RENESAS Tool News

RENESAS TOOL NEWS on April 1, 2013: 130401/tn1

Note on Using C/C++ Compiler Package for RX Family

When using the C/C++ compiler package for the RX family of MCUs, take note of the following problem:

- With using the link option -rom ROM support function (LNK-0012)

Here the number at the end of the above item is a consecutive number for indexing the problems in this compiler package.

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1. Product and Versions Concerned

- C/C++ Compiler Package for RX Family (for CubeSuite+)
  V1.02.00 through V1.02.01
- C/C++ Compiler Package for RX Family (for High-performance Embedded Workshop)
  V.1.00 Release 00 through V.1.02 Release 01

2. Description

Look under the Optimizing Linker tab and find the ROM and RAM list. If the number of alignment of the location counter is greater than 1, and a section of size 0 is entered to the RAM section when the -rom option is used, the symbol defined in the ROM section may not correctly be placed in an address within the RAM section.

3. Conditions

This problem may arise if the following conditions are all satisfied:

(1) The "-endian=big" compile option is selected.
(2) In two or more object files exist the sections whose size are 0 and names are the same as each other.
(3) The "-rom" link option is selected, and the section in (2) is entered in the RAM section.
(4) In the RAM section in (3) is used the number of alignment greater than the one that is used in the ROM section.

4. Examples

4.1 Example of Source Code

As a compile option, "-endian=big" is used: Condition (1)

```
-----------------------------------------------------------------
 tp1.src
     .SECTION    R_1,DATA          ; Conditions (2),(3), and (4)
     .END



 tp2.src
     .SECTION    D_1,ROMDATA       ; Condition (4)
     .glb        _label
   _label:
     .byte       01H

     .SECTION    R_1,DATA,ALIGN=2    ; Conditions (2),(3), and (4)
     .END
-----------------------------------------------------------------
```

4.2 Example of Link Command

```
-----------------------------------------------------------------
  optlnk tp1.obj tp2.obj -rom=D_1=R_1 -start=D_1,R_1/100
-----------------------------------------------------------------
```

4.3 Example of Linking Results

```
-----------------------------------------------------------------
  00000100                          .section D_1,romdata
                                      .org    00000100h
  00000100 01                       .byte   01h
                    ;
  00000101                          .section R_1,data
                                      .org    00000101h
  00000101 00000001               .blkb   1
  00000102                _label:
  00000102 00000001               .blkb   1
                    ;
                                      .end
-----------------------------------------------------------------
```

In the above results, if data of section D_1 is transferred to section R_1, address 0x01 in D_1 is transferred to address 0x00000101, and no data is transferred to address 0x00000102. So "_label" takes an indefinite value.

5. Workaround

Use the same number of alignment for the sections entered to the ROM

and RAM sides when the -rom option is used.

6. Schedule of Fixing Problem

In C/C++ Compiler Package for RX Family (for CubeSuite+), we plan to fix this problem

in the next version of the product (to be published on April 16, 2013).

As to C/C++ Compiler Package for RX Family (for High-performance Embedded Workshop),

the plan for fixing this problem has yet to be determined.
