

Comparison of QNX Neutrino, Windows CE7, Linux RT and Android (RT) operating systems on ARM processor

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Contents

1	About the RTOS evaluation project	5
1.1	Purpose and scope of the RTOS evaluation.....	5
1.2	Test framework used: 2.9.....	5
2	About the OSs and the testing platform.....	6
2.1	Software	6
2.2	Hardware.....	7
3	Evaluation results overview	9
3.1	Dedicated Systems' ratings for the tested RTOSs.....	9
3.2	Rating Criteria	9
3.3	Positive and negative points for each OS	10
3.4	Ratings by category	11
3.4.1	QNX Neutrino 6.5 with Patch 2530.....	12
3.4.2	Windows Embedded Compact 7	12
3.4.3	Linux 2.6.33.7 with rt30 Patch	12
3.4.4	Android Linux 3.0.4.....	12
3.5	Tests Summary	13
3.5.1	Clock tick processing duration (CLK-P-DUR).....	13
3.5.2	Thread switch latency between same priority threads (THR-P-SLS).....	14
3.5.3	Maximum sustained interrupt frequency (IRQ_S_SUS).....	15
3.5.4	Mutex acquire-release timings: contention case (MUT-P-ARC).....	16
3.5.5	Mutex acquire-release timings: no-contention case (MUT-P-ARN)	17
4	Detailed Comparison	18
4.1	Clock tests (CLK)	18
4.2	Thread tests (THR).....	19
4.2.1	Thread creation behaviour (THR-B-NEW).....	19
4.2.2	Round robin behaviour (THR-B-RR)	20
4.2.3	Thread switch latency between same priority threads (THR-P-SLS).....	21
4.2.4	Thread creation and deletion time (THR-P-NEW)	23
4.3	Semaphore tests (SEM).....	25
4.3.1	Semaphore locking test mechanism (SEM-B-LCK)	25
4.3.2	Semaphore releasing mechanism (SEM-B-REL).....	26
4.3.3	Time needed to create and delete a semaphore (SEM-P-NEW)	26
4.3.4	Test acquire-release timings: non-contention case (SEM-P-ARN)	28
4.3.5	Test acquire-release timings: contention case (SEM-P-ARC)	29
4.4	Mutex tests (MUT).....	31
4.4.1	Priority inversion avoidance mechanism (MUT-B-ARC)	31
4.4.2	Mutex acquire-release timings: no-contention case (MUT-P-ARN)	32
4.4.3	Mutex acquire-release timings: contention case (MUT-P-ARC).....	33
4.5	Interrupt tests (IRQ).....	35

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4.5.1 Interrupt latency (IRQ_P_LAT)	35
4.5.2 Interrupt dispatch latency (IRQ_P_DLT)	37
4.5.3 Interrupt to thread latency (IRQ_P_TLT)	38
4.5.4 Maximum sustained interrupt frequency (IRQ_S_SUS)	39
5 Conclusion	41
6 Related documents	42
7 Appendix A: Acronyms.....	44

SAMPLE

1 About the RTOS evaluation project

This section describes the purpose and scope of the evaluations conducted by Dedicated Systems.

1.1 Purpose and scope of the RTOS evaluation

This document provides quantitative measures to help potential RTOS users make objective comparisons between OSs and help them decide which OS is better for their needs.

This document compares the results of the quantitative evaluations of four real time operating systems (RTOSs). These OSs are:

- QNX Neutrino 6.5 patch 2530
- Windows Embedded Compact 7
- Linux 2.6.33.7.2-rt30
- Android Linux 3.0.1

The order in which we list the OSs is based on the overall results obtained by the OSs, with the OS with the best results listed first and the others following in descending order. This ordering is maintained throughout the whole report.

These RTOSs were evaluated on the same ARM platform (BeagleBoard-XM Rev C).

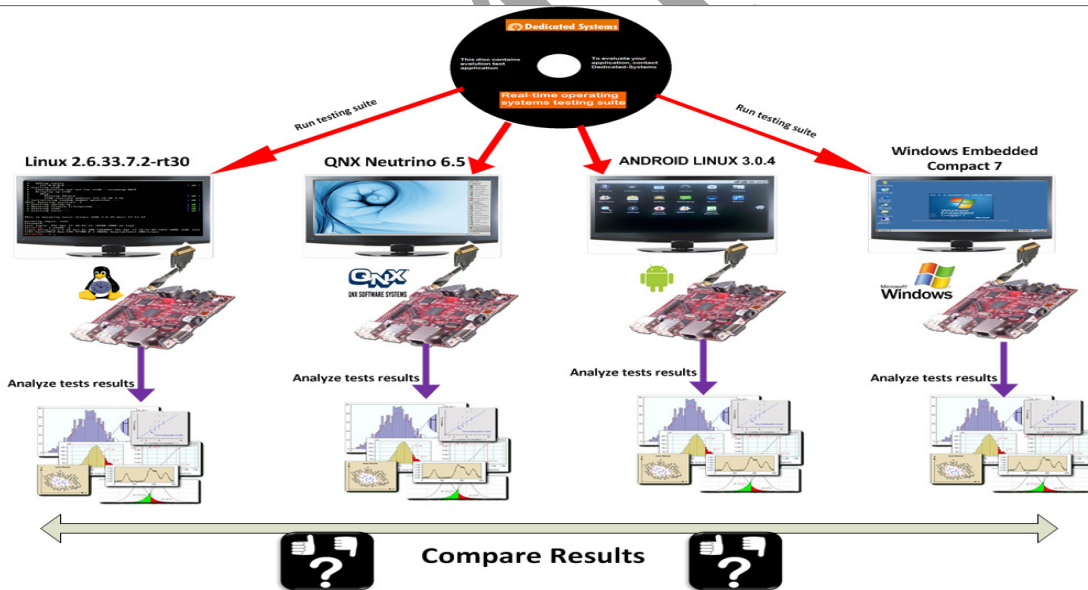


Figure 1: High level view of the evaluation procedure

1.2 Test framework used: 2.9

This document shows the test results in the scope of the evaluation framework 2.9. More details about this framework are found in Doc 1 (see section 6).

2 About the OSs and the testing platform

This section describes the OSs that Dedicated Systems tested using its Evaluation Testing Suite, and the hardware on which these OSs were running during the testing.

2.1 Software

The following table shows the operation systems' versions whose behavior and performance results were compared by Dedicated Systems after testing them with its evaluation testing suite on the same ARM platform (BeagleBoard-XM Rev C).

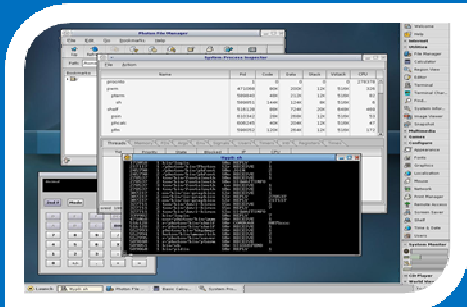
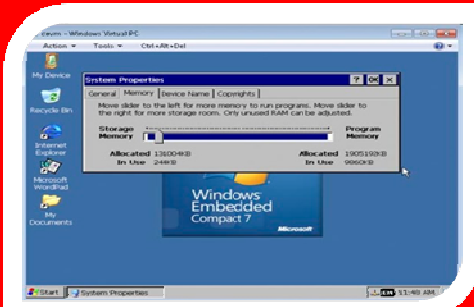
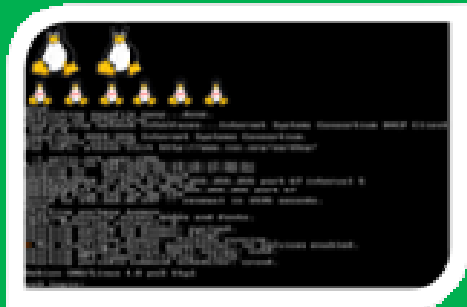
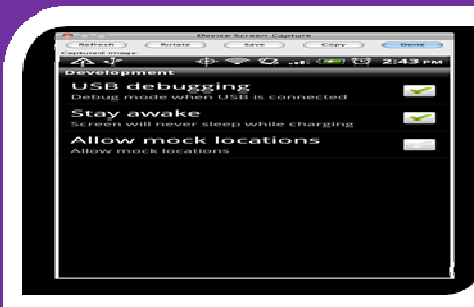
<p>QNX Neutrino RTOS v6.5.0 with Patch 2530</p>	<p>Windows Embedded Compact 7</p>
	
<p>Vanilla Linux 2.6.33.7 with RT-30 Patch</p>	<p>Android Linux 3.0.4</p>
	

Table 1: The evaluated OSs

For **QNX Neutrino 6.5**, Patch 2530 was applied. This patch introduces a fix to the io-pkt network stack where a timer pulse implementation is used instead of attaching a handler to the timer interrupt. This patch significantly improves clock tick processing times and results in improved real time performance.

For **Windows Embedded Compact 7**, no patches were applied.

For “**Vanilla**” **Linux 2.6.33.7**, real-time patch rt-30 was applied to provide some real time characteristics for the Linux kernel. This RT patch was the latest version officially released by OSADL.

For **Android Linux 3.0.4**, no patches were applied

2.2 Hardware

We conducted our tests on the same ARM platform. This platform is a Beagle-XM Board Rev C with the following characteristics:

- Based on the Texas Instruments DM3730 Digital Media Processor
- ARM Cortex A8 running at 1GHz
- L1 Cache: 32KB instruction and 32KB data cache
- L2 Cache: 64KB
- 512MB RAM at 166MHz

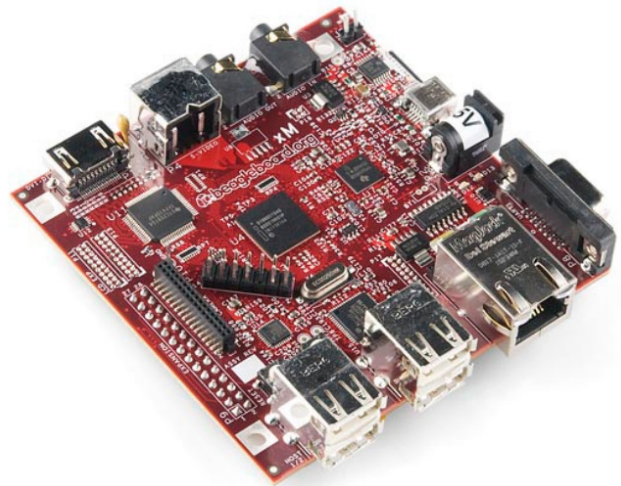


Figure 2: The ARM board on which the tests were conducted