

# VCOM 2.0 Driver for Linux Installation Guide

[ICG.Support@advantech.com.tw](mailto:ICG.Support@advantech.com.tw)

Revision Date	Revision	Description	Author
2019/2/11	V1.2	Third Edition	Jay Wu

# 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

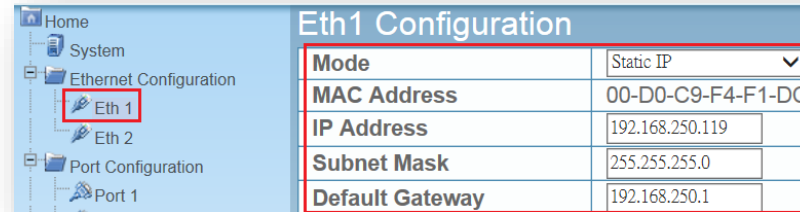
- Comparison Table

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
<b>Pre-built Binary Support List</b>	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

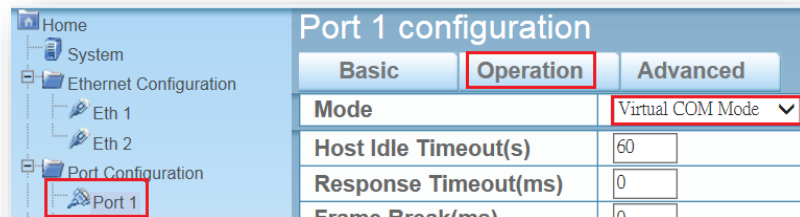
- To configure the IP address of device server, and make sure that the communication is working



Eth1 Configuration	
Mode	Static IP
MAC Address	00-D0-C9-F4-F1-DC
IP Address	192.168.250.119
Subnet Mask	255.255.255.0
Default Gateway	192.168.250.1

## 2. VCOM mode

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

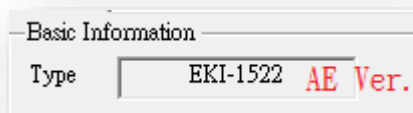


Port 1 configuration		
Basic	Operation	Advanced
Mode		Virtual COM Mode
Host Idle Timeout(s)		60
Response Timeout(ms)		0
Frame Break(ms)		0

# Before installing, please double check these points...

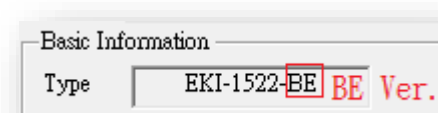
## 3. Identify the HW version

- 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:



Basic Information

Type



Basic Information

Type

### 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"

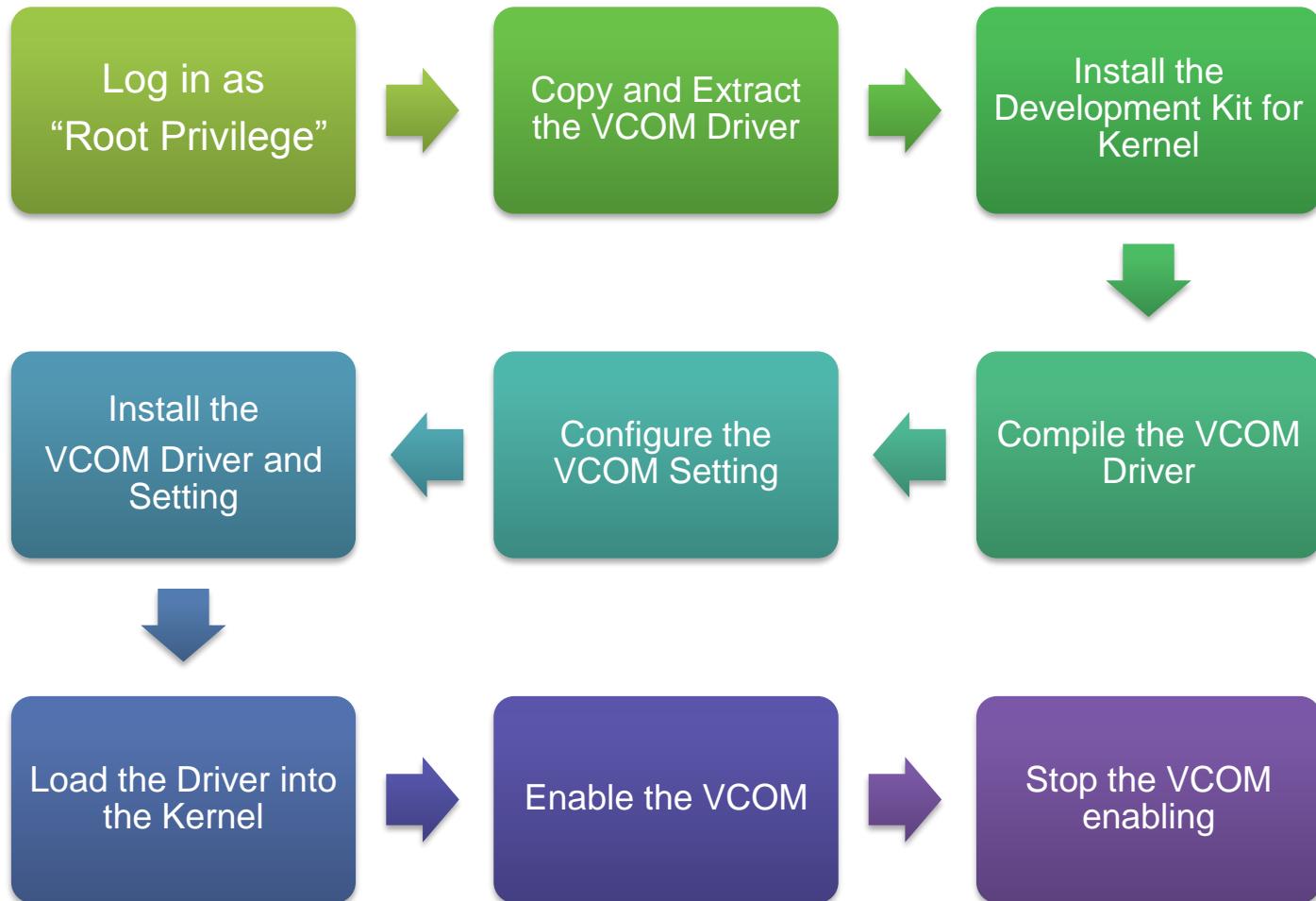
[Minor]	[Device-Type]	[Device-IP]	[Port-Idx]
0	B522	10.0.0.1	1



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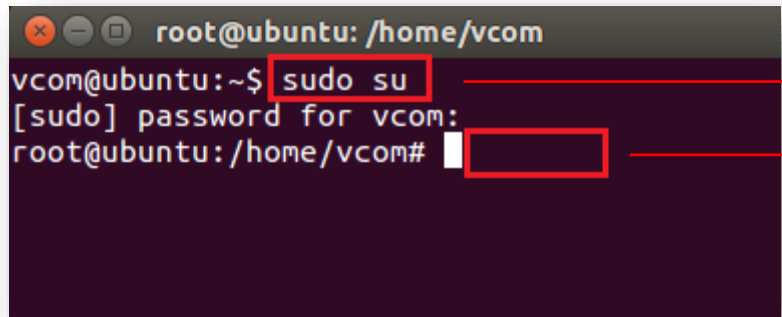
# Installation Procedure

# 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 “*XXXXXXXX*” that you created



The image shows a terminal window with a dark background. The title bar at the top reads "root@ubuntu: /home/vcom". The terminal content shows the following sequence of commands and prompts:

```
vcom@ubuntu:~$ sudo su
[sudo] password for vcom:
root@ubuntu:/home/vcom#
```

Two red boxes are drawn on the terminal output. The first box highlights the text "sudo su" on the first line, with a red arrow pointing from it to the text "Key in “sudo su”". The second box highlights the password input area on the second line, with a red arrow pointing from it to the text "Fill in the Root’s password".



# 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.
3. Make sure internet is available.

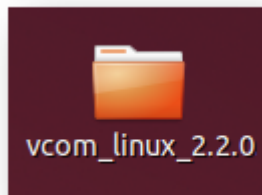
```
root@ubuntu: /home/vcom/Desktop
vcom@ubuntu:~$ sudo su
[sudo] password for vcom:
root@ubuntu:/home/vcom# cd Desktop/
root@ubuntu:/home/vcom/Desktop# tar -jxv -f vcom_linux_2.2.0.tar.bz2
```

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

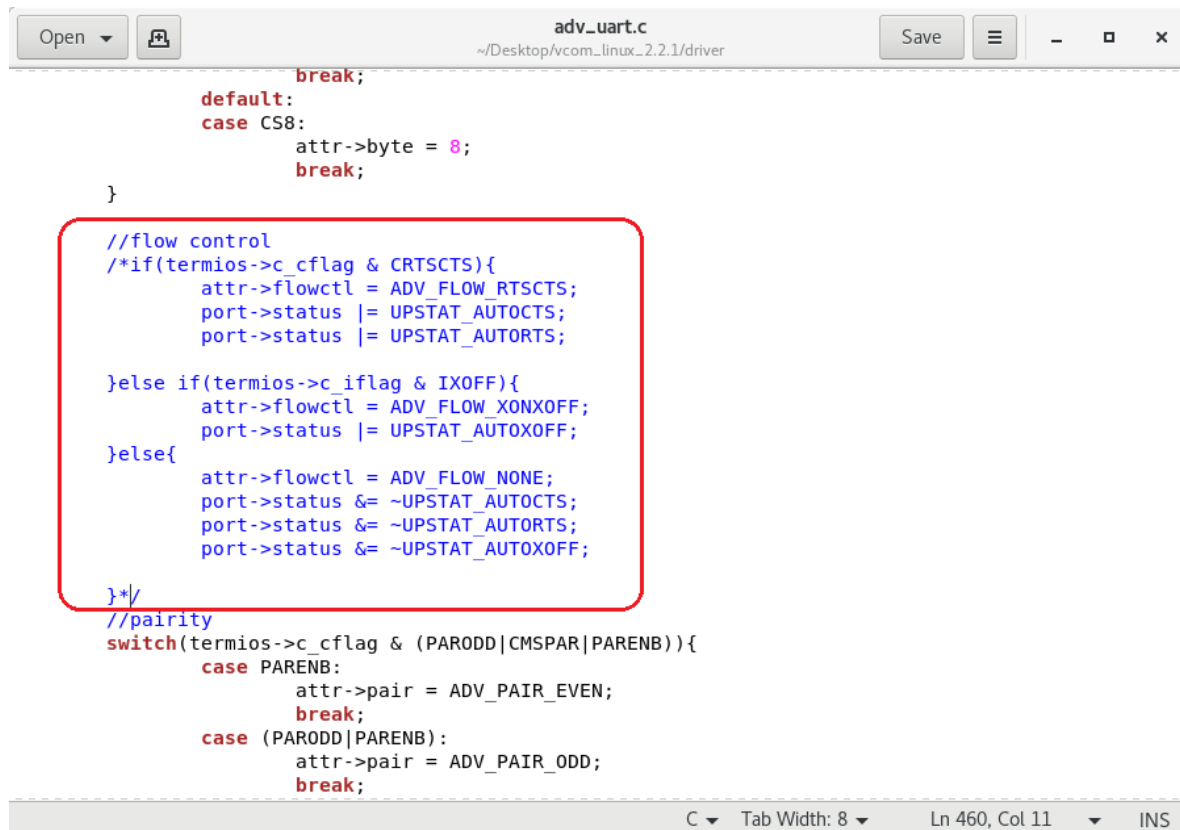
- For Ubuntu/Linux-Mint family ,  
Key in: “#sudo apt-get install build-essential linux-headers-generic ”
- For CentOS/RHEL/Fedora,  
Key in: “# yum install kernel-devel kernel-headers gcc make”

```
root@ubuntu: /home/vcom
vcom@ubuntu:~$ sudo su
[sudo] password for vcom:
root@ubuntu: /home/vcom# sudo apt-get install build-essential linux-headers-generic
Reading package lists... Done
Building dependency tree
Reading state information... Done
Please make sure that you are connecting with internet.
If you are already installing it at before, please ignore it.*
The following extra packages will be installed:
  dpkg-dev fakeroot g++ g++-4.8 libalgorithm-diff-perl
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libfakeroot
  libstdc++-4.8-dev linux-generic linux-headers-3.13.0-48
  linux-headers-3.13.0-48-generic linux-image-3.13.0-48-generic
  linux-image-extra-3.13.0-48-generic linux-image-generic
Suggested packages:
  debian-keyring g++-multilib g++-4.8-multilib gcc-4.8-doc libstdc++6-4.8-dbg
  libstdc++-4.8-doc fdutils linux-doc-3.13.0 linux-source-3.13.0 linux-tools
The following NEW packages will be installed:
  build-essential dpkg-dev fakeroot g++ g++-4.8 libalgorithm-diff-perl
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libfakeroot
  libstdc++-4.8-dev linux-headers-3.13.0-48 linux-headers-3.13.0-48-generic
  linux-image-3.13.0-48-generic linux-image-extra-3.13.0-48-generic
The following packages will be upgraded:
  linux-generic linux-headers-generic linux-image-generic
3 upgraded, 14 newly installed, 0 to remove and 354 not upgraded.
Need to get 70.5 MB of archives.
After this operation, 303 MB of additional disk space will be used.
Do you want to continue? [Y/n] y Click "y" to continue the process
Get:1 http://us.archive.ubuntu.com/ubuntu/ trusty-updates/main linux-image-3.13.0-48-generic a
md64 3.13.0-48.80 [15.1 MB]
```

\*Note: Important- Once you upgrade and install finished, please reboot your Linux OS.

# 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.



```
Open  [icon]  adv_uart.c  ~/Desktop/vcom_linux_2.2.1/driver  Save  [menu]  -  [max]  x

        break;
    default:
    case CS8:
        attr->byte = 8;
        break;
}

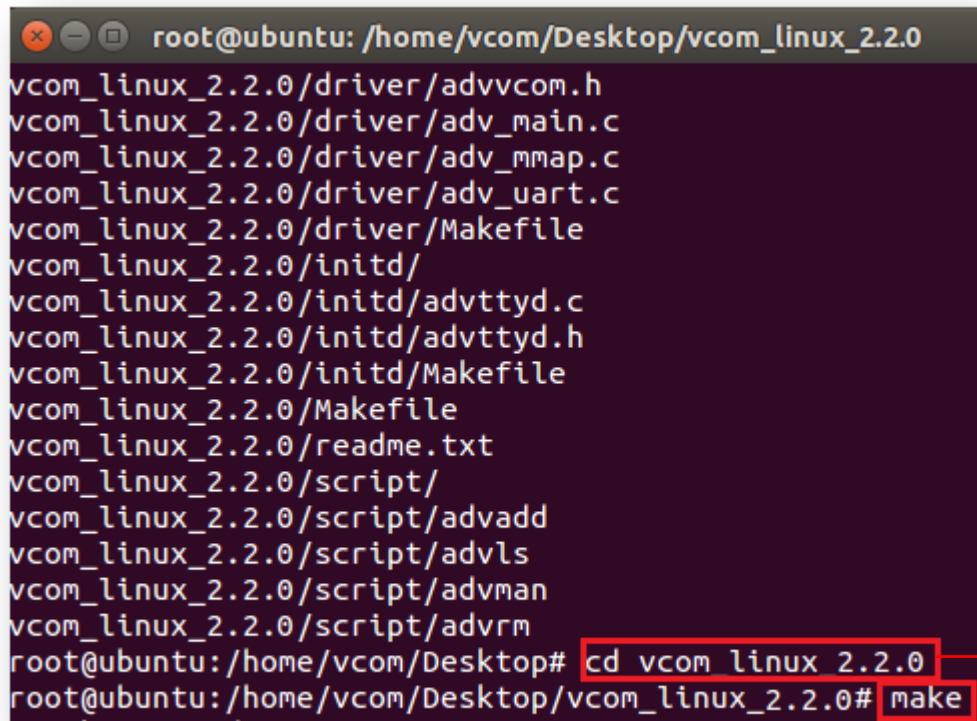
//flow control
/*if(termios->c_cflag & CRTSCTS){
    attr->flowctl = ADV_FLOW_RTSCTS;
    port->status |= UPSTAT_AUTOCTS;
    port->status |= UPSTAT_AUTORTS;

}else if(termios->c_iflag & IXOFF){
    attr->flowctl = ADV_FLOW_XONXOFF;
    port->status |= UPSTAT_AUTOXOFF;
}else{
    attr->flowctl = ADV_FLOW_NONE;
    port->status &= ~UPSTAT_AUTOCTS;
    port->status &= ~UPSTAT_AUTORTS;
    port->status &= ~UPSTAT_AUTOXOFF;
}*/
//parity
switch(termios->c_cflag & (PARODD|CMSPAR|PARENB)){
    case PARENB:
        attr->pair = ADV_PAIR_EVEN;
        break;
    case (PARODD|PARENB):
        attr->pair = ADV_PAIR_ODD;
        break;
}
```

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# Compile the VCOM Driver

1. Key in “`cd vcom_linux_2.2.1`” to change the direction to the driver folder.
2. Key in “`make`” to compile the VCOM driver.



```
root@ubuntu: /home/vcom/Desktop/vcom_linux_2.2.0
vcom_linux_2.2.0/driver/advvcom.h
vcom_linux_2.2.0/driver/adv_main.c
vcom_linux_2.2.0/driver/adv_mmap.c
vcom_linux_2.2.0/driver/adv_uart.c
vcom_linux_2.2.0/driver/Makefile
vcom_linux_2.2.0/initd/
vcom_linux_2.2.0/initd/advttyd.c
vcom_linux_2.2.0/initd/advttyd.h
vcom_linux_2.2.0/initd/Makefile
vcom_linux_2.2.0/Makefile
vcom_linux_2.2.0/readme.txt
vcom_linux_2.2.0/script/
vcom_linux_2.2.0/script/advadd
vcom_linux_2.2.0/script/advls
vcom_linux_2.2.0/script/advman
vcom_linux_2.2.0/script/advrm
root@ubuntu: /home/vcom/Desktop# cd vcom linux 2.2.0
root@ubuntu: /home/vcom/Desktop/vcom_linux_2.2.0# make
```

Key in “`cd vcom_linux_2.2.1`”  
\*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.

```
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.2.0# vim config/advttyd.conf
```

Key in “`vi config/advttyd.conf`”  
Or “`vim config/advttyd.conf`”  
\*Please note the uppercase letters.\*

2. To edit the setting.

```
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.2.0
# [Minor] [Device-Type] [Device-IP] [Port-Idx]
0  1322  2001:db8:0:f101::4  1
1  1322  2001:db8:0:f101::4  2
```

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

```
@ubuntu:/home/vcom/Desktop/vcom_linux_2.2.0
0  B522  192.168.250.119  1
1  B522  192.168.250.119  2
```

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

# Install the VCOM Driver and Setting

- Key in “**sudo make install**”

\*Please note the uppercase letters.\*

```
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.2.0# sudo make install
install -d /usr/local/advtty
cp ./driver/advvcom.ko /usr/local/advtty/
cp ./daemon/vcomd /usr/local/advtty/
cp ./initd/advttyd /usr/local/advtty/
cp ./config/advttyd.conf /usr/local/advtty/
cp ./Makefile /usr/local/advtty/
cp ./script/advls /usr/local/advtty/
cp ./script/advadd /usr/local/advtty/
cp ./script/advrn /usr/local/advtty/
cp ./script/advman /usr/local/advtty/
chmod 111 /usr/local/advtty/advls
chmod 111 /usr/local/advtty/advadd
chmod 111 /usr/local/advtty/advrn
chmod 111 /usr/local/advtty/advman
ln -sf /usr/local/advtty/advls /sbin/advls
ln -sf /usr/local/advtty/advrn /sbin/advrn
ln -sf /usr/local/advtty/advadd /sbin/advadd
ln -sf /usr/local/advtty/advman /sbin/advman
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.2.0#
```

# Load the Driver into the Kernel

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

```
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.2.0# sudo advman -o insert  
/usr/local/advtty/advvcom.ko  
inserting kernel moduel advvcom.ko...  
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.2.0#
```

# Enable the VCOM

- Key in “`sudo advman -o start`” to enable the VCOM.

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

- 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# 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.

```
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.2.0# sudo advman -o stop  
/usr/local/advtty/advvcom.ko  
stop  
stopping all local services...  
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.2.0#
```



# Frequently Asked Questions

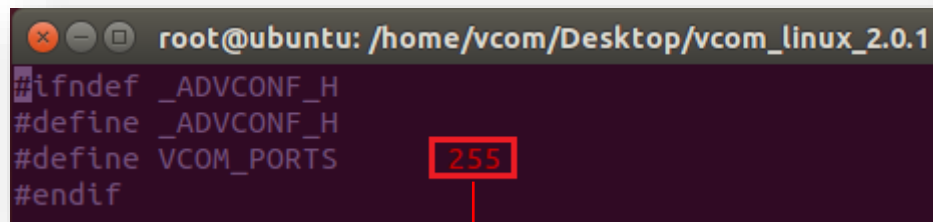
# Questions list

1. How many VCOM ports that I can create?
2. Why can not 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
```




```
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.0.1
#ifndef _ADVCONF_H
#define _ADVCONF_H
#define VCOM_PORTS 255
#endif
```

The default setting is 255 ports

## Question 2

- Why can not read the data from “/dev/vttyAP0”
  - Ans: we are changing the VCOM naming from “vttyAP” to “ttyADV”. You can read the data from “/dev/ttyADV0” .

```
root@ubuntu:/home/vcom/Desktop/testtool# ./openclose /dev/ttyADV0
done init
fd 3 count: 3 err: 0 clr: 0 tx: 287440 rx: 282222.
```



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

## Question 3

- Do I need to remove the VCOM driver before I remapping the VCOM?
  - Ans: No, you can use below command to remapping your VCOM without removing it. Key in “**advman -o restart**” to remapping the VCOM.

```
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.0.1# advman -o restart  
/usr/local/advtty/advvcom.ko  
stopping all local services...  
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.0.1#
```

## 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”
    - ↑ VCOM Port
    - ↑ Device Name
    - ↑ IP Address
    - ↑ Physical Ports on EKI

```
root@ubuntu:/home/vcom/Desktop/vcom_linux_2.0.1# /usr/local/advtty/vcomd -t 3 -d 1522 -a 10.0.0.1 -p 1
setting tty ID : 3 ...
setting device model : 1522 ...
setting IP addr : 10.0.0.1 ...
setting device port : 1 ...
█
```

/dev/ttyADV3 ↔ EKI-1522-AE (IP: 10.0.0.1; COM 1)



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