Release Notes: GCC 4.8.4.201703-GNURX

2nd of October, 2017

CyberThor Studios Ltd. is releasing the GCC 4.8.4.201703-GNURX, a cross compiler tool for Renesas RX micro-controllers.

SALIENT FEATURES

The GCC 4.8.4.201703-GNURX toolchain is based on:
- ❖ GCC 4.8.4 [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 4.8.4.201703-GNURX

Release Version:	GCC 4.8.4.201703-GNURX
Release Date:	2nd of October, 2017
Platforms Supported:	Red Hat GNU/Linux v8.0 or later (or compatible distribution) Windows XP, Windows 7, Windows 8, Windows 10
Language:	C, C99, C++
Targets:	RX100 RX200 RX600 RX64M RX700
Object File Format:	ELF

This section describes the fixes made in the GCC 4.8.4.201703-GNURX release.

GCC/Binutils:

1. *[Improvement]* adjustments have been made to *TARGET_MAX_ANCHOR_OFFSET* for the *-fsection-anchors* option.
2. *[Improvement]* Following options have been enabled by default in order to achieve code size improvements: *-fweb, -tree-loop-if-conv, -fsection-anchors,*
-mrelax, -free, -mno-balign, -foptimize-strlen, -fdata-sections, -ffunction-sections
and --gc-section.
Additionally, the following options have been disabled for code size optimization: *-fcommon, partial-inlining*
3. *[Improvement]* Generation of PC register for *__builtin_rx_mvfc* has been added.
4. *[Improvement]* Stack protector has been added for the RX target.
5. *[Improvement]* The bound on size of expressions used in the scalar evolutions analyzer has been adjusted for better code size results. *scev-max-expr-size* has been adjusted.
6. *[Improvement]* The default *-Os* options have been adjusted for better code size results when using jump tables. Following options are enabled by default for *-Os*: *-fno-jump-tables and -finline-small-functions*
7. *[Improvement]* Added the *-mlarge-function-growth=VALUE* option which limits the growth of large function (in percents). Default value is 42.
8. *[Improvement]* Warning concerning "NaNs and infinities" has been disabled by default.
9. *[Bug Fix]* The *fsub* instruction has been fixed.

INSTALLER and RPM:

1. The GCC 4.8.4.201703-GNURX 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 4.8.4.201703-GNURX" and the user's username and activation key are silently accepted if cached in the registry.
2. The GNURX ABI (Application Binary Interface) is made available on our GNU Tools support website (https://gcc-renesas.com) and also provided along with Linux RPM and Windows installer.

Notes:

This installer does not provide an option to integrate the GNURX toolchain with e2 studio, as the e2 studio IDE will automatically detect the GNURX 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.

This section describes all known issues for this particular release:

1. In certain cases the program will time out while executing with following options:
Note: Both flags need to be accompanied by "-fno-diagnostics-show-caret -w -O1 -DSTACK_SIZE=4096 -msim -lm" for the problem to be observed.
a) -funroll-loops
b) -fpeel-loops

2. An incomplete type error can be observed ocasionally when using the -fpack-struct option in C++.
The combination of the flags that reproduce this problem is "-fpack-struct -fno-diagnostics-show-caret -nostdinc++ -fmessagelength=0 -std=c++11 -pedantic-errors -Wno-long-long -S -msim"

3. GDB issue: step-over behaves as step-in on certain function calls.
The problem is present on -O0 optimization due to adjustments to the stack (add/sub).

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/