RTOS Debugger for Symbian OS (EKA2)

- Real-time non-intrusive display of SymbianOS system resources
- Thread related breakpoints
- Thread stack coverage
- Thread context display
- Full integrated MMU support
- Debugging drivers, processes, libraries and applications
- Debugging several processes and applications at once
- Dynamic thread performance measurement
- Symbian OS specific display of real time trace
- Statistic evaluation and graphic display of thread run times
- Thread related evaluation of function run times
- Statistic evaluation and graphic display of thread states
- PRACTICE functions for OS data
- Symbian OS 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 Symbian OS (EKA2) Real Time Kernel from Symbian.

In close cooperation with Symbian, we built a highly sophisticated Symbian OS awareness, which enables you to do a most effective debugging with the TRACE32 systems on targets running Symbian OS.
RTOS Awareness on TRACE32 for Symbian OS

Real Time, Non-Intrusive Display of Symbian OS System Resources

The TRACE32 RTOS debugger for Symbian OS provides display functions to show the system resources of Symbian OS. All objects, such as processes, threads, libraries and chunks 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.
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.

Thread Stack Coverage

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

Thread Context Display

The TRACE32 RTOS Debugger provides an easy way to switch the current displayed context to another thread. Normally all register related windows (e.g. listing at current PC, local variables or function call stack) are displayed related to the actual context (i.e. current executed thread). You can switch to the context of another thread to see all this information at the time this thread was scheduled.

Debugging Drivers, Processes, Libraries and Applications

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 Symbian OS processes and applications at once. An internal logic provides you with an easy access to all process memory spaces. A special process detection mechanism allows to halt the application exactly on the entry point of a process, allowing you to debug your process right from the beginning.
Dynamic Thread Performance Measurement

While Symbian OS 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 the results. This feature is available even without any hardware trace.

Symbian OS Specific Display of Trace Listing

The data recorded in the trace buffer 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

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 behaviour of the system.

Thread Related Evaluation of Function Run Times

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

Statistic Evaluation and Graphic Display of Thread States

These tabular and graphical analyses of the status of threads show the various states (i.e. running, ready, waiting, suspended and undefined) and times each thread spent in each state. A graphical view of the data can help to highlight prioritisation problems, critical paths etc.
PRACTICE functions for OS data.

The support includes extended PRACTICE functions for Symbian OS specific data. E.g. the function "TASK.CONFIG (magic)" returns the address of the so-called magic value, which corresponds to the id of the current executed thread.

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

TRACE32 with Symbian OS menu
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