



RTOS Debugger for PikeOS

ARM
PowerPC
x86

- Real Time, non-intrusive Display of PikeOS System Resources
- Debugging PikeOS Kernel, Tasks and Threads
- Debugging Elinos and POSIX personalities
- Full Integrated MMU Support
- SMP Support
- Thrad Related Breakpoints
- Thread Stack Coverage
- Dynamic Task Performance Measurement
- PikeOS Specific Display of Real Time Trace Listing
- Statistical and Graphic Display of Thread Run Times
- Thread related Evaluation of Function Run Times
- PRACTICE Functions for OS Data
- PikeOS Related Pull-Down Menu

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 PikeOS Real Time Operating System from SYSGO AG.

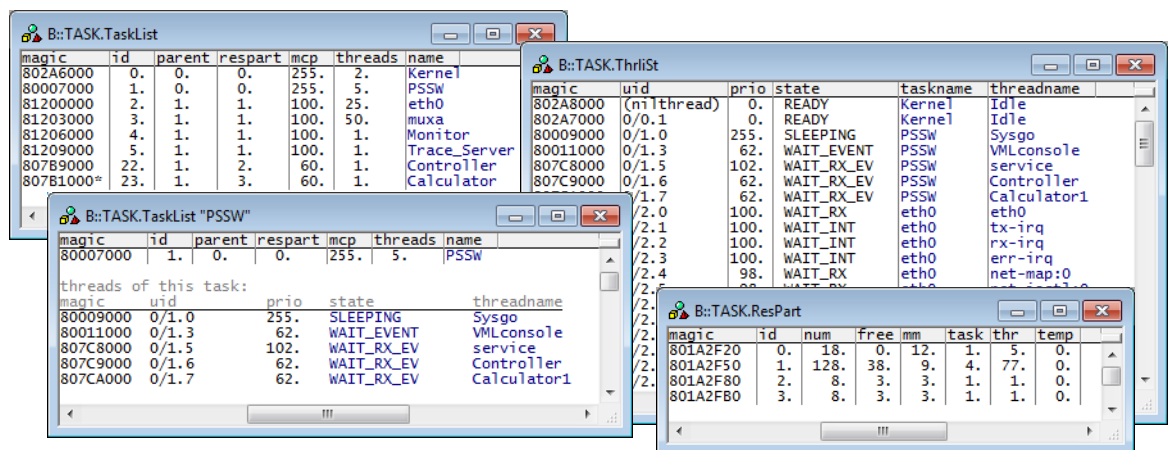
The PikeOS awareness provides easy access to task lists and other kernel information, generates performance analysis data and enables you to do a most effective debugging with the TRACE32 systems on targets running PikeOS.

RTOS Debugging in TRACE32 with PikeOS

Real Time, Non-Intrusive Display of PikeOS System Resources

The TRACE32 RTOS debugger for PikeOS provides display functions to show the system resources of PikeOS. All objects, such as tasks, threads, partitions etc. can be displayed and inspected. In addition, by using the processors capability of reading the target

memory while the application is running, or by using the emulators dual-port memory (if 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 list, thread list, resource partitions and detailed task window

Kernel and/or Application Debugging

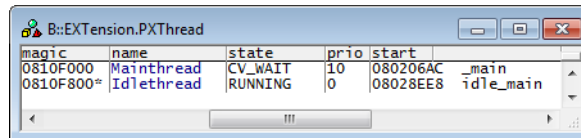
Due to the fact, that TRACE32 is a hardware debugging tool, you are able to debug anything you want, including bootstrap code, initialization phase, interrupt routines, drivers, kernel, etc. TRACE32 includes a complete MMU support, providing mechanisms to inspect the target memory using virtual addresses or physical addresses and to show the translation tables.

Additionally, TRACE32 has a special MMU support for several address spaces, which allows you to debug several PikeOS applications (tasks) at once. An internal logic provides you with an easy access to all task memory spaces.

Debugging of a POSIX Personality

The RTOS Debugger for PikeOS contains an additional awareness for a POSIX Personality. It allows to debug

and view the POSIX threads and their states, running within a PikeOS task.



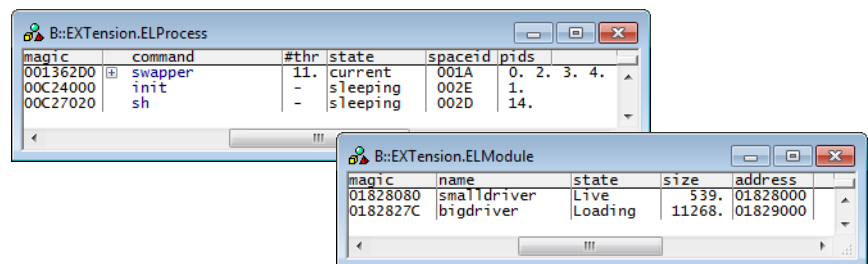
magic	name	state	prio	start	
0810F000	Mainthread	CV_WAIT	10	080206AC	_main
0810F800	Idlethread	RUNNING	0	08028EE8	Idle_main

Threads running in a POSIX personality

Debugging of an ELinOS Personality

The RTOS Debugger for PikeOS contains an additional awareness for an ELinOS Personality, SYSGO's embed-

ded Linux distribution. It enables debugging the Linux kernel, kernel modules, user processes and libraries.



magic	command	#thr	state	spaceid	pids
001362D0	swapper	11.	current	001A	0. 2. 3. 4.
00C24000	init	-	sleeping	002E	1.
00C27020	sh	-	sleeping	002D	14.

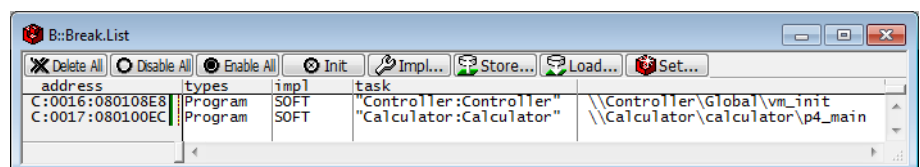
magic	name	state	size	address
01828080	smalldriver	Live	539.	01828000
0182827C	bigdriver	Loading	11268.	01829000

Linux processes and kernel modules running in an ELinOS personality

Thread Related Breakpoints

Any breakpoint set in the TRACE32 debugger can be set dependent to a specific thread. This means, that the

breakpoint will then only halt, if hit by the specified thread. This allows thread related debugging even in shared code.



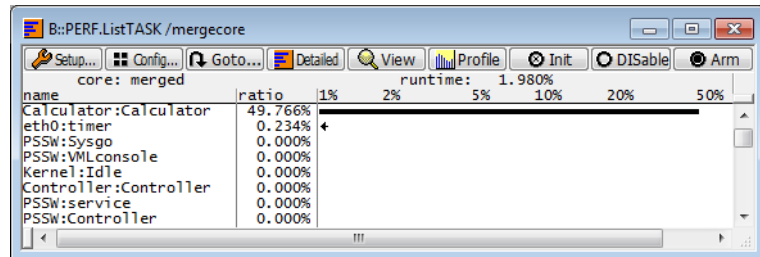
address	types	impl	task	
C:0016:080108E8	Program	SOFT	"Controller:Controller"	\\Controller\Global\vm_init
C:0017:080100EC	Program	SOFT	"Calculator:Calculator"	\\Calculator\calculator\p4_main

Breakpoint list with thread dependent breakpoints

Dynamic Task Performance Measurement

While PikeOS is running, TRACE32 is capable of recurrently evaluating the current running thread and collecting the results. The percentage, each thread 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.



Performance measurement list

PikeOS Specific Display of Trace Listing

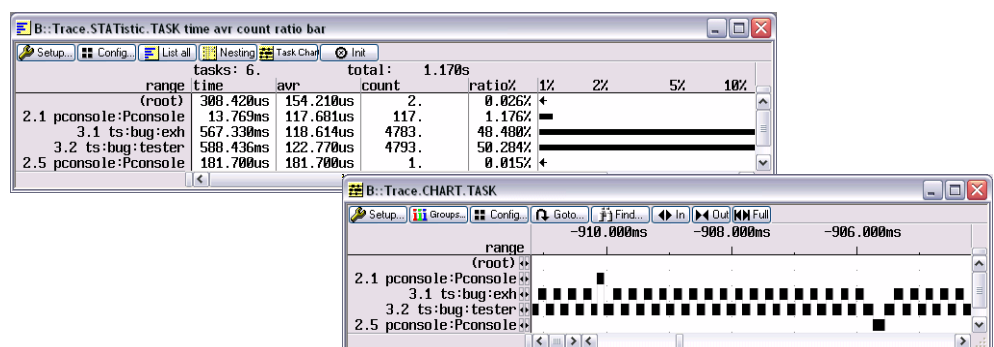
The data recorded in the real time trace buffer (if available) can be displayed and interpreted specific to the operating system. The thread switches are

displayed symbolically, either exclusively or in addition to other information.

Statistic Evaluation and Graphic Display of Thread Run Times

Out of the real time trace buffer (if available), the analyzer can calculate statistic tables of thread run times and thread switches. A graphical diagram

shows which thread was active at a specific time, giving a clear view of the behavior of the system.

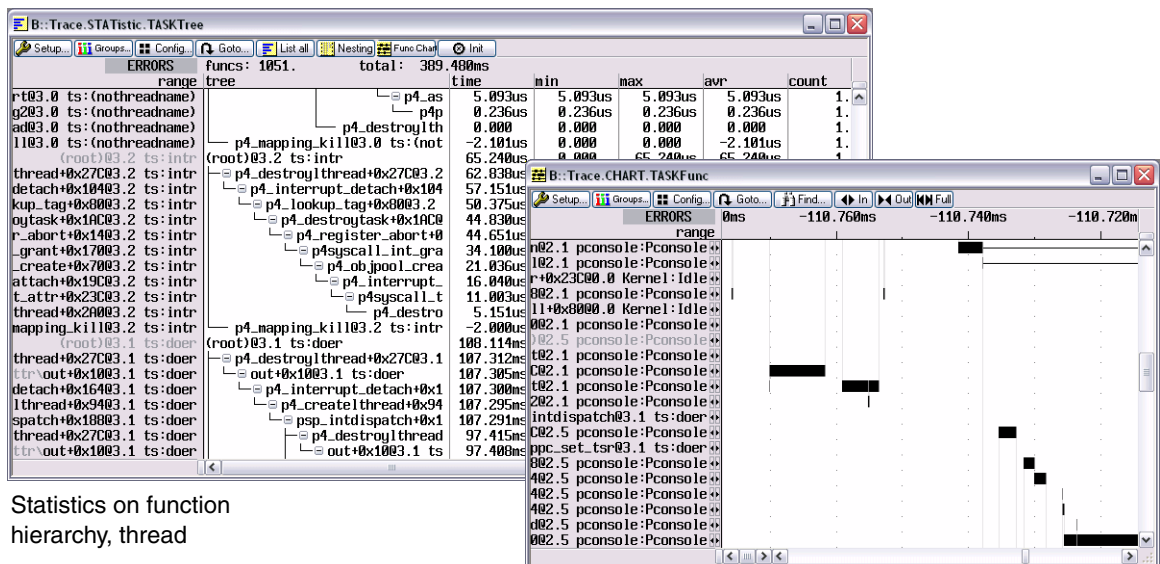


Statistics and flow of threads

Thread 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 thread. This is nec-

essary, if different threads call one single function at the same time, or if a thread switch occurs in between the function.



Statistics on function hierarchy, thread

Flow of functions, related to the calling thread

PRACTICE Functions for OS Data.

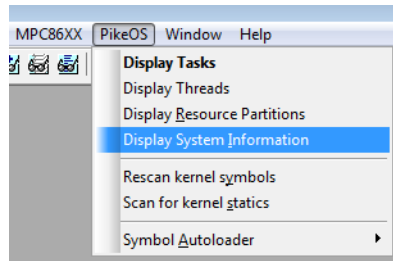
The support includes extended PRACTICE functions for PikeOS specific data, to be used in setup and test scripts. E.g. the function "task.con-

fig(magic)" returns the address of the so called magic value, which corresponds to the id of the current executing thread.

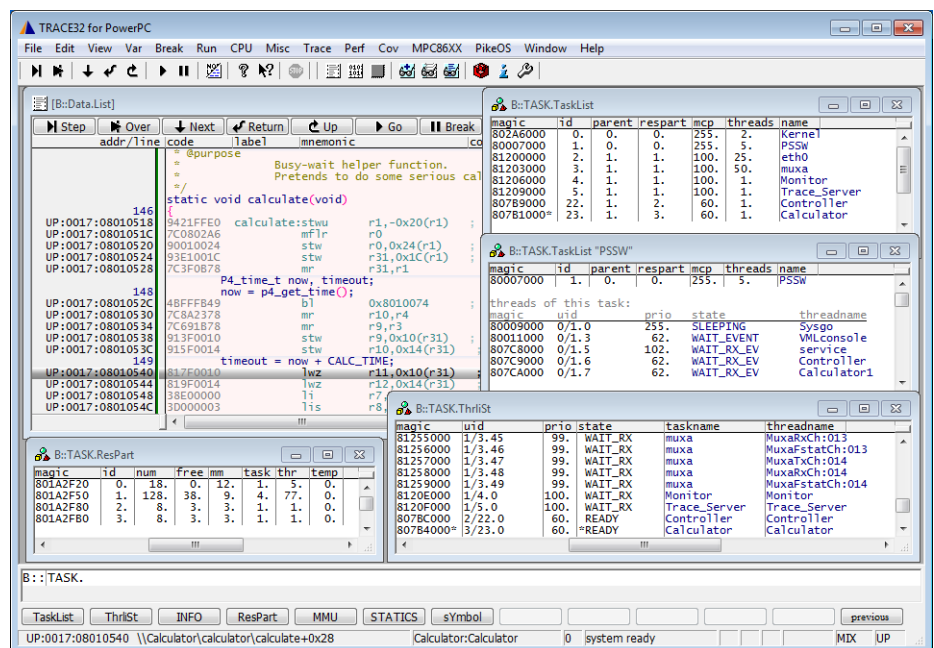
PikeOS related pull-down menu

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

PikeOS support with an example for such specific menus, which provides fast access to the PikeOS awareness features.



PikeOS specific menu items



TRACE32 with source/assembly window and opened PikeOS specific displays

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