VCOM 2.0 Driver for Linux Installation Guide

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Revision Date	Revision	Description	Author
2019/2/11	V1.2	Third Edition	Jay Wu
2020/5/5	V1.3	4th Edition With SerialCom Tool Example	Calvin Lin
2021/12/28	V1.4	5th Edition With DKMS & OpenSSL Information	Calvin Lin

VCOM 2.0 Driver Feature List

- Features Enhancement
  - VCOM
  - TCP Redundancy
  - Manual Mapping for Basic Debug Message
- Devices Support List
  - ADAM-4570-BE/CE
  - ADAM-4570L-CE/DE
  - ADAM-4571-BE/CE
  - ADAM-4571L-CE/DE
  - EKI-1521/2/4/8/6(I)(CI)-AE/BE/CE

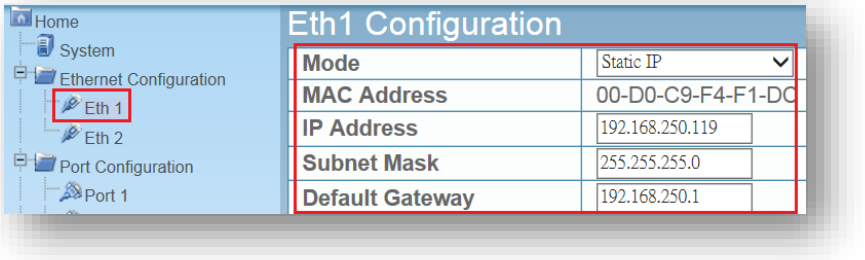
VCOM Driver Version Comparison

- Comparison Table

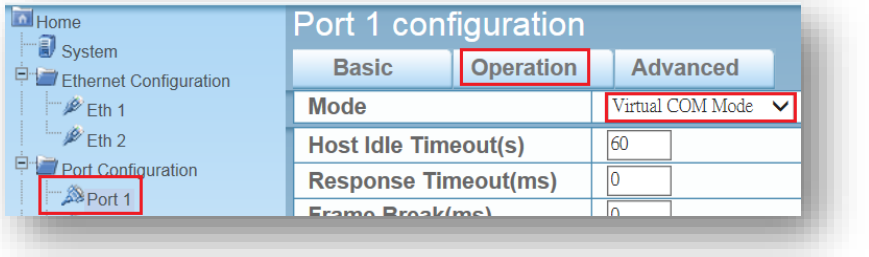
Driver Version	VCOM Driver Ver. 1.0	VCOM Driver Ver. 2.0
Driver Name	**iCom_Linux_Pseudo_TTY_Driver_v1.4.1**	**vcom_linux_2.2.1**
Pre-built Binary Support List	Red Hat 9 (Kernel 2.4.20-8) Red Hat Enterprise 5.4 (Kernel 2.6.18-164.el5) Fedora Core 13 (64bit) (Kernel 2.6.33.3-85.fc13) Fedora Core 14 (Kernel 2.6.35.6-45.fc14) Fedora Core 16 (Kernel 3.1.0-7.fc16) OpenSUSE 10.1 (Kernel 2.6.16.13-4-default) OpenSUSE 11.2 (Kernel 2.6.31.5-0.1-desktop) Mandriva 2010 (Kernel 2.6.31.5-desktop-1mnb) Debian 5.0.4 (Kernel 2.6.26-2-686) Ubuntu 8.04 (Kernel 2.6.24-19-generic) Ubuntu 11.10 (Kernel 3.0.0-12-generic)	Ubuntu 14.04 LTS (64bit) (Kernel 3.13.0-48-generic) Ubuntu 16.04 LTS (64bit) (Kernel 4.04.0-21-generic) Ubuntu 18.04 LTS (64bit) (Kernel 4.15.0-23-generic) OpenSUSE 13.2 (32bit) (Kernel 13.16) Linux-Mint 18.3 (64bit) (Kernel 4.10) CentOS 7.2 – 1511 (64bit) (Kernel 3.10.0-327) CentOS 7.4 – 1708 (64bit) (Kernel 3.10.0-693) CentOS 7.6 – 1810 (64bit) (Kernel 3.10.0-957)

Before installing, please double check these points…

1. IP address
   - To configure the IP address of device server, and make sure that the communication is working



2. VCOM mode
   - Launch browser and check the operation mode that is configured to VCOM mode on Web GUI

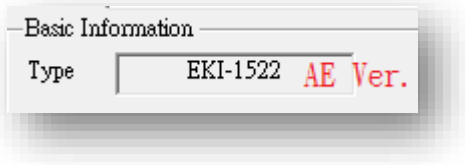


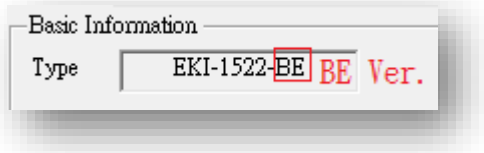
Before installing, please double check these points…

3. Identify the HW version

– The BE ver. is different naming rule from AE in our Linux driver. If you are using
EKI-1522(I)-AE, please fill the name of 1522 to advttyd.conf.
EKI-1522(I)-BE, please fill the name of b522 to advttyd.conf
EKI-1522(I)-CE, please fill the name of c522 to advttyd.conf
EKI-1524(I)-AE, please fill the name of 1524 to advttyd.conf.
EKI-1524(I)-BE, please fill the name of b524 to advttyd.conf
EKI-1524(I)-CE, please fill the name of c524 to advttyd.conf
EKI-1512-AE, please fill the name of 1512 to advttyd.conf

– For example:





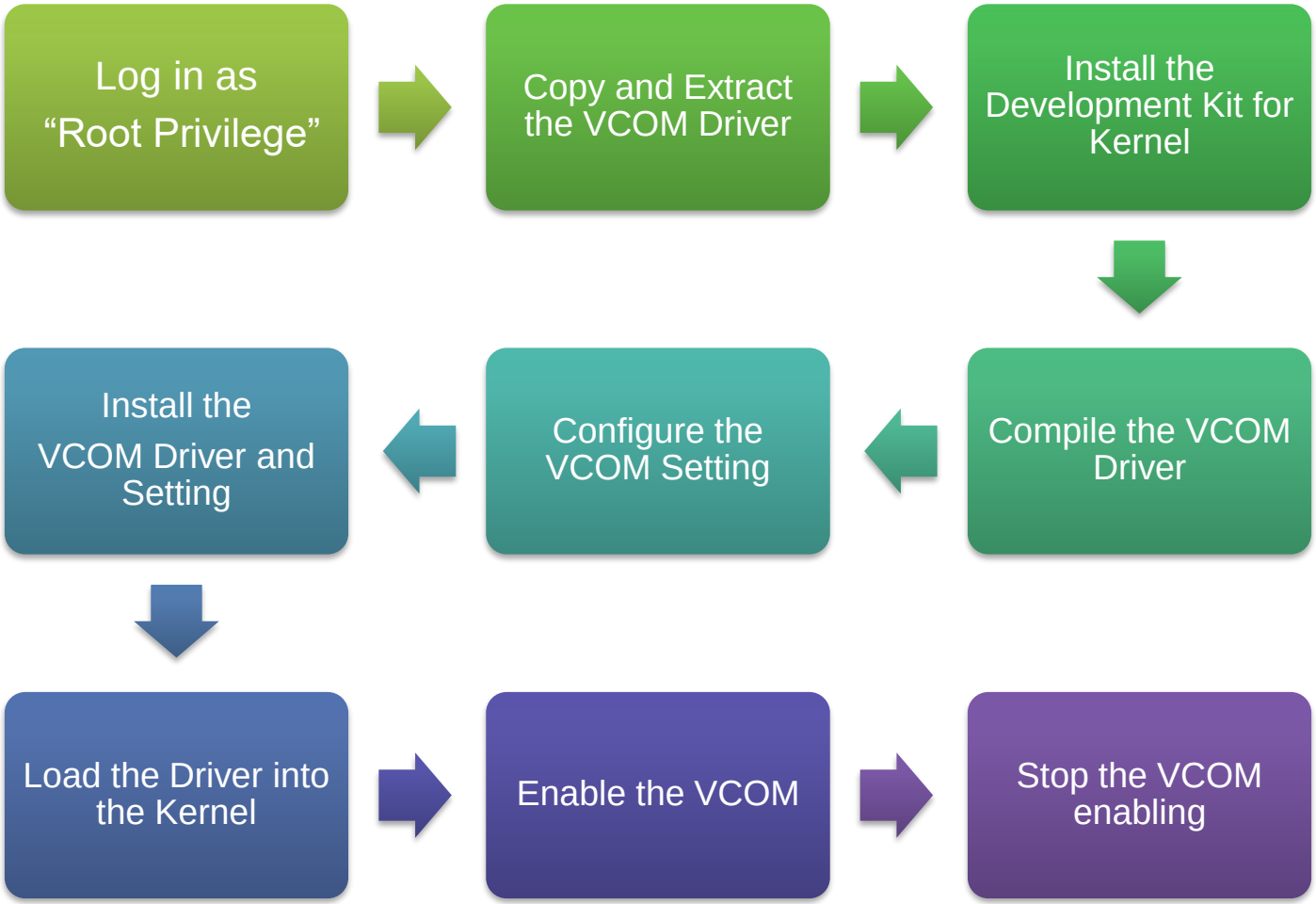
If you are using the EKI-1522-"AE"			
[Minor]	[Device-Type]	[Device-IP]	[Port-Idx]
0	1522	10.0.0.1	1

If you are using the EKI-1522-"BE"			
[Minor]	[Device-Type]	[Device-IP]	[Port-Idx]
0	B522	10.0.0.1	1

Installation Procedure

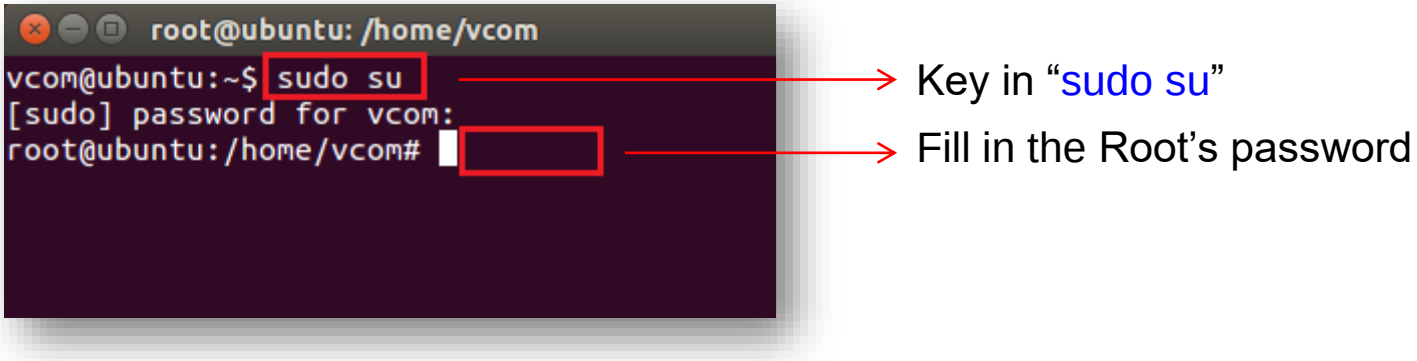
*Note: For detailed information for latest version, please refer to the Readme.txt file with the driver.

Installation Step



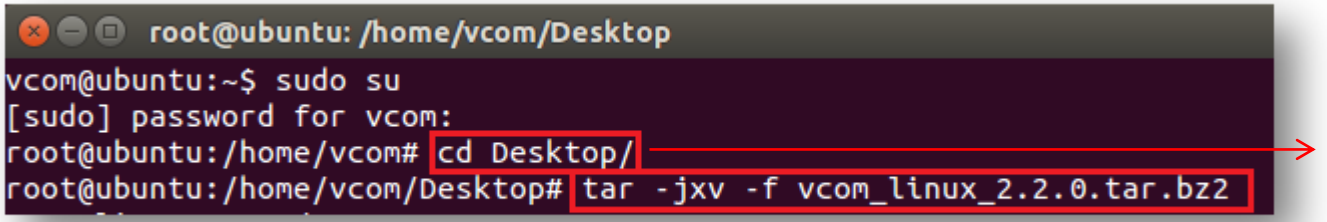
Log in as “Root Privilege"

1. Open the terminal of Linux.
2. Key in “sudo su” to get the root privilege.
3. Fill in the Root’s password “*xxxxxxx*” that you created



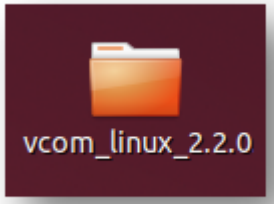
Copy and Extract the VCOM Driver

1. Key in “cd Desktop” to change the direction to the desktop.
2. Key in “tar –jxv –f vcom_linux_2.2.0.tar.bz2” to extract the VCOM file to the desktop.
3. Make sure internet is available.



Key in “cd Desktop”
Please note the uppercase letters.

Key in “tar –jxv –f vcom_linux_2.2.0.tar.bz2”
Please note the uppercase letters.



The VCOM folder has been extracted

Install the Development Kit for Kernel

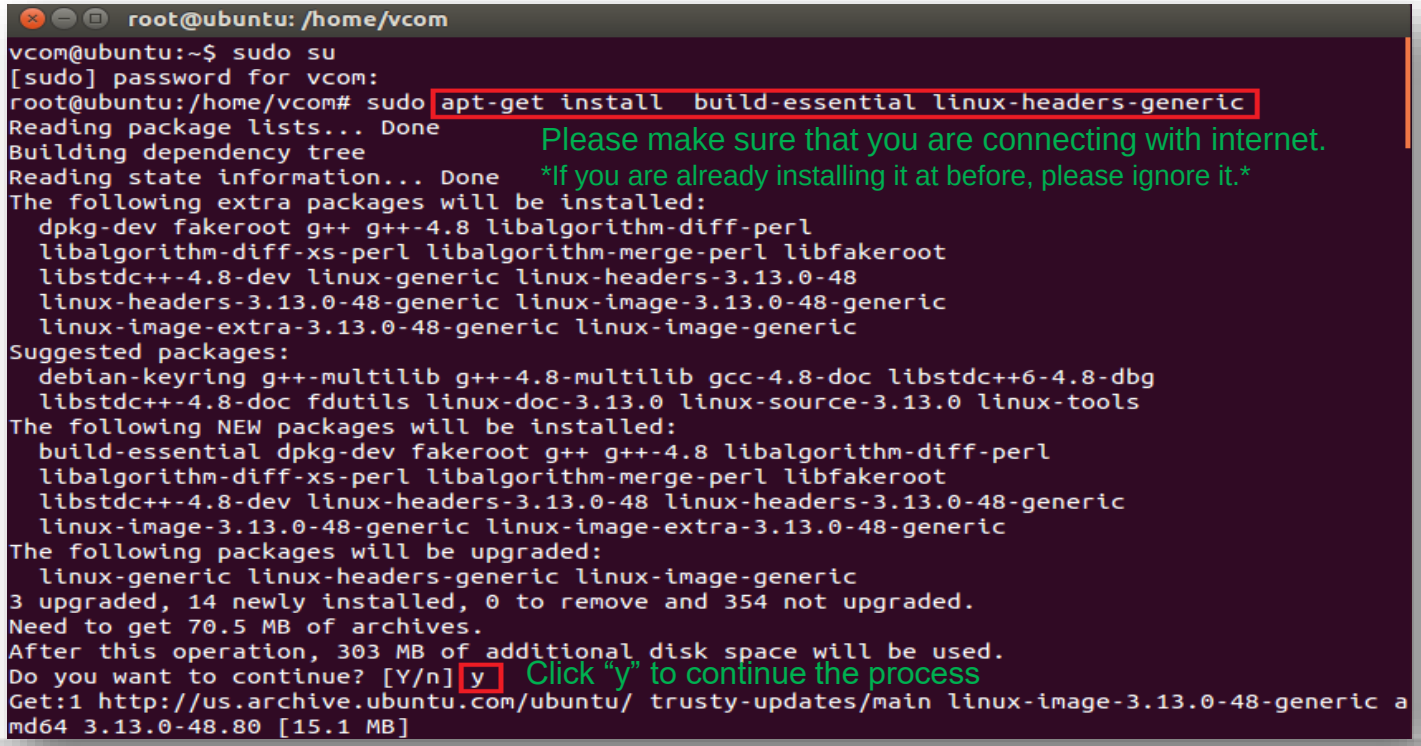
- For Ubuntu/Linux-Mint family ,

  Key in: “#sudo apt-get install build-essential linux-headers-generic ”

- For CentOS/RHEL/Fedora,

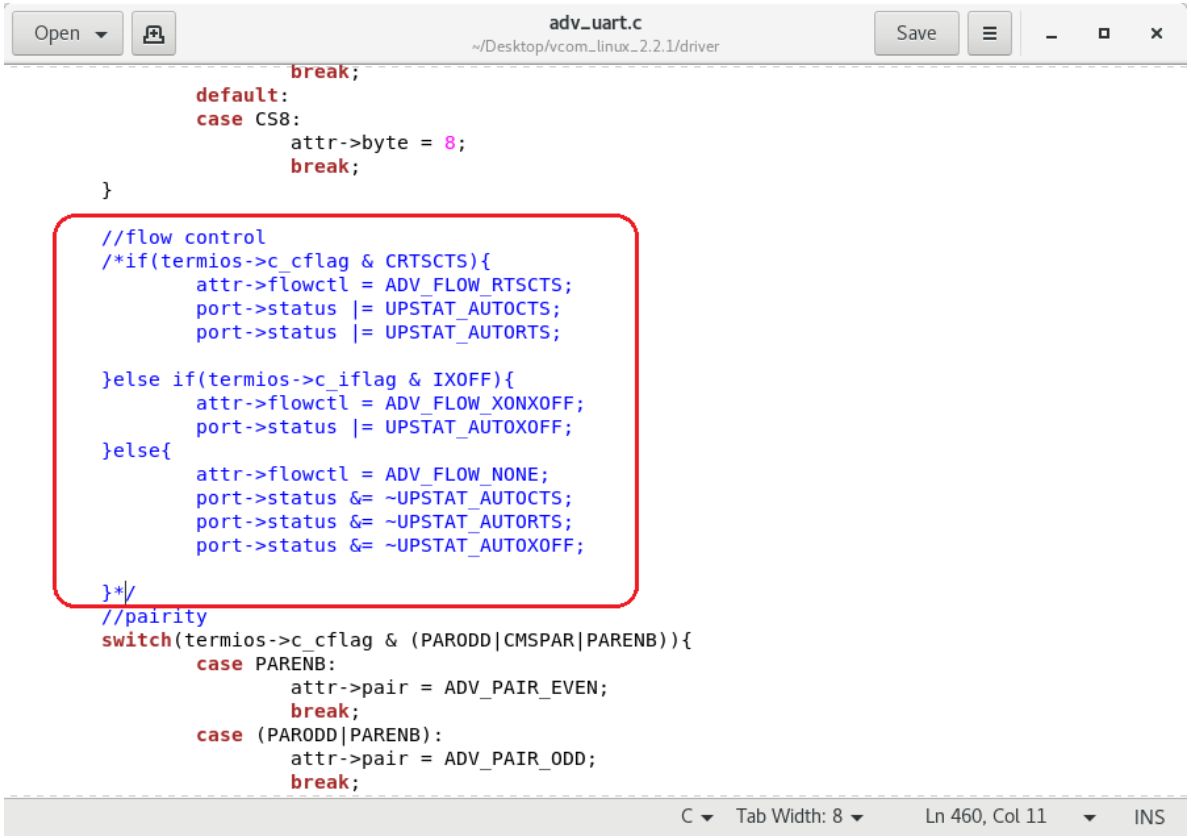
  Key in: “# dnf install kernel-devel kernel-headers gcc make”

  or “# yum install kernel-devel kernel-headers gcc make” (for Early RedHat systems (before CentOS 7/RHEL 7/Fedora 21))



Install the Development Kit for Kernel

- If your Linux is CentOS/RHEL/Fedora, kernel is under 3.10. Please modify below file //vcom_linux_2.2.1/driver/adv_uart.c to remark flow control function and then save the file.
- For more information, please reference readme.txt file.



Install the DKMS & OpenSSL (v2.2.3 or later)

- For Ubuntu/Linux-Mint family ,

  Key in:

  "#sudo apt-get install dkms"

  "#sudo apt-get install openssl libssl-dev"

- For CentOS/RHEL/Fedora,

  Key in:

  "# dnf install openssl-devel"

  "# dnf install openssl"

  "# dnf install dkms"

  * On CentOS 7, DKMS is included in the "EPEL"(Extended Packages for Enterpirse Linux). One would need to enable EPEL with the following command:

  "# yum install -y epel-release"

  "# yum install openssl-devel"

  "# yum install openssl"

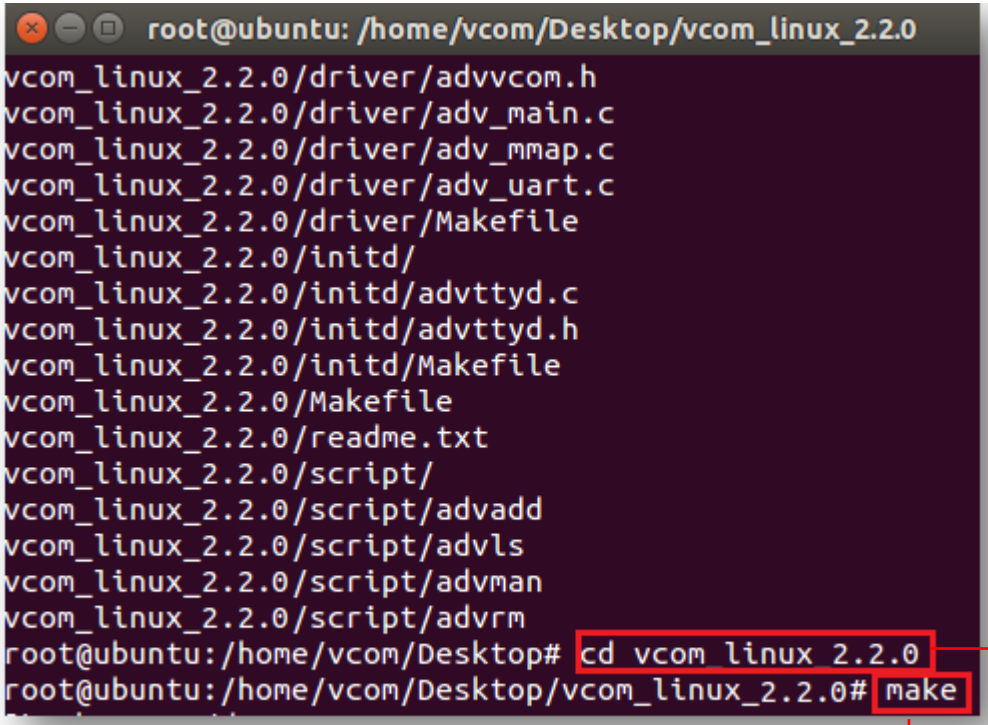
  "# yum install dkms"

  (Started with "yum" for Early RedHat systems (before CentOS 7/RHEL 7/Fedora 21))

*Note: Important- Once you upgrade and install finished, please reboot your Linux OS.
For detailed information for latest version, please refer to the Readme.txt file with the driver.

Compile the VCOM Driver

1. Key in “cd vcom_linux_2.2.1” to get into the driver folder.
   (Change the folder path according to where you extract the files.)
2. Key in “make” to compile the VCOM driver.

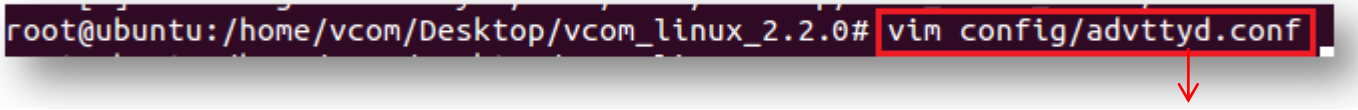


Key in “cd vcom_linux_2.x.x”
Please note the uppercase letters.

Key in “make”
Please note the uppercase letters.

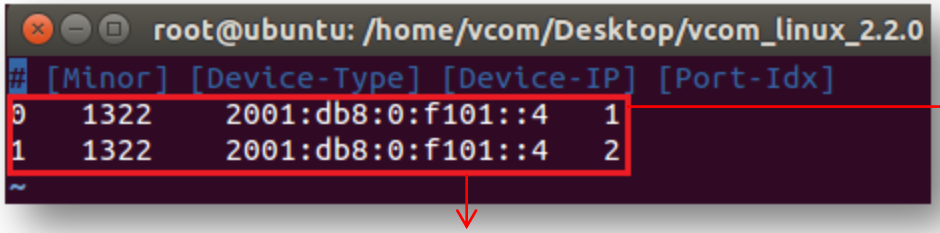
Configure the VCOM Setting

1. Key in “vi config/advttyd.conf” to edit the VCOM setting.



Key in “vi config/advttyd.conf”
Or “vim config/advttyd.conf”
according to the editor used.
Please note the uppercase letters.

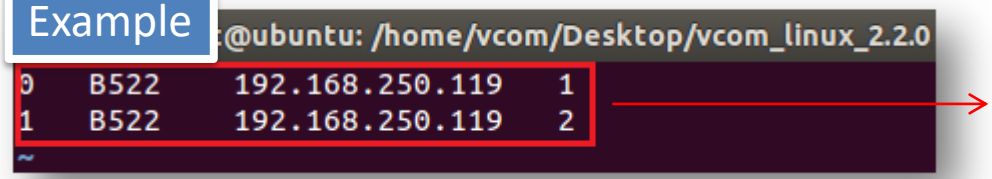
2. To edit the setting.



You can edit the setting in this file

Press “i” to enter the “Editor Mode”
Press “ESC” back to the “Normal Mode”
After returning to “Normal mode”, please using “:wq” to save the setting.

Example

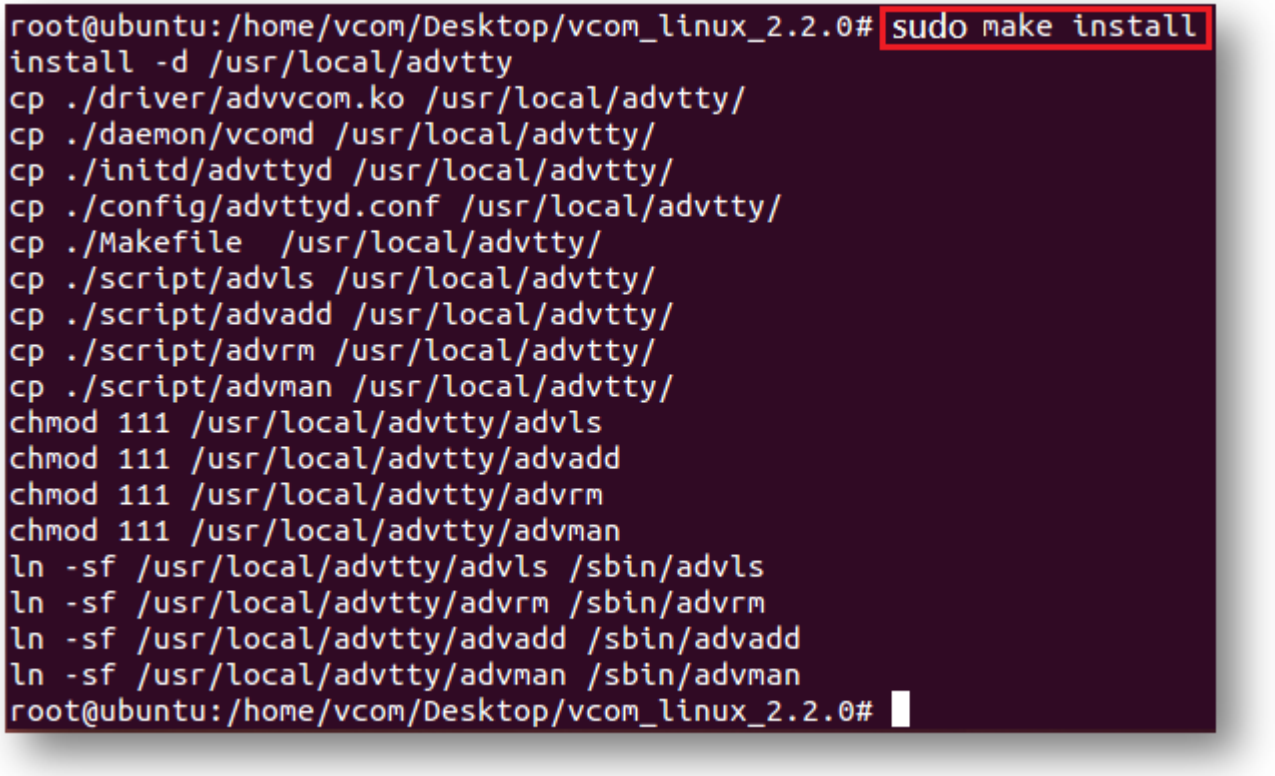


Set VCOM number from 0 to 1
Device is using the EKI-1522-BE
IP address is 192.168.250.119
COM port are using Port 1 and Port 2

Install the VCOM Driver and Setting

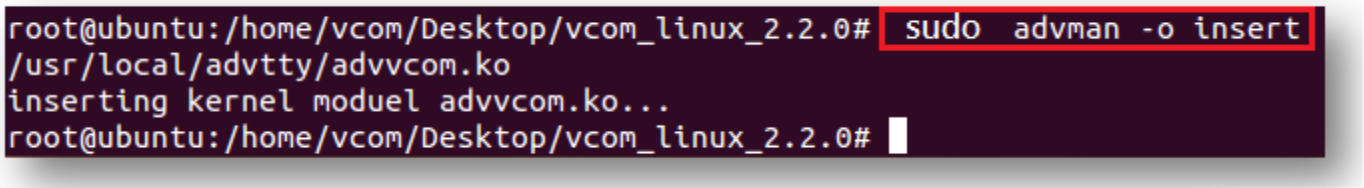
- Key in “sudo make install”

Please note the uppercase letters.



Load the Driver into the Kernel

- Key in “sudo advman -o insert” to Load the driver into the kernel.



Enable the VCOM

- Key in “sudo advman -o start” to enable the VCOM.
  - Note that start this is like enabling the service of VCOM. You still need other serial communication tool to establish the communication.

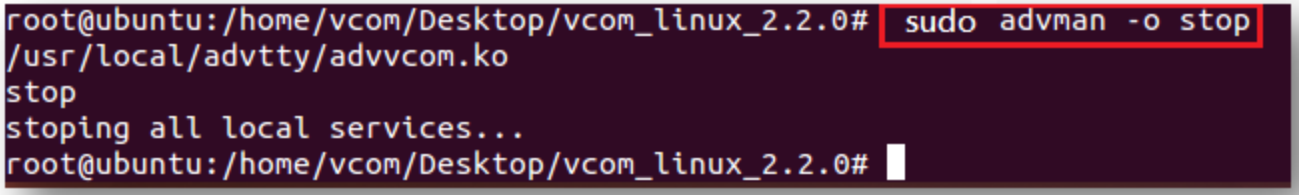
```
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.2.0# sudo advman -o start
/usr/local/advtty/advvcom.ko
kernel moduel advvcom.ko detected...
starting service....
invoking local deamon...
```

- Also, you can use the “sudo ls /proc/vcom/” command to confirm the VCOM is enabling.

```
root@ubuntu: /home/vcom/Desktop/vcom_linux_2.2.0
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.2.0# sudo ls /proc/vcom/
advproc0    advproc131  advproc165  advproc199  advproc231  advproc36  advproc7
advproc1    advproc132  advproc166  advproc2    advproc232  advproc37  advproc70
advproc10   advproc133  advproc167  advproc20   advproc233  advproc38  advproc71
advproc100  advproc134  advproc168  advproc200  advproc234  advproc39  advproc72
advproc101  advproc135  advproc169  advproc201  advproc235  advproc4   advproc73
advproc102  advproc136  advproc17   advproc202  advproc236  advproc40  advproc74
advproc103  advproc137  advproc170  advproc203  advproc237  advproc41  advproc75
advproc104  advproc138  advproc171  advproc204  advproc238  advproc42  advproc76
advproc105  advproc139  advproc172  advproc205  advproc239  advproc43  advproc77
```

Stop the VCOM enabling

- Key in “sudo advman -o stop” to close the VCOM.



Serial Communication Tool Example

- PuTTY
- minicom

Installing Serial Communication Tool (1/2)

- **PuTTY** may more feasible to Desktop version of Ubuntu.
- Key in "sudo apt-get install putty" to install.

```
calvin@calvin-VirtualBox:~$ sudo su
[sudo] password for calvin:
root@calvin-VirtualBox:/home/calvin# sudo apt-get install putty
```

- Check the user group that authorized to access the VCOM device. In this sample, the accessible user groups are **root** and **dialout**.
- Key in "sudo adduser *username usergroup*" to add the user to specific user group. Reboot after adding.
  - Without correct privilege, PuTTY may not able to work with the VCOM device.

```
root@calvin-VirtualBox:/home/calvin# advman -o start
/usr/local/advtty/advvcom.ko
kernel moduel advvcom.ko detected...
starting service....
invoking local deamon...
root@calvin-VirtualBox:/home/calvin# ll /dev/ttyADV0
crw-rw---- 1 root dialout 38, 0 5月   5 11:12 /dev/ttyADV0
root@calvin-VirtualBox:/home/calvin# adduser calvin root
```

Installing Serial Communication Tool (2/2)

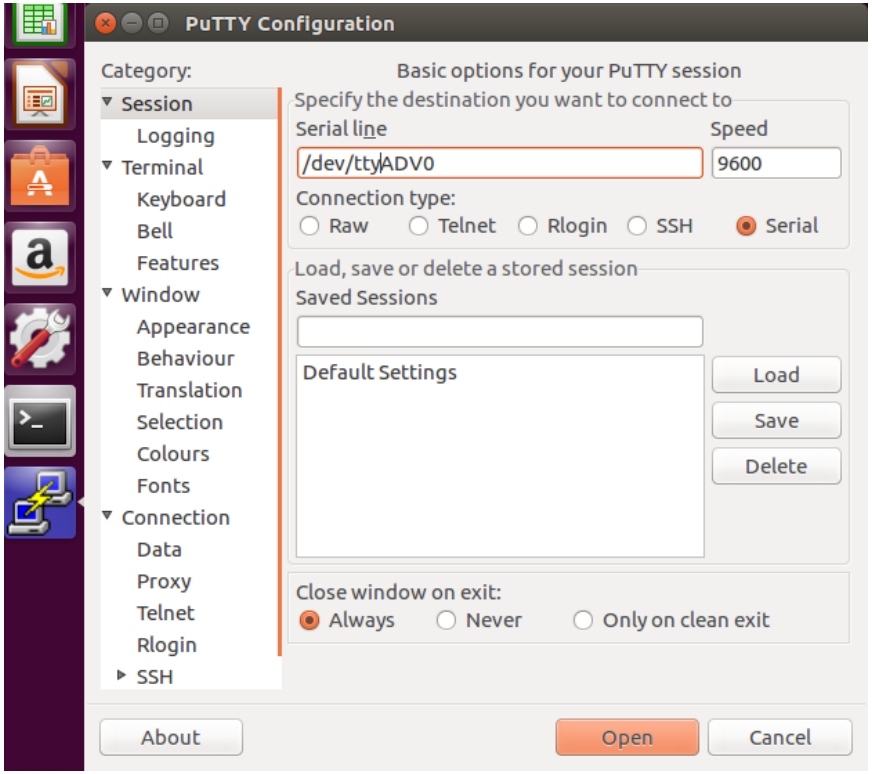
- **minicom** may more feasible to Server version of Ubuntu. Its UI is text only.
- Key in “sudo apt-get install minicom” to install.

```
calvin@calvin-VirtualBox:~$ sudo su
[sudo] password for calvin:
root@calvin-VirtualBox:/home/calvin# sudo apt-get install minicom
```

- minicom does not need to modify the user group.

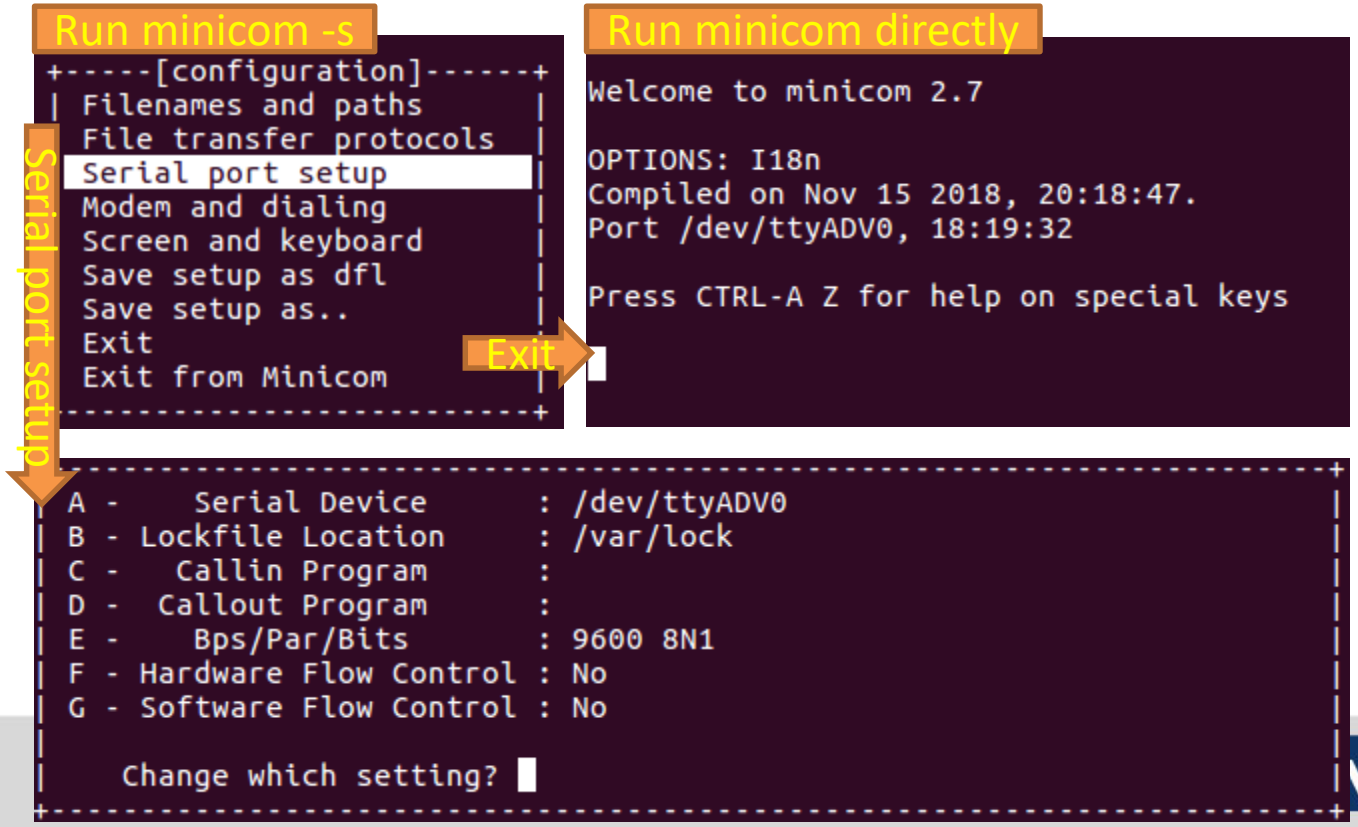
Activating Serial Communication Tool (1/2)

- Key in “putty” with terminal or run PuTTY directly.
- Select the connection type as *Serial* and change the device name, for example, “/dev/ttyADV0”. Set the Baud rate.
- Click Open to actually activate the VCOM connection.



Activating Serial Communication Tool (2/2)

- Key in “minicom -s” with terminal to configure minicom, or key in “minicom” to run minicom directly.
- You can change the Serial port setup with enabled serial device, for example, “/dev/ttyADV0”. Set the Baud rate, parity and stop bit.
- Save setup as dfl, and exit to run minicom.



Frequently Asked Questions

Questions list

1. How many VCOM ports that I can create?
2. Why can’t read the data from “/dev/vttyAP0” ?
3. Do I need to remove the VCOM driver before I remapping the VCOM?
4. How can I see the debug message on the console?

Question 1

- How many VCOM ports that I can create?
  - Ans: The maximum numbers of VCOM ports are up to 2 powers of 20.
  - Default value of ports is 255. Or you can revise it by yourself

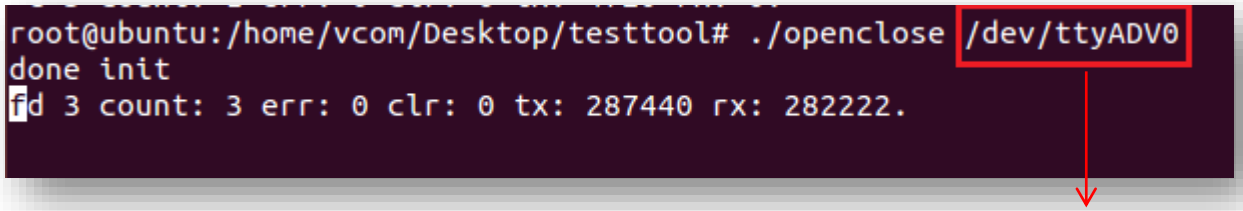
key in “vim driver/advconf.h

```
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.0.1# vim driver/advconf.h
```

The default setting is 255 ports

Question 2

- Why can't read the data from "/dev/vttyAP0"?
  - Ans: We have changed the VCOM naming from "vttyAP" to "ttyADV". You can read the data from path "/dev/ttyADV0" .

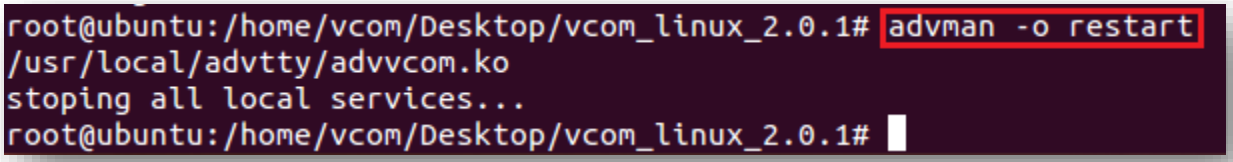


VCOM 2.0 driver has changed the naming to /dev/ttyADV0.

  - You can also read data through other tool like PuTTY or minicom. Please refer to the previous chapter *Serial Communication Tool Example*.

Question 3

- Do I need to remove the VCOM driver before I remapping the VCOM after configuration modified?
  - Ans: No, you can use below command to remapping your VCOM without removing it.
  - Tow methods offer now: Key in “advman –o restart” to restart all VCOM services and remapping the VCOM, or key in “advman –o start” to compare and restart only modified parts.



Question 4

- How can I see the debug message on the console?
  - Ans: You can manually apply a single VCOM mapping and see the debug message by using the vcomd command.
  - Key in "/usr/local/advtty/vcomd –t 3 –d 1522 –a 10.0.0.1 –p 1"

```
root@calvin-VirtualBox:/home/calvin# /usr/local/advtty/vcomd -t 0 -d e571 -a 192.168.1.100 -p 1
setting tty ID : 0 ...
setting device model : e571 ...
setting IP addr : 192.168.1.100 ...
setting device port : 1 ...
adding port 5202 to IPv4 address
```

VCOM Port | Device Name | IP Address | Physical Port on EKI

Meaning: /dev/ttyADV0 ⟷ EKI-4571L-DE (IP: 192.168.1.100; COM 1)

  - For example, you can see the error if the IP is not correct.

```
root@calvin-VirtualBox:/home/calvin# /usr/local/advtty/vcomd -t 0 -d e571 -a 192.168.1.99 -p 1
setting tty ID : 0 ...
setting device model : e571 ...
setting IP addr : 192.168.1.99 ...
setting device port : 1 ...
adding port 5202 to IPv4 address
Socket ERR: No route to host
```


Enabling an Intelligent Planet