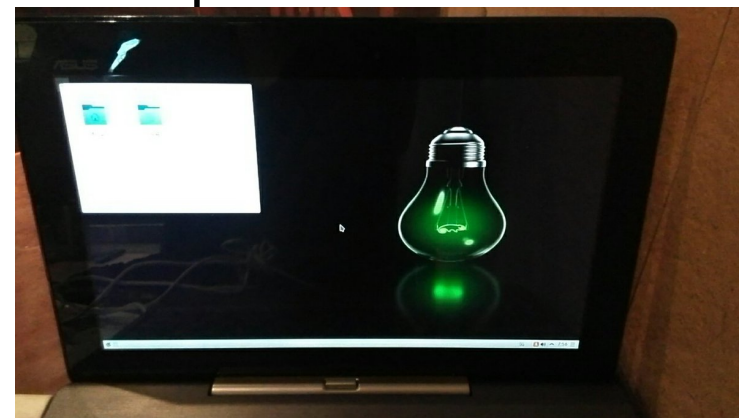


Hacking with x86 Windows Tablet and mobile devices on openSUSE¹

2in1 Language
Black:日本語
Blue:English

- 1、自己紹介 Self introduction
- 2、最近やっている事 To Do
- 3、Chrooted openSUSE on ARM Android
- 4、WindowsタブレットにopenSUSEを移植
Install openSUSE on WindowsTablet
- 5、grub2のCUI設定
Setting and install grub2 on openSUSE.
- 6、インストールトラブル他
Install trouble
- 7、結論
Conclusion

Windows Tablet
+openSUSE42.2



This Presentation:
Slideshare & PDF files
publication of my HP
<http://kapper1224.sakura.ne.jp>

Speaker:
Kenji Shimono

openSUSE Asia Summit 2017
2017/10/21 16:00~
Place: 電気通信大学 Room2

自己紹介 Self Introduction

- My name: Kapper
- Twitter account: [@kapper1224](https://twitter.com/kapper1224)
- HP: <http://kapper1224.sakura.ne.jp>
- Slideshare: <http://www.slideshare.net/kapper1224>
- ニコナレ: <http://niconare.nicovideo.jp/users/59379263>
- Facebook: <https://www.facebook.com/kapper1224/>
- My Hobby: Linux, *BSD, and Mobile ARM Devices
- My favorite words: Record than experiment important
- Test Model: Netwalker(PC-Z1,T1)、Nokia N900、DynabookAZ、RaspberryPi
Nexus7(2012、2013)、Hercules eCAFE EX HD、Jetson TK-1、
OpenPandora、ARM Chromebook、ZTE OPEN C (FirefoxOS)
台湾Android電子辞書 無敵CD-920、CD-928、TW708、GPD-WIN
- Recent Activity:
 - Hacking Linux on Windows10 Tablet (Intel Atom base).
 - I have been active in the Tokaido Linux User Group.
 - Hacking Linux on GPD-WIN,GPD-Pocket and many Atom Devices.
 - I have recently often use the ARM Chromebook.

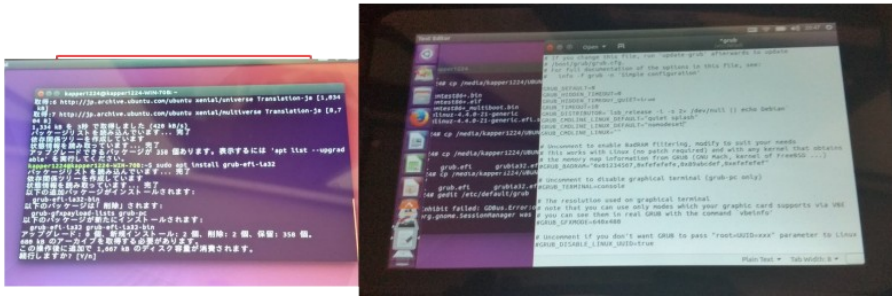


Recently my test

1. Linux distro on x86 Windows Tablet

Install ISO for Ubuntu 16.04

- After boot Ubuntu16.04, connect USB-Wifi and wait 5min. Install 「sudo apt-get install grub2-efi-ia32」
- Edit Grub2, 「sudo gedit /etc/default/grub」 add 「GRUB_CMDLINE_LINUX_DEFAULT="nomodeset"」 and saved.
- Upgrade grub.cfg 「sudo update-grub」
- Reboot Ubuntu16.04



3. Linux distributions on Android

Debian KitとComplete Linux

- Android上でchroot環境を構築してapt-getしてパッケージを入れるアプリ。Debian化が出来る。
- Androidをシンプルにサーバ化できる。root化が出来るものといらないものと。
- Debian KitはAndroidの親プロセスのルート環境でapt-getが使える仕組みなので、自由度が高い(ハイリスク?)
- Debian Norootが入れられない古い環境向けも

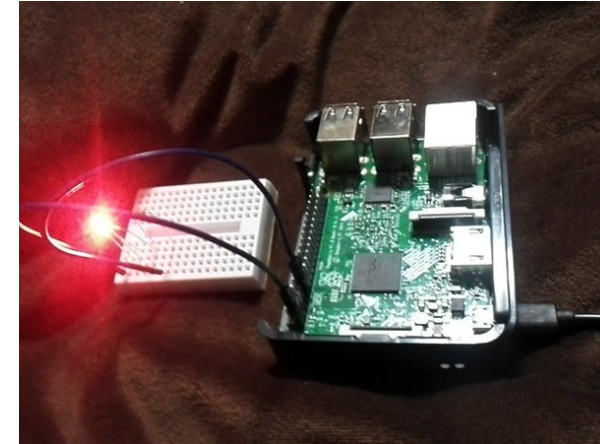


Complete Linux

こんな事やっています³

2. Electronic Circuit on ARM

RaspberryPiを使ってLチカ
昔に戻って、電子回路工作を楽しんでいます



4. Presentations in Asia(HongKong,Taiwan)

Opensource Conference

台湾MOPCON2015 Kapperセミナー

- 今回の通訳さん、Field Pan氏。本職ゲームクリエイター 通訳とかコーディネーターも出来るハイスキルな方 台湾でビジネスする人には頼りになるはず
- 視聴者 推定500人前後。
- 日本人の活動の宣伝資料追加。
- 若いエンジニアさん多数。質問多い Mainly many young engineer's



Install Linux on SmartPhone and Tablet ⁴

- タブレットとは **What is Tablet?**
タッチパネル液晶 **Touchscreen**
バッテリー **battery**
周辺機種 **PC Accessories**
センサー **sencer**
高性能CPU&GPUボード **CPU&GPU**
を統合した一つの高度なPCである
- 活動目的 **The Purpose**
スマホやタブレットでLinuxディストリ文化を次世代に残す
Linux Dsitro on Smartphone and Tablet for next generations
PCを持っていないスマホ世代にもLinuxを知ってもらう
Non PC younger user can use and know Linux.
ディストリビューターへ自分のOSがタブレットで動く事を証明する、移殖する、使ってもらう
Play your own Linux on Tablet for Linux Distributer.
AndroidがLinuxから離れてもモバイルLinuxの文化は絶対残す
If Android won't use Linux,I will develop mobile Linux.



安いWindowsタブレットの入手など

Inexpensive Windows Tablet

- 最近インテルタブレットの**中古**、**OSなし**が**とっても安い**ですよね♪
どんどん安くなる恐ろしいハイスペックデバイス。
- Recently Intel Tablet is too inexpensive, in Japan and Akihabara.
Let's install any Linux distributions.

Android



ジャンク Android
タブレット各種

マウスコンピューター MCJ LuvPad
AD701 / AD702TV / AD705C
AD708 / MID407 / MID407W

本体のみ(電源アダプタ無し)、動作保証無し

1,000円 (税込)
税別価格 926円

Windows

商品番号：92007056 **お買い得!**



[詳細画像を見る](#) >

¥3,980 (税込)

値下げしました!

状態
中古

付属品
一部付

保証
1ヶ月

1点限り

openSUSEにWindowsタブレットの課題⁶

openSUSE problems on Windows Tablet

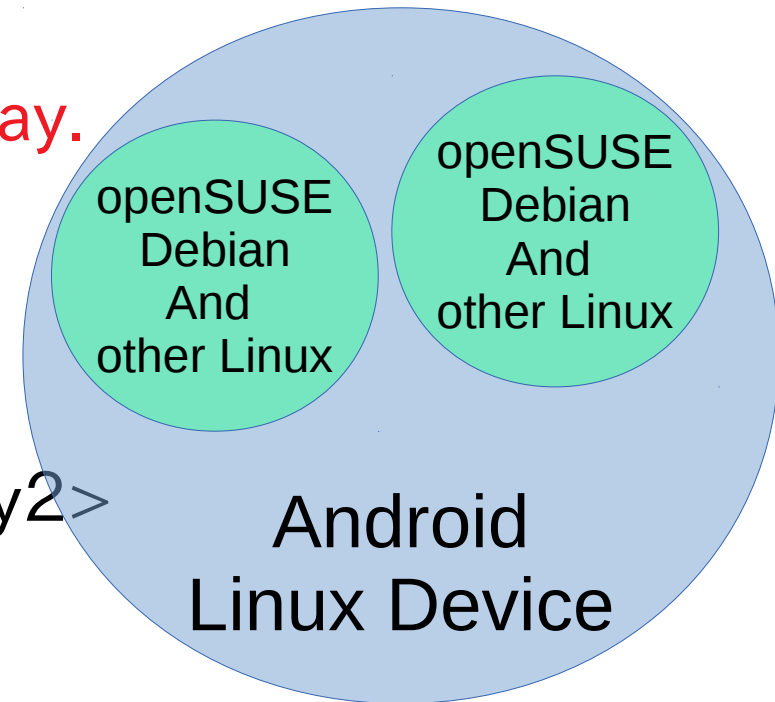
- openSUSE42.3はどうよ? What's openSUSE on Windows Tablet?
 - Kernel4.4は古くてTurboモード過剰発熱のバグがある
Freeze Kernel4.4 Bug.(CPU Turbo mode freeze)Fixed Kernel4.12
 - Xorgがちゃんと動かない
Xorg GPU have some troubles.
 - ドライバが古く周辺機種が動かない
Firmware was too old.
 - Kernelを最新LTSにアップグレードする必要あり
Need upgrade kernel.Fixed Kernel bugs.
 - UEFI32bitのブートローダーパッケージがない。コマンド起動必須
No UEFI32bit bootloader Grub2 and packages on openSUSE.
Need to boot grub2 commandline on UEFI32bit and openSUSE
 - Wifi Firmwareがインストール時に機能しないのでUSB有線LAN推奨
When install openSUSE, No Wifi and zypper. Recommended
Wired USB LAN. Fixed Kernel 4.13.
- Tumbleweed ISOの動作NG
No boot Tumbleweed ISO x86-64 on Windows Tablet.

まあとにかく入れてみましょう
Let's install openSUSE.

Chrooted openSUSE on ARM Android

Install openSUSE on Chrooted ARM Android⁹

- ChrootはLinux環境を内部にもう一つ作れます
Chroot can install openSUSE on Android
- Androidの場合、専用アプリを入れるだけ
Install only Application from Googleplay.
- Chrootの中から基本は外の環境へアクセス出来ない
フォルダをマウントすると移動出来る
Chroot access only chrooted folder.
`mount -o bind <directory1> <directory2>`
- ChrootはRootユーザーのみ。
一般ユーザーではFakechrootが必要
(Debian Norootなどで使用)
Chroot can use Rooted user only in openSUSE.
- Kernelは標準OSのまま使用するので、
ドライバやモジュールは、オリジナルKernelのまま。
→オリジナルKernelがサポートしていない
ドライバやOSは使用できない
Chroot can use original kernel only. Different driver don't use.



Chrooted Linux on ARM Android

Android Electronic Dictionary CD-920



Complete Linux on Nexus7



Android chroot applications

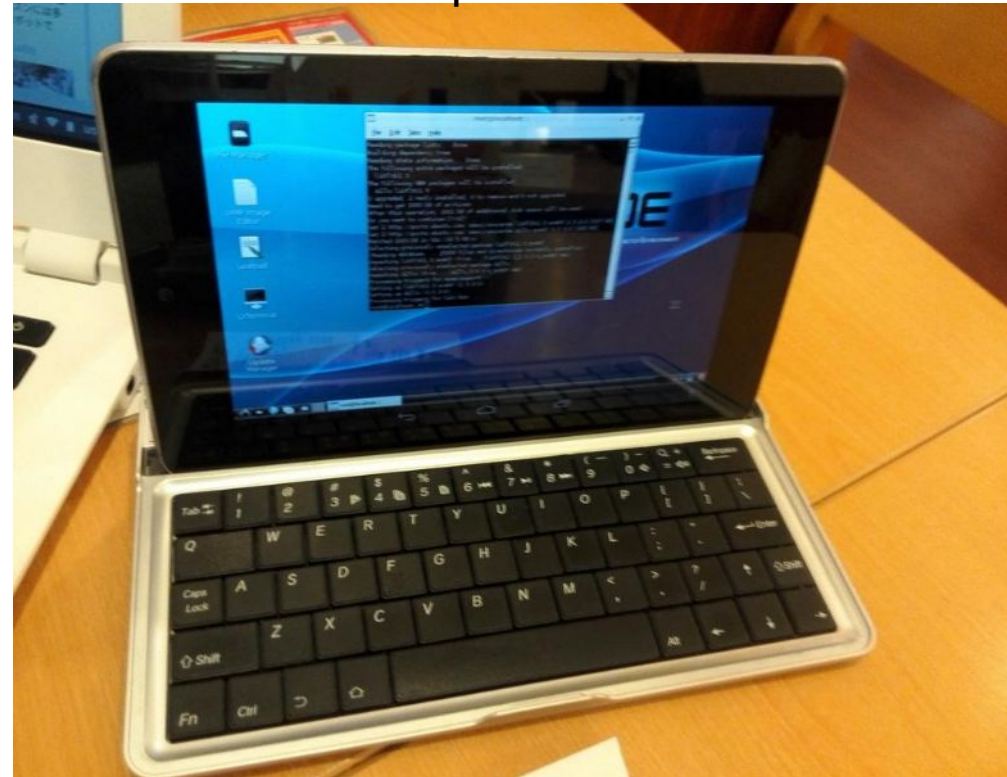
Terminalベースは慣れが必要ですが容量が小さくすみます。XはXserver-SDLかVNC

Android applications	Android versions	Installer, CUI or GUI	Linux distributions	Root	comment
Debian Noroot (Gimp他)	4.3~	Full Auto XserverSDL	Debian	No	Installed Xorg Much Stroage
Complete Linux	4.0.3~	Terminal	Debian, Ubuntu, Fedora, Arch, openSU SE他	Root	Some Distro GUI Install
Debian Kit	4.1~	Terminal	Debian	Root	Debootstrap
Linux Deploy	2.1~	Terminal	Debian, Ubuntu, Fedor a, Arch, openSUSE他	Root	Most Distro CentOS
GnuRoot	1.6~	Terminal	Debian	No	A lot of Android Too old
GnuRoot debian, Fedora, Gentoo	1.6~	Terminal	Debian, Fedora, Gentoo	No	GNURoot distro Too old
GnuRoot Wheezy X	1.6~	Xserver	Debian	No	Xserver Too old
AndroLinux	3.0~	Terminal	Fedora, CentOS	?	CentOS
APKLinux	4.0.3~	Terminal	Bare-Bone	Root	Own packages
Lil' Debi	2.1~	Terminal	Debian	Root	Debootstrap

Debian Kit and Complete Linux

- Android上でchroot環境を構築してapt-getしてパッケージを入れるアプリ。Debian化が出来る。
Debian on chrooted Android, can use apt-get.
Complete Linux is some Linux distributions,openSUSE.
- Androidをシンプルにサーバ化できる。root化がいるものといらないものと。
Android will be server. Rooted or Non Rooted app.
- Debian Norootが入れられない古い環境向けも
Old android can install
Debian kit and GNU Root.
- 色々なディストロを使いたい
openSUSE can use 「Complete Linux」.

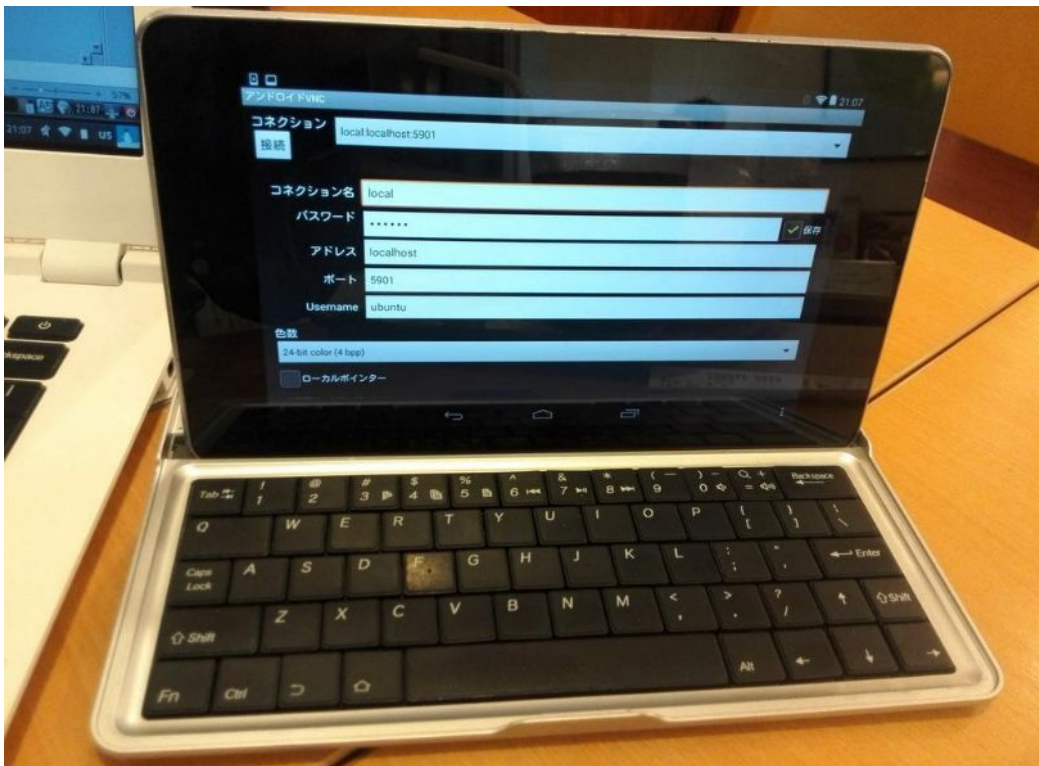
Complete Linux



TightVNCserverとVNCviewer

- もっとも容易なXサーバの代替がVNCserver
Most easy to use VNCserver like Xorg server on Android.
- chroot環境でTightVNCserverを起動すれば容易にAndroid上でX環境を立ち上げられます。
`sudo apt-get install tightvncserver`
`tightvncserver -geometry 1024x600(screen size)`
- もちろん、遠隔操作して使うことも可能です。

VNC Viewer



Complete Linux



Xserver-SDL

- Xserverの代替としてDebian norootでも使われているXserver-SDLを単独でも使えます。
Xserver-SDL is own Xserver application on Android.
- 使い方はXserver-SDLを起動させてから、Chroot環境で端末から、
`env DISPLAY=xxx.xxx.xxx.xxx:0 lxsession &`
と起動しAndroid上で再度Xserver-SDLを表示
Start Xserver-SDL and chrooted, After commanded 「env～」
on Chrooted terminal. Play xorg on Android.

Xserver-SDL

Launch these commands on your Linux PC:

```
env DISPLAY=172.22.57.22:0 metacity &  
env DISPLAY=172.22.57.22:0 gimp
```

To tunnel X over SSH, forward port 6000
in your SSH client

Complete Linux



Install openSUSE on x86 Windows Tablet

Recently Atom UEFI Devices

- Intel機種は仕様がほぼ同一でLinux移植が容易
Intel PC is easy to install Linux distributions.
UEFIブートローダーのトラブルでUEFI32bit面倒
UEFI 32bit has some bootloader problems on Linux.

- UEFI32bit **Difficult**
Atom Windows Tablet,
Stick PC

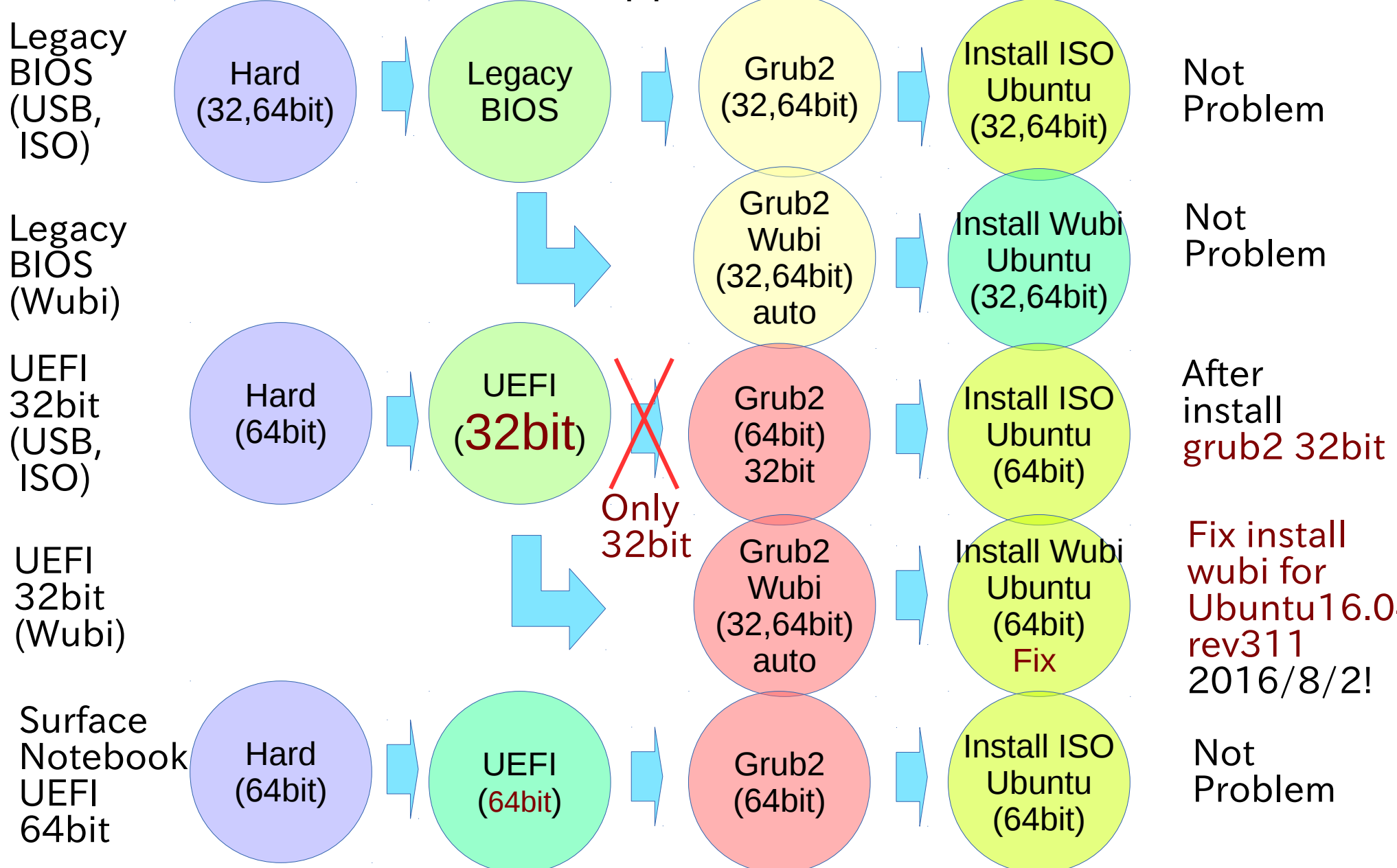
- UEFI64bit **Easy**
Notebook, Surface, AMD



最近のWindows PCでLinuxを起動

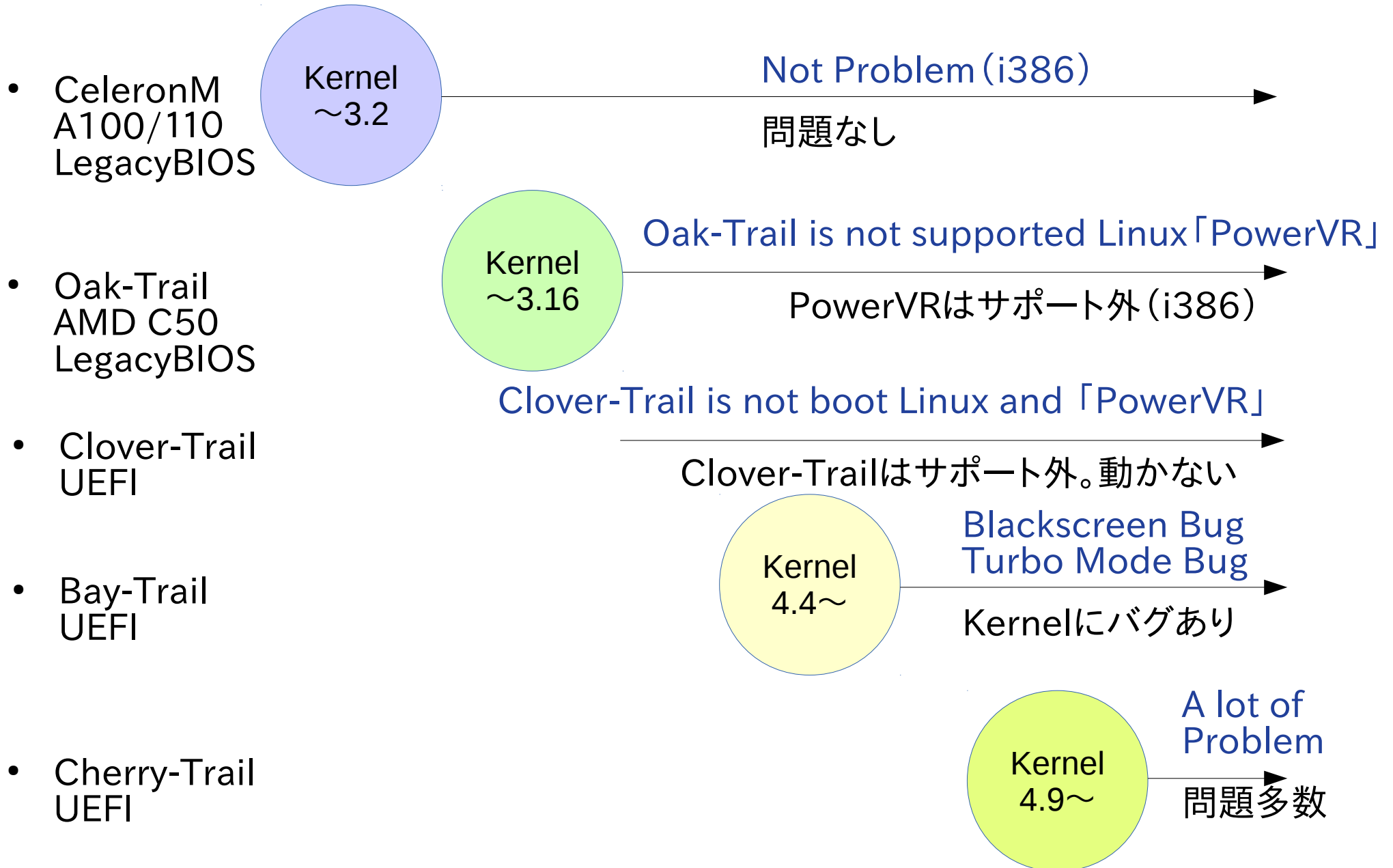
Recently PC's boot process for Windows and Linux

- Ubuntu official ISO is not supported to both 32bit and 64bit.



Unofficial support Liunx Kernel

- Research Linux Kernel generations. 多分こんな感じ



Drivers on Windows Tablet

Devices	Oak Trail	Clover Trail	Bay Trail	Bay Trail	Cherry Trail	Cherry Trail	Comments
	ONKYO TW2A	W3-810	TW708/CAS	Chuwi Hi8	Chuwi Vi8	jumper EZBook 2	
Touchscreen	HID準拠	I2C HID	I2C HID	KMDF I2C HID	I2C HID	I2C HID	Different models
Wifi	Ralink Tec.cop	Broadcom	RTK8723	Broadcom	Broadcom	Broadcom	RTK:GitHub Broadcom:OSS
Bluetooth	Broadcom	Broadcom	RTK8723BT	Broadcom	Broadcom	Broadcom	RTK:GitHub Broadcom:OSS
Sound	Realtek	IntelSST Audio RealtekI2S	IntelSST Audio RealtekI2S	IntelSST Audio RealtekI2S	IntelSST Audio RealtekI2S	IntelSST Audio ES8316	
Display	Intel GMA600	Intel (Power VR)	IntelHD Graphics	IntelHD Graphics	IntelHD Graphics	IntelHD Graphics	
Camera	1.3M WebCam	OV2722	Unicam Ar0543 M1040	OV2680	IntelAV Stream	1.3M WebCam	Different models
Accelerometer		HID		BMA2x2 Bocsh	Bocsh Accela		Different models
Senser (Other)		Senser	Broadcom GNSS4752	CM3128x SDOV2			Different models
SD	Intel SM35	Intel IHost	Intel Host	Intel Host	Intel Host	Intel Host	
Mic		IntelSST Audio	IntelSST Audio	IntelSST Audio	IntelSST Audio	IntelSST Audio	
Monitor	デジタルフラット	PnP	PnP	PnP	PnP	PnP	

Touchscreen Driver

タッチスクリーンはドライバが動く機種と動かない機種があります。

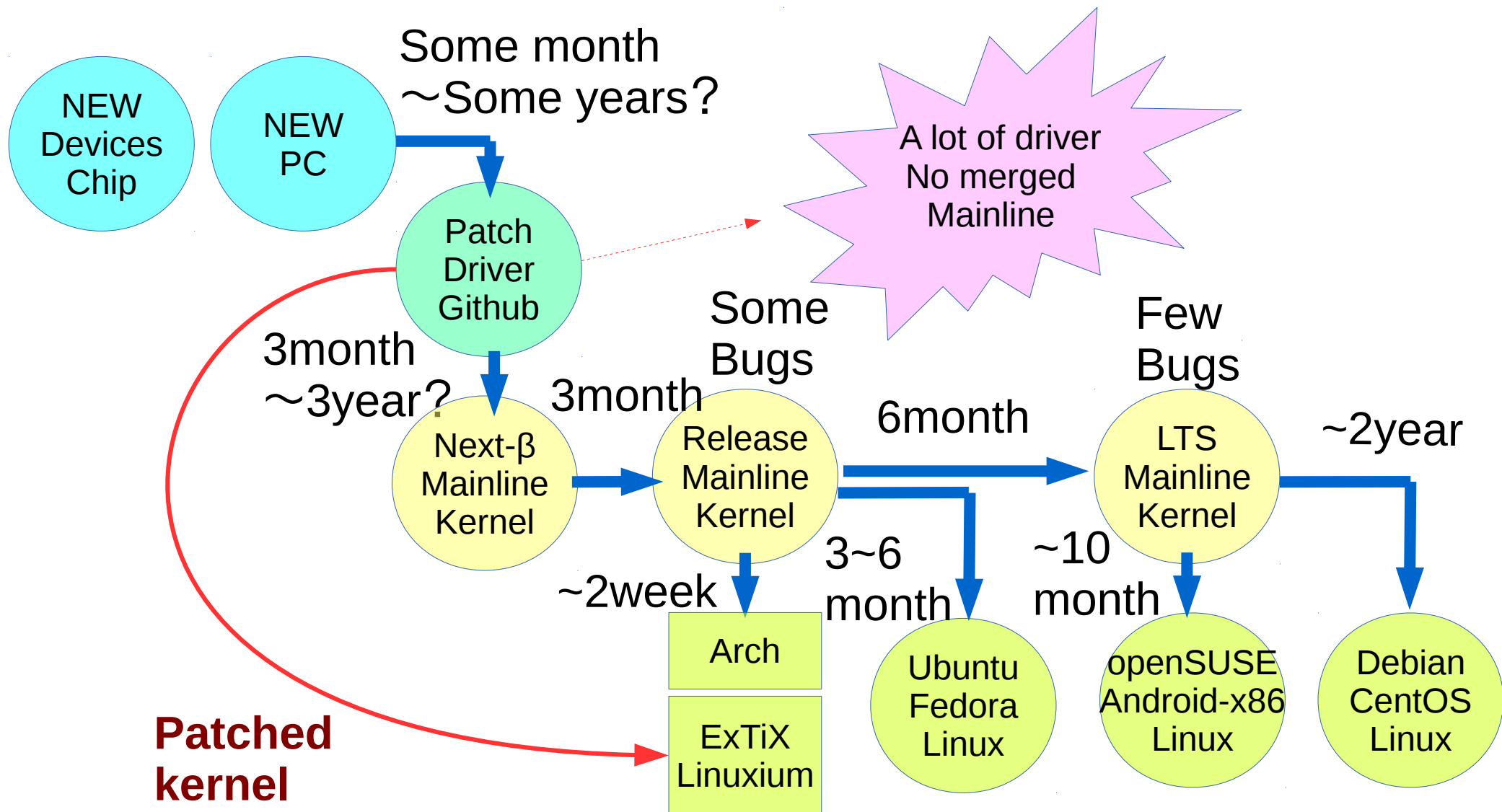
Touchscreen is different chip on Tablet models.

This Lists Checked my Windows Tablet on Linux.

- ATML1000:T100TA,Miix2 8,Yoga300,WT8-A32 ○ (~Kernel4.8?)
- FTSC1000:TW708,XPS12,Flexx10.1,Cubei7,WinpadA1,UX360UX ○
- SIS0817:T100TAF ◎
- GSX1680 (MSSL1680) :WIN-7b、WN892,WDP-072,
Chinese Tablet △ (add Driver)
- MSHW0037:Surface3 (Kernel4.8~) ◎
- SYNA7500:Venue 8 Pro,Envy x2,W4-820 △ (nomodeset)
- Goodix Touch HID: Steam8,W1-8100,Encore Mini WT7-C, GPD-WIN,
GPD-Pocket ◎
- Atmel:Photon2 ◎
- eGalax USB TouchController: W500S ○
- ELAN 04f3:0732 :Dynabook Tab S50 ◎
- Wacom DELL Venue Pro ◎

新機能問題 New Drivers problem

- 新機能、ドライバがLinuxディストリに採用されるまでに結構時間が掛る。問題はISOにバグがあるとブートしない事
If Kernel have few bugs, ISO image has no boot problem.



GPD-WIN+Atom Notebook(UEFI64bit) ²²

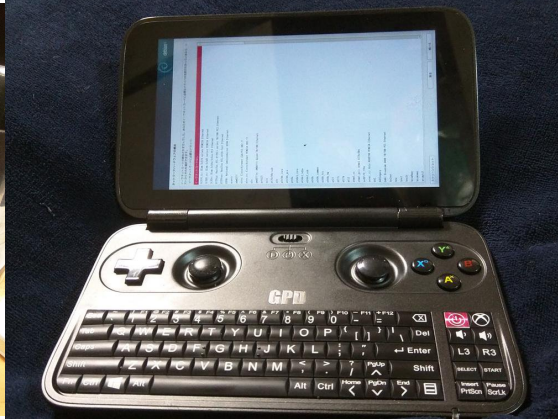
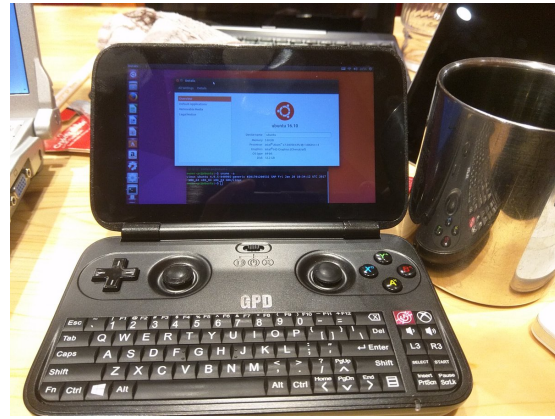
- Blackscreen trouble (need "i915.modeset=0")

Ubuntu16.10

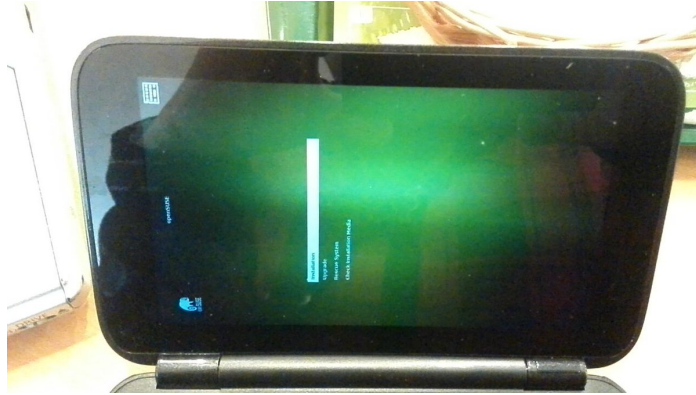
Debian Multi-Arch

Sabayon

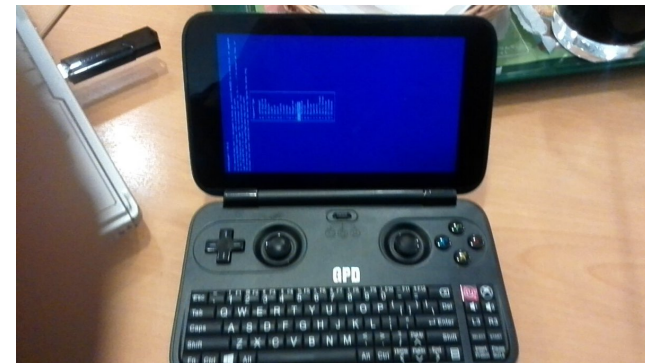
CentOS



openSUSE



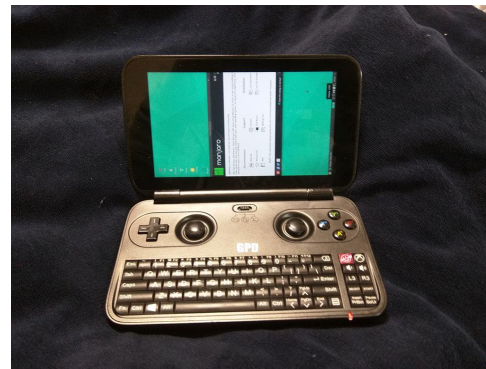
NetBSD (UEFI Testing)



CyanogemMOD-x86



Manjaro



Gentoo

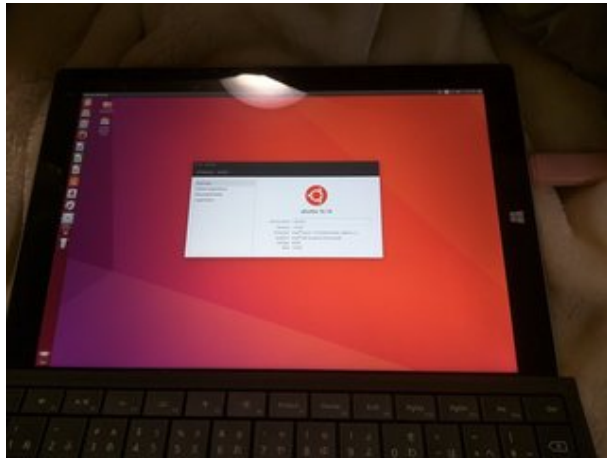


Fedora



Surface3 (Cherry-Trail)UEFI64bit ≧Kernel4.8 and Ubuntu 17.04~ distro

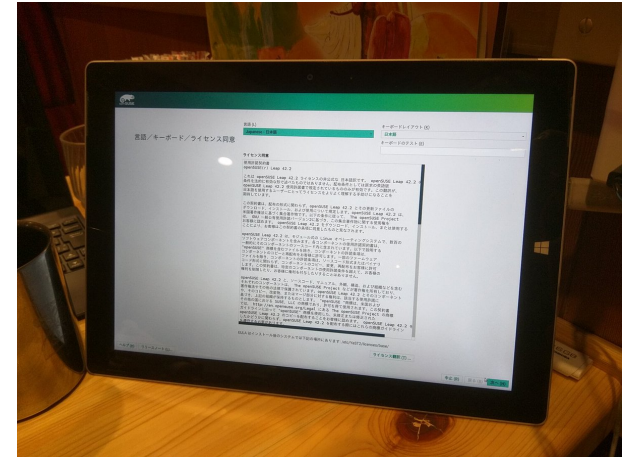
Ubuntu



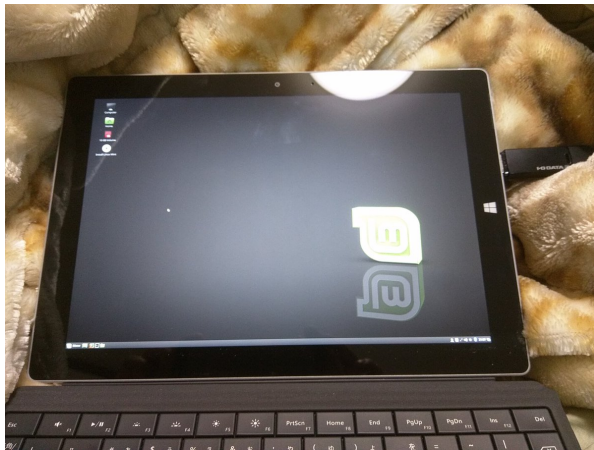
Manjaro



openSUSE



LinuxMINT (Update Kernel)



CyanogenMOD-x86



Extix Linux



SurfaceRT (WindowsRT) was able to install Windows10 Mobile!?

Chinese Cheap Windows Tablet UEFI32bit

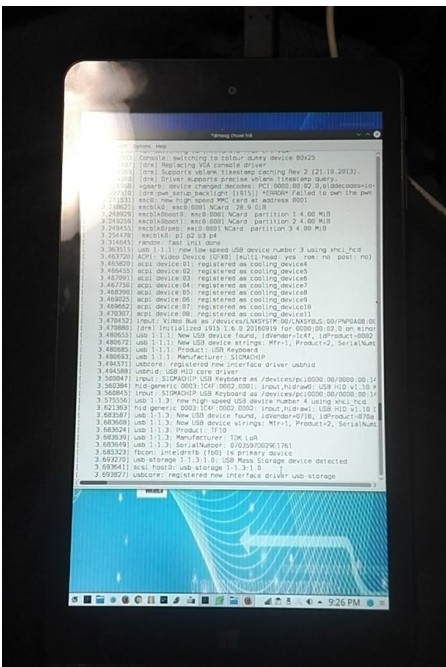
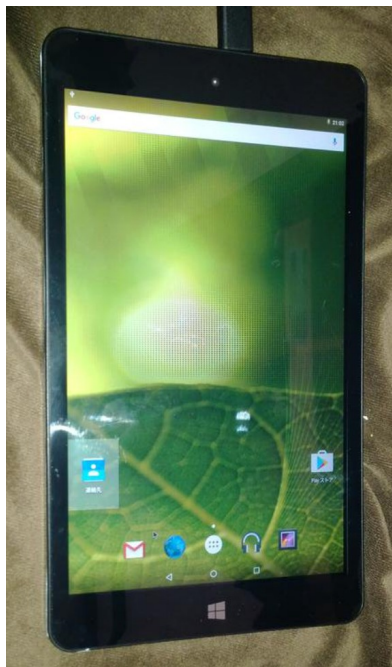
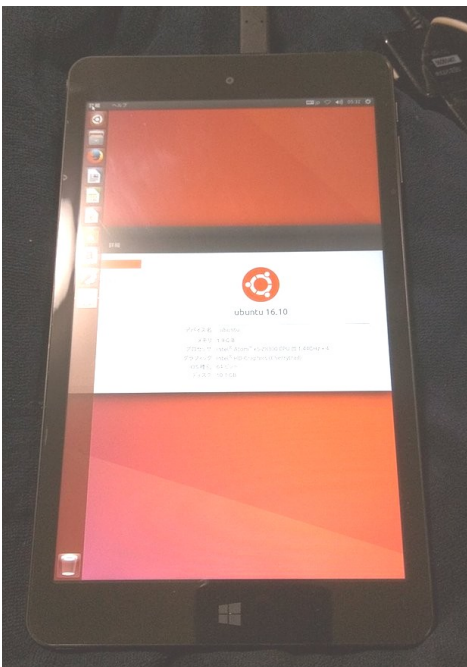
UEFI 32bit bootloader, Power and blackscreens problem

Ubuntu

Android-x86

ExTixLinux

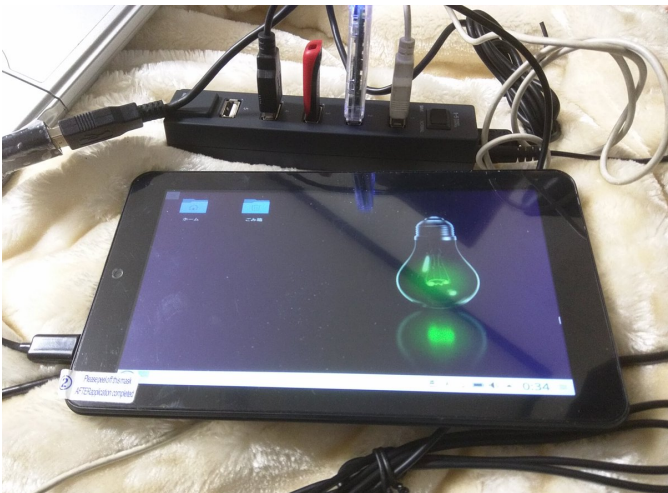
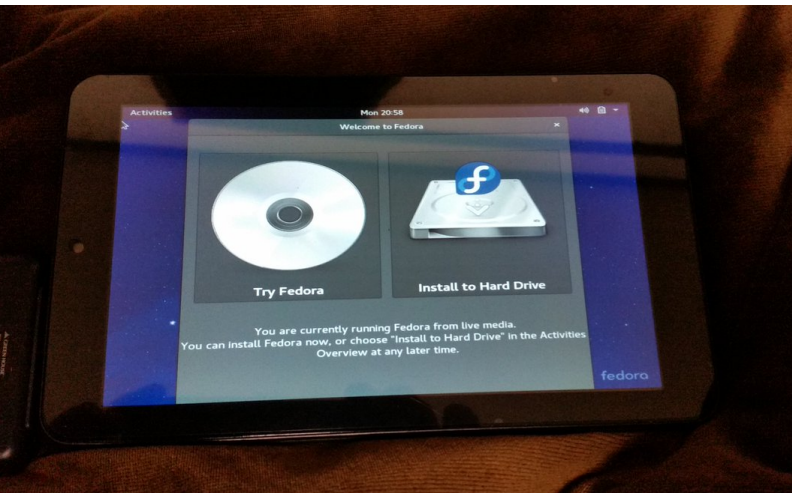
Old Kernel Freeze Bug



Fedora

openSUSE

Debian

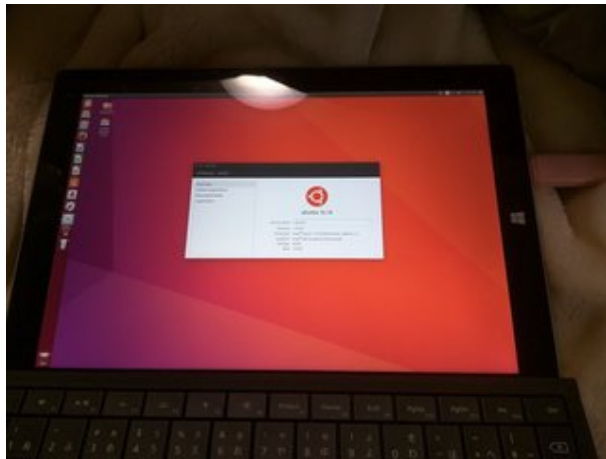


Intel VS AMD Windows Tablet

IntelのAtomはバグが多い。AMDはノートPCに近く、Surface 似

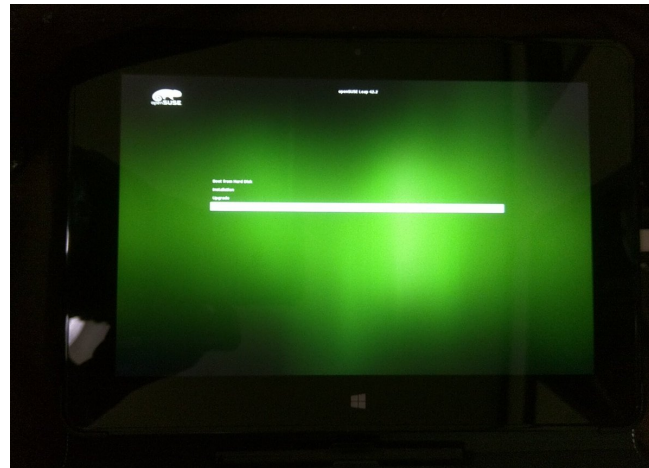
Intel Atom has a lot of BUG. Surface is UEFI64bit like notebookPC. AMD Tablet is UEFI64bit and Radeon. Easy to install Linux on AMD Tablet.

Intel Surface and Tablet



Surface3
UEFI64bit
some bugs

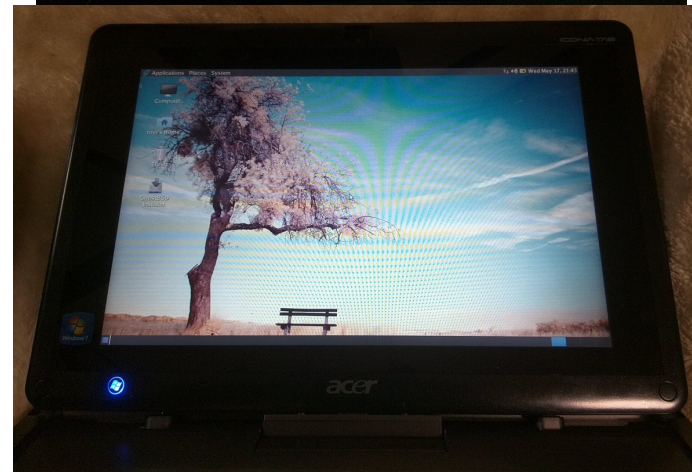
AMD Windows Tablet



AMD Tablet
Photon2
UEFI64bit
few bugs
Radeon
10 inch only



Atom Tablet
UEFI32bit
Bay-Trail
~Cherry-Trail
A lot of bugs



AMD Tablet
W500S
LegacyBIOS
few bugs
Radeon
10 inch only

推奨テスト機 Recommended Test Model PC

- ASUS T100TA (Bay-Trail) 2014/8 UEFI32bit オススメ
初期のBay-Trail UEFI32bitタブレットで海外で大人気モデル
The early Bay-Trail Tablet 「T100TA」.
- ドライバ、移植情報が特に多くT100Linux専用コミュニティがある
Some driver and infomations take 「T100 community」
supported.
- USBが2個、充電しながら使える、長時間バッテリー、キーボード
2 USB ports, charged, long battery, 2 in 1 style Keyboard.



LATEST STEPS TO INSTALL UBUNTU ON THE ASUS T100TA

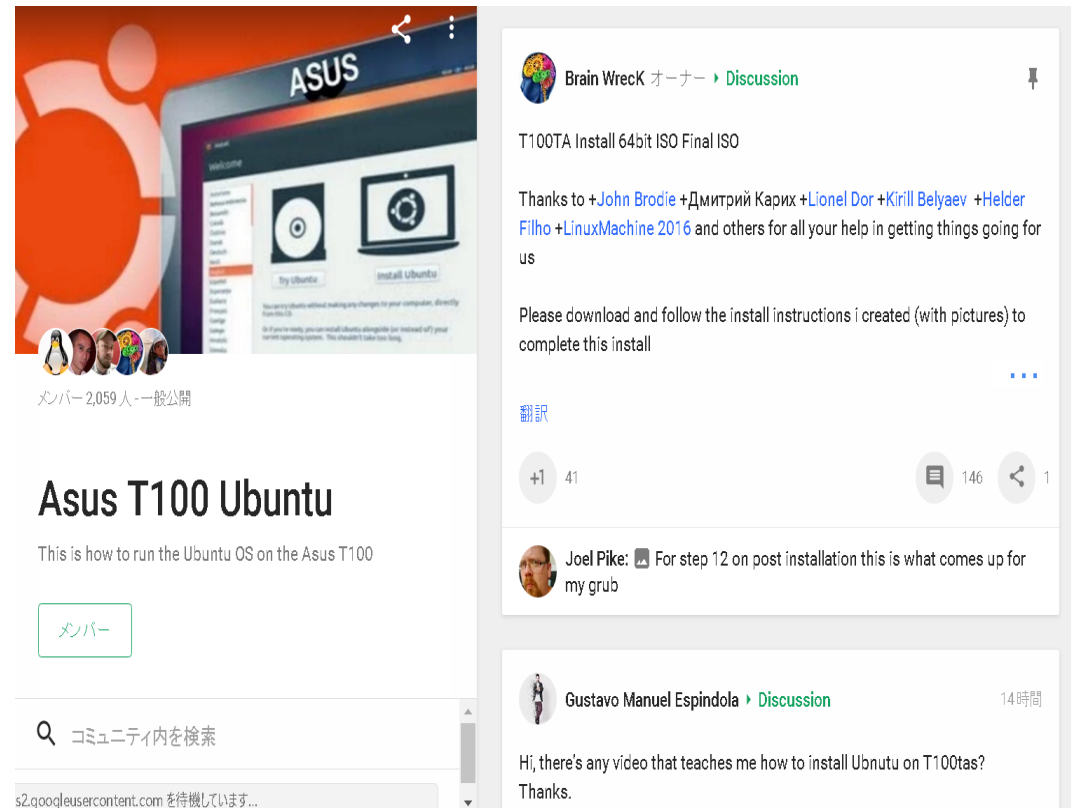
get a fully-former T100TA, d, and we had to / monitoring, or i pain? How

new kernels has over at the [Asus](#) away moving for not being

re the latest king machine.

[installation post](#) e steps, you he many helpful

01/2016)



ASUS

Asus T100 Ubuntu

This is how to run the Ubuntu OS on the Asus T100

メンバー 2,059人 一般公開

Brain Wreck オーナー Discussion

T100TA Install 64bit ISO Final ISO

Thanks to +John Brodie +Дмитрий Карих +Lionel Dor +Kirill Belyaev +Helder Filho +LinuxMachine 2016 and others for all your help in getting things going for us

Please download and follow the install instructions i created (with pictures) to complete this install

翻訳

+1 41

146

Joel Pike: For step 12 on post installation this is what comes up for my grub

Gustavo Manuel Espindola Discussion 14時間

Hi, there's any video that teaches me how to install Ubuntu on T100tas? Thanks.


コミュニティ内を検索

s2.googleusercontent.com を待機しています...

実はここに書いてあります


Check debian T100TA Website

<https://wiki.debian.org/InstallingDebianOn/Asus/T100TA>



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[フロントページ](#)
[更新履歴](#)
[ページ検索](#)
[ヘルプの目次](#)



/ Wiki /

[ログイン](#)
[情報](#)
[添付ファイル](#)
その他のアクション: ▼

InstallingDebianOn Asus T100TA

Translation(s): none

[DebianOn](#) is an effort to document how to install, configure and use Debian on some specific hardware. Therefore potential buyers would know if that hardware is supported and owner would know how get the best out of that hardware.

The purpose is not to duplicate the Debian [Official Documentation](#), but to document how to install **Debian on** some **specific** hardware.

Models covered

	ASUS Transformer Book T100TA-DK002DH	T100TAM-BING-DK016B
CPU:	Intel Atom Bay Trail Z3740 (BYT-T)/BGA	Intel Atom Bay Trail Z3775 (BGA)
Video card:	Intel HD Graphics (Atom Processor Z36xxx/Z37xxx Series Graphics & Display)	
Screen:	10.1" HD SLIM WV (GL, LED-TP)	
Wireless card:	Broadcom 43241b4 SDIO	
Disks:	eMMC 32 GB (/dev/mmcblk0)	eMMC 64GB (/dev/mmcblk0)
	internal USB Disk 7.5GB (/dev/sda, hidden, Windows recovery)	
RAM:	LPDDR3 1067 2GB (on-board)	
Bluetooth:	Broadcom (on-board BCM2035 HCI?)	

目次

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Driver on Kernel4.9LTS

Overall Status in Debian Stretch (testing)

	Core Components
Boot Standard Kernel:	👍
Detect hard drives:	👍
CPU:	📘 (Bay Trail C-state issue, workaround available)
	Extra Features
Shutdown	👍
Reboot	👍
Hibernation	⚠️
Sleep / Suspend	⚠️
Battery monitor	👍
Xorg	👍
- OpenGL	👍
- Resize-and-Rotate(randr)	📘
Screen backlight	❌ (always at full brightness)
Light sensor	❌
Switch to External Screen (HDMI)	👍
Accelerometers	👍
Mouse	
- Built-in (Touchpad)	👍 (but no multitouch)
- Built-in (Touchscreen)	👍 (but no multitouch)
Bluetooth	📘 ⚠️
Wireless/Wifi	📘 🚫
Keyboard's Hotkeys	👍 (only some keys)
Sound	📘 🚫
MicroSD card reader	⚠️ since kernel 4.8
Built-in camera	❌

Legend :

👍 = OK ; ❌ Unsupported(No Driver) ; ⚠️ = Error (Couldn't get it working); 📘 Unknown, Not Test ; [-] Not-applicable

📘 = Configuration Required; 🚫 = Only works with a non-free driver and or firmware

Install ISO for openSUSE42.2

- Required
 1. Windows Tablets
 2. USB Memory(>2GB) install openSUSE42.2 x86-64 ISO
 3. USB-MicroUSB OTG cable
 4. USB hub
 5. USB keyboard
 6. USB mouse
 7. USB Wired LAN adapter



Install openSUSE 42.2 on Tablet

- Disable 「Secure boot」 on UEFI. And boot USB on UEFI.
- Type Grub2 and Boot openSUSE 42.2 install ISO on USB memory.

```
Linux (hd0,msdos1)/boot/x86_64/loader/linux
root=/dev/mmcblk0p2 nomodeset reboot=pci
initrd (hd0,msdos1)/boot/x86_64/loader/initrd
boot
```

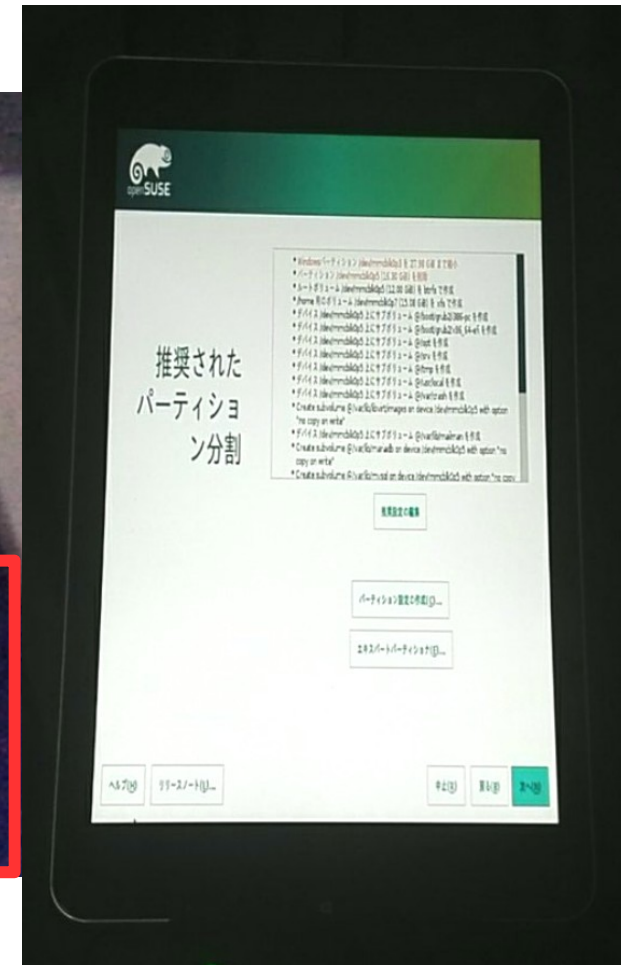
Install GUI

GNU GRUB version 2.02~beta2

Minimal BASH-like line editing is supported. For the first word, TAB lists possible command completions. Anywhere else TAB lists possible device or file completions.

```
grub> linux (hd0,msdos1)/boot/x86_64/loader/linux root=/dev/mmcblk0p2 nomodeset reboot=pci
grub> initrd (hd0,msdos1)/boot/x86_64/loader/initrd
grub> boot_
```

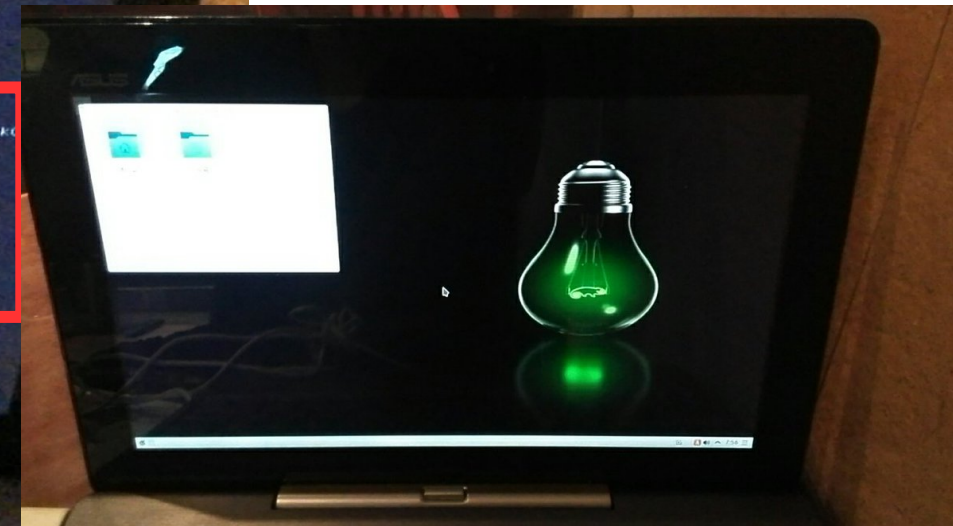
Type Grub2 command line



2ndboot openSUSE 42.2 on Tablet

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- Type Grub2 and Boot openSUSE 42.2 install ISO on USB memory, after reboot. If you don't use Wired LAN and internet, then openSUSE install error on Tablet. select gpt?=installed partations. Install partations single 「gpt2」, dual 「gpt6」? folder⇒/@/.snapshots~ are openSUSE when install error.
- linux (hd1,gpt2)/@/.snapshots/2/snapshot/boot/x86_64/loader/vmlinuz-4.4.49-16-default root=/dev/mmcblk0p2 nomodeset intel_idle.max_csate=1 reboot=pci
initrd (hd1,gpt2)/@/.snapshots/2/snapshot/boot/x86_64/loader/initrd-4.4.49-16-default
boot



Grub2を自分でビルドして実装する

Install grub2 i386 UEFI32bit on openSUSE

- openSUSEでgrub2をビルドに必要なパッケージをインストール
Install packages 「to use build grub2」 on openSUSE.
zypper install autogen automake autoconf bison gcc flex make git git-cvs nano
- でgrub2をダウンロードしてビルドします。コピペするだけ。
Download sourcecode and build grub2, copy and paste only.
sudo su
git clone git://git.savannah.gnu.org/grub.git
cd grub
./autogen.sh
./configure --with-platform=efi --target=i386 --program-prefix=""
make
make install

cd grub-core
../grub-install -d . --efi-directory /boot/efi --target=i386
../grub-mkimage -d . -o bootia32.efi -O i386-efi -p /boot/grub ntfs hfs appleldr
boot cat efi_gop efi_uga elf fat hfsplus iso9660 linux keylayouts memdisk
minicmd part_apple ext2 extcmd xfs xnu part_bsd part_gpt search
search_fs_file chain btrfs loadbios loadenv lvm minix minix2 reiserfs memrw
mmap msdospart scsi loopback normal configfile gzio all_video efi_gop efi_uga
gfxterm gettext echo boot chain eval

cp /boot/efi/EFI/opensuse/grubia32.efi ../grub/

Grub2を自分でビルドして実装する

Install grub2 i386 UEFI32bit on openSUSE

- openSUSEを例に起動設定ファイルを作成。自動設定ファイルでは起動しない
To make bootloader configfile 「grub.cfg」 on openSUSE.
nano /boot/grub/grub.cfg
- で下記文章を貼り付けて保存。linux～、initrd～以下の文章は機種に合わせて変更する。どうやらGUI関係の文章は使えないらしい。そこを削除すると使える
Add HDD patations path (hd1～、gpt～) in front of linux～ and initrd～.
Copy under text on grub.cfg

```
if loadfont /boot/grub/font.pf2 ; then
    set gfxmode=auto
    insmod efi_gop
    insmod efi_uga
    insmod gfxterm
    terminal_output gfxterm
fi
set menu_color_normal=white/black
set menu_color_highlight=black/light-gray
menuentry "Boot OpenSuse42.2" {
    set gfxpayload=keep
    linux (hd1,gpt2)/@/.snapshots/2/snapshot/boot/vmlinuz-4.4.49-16-
default root=/dev/mmcblk0p2 nomodeset reboot=pci,force quiet splash ---
    initrd (hd1,gpt2)/@/.snapshots/2/snapshot/boot/initrd-4.4.49-16-default
}
```

Grub.cfgを書き換えてブート画面設定

Edit grub.cfg and change boot screen

- 毎回grub.cfgを手入力するのは面倒なので設定
Edit grub.cfg and boot openSUSE.
- /etc/default/grubの設定を端末から書き換え
Add /etc/default/grub on text editor in terminal.
sudo nano /etc/default/grub
- GRUB_CMDLINE_LINUX_DEFAULT="intel_idle.max_cstate=1 reboot=pci resume=/dev/mmcblk0p2 splash=silent quiet showopts"
- Rootフォルダの設定はUUIDを使うとエラーが出ないので良い
Recommended to set UUID for Root partitons.

自動設定「update-grub」作成

autoconfig script 「update-grub」

- Kernelの設定が変わると面倒なので「update-grub」スクリプトを作成する
If you update kernel, autoconfig script 「update-grub」.
- 端末からnano update-grub
Edit nano 「update-grub」 on terminal.
- 下記をコピーして保存。copy and paste 「update-grub」
#!/bin/sh
set -e
exec grub2-mkconfig -o /boot/grub/grub.cfg "\$@"
- 実行形式に変換。change chmod.
sudo chmod +x update-grub
sudo cp update-grub /usr/sbin/
- 実行。update grub.cfg
- sudo update-grub

自動設定「update-grub」作成 autoconfig 「update-grub」

- 「update-grub」スクリプトで作られるgrub.cfgは相対パス
絶対パスに変更しないと起動しないので修正
change grub.cfg ⇒ Need absolute path
- Linuxefi ⇒ linux (hd1,gpt2)
initrdefi ⇒ initrd (hd1,gpt2)
- 端末から、On terminal
sudo nano /boot/grub/grub.cfg
- linux (hd1,gpt2)/@/boot/vmlinuz-4.4.49-16-default
intel_idle.max_cstate=1 reboot=pci
initrd (hd1,gpt2)/@/boot/vmlinuz-4.4.49-16-default
boot
- 保存したら終了。Save file and END.

Mainline kernel レポジトリを使う

To use mainline kernel repository

- 新しいドライバを使いたい場合はまMainline Kernelのレポジトリを使う。
If you want to use newer driver, to use mainline kernel repository.
- 端末から、On terminal
`sudo nano /etc/zypp/zypp.conf`
- `multiversion = provides:multiversion(kernel)`
`multiversion.kernels = latest,latest-1,running,oldest`
- `sudo zypper addrepo -f`
`https://download.opensuse.org/repositories/Kernel:/HEAD/standard/kernelrepo`
- 保存したらアップグレード。Save and upgrade.

Wanted! 緩募!

- Grub2-i386-EFI (UEFI 32bit) Package, Included RPM file on ISO image.
- 「Update-grub」 like autoconfig grub.cfg command.
- Add new mainline kernel installer tool like 「UKUU」
- 「Wubi」 like installer loopback images on Windows.
- Fix Tumbleweed x86-64 Live Image to boot.
There is no boot on any PC and Tablet. No one use it?

結論

conclusion



ブートローダーさえ何とかできればOK

Kernel4.9LTSお待ちしております。

It is difficult Tablet for beginner on openSUSE now.
But you can be setting grub2 CUI 「copy and paste」
The other WindowsTablet is needed to Kernel4.9LTS,
Kernel4.14LTS.

openSUSEもWindowsタブレットの
時代が来たるなう!!!

Let's install openSUSE on Tablet!