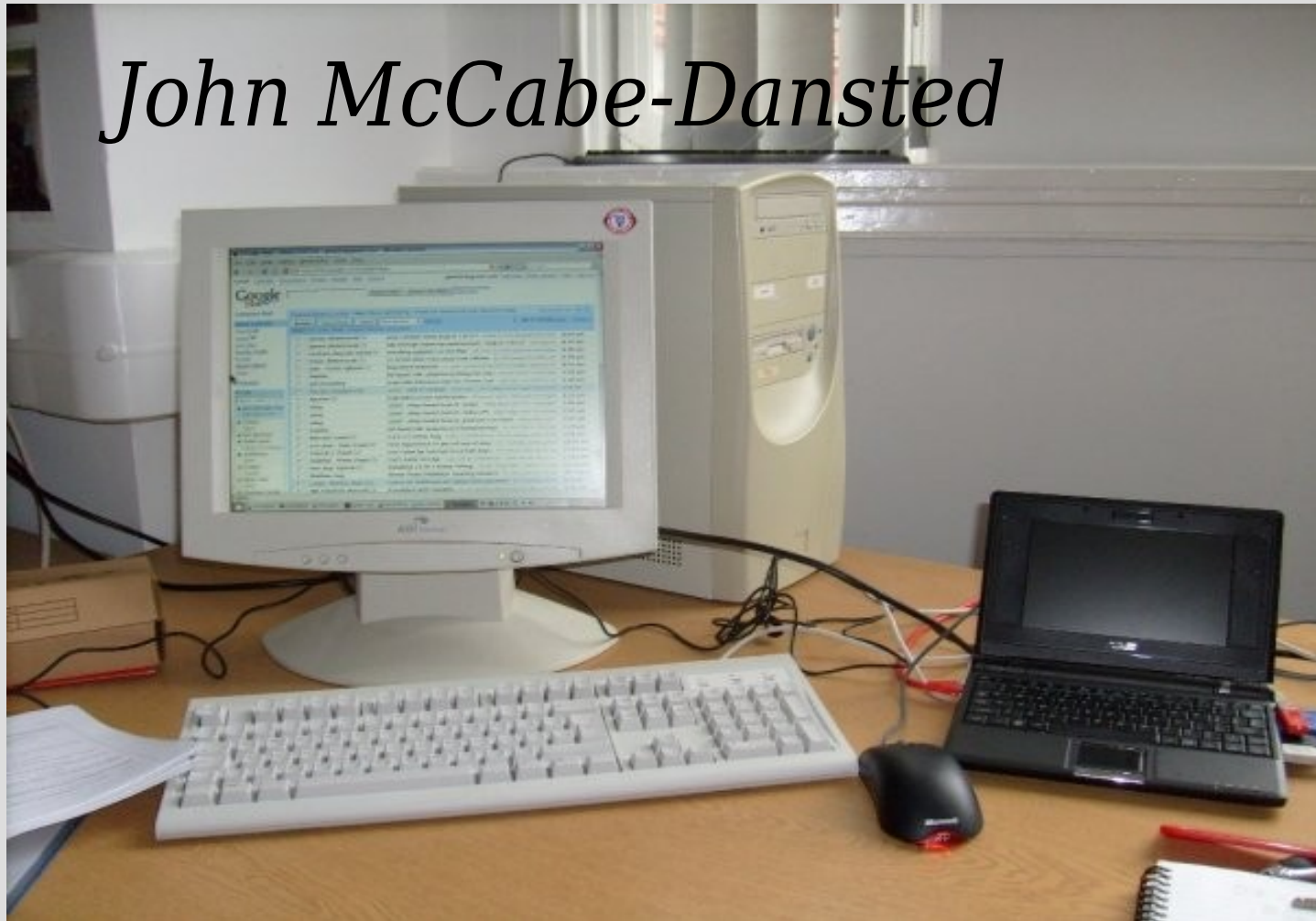


EeePC Tips and Tricks

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Overview

- Why the Eeepc
- Memory, Swap, and CompCache
- CPU & “Overclocking”
- Virtual Resolution
- Flash Memory, Compression
- Adding Software
- Why EeeOS.
- Wireless lite.
- Battery life.
- Compiz and Transparency

Why EeePC?

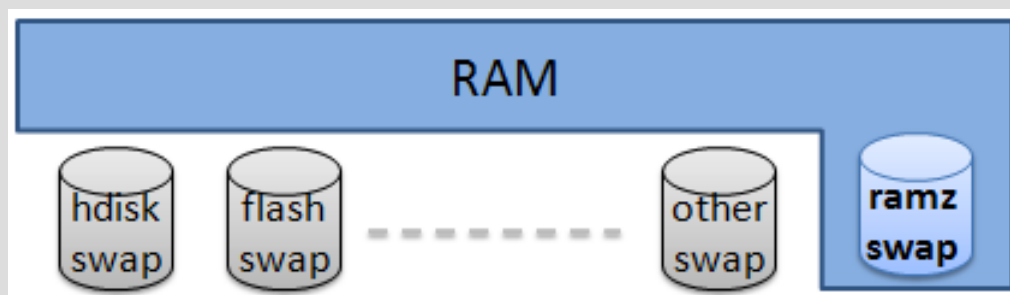
- The EeePC 701: Ultramobile PC.
 - Under 1Kg
 - Cheap (\$170/\$260).
 - Robust, No HDD.
- EeePC 901:
 - 9" screen, battery life, multi-touch
- EeePC 1000:
 - 10" keyboard
- A full Linux (Xandros) machine
 - (XP, or MacOS X, or ...)
 - multimedia, play (widescreen) video
 - Can even run Firefox!

Memory

- 512 MB of ram (1GB for 900+)
 - Easy to replace.
- No swap
 - SSD has limited (10,000+) write cycles.
 - Still over a year at 1MB/sec
 - Does not void 3year warrenty
 - Only 4GB of SSD.
- Swap to compressed ram.
 - “compcache”
 - 2:1 ratio
 - Default of 25%: Squeeze 128MB into 64MB
 - Only allocates memory as required.

Compcache

- Swap to compressed ram.



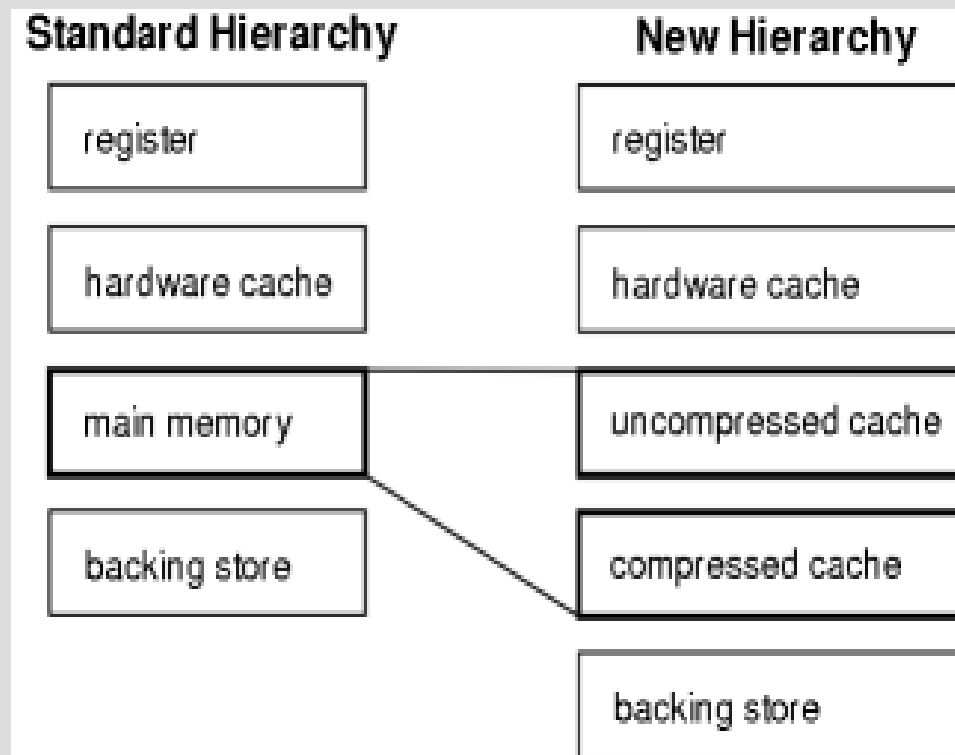
- 2:1 ratio
- Default of 25%: Squeeze 128MB into 64MB
- Only allocates memory as required.
- Also useful for LiveCDs
 - Ubuntu required 256MB, but 300MB for LiveCD
 - I submitted debdiff for Ubuntu to add CC module

Compcache: Module vs Patch

- I use module for Eeepc.
 - Safe, always have option of not loading
 - Doesn't waste disk space, BUT
 - Emulates physical swap
 - Disk is not told when swap no longer needed
 - Module cannot shrink swap
- Patch more memory efficient
 - Adds hooks to kernel
 - Can shrink swap space
 - Might still store “clean” pages
 - Use 1.5x memory rather than 0.5x
 - Used by Ubuntu

Compressed Caching

- Current Compcache doesn't cache.
- Goal, and model of linux24-cc:



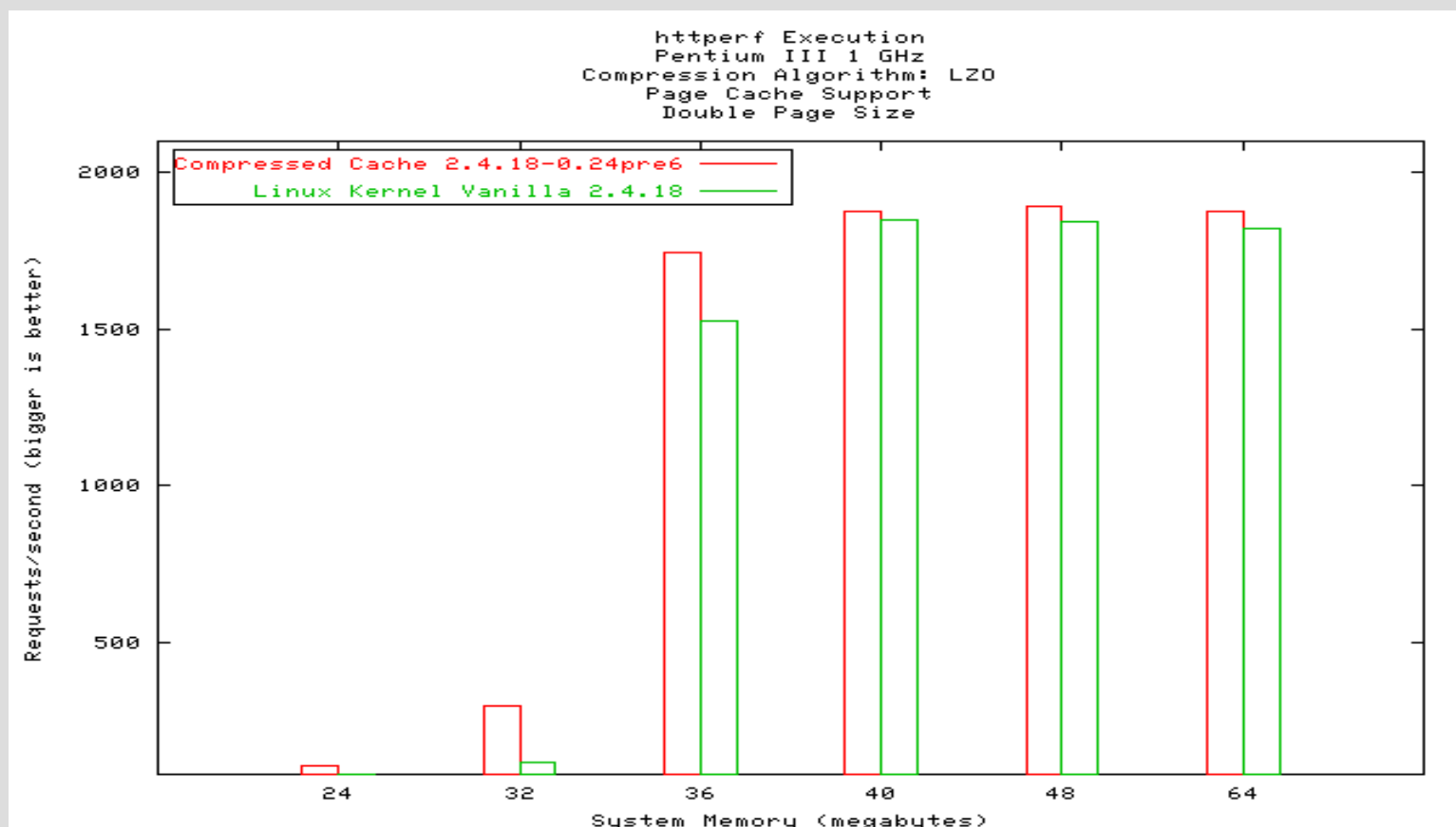
from CC website

Why is Compressed Cache Useful?

- For EeePC only swap available. (not cache)
- Cache hierarchy
 - 1st level cache: Fast
 - 2nd level cache: Still Fast
 - Memory. 60ns
 - *Compressed Cache [$\sim 20\mu\text{s}$]*
 - *2x Slower than memcpy.*
 - *But have to read entire 4K page.*
 - Disk 10ms = 10,000,000ns
- No extra hardware required
- Adaptive, disable when not useful
- CPU usually idle when low on memory.
- Up to 5x faster than disk swap alone

Benchmark

- Old Benchmark of Compressed Caching.



CPU

- 900Mhz Intel Dothan
 - Similar to 1.6MHz Pentium 4
 - Outperforms in nbench/BYTEmark

CPU	Memory	Integer	Floating Point
Dothan 70%	3.443	3.659	6.001
Dothan 85%	4.535	4.799	8.017
Dothan 100%	5.295	5.658	9.391
Pentium 4 1.6GHz	4.938	4.211	8.262

“Overclocking”

- Dothan rated for 900MHz
- Overheat?
 - No dedicated heatsink.
 - ~60C should be OK.
- Power?
 - Little difference
 - May need to increase voltage
- Change in speed may cause crash
 - Use small increments.
 - Underclock before sleeping.

Virtual Resolution

- The screen is 800x480.
 - Many apps assume 800x600 or more.
- Alt-drag is usable
 - [Alt]-F11 fullscreen
- Linux supports “Virtual Resolution”
 - Screen follows mouse.
 - More convenient than dragging
 - Intel driver does not support Virtual Resolution
- Workaround
 - i810pan
 - Need to use later unofficial version

Flash Memory

- Has 4GB Flash Memory
 - 1.4GB free
- Compressed Drive
 - Ubuntu 700MB liveCD -> 2GB install
 - SquashFS: readonly
 - unionfs
 - ReiserFS v4: not in mainline
 - CompFUSEd: Experimental, segfaults on Eeepc
- I have not used compression.

Myth: Speed vs Size

- Compressed Drives often faster
- SSD sequential read 25MB/s
- LZO fast compressor
 - Used by compcache
 - /usr/bin 137MB squeezed to 66MB
 - Decompression 1.6s on Eeepc (lzop -d)
 - 39MB/s in, 80MB/s out
 - (1.2s when “overclocked”)
 - Decompression 3.0s from Disk
 - 22MB/s in, 45MB/s out
- 2x faster.
- Save 4 seconds on boot (squashfs)

Software

- Eeepc has almost no software in Repos.
- Can use Debian Etch software
 - Use apt-pinning
 - Ensures that we don't break system.
 - /etc/apt/preferences
- Etch is old
 - OpenOffice 2.0, Firefox 2.0
 - Lenny about to be released
 - Can compile own software
 - 1.4GB not much to install devel libraries

Debootstrap

- I compile for my EeePC on my Desktop.
- Debootstrap installs a minimal Debian.
 - Uses same kernel.
 - No need to dual boot.
 - No virtualisation software
- Commands:
 - `sudo debootstrap etch ./etch-chroot ftp://ftp.iinet.net.au/debian/debian`
 - `chroot `pwd` /etch-chroot/`
 - `apt-get build-dep lyx?`
 - `pbuilder, or;`
 - `./configure && make && make install`

CFLAGS

- May as well optimize for EeePC's CPU
- I use:
 - `CFLAGS="-march=pentium-m -Os -pipe -fomit-frame-pointer" CXXFLAGS="-march=pentium-m -Os -pipe -fomit-frame-pointer" ./configure --prefix="/usr/local/lyx-1.5.7"`
- `CFLAGS`: For C compiler
- `CXXFLAGS`: for C++ compiler
- `-march=pentium-m -Os`: Optimise for Atom
- `-pipe`: compile faster
- `-fomit-frame-pointer`: Don't need to Debug
- `prefix=...`: install to directory ...

Why EeeOS

- Alternatives: eeeXubuntu, Ubuntu-eee, ...
- Fast Boot
- Quirky
- No CDRom
 - Can boot from USB (theoretically)

Wireless

- GUI clumsy.
 - KDE less so.
- Terminal (Cntl-Alt-T)
- ~/bin/m:
 - sudo killall wpa_supplicant && sleep 1
 - sudo wpa_supplicant -iath0 -c
~/t/wpa_supplicant.conf.ath0 &
 - sleep 19
 - sudo dhclient ath0
- Now I just Enter "m"

Battery Life

- 3 hours
- Reduce Brightness
- Turn off wireless.
- Others, F2 on boot, disable hardware
- Powertop.

Compiz

- Intel 915GM
- Powerful enough to run Compiz
 - “Desktop Effects”
 - Wobbly Windows?
 - Transparency
 - See window behind
 - Good for low resolution screen.
- Enabling Compiz on EeeOS not trivial

Enabling Compiz

- Install Full KDE
 - Default EEE Desktop does not allow new WM.
 - Cntl-Alt-T (start terminal)
 - sudo apt-get install ksmserver kicker
 - Can switch to KDE using power button.
- Enable Virtual Terminals
 - In case X does not work.
 - Change Option "DontVTSwitch" to "false"
 - /etc/X11/xorg.conf
 - Cntl-Alt-F3 to switch to VT
 - Alt-F2 to switch back to X.
 - Make sure you can log in

Enabling Compiz

- Modify xorg.conf
 - See: <http://www.r3uk.co.uk/index.php/home/36-useful-information/79-eeepc-tips-and-tricks>
- Install compiz
 - Apt-get install compiz
 - When in KDE can switch to compiz
 - Alt-F2
 - compiz -replace
 - Can also set to use compiz by Default.

Fixing Compiz

- Re-enable Alt-Move.
 - Can't drag windows above screen anymore
 - gconf-editor, untick constrain_y in
Compiz->Plugins->Move->allscreens->options
- Still no transparency, just ugly black bars
 - EeePC has buggy DRI
 - Download DRI drivers

<http://tikiwiki.tuxworld.ch/tiki-index.php?page:>

- Tearing
 - Need to enable vsync
 - sudo apt-get install driconf
 - run driconf “Always sync with Vertical Refresh”

Demo Time

- ... And Questions



Screenshots and Diagrams are from the respective projects.
Software I have used is mirrored at:

<http://www.ucc.asn.au/~mccabedj/eeepc/>