



KADAK Products Ltd

RTOS Debugger for AMX

- Real time, non-intrusive display of AMX system resources
- AMX specific display of analyzer listing
- Statistic evaluation and graphic display of task run times
- Task related evaluation of function run times
- Statistic evaluation and graphic display of task states
- Task stack coverage
- PRACTICE functions for OS data
- AMX related pull-down menu

The TRACE32 System includes a configurable multitask debugger to provide symbolic debugging in real time operating systems. Our software package contains a ready-to-run configuration for the AMX Real Time Kernel from KADAK Products Ltd.

In close cooperation with KADAK we built a special multi-task support for AMX on Motorola 68k processors. This leaflet will guide you through the additional implemented features in TRACE32, to do an effective debugging on AMX systems.

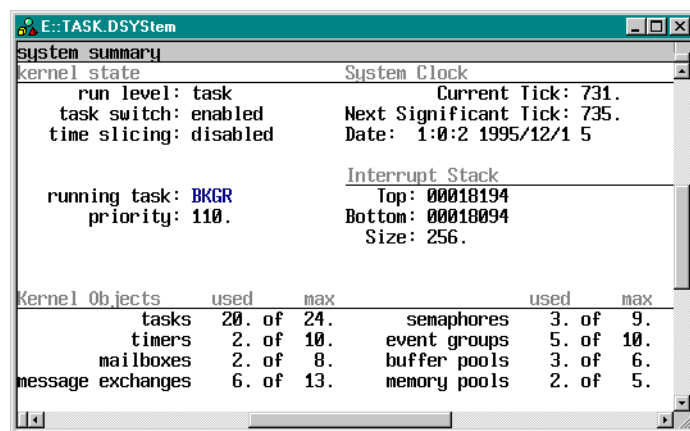
**PowerPC
68K
ARM
XSCALE
PowerPC
68K**

Multitask Debugging on TRACE32 with AMX

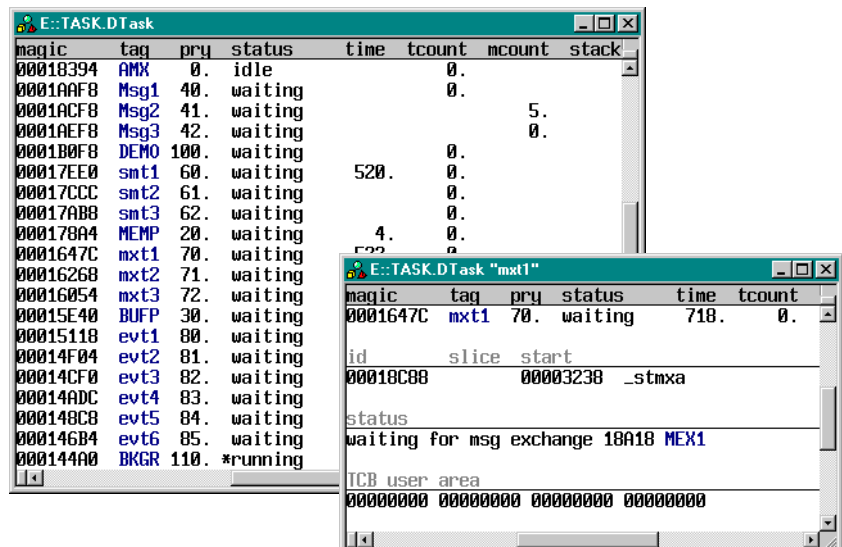
Real time, non-intrusive display of KADAK/AMX system resources

The TRACE32 multitask debugger for AMX provides display functions for all AMX resources. The system summary, tasks, timers, mailboxes, message exchanges, semaphores, events and pools can be displayed. In addition, by

using the emulators dual-port memory, 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.



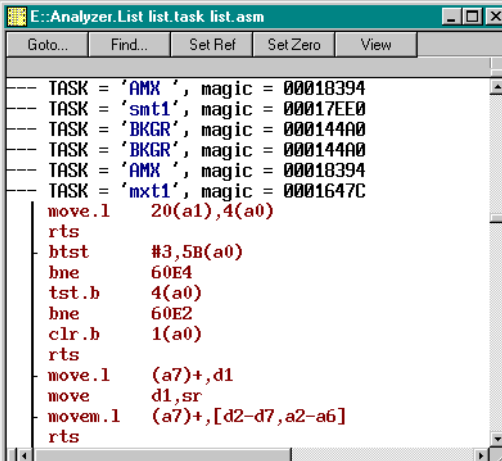
System summary window



Task Status list window and detailed window of one specific task

AMX specific display of analyzer listing

The data recorded in the analyzer can be displayed and interpreted specific to the operating system. The task switches can be displayed symbolically.



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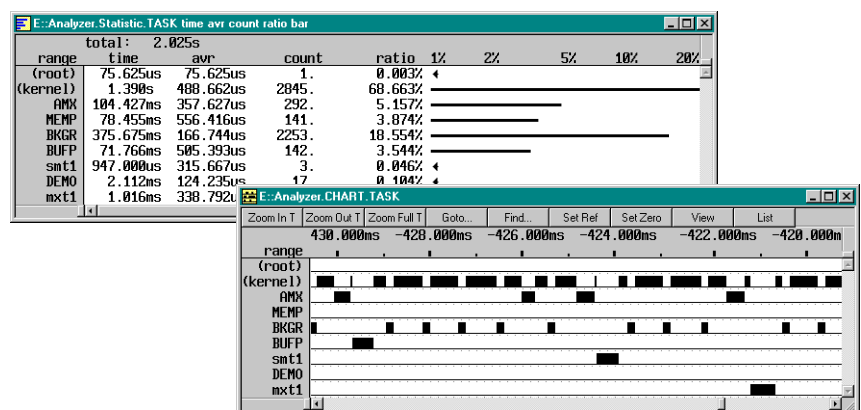
E::Analyzer.List list.task list.asm
Goto... Find... Set Ref Set Zero View
--- TASK = 'AMX', magic = 00018394
--- TASK = 'smt1', magic = 00017EE0
--- TASK = 'BKGR', magic = 000144A0
--- TASK = 'BKGR', magic = 000144A0
--- TASK = 'AMX', magic = 00018394
--- TASK = 'mxt1', magic = 0001647C
move.l 20(a1),4(a0)
rts
btst #3,5B(a0)
bne 60E4
tst.b 4(a0)
bne 60E2
clr.b 1(a0)
rts
move.l (a7)+,d1
move d1,sr
movem.l (a7)+,[d2-d7,a2-a6]
rts
  
```

Analyzer listing, task selective recording, display of task switches and assembler mnemonics

Statistic evaluation and graphic display of task run times

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.

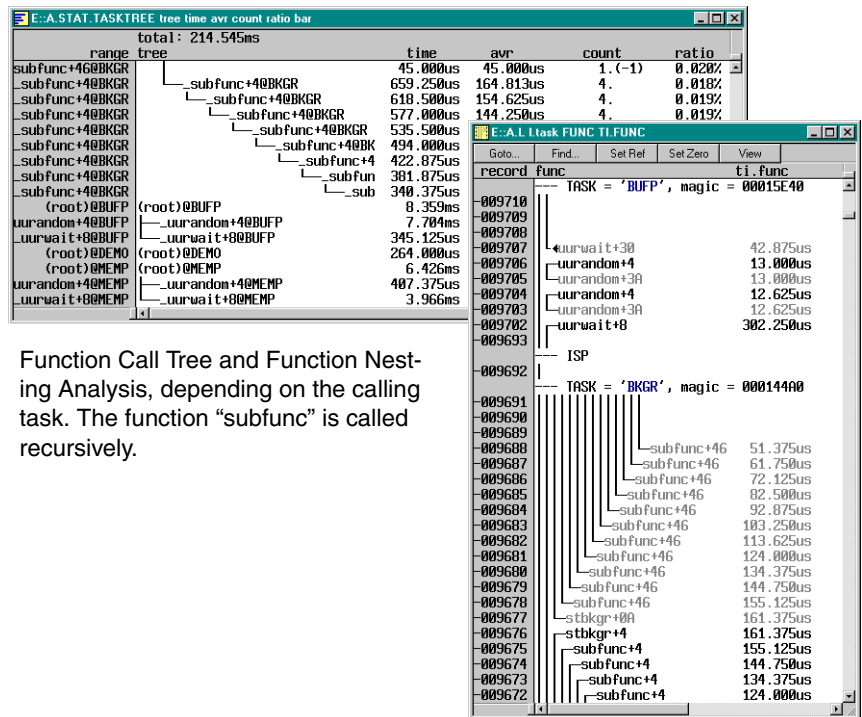


Statistics and flow of tasks

Task related evaluation of function run times

The statistic and graphic evaluation of function calls and function run times can be done dependant to the actual running task. This is necessary, if dif-

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

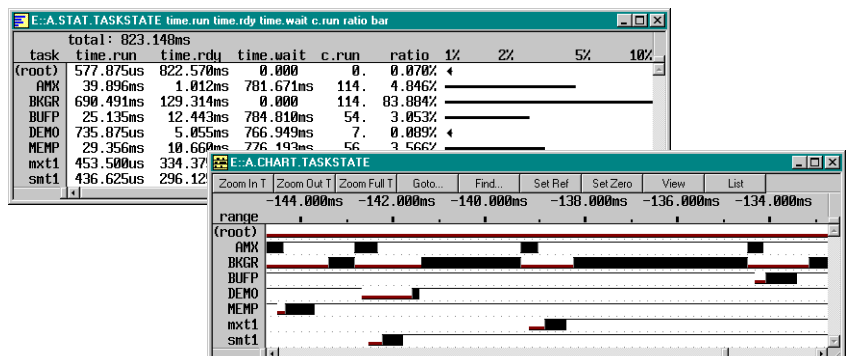


Function Call Tree and Function Nesting Analysis, depending on the calling task. The function "subfunc" is called recursively.

Statistic evaluation and graphic display of task states

These tabular and graphical analyses of the status of tasks show the various states (i.e. running, ready, waiting, suspended and undefined) and times each

task spent in each state. A graphical view of the data can help to highlight prioritisation problems, critical paths etc.



Statistics and flow of task states

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 each separate task.

magic	bottom	top	sp(stk)	sp(req)	curr	max	usage	0	10	20	30	40	50	60
DEMO	0001B100	0001AF00	0001B060		31%	0001B050	34%	[Progress bar]						
smt1	00017CE8	00017CE8	00017E04		44%	00017E04	44%	[Progress bar]						
smt2	00017CD4	00017AD4	00017BF4		43%	00017C7C	17%	[Progress bar]						
smt3	00017AC0	000178C0	000179E0		43%	000178C4	99%	[Progress bar]						
MEMP	000170AC	000174AC	000177A0		26%	000174AC	100%	[Progress bar]						
mxt1	00016484	00016284	0001637C		51%	0001637C	51%	[Progress bar]						
mxt2	00016270	00016070	00016160		53%	000161E4	27%	[Progress bar]						
mxt3	0001605C	00015E5C	00015F4C		53%	00015E60	99%	[Progress bar]						
BKGR	000144A8	000142A8	000143B4	00014434	22%	00014374	60%	[Progress bar]						

Task stack coverage window

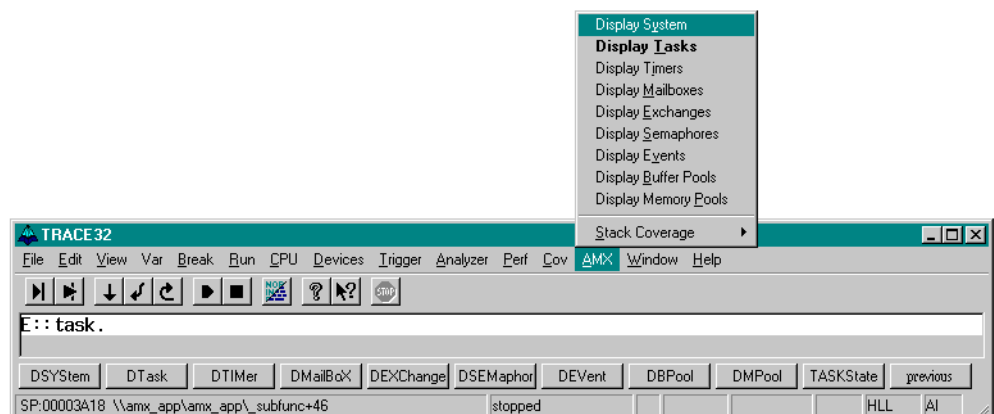
PRACTICE functions for OS data.

The support includes extended PRACTICE functions for task specific data. E.g. the function "TASK.CONFIG (magic)" returns the address of the so called magic value.

AMX 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 sys-

tem specific commands. We deliver AMX support with an example for such specific menus, which provides fast access to the AMX features.



TRACE32 with AMX menu

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