The AmigaOne Debian Woody Linux Install Guide

© 2003, Ross Vumbaca (Rev 2.2)

Parts of this guide are taken from the "SuSe Linux Installation on the AmigaOne" document by Hyperion Entertainment.

1. Before you start

Before you start you will need to have this guide handy (print it out if required), the "AmigaOne Linux install Boot CD", and the Debian Woody PowerPC CDs, or a reasonably fast internet connection.

Before you begin the installation, you need to make a few adjustments to the U-Boot configuration. To do this, switch on your machine and wait for the U-Boot prompt to appear. If you have auto booting enabled, you might need to press any key to stop the boot countdown. If a BIOS menu appears, press the <ESC> key on your keyboard.

The U-Boot prompt will look like this:

```
]
```

On the prompt, you will be able to enter commands to configure U-Boot and instruct it to boot a Linux kernel.

Insert the Boot CD into your CDROM drive.

The first thing you need to do is find out where your CD-ROM drive is located. If you have it connected to the Primary IDE bus, then its device number will be zero or one: zero is the primary master, one is the primary slave. On the secondary bus, two is the secondary master and three is the secondary slave. The easiest way to find this out is to enter the "ide info" command. Just type the words without quotes at the "]" prompt. You should get some output similar to this:

```
] ide info

IDE device 0: Model: Conner Peripherals 210MB - CFS210A Firm: 6BT0.16 Ser#: CCB2ST0
        Type: Hard Disk
        Capacity: not available
IDE device 1: Vendor: SONY Prod.: CDU5211 Rev: YYS2
        Type: Removable CD ROM
        Capacity: 6.2 MB = 0.0 GB (3190 x 2048)

]
```

Note: The above output has been trimmed, and will differ from yours slightly.

As can be seen above, the CD-ROM drive is known as IDE device "**1**".

Note that the capacity of the drive should not be reported as "not available". If the CD hasn't been recognised, you need to issue the command "ide reset" and try again.

The next thing to do is to set to environment variables. Environment Variables are a named storage space for parameters, much like in a UN*X shell. They are also referred to as "env variables". You need to set five variables.

If you are using a Voodoo 3/4/5 card enter:

```
] setenv bootargs root=/dev/hda2 video=tdfx:1024x768-8@70 l2cr=0x80000000
] setenv autostart yes
] setenv bootdevice 0:1
] setenv bootcmd diskboot
] setenv bootdelay 5
] saveenv
```

The first line, is the "bootargs" variable, and contains the "kernel command line". It is the way to communicate additional parameters to the Linux kernel.

The root "root=" parameter tells the Linux kernel where your root partition is (we do not have one yet, but we are preparing for it). The "video=" parameter tells the kernel to use a 1024x768 video mode at 70Hz with your Voodoo card. If your monitor is not capable of that video mode (most modern monitors are), leave out the "video=" parameter. The "l2cr=" parameter activates the CPU's L2 cache.

The second line causes the "autostart" variable to be set to "yes". It means that when U-Boot loads a Linux kernel, it should boot it immediately, without user intervention.

The third line tells U-Boot that partition 1 on IDE device 0 (assumedly your hard disk is the primary master, and /dev/hda1 (partition 1) is the boot partition) is where your Linux kernel is located.

The fourth line tells U-Boot that on boot-up, the command to execute is diskboot.

The fifth line tells U-Boot to delay for 5 seconds before booting – giving you time to abort the boot if you wish.

The last line saves the environment variables to non-volatile RAM, so they survive a reboot.

If you are using an ATI Radeon video card, you need to enter:

```
] setenv bootargs root=/dev/hda2 video=radeon:1024x768-8@70 l2cr=0x80000000
] setenv autostart yes
] setenv bootdevice 0:1
] setenv bootcmd diskboot
] setenv bootdelay 5
] saveenv
```

The "video=" parameter tells the kernel to use a 1024x768 video mode at 70Hz with your Radeon card. If your monitor is not capable of that video mode (most modern monitors are), leave out the "video=" parameter.

If you are using an ATI Rage 128 card you need to enter:

```
] setenv bootargs root=/dev/hda2 video=aty128fb:1024x768-8@70 l2cr=0x80000000
] setenv autostart yes
] setenv bootdevice 0:1
] setenv bootcmd diskboot
] setenv bootdelay 5
] saveenv
```

If you are not using any of the above video cards, then you will need to enter the following:

```
] setenv bootargs  root=/dev/hda2 nolangchooser l2cr=0x80000000
] setenv autostart yes
] setenv bootdevice 0:1
] setenv bootcmd diskboot
] setenv bootdelay 5
] saveenv
```

The "nolangchooser" option needs to be used if you install using a standard VGA console – this will occur if you are not using either a Voodoo 3/4/5, ATI Radeon, or ATI Rage 128 video card.

With the device number for your CD-ROM drive that you obtained earlier, we are now ready to boot the installation system. From the command prompt, enter:

```
] diskboot 500000 1:0
```

Replace the "1" with the device number of your CD-ROM drive. The "0" actually refers to the partition you want to boot from, but since CD-ROM's don't have partitions, you specify 0 here.

As soon as you press enter, the system will try to load the Linux installation image. The output you get should look similar to the following:

```
Loading from IDE device 1, partition 0: Type: PPCBoot
   Image Name:   Debian Install
   Created:         2002-12-19  10:21:38 UTC
   Image Type:   PowerPC Linux Multi-File Image (gzip compressed)
   Data Size:       2457892 Bytes = 2400 kB = 2 MB
   Load Address: 00000000
   Entry Point:    00000000
   Contents:
   Image 0:   988203 Bytes = 965 kB = 0 MB
   Image 1:  1469676 Bytes = 1435 kB = 1 MB
```

The CD-ROM will be loaded from for a short while.

(Don't worry if your output is not exactly the same as above).

The boot process will then automatically start:

```
=> bootm
## Booting image at 00500000 ...
   Image Name:   Debian Install
   Created:      2002-12-19  10:21:38 UTC
   Image Type:   PowerPC Linux Multi-File Image (gzip compressed)
   Data Size:    2457892 Bytes = 2400 kB = 2 MB
   Load Address: 00000000
   Entry Point:  00000000
   Contents:
   Image 0:   988203 Bytes = 965 kB = 0 MB
   Image 1:  1469676 Bytes = 1435 kB = 1 MB
   Verifying Checksum ... OK
   Uncompressing Multi-File Image ... OK
   Loading Ramdisk to 07b5f000, end 07cc5cec ... OK
```

The numbers, dates and name may not be the same as shown above.

Important note regarding detection problems with CD-ROM drives:

If your CD-ROM drive is connected to your *secondary* IDE port on your AmigaOne, and you are finding that U-Boot does not detect your CD-ROM drive, you need to enable the *secondary* IDE port by adding the following line when setting your environment variables:

```
] setenv ide_maxbus 2
```

If your CD-ROM drive is the *only device* connected to your *secondary* port, you *must* set your CD-ROM drive to be the "*Master*". By default, most CD-ROM drives are set to "*Slave*".

To set the CD-ROM drive to "*Master*", will involve changing a jumper setting on the back of the drive. Information on these settings is usually printed on the drive itself, or available in your CD-ROM drive's manual.

2. Installation

You will see text scrolling down the screen (the kernel booting), and the Debian installation system will soon appear.

If you have a Voodoo 3/4/5, ATI Radeon, or ATI Rage 128 video card, you will see a dialog asking you what language you want to do the installation in. Choose the language that you prefer. This manual will only cover English installation however.

If you do not have the above video cards, and the kernel has booted using a standard VGA console, you will not be asked what language you prefer.

After selecting the language (and variant – if it asks you), you will be greeted with a welcome message, press <Enter> to continue.

The installation of Debian is made up of a number of steps. Each step of the way, you can proceed to the next step, or you can step back, or take alternative choices. The most logical next step is always shown first.

You will now be shown the next step – "Configure the keyboard", plus other alternatives. Simply press <Enter> to configure the keyboard.

Select the "qwerty/us" keyboard at the top of the list, unless you have a non-US keyboard.

The Debian installer then offers you the option to partition your hard disk. Press <Enter> to proceed.

The `cfdisk` program will be started. This program allows you to partition your hard drive. We need at least three partitions on the hard disk – a boot partition, a root partition, and a swap partition.

The boot partition should typically be around 15 - 20 MB in size. The boot partition will later contain the kernel image, and is used to boot Linux on your machine.

The root partition should take up the majority of the drive's space, unless you have a need to create additional partitions. It should be at least 1 GB in size. A fully installed Linux system can take anything between 500 MB and 7 GB.

There have been endless discussions about the recommended size of a swap partition. As a general rule, use a swap partition that is about two to four times the size of your main memory (if you have a large hard drive, favour four times).

As mentioned, the partitioning is performed via the program `cfdisk`. When it loads, the bottom of the screen will contain columns of options. The top half of the screen lists the partitions present on the hard disk, and details such as their size. On a factory new hard disk, you will usually see no partitions, just "Free Space".

To use the program, use the <left> and <right> cursor keys to highlight an option, and <Enter> to choose an option. DO NOT use the <up> and <down> cursor keys to choose an option, <up> and <down> is used to highlight partitions on the hard disk (on a clean hard disk there will be none).

In accordance with the environment variables that we set in U-Boot previously, you should make the boot partition come first, followed by the root partition, and then the swap partition.

To start, press <right> to highlight "new" and press <Enter>. Select "primary", and enter a size for the boot partition of about 15 – 20 MB. Select "Beginning" when asked for the position. You will now see a partition listed on the top section of the screen, followed by "Free Space".

Press <down> on the cursor keys to select the free space, and then select "New" to create a new partition. Next select "primary". We will now create the root partition, subtract from the size that appears, the size that you want to use for the swap partition, and press <Enter>.

Finally create the swap partition as you created the previous two partitions. One important step here is to set the partition "type" for the boot and swap partition. By default, all partitions created by cfdisk are flagged as "Linux" type partitions, but we want the boot partition to be flagged as a "PPC PReP Boot" and the swap partition to be flagged as a "Linux swap" partition. To do this, select the boot partition (using the <up> cursors), and then choose the "Type" option. A long list of partition types appears, enter "41". Then select the swap partition with the cursor keys, and again choose the "Type" option. A long list of partition types appears again, enter "82".

Select "Write" to save the partition table to the hard disk, followed by "Quit".

Next you are offered the choice of activating and initialising your swap partition. Press <Enter> to select that option. You are then asked if the partition (which should be /dev/hda3) should be scanned for bad blocks. It is fine to choose the "No" option, which will already be selected for you. Press <Enter> again when you're asked if you're sure you want to format /dev/hda3 as the swap partition.

The next step is to initialise the root (Linux) partition for your system. As an alternative, you could mount a previously initialised partition as the root, but since we should have no previously initialised partition on our hard drive, we select to "Initialise a Linux partition". You will be asked if you want to use Ext2, or Ext3. Ext3 is the next generation of Ext2, which supports journaling, making it a lot more reliable, and is the recommended choice.

As with the initialising of the swap partition, you will be asked if you want to perform a bad block scan (select "No"), and if you are sure you want to initialise "/dev/hda2" – select "Yes".

Some text describing the initialisation process will appear on screen as the partition is initialised.

Once the initialisation is complete, you will be asked if you wish to mount "/dev/hda2" as your root, select "Yes".

You are now up to the stage of installing the kernel driver modules to your hard drive. Make sure that the "AmigaOne Linux install Boot CD" is in your CD-ROM drive, and press <Enter> to select this option.

Next you will be asked where the modules are available from, press <Enter> to select "cdrom".

If you have more than one CD-ROM drive, you will be asked which CD-ROM drive to look in, select the appropriate one, and press <Enter> to continue.

A message will appear asking you to insert the "First Debian CD-ROM in the CD-ROM drive" – **ignore this message**, leave the "AmigaOne Linux install Boot CD" in the CD-ROM drive, and press <Enter> to continue.

You will next be asked if you want the installer to look for the modules on the CD ("list"), or to enter it manually. Select "list" (it will probably already be selected), and press <Enter> to continue. You will be asked to select the directory from a list of one item, simply press <Enter> again to proceed.

Modules have now been installed. You now have to select which modules (if any) you wish to use. Press <Enter> to "Configure Device Driver Modules", and <Enter> again when a "note about loaded drivers" appears.

You now have a list where you can select any modules (drivers) that you would like your Linux system to load on boot up. If you do not wish to load any modules, simply press <Enter> to select "Exit – Finished. Return to previous menu". Otherwise, scroll down with the cursor keys and select any modules that you would like, such as modules for your sound card, or modules for your network card.

Remember that "module" is just another word for a hardware driver. If you have a Creative Sound Blaster Live sound card, you would select the "kernel/sound/pci/emu10k1" option, and then select to load the "snd-emu10k1" module. If you have a Creative Vibra/PCI128, you would select the "kernel/sound/pci" option, and then select to load the "snd-ens1371" module. If you wish to use the onboard sound of the AmigaOne XE, you would select the "kernel/sound/pci" option and then select to load the "snd-via82xx" module. After loading a sound card module, you should also select the "kernel/sound/acore/oss" option, and select to load the "snd-pcm-oss" module. There are also modules for other hardware that more advanced users may make use of.

The step of configuring modules can be repeated in future at any time on your Debian Linux system, by simply entering "modconf" at a shell prompt.

When you have completed the module configuration step, press <Enter> to select "Configure the Network". You will be asked for a host name for your machine. Think of a unique, short name for your machine to use on the network. If you're not sure what to use, you could use "amigaone".

You will then be asked if you wish to use DHCP. If you have a DHCP server available on your network, select "Yes", otherwise select "No". If you select not to use DHCP, you will then have to manually enter an IP address, subnet mask, and name server IP address for the network.

Windows machines with internet connection sharing, home routers, and cable modem internet, all typically offer DHCP services. If you are unsure of what to do, ask someone that is familiar with your network.

If you are not using a network at all, then after selecting to not use DHCP, you can enter any values that you please, but it is best to enter an IP address of "192.168.0.1", subnet mask of "255.255.255.0" and no name server address. These can be changed in future if you connect your AmigaOne to a network.

You are now ready to install the base system. Press <Enter> to select this option. At this point, you can either use your Debian CD-ROMs, or if you have a fast internet connection and no Debian CD-ROMs on hand, you can choose to use the network.

If you choose to use CD-ROM, you will be asked to insert your Debian CD-ROM, at this point, you should remove the "AmigaOne Linux install Boot CD", and insert the first Debian CD-ROM into your CD-ROM drive, pressing <Enter> to continue. The CD will be scanned, and you will be asked to select where you want to install from. You will be given only one choice (which refers to the CD), press <Enter> again to proceed. The system will then begin installing the base system, with the process taking at least a few minutes, depending on the speed of your CD-ROM drive, hard disk, and CPU.

If you choose to use the network, you will be asked where you would like to download the packages from. It is best if you enter a local mirror here, but if you don't know of one, then the default US based

site will be fine. After choosing to continue, the base system will be downloaded and installed. This will take time, depending on the speed of your connection, and the speed of your machine.

When the process has completed, you will be faced with the final options. The highlighted step will be "Make system bootable". This will copy the Linux kernel to your boot partition (which will be /dev/hda1 if you followed these instructions). Press <Enter> to do this. The installer will check that you i) Have a Type 41 boot partition, and that ii) It is large enough (greater than 10 MB). If these two conditions are not satisfied, an error message explaining the problem will appear.

After the kernel has been copied to the boot partition, select to "Reboot the System". The AmigaOne will reboot after a short while.

3. After the installation

After rebooting, your AmigaOne will automatically boot into Linux. It will always do this on power up. If you ever wish to stop the bootup, because you want to access the U-Boot prompt, simply press a key when it is counting down the autoboot (it may flash past very quickly). If a BIOS setup menu appears, press <ESC> to clear it.

The final stage of the installation occurs after you have booted your AmigaOne with Linux. It will involve installing a full set of required packages (via CD-ROM or the Internet), and setting up a few options of the Linux system.

<THE FINAL STEPS ARE FAIRLY SELF EXPLANATORY, BUT IF IT IS FELT THAT THEY SHOULD ALSO BE DOCUMENTED, I WILL ALSO ADD THAT TO THIS DOCUMENT>

4. Installation into an existing (RDB) Partition

This paragraph describes the installation of Debian into an existing partition, especially for hard disks, which have been partitioned under AmigaOS (RDB partitions). The installation into an existing PC formatted hard drive (MBR) is similar.

To later use the same hard disk under AmigaOS 4 without losing an existing Linux installation do as follows:

Partition the hard disk with an Amiga (or under Amithlon) with the HD Toolbox (or a similar program) or under Linux with amiga-fdisk.

You will need at least three partitions for the installation. Create three or more partitions, one with about 10-20 MB for the kernel, 500MB or more for the Linux system and 256-512 MB (or more) for a swap partition. The rest could be used for the Amiga operating system. If you want to use MacOS it is recommended to create another partition (4 to 6 GB is fine).

It is important to mark the Linux partitions with special "filesystem identifiers". Press the button "Filesystem" within the HDToolbox and change the filesystem to "Custom Filesystem". For the Linux system partition define a filesystem-identifier of 0x4c4e5800 ("LNX\0"), for the swap partition 0x53575000 ("SWP\0"). You will see this filesystem description later in the partitions overview window (or immediately within the OS4-Mediatoolbox). This entry isn't needed for the kernel (boot) partition. Set it to 0 or anything you like. For each Linux parirition switch off the "automount" option. The AmigaOS partition names are not recognised by Linux, choose anything you like.

Save your settings and mount the drive into the AmigaOne.

Start the Debian installer as described above. Within the installer select "Activate a Previously-Initialized Swap Partition". The installer will automatically recognise the partition marked as "SWP\0" and ask to initialise it as already described above.

Choose "Mount a Previously-Initialized Partition" to install a previous "LNX\0" partition. The installer will show you a list of all recognised partitions. All further steps are similar to the usual Debian installation (see paragraph 2).

Important! Currently an automatic installation of the kernel into the RDB Linux boot partition is not possible yet! You have to create a boot disk first.

Under Linux partitions are numbered from left to right and start with one, e.g. The first IDE partition is named "/dev/hda1" (HDToolbox equivalent dh0), the next is "/dev/hda2" and so on. Remember the number of your kernel partition. Finally insert a floppy disk and use the option "Create a bootdisk" in the installer. The kernel will now be transferred to the inserted disk.

To start Linux after the installation you use the newly created boot disk. Select to "Reboot the System." If autoboot from floppy disk is not activated press <ESC> to enter the boot console. Insert the bootdisk and enter "fdcboot" to boot from the floppy disk.

Under Linux copy the kernel image from the disk (or the actual Linux kernel image http://amigaone-linux.sourceforge.net/kernel.img from the AmigaOne Linux Homepage) to your kernel partition (in our case /dev/hda1). Type "dd if=/dev/fd0 of=/dev/hda1" on a Linux console to copy the image from the disk to the kernel partition. If you have a kernel.img file, type "dd if=kernel.img of=/dev/hda1" instead.

WARNING! Make sure /dev/hda1 is your kernel partition. Any existing data on the given partition will be destroyed.

5. Some final notes on using Debian

Debian is very easy to use. If you wish to install a program, you simply enter:

"apt-get install <name>" – where <name> is the name of the program. For example, if I want to install the "aumix" mixer for my sound card (which is required for sound card users), you enter:

"apt-get install aumix"

Debian will then proceed to ask for an appropriate CD, or to download the package, and install it.

If you would like an interface to installing packages, I recommend you use "aptitude". To install aptitude, simply type:

"apt-get install aptitude"

You may then type "aptitude" whenever you want to run the program.

If you want to access a large, searchable database of all the available Debian packages for your distribution (Woody), point your browser to ***http://packages.debian.org.***

If you would like a list of all the installed packages on your system, enter "dpkg –l |more" at a shell prompt.

If you would like help, point your browser to ***http://www.debian.org/doc*** or ask a friendly Debian user like myself.

6. Suggested Updates

We suggest the following system updates. *This section is only recommended for experienced users because it might lead to possible instabilities! Use at your own risk!*

- **XFree86 Version 4.3**

Warning! Version 4.3 for PowerPC is currently declared "unstable", but is needed to use newer ATI graphics boards (like 8500 and 9x00) correctly.

The packages can be found here:

deb http://www.penguinppc.org/~daniels/sid/$(ARCH) ./

Add this line into your /etc/apt/sources.list file. To use XFree86 version 4.3 a (currently) unstable libc6 is required. Therefore you have to switch your package list to unstable, install "apt-get install libc6" and switch back to stable again. Please check the following sample /etc/apt/sources.list to see how your package configuration might look like. After you have changed the sources.list file you must call "apt-get update" to update the package list.

e.g:

```
deb cdrom:[Debian GNU/Linux 3.0 r1 _Woody_ - Official powerpc Binary-1 (20030109)]/
unstable contrib main non-US/contrib non-US/main

deb http://security.debian.org/ stable/updates main

deb http://ftp.at.debian.org/debian/ stable main
deb-src http://ftp.at.debian.org/debian/ stable main
deb http://non-us.debian.org/debian-non-US stable/non-US main
deb-src http://non-us.debian.org/debian-non-US stable/non-US main

# xfree86 4.3
deb http://www.penguinppc.org/~daniels/sid/$(ARCH) ./
```

After you have succesfully installed the unstable libc6 it is highly recommended to switch back to the stable packages again.

- **KDE 3.1**

The K-Desktop-Environment has been improved a lot in version 3.1. Version 3.1 is a stable release and we highly recommend to update to this version (Debian Woody 3.0r1 installs version 3.0 by default).

Add this line into your /etc/apt/sources.list file:

deb http://download.kde.org/stable/3.1.1/Debian stable main

Type "apt-get update" to update the package list. Usually, if you have installed the previous version of KDE, an "apt-get upgrade" should be sufficient to upgrade KDE to version 3.1, otherwise you have to manually install packages from 3.1 with aptitude or Kpackage or the like.