

QNX V6.5 ON X86 ATOM

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1	Document Intention.....	6
1.1	Purpose and scope	6
1.2	Document issue: the 2.9 framework	6
1.3	Related documents	7
2	Introduction	8
2.1	Overview	8
2.2	Evaluated (RTOS) product.....	8
2.2.1	Software	8
2.2.2	Hardware	8
3	Evaluation results summary.....	9
3.1	Positive points	9
3.2	Negative points	9
3.3	Ratings	9
4	Test Results.....	10
4.1	Calibration system test (CAL)	10
4.1.1	Tracing overhead (CAL-P-TRC).....	10
4.1.2	CPU power (CAL-P-CPU)	11
4.2	Clock tests (CLK)	12
4.2.1	Operating system clock setting (CLK-B-CFG)	12
4.2.2	Clock tick processing duration (CLK-P-DUR)	12
4.3	Thread tests (THR)	14
4.3.1	Thread creation behaviour (THR-B-NEW)	14
4.3.2	Round robin behaviour (THR-B-RR).....	15
4.3.3	Thread switch latency between same priority threads (THR-P-SLS).....	15
4.3.4	Thread creation and deletion time (THR-P-NEW).....	17
4.4	Semaphore tests (SEM).....	21
4.4.1	Semaphore locking test mechanism (SEM-B-LCK)	22
4.4.2	Semaphore releasing mechanism (SEM-B-REL).....	22
4.4.3	Time needed to create and delete a semaphore (SEM-P-NEW).....	22
4.4.4	Test acquire-release timings: contention case (SEM-P-ARN).....	25
4.4.5	Test acquire-release timings: contention case (SEM-P-ARC).....	26
4.5	Mutex tests (MUT).....	29
4.5.1	Priority inversion avoidance mechanism (MUT-B-ARC)	30
4.5.2	Mutex acquire-release timings: contention case (MUT-P-ARC)	30
4.5.3	Mutex acquire-release timings: no-contention case (MUT-P-ARN).....	32
4.6	Interrupt tests (IRQ)	33
4.6.1	Interrupt latency (IRQ_P_LAT).....	34
4.6.2	Interrupt dispatch latency (IRQ_P_DLT)	34
4.6.3	Interrupt to thread latency (IRQ_P_TLT).....	35
4.6.4	Maximum sustained interrupt frequency (IRQ_S_SUS).....	37
4.7	Memory tests.....	37

4.7.1 Memory leak test (MEM_B_LEK)	38
5 Appendix A: Vendor comments	39
6 Appendix B: Acronyms	40

SAMPLE

1 Document Intention

1.1 Purpose and scope

This document presents the quantitative evaluation results of the QNX Neutrino operating system V6.5 employed on an x86 Atom based platform.

The layout of this report follows the one depicted in “The OS evaluation template” [Doc. 4]. The test specifications can be found in “The evaluation test report definition.” [Doc. 3]. See section 1.3 of this document for more detailed references. These documents have to be seen as an integral part of this report! Due to the tightly coupling between these documents, the framework version of “The evaluation test report definition.” has to match the framework version of this evaluation report (which is 2.9). More information about the documents and tests versions together with their corresponding relation between both can be found in “The evaluation framework”, see [Doc. 1] in section 1.3 of this document.

The generic test code used to perform these tests can be downloaded on our website by using the link in the related documents section.

1.2 Document issue: the 2.9 framework

This document shows the test results in the scope of the evaluation framework 2.9.

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2 Introduction

This chapter talks about the OS that we are going to test and evaluate, and the hardware on which the OS under testing will be employed.

2.1 Overview

QNX Software Systems Ltd was founded in 1980 and has been always focused on delivering solutions for the embedded systems market.

One of the main differences between QNX and other RTOS is the fact that QNX is built around the POSIX API standard. This has its advantages as a lot of code for Linux based platforms can be compiled and run on QNX Neutrino. However, bear in mind that we are discussing a real-time operating system here.

QNX Neutrino is based on true microkernel architecture with message-based inter-process communication. For instance, drivers are just applications with special privileges, and as such they cannot crash the kernel. The concept of kernel modules which is the case in Linux is not needed here, which makes QNX Neutrino a very stable product.

Furthermore, QNX Neutrino was initially built-up as a multi-processor capable operating system (both SMP and AMP). Nowadays, this is a very important asset in today's multi- and many-core business.

2.2 Evaluated (RTOS) product

2.2.1 Software

The operating system that we are going to evaluate is the QNX NEUTRINO RTOS v6.5.0 including patch 2530, from QNX Software Systems Ltd.

2.2.2 Hardware

The hardware that was used for executing our tests for the QNX Neutrino RTOS has the following characteristics:

- Motherboard: Advantech SOM-6760, PCI bus at 33MHz, using the System Controller Hub US15W.
- CPU: Intel Atom Z530 1.6GHz 133MHz Front Side Bus.
 - 32KByte L1 Instruction Cache,
 - 24KByte L1 Write Back Data Cache,
 - 512KByte 8-way L2 Cache (which can be reduced up to zero in some processor sleep states)
 - 1 core with hyper-threading support (however hyper threading was disabled during this test).
- RAM: 512MB DDR2
- VMETRO PCI exerciser in PCI slot 3 (PCI interrupt level D, local bus interrupt level 10)
- VMETRO PBT-315 PCI analyser in PCI slot 4.
- External and CPU internal cache was enabled during the tests.

3 Evaluation results summary

Following is a summary of the results of evaluating the QNX NEUTRINO RTOS v6.5.0, from QNX Software Systems Ltd.

3.1 Positive points

- Excellent architecture for a robust and distributed system.
- Very fast and predictable performance.
- Large number of board support packages (BSP) and drivers (the source for most of them is available for public) which can be easily downloaded.
- The availability of documentation which can be considered more than the average.
- Efficient and user friendly Integrated Development Environment (IDE)

3.2 Negative points

- Not all code is available in source code. Customers can apply for source access.

3.3 Ratings

For a description of the ratings, see [Doc. 3].

RTOS Architecture	0	<div style="width: 90%;"></div>	9	10
OS Documentation	0	<div style="width: 90%;"></div>	9	10
OS Configuration	0	<div style="width: 80%;"></div>	8	10
Internet Components	0	<div style="width: 80%;"></div>	8	10
Development Tools	0	<div style="width: 90%;"></div>	9	10
BSPs	0	<div style="width: 80%;"></div>	8	10
Support	0	<div style="width: 80%;"></div>	8	10