

INTRODUCING

+ RapiTime+

now with C++ support



On-target timing verification tools from:



Rapi**Time** 2.4

The essential on-target timing verification and optimization tool for critical real-time embedded systems.

Now supporting engineers working with C, C++ and Ada

Rapi**Time** 2.4 reduces the cost and effort required to conduct timing verification, optimize software, update legacy systems and integrate critical real-time embedded systems

Engineers working on critical real-time embedded systems often encounter one or more of these challenges:

Timing verification

Are there any alternatives to the intensive *and* expensive effort usually required for engineers to perform timing verification on critical real-time embedded systems?

Software optimization

Can engineers eliminate weeks of trial and error and quickly home in on the optimizations that have the greatest impact in reducing peak CPU load?

Updating a legacy system

Is it possible to increase confidence in your business case when the choice is between sticking with your legacy hardware or opting for an upgrade?

Integrating a system

Will there ever be a solution to performance problems caused by the incorporation of software modules from different suppliers into one integrated system?

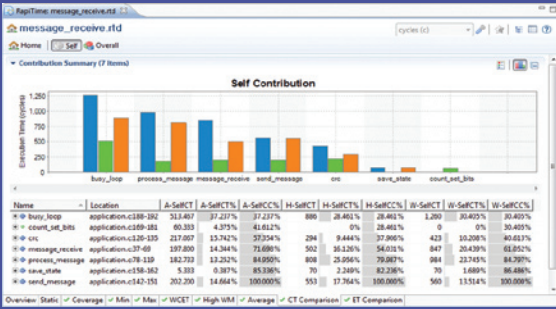
The answer to all four questions is YES
– with Rapi**Time** 2.4

RapiTime 2.4 combines the features of previous versions with support for engineers working with C, C++ and Ada including:

Execution Time Measurement

If you want in-depth measurements at a far quicker rate than normal and with substantially less effort, RapiTime automates execution time measurement and rapidly highlights potential problem areas.

Execution Time Summary reports provide the following information for each function:



Name	Location	A-SelfCT	A-SelfCT%	A-SelfCC%	H-SelfCT	H-SelfCT%	H-SelfCC%	W-SelfCT	W-SelfCT%	W-SelfCC%
busy_loop	application.c108-181	311.807	37.237%	37.237%	889	28.461%	28.461%	1.200	20.402%	30.402%
count_set_bits	application.c109-181	60.353	4.375%	41.612%	0	0%	28.461%	0	0%	30.402%
cx	application.c120-135	237.057	15.742%	37.234%	294	9.444%	37.060%	423	10.206%	80.637%
message_receive	application.c37-69	197.809	14.346%	71.086%	502	26.226%	54.012%	647	20.429%	61.551%
process_message	application.c78-119	182.732	13.252%	84.950%	808	25.956%	79.067%	984	23.743%	84.797%
save_state	application.c158-162	5.333	0.387%	85.336%	70	2.249%	82.236%	70	1.889%	86.488%
send_message	application.c142-151	202.200	14.664%	100.000%	553	17.764%	100.000%	340	13.514%	100.000%

- minimum, maximum and average execution times
- execution time on the high watermark path
- worst-case execution time
- the contribution to the overall average time, WCET or high water mark
- number of executions in the average case, high water mark case and worst case
- execution times either including or excluding sub-functions.
- As with all RapiTime reports, you can display data in time units (e.g. microseconds) or in terms of CPU cycles.

Worst-Case Calculation

Go beyond conventional code profiling techniques which only identify the lines of code that execute the most on average. RapiTime quickly identifies worst-case hotspots from the point of view of their contribution to the overall worst-case execution time.

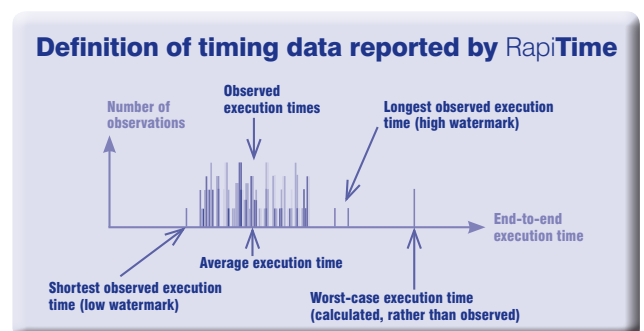
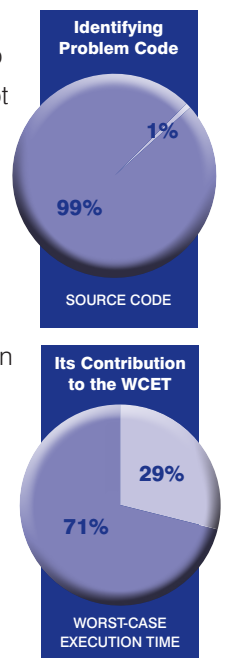
Performance Optimization

When you need to reduce worst-case execution times but aren't sure where to look, RapiTime identifies worst-case hot spots and helps you to direct your optimization efforts to where they will have the greatest benefit.

Once we know which code is making the most contribution to the worst-case execution time, performance optimization can begin. Removing or amending code has been shown to dramatically reduce worst-case execution times on large real-time software systems.

RapiTime 2.4 also includes the collection of on-target **code coverage** – which gives you an accurate picture of the parts of the source code investigated during testing – and **debugging support** through the Rewind facility, which gives users the ability to move backwards and forwards – “Rewind” – through source code.

The capacity to quickly identify the source of timing problems and carry out targeted optimization work means RapiTime 2.4 helps engineers and managers overcome this challenge.



Rapita Systems Ltd

We specialise in on-target verification tools and services for large critical real-time embedded software systems in the avionics and automotive electronics markets. A spin-off company from York University, founded in 2004 to bring real-time verification products to market, Rapita Systems now have clients and distributors around the world.

RapiTime v2.4 supports:

Targets: All 8, 16 and 32 bit microprocessors and DSPs

Languages: C, C++ and Ada

C Compilers: ANSI C, Wind River, GCC, Tasking, Cosmic, Greenhills, IAR, Keil, MSVC, Borland

Ada Compilers: Gnat, Greenhills, XD Ada

Host Operating Systems: Microsoft Windows (XP, 2000, Vista, 7), Linux

Installation and Integration: To minimise set-up time, Rapita Systems' experienced engineers can install RapiTime and work with you to integrate it with your current system and RTOS if applicable.

Interested?

Contact us:

- To request a trial version of RapiTime 2.4.
- For current information on our compiler and OS support.
- For an update on our plans to support other languages or operating systems.
- To request support for a different compiler.

For more information on RapiTime and other Rapita products

- take a look at www.rapitasystems.com
- download white papers at www.rapitasystems.com/downloads
- contact your RapiTime distributor www.rapitasystems.com/distributors
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