Part A: Configuring and building Linux kernel

1. Do not include any Bluetooth Subsystem Support:
   1. .config file

None of the bluetooth device drivers are set in kernel 5.2.6 configuration.

* 1. Observed system changes:
     1. Kernel 5.4.0

The following bluetooth drivers were found for kernel 5.4.0

$ ls /lib/modules/5.4.0-48-generic/kernel/drivers/bluetooth

ath3k.ko bt3c\_cs.ko btmtksdio.ko btsdio.ko hci\_uart.ko

bcm203x.ko btbcm.ko btmtkuart.ko btusb.ko hci\_vhci.ko

bfusb.ko btintel.ko btqca.ko btwilink.ko

bluecard\_cs.ko btmrvl.ko btrsi.ko dtl1\_cs.ko

bpa10x.ko btmrvl\_sdio.ko btrtl.ko hci\_nokia.ko

* + 1. Kernel 5.2.6

As expected no bluetooth drivers were present in kernel 5.2.6.

'/lib/modules/5.2.6/kernel/drivers/bluetooth': No such file or directory

Also no files were found related to BlueZ which is the Bluetooth protocol stack for linux.

1. Update and make Reno as the default TCP congestion control algorithm:
   1. .config file has following changes:

os-lab@oslab:~/linux-5.2.6$ grep -i 'reno' .config

CONFIG\_DEFAULT\_RENO=y

CONFIG\_DEFAULT\_TCP\_CONG="reno"

os-lab@oslab:/lib/modules/5.4.0-42-generic$ grep -i 'reno' build/.config

# CONFIG\_DEFAULT\_RENO is not set

* 1. System information changes:
     1. For Kernel version 5.4.0

os-lab@oslab:~$ uname -r && sudo sysctl -a | grep -i 'congestion\_control'

5.4.0-42-generic

net.ipv4.tcp\_allowed\_congestion\_control = reno cubic

net.ipv4.tcp\_available\_congestion\_control = reno cubic

net.ipv4.tcp\_congestion\_control = cubic

* + 1. For Kernel version 5.2.6

os-lab@oslab:~$ uname -r && sudo sysctl -a | grep -i 'congestion\_control'

5.2.6

net.ipv4.tcp\_allowed\_congestion\_control = reno

net.ipv4.tcp\_available\_congestion\_control = reno cubic

net.ipv4.tcp\_congestion\_control = reno