Nettop project
Computer Organization I
WS 08/09

Maria Balukova, Christian Hofer, Natalya Us, Patrica Walker

February 5, 2009, Graz

1 Assignment

Our task was to choose a small and energy efficient Nettop computer based on the Atom processor, optionally with a DVD drive. Our budget was 400 Euro. In addition we should acquire a suitable display for our Nettop.

2 Choosing components

2.1 Barebone

First of all we had to decide which barebone suits our needs best. Our main criteria were:
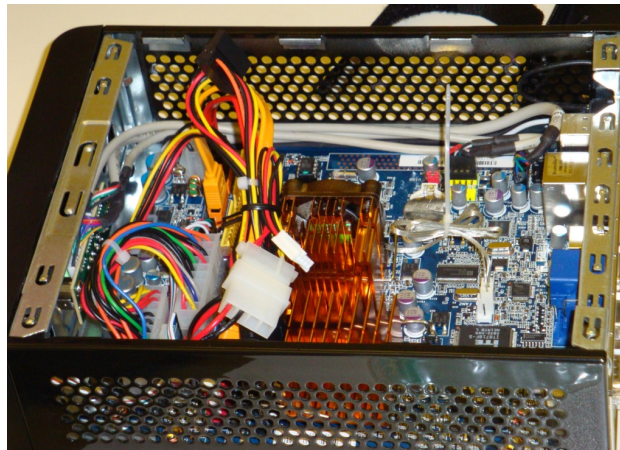
- Small Form Factor

- Silent

- DVI Port

- No preinstalled components

The only computer that fulfilled all our requirements was the Shuttle Barebone X27D.

The package consisted of the following parts:

- Case (25 x 18,5 x 7 cm (L/B/H))

- Motherboard (Intel 945GC + ICH7)

- Intel ATOM 1,6 GHz dual

  - Two cores offer much faster multitasking performance

- Onboard graphics (GMA 950, DVI)

- Sound, network (gigabit) and usual suspects ...

2.2 Components

- Samsung M5S 160GB HDD (SATA)

  In comparison to the 250GB model, this one didn't produce that much heat. Due to the small dimensions of our case, only a 2.5 inch model was contemplable.

- Kingston 2GB memory (DDR2-5300/667)

  As it is intended to be used as an office computer, 2 GB of main memory was largely enough.

- LITEON DVD-RW drive slim

  The case offered the possibility to install an internal optical drive.

- SilenX iXtrema PRO 40mm fan

  We decided to exchange the preinstalled motherboard fan with an even more silent one.

2.3 Display

In consultation with our professor and tutor, we settled for the 20-inch Dell E2009W display, as it is a brand new model and Dell offers a 3-year monitor replacement service.
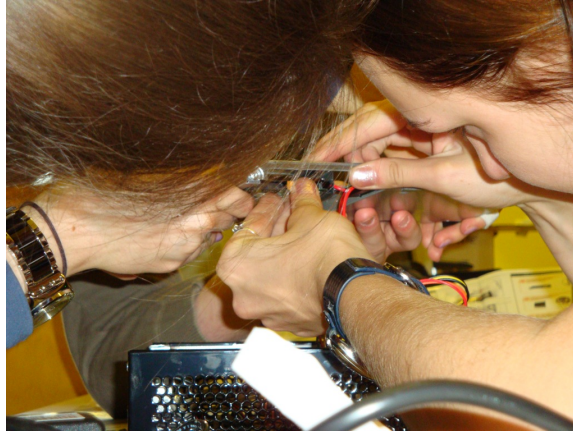

2.4 Cost

- Nettop: Eur 342.32

- Display: Eur 191.04

3 Assembly

3.1 General

As the processor was preinstalled, only optical drive, hard drive and memory had to be installed into the computer. The case can be easily opened and the installation process was not really problematic (although more hands make it much easier...).

3.2   Motherboard Fan

We exchanged the already installed motherboard fan - even though it wasn't noisy at all - with our even more silent and more efficient SilenX fan. The assembly was a bit problematic, due to the fact that it was quite tricky to access the screws with our screw driver. Moreover while screwing and unscrewing the fans, the cooling element moved quite a bit as it was only loosely mounted.

4   Setup

For our operating systems, we chose English as default language. We assigned 40 GB of usable hard disc space for every operating system.

4.1   MS Windows XP

We faced no problems in the installation process of Windows XP. All neeeded drivers were available on the included disc.

4.2   Linux - Ubuntu 8.10

General installation worked without any problems.

4.2.1   Network configuration

The Ubuntu network configuration tool did not work correctly, so we had to alter the network configuriation files by hand. First of all in `/etc/iftab` the network card had to be listed. The `/etc/network/interfaces` has to look the following way:

```
auto lo
auto [NETWORK INTERFACE]
```

```
iface lo inet loopback
iface [NETWORK INTERFACE] inet static
address [IP ADDRESS]
netmask [NETMASK]
gateway [GATEWAY]
mtu 1500
txqueuelen 1000
```

Afterwards the nameservers were written in `/etc/resolv.conf` and finally the network interface had to be reactivated with the following command: `sudo /etc/init.d/networking restart`.

At first we forgot the third line for the loopback device in the script above. Basically the network ran fine... until a restart, where the operating system overwrote the `resolv.conf` file.

5   Conclusion

As the case dimensions, the later use as an office computer and the ability of the Atom processor (all those points are in a way interdependent) narrowed down the choice, keeping to the budget AND choosing the suitably best components were both the hardest and most "thrilling" aspects of our task.

Unfortunately, the installation of the hardware, which is the most exciting part, was quickly done (due to the points we mentioned above). But nevertheless, it was a great experience and an opportunity to expand our knowledge, as everyone made a contribution to the project.

And of course it was great fun...!