Installing Debian (Sarge) on an Asus P5AD2-E Premium

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Introduction

Allthough the Mainboard Asus P5AD2-E Premium is rated as "compatible" at Linux Compatible [http://www.linuxcompatible.org] several users have huge problems installing Debian (Sarge) on their hardware. The difficulties are encountered during the installation of the gigabit ethernet driver for the chip "Marvell Yukon/SysKonnect SK-98xx" and the IDE RAID controller "ITE8212". This paper is written to resume the wide spread documentation for solving installation problems with these controllers.

The following method requires an already running Debian (Sarge) system on a different computer. First a CD containing the Debian disc 1 has to be burned. This will not be discussed here. Second a driver disc with the needed module for the ITE 8212 has to be created. In the third step the target computer with the Asus P5AD2-E Premium has to be booted with the Debian disc 1 and the module on the driver disc has to be loaded. After that the installation can be continued as usual excepting the configuration of the network interface. The module for the gigabit ethernet card will be build later on the running system. These steps will be discussed in detail in the following chapters.

Pre-Requisites

The Sarge installation CD uses the kernel version 2.6.8-2-368 so all modules we need to load have to be compiled with the same options like the kernel has been. Debian provides a easy mechanism for solving this problem. The package kernel-headers-2.6.8-2-386 contains all headers and configurations which has been used for the compilation of the Debian kernel. You have to install this package and the kernel source code on an already running computer with the following command:

```
apt-get install kernel-source-2.6.8 kernel-headers-2.6.8-2-386
```

IDE RAID Module

Download

Compilation

Gigabit Ethernet Module

Download

install-8_23.tar.bz2
[http://www.syskonnect.com/syskonnect/support/driver/zip/linux/install-8_23.tar.bz2]   `mkdir sk98lin          cd          sk98lin          wget          http://www.syskonnect.com/syskonnect/support/driver/zip/linux/install-8_23.tar.bz2 tar xjvf install-8_23.tar.bz2`

Compilation

Driver Disc

Debian (Sarge) Installation

Insert the Debian (Sarge) netinstall CD into your CD/DVD drive. If your BIOS is configured for booting from CD/DVD you will get the LILO boot prompt immedately. If not, you can push `F8` during computer boot up to enter a selection menu for the device to boot from. Select your CD/DVD drive here and enter `expert26` to load the installation routine with the kernel version 2.6.8-2-386. Now follow the instructions in the list below.

1. Select the menu entries `Choose language`, `Choose country or region` and `Select a keyboard layout` to set up your language specific configuration.

2. In the next step select `Detect and mount CD-ROM`. You will get here a dialog with a list of several modules which can be loaded. Only `floppy, ide-core, ide-generic, ide-disc, ide-cd` and `isofs` are required. Two further dialogs will be shown: `Prompt for module parameters?` and `Start PC card services?`. Answer to both with `No`.

3. Next choose `Load installer components from CD` and proceed without selecting anything.

4. The menu item `Detect network hardware` will lead you through the same dialogs you have already seen by selecting `Detect and mount CD-ROM` before. The modules whe have choosen before are not shown anymore so you can disselect all modules and answer the following two questions with `No`. You will be also asked to choose a driver needed by your ethernet card. Select `no ethernet card` and continue.

5. Select the menu item `Configure the network`. The following window tells you that no network card has been detected. Confirm with `Continue` and enter a hostname in the next dialog.

6. By selecting `Detect hardware` you will get the dialog for modules to load one more time. Deselect all modules, confirm and answer the next two dialogs with `No` again.

7. Choosing `Partition disks` will result in an error `No partitionable media found.`. Just continue here and proceed with the next step.

8. Now it's time to load the modules for the IDE RAID controller and the gigabit ethernet. Push `Alt+F2` and confirm by pressing enter to open a console. You have to mount the floppy drive, copy the two modules on hard disk and load them afterwards:

```
mount /floppy
cp /floppy/iteraid.ko /tmp/
cp /floppy/sk98lin.ko /tmp/
modprobe scsi_mod
insmod /tmp/iteraid.ko
insmod /tmp/sk98lin.ko
```

The module `scsi_mod` is needed by `iteraid.ko` and has to be loaded first.

9. To leave the console and switch back to the installation menu press `Alt+F1`. Choose `Detect network hardware` and proceed with no selected modules.

10. In the next step select `Configure the network` and choose `eth0` assuming that you want to use your on-board network connector as your primary networking interface. Make sure you have pluged in a network cable into it.

11. Select `Detect hardware` and proceed according to step 5.

12. Next select `Partition disks`, choose a partitioning method and partition your drives. Write the partition table to disk afterwards.

13. Selecting `Installing the system` will copy all necessary data to your hard drive. After a while you have the opportunity to choose the kernel to install. Select `kernel-image-2.6.8-2-386` here as the two modules are compiled for this kernel.

14. Next you have to install a boot loader - either GRUB or LILO. I've decided to choose GRUB and installed it to the master boot record.

15. The two modules have to be intergrated into the new installed system. To do so switch to the console again by pressing `Alt+F2`. You can find all installed data in the directory `/target`. First the two modules have to be copied into the root directory of the new system.

```
cp /tmp/iteraid.ko \
  /target/lib/modules/2.6.8-2-386/kernel/drivers/scsi/
cp /tmp/sk98lin.ko \
  /target/lib/modules/2.6.8-2-386/kernel/drivers/net/sk98lin/
```

Second you need to change the root directory to `/target` for proper installation and configuration of the new system by typing `chroot /target`. After that, update your module dependencies with the command `depmod`. Fourth add the following two lines to the file `/etc/mkinitrd/modules`.

```
scsi_mod
iteraid
```

This will put the two modules to an initrd image which is created by the `mkinitrd` command. Before this can be executed, the proc filesystem has to be set up inside the `chroot` environment by typing:

```
mount -tproc none /proc
```

Now the initrd image is created with the following command.

```
mkinitrd -k -r /dev/sda1 \
  -o /boot/initrd.img-2.6.8-2-386.iteraid
```

So the new initrd image is /boot/initrd.img-2.6.8-2-386.iteraid. Please consider choosing the appropriate device file in the /dev directory which mounted as root directory. Next rename the original initrd image and create a link to the new one:

```
mv /boot/initrd.img-2.6.8-2-386 \
  /boot/initrd.img-2.6.8-2-386.org
ln -s /boot/initrd.img-2.6.8-2-386.iteraid \
  /boot/initrd.img-2.6.8-2-386
```

Set aliases for the two ethernet interfaces eth0 and eth1 in the file / etc/modutils/network. The file should look like this:

```
alias eth0 sk98lin
alias eth1 sk98lin
```

Also the file /etc/modules has to be modified telling the system which modules have to be loaded after the kernel has been loaded. Add the following line here:

```
sk98lin
```

In the last step inside the console execute the command update-modules for updating the file / etc/modules.conf.

16. Press Alt+F1 again to switch back to the installation menu and select Finish the install-ation.

Your system should reboot now and the debian configuration menu shoud appear. Continue from now on as usual.

References

[BOX04]   Jason   Boxman.   2004-03-22.   *Creating   an   initrd   image   on   Debian   GNU/Linux*
            [http://www.edseek.com/archives/000042.html].

[DEBFAQ]   #debian.de-FAQ-Team.   2005-09-13.   *#debian.de   -   Frequently   Asked   Questions*
            [http://channel.debian.de/faq/ch-dpkgundco.html].