Installation

This is a migration scenario. I set up the new machine first with the new Debian system, then move the data drives from the old server. For initial setup I create a 5GB Home mount point, which will later be replaced with the one on the data drives from the old server.

Install ISO image

1. Test your hardware compatibility with a Debian Live system, then download and do a manual install from the image file on a USB-stick
2. Partition manually on System Drive 1: partitions ESP (500MB), RAID (127.5GB)
3. Partition manually on System Drive 2: partitions ESP (500MB), RAID (127.5GB), Home (5GB), Swap (remaining)

Graphics driver

Since I'm installing an old technology low performance quiet graphics card, I need to setup access for Xorg first.

1. After booting into the installed system the screen goes blank
2. Enter a tty terminal with Ctrl-Alt-F1 and login
3. Add file `20-nouveau.conf` to `/etc/X11/xorg.conf.d/` containing:

```
Section "Device"
        Identifier "Nvidia card"
        Driver "nouveau"
EndSection
```

4. Do not install nVidia's proprietary drivers, see Debian Linux – Uninstall NVIDIA Driver & Reinstall Nouveau Driver (Step-by-Step) if you already did, and google *use nouveau xorg* on an AI enabled browser

Next steps

1. Data drives must be set to RAID, LVM, CRYPT in this order. For my use cases LUKS on LVM is the best scenario.
2. If you set data drives, the installer request to encrypt swap space. Do it, then remove the swap encryption after booting into the system.
3. Set manual static IP address in Network Manager for main NIC and reboot
4. Update repositories and apps

```
apt-get update
apt-get upgrade
```

5. Copy “.bashrc” from user account to /root, modify prompt color from 0;32 (green) to 0;31 (red)

6. Check your locale settings

```
locale -a
```

7. Install the required locales

```
dpkg-reconfigure locales
```

8. Change *dhcp* to *static* in file /etc/network/interfaces, or remove the entry for the interface you want to manage with *wicd* or *network manager*, to avoid dhcp-client to assign a dynamic ip during boot. Do not add further interface information, do this in *wicd* or *network manager*

```
sudo vim /etc/network/interfaces
iface eth0 inet manual
```

Root and SSH access

1. Add user to sudoers group and set sudo user permissions (type exactly as indicated)

```
sudo adduser <user> sudo
```

2. Logout and Login again
3. Disable root account, vim /etc/passwd, replace the following line with the one below

```
root:x:0:0:root:/root:/bin/bash
root:x:0:0:root:/root:/usr/sbin/nologin
```

4. Install SSH Access

Virtualbox 7.1

1. Import the GPG key: `wget -q https://www.virtualbox.org/download/oracle_vbox_2016.asc -O- | sudo gpg –dearmor -o /etc/apt/trusted.gpg.d/virtualbox.gpg`
2. Add the repository: `sudo sh -c 'echo “deb [arch=amd64] http://download.virtualbox.org/virtualbox/debian bookworm contrib” » /etc/apt/sources.list.d/virtualbox.list'`
3. Update package lists: `sudo apt update`
4. Install VirtualBox: `sudo apt install virtualbox-7.1`
5. Install the VirtualBox Extension Pack: `sudo apt install virtualbox-ext-pack`

LVM

1. Install the lvm2 package:

```
sudo apt install lvm2
```

2. Enable and start the LVM service:

```
sudo systemctl enable lvm2-lvmetad
sudo systemctl start lvm2-lvmetad
```

Connect existing data volumes

1. Mount LVM volumes, first check filesystem type

```
file -sL /dev/sda1 or file -sL /dev/vg_group/lv_volume
```

2. Add fstab entry to mount during system boot for unencrypted volumes

```
/dev/vg_group/lv_volume /home ext4 noatime,user_xattr 0 0
```

3. Add Encrypted partitions/folders with auto-mount

Install Software

1. Install

```
sudo apt install vim
sudo apt install smartmontools
sudo apt install iotop
sudo apt install rsync
sudo apt install zip
sudo apt install wget
```

2. Usage

```
smartctl --health /dev/sda
```

Autostart Apps

1. Set up rc.local to autostart scripts at boot time

Remove Applications

LibreOffice

```
sudo apt-get remove --purge libreoffice*
sudo apt-get clean
sudo apt-get autoremove
```

Firmware

You might first need to add the firmware repositories to get acceptable graphics output. For example, you are installing on a machine with an old graphics card, but a new monitor. In one of my installs the XFCE desktop will boot, but the screen resolution is off, and the fonts are hardly readable. LXQt desktop will not boot into a graphics desktop at all, the machine drops into a terminal during boot.

- Add to or create file /etc/apt/sources.list.d/firmware.list, and add the contrib and non-free repositories.

```
# replace the following repositories (http://mirror.kku.ac.th) with the
ones you are using
# use buster for Debian 10 or stretch for Debian 9
deb http://mirror.kku.ac.th/debian/ buster non-free contrib
deb-src http://mirror.kku.ac.th/debian/ buster non-free contrib
```

- Save and exit
- Update apt and install the firmware

```
sudo apt update
sudo apt install firmware-linux firmware-linux-nonfree
```

- Check display hardware and install hardware specific firmware (see below)

```
lspci -vnn | grep VGA
```

- You also might need to reset the display settings. Look for a folder within ~/.config, for example xfce4, and rename it from an ssh shell when logged out from the graphical desktop, then login again.

AMD Graphic Cards

- Install AMD Drivers

```
sudo apt install libdrm-amdgpu1 xserver-xorg-video-amdgpu
```

- How to Install the Latest AMD Drivers on Debian 10 Buster
- Binary firmware for AMD/ATI graphics chips
- AtiHowTo - Debian Wiki

nVidia Graphic Cards

- Install nVidia drivers

```
sudo apt install nvidia-driver nvidia-settings nvidia-xconfig
```

- How to install the latest NVIDIA drivers on Debian 9 Stretch Linux

Realtek

- Install Realtek NIC drivers

```
sudo apt-get install firmware-realtek
```

Aquantia

- Aquantia AQC107 firmware is not in the repositories
- Download the driver from Aquantia
- Unpack, then configure the adapter defaults, and build the driver code

```
tar zxf atlantic.tar.gz
mv Linux ~/Drivers/Aquantia
cd ~/Drivers/Aquantia
vim aq_cfg.h
#define AQ_CFG_IS_LRO_DEF 0U /* change from 1U to 0U */
sudo apt-get install build-essential gawk dkms
sudo apt-get install linux-headers-`uname -r`
cd ~/Drivers/Aquantia
sudo ./dkms.sh install
```

- Verify the driver location and that the driver is loaded

```
/lib/modules/`uname -r`/updates/dkms/atlantic.ko
lspci -v
```

- Uninstall the driver:

```
sudo ./dkms.sh uninstall
```

- Aquantia Readme

Exclude package from upgrade

Sometimes it is helpful to exclude a package from upgrading. Virtualbox, for example, requires the GUI on the client to be used after version upgrade to upgrade and install the guest addtions, so sometimes it's better to not upgrade the package while you don't have physical access to the client. You can exclude and include with the following commands:

```
sudo apt-mark hold virtualbox-6.1
sudo apt-mark unhold virtualbox-6.1
```

Links

- Where is rc.local in Debian 9 (Debian Stretch)

- How to manage startup applications in Debian 9?
- Upgrade Debian 10 to Debian 11 Bullseye