RTOS Debugger for NORTi

- Display of all NORTi System Resources
- Task Related Breakpoints
- Task Stack Coverage
- Dynamic Task Performance Measurement
- NORTi Specific Display of Trace Listing
- Statistic Evaluation and Graphic Display of Task Run Times
- PRACTICE Functions for OS Data
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ARM

The TRACE32 System includes a configurable RTOS debugger to provide symbolic debugging in real time operating systems. Our software package contains a ready-to-run configuration for the NORTi Real Time Operating System from MIPSO.

The NORTi awareness provides easy access to task lists and other kernel information, generates performance analysis data and enables you to do a most effective debugging with the TRACE32 systems on targets running NORTi.
RTOS Debugging on TRACE32 with NORTi

Display of All NORTi System Resources

The TRACE32 RTOS debugger for NORTi provides display functions to show all system resources of NORTi. All objects, such as tasks, memory pools, mailboxes, semaphores etc. can be displayed and inspected. In addition, if a dual-port access to memory is available, the display of all these regions can be viewed non-intrusively in real time. The tables are updated permanently (“On The Fly”), without affecting the application at all.

Task Related Breakpoints

Any breakpoint set in the TRACE32 debugger can be set dependent to a specific task. This means, that the breakpoint will then only halt, if hit by the specified task. This allows task related debugging even in shared code.

Breakpoint list with task dependent breakpoints
**PRACTICE Functions for OS Data.**

The support includes extended PRACTICE functions for NORTi specific data, to be used in setup and test scripts. E.g. the function “task.config(magic)” returns the address of the so called magic value, which corresponds to the id of the current executing task.

**Task Stack Coverage**

In real time systems it is quite important to know, how much stack space each task consumes. For this purpose, a special window shows the current and the maximum usage of the stack of each separate task.

![Task stack coverage window](image)

**Dynamic Task Performance Measurement**

While NORTi is running, TRACE32 is capable of recurrently evaluating the current running task and collecting the results. The percentage, each task consumes of the system, is then displayed graphically and updated permanently. The longer time you let the measurement run, the more exact are the results. This feature is available even without any hardware trace.

![Dynamic Performance window](image)
NORTi Specific Display of Trace Listing

The data recorded in the real time trace buffer (if available) can be displayed and interpreted specific to the operating system. The task switches are displayed symbolically, either exclusively or in addition to other information.

Statistic Evaluation and Graphic Display of Task Run Times

Out of the real time trace buffer (if available), the analyzer can calculate statistic tables of task run times and task switches. A graphical diagram shows which task was active at a specific time, giving a clear view of the behaviour of the system.
Task Related Evaluation of Function Run Times

The statistic and graphic evaluation of function calls and function run times (if available) can be done dependant to the actual running task. This is necessary, if different tasks call one single function at the same time, or if a task switch occurs in between the function.

NORTi related pull-down menu

Because the menu bar of the TRACE32 user interface can be fully customized, you can create a new pull down menu, including operating system specific commands. We deliver NORTi support with an example for such specific menus, which provides fast access to the NORTi awareness features.
TRACE32 with NORTi menu
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