Running Debian on Inexpensive Network Attached Storage Devices

Martin Michlmayr
tbm@cyrius.com

FOSDEM
Brussels, Belgium

- Explain what Network Attached Storage Devices (NAS) are.
- Show some interesting hardware.
- Explain how Debian can be installed on them.
- Mention some web resources and answer questions.

Network Attached Storage Devices

- For most people, a Network Attached Storage device (NAS) is an external hard drive on steroids.
- For geeks, a NAS is a complete computer.

- Power efficient
- Quiet
- Cheap

- Intel IXP42x, 133 or 266 MHz
- 32 MB RAM
- 8 MB flash
- no internal disk
- 1 10/100 Ethernet
- 2 USB
- ~85 EUR

- Intel IOP 80219, 600 MHz
- 1 DDR400 slot (up to 512 MB)
- 16 MB flash
- 2 SATA
- 2 GBit Ethernet
- 3 USB
- 1 mini-PCI slot
- ~350 EUR (no disk)

- Intel IXP420, 266 MHz
- 64 MB RAM
- 16 MB flash
- 1 PATA
- 1 10/100 Ethernet
- 2 USB

Freecom FSG-3

- Intel IXP42x, 266 MHz
- 64 MB RAM
- 4 MB flash
- 1 SATA
- 4 Ethernet
- 4 USB
- 1 E-SATA interface (external)
- ~290 EUR (with 160 GB disk)

- Freescale MPC8241, 266 MHz
- 128 MB RAM
- 4 MB flash
- 1 PATA
- 1 GBit Ethernet
- 2 USB
- Similar to the Buffalo Linkstation
- US$149

Linksys NSLU2

Advantages:

- It's cheap.
- It's quiet.
- Firmware can be upgraded via the network.

Disadvantages:

- Ethernet needs proprietary microcode.
- It's slooow and doesn't have much memory.

Advantages:

- It's reasonably fast.
- RAM can be upgraded.
- The company supports our porting effort.

Disadvantages:

- Ventilation is not ideal.
- It's noisy.
- It's expensive.

- Have serial console access (and ideally JTAG).
- Have working kernel support in mainline!
- Ideally, have a good relationship with the hardware vendor.

The general approach

- We provide a 'firmware' image that really is debian-installer.
- We read values from the existing system to start SSH.
- Users can do a normal installation via SSH.
- At the end, a Debian kernel and initramfs will be written to flash.

- Reads values from an existing system or firmware.
- Preseeds debian-installer so SSH will be started.
- Parses Unix tree, reads value from flash, etc.

- Writes kernel and initramfs to flash.
- Supports NSLU2 and N2100 – easy to extend.
- initramfs hooks: for example to set root partition

The future

- Support systems with 4 MB of flash.
- Put a rescue filesystem in flash.
- Release debian-installer RC2 because RC1 is broken.

More information

- http://www.cyrius.com/debian/nslu2/
- http://www.cyrius.com/debian/iop/n2100/
- http://www.nslu2-linux.org/