RELEASE NOTES: GNURL78 v13.02 MAINTENANCE PACK 1

18th October 2013

KPIT Cummins Infosystems Limited is releasing the GNURL78 v13.02 (MP1), a cross compiler tool for Renesas RL78 micro-controllers.

RL78 is a new micro-controller family to deliver solutions for Next-Generation 8-/16-bit embedded applications. To know more about RL78 micro-controller family, please visit the following link,
http://www.renesas.com/press/news/2010/news20101117.jsp

SALIENT FEATURES:

1. The GNURL78 v13.02 (MP) toolchain is based on
    GCC 4.8.0 [snapshot dated 19th December 2012],
    Binutils 2.23.51 [snapshot dated 19th December 2012],
    Newlib 1.20.0 [snapshot dated 19th December 2012] and
    GDB 7.5 [snapshot dated 19th December 2012].

2. This release includes enhancement in interrupt code size, and support naked attribute so that users can write their own mixed C/assembler interrupt handlers.

3. The RL78 toolchain now supports hardware multiply instruction for the G13 and G14 targets in character and short data types. The previous version only supported long (32-bit) data type.

ABOUT RL78 v13.02 :

Release Version:	GNURL78 v13.02 (MP1)
Release Date:	18th October 2013
Platforms Supported	Red Hat GNU/Linux v8.0 or later (or compatible distribution) Windows XP, Windows 7 (32 and 64 bit)
Language:	C, C99, C++
Targets	G1X, I1X, D1X, LIN MCP, F1X, and L1X.
Object File Format	ELF

CHANGES IN THIS MAINTENANCE PACK:

This section describes the fixes made in the GNURL78-ELF v13.02 maintenance pack 1 release.

1. GNURL78 toolchain gives below assembler error with optimization
    for certain testcases.
    Error:
    ```
    /tmp/ccUN1i9h.s: Assembler messages:
    /tmp/ccUN1i9h.s:38: Error: value of 258 too large for field of 1 bytes at
    12
    ```
    This issue has been fixed.

2. The RL78 toolchain assembler generated warning for certain testcases while creating 16 bit branch table by using the ".hword" and "%lo16" keyword.
   ```
   test.S: Assembler messages:
   test.S:7: Warning: value 0xf0a80 truncated to 0xa80
   ```

   These warnings are now converted to errors.

CHANGES IN THIS RELEASE:

This section describes the enhancements made and the issues fixed in v13.02 release.

1. RL78 toolchain generates ICE (internal compiler error) while compiling "s_remquo.c" file of Newlib source without any optimization (O0).

   This issue has now been fixed.

2. The RL78 toolchain assembler generates error while creating 16 bit branch table by using the ".hword" and "%lo16" keyword

   This issue has now been fixed.

3. The GNURL78 toolchain generates Internal Compiler error when optimization is used along with the __far keyword.

   This issue has now been fixed.

4. The GNURL78 toolchain generated incorrect results for G13 hardware multiply instruction in certain scenarios.

   This issue has now been fixed.

5. The rl78-elf-libgen utility used for creating user libraries was crashing in certain scenarios on Windows 7 systems.

   This issue has now been fixed.

KNOWN LIMITATIONS:

This section describes the known limitations in this release. We intend to fix these limitations in our future releases.

1. The RL78 toolchain generates incorrect instructions when the '.rodata. section is not placed in the mirror area. The default linker script expects the compiler to place all the '.rodata' sections in the mirror area and generates code.

2. Function pointer located in near memory which point to functions in far memory is not called via the pointer as expected. The RL78 toolchain is not able to generate the 20-bit addressing required for this.

3. The '-mrelax' option, when passed to the toolchain causes certain applications to fail on hardware execution.

4. GNURL78 toolchain gives 'Internal compiler error' while handling the '__far' attribute when optimization level above "O0" is used along with the '-g' option.

For Windows OS only:

1. The GNURL78 v13.02 toolchain installer does not support HEW integration, however it supports integration with the e2 studio IDE.

2. The registry entry for Windows-7 64-bit system differs to Windows-7 32-bit system.

NOTE:

WINDOWS and GNU/LINUX:

1. The optimized libraries provided along with the Newlib libraries in the toolchain do not require a separate download.

2. The optimized libraries ('liboptm.a' and 'liboptc.a') are not provided under GNU GPL. The source code of these optimized libraries is neither released nor available on request.

3. The 'libgen' utility is not provided under GNU GPL. The source code of the "libgen" utility is neither released nor available on request.

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   For your feedback and suggestions, please visit http://www.kpitgnutools.com/feedback.php.