

Cubietruck als headless Video Disk Recorder (VDR)

Installation von Debian (GNU Debian 10.x aka. Buster) auf dem Cubietruck (ARMv7 AllWinner A20)

Quellen

1. <https://wiki.debian.org/InstallingDebianOn/Allwinner>
2. <https://www.debinux.de/2014/12/debian-basics-mit-systemd/>
3. <http://www.milaw.biz/wiki/arch/cubietruck> - Pimp my CubieTruck
4. <https://www.robert-sperling.de/mainline-kernel-fuer-cubietruck/>
5. <http://www.sundtek.com/>



Debian 10.x aka. Buster Installation

Installation wie unter [1] beschrieben durchführen.

```
wget https://deb.debian.org/debian/dists/stable/main/installer-armhf/current/images/netboot/SD-card-images/firmware.Cubietruck.img.gz
wget https://deb.debian.org/debian/dists/stable/main/installer-armhf/current/images/netboot/SD-card-images/partition.img.gz
zcat firmware.<board_name>.img.gz partition.img.gz > /dev/sdc
```

- Serielles Kabel (FTDI-Kabel) anschließen um die folgenden Schritte auf der Konsole durchführen zu können, Schnittstellenparameter: 115200 baud, 8N1
- `sudo minicom -b 115200 -o -D /dev/ttyUSB0`
- Cubietruck mit der neu erstellten SD-Karte booten
- SD-Karte in Cubietruck, Power ON
- System bootet komplett im RAM
- Installation via Konsole durchführen
- Reboot

Konfiguration des Grundsystems

SSH Login einrichten und Grundsystem konfigurieren ...

```
#login als <USER> via SSH
ssh -l <USER> <VDR-IP>
su root
echo "PermitRootLogin yes" >> /etc/ssh/sshd_config
```

reboot

Zum SSH-Login ohne Passwordeingabe eine SSH Schlüsseldatei auf den VDR kopieren:

```
ssh-copy-id -i ~/.ssh/vdr.wg.pub root@<VDR-IP>
# dann immer mit:
ssh vdr
```

Oder mit Passwort:

```
ssh -l root <VDR-IP>
```

install_system.sh

```
#!/bin/bash
# System aktualisieren und ein paar wichtige Tools installieren
apt-get -y update
apt-get -y dist-upgrade
apt-get -y install mc aptitude net-tools psmisc
echo "PATH=$PATH:/sbin:/usr/sbin/" >> .profile
echo "PATH=$PATH:/sbin:/usr/sbin/" >> /home/christoph/.profile

# Zeitzone auf Europa - Berlin einstellen:
timedatectl set-timezone Europe/Berlin
# Systemsprache auf "Deutsch" ändern damit VDRAdmin-AM auch 'schön'
aussieht und Umlaute sowohl im EPG als auch in den Aufnahmen korrekt
dargestellt werden:
sed -i 's/# de_DE.UTF-8 UTF-8/de_DE.UTF-8 UTF-8/g' /etc/locale.gen
locale-gen
update-locale LANG=de_DE.UTF-8 LC_MESSAGES=de_DE.UTF-8
LANGUAGE=de_DE.UTF-8
sed -i 's/LC_ALL="C"/LC_ALL=de_DE.UTF-8/g' /etc/environment
echo "LANG=de_DE.UTF-8" >> /etc/environment
echo ""
echo "Reboot empfohlen!"
#reboot
```

```
# Check mit:
date
```

Netzwerkconfiguration

install_network.sh

```
#!/bin/bash
# Statische Netzwerkkonfiguration --> Networkmanager abschalten - wird
```

```
bei mir nicht benötigt
systemctl stop NetworkManager
systemctl disable NetworkManager

# Netzwerkkonfiguration schreiben:
cat << EOF >> /etc/network/interfaces

auto eth0
iface eth0 inet static
    address 192.168.100.3
    broadcast 192.168.100.255
    netmask 255.255.255.0
    gateway 192.168.100.1
    dns-nameservers 192.168.100.1
EOF

# Netzwerkdienste neu starten
systemctl restart networking
systemctl restart resolvconf
```

NTP Server ändern

```
# eigenen NTP Server eintragen:
grep -v '^pool' /etc/chrony/chrony.conf > /etc/chrony/chrony.tmp; echo
"server 192.168.100.1" >> /etc/chrony/chrony.tmp; mv /etc/chrony/chrony.tmp
/etc/chrony/chrony.conf
```

Festplatte einbinden

[mount_hdd.sh](#)

```
#!/bin/bash
# Die eindeutige ID meiner Festplatte ermitteln und damit einen Eintrag
zum mounten beim Systemstart in der 'fstab' erstellen:
UUID=`blkid -o value -s UUID /dev/sda1`; echo "UUID=$UUID /mnt/sda1
ext4 defaults 1 1" >> /etc/fstab
#UUID=`blkid | grep -i sda1 | cut -d'"' -f2`; echo "UUID=$UUID
/mnt/sda1 ext4 defaults 1 1" >> /etc/fstab
#
# HOME-Verzeichnis umleiten damit ich mehr Platz zur Verfügung habe ;-)
mkdir -p /mnt/sda1
mount -a
mkdir -p /mnt/sda1/christoph
cd /home/
mv christoph christoph_orig
ln -s /mnt/sda1/christoph christoph
```

```
chown -R christoph:christoph /mnt/sda1/christoph
cd /home/christoph_orig
find . -depth -print | cpio -pdm --quiet ../christoph/
```

Installation Sundtek Treiber

[install_sundtek.sh](#)

```
#!/bin/bash
mkdir -p sundtek
cd sundtek
# Installations-Script vom Hersteller Sundtek herunter laden und
ausführen:
wget http://www.sundtek.de/media/sundtek_netinst.sh
chmod +x sundtek_netinst.sh
./sundtek_netinst.sh -easyvdr -nolirc
/opt/bin/mediaclient --dtvtransfermode=bulk -d
/dev/dvb/adapter0/frontend0
# Reconnect Tuner #1
/opt/bin/mediaclient --dtvtransfermode=bulk -d
/dev/dvb/adapter1/frontend0
# Reconnect Tuner #2
#
# VDR erneut starten wenn DVB-Tuner Treiber geladen sind:
echo "device_attach=service vdr restart" >> /etc/sundtek.conf
```

Installation Hauppauge WinTV-dualHD Firmware

Zum Betrieb des DVB-C dual Tuners **WinTV-dualHD** wird noch die passende Firmware benötigt. Diese muss im Verzeichnis `/lib/firmware/` abgelegt werden damit der Kernel sie beim Systemstart automatisch laden kann.

Quellen

- [Hauppauge Support Webseite](#)
- <https://tvheadend.org/boards/5/topics/41993>
- <http://palosaari.fi/linux/v4l-dvb/firmware/Si2168/Si2168-B40/>

[install_hauppauge.sh](#)

```
#!/bin/bash
sudo su
```

```
cd /lib/firmware/  
# defekt: wget  
https://github.com/OpenELEC/dvb-firmware/raw/master/firmware/dvb-demod-  
si2168-b40-01.fw  
# defekt: wget  
https://github.com/OpenELEC/dvb-firmware/blob/master/firmware/dvb-demod-  
-si2168-b40-01.fw  
# defekt:wget  
http://palosaari.fi/linux/v4l-dvb/firmware/Si2168/Si2168-B40/4.0.25/dvb-  
-demod-si2168-b40-01.fw  
wget http://palosaari.fi/linux/v4l-dvb/firmware/Si2168/Si2168-  
B40/4.0.4/dvb-demod-si2168-b40-01.fw  
shutdown -r now
```

```
wget http://palosaari.fi/linux/v4l-dvb/firmware/Si2168/Si2168-  
B40/4.0.25/dvb-demod-si2168-b40-01.fw
```

dmesg

```
...  
[ 35.605149] si2168 5-0064: downloading firmware from file 'dvb-demod-  
si2168-b40-01.fw'  
[ 36.824341] si2168 5-0064: firmware version: B 4.0.25  
[ 36.843449] si2157 8-0060: found a 'Silicon Labs Si2157-A30'  
[ 36.898574] si2157 8-0060: firmware version: 3.0.5  
[ 36.943588] si2168 5-0064: downloading firmware from file 'dvb-demod-  
si2168-b40-01.fw'  
[ 36.951864] si2168 7-0067: downloading firmware from file 'dvb-demod-  
si2168-b40-01.fw'  
[ 38.081222] si2168 5-0064: firmware version: B 4.0.25  
[ 38.090572] si2157 8-0060: found a 'Silicon Labs Si2157-A30'  
[ 38.092594] si2168 7-0067: firmware version: B 4.0.25  
[ 38.101348] si2157 9-0063: found a 'Silicon Labs Si2157-A30'  
[ 38.115615] si2157 8-0060: firmware version: 3.0.5  
[ 38.151070] si2157 9-0063: firmware version: 3.0.5  
[ 38.172695] si2168 7-0067: downloading firmware from file 'dvb-demod-  
si2168-b40-01.fw'  
[ 39.367599] si2168 7-0067: firmware version: B 4.0.25  
[ 39.380975] si2157 9-0063: found a 'Silicon Labs Si2157-A30'  
[ 39.406462] si2157 9-0063: firmware version: 3.0.5
```

VDR installieren

[install_vdr.sh](#)

```
#!/bin/bash  
# VDR, StreamDev-Server, VNSI-Plugin, EPGSearch und VDRAdmin-AM  
installieren:  
apt-get -y install vdr vdr-plugin-streamdev-server vdr-plugin-
```



```

then
    echo "LOCAL_NET = 192.168.0.0/16" >> /var/lib/vdradmin-
am/vdradminind.conf
else
    sed -i 's/LOCAL_NET = 0.0.0.0\32/LOCAL_NET = 192.168.0.0\16/g'
/var/lib/vdradmin-am/vdradminind.conf
fi
echo "VIDEODIR = /mnt/sda1/video0" >> /var/lib/vdradmin-
am/vdradminind.conf
echo "TM_MARGIN_BEGIN = 10" >> /var/lib/vdradmin-am/vdradminind.conf
sed -i 's/GUEST_ACCOUNT = 0/GUEST_ACCOUNT = 1/g' /var/lib/vdradmin-
am/vdradminind.conf
echo "PASSWORD_GUEST = gast" >> /var/lib/vdradmin-am/vdradminind.conf
echo "USERNAME_GUEST = gast" >> /var/lib/vdradmin-am/vdradminind.conf

# Lokale Netzwerke zulassen:
echo "192.168.0.0/16" >> /etc/vdr/svdrphosts.conf
sed -i 's/#192.168.100.0\24/192.168.0.0\16/g'
/etc/vdr/plugins/streamdevhosts.conf
sed -i 's/192.168.0.0\24/192.168.0.0\16/g'
/etc/vdr/plugins/vnsiserver/allowed_hosts.conf
#/etc/init.d/vdr start && /etc/init.d/vdradmin-am start

```

Sendersuchlauf manuell starten

```

sudo su
#apt-get install w-scan
# w_scan -fc -c DE >> /root/channels.conf
w_scan -fc -c DE >> /root/`date +%Y%m%d`_channels.conf

```

angepasste Kanalliste verwenden

Kanalliste kopieren nach /var/lib/vdr/channels.conf

[mk_channels_conf.sh](#)

```

#!/bin/bash
# Backup der Originl-Kanalliste anlegen:
cp /var/lib/vdr/channels.conf /var/lib/vdr/channels_`date +%Y%m%d`.conf

# meine persönliche Kanalliste erstellen:
cat << EOF > /var/lib/vdr/channels.conf
Das Erste
HD;ARD:330000:M256:C:6900:5101=27:0;5102=@106,5103=@106:5104;5105:0:111
00:1:1051:0
ZDF

```

```
HD;ZDFvision:450000:M256:C:6900:6110=27:0;6120=@106,6121=@106,6123=@106
:6130;6131:0:11110:1:1079:0
NDR FS NDS
HD;ARD:458000:M256:C:6900:5221=27:0;5222=@106,5223=@106:5224;5225:0:103
27:1:1073:0
SAT.1;Digital
Free:122000:M64:C:6900:2701=2:2702=ger@3;2703=@106:2704:0:53626:61441:1
0000:0
RTL;Digital
Free:122000:M64:C:6900:1401=2:1402=ger@3;1403=@106:1404;6261:0:53601:61
441:10000:0
ProSieben;Digital
Free:442000:M256:C:6900:2201=2:2202=ger@3;2203=@106:2204:0:53621:61441:
10008:0
VOX;Digital
Free:394000:M256:C:6900:1701=2:1702=ger@3:1704;1700:0:53604:61441:10003
:0
kabel eins;Digital
Free:442000:M256:C:6900:2301=2:2302=ger@3:2304:0:53622:61441:10008:0
kabel eins Doku;Digital
Free:610000:M64:C:6900:1511=2:1512=ger@3:1514:0:50122:61441:10021:0
3sat
HD;ZDFvision:562000:M256:C:6900:6691=27:0;6692=@106,6693=@106,6697=@106
:6694;6690:0:11150:61441:10017:0
arte
HD;ARD:418000:M256:C:6900:6661=27:0;6662=@106,6663=@106,6669=@106:6664;
6665,6666:0:11120:61441:10014:0
PHOENIX
HD;ARD:474000:M256:C:6900:581=27:0;582=@106,583=@106:584:0:10331:61441:
10009:0
zdf_neo
HD;ZDFvision:474000:M256:C:6900:541=27:0;542=@106,543=@106,547=@106:544
;540:0:11130:61441:10009:0
ZDFinfo
HD;ZDFvision:450000:M256:C:6900:6710=27:0;6720=@106,6721=@106,6723=@106
:6730;6731:0:11170:1:1079:0
tagesschau24 HD;Digital
Free:586000:M256:C:6900:1221=27:0;1222=@106,1223=@106:1224:0:50062:6144
1:10018:0
n-tv;Digital
Free:394000:M256:C:6900:1901=2:1902=ger@3,1903=qaa@4:1904:0:53606:61441
:10003:0
N24 Doku;Digital
Free:610000:M64:C:6900:1471=2:1472=ger@3:1474:0:51037:61441:10021:0
ONE HD;Digital
Free:570000:M256:C:6900:1721=27:0;1722=@106,1723=@106:1724;1720:0:10376
:61441:10023:0
ARD alpha HD;Digital
Free:586000:M256:C:6900:1211=27:0;1212=@106,1213=@106:1214;1210:0:50061
:61441:10018:0
```



```
KiKA
HD;ZDFvision:474000:M256:C:6900:431=27:0;432=@106,433=@106:434;430:0:11
160:61441:10009:0
TOGG0 plus;Digital
Free:402000:M256:C:6900:591=2:592=ger@3:0:0:53326:61441:10002:0
ProSieben MAXX;Digital
Free:562000:M256:C:6900:6431=2:6432=ger@3;6433=@106:6434:0:53009:61441:
10017:0
Welt der Wunder TV;Digital
Free:610000:M64:C:6900:1421=2:1422=ger@3:0:0:51043:61441:10021:0
BR Fernsehen Süd
HD;ARD:338000:M256:C:6900:5201=27:0;5202=@106,5203=@106:5204;5205:0:103
25:1:1101:0
SR Fernsehen HD;Digital
Free:586000:M256:C:6900:1271=27:0;1272=@106,1273=@106:1274;1270:0:50064
:61441:10018:0
rbb Berlin
HD;ARD:450000:M256:C:6900:5311=27:0;5312=@106,5313=@106:5314;5315:0:103
51:1:1079:0
NDR FS HH
HD;ARD:338000:M256:C:6900:5241=27:0;5242=@106,5243=@106:5244;5245:0:103
29:1:1101:0
MDR Sachsen
HD;ARD:338000:M256:C:6900:5321=27:0;5322=@106,5323=@106:5324;5325:0:103
52:1:1101:0
SWR RP
HD;ARD:330000:M256:C:6900:5131=27:0;5132=@106,5133=@106:5134;5135:0:103
04:1:1051:0
WDR HD
Köln;ARD:330000:M256:C:6900:5501=27:0;5502=@106,5503=@106:5504;5505:0:2
8325:1:1051:0
hr-fernsehen
HD;ARD:418000:M256:C:6900:6551=27:0;6552=@106,6553=@106:6554;6550:0:103
55:61441:10014:0
sixx;Digital
Free:442000:M256:C:6900:1181=2:1182=ger@3:1184:0:50700:61441:10008:0
TELE 5;Digital
Free:442000:M256:C:6900:411=2:412=ger@3:414:0:53002:61441:10008:0
SUPER RTL;Digital
Free:394000:M256:C:6900:1501=2:1502=ger@3:1504;1500:0:53602:61441:10003
:0
RTL II;Digital
Free:394000:M256:C:6900:1601=2:1602=ger@3:1604;1600:0:53603:61441:10003
:0
DMAX;Digital
Free:466000:M256:C:6900:2291=2:2292=ger@3:2294:0:53617:61441:10007:0
SAT.1 Gold;Digital
Free:538000:M256:C:6900:2431=2:2432=deu@3:2434:0:53324:61441:10022:0
EOF
```

```
chown vdr:vdr /var/lib/vdr/channels.conf
```

```
/etc/init.d/vdr start && /etc/init.d/vdradmin-am start
```

Radiorecorder mit Web-GUI

```
sudo su
apt-get -y install lighttpd streamripper at
systemctl status lighttpd
usermod -G vdr -a www-data
# PHP7.x
apt-get -y install php-common php-cgi php
lighty-enable-mod fastcgi
service lighttpd force-reload
lighty-enable-mod fastcgi-php
service lighttpd force-reload
systemctl restart lighttpd
echo "<?php phpinfo(); ?>" >> /var/www/html/phpinfo.php
# Im Browser öffnen: http://VDR-IP/phpinfo.php
# www-data aus /etc/at.deny entfernen
sed -i -e '/www-data/d' /etc/at.deny
cd ~
wget
https://netcologne.dl.sourceforge.net/project/radiorecwebgui/0.3.x/radioreco
rder_0.3.1.tar.gz
tar xzf radiorecorder_0.3.1.tar.gz
mkdir -p /var/www/html/radiorecorder
cp -R radiorecorder_0.3.1/* /var/www/html/radiorecorder/
touch /var/www/html/radiorecorder/res/streams.txt
```

/var/www/html/radiorecorder/res/streams.txt

streams.txt

```
NDR2;http://ndr-ndr2-niedersachsen.cast.addradio.de/ndr/ndr2/niedersach
sen/mp3/128/stream.mp3
NDR
Kultur;http://ndr-ndrkultur-live.cast.addradio.de/ndr/ndrkultur/live/mp
3/128/stream.mp3
NDR
Info;http://ndr-ndrinfo-niedersachsen.cast.addradio.de/ndr/ndrinfo/nied
ersachsen/mp3/128/stream.mp3
N-
Joy;http://ndr-njoy-live.cast.addradio.de/ndr/njoy/live/mp3/128/stream.
mp3
```

NDR

Blue;<http://ndr-ndrblue-live.cast.addradio.de/ndr/ndrblue/live/mp3/128/stream.mp3>

NDR

Plus;<http://ndr-ndrplus-live.cast.addradio.de/ndr/ndrplus/live/mp3/128/stream.mp3>

```
chown -R www-data:www-data /var/www/html/  
mkdir /mnt/sda1/video0/radiorecorder  
chown -R vdr:vdr /mnt/sda1/video0/radiorecorder/  
chmod -R g+w /mnt/sda1/video0/radiorecorder/  
systemctl restart lighttpd  
# Im Browser öffnen: http://<VDR-IP>/radiorecorder/
```

/var/www/html/radiorecorder/res/settings.php

[settings.php](#)

```
<?php  
  
class Settings {  
  
    public static $siteRoot = '/var/www/html/radiorecorder';  
    public static $recordedFilesDestination =  
'/mnt/sda1/video0/radiorecorder';  
    public static $language = 'de'; // "de" for german or "en" for english  
    public static $locale = 'C'; // default is "C"; other possible  
    locales: "de_AT.UTF-8" to enable all corresponding characters for the  
    filename  
    public static $defaultStreamripperParams = ''; // adds streamripper  
    params to each call  
    public static $addDatePrefixToFilename = null; // prefix format  
    (e.g. 'Y-m-d') or null if no prefix to add  
    public static $postCommand = ''; // command to be executed after  
    the recording is finished  
    public static $logThreshold = 3; // Level of log messages, possible  
    values : LEVEL_DEBUG=4, LEVEL_INFO=3, LEVEL_WARN=2, LEVEL_ERROR=1  
  
}  
  
?>
```

SAMBA installieren und einrichten

```
apt-get -y install samba cifs-utils
adduser christoph
smbpasswd -a christoph
usermod -G vdr -a christoph
adduser gast
smbpasswd -a gast
systemctl restart smbd
```

Samba Konfiguration

```
cp /etc/samba/smb.conf /etc/samba/smb.conf_orig
mcedit /etc/samba/smb.conf
```

[smb.conf](#)

```
#===== Global Settings =====

[global]
    workgroup = WG
    server string = %h server
    wins support = no

    wins server = 192.168.100.1
    dns proxy = no
    name resolve order = lmhosts host wins bcst
    unix extensions = no
    server signing = disabled

#### Networking ####
;   interfaces = 127.0.0.0/8 eth0
;   bind interfaces only = yes

#### Logging ####
    log file = /var/log/samba/log.%m

# Cap the size of the individual log files (in KiB).
    max log size = 1000
    syslog = 0
    panic action = /usr/share/samba/panic-action %d

##### Authentication #####
    security = user
    encrypt passwords = true
    passdb backend = tdbsam
```

```

obey pam restrictions = yes
unix password sync = yes
passwd program = /usr/bin/passwd %u
passwd chat = *Enter\snew\s*\spassword:* %n\n
*Retype\snew\s*\spassword:* %n\n *password\supdated\ssuccessfully* .
pam password change = yes
map to guest = bad user

client min protocol = SMB2
client max protocol = SMB3

#===== Share Definitions =====
[homes]
    comment = Home Directories
    browseable = yes
    writeable = yes
    read only = no
    create mask = 0700
    directory mask = 0700
    valid users = %S

[Aufnahmen]
    comment = VDR Aufnahmen
    path = /mnt/sda1/video0
    browseable = yes
    writeable = yes
    read only = no
    #create mask = 0700
    #directory mask = 0700
    #valid users = %S
    create mask = 0664
    directory mask = 0775
    force group = users
    follow symlinks = yes
    wide links = yes

load printers = no
printing = bsd
printcap name = /dev/null
disable spoolss = yes

```

Alles zusammen in einem Script...

```

wget -O install_all.sh
"https://www.von-thuelen.de/doku.php/wiki/projekte/cubietruck/cubietruck_arm
bian_buster?do=export_code&codeblock=23" && chmod +x install_all.sh &&
./install_all.sh

```

install_all.sh

```
#!/bin/bash
echo "Lade Installations-Skripte herunter ..."
wget -O install_system.sh
"https://www.von-thuelen.de/doku.php/wiki/projekte/cubietruck/cubietruck_armbian_buster?do=export_code&codeblock=4" && chmod +x
install_system.sh
wget -O install_network.sh
"https://www.von-thuelen.de/doku.php/wiki/projekte/cubietruck/cubietruck_armbian_buster?do=export_code&codeblock=6" && chmod +x
install_network.sh
wget -O mount_hdd.sh
"https://www.von-thuelen.de/doku.php/wiki/projekte/cubietruck/cubietruck_armbian_buster?do=export_code&codeblock=8" && chmod +x mount_hdd.sh
wget -O install_sundtek.sh
"https://www.von-thuelen.de/doku.php/wiki/projekte/cubietruck/cubietruck_armbian_buster?do=export_code&codeblock=9" && chmod +x
install_sundtek.sh
wget -O install_hauppage.sh
"https://www.von-thuelen.de/doku.php/wiki/projekte/cubietruck/cubietruck_armbian_buster?do=export_code&codeblock=10" && chmod +x
wget -O install_vdr.sh
"https://www.von-thuelen.de/doku.php/wiki/projekte/cubietruck/cubietruck_armbian_buster?do=export_code&codeblock=11" && chmod +x
install_vdr.sh
wget -O configure_vdr.sh
"https://www.von-thuelen.de/doku.php/wiki/projekte/cubietruck/cubietruck_armbian_buster?do=export_code&codeblock=12" && chmod +x
configure_vdr.sh
wget -O mk_channels_conf.sh
"https://www.von-thuelen.de/doku.php/wiki/projekte/cubietruck/cubietruck_armbian_buster?do=export_code&codeblock=14" && chmod +x
mk_channels_conf.sh
echo " ... fertig. Starte System- und VDR Installation..."
read -n1 -rsp $'Press any key to start system installation or Ctrl+C to exit...\n'
./install_system.sh
read -n1 -rsp $'Press any key to start network configuration or Ctrl+C to exit...\n'
./install_network.sh
read -n1 -rsp $'Press any key to mount hdd, configure \"video0\" directory and move \"home\" directory or Ctrl+C to exit...\n'
./mount_hdd.sh
read -n1 -rsp $'Press any key to install Sundtek DVB-C driver or Ctrl+C to exit...\n'
./install_sundtek.sh
read -n1 -rsp $'Press any key to install Hauppauge DVB-C Firmware or Ctrl+C to exit...\n'
./install_hauppage.sh
```

```
read -n1 -rsp '$Press any key to install VDR and VDRadmin-AM or Ctrl+C
to exit...\n'
./install_vdr.sh
read -n1 -rsp '$Press any key to configure VDR and VDRadmin-AM or
Ctrl+C to exit...\n'
./configure_vdr.sh
read -n1 -rsp '$Press any key to generate \"channels.conf\" file or
Ctrl+C to exit...\n'
./mk_channels_conf.sh
echo "Done!"
read -n1 -rsp '$Press any key to reboot your system now (recommended!)
or Ctrl+C to exit...\n'
shutdown -r now
```

Misc

Seriennummer der USB Tuner herausfinden

```
find /sys/devices -name 'dvb*frontend*'
/sys/devices/platform/soc@1c00000/lc1c000.usb/usb3/3-1/3-1:1.0/dvb/dvb1.fron
tend0
/sys/devices/platform/soc@1c00000/lc1c000.usb/usb3/3-1/3-1:1.0/dvb/dvb0.fron
tend0
root@VDR:/# dmesg | grep 'usb 3-1' | grep -i serialnumber | tail -1
[ 7455.803666] usb 3-1: SerialNumber: xxxxxxxxxxxx
```

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<https://www.von-thuelen.de/> - Christophs DokuWiki

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