



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
- NORTi Related Pull-Down Menu

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 MISPO

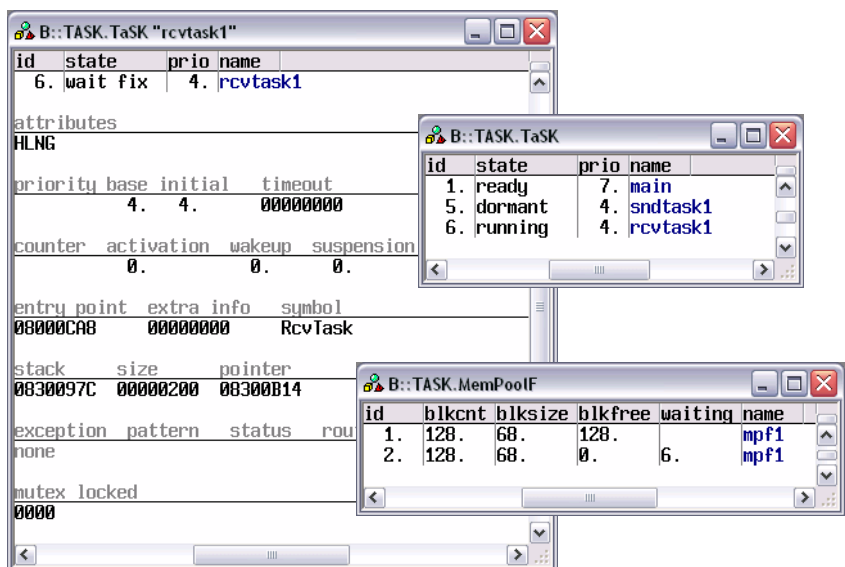
The NORTi awareness provides easy access to task lists and other kernel information, generates performance analysis data and enables you to do a most effective debugging with the TRACE32 systems on targets running NORTi.

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.

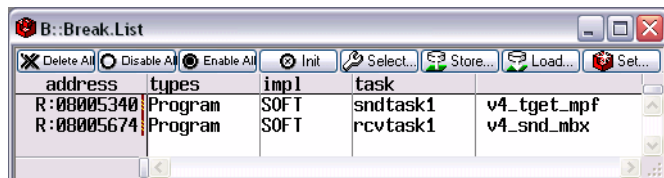


Task and memory pool list window, and detailed task window

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.

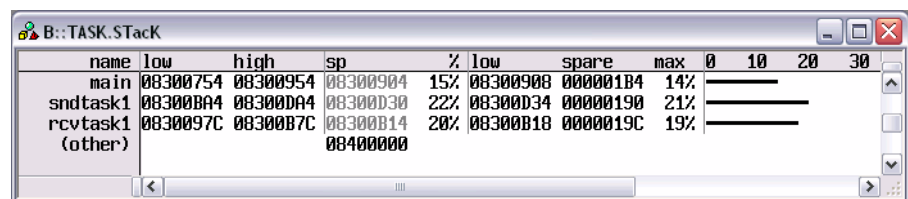
The support includes extended PRACTICE functions for NORTi specific data, to be used in setup and test scripts. E.g. the function "task.config(magic)"

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



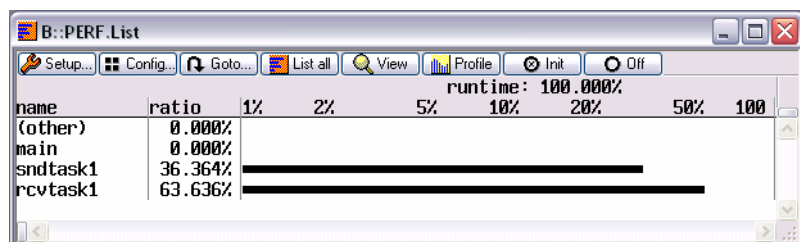
name	low	high	sp	%	low	spare	max	0	10	20	30
main	08300754	08300954	08300904	15%	08300908	000001B4	14%	[Progress bar]			
sndtask1	08300BA4	08300DA4	08300D30	22%	08300D34	00000190	21%	[Progress bar]			
rcvtask1	0830097C	08300B7C	08300B14	20%	08300B18	0000019C	19%	[Progress bar]			
(other)			08400000					[Progress bar]			

Task stack coverage window

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 dis-

played 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.



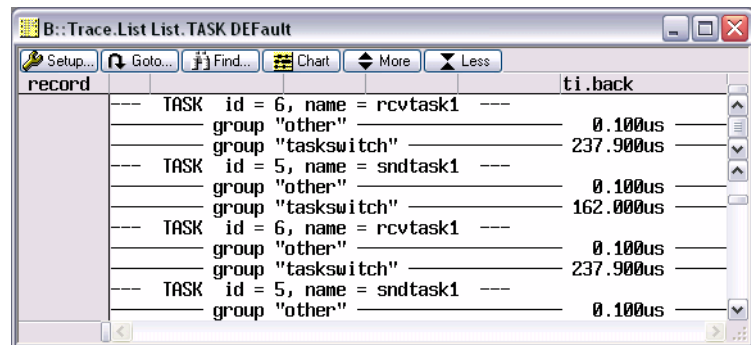
name	ratio	1%	2%	5%	10%	20%	50%	100
(other)	0.000%	[Progress bar]						
main	0.000%	[Progress bar]						
sndtask1	36.364%	[Progress bar]						
rcvtask1	63.636%	[Progress bar]						

Dynamic Performance window

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 operat-

ing system. The task switches are displayed symbolically, either exclusively or in addition to other information.

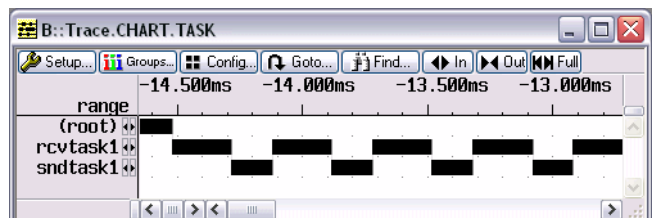
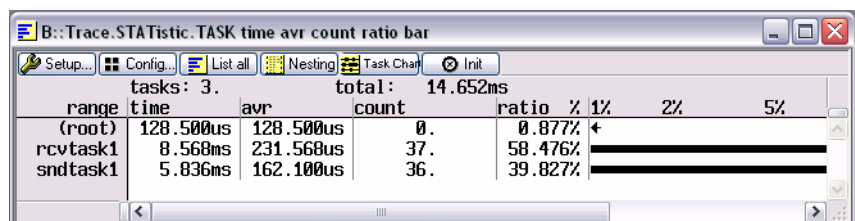


Trace List window with task switches and times

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.

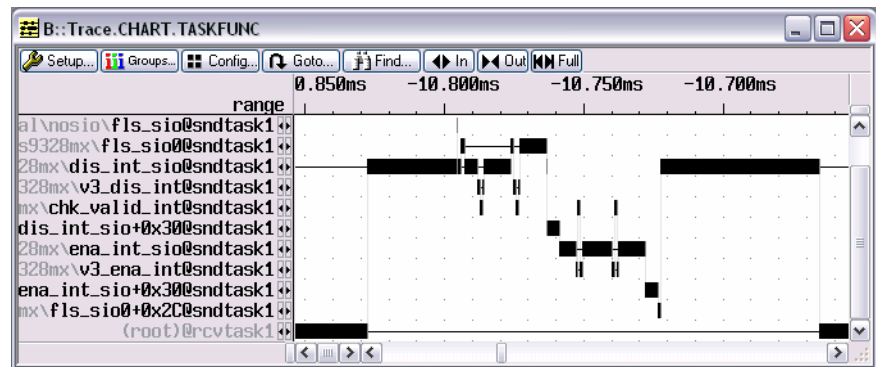


Statistics and flow of tasks

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 neces-

sary, if different tasks call one single function at the same time, or if a task switch occurs in between the function.

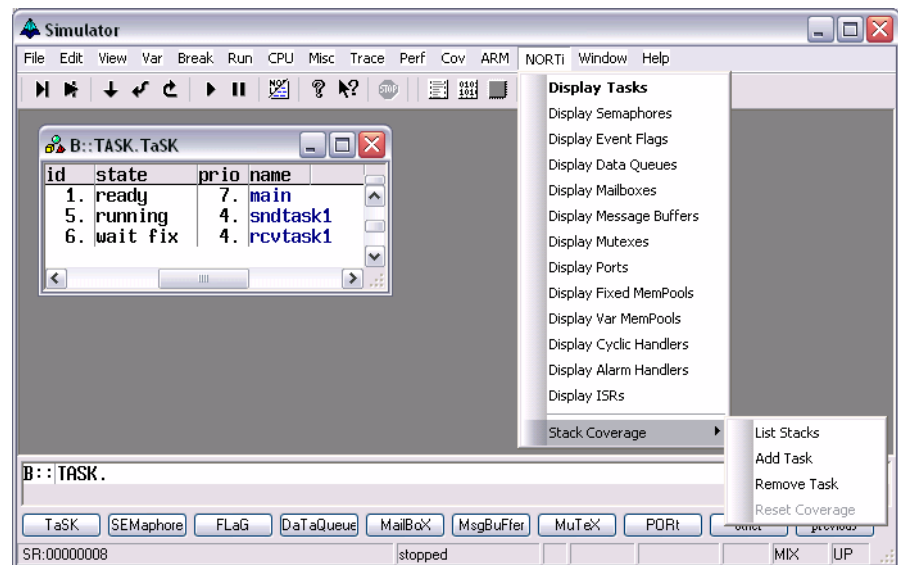


Function flow chart

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 menues, which provides fast access to the NORTi awareness features.



TRACE32 with NORTi menu

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