



Maemo endurance testing results

- Vitaly Petrov
- Anton Ovseenko

Maemo

- **Maemo** – OS for mobile devices
- **Used in:** Nokia 770, N800, N810





Goal

- Target:
Find “hard to find” errors in the default set of maemo applications
- Errors
 - memory leaks
 - hang up
- Problems:
 - hard to reproduce errors
- Method: endurance testing



Endurance testing

Run application in typical scenarios for long-time

Automation

Simulation user actions in cycle

1. Open PDF
2. Scroll through pages
3. Take the system snap-shot
4. Go to step 2
5. Close PDF

Compare snap-shots with each other

Find difference in resource usage



Test cases

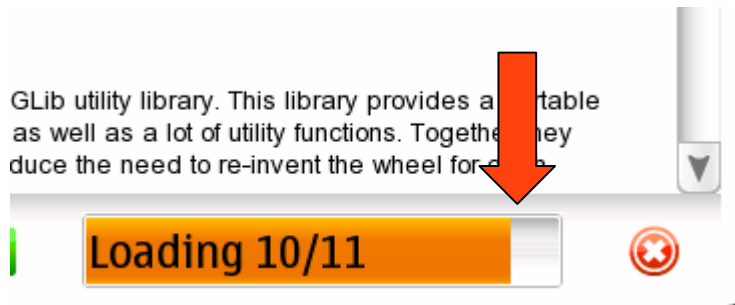
- Simple Tests
 - ✓ 1 application
- Simple Communication
 - ✓ Use network
- Advanced Communication
 - ✓ 2 devices (synchronization)

Start at 3 devices, >3 hours each test

Tools and Apps

Tools

- Xnee , dbus
 - (repeat action sequence)
- Xprop , xresponce
 - (check changes on screen)
- Sp-endurance
 - (take system snap-shot)



Apps

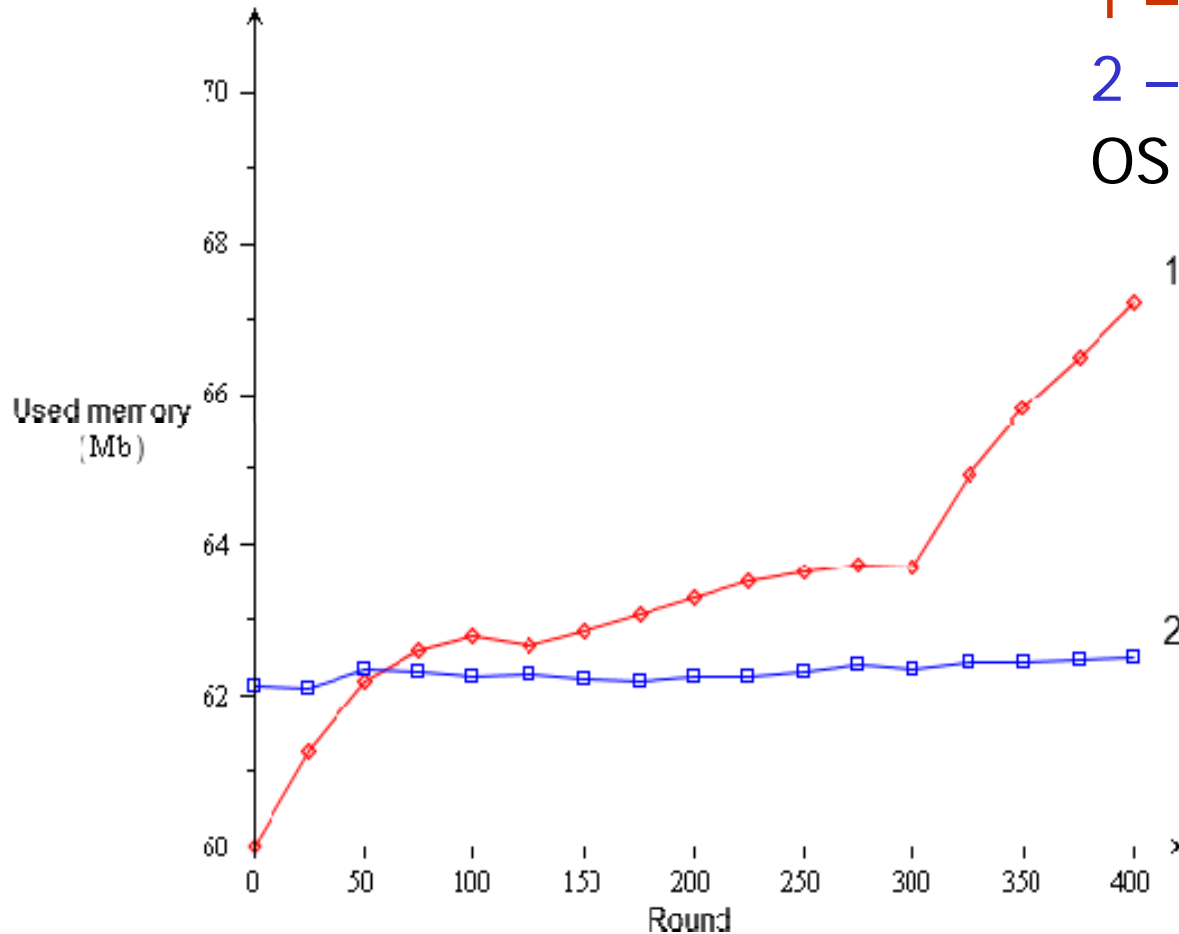
- Browser
- Chat
- Sketch
- Pdf
- Notes
- Gtalk
- Audio/video player
- Image browser

Report example

1 – chat (leak)

2 – notes (ok)

OS release – Diablo 43-7



Testing results

test	Chinook 51-13	Diablo 23-14	Diablo 36-5	Diablo 43-7
simple	Results	Results	Results	Results
audio\list	leak	small leak	fault	small leak
audio\move	small leak	small leak	small leak, fault	small leak
image\rotate	fault	fault	fault	fault
image\zoom	small leak	small leak	small leak	small leak
notes\changetext	ok	ok	ok	small leak
notes\copytext	leak, fault	ok	ok	leak
notes\writetext	small leak	ok	ok	ok
pdf\test1	ok	small leak	ok	ok
pdf\test2	leak, fault	fault	ok	ok
pdf\test3	ok	ok	ok	ok
pdf\test4	fault	small leak, fault	small leak	ok
pdf\test5	ok	ok	ok	ok
pdf\test6	small leak	small leak	ok	leak
sketch\test1	ok	ok	ok	ok
sketch\test2	ok	small leak	small leak	ok
video\fullvid	leak	leak	ok	small leak
video\move	fault	leak	fault	ok
adv_comm	Chinook 51-13	Diablo 23-14	Diablo 36-5	Diablo 43-7
video-call\caller	leak	leak	small leak	small leak
video-call\ant.	small leak	small leak	ok	small leak
audio-call\caller	leak	leak	leak	small leak
audio-call\ant.	leak	small leak	leak	leak
bluetooth\sender	ok	ok	ok	ok
bluetooth\receiver	ok	ok	small leak	ok
google-chat	small leak	ok	ok	ok
simple_comm	Chinook 51-13	Diablo 23-14	Diablo 36-5	Diablo 43-7
rss\txt	fault	ok	ok	small leak
rss\pic	fault	ok	ok	ok

Results

- **Fault** (hanging)
- **Leak** (>5mb)
- **Small leak** (1-5mb)
- **Ok** (<1mb)

Results analysis

Changes

	Bad
	No change
	Good

		September	November				
test	Chinook 51-13	Diablo 23-14	Diablo 36-5	Diablo 43-7	Difference	Difference	Difference
simple	Results	Results	Results	Results	51-3 to 23-14	23-14 to 36-5	36-5 to 43-7
audio\list	leak	small leak	fault	small leak			
audio\move	small leak	small leak	small leak, fault	small leak			
image\rotate	fault	fault	fault	fault			
image\zoom	small leak	small leak	small leak	small leak			
notes\changetext	ok	ok	ok	small leak			
notes\copytext	leak, fault	ok	ok	leak			
notes\writetext	small leak	ok	ok	ok			
pdf\test1	ok	small leak	ok	ok			
pdf\test2	leak, fault	fault	ok	ok			
pdf\test3	ok	ok	ok	ok			
pdf\test4	fault	small leak, fault	small leak	ok			
pdf\test5	ok	ok	ok	ok			
pdf\test6	small leak	small leak	ok	leak			
sketch\test1	ok	ok	ok	ok			
sketch\test2	ok	small leak	small leak	ok			
video\fullvid	leak	leak	ok	small leak			
video\move	fault	leak	fault	ok			
adv_comm	Chinook 51-13	Diablo 23-14	Diablo 36-5	Diablo 43-7	51-3 to 23-14	23-14 to 36-5	36-5 to 43-7
video-call\caller	leak	leak	small leak	small leak			
video-call\ant.	small leak	small leak	ok	small leak			
audio-call\caller	leak	leak	leak	small leak			
audio-call\ant.	leak	small leak	leak	leak			
bluetooth\sender	ok	ok	ok	ok			
bluetooth\receiver	ok	ok	small leak	ok			
google-chat	small leak	ok	ok	ok			
simple_comm	Chinook 51-13	Diablo 23-14	Diablo 36-5	Diablo 43-7	51-3 to 23-14	23-14 to 36-5	36-5 to 43-7
rss\txt	fault	ok	ok	small leak			
rss\pic	fault	ok	ok	ok			



Results

final decision	Chinook 51-13	Diablo 23-14	Diablo 36-5	Diablo 43-7
fault	7	3	4	1
leak	5	4	2	3
small leak	6	8	5	9
ok	8	11	15	13

- Bugs were confirmed by developers
- Fixed applications show better results during next testing