Release Notes: GNUSH v12.02

22nd June 2012

KPIT Cummins Infosystems Limited is releasing the GNUSH v12.02, a cross compiler tool for Renesas SH micro-controllers.

SALIENT FEATURES:

1. The GNUSH v12.02 toolchain is based on,
    - GCC 4.7.0 [Released]
    - Binutils 2.22 [Released]
    - Newlib 1.20.0 [Released] and
    - GDB 7.4.1 [Released]

2. The latest patches are applied to gcc, binutils and newlib sources. Please visit the following link for the patches applied to the GNUSH toolchain,
    http://www.kpitgnutools.com/phpmyfaq/index.php?aktion=artikel&rubrik=002004&id=78&lang=en

ABOUT GNUSH v12.02:

Release Version:	GNUSH v12.02
Release Date:	22nd June 2012
Platforms Supported:	Red Hat GNU/Linux v8.0 or later (or compatible distribution) Windows XP, Windows 7 (32-bit and 64-bit)
Language:	C, C99, C++
Targets:	SH-1 SH-2 SH-2A SH-2E SH2-DSP SH-3 SH-3E SH3-DSP SH-4 SH-4A SH-4AL-DSP
Object File Format:	ELF

CHANGES IN THE GNUSH-ELF v12.02 Release:

This section describes the enhancements made and the issues fixed in the v12.02 release.

GCC:

1. Registers used in ISR are saved separately along with 'resbank' instruction on using 'resbank' attribute. These registers need not be saved on stack as they are saved in the register bank. Saving the registers on stack delays code execution and increases stack use.
   This issue has been fixed.

HEW (For Windows OS only):

2. Project build and independent dependency scanning was failing in HEW for GNU toolchains built using GCC 4.7.0. This was due to a change to the dependency scanning information generated by GCC 4.7.0. The HEW integration DLLs have been modified to process this new information thereby fixing the problem of project build and dependency scanning.

3. Use of the Flash Development Tool (FDT) plug-ins under HEW is deprecated. Hence, users are advised to download the latest version of the FDT application and use it independently for Flash downloads.

4. The simulator debugging in HEW for SH3 and SH4 targets used to fail with earlier release.
   This bug has been fixed.

KNOWN LIMITATIONS IN SH-ELF:

This section describes the known limitations in this release. We intend to fix these issues in our future releases. We occasionally release maintenance packs for critical bug fixes.

Windows and GNU/Linux:

1. In newlib, the 'fmod' function fails with and without "-mrenesas" option for the following single precision targets:
   a. SH2E
   b. SH2A-Single-Only
   c. SH3E
   d. SH4-Single-Only (little endian and big endian)
   e. SH4A-Single-Only (little endian and big endian)

2. The 'ldexp' function of optimized libraries fails for SH4-Single-Only (little endian) and SH4A-Single-Only (little endian) targets.

3. Library Generator: Please visit the following link for the known issues and limitations related to this utility:
   http://www.kpitgnutools.com/phpmyfaq/index.php?aktion=artikel&rubrik=002003&id=415&lang=en

HEW (For Windows OS only):

1. The following features are currently not supported in HEW:
   a. 'Generate Makefile'
   b. Support for 'convrenesaslib' utility

2. For other limitations pertaining to the single interface for the compiler, assembler, linker and library generator, please visit the following link:
   http://www.kpitgnutools.com/phpmyfaq/index.php?aktion=artikel&rubrik=003001&id=445&lang=en

3. If the GNUSH v12.02 toolchain is installed in a directory with spaces, linking using '-flto' (Link Time Optimization) fails in HEW. This is due to GCC 4.7.0 limitation. On command line, short path is used and hence, there is no problem in linking using '-flto'. Please refer to the below GNURX related FAQ for details and work-around,
   http://www.kpitgnutools.com/phpmyfaq/index.php?aktion=artikel&rubrik=003001&id=523&lang=en

4. On Windows 7, HEW crashes occasionally while upgrading the projects created using earlier versions of toolchains.
   To avoid this crash, please launch HEW in 'Windows XP' Compatibility mode. You can select it from,
   HEW executable or shortcut Properties -> Compatibility -> Compatibility mode -> Run this program in compatibility mode for -> 'Windows XP'

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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