Debian 8.0
Jessie
Installation Manual

Aries Hausdorff
V 1.0 - 5. Feb. 2015
V 1.1 – 13. Mar. 2015
(LXDE Desktop)

You will need to note down two passwords when you follow this manual exactly.
One, the so-called „root“ or „Administrator“ password serves solely the purpose to install and delete software, and make permanent changes to the computers operating system.
The other password is the user-password, which is needed to allow access for normal daily use to the system.
This manual assumes an installation for a single-user PC, however, Linux supports up to almost 65536 users on a single computer. That is usually pretty sufficient for everything.
On Debian, and basically every Linux-based system, you can select between different „Desktops“, that is the interface you as the user work with. LXDE, which I use here for reference, resembles Windows XP, whilst KDE for example is more like Win 7 or „How Windows 8 should have been“.

Table of Contents

Root Password : _____

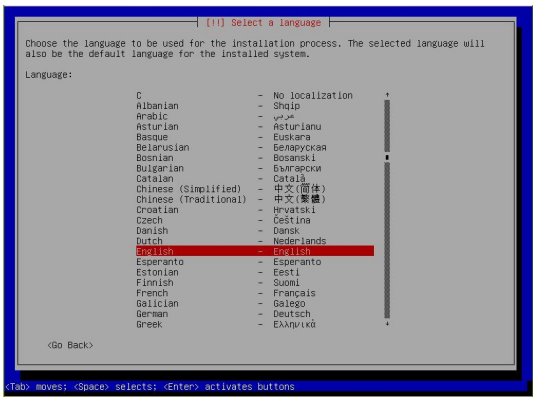
User Name : _____

User Password : _____

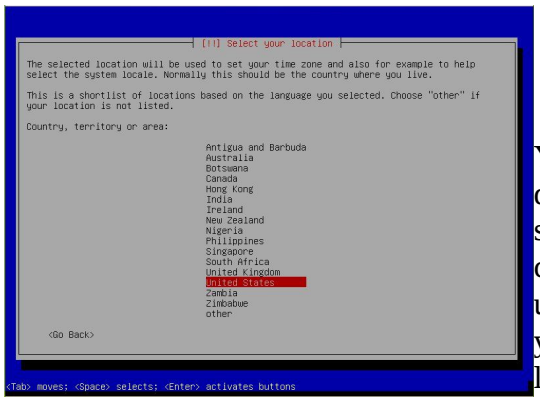
Debian Base-Installation

First we install the default Debian system.
When asked, I selected to use the LXDE desktop, the (uppermost entry) default graphical system, SSH server, print-server .. basically, the lower three items on the selection list were marked for installation. Selection is made using cursor up/down and SPACE to select / deselect.

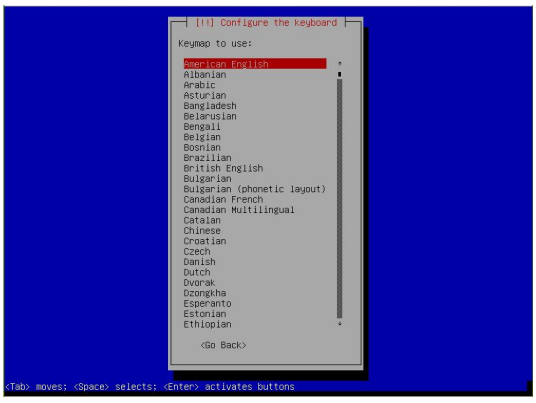
System Installation Setup

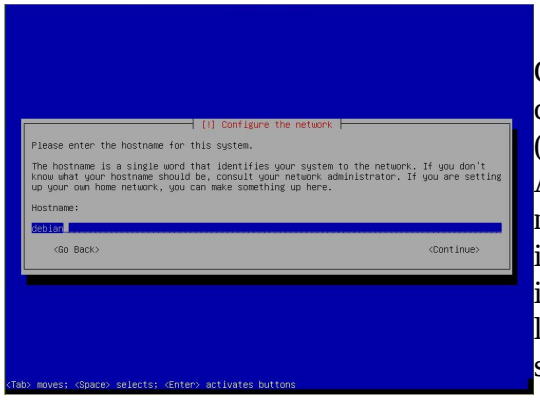


Select „Install“ using cursor up/down, then press enter. Next you select your language.

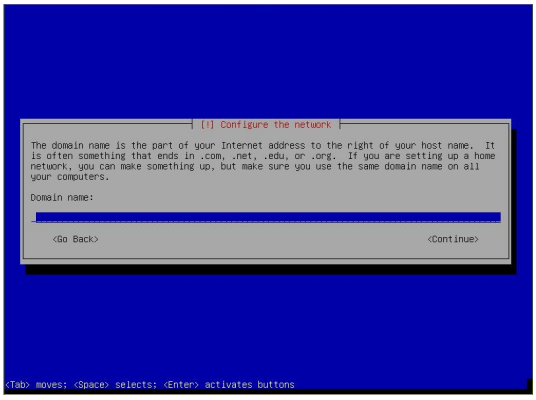


Your location defines defaults, such as the currency and units. Next select your keyboards language.

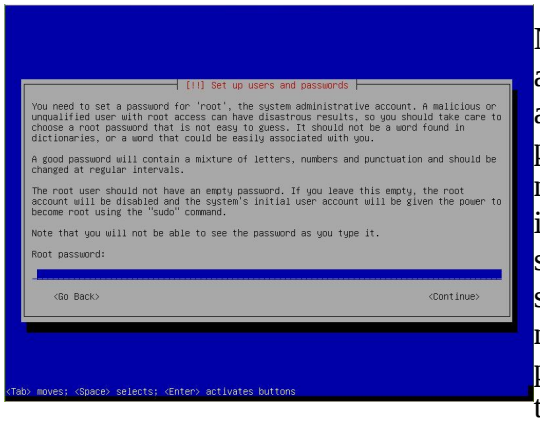




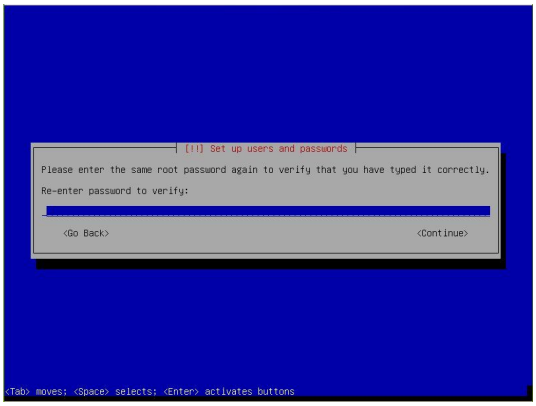
Give your computer a name (all lowercase). A domainname is not usually used in home-setups, it might even lead to problems, so leave it empty.

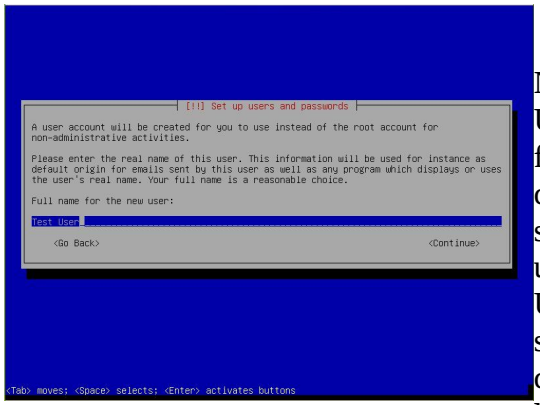


User Setup

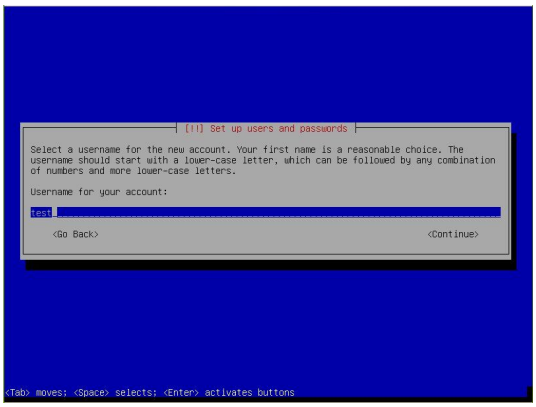


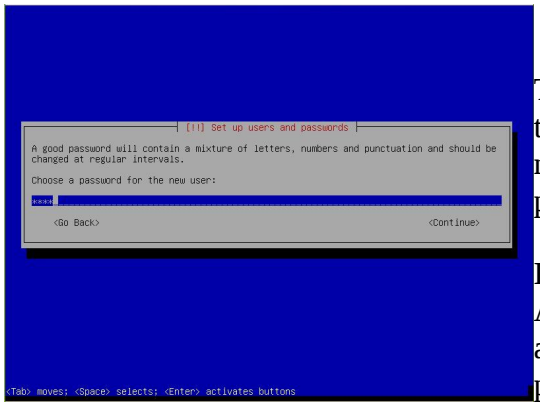
Now, enter the administrator accounts (root) password. It is needed for installing software and such. You will not see the actual password whilst typing!





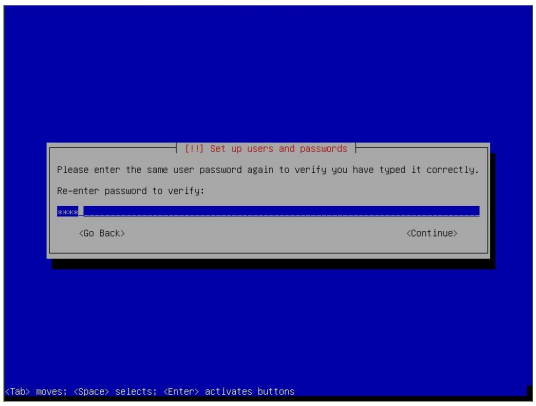
Next comes the Users realname, from which the computer suggests a username. Usernames should only contain lowercase letters.

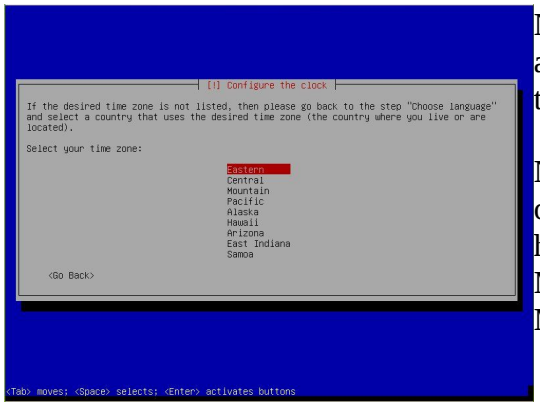




The useraccount thus created needs a password, too.

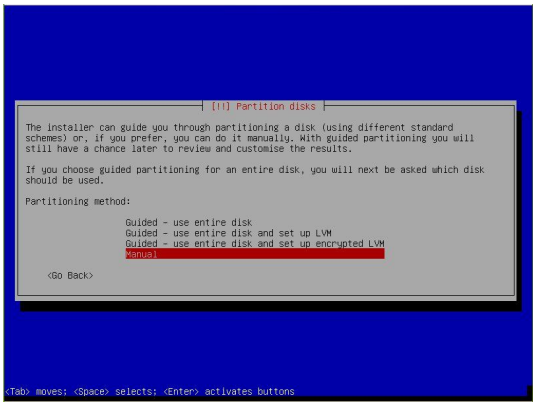
Like for the Admin / Root account, the password is not visible.



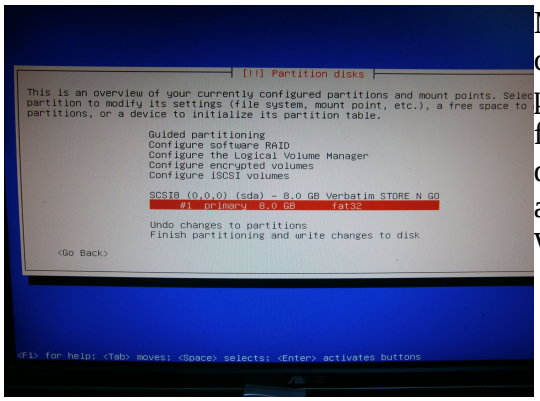


Now we get asked for the timezone.

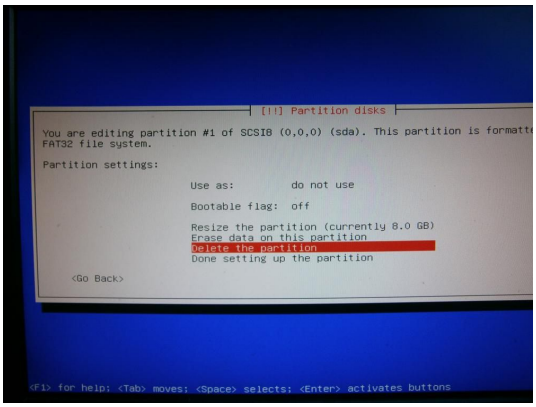
Next, we set-up our harddrive – here a Virtual Machines drive. Manually.

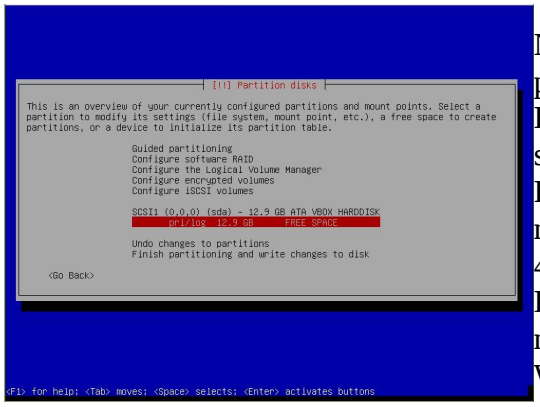


Partitioning

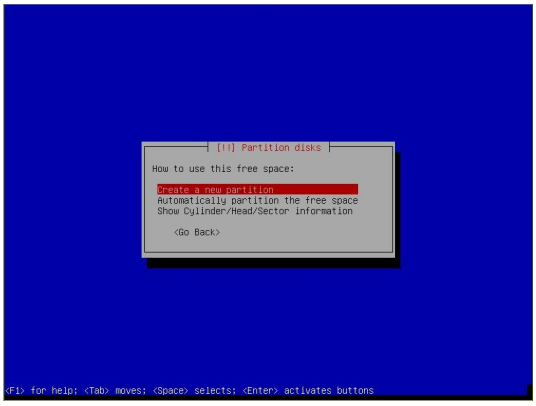


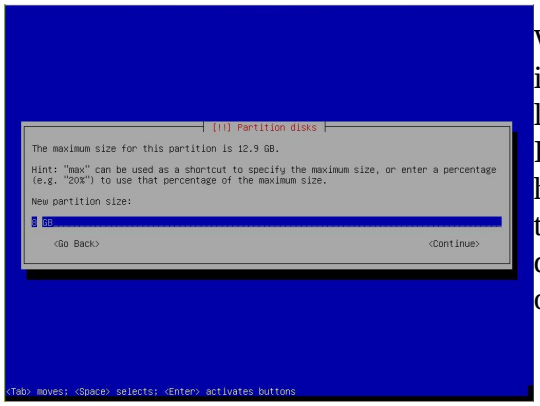
Many HDDs come with a partition already formatted. We delete that one, as it's for Windows only.



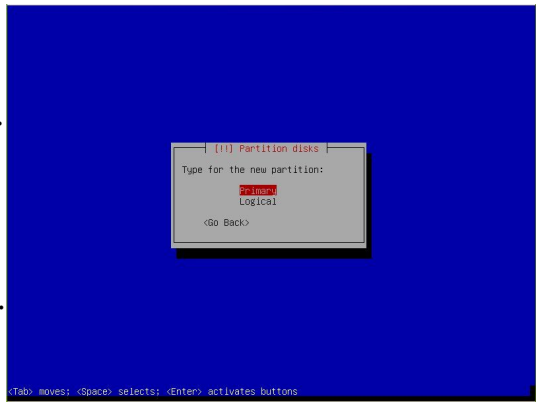


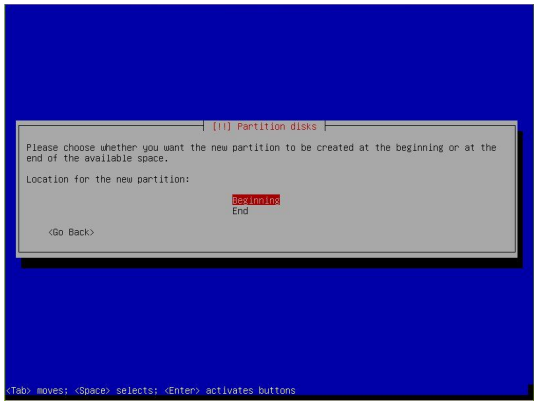
Now, we create a partition for the Linux Operating system. Recommended minimum size is 4GB for a LXDE Desktop, and a multipurpose Workstation uses 40GB to 60GB.

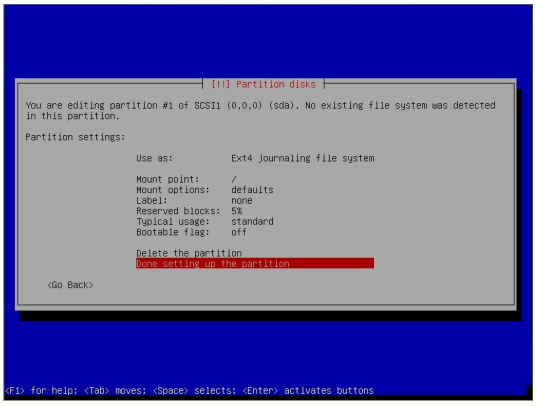


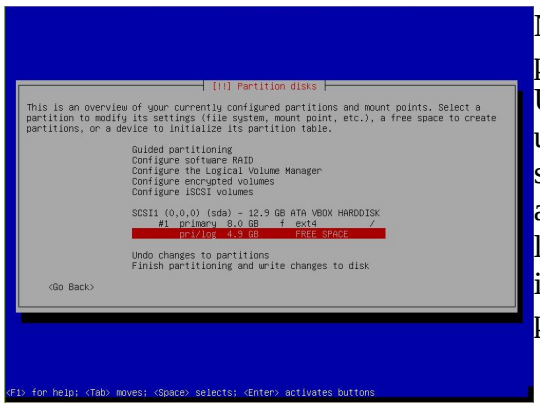


When your HDD is 160GB or larger, use 40GB. It'll mean you'll hardly ever have to worry about diskspace for the operating system.

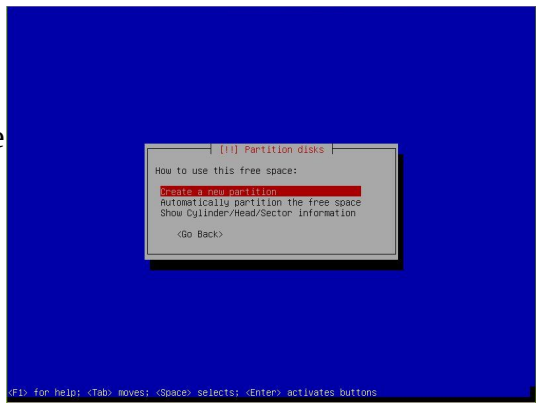


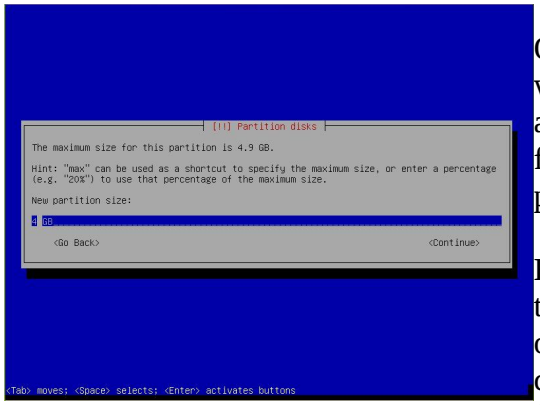






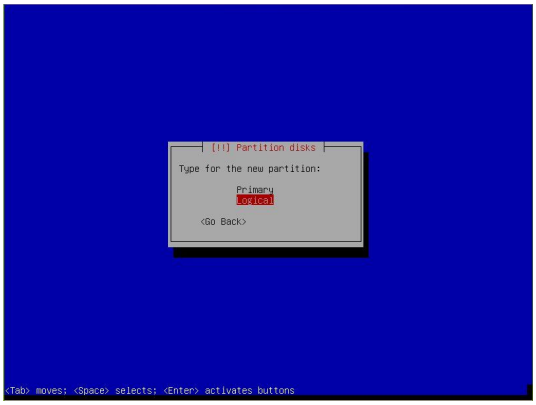
Next we create a partition for the Users. All the users files will be stored there, and also programs like Steam will install their programs here.

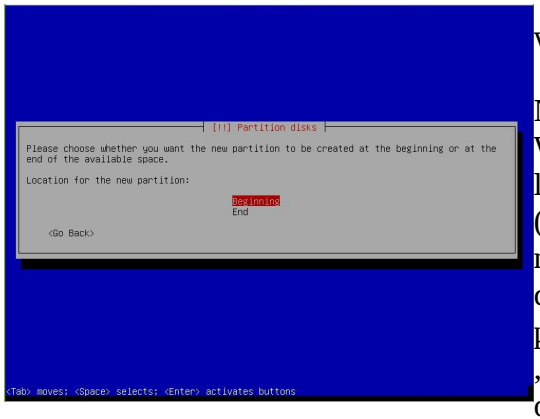




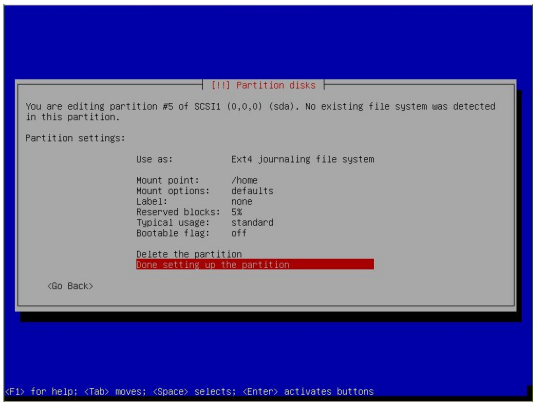
On average you will want to have as much space for the users as possible.

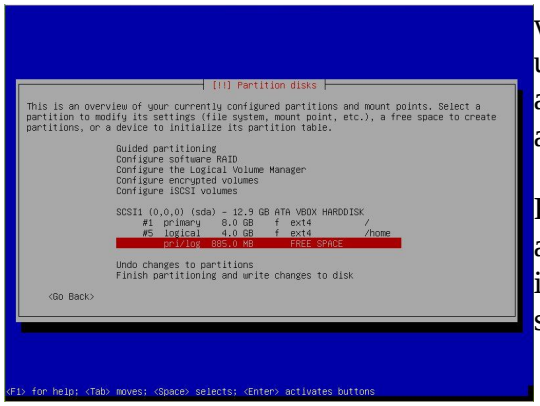
However, leave twice the amount of your computers RAM free on the HDD. You'll see soon why.



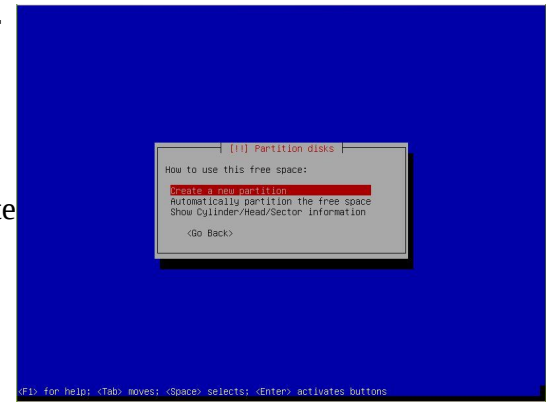


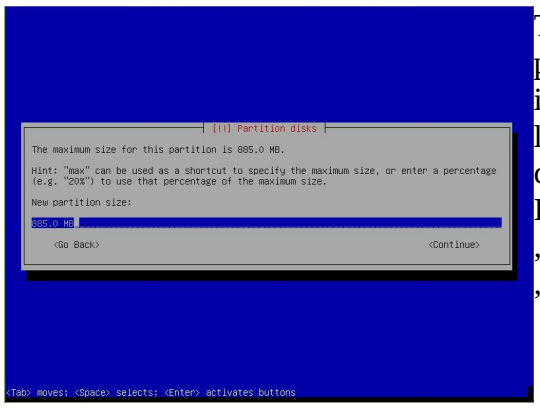
Note:
When you have a large harddrive (>500GB) you might wish to create a separate partition under „/media/data“ or „/srv“ to store multimedia-files which also other users might be allowed to access.



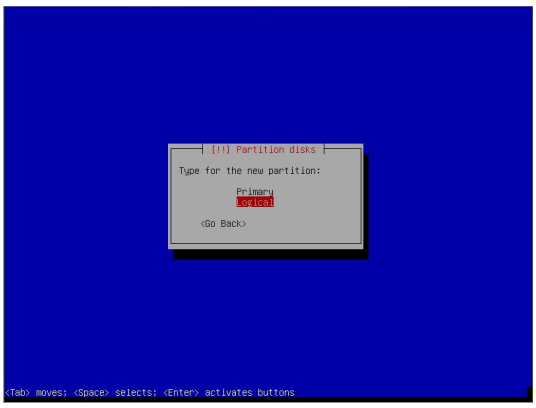


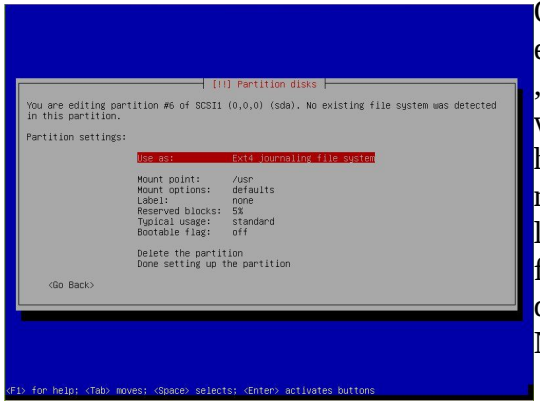
Finally, we create a third partition in the remaining space available.



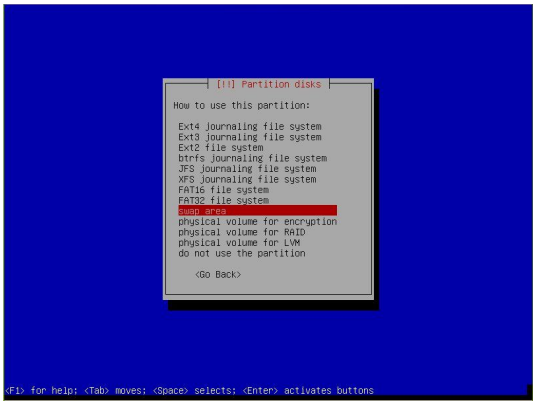


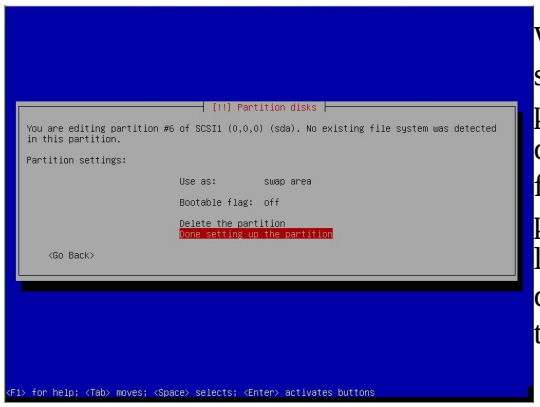
This thisr partition is, ideally, twice as large as your computers RAM. It is so-called „swap space“ or „virtual RAM“.



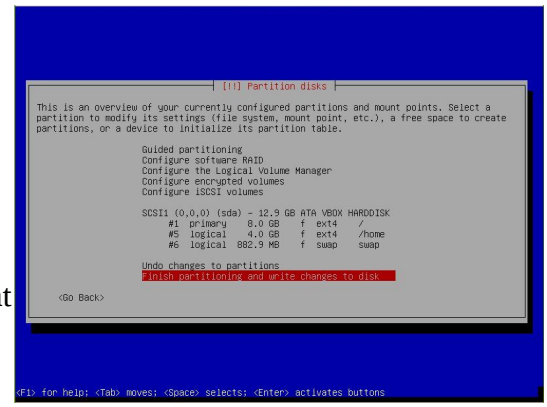


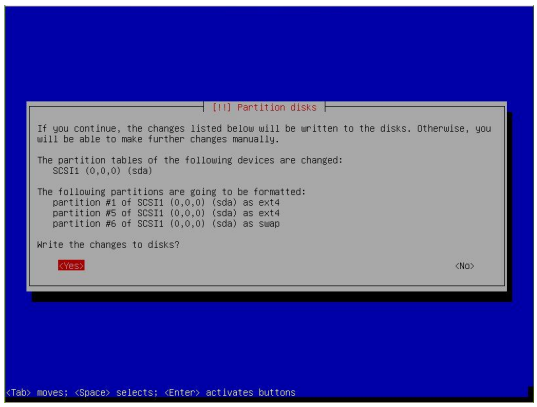
On Windows, the equivalent is the „pagefile.sys“, which is, however, responsible for a lot of disk-fragmentation on drive C.
Not so on Linux.



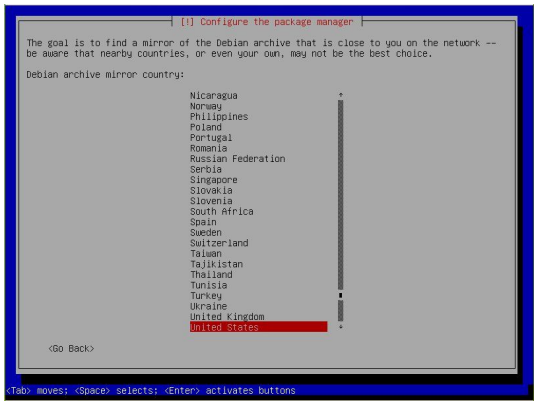


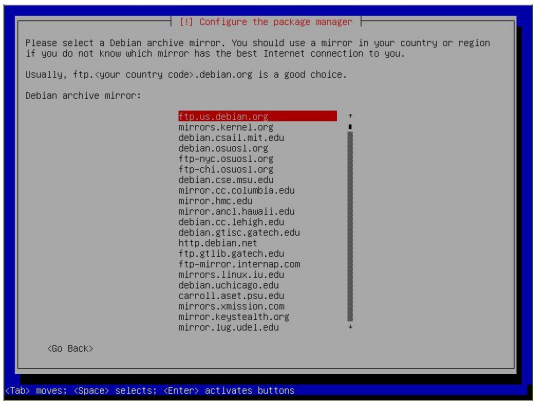
With all the standard partitions configured, we finalize the partitioning and let the system create and format the partitions.

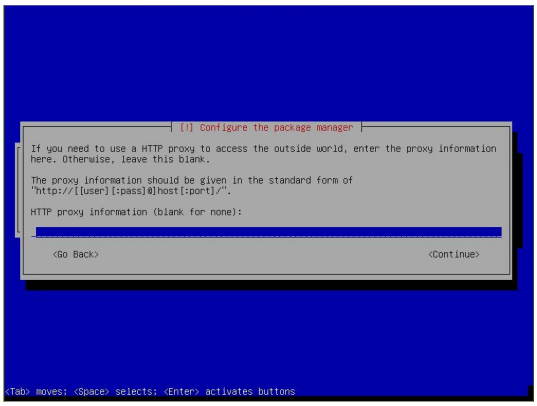


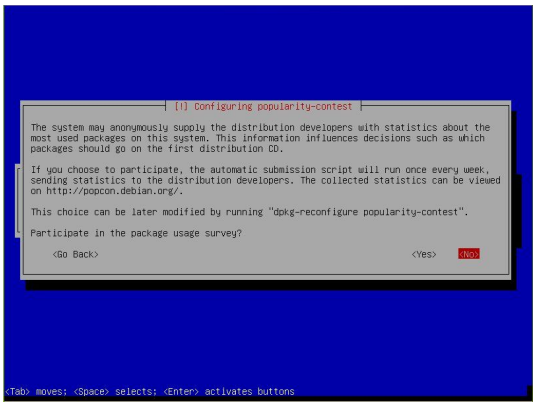


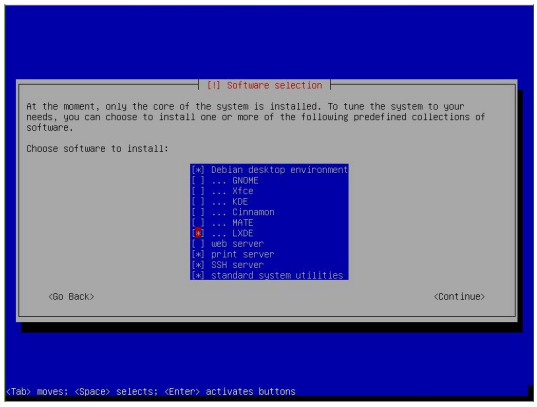
Software Installation Setup







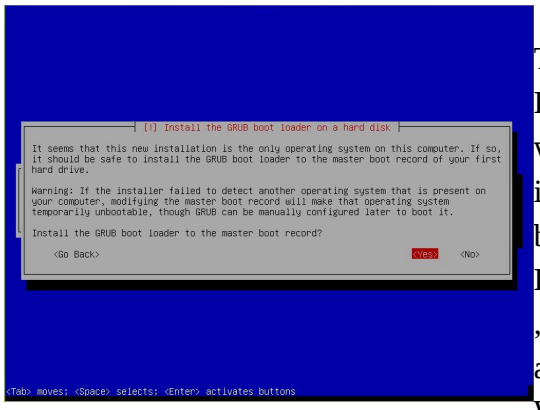


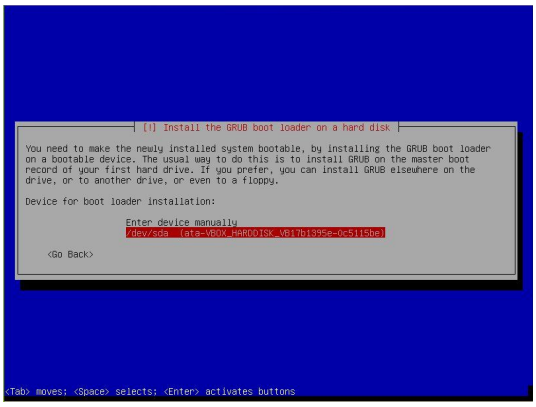


For the software installation setup we have to select a so-called „software repository“. That is those servers containing updates and additional software. We select one that's in our country. The default one usually does fine. In a home-setup no proxy is needed, and there is no need to participate in the „popularity contest“, which is a tool to help optimize the default setup for the next release by finding out what people actually do use on their systems on a statistical level.

Finally, we select our desktop and a few additional „function-packages“. Instead of LXDE you can select KDE when your PC is pretty beefy, or any of the other listed Desktops when you like new experiences.

Final Steps: Installing the Bootloader





To start our Linux system, we need to install the bootloader. The Bootloader „Grub“ is also able to start Windows if needed. And when it was isntalled at the time we isntalled Linux.

Thus: Always install Windows first when you want a dual-boot system.

The second option listed is, assuming a single-HDD system, normally the correct one. Typically it should read something like „/dev/sda“.

After that, we can finish the installation and reboot into the new system.

Finally: Booting the new system!

Now we use the username and the user's password to log into the desktop.

Our new shiny Debian 8.0 „Jessie“ with (in this case) an LXDE Desktop awaits us!

First Install: Little Helpers

Now, on the LXDE desktop, we press LALT-F2 to open the “mini-terminal”, and enter “lxterminal” – that's LXDEs standard terminal.
Next, in the new terminal window:

delock@debian:~$ su
Password:
root@debian:/home/delock# apt-get install gpm synaptic gparted clamtk screen

This installs:
gpm (gives us a mousecursor even on the text-terminals)
synaptic (graphical package installations)
gparted (to modify partitionsizes)
clamtk (virusscanner, mostly for Windows maintenance)
screen (allows us in the shell to „detach“ from a running program, helpful for terminal-multitasking with SSH logins)

Software-Repositories: Where we get new software from

There is a lost of software available. However, as per Debian's default, there is no software with any type of „restrictive“ license available. That is morally all fine and high, but we are groundhogs and the systems are not for educational purposes, but for work and play.
So we add additional software-repositories to the software-management-system's list:

root@debian:/home/delock# nano /etc/apt/sources.list

In nano, behind every line ending with “main” we add “contrib non-free”
so that the resulting lines look similar to this (which is the first line I changed) :

deb http://ftp.us.debian.org/debian/ jessie main contrib non-free

This allows Debian to also use online-repositories which contain software which is under copyright, such as the Adobe Flashplayer.
There is an additional repository with special multimedia-software available.
You can add that at the end of the sources.list file – I didn't do this on the USB-HDD yet:

deb http://www.deb-multimedia.org jessie main non-free

Add an empty line after this line.

Now we need to inform our Linux of the changes by telling the software manager to fetch / update the list of available software:

root@debian:/home/delock# apt-get update

We'll get an error message, as the new repository we added in the last line uses an unknown security-key. As I didn't do this on the USB-HDD, the following steps would need to be done, too. So, we add that key by installing the repositories „keyring“:

root@debian:/home/delock# apt-get install deb-multimedia-keyring

With the security-key now installed, we can re-do the updating of the repositories index:

root@debian:/home/delock# apt-get update

This should finish without any errors now.

Firmware – Driver's little helpers

Once that command has finished updating the list of online-repositories, we look for the “Firmware” to enable all the hardware-drivers in the linux-kernel to work properly.
Some hardware or it's drivers needs firmware to operate properly.
So we do:

root@debian:/home/delock# apt-cache search firmware-

We tell the software-management utility apt to perform a task in the cache, the index of all software available, which was created before by “apt-get update”. Namely, we order it to search for all packets carrying “firmware-” in their name.
This happens to be all the firmware we normally want. There might be doubles as some firmwares are in the process of being updated, meaning there is an older and a newer version available. For Debian Jessie, all relevant firmware packets start with “firmware-”.
There is one particular exception:
There is the “firmware-b43legacy-installer”, which, as the name implies, is a legacy item.
It is needed only in older server mainboards, and should be skipped, and instead the “firmware-b43-installer” should be used, resulting in this command:

root@debian:/home/delock# apt-get install firmware-zd1211 libertas-firmware firmware-ti-connectivity firmware-samsung firmware-realtek firmware-ralink firmware-qlogic firmware-netxen firmware-myricom firmware-linux-nonfree firmware-linux firmware-libertas firmware-iwlwifi firmware-ivtv firmware-ipw2x00 firmware-intelwimax firmware-brcm80211 firmware-bnx2x firmware-bnx2 firmware-atheros firmware-adi firmware-crystalhd dahdi-firmware-nonfree firmware-linux-free firmware-b43-installer

This will install also a pack of additional software, support-tools mostly.
There might be – there is a legal issue ongoing these days – a firmware for AppleTV hardware by the time you repeat these steps.
In that case, there might arise during installation of the firmware the question if you „have the original driver ready“. Most likely you gleefully will say „no“ and skip installation of that particular firmware.
After the next reboot, most pluggable hardware such as wlan-adapters will work straight away.

Flashplayer & Windows Fonts

What we most likely want, too, is the flash-player to use the majority of multimedia-websites, as

well as the standard fonts Windows uses, as to be able to view documents exactly the same way as under Windows:

root@debian:/home/delock# apt-get install flashplugin-nonfree ttf-mscorefonts-installer

Graphical audio-configuration utility

Adding the Volume-Control to the taskbar is done by right-clicking onto the taskbar, selecting “add/remove panel items”, then in the “panel applets” tab selecting “add” and then selecting the “Volume Control”. It`s position in the taskbar we shift using the up/down buttons.

To get a nicer audio-system management module than the default one, I typed:

root@debian:/home/delock# apt-cache search pulseaudio

and – knowing after years of using them – selected for installation:

root@debian:/home/delock# apt-get install paman padevchooser paprefs pavucontrol

These components allow us to select also plugged-in hardware (Webcam microphones, USB-headsets) and have a nicer volume control and configuration utility.

Skype and 32Bit software compatibility

From here on, Debian would be ready to run, if not for Skype.
We need to download Skype for Debian manually from Skype.com => Downloads => “Debian 7 Multiarch”.
We use Debian 8, but that`s of little consequence, luckily, but the “Multiarch” is.
Debian 64Bit is exactly that – by default there is no 32Bit backward-compatibility installed.
I downloaded Skype to the “Downloads” folder. Now, we try to install it:

root@debian:/home/delock/Downloads# dpkg -i skype-debian_4.3.0.37-1_i386.deb

dpkg: error processing archive skype-debian_4.3.0.37-1_i386.deb (--install):
package architecture (i386) does not match system (amd64)
Errors were encountered while processing:
skype-debian_4.3.0.37-1_i386.deb

The i386 architecture is for the old 32Bit systems.

Now, we need to tell our Debian to activate and install 32Bit compatibility:

root@debian:/home/delock/Downloads# dpkg --add-architecture i386

And now we need to tell Debian to again update the list of available Software:

root@debian:/home/delock/Downloads# apt-get update

With that task done, we again try to install skype:

root@debian:/home/delock/Downloads# dpkg -i skype-debian_4.3.0.37-1_i386.deb
Selecting previously unselected package skype.
(Reading database ... 103004 files and directories currently installed.)
Preparing to unpack skype-debian_4.3.0.37-1_i386.deb ...
Unpacking skype (4.3.0.37-1) ...
dpkg: dependency problems prevent configuration of skype:
skype depends on libc6 (>= 2.3.6-6~).
skype depends on libc6 (>= 2.7).
skype depends on libgcc1 (>= 1:4.1.1).
skype depends on libqt4-dbus (>= 4:4.5.3).
skype depends on libqt4-network (>= 4:4.8.0).
skype depends on libqt4-xml (>= 4:4.5.3).
skype depends on libqtcore4 (>= 4:4.7.0~beta1).
skype depends on libqtgui4 (>= 4:4.8.0).
skype depends on libqtwebkit4 (>= 2.1.0~2011week13).
skype depends on libstdc++6 (>= 4.2.1).
skype depends on libx11-6.
skype depends on libxext6.
skype depends on libxss1.
skype depends on libxv1.
skype depends on libssl1.0.0.
skype depends on libpulse0.
skype depends on libasound2-plugins.

dpkg: error processing package skype (--install):
dependency problems - leaving unconfigured
Processing triggers for dbus (1.8.12-3) ...
Processing triggers for desktop-file-utils (0.22-1) ...
Processing triggers for mime-support (3.58) ...
Processing triggers for hicolor-icon-theme (0.13-1) ...
Errors were encountered while processing:
skype

This tells us that Skype needs additional software to be installed.
We used dpkg to install, and dpkg has zero intuition of it`s own.
So, instead of installing all that software now by hand we again use the main software management system apt to do the job for us:

root@debian:/home/delock/Downloads# apt-get install -f

Apt now installs a lot of software. All of it 32Bit software needed to run Skype.
However, with this step the system is now able to handle both 32 as well as 64 bit programs without any further intervention.

Other Things: Nvidia driver

What is still missing is to install the nvidia graphicsdriver in case the system is using an nvidia graphicscard.
Clearly, as this USB-emergency-system is built with the idea of compatibility over performance, I

leave that out. This way the system will always choose the most compatible graphicsdriver, which might not be the best, but will work in most cases.
To install the driver, the user-configuration-utility and a small helper-program, do this:

root@debian:/home/delock/Downloads# apt-get install nvidia-driver nvidia-xconfig nvidia-settings

After installation execute nvidia-xconfig as root once. It'll configure the system to use the driver.

Post-Installation-Log:

apt-get install gpm screen synaptic gparted clamtk
apt-cache search firmware
nano /etc/apt/sources.list
apt-get update
apt-get install deb-multimedia-keyring
apt-get update
apt-cache search firmware-
apt-get install firmware-zd1211 libertas-firmware firmware-ti-connectivity firmware-samsung firmware-realtek firmware-ralink firmware-qlogic firmware-netxen firmware-myricom firmware-linux-nonfree firmware-linux firmware-libertas firmware-iwlwifi firmware-ivtv firmware-ipw2x00 firmware-intelwimax firmware-brcm80211 firmware-bnx2x firmware-bnx2 firmware-atheros firmware-adi firmware-crystalhd dahdi-firmware-nonfree firmware-linux-free firmware-b43-installer
apt-cache search flashplayer
apt-get install flashplugin-nonfree ttf-mscorefonts-installer
apt-cache search pulseaudio
apt-get install paman padevchooser paprefs pavucontrol
ls
ls Downloads/
cd Downloads/
ls
dpkg -i skype-debian_4.3.0.37-1_i386.deb
dpkg --add-architecture i386
apt-get update
dpkg -i skype-debian_4.3.0.37-1_i386.deb
apt-get install -f
apt-get install memtest86 # To use the USB drive for memorytesting
apt-get install k3b audacity pidgin icedove mesa-utils # CD/dvd burning and some overall tools (Audiorecording, IM, Email, 3d-test)
exit