Release Notes: GCC 4.9.2.201703-GNURL78

2nd of October, 2017

CyberThor Studios Ltd. is releasing the GCC 4.9.2.201703-GNURL78, a cross compiler tool for Renesas RL78 micro-controllers.

SALIENT FEATURES

The GCC 4.9.2.201703-GNURL78 toolchain is based on:

- GCC 4.9.2 [released]
- Binutils 2.24 [released]
- Newlib 2.2.0 [released]
- GDB 7.8.2 [released]

The latest patches are applied to GCC, Binutils and Newlib sources.

ABOUT GCC 4.9.2.201703-GNURL78

Release Version:	GCC 4.9.2.201703-GNURL78
Release Date:	2nd of October, 2017
Platforms Supported:	Red Hat GNU/Linux v8.0 or later (or compatible distribution) Windows XP or later
Language:	C, C99, C++
Targets:	G1X, I1X, D1X, LIN MCP, F1X, and L1X
Object File Format:	ELF

CHANGES IN THE GCC 4.9.2.201703-GNURL78

This section describes the fixes made in the GCC 4.9.2.201703-GNURL78 release.

GCC/Binutils:

1. *[Improvement]* New register allocator has been added to RL78 target (*-mrl78reg-alloc*)
2. *[Improvement] objdump* improved to display the multiplication/division registers by their name instead of their memory-mapped addresses.
3. *[Improvement]* The following patterns were added for G10, G13 and G14 cores - *udivmodqi4, udivhi3, umodhi3, udivmodhi4, divhi3, modhi3, divmodhi4, udivsi3, umodsi3, divsi3, modsi3*
4. *[Improvement]* Stack protector has been added for the RL78 target.
5. *[Improvement]* Implemented aliases for *-mcpu=g10,g13,g14* to resemble the manual (s1,s2,s3)
6. *[Improvement]* Implemented *MOVE_BY_PIECES_P, SET_BY_PIECES_P and STORE_BY_PIECES_P* for better code size.
7. *[Bug Fix]* Fixed the generation of "es:" before the sfr address.
8. *[Bug Fix]* Fixed:
   mov [de],#IMM is interpreted now as *mov [de+0],#IMM*
   mov [hl],#IMM is interpreted now as mov *[hl+0],#IMM*
9. *[Bug Fix]* Fixed the behavior of *lo16, hi16, hi8* local symbols to resemble *lo16, hi16, hi8* global symbols
10. *[Bug Fix]* Fixed the precision error on floating-point addition.
11. *[Bug Fix]* Fixed compile error on accessing *sfr* with *__far* pointer.
12. *[Bug Fix]* Stack pointer arithmetic operations prohibited from modifying CPU flags
13. *[Bug Fix]* Corrected updating of the debug information when using new register allocator.
14. *[Bug Fix]* Corrected the save/restore of multiply registers in interrupts.
15. Optimized libgcc signed/unsigned *div/mod*

INSTALLER and RPM:

- The GCC 4.9.2.201703-GNURL78 Installer onwards supports the 'Custom Installation' and 'Default Installation' modes. The 'Default Installation' mode is set by default where the tools are installed into the default location at "C:\Program Files\GCC 4.9.2.201703-GNURL78" and the user's username and activation key are silently accepted if cached in the registry.

Notes:

This installer does not provide an option to integrate the GNURL78 toolchain with e2 studio, as the e2 studio IDE will automatically detect the GNURL78 toolchain installation on start-up for integration. Alternatively, you may use the 'Toolchain Management' feature in e2 studio to achieve this.

For details on e2 studio please visit the following link below:
http://www.renesas.com/products/tools/ide/ide_e2studio/index.jsp

There is no support in this installer to integrate toolchain with the HEW IDE.

KNOWN ISSUES IN GCC 4.9.2.201703-GNURL78

This section describes all known issues for this particular release:

1. GDB Issue - Stepover behaves as Stepin on certain function calls.
   The problem is present on *-O0* optimization due to adjustments to the stack (add/sub).

FREE SUPPORT FOR GCC 4.9.2.201703-GNURL78

For free technical support, please register at
https://gcc-renesas.com

For your feedback and suggestions, please visit
https://gcc-renesas.com/help/contact-us/