



Release Note for GNU Arm Embedded Toolchain

6-2017-q2-update

Non-Confidential

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Release Note for GNU Arm Embedded Toolchain

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Release information

Document history

Issue	Date	Confidentiality	Change
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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1. Release Note for GNU Arm Embedded Toolchain 6-2017-q2-update

Release notes for GNU Tools for ARM Embedded Processors 6 - Q2 2017

This release includes the following items:

- Bare metal EABI pre-built binaries for running on a Windows host
- Bare metal EABI pre-built binaries for running on a Linux host
- Bare metal EABI pre-built binaries for running on a Mac OS X host
- Source code package (together with build scripts and instructions to setup build environment), composed of:
 - gcc : ARM/embedded-6-branch revision 249437 svn://gcc.gnu.org/svn/gcc/branches/ARM/embedded-6-branch/
 - binutils : 2.28 git://sourceware.org/git/binutils-gdb.git commit c0a558756bcf42dc2554aa778b84bf6e13232819
 - newlib and newlib-nano : git://sourceware.org/git/newlib-cygwin.git commit 0d79b021a4ec4e6b9aa1a9f6db0e29a137005ce7
 - gdb : 7.12 without target sim support git://sourceware.org/git/binutils-gdb.git commit 17265fcd6b8b6406821d8e6bdcfbb4760bdf28aa

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 : <http://jaist.dl.sourceforge.net/project/expat/expat/2.1.1/expat-2.1.1.tar.bz2>
- gmp 6.1.0 : <ftp://gcc.gnu.org/pub/gcc/infrastructure/gmp-6.1.0.tar.bz2>
- isl 0.15 : <ftp://gcc.gnu.org/pub/gcc/infrastructure/isl-0.15.tar.bz2>
- libelf 0.8.13 : <http://www.mr511.de/software/libelf-0.8.13.tar.gz>
- libiconv 1.14 : <http://ftp.gnu.org/gnu/libiconv/libiconv-1.14.tar.gz>
- mpc 1.0.3 : <ftp://gcc.gnu.org/pub/gcc/infrastructure/mpc-1.0.3.tar.gz>
- mpfr 3.1.4 : <ftp://gcc.gnu.org/pub/gcc/infrastructure/mpfr-3.1.4.tar.bz2>
- python 2.7.13 : <https://www.python.org/ftp/python/2.7.13/python-2.7.13.msi>
- zlib 1.2.8 <http://sourceforge.net/projects/libpng/files/zlib/1.2.8/zlib-1.2.8.tar.gz/download>

Supported hosts:

- Windows 7 32/64 bits (with installer and alternative zip package)
- Linux 64 bits
 - Ubuntu 14.04 or later (tarball)

- Ubuntu 14.04/16.04/16.10 (tarball and PPA)
- RHEL 7 (tarball)
- Mac OS X 10.7.3 and newer 64 bits (tarball)

Supported target OS:

- Bare metal EABI only

Features:

- All GCC 6 features, plus latest mainline features:
 - Full ARMv8-M support including atomics and Security Extensions
 - ARM PURECODE support for ARMv7-M and ARMv8-M Baseline and Mainline
 - Co-processor intrinsics support
 - Cortex-M23 and Cortex-M33 support
 - -mthumb optional for Cortex-M devices
- Support for OS-retargeting of locking routines in newlib
- Advanced SIMD-optimized memchr implementation in newlib
- Enable setting options for Windows installer on command line

Tests:

- Tested on a variety of Cortex-M0/M0+/M3/M4/M7/A9 boards
- Tested on Qemu
- Tested on ARM Fast Models

Important bugs fixed in 6 release:

- Fix redundant load in loop
<https://answers.launchpad.net/gcc-arm-embedded/+question/259553>
- Fixed stack corruption when using high registers and LR register
https://gcc.gnu.org/bugzilla/show_bug.cgi?id=77933
- Fixed internal compiler error when compiling empty FIQ interrupt handler
<https://bugs.launchpad.net/gcc-arm-embedded/+bug/1454506>
- Fix internal compiler error with LTO when building g++.dg/lto/20081219 testcase
- Fixed callee-saved register trashing when clobbering SP register
https://gcc.gnu.org/bugzilla/show_bug.cgi?id=77904
- Fixed internal compiler error when using -mslow-flash-data and floating-point operations
https://gcc.gnu.org/bugzilla/show_bug.cgi?id=71607

- Fixed wrong code generation with indirect sibbling calls

<https://bugs.launchpad.net/gcc-arm-embedded/+bug/1616992>

- Fixed spurious code removal

https://gcc.gnu.org/bugzilla/show_bug.cgi?id=78617

Important bugs fixed in 6 update 1 release:

- Fix Mac GDB crash with invalid commands

<https://bugs.launchpad.net/gcc-arm-embedded/+bug/1655778>

- Fix Windows wildcard support
- Fix selection of newlib.h variant with nano.specs and g++

<https://bugs.launchpad.net/gcc-arm-embedded/+bug/1661882>

- Allow VCMP immediate without prefix in unified syntax

<https://bugs.launchpad.net/gcc-arm-embedded/+bug/1641333>

Important changes in 6 update 2 release:

- GCC incorrectly assumes Cortex-r[578] have 64-bit single-copy atomic LDRD

https://gcc.gnu.org/bugzilla/show_bug.cgi?id=80082

- LDR pseudo-op generates MOVS

<https://bugs.launchpad.net/gcc-arm-embedded/+bug/1682620>

- Fixed FPSCR getter and setter builtins
- SG import libraries that were created as executable now fixed to relocatable
- Enable setting options for Windows installer on command line
- PURECODE support enabled for ARMv8-M.Baseline
- Advanced SIMD-optimized memchr implementation in newlib

Known Changes and Issues:

- Thumb1 code size regression due to new register allocation:

https://gcc.gnu.org/bugzilla/show_bug.cgi?id=59535

- Multilib is now enabled with `-with-multilib-list=rmprofile` when building the toolchain from source