# **RENESAS** Tool News

## RENESAS TOOL NEWS on November 1, 2011: 111101/tn9

## Notes on Using Real-Time OS--RI600/4--for RX Family

When using real-time OS, RI600/4, for the RX MCU family, take note of the following problems:

- With the loc\_mtx, tloc\_mtx, or chg\_pri service call with the mutex function being used
- With fixed-sized memory pools
- With the dispatching-disabled state
- With the GUI configurator

## 1. Product and Versions Concerned

RI600/4 V.1.00 Release 00 through V.1.00 Release 02

## 2. Problem with the loc\_mtx, tloc\_mtx, or chg\_pri Service Call with the

## **Mutex Function Being Used**

#### 2.1 Description

If an operation or event that necessitates task switching is performed by an interrupt generated while the loc\_mtx, tloc\_mtx, or chg\_pri service call is executed, no task switching may be done. (See NOTE.)

In this case, any task except the one with the highest priority is executed; and after the task has made a call to the service call that changes the state of another task, or the kernel interrupt has been completed, the task with the highest priority is executed. However, if the mutex function is not used (the .cfg file contains no mutex[]), this problem does not arise.

#### NOTE:

An operation or event that necessitates task switching is any of the following, where the task that has made a call to loc\_mtx, tloc\_mtx, or chg\_pri is hereafter called the task in RUNNING state.

- (1) Specifying the task in RUNNING state by isus\_tsk called from an interrupt handler, cyclic handler, or alarm handler
- (2) Lowering the current priority of the task in RUNNING state by ichg\_pri called from an interrupt handler, cyclic handler, or alarm handler
- (3) Making the current priority of a task in READY state higher than that of the task in RUNNING state by ichg\_pri called from an interrupt handler, cyclic handler, or alarm handler
- (4) Specifying the current priority of the task in RUNNING state by irot\_rdq called from an interrupt handler, cyclic handler, or alarm handler when there is more than one task in READY state with the same current priority as the task in RUNNING state
- (5) Making a call to a service call from an interrupt handler, cyclic handler, or alarm handler to cancel the waiting state of a task with a higher current priority than the task in RUNNING state
- (6) Being generated the timeout of a task with a higher current priority than the task in RUNNING state. Or being generated the ending of delay of a task with a higher current priority in the WAITING state by dly\_tsk

## 2.2 Workaround

Place the ena\_dsp service call immediately after the loc\_mtx, tloc\_mtx, or chg\_pri.

## 3. Problem with Fixed-Sized Memory Pools

In this problem, the following three symptoms appear:

(1) The irel\_mpf service call may write into an incorrect address.

Conditions:

This symptom may appear if the following conditions are all satisfied:

- (a) A task is waiting for the acquisition of a fixed-sized memory block by issuing tget\_mpf.
- (b) A handler makes a call to irel\_mpf to release a fixed-sized memory block acquired by a task.
- (c) The IDs of the fixed-sized memory pools in (a) and (b) are the same.

## Workaround:

To release a fixed-sized memory block acquired by a task, make a call to rel\_mpf from the task.

(2) When the kernel is started, 1 byte immediately after the BRI\_RAM

section may be cleared to 0.

Conditions:

This symptom may appear if the number of memory blocks of the fixed-sized memory pool with the maximum fixed-sized memory pool ID is a multiple of 8.

Here, the number of memory blocks is the value defined by memorypool[].num\_block in the .cfg file.

Workaround:

Define the number of memory blocks as a value that is not a multiple of 8 in the .cfg file.

- (3) When a call is made to vrst\_mpf, either of the following symptoms may appear:
  - (a) One byte immediately after the BRI\_RAM section is cleared to 0.
  - (b) The front 8 memory blocks of the fixed-sized memory pool area whose ID number is that of the fixed-sized memory pool that is reset by vrst\_mpf plus 1 cannot be released.

Conditions:

This symptom may appear if the number of memory blocks of the fixedsized memory pool that is reset by vrst\_mpf is a multiple of 8. Here, the number of memory blocks is the value defined by memorypool[].num\_block in the .cfg file.

Workaround:

Define the number of memory blocks as a value that is not a multiple of 8 in the .cfg file.

## 4. Problem with the Dispatching-Disabled State

## 4.1 Description

In the dispatching-disabled state, if operation A is performed after operation B has moved the task in RUNNING state to any position except the front in the ready queue, the kernel may run away or malfunction. Here operations A and B are any of the following operations or event:

## Operation A:

- (1) Making a call to ploc\_mtx from the task in RUNNING state
- (2) Making a call to unl\_mtx from the task in RUNNING state
- (3) Making a call to ext\_tsk from the task in RUNNING state

**Operation B:** 

- (1) Specifying the task in RUNNING state by isus\_tsk
- (2) Lowering the current priority of the task in RUNNING state by chg\_pri or ichg\_pri
- (3) Specifying the current priority of the task in RUNNING state by rot\_rdq or irot\_rdq called from an interrupt handler, cyclic handler, or alarm handler when there is more than one task in READY state with the same current priority as the task in RUNNING state.

## 4.2 Workaround

Perform operations A in the dispatching-enabled state.

## 5. Problem with the GUI Configurator

## 5.1 Description

If pages of a variable- and a fixed-sized memory pool are displayed, the GUI configurator may terminate abnormally.

## 5.2 Workaround

We have no plan to circumvent this problem.

## 6. Schedule of Fixing the Problems

All the above problems have already been fixed in RI600/4 V.1.01 Release 00, so please use this. For how to update your product, see RENESAS TOOL NEWS Document No. 111101/tn10 on the Web page at: http://tool-support.renesas.com/eng/toolnews/111101/tn10.htm This page will be opened on November 21, 2011.

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