

EKI-1500 Trouble Shooting when using Linux VCOM driver

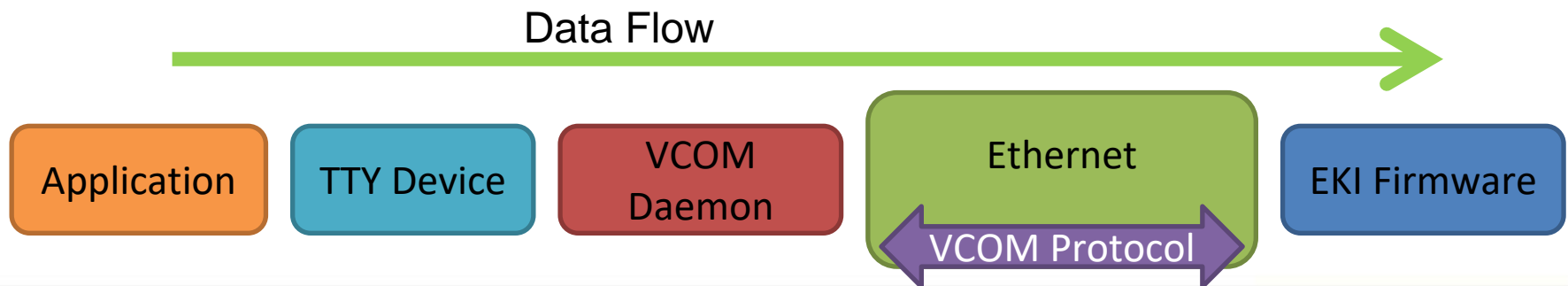
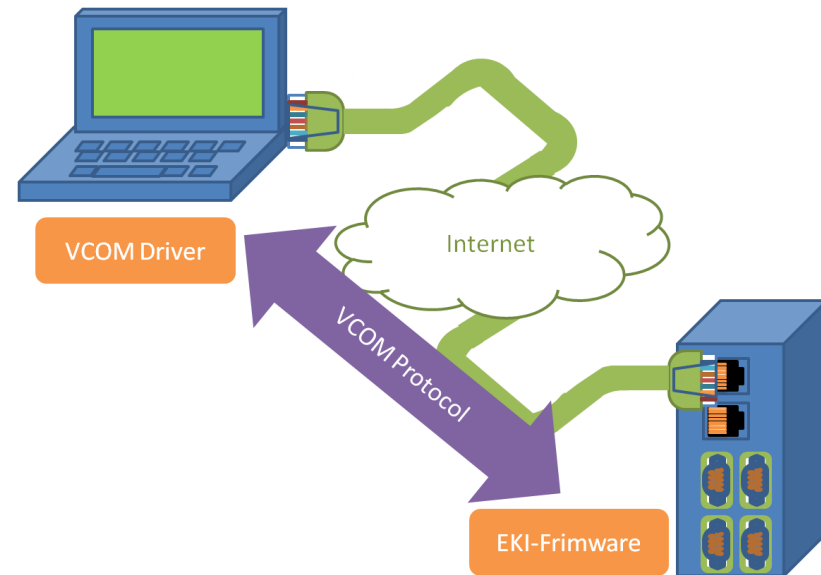
Purpose

This paper would show how to monitor virtual com state in Linux OS. This paper was designed to provide critical real-time driver status, which will help system-administrators, and developers understand the internal state of a runtime VCOM driver; therefore, an issue can be analyzed and solved within the shortest time.

During the test, we use the latest Linux VCOM driver v2.1.0.

VCOM Linux Architecture

- After compiler VCOM driver in Linux OS, that can work fine in VCOM access.
- Advantech Linux Virtual COM driver that would handle the Application to EKI Firmware communication.
- In the next page, we would discuss how to trouble shooting via RS-232 loopback



Before Trouble Shooting

The VCOM Linux driver v.2.1.0 that support most common kernel version in the world. That support kernel version 3.10 and latter version. If you would like to check the kernel version, key “**uname -a**” to check it in Linux OS platform.

```
[root@localhost config]# uname -a
Linux localhost.localdomain 3.10.0-514.el7.x86_64 #1 SMP Tue Nov 22 16:42:41 UTC 2016 x86_64 x86_64
/Linux
[root@localhost config]#
```

If you are using older kernel 2.6.32. Please contact
ICG.Support@advantech.com

Before Trouble Shooting

Download VCOM driver for Linux v2.1.0 from website and all operation setting can be found in the “[VCOM 2.0 DRIVER FOR LINUX INSTALLATION GUIDE.pdf](#)”

```
icg@localhost:~/Documents/vcom_linux_2.1.0
File Edit View Search Terminal Help
vcom_linux_2.1.0/daemon/vc_client_netup.h
vcom_linux_2.1.0/COPYING
vcom_linux_2.1.0/script/
vcom_linux_2.1.0/script/advman
vcom_linux_2.1.0/script/advrm
vcom_linux_2.1.0/script/advls
vcom_linux_2.1.0/script/advadd
vcom_linux_2.1.0/inotify/
vcom_linux_2.1.0/inotify/vcom_inotf.c
vcom_linux_2.1.0/inotify/vcinot
vcom_linux_2.1.0/inotify/Makefile
vcom_linux_2.1.0/config/
vcom_linux_2.1.0/config/advttyd.conf
[icg@localhost Documents]$ ls
vcom_linux_2.1.0 VCOM_LINUX_2.1.0.TAR.BZZ
[icg@localhost Documents]$ cd vcom_linux_2.1.0/
[icg@localhost vcom_linux_2.1.0]$ ls
config COPYING daemon driver initd inotify Makefile readme.txt script
[icg@localhost vcom_linux_2.1.0]$ sudo apt-get install build-essential linux-headers-generic
[sudo] password for icg:
sudo: apt-get: command not found
[icg@localhost vcom_linux_2.1.0]$ sudo yum install build-essential linux-headers-generic
```

Unzip the
“VCOM_Linux_2.1.0.tar.bz2”

VCOM Scripts Support

- VCOM driver support the below VCOM scripts to check the configure state
 - advadd
 - addrm
 - advman
 - advls
- For example use “advls” command to show current configure file
- For how to operate with each function, key “advls ?” to check it out.

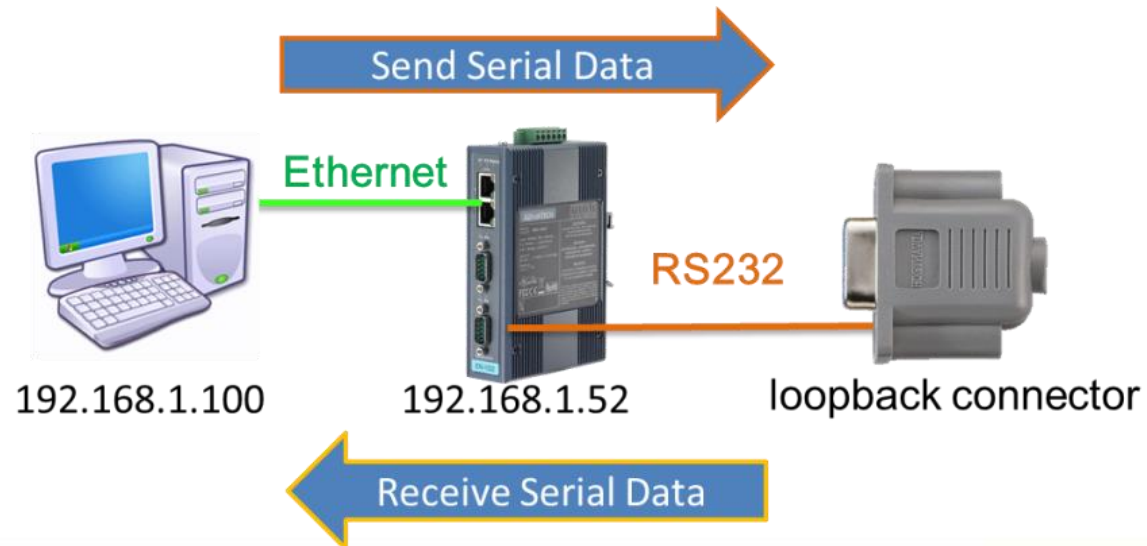
```
[icg@localhost ~]$ sudo advls
5   b522      192.168.1.121    1
6   b522      192.168.1.121    2
[icg@localhost ~]$
```

APP test

- Use Application to loopback test with RS-232 head to verify VCOM driver can work in Linux with no problem.

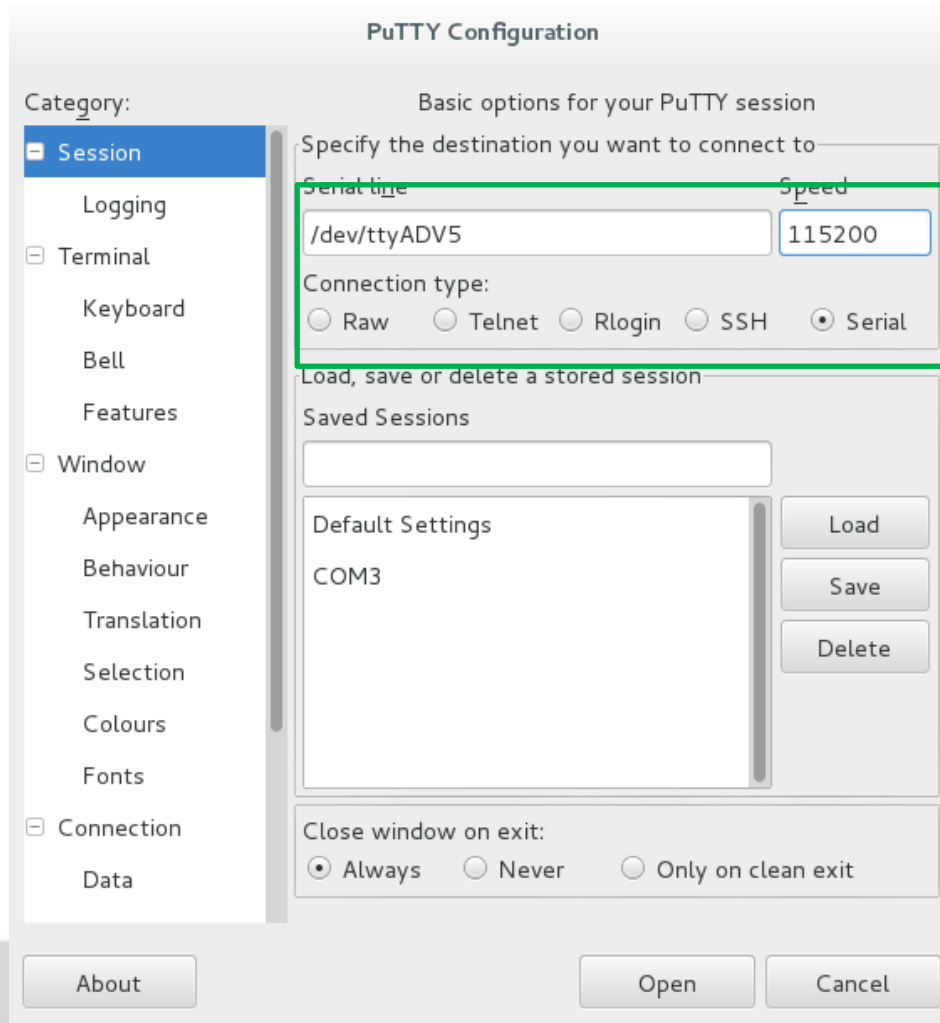
Step1: check EKI-1500 series configuration setting in the EKI-1500 Web GUI.

Step2: use some application test tool like putty, or minicom to test under Linux OS.

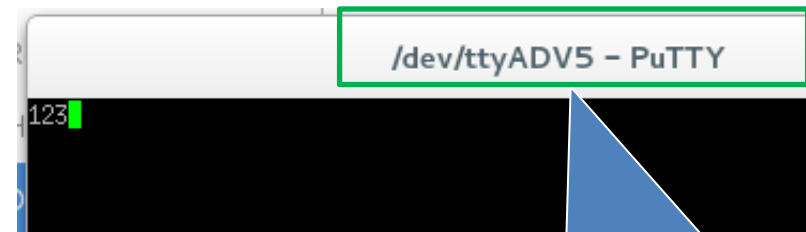


APP test

Use “sudo Putty” to test and default use /dev/ttyADV* to open port.



Step1: “ * ” of “ttyADV*” is vcom port that mapped



Step2: Open Port to verify in the path: /dev/ttyADV5

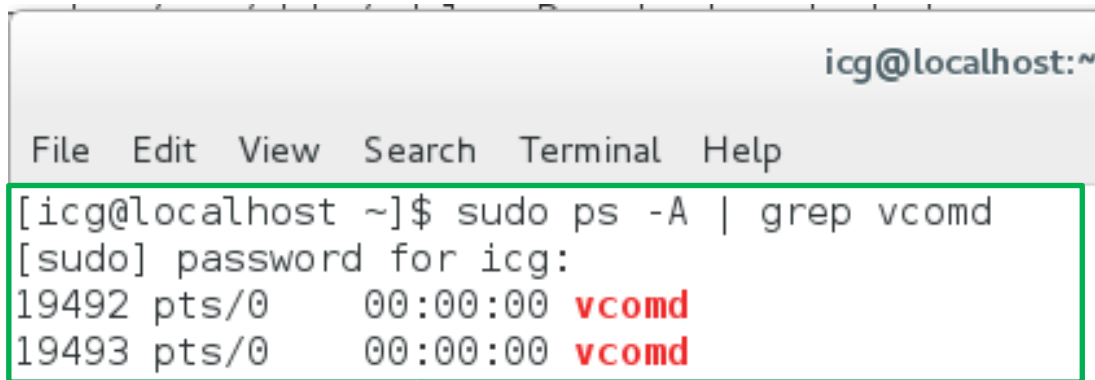
TTY Device check

- If you compiler with no problem and can found the device with “ls /dev/ttyADV*”. That would no problem in tty device

```
tty      tty26  tty44  tty62      ttyADV111  ttyADV13  ttyADV148  ttyADV166  ttyADV184  ttyADV201  ttyADV22
tty0     tty27  tty45  tty63      ttyADV112  ttyADV130  ttyADV149  ttyADV167  ttyADV185  ttyADV202  ttyADV220
tty1     tty28  tty46  tty7       ttyADV113  ttyADV131  ttyADV15   ttyADV168  ttyADV186  ttyADV203  ttyADV221
tty10    tty29  tty47  tty8       ttyADV114  ttyADV132  ttyADV150  ttyADV169  ttyADV187  ttyADV204  ttyADV222
tty11    tty3   tty48  tty9       ttyADV115  ttyADV133  ttyADV151  ttyADV17   ttyADV188  ttyADV205  ttyADV223
tty12    tty30  tty49  ttyADVO    ttyADV116  ttyADV134  ttyADV152  ttyADV170  ttyADV189  ttyADV206  ttyADV224
tty13    tty31  tty5   ttyADV1     ttyADV117  ttyADV135  ttyADV153  ttyADV171  ttyADV19   ttyADV207  ttyADV225
tty14    tty32  tty50  ttyADV10   ttyADV118  ttyADV136  ttyADV154  ttyADV172  ttyADV190  ttyADV208  ttyADV226
tty15    tty33  tty51  ttyADV100  ttyADV119  ttyADV137  ttyADV155  ttyADV173  ttyADV191  ttyADV209  ttyADV227
tty16    tty34  tty52  ttyADV101  ttyADV12   ttyADV138  ttyADV156  ttyADV174  ttyADV192  ttyADV21   ttyADV228
tty17    tty35  tty53  ttyADV102  ttyADV120  ttyADV139  ttyADV157  ttyADV175  ttyADV193  ttyADV210  ttyADV229
tty18    tty36  tty54  ttyADV103  ttyADV121  ttyADV14   ttyADV158  ttyADV176  ttyADV194  ttyADV211  ttyADV23
tty19    tty37  tty55  ttyADV104  ttyADV122  ttyADV140  ttyADV159  ttyADV177  ttyADV195  ttyADV212  ttyADV230
tty2     tty38  tty56  ttyADV105  ttyADV123  ttyADV141  ttyADV16   ttyADV178  ttyADV196  ttyADV213  ttyADV231
tty20    tty39  tty57  ttyADV106  ttyADV124  ttyADV142  ttyADV160  ttyADV179  ttyADV197  ttyADV214  ttyADV232
tty21    tty4   tty58  ttyADV107  ttyADV125  ttyADV143  ttyADV161  ttyADV18   ttyADV198  ttyADV215  ttyADV233
tty22    tty40  tty59  ttyADV108  ttyADV126  ttyADV144  ttyADV162  ttyADV180  ttyADV199  ttyADV216  ttyADV234
tty23    tty41  tty6   ttyADV109  ttyADV127  ttyADV145  ttyADV163  ttyADV181  ttyADV2   ttyADV217  ttyADV235
tty24    tty42  tty60  ttyADV11   ttyADV128  ttyADV146  ttyADV164  ttyADV182  ttyADV20   ttyADV218  ttyADV236
tty25    tty43  tty61  ttyADV110  ttyADV129  ttyADV147  ttyADV165  ttyADV183  ttyADV200  ttyADV219  ttyADV237
```

VCOM Daemon check (1/2)

- Use “`ps -A | grep vcomd`” to check daemon state and PID number



A terminal window screenshot showing the command `ps -A | grep vcomd` being executed. The terminal has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The prompt is `icg@localhost:~`. The command is entered, followed by a password prompt and the command execution. The output shows two lines of process information for the `vcomd` daemon.

```
icg@localhost:~  
File Edit View Search Terminal Help  
[icg@localhost ~]$ sudo ps -A | grep vcomd  
[sudo] password for icg:  
19492 pts/0      00:00:00 vcomd  
19493 pts/0      00:00:00 vcomd
```

Daemon check(2/2)

“ cat /tmp/advman/advtty

```
[icg@localhost ~]$ cat /tmp/advmon/advtty5  
Pid : 19492 | State : Net Up [icg@localhost ~]$ cat /tmp/advmon/advtty6  
Pid : 19493 | State : Net Down [icg@localhost ~]$
```

Pid ****:

This is the PID of the daemon which is responsible for “ttyADV5”

|

This separates the PID and the current runtime status.

State[****]

This is the current runtime state.

Daemon check(2/2)

For example: “`cat /tmp/advmon/advtty5`”

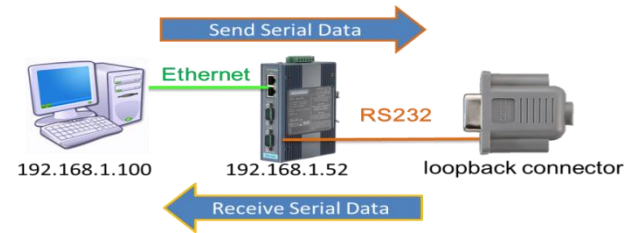
- A. The daemon related to this connection has a PID of 19492.
- B. The current state of the daemon is “Net Up”. A VCOM connection has been running, without ever engaging an exception.

For example: “`cat /tmp/advmon/advtty6`”

- A. The daemon related to this connection has a PID of 19493.
- B. The current state of the daemon is “Net Down”. The network connection is disabled; therefore, VCOM driver has disconnected from the corresponding device server.

```
[icg@localhost ~]$ cat /tmp/advmon/advtty5
Pid : 19492 | State : Net Up [icg@localhost ~]$ cat /tmp/advmon/advtty6
Pid : 19493 | State : Net Down [icg@localhost ~]$
```

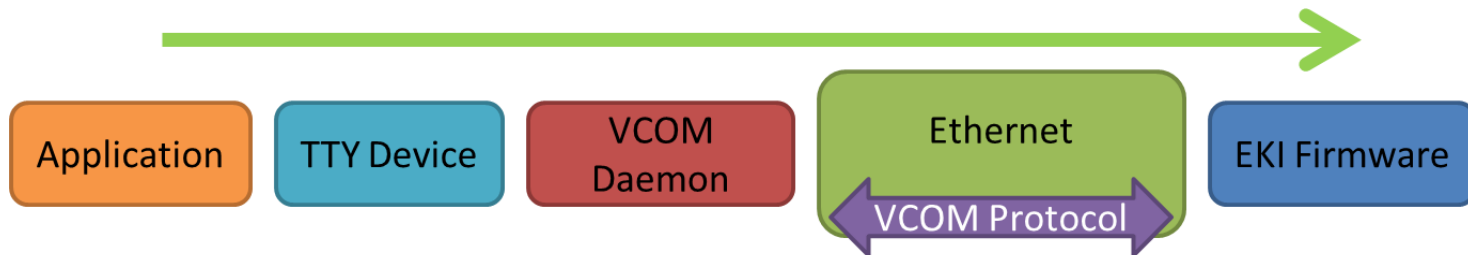
TCP/IP Topology check



In Ethernet TCP/IP with VCOM protocol check:

Network Topology and IP Setting is focused that include

1. Linux PC : IP address/default GW
2. EKI-1500 : IP address/default GW
3. Log-in EKI-1500 WEBGUI interface from Linux PC browser. Make sure the network setting is working fine.



EKI Firmware Check

- In EKI Web GUI monitor page, you can see the connected IP Address which related port Status when com port open

Port 1 Status	
Setting	Statistic
ConnectedIP	
Connected IP	IP Address
IP 1	::ffff:192.168.1.100
IP 2	
IP 3	
IP 4	
IP 5	
IP 6	
IP 7	
IP 8	
IP 9	
IP 10	
IP 11	
IP 12	
IP 13	
IP 14	
IP 15	
IP 16	

EKI Firmware Check

- Make sure set-up the correct operation mode

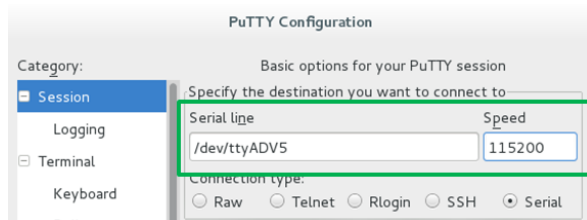
The screenshot displays the web interface of an ADVANTECH EKI-1526-CE Device Server. The browser address bar shows the URL `172.21.11.55/cgi-bin/index.cgi#/cgi-bin/index.cgi?func=portpage&portid=1`. The left sidebar contains a navigation menu with options: System, Ethernet Configuration, Port Configuration, and a list of ports (Port 1 through Port 7). The main content area is titled 'Home / Port Configuration' and features three tabs: Basic, Operation (selected), and Advanced. Under the 'Operation' tab, the 'Port 1 configuration' section is visible. It includes a 'Mode' dropdown menu set to 'Virtual COM Mode', which is highlighted with a green box. Below this, there are input fields for 'Host Idle Timeout(s)' (60), 'Response Timeout(ms)' (0), and 'Frame Break(ms)' (0). At the bottom, a note states: 'Pack conditions (Pack sent immediately when reach 1024 Bytes)'.

F&Q Question-1:

Is it available to modify the device name from /dev/ttyADV* to another one like /dev/vttyAP*?

- In default, EKI-1500 use *ttyADV** as the vcom driver device name. If the customer would like to change to different one. That just simply modify it.

Original: Using putty to open serial port in the path: /dev/ttyADV*



Purpose: Using putty to open serial port in the path for example : /dev/vttyAP*



Answer:

Step 1: Stop & remove the advvcom.ko that running

```
icg@localhost:~/Documents/vcom_linux_2.1.0
File Edit View Search Terminal Help
[icg@localhost Documents]$ cd vcom_linux_2.1.0/
[icg@localhost vcom_linux_2.1.0]$ ls
config COPYING daemon driver initd inotify Makefile readme.txt script
[icg@localhost vcom_linux_2.1.0]$ advls
/bin/bash: /usr/sbin/advls: Permission denied
[icg@localhost vcom_linux_2.1.0]$ sudo advls
[sudo] password for icg:
5 b522 192.168.1.121 1
6 b522 192.168.1.121 2
[icg@localhost vcom_linux_2.1.0]$ sudo advman -o stop
/usr/local/advtty/advvcom.ko
stop
stopping all local services...
[icg@localhost vcom_linux_2.1.0]$ sudo advman -o remove
/usr/local/advtty/advvcom.ko
stopping all local services...
vcomd: no process found
advttyd: no process found
removing kernel moduel advvcom.ko...
```

Answer:

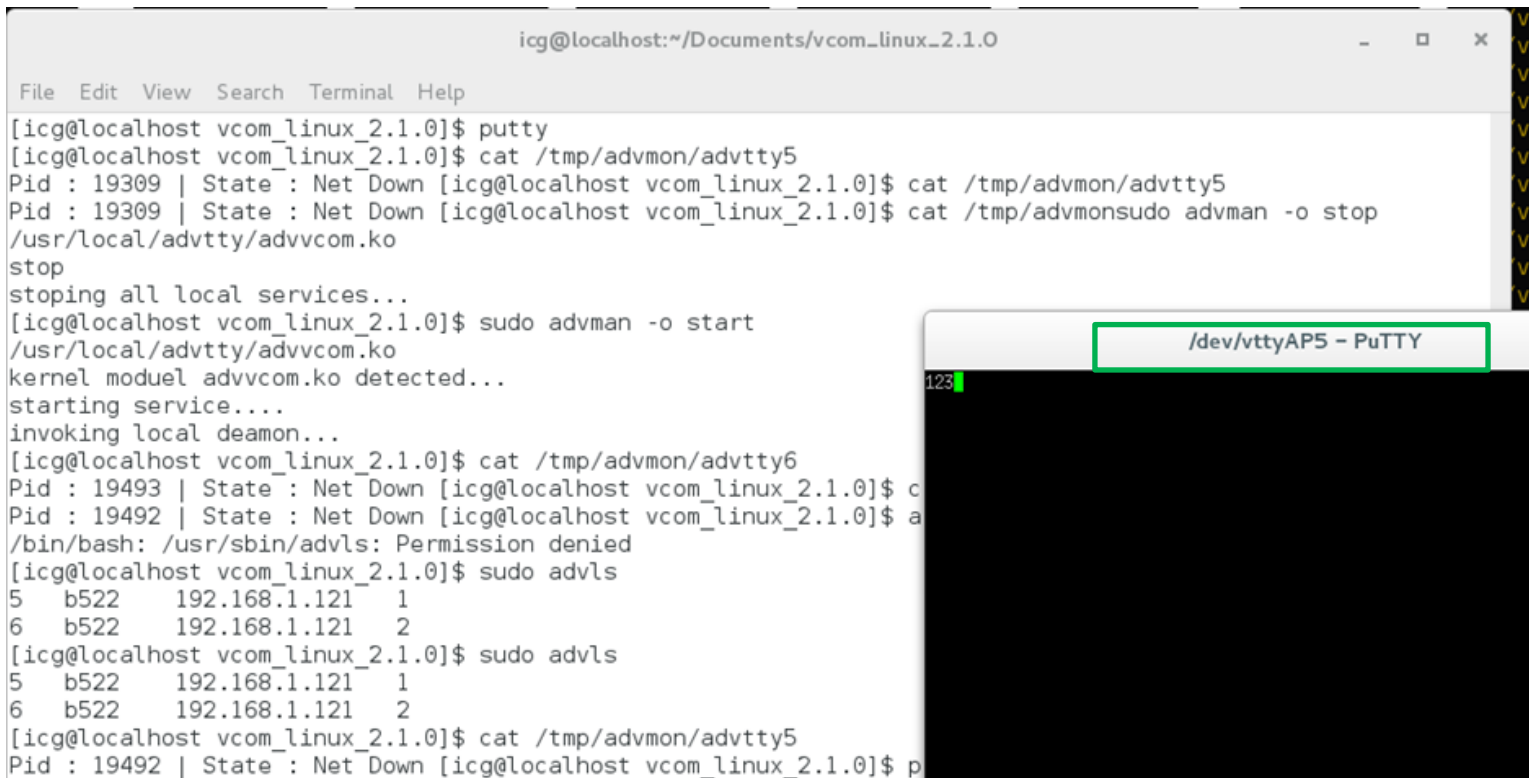
Step 2: Modify “dev_name” as you want in the [adv_uart.c](#) file.
and then use “make” to compiler again

For example: modified “ttyADV” to “vttyAP”

```
[icg@localhost driver]$ cd ..  
[icg@localhost vcom_linux_2.1.0]$ grep -i 'vttyAP*' driver/*  
driver/adv_uart.c:         .dev_name           = "vttyAP",  
Binary file driver/adv_uart.o matches  
Binary file driver/advvcom.ko matches  
Binary file driver/advvcom.o matches  
[icg@localhost vcom_linux_2.1.0]$ grep -i 'ttyADV*' driver/*  
driver/adv_uart.c://         .dev_name           = "ttyADV",  
[icg@localhost vcom_linux_2.1.0]$ make  
make -C ../daemon  
make[1]: Entering directory `/home/icg/Documents/vcom_linux_2.1.0/daemon'
```

Answer:

Step 3: Follow the SOP to build and verify it.



The image shows a terminal window titled "icg@localhost:~/Documents/vcom_linux_2.1.0" with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal output shows the following commands and responses:

```
[icg@localhost vcom_linux_2.1.0]$ putty
[icg@localhost vcom_linux_2.1.0]$ cat /tmp/advmon/advtty5
Pid : 19309 | State : Net Down [icg@localhost vcom_linux_2.1.0]$ cat /tmp/advmon/advtty5
Pid : 19309 | State : Net Down [icg@localhost vcom_linux_2.1.0]$ cat /tmp/advmonsudo advman -o stop
/usr/local/advtty/advvcom.ko
stop
stopping all local services...
[icg@localhost vcom_linux_2.1.0]$ sudo advman -o start
/usr/local/advtty/advvcom.ko
kernel module advvcom.ko detected...
starting service....
invoking local daemon...
[icg@localhost vcom_linux_2.1.0]$ cat /tmp/advmon/advtty6
Pid : 19493 | State : Net Down [icg@localhost vcom_linux_2.1.0]$ c
Pid : 19492 | State : Net Down [icg@localhost vcom_linux_2.1.0]$ a
/bin/bash: /usr/sbin/advls: Permission denied
[icg@localhost vcom_linux_2.1.0]$ sudo advls
5 b522 192.168.1.121 1
6 b522 192.168.1.121 2
[icg@localhost vcom_linux_2.1.0]$ sudo advls
5 b522 192.168.1.121 1
6 b522 192.168.1.121 2
[icg@localhost vcom_linux_2.1.0]$ cat /tmp/advmon/advtty5
Pid : 19492 | State : Net Down [icg@localhost vcom_linux_2.1.0]$ p
```

Overlaid on the bottom right is a PuTTY window titled "/dev/ttyAP5 - PuTTY" with a green border. It shows a black terminal screen with a green cursor at the top left.

F&Q Question-2:

Some customer met the issue when they buy the EKI-1526-CE/EKI-1528-CE cannot success in Linux VCOM setting.

Solution:

Step1: Please check your Kernel version in Linux Platform.
[Reference the page4-5.](#)

F&Q Question-2: How to use EKI-1526-CE or EKI-1528-CE in Linux?

Step2: For VCOM in Linux used that need to map module name.
Please follow the SOP in the website, in configure file you need to make sure you put the module name EKI-1526-CE as “D526”.

```
root@localhost:~/Documents/vcom_linux_2.1.0/config
File Edit View Search Terminal Help
/usr/local/advtty/advvcom.ko
stopping all local services...
vcomd: no process found
advttyd: no process found
[root@localhost config]# advman -o start
/usr/local/advtty/advvcom.ko
kernel module advvcom.ko detected...
starting service...
invoking local daemon...
[root@localhost config]# advls
2 C528 192.168.1.96 1
3 C528 192.168.1.96 2
5 D526 192.168.1.99 1
6 D526 192.168.1.99 2
[root@localhost config]# advman -o stop
/usr/local/advtty/advvcom.ko
stop
stopping all local services
```

Mapping to Port1
of EKI-1526-CE

Mapping to Port2
of EKI-1526-CE

For EKI-1526-CE: Device Name use D526
Example:
VCOM Port: 5; Device Name: D526; IP: 192.168.1.99;
Physical Port:1
VCOM Port: 6; Device Name: D526; IP: 192.168.1.99;
Physical Port:2

F&Q Question-2:

How to use EKI-1526-CE or EKI-1528-CE in Linux?

Another Option: You also can enabled “Ignore VCOM Device ID” in Web GUI then you don’t need to modify as “D526”. You can keep the C526 or name as you would like.

The screenshot displays the Advantech web interface for the EKI-1526L-CE Device Server. The left sidebar contains navigation links: System, Ethernet Configuration, Port Configuration, Monitor, Alarm, Syslog, Tools, and Management. The main content area is titled 'System Configuration' and includes the following settings:

- Firmware version: 1.03
- Revision number: 4945
- Device Name: (empty text field)
- Device Description: (empty text area)
- VCOM Ignore Device ID: ☒ Enable (highlighted with a green box)
- Telnet: ☒ Enable
- SNMP: ☒ Enable
- Local Time: 2017 / 8 / 22, 15 : 38 : 11 (with a 'Modify' button)
- Time Server: (empty text field)



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