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1 Intro

How to prepare and create an SD-Card or USB Stick Boot-Image for RasPi 2 or 3 to be able to run the AS Software.

Basic Elements: Linux is ArchLinuxArm because it has most flexibility and newest drivers.

The Installation is with Xorg and jre for JavaFX. All activations are made with SYSTEMD.

Watchmen is running in parallel to GUI. (Simple WebServer for system analysis)

Hardware: RasPi 2 or 3 with Touch Screen 800x480 and USB Audio Interface.

Audio Interfaces are more stable in arch linux than in raspbian (why)

Symptom: audacity sometimes stopps recording in raspbian.

Arch is a pure systemd system.

2 Image prepare

2.1 Preparation Host

Knoppix 8,2 on old laptop

2.2 Parting

Plan: part1 256M part2 7G

Part1:

Part 1Sector Start 2048

Size Part1[sectors]: $(256 * 1024 * 1024 - 2048 * 512) / 512 = 522240$

Part 2:

Start Part2[Sectors]: $256 * 2^{20} / 512 = 524288$

Size Part2[Sectors]: $7 * 2^{30} / 512 = 14680064$

dd size: $(7 * 2^{30} + 256 * 2^{20}) / 2^{20} = 7424$

TRAP: Knoppix background file system vFat does not allow 7G Filesize

UNTRAP: use with overlay .. allows big files inside knoppix (not at mouunt system)

2.3 bootline

For USB Stick .. change bootdrive to sda1 (ala?)

2.4 Extending config.txt

Remove black borders

disable_overscan=1

For hifiberry amp and amp+

dtoverlay=hifiberry-amp

For Hifiberry amp2

dtoverlay=hifiberry-dacopus

For Touchscreen

max_usb_current=1

hdmi_force_hotplug=1

config_hdmi_boost=7

hdmi_group=2

hdmi_mode=1

hdmi_mode=87

hdmi_drive=1

hdmi_cvt 800 480 60 6 0 0 0

Uart

enable_uart=1

3 Creating

TRAP: ArchLinux requires bigger first partition than Raspbian.

`tar -xvzf <file.tar.gz> -C <destination>`

??? -p preserve file attributes

Use script

age.sh

to get the ala archieve file

TRAP: use rpi-2 image for raspi 3 too

Use script

make_image.sh

To create an image for arch linux

change config.txt for USB Stick usage

TODO every script mount and unmount losetup

4 First Install and Update

After starting image ... log into arch linux with putty

Login as alarm; su to root (both name = passwd) (no root on ssh)

loadkeys de

at Terminal usage.

Two commands by install advise

pacman-key --init

pacman-key --populate archlinuxarm

Init the update system

```
pacman -Sy  
pacman -Su
```

Special tool found necessary

```
pacman -S mc
```

install xorg in arch with optional lxde

```
pacman -S xorg  
pacman -S xterm  
pacman -S lxde  
pacman -S xorg-xinit
```

start with

```
startx startlxde
```

PROBLEM: xorg install is incomplete; after 2nd reboot sd card is corrupted and usb does not start
maybe: arch linux runs only from sd card

SUCCESS:

Everything from SD Card; not USB Stick

```
pacman -S xf86-video-fbdev
```

File

```
~/.xinitrc
```

contains

```
startlxde
```

start with

```
startx
```

you should see running lxde

5 Run Tests

5.1 Audio Test

Install audacity

```
pacman -S audacity
```

Audio Interfaces are not visible

must install

```
pacman -S alsa-lib
```

then audio interfaces are visible in audacity

```
pacman -S alsa-utils
```

then alsamixer is available

5.2 Ensemble8

Test with bellsoft jre 9.....

Must run as root or problem with input

Bellsoft 11.0.2 lite does not contain FX

Must run big

Error message

JavaFX detected no fonts! Please refer to release notes for proper font configuration

Check with

/usr/share/fonts

contains something

fc-list

shows many fonts

Adding lib/fonts with lucidia from other jdk goes to next step

Hint

<https://www.raspberrypi.org/forums/viewtopic.php?t=71111>

<https://wiki.openjdk.java.net/display/OpenJFX/Font+Setup>

Next

glGetError 0x505 == out of memory reported by the opengl gpu driver.

gpu_mem=256

Successful start script from ssh terminal

DISPLAY=:0.0 j9/bin/java -Dprism.useFontConfig=false -jar Ensemble8.jar

Mouse input on Ensemble8 ... No keyboard input ???

--- no keyboard ??? ... Start command:

j11b/bin/java -Dprism.useFontConfig=false -jar Ensemble8.jar

5.3 Standard Java Demos

Test mit:

jre8-openjdk

Standard Java Demos

krötenlangsam

alle Bellsoft stürzen ab

Cross Test

jre-openjdk

was 11 ist

Stürzt auch ab

11er Demos holen:

Aus zulu package (Azul Zulu)

Bellsoft J11b mit 11er Demo ... geht so

-Xcomp

extem lange ladezeiten; dann nett

jre-openjdk mit 11er Demo: Zuckt ruckelt aber dann schnell

jre8-openjdk: -Xcomp : magic switch no effect

jre11-openjdk ohne magic switch etwas langsamer aber startet viel schneller

Ensemble8 and bellsoft jre11 **ohne** X: surprise runs too ... without keyboard

can only be stopped with a

killall java

5.4 Sun/Oracle jre

Access download requires name password !

<https://docs.oracle.com/javase/8/embedded/develop-apps-platforms/jrecreate.htm>

Use Script

ejdk.sh

to build sun jre.

Loading time and execution speed

BOOAAAAHHHH

5.5 Sun with gluon 6

<https://stackoverflow.com/questions/38359076/how-can-i-get-javafx-working-on-raspberry-pi-3>

Combine sun jre with gluon 6 (Problem armv7 arm v6 ????)

```
armv6hf-sdk/rt/lib/ext/jfxrt.jar --> jre/lib/ext/  
armv6hf-sdk/rt/lib/arm/* --> jre/lib/arm/  
armv6hf-sdk/rt/lib/javafx.platform.properties --> jre/lib/  
armv6hf-sdk/rt/lib/javafx.properties --> jre/lib/  
armv6hf-sdk/rt/lib/jfxswt.jar --> jre/lib/
```

exactly same problem as bellsoft11: no keyboard and block cursor after scrollbar usage

different failure message because of fonts

Start script Error message no Fonts

gluon/bin/java -jar Ensemble8.jar

starts:

gluon/bin/java -Dprism.useFontConfig=false -jar Ensemble8.jar

Lucidia fonts was already in sunjre.

5.6 Cross check Raspbian

With installed oracle jre ... good performance

Ensemble8 with Liberica jre same symptoms ... no keyboard and scrollbar cursor disappear

6 Prep 4 X

For german keyboard and Timezon the File

~/xinitrc

must contain

```
setxkbmap de &  
timedatectl set-timezone Europe/Berlin &  
startlxde
```

7 Add JRE

7.1 Added dirs in ala userland

/opt/as/apps

Own applications

as application and watchmen

/opt/as/sunjre

Last latest sun / oracle jre 8 full generated by jrecreate

/opt/as/gluon

/opt/as/lib9

Latest Bellsoft Liberica jre version 9 (with javafx)

/opt/as/lib11

Latest Bellsoft Liberica jre version 11 (with javafx)

7.2 Files added to userland

/home/alarm/.xinitrc

/root/system-update.sh

7.3 systemd add ons

Find out what to do

8 Other Linux commands

```
netstat -a -tcp -n
```

```
ps -aux
```

```
ip link show
```

```
modprobe b43
```

```
xscreensaver-demo # to disable
```

```
mount //qnap/public qn
```

only root can write

```
sudo mount -t cifs -o vers=2.0,username=otto,password=geheim //192.168.1.100/Tausch  
/media/austausch
```

CAN-Bus

```
ip link add type vcan  
ip link add dev vcan42 type vcan  
ip link del vcan42
```

Works on Raspi

Open Port in firefox for watchmen

```
about:config
```

```
network.security.ports.banned.override value:portnumber
```

9 ToDo

Systemd start

lxde

as

watchmen

lxde starts for test programmes

10 Links

10.1 alarm

<http://archlinuxarm.org>

<https://archlinuxarm.org/platforms/armv8/broadcom/raspberry-pi-3>

Hints about X Server

<https://wiki.archlinux.org/index.php/xorg>

10.2 OpenJDK

<https://wiki.openjdk.java.net/display/OpenJFX/Monocle>

<https://wiki.openjdk.java.net/display/OpenJFX/Font+Setup>

<https://wiki.openjdk.java.net/display/OpenJFX/OpenJFX+on+the+Raspberry+Pi>

<https://wiki.openjdk.java.net/display/OpenJFX/Platforms>

<https://wiki.openjdk.java.net/display/OpenJFX/Touch+screen+calibration+on+embedded+platforms>

<https://openjfx.io/javadoc/11/>

10.3 Liberica jre

Company

<https://www.bell-sw.com/>

List of all releases

<https://github.com/bell-sw/Liberica/releases/>

10.4 Azul Zulu

<https://www.azul.com/downloads/zulu/>

<https://www.azul.com/downloads/zulu/zulufx/>

kein arm

10.5 Other

<https://www.b4x.com/android/forum/threads/raspberry-pi-b4j-ui-applications-with-liberica-jdk.92950/>

10.6 Hints

WorkEnvironement/Doc/Javarpi2_alarm.odt