update Release
7-2017-q4-major	18 December 2017	Non-Confidential	7-2017-q4-major Release
6-2017-q2-update	28 June 2017	Non-Confidential	6-2017-q2-update Release
6-2017-q1-update	23 February 2017	Non-Confidential	6-2017-q1-update Release
6-2016-q4-major	21 December 2016	Non-Confidential	6-2016-q4-major Release
5-2016-q3-update	28 September 2016	Non-Confidential	5-2016-q3-update Release
5-2016-q2-update	27 June 2016	Non-Confidential	5-2016-q2-update Release
5-2016-q1-update	4 April 2016	Non-Confidential	5-2016-q1-update Release

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Contents

1. Release Note for GNU Arm Embedded Toolchain 9-2020-q2-update

Release notes for GNU Arm Embedded Toolchain 2020-q2-update

This release includes bare metal pre-built binaries for AArch32 EABI targets, which can be hosted on:

- Windows 10 or later on 32/64-bit architecture
- Linux
  - on AArch64 (RHEL 7, Ubuntu 14.04 or later)
  - on x86_64 (RHEL 7, Ubuntu 16.04 or later)
- Mac OS X 10.14 or later on 64-bit architecture

For Windows, the binaries are provided with an installer and as a zip file.

For Linux, the binaries are provided as tarball files.

For Mac OS X, the binaries are provided as tarball and pkg files.

The release also contains source code package (together with build scripts and instructions to setup the build environment), which is composed of:

- gcc : refs/vendors/ARM/heads/arm-9-branch git://gcc.gnu.org/git/gcc.git commit 13861a80750d118fbdca6006ab175903bacbb7ec
- binutils : binutils-2_34-branch git://sourceware.org/git/binutils-gdb.git commit f75c52135257ea05da151a508d99fbaee1bb9dc1
- newlib and newlib-nano : newlib-3.3.0 git://sourceware.org/git/newlib-cygwin.git commit 6d79e0a58866548f435527798fbd4a6849d05bc7
- gdb : gdb-8.3-branch git://sourceware.org/git/binutils-gdb.git commit fc94da0a253e925166bbb1a429c190200dc5778d

Note that some or all of the following prerequisites are downloaded when building from source:

- EnvVarUpdate NSIS script : http://nsis.sourceforge.net/mediawiki/images/a/ad/EnvVarUpdate.7z
- expat 2.1.1 : https://downloads.sourceforge.net/project/expat/expat/2.1.1/expat-2.1.1.tar.bz2
- gmp 6.1.0 : https://gmplib.org/download/gmp/gmp-6.1.0.tar.bz2
- isl 0.18 : http://isl.gforge.inria.fr/isl-0.18.tar.xz
- libelf 0.8.13 : https://fossies.org/linux/misc/old/libelf-0.8.13.tar.gz
- libiconv 1.15 : https://ftp.gnu.org/pub/gnu/libiconv/libiconv-1.15.tar.gz
- mpc 1.0.3 : ftp://ftp.gnu.org/gnu/mpc/mpc-1.0.3.tar.gz
- mpfr 3.1.4 : http://www.mpfr.org/mpfr-3.1.4/mpfr-3.1.4.tar.bz2

- python 2.7.7 : https://www.python.org/ftp/python/2.7.7/python-2.7.7.msi
- zlib 1.2.8 : http://www.zlib.net/fossils/zlib-1.2.8.tar.gz

Features:

- All GCC 9.3.1 features, plus latest mainline features

Tests:

- Targets:
  - Variety of Cortex-M0/M0+/M3/M4/M7/A9 boards
  - Qemu
  - Arm Fast Models

Notable changes in 2020-q2-update release:

- Bumped binutils to version 2.34.
- Bumped newlib to version 3.3.0.
- Fixed https://bugs.launchpad.net/gcc-arm-embedded/+bug/1848002

  Parallel builds fail on Windows due to bug in MinGW-w64 used to build binutils.
- Fixed https://community.arm.com/developer/tools-software/tools/f/arm-compilers-forum/46294/macos-objdump-reading-section-bss-failed-because-memory-exhausted

  objdump: Reading section .bss failed because: memory exhausted.
- Fixed https://gcc.gnu.org/bugzilla/show_bug.cgi?id=93188

  Fix rmprofile multilibs when architecture includes +mp or +sec.
- Fixed https://bugs.launchpad.net/gcc-arm-embedded/+bug/1415310

  Extend the –skip_steps to enable skipping the target library strip step.
- Additional v7-a multilib directories:
  - thumb/v7-a+fp/softfp
  - thumb/v7-a+fp/hard
  - thumb/v7-a+simd/softfp
  - thumb/v7-a+simd/hard
  - thumb/v7-a/nofp
- Additional v7ve multilib directories:
  - thumb/v7ve+simd/softfp
  - thumb/v7ve+simd/hard
- Additional v8-a multilib directories:
  - thumb/v8-a/nofp
  - thumb/v8-a+simd/softfp

    - thumb/v8-a+simd/hard

Known issues:

- Doing IPA on CMSE generates a linker error:

  The linker will error out when resulting object file contains a symbol for the clone function with the __acle_se prefix that has a non-local binding.

  Issue occurs when compiling binaries for M-profile Secure Extensions where the compiler may decide to clone a function with the cmse_nonsecure_entry attribute.

  Although cloning nonsecure entry functions is legal, as long as the clone is only used inside the secure application, the clone function itself should not be seen as a secure entry point and so it should not have the __acle_se prefix.

  A possible work around for this is to add a ‘noclone’ attribute to functions with the ‘cmse_nonsecure_entry’. This will prevent GCC from cloning such functions.