Release Notes: GNUH8 v12.02

22nd June 2012

KPIT Cummins Infosystems Limited is releasing the GNUH8 v12.02, a cross compiler tool for Renesas H8 micro-controllers.

SALIENT FEATURES:

1. The GNUH8 v12.02 toolchain is based on
   GCC 4.7.0 [Released]
   Binutils 2.22 [Released]
   Newlib 1.20.0 [Released] and
   GDB v7.4.1 [Released]

2. The latest patches are applied to gcc, binutils and newlib sources. Please visit the following link for information on the patches applied to the GNUH8 toolchain:
   http://www.kpitgnutools.com/phpmyfaq/index.php?aktion=artikel&rubrik=001005&id=42&lang=en

ABOUT GNUH8 v12.02:

Release Version:	GNUH8 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:	H8/300 H8/300L H8/300H H8/300H Tiny Series H8/S 2XXX H8/S 26XX H8/SX
Object File Format:	ELF

CHANGES IN THE GNUH8-ELF v12.02 RELEASE:

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

HEW (For Windows OS only):

1. 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. The H8300 toolchain generates internal compiler error while building libstdc++ for gcc-4.6.x.
   This bug has now been fixed.

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

INSTALLER:

1. Installer now supports 'Custom Installation' and 'Default Installation' modes. The "Default Installation" mode is set by default where the tools are installed into the default HEW (if found) and the user's username and activation key are silently accepted if cached in the registry.

KNOWN LIMITATIONS IN H8-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. The GNUH8 toolchain no longer supports 32 bit integer for H8 targets in normal mode operation. Hence the command line option '-mn' cannot be used with '-mint32' in the v12.02 toolchain.
   This has been disabled since the '-mint32' specifies 32 bit integers while the '-mn' expects pointers to be 16 bits which causes issues in code generation.

2. The following code, when compiled for H8300H, H8300HN, H8S, H8SN, H8SX and H8SXN targets with the optimization option '-O1' or above, generates incorrect assembly code.

```
unsigned int ReadWordx86Style(unsigned long lAddr)
{
    unsigned char baBuff[2];
    baBuff[0x00]=*((unsigned char *)((unsigned int)(lAddr+1)));
    baBuff[0x01]=*((unsigned char *)((unsigned int)(lAddr+0)));
    return((*(unsigned int *)baBuff));
}

int start(void)
{
    unsigned char baBuff[256];
    unsigned int wResult;
    wResult = ReadWordx86Style((unsigned long)((unsigned int)baBuff));
    return(wResult);
}
```

3. The '.tinybss' implementation does not work as expected.

4. H8300 targets does not support Link Time Optimization (-flto). Trying to use the option 'flto' causes following internal compiler error,

```
lto1.exe: internal compiler error: in output_constructor_regular_field, at
varasm.c:4834
Please submit a full bug report,
with preprocessed source if appropriate.
See <URL:http://www.kpitgnutools.com> for instructions.
lto-wrapper: h8300-elf-gcc.exe returned 1 exit status
ld.exe: lto-wrapper failed
collect2.exe: error: ld returned 1 exit status
```

5. 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=001002&id=413&lang=en

HEW (For Windows OS only):

1. In HEW, when optimized libraries are used in C++ projects, the linker generates "undefined references" error for some ANSI C library functions as they are not implemented.

   Workaround:
   Users can add their own implementation of these functions or can provide dummy routines depending upon the usage.

2. The 'Generate Makefile' feature is currently not supported in HEW.

3. 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

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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