

IPWAVE Basic Protocols Project

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Jaehoon (Paul) Jeong
Yiwen (Chris) Shen



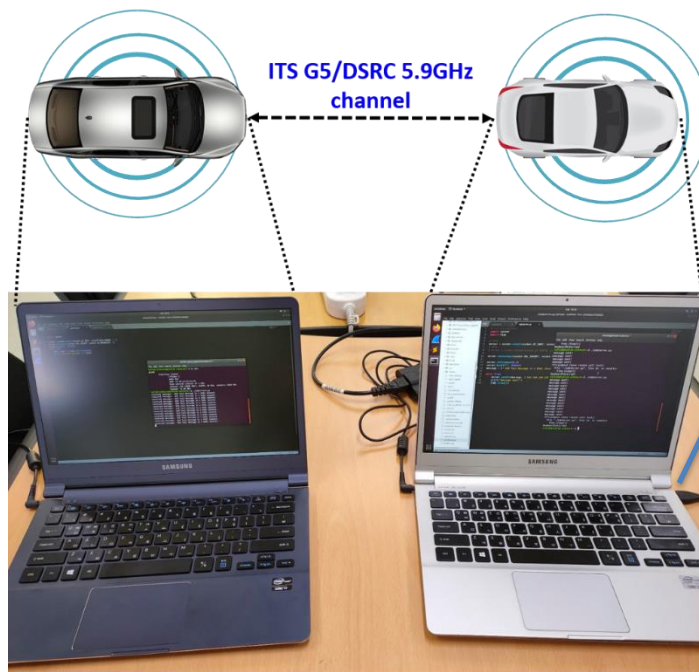
Hackathon Plan

- IPv6 Packet Transmission over two OCB-enabled WiFi modules in vehicular networks
 - How to enable a commercial WiFi module to work on 5.9GHz band?
 - How would IPv6 ND work in IEEE OCB mode?
 - How to enable webcam (dashcam) streaming by IPv6 over 802.11 OCB mode?
- Related IPWAVE Drafts:
 - <https://datatracker.ietf.org/doc/draft-ietf-ipwave-ipv6-over-80211ocb/>
 - <https://datatracker.ietf.org/doc/draft-ietf-ipwave-vehicular-networking/>

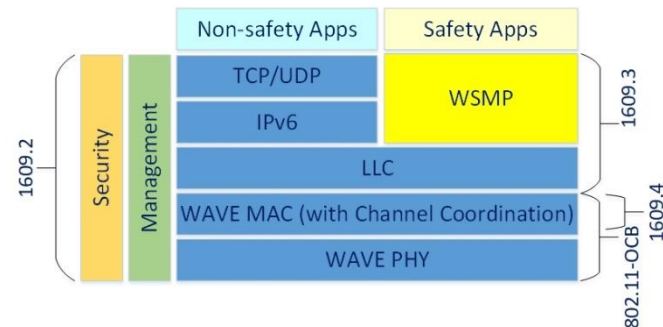
What got done

- Compiling Linux Kernel for OCB mode (Kernel version 4.4).
 - Modify Makefile to remove possible errors
 - Menuconfig for OCB mode
 - Enable ITS G5/DSRC band
 - Atheros 802.11 ath9k wireless card driver
 - Enable webcam driver
- IPv6 packet transmission by two OCB-enabled WiFi modules.
 - IPv6 address configuration
 - UDP packets transmission
 - Webcam streaming

Setup Environment



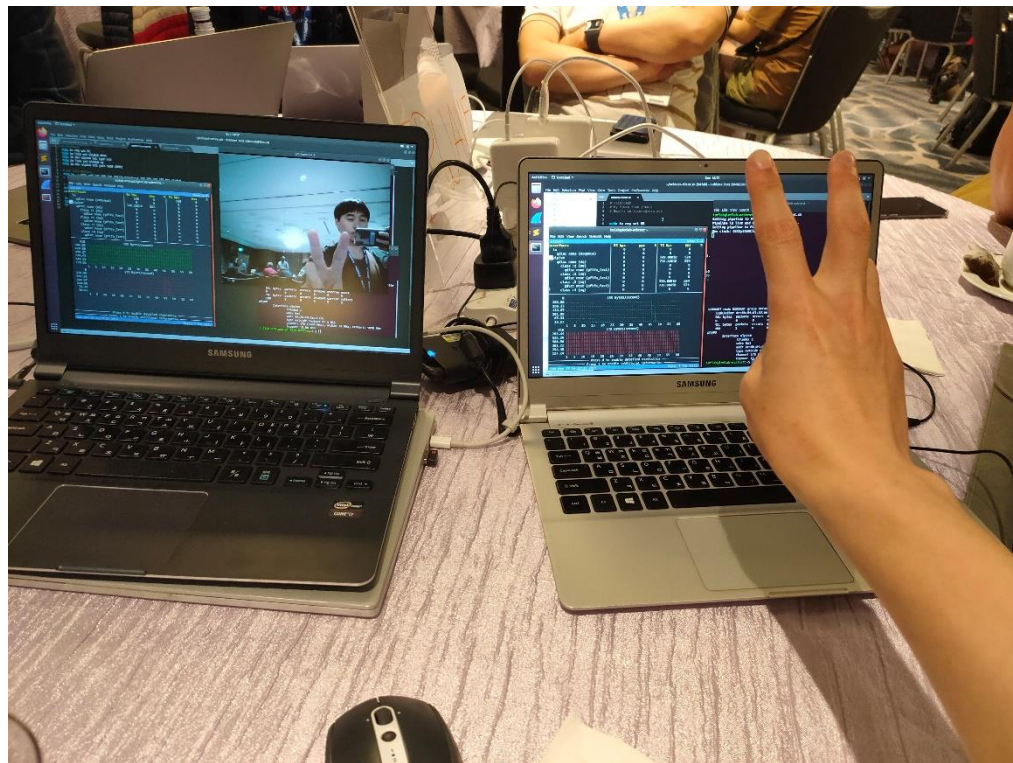
Environment Setup



```
File Edit View Search Terminal Help
iotlab@iotlab:~$ iw dev phy#0 interface wlp3s0
ifindex 2
wdev 0x1
addr 6c:0b:84:63:3d:ee
type outside context of a BSS
channel 178 (5890 MHz), width: 10 MHz, center1: 5890 MHz
txpower 13.00 dBm
iotlab@iotlab-ocbtest:~$ iw dev phy#0 interface wlp3s0
ifindex 2
wdev 0x1
addr 6c:0b:84:63:3d:ee
type outside context of a BSS
channel 178 (5890 MHz), width: 10 MHz, center1: 5890 MHz
txpower 13.00 dBm
```

Experiment

- Successfully stream webcam over two OCB-enabled laptops.



What We Learned

- Compiling error can happen due to Makefile setting.
 - Updated Makefile to remove the error
 - Updated Makefile of Central Regulatory Domain Agent (CRDA) to remove a compiling flag, *-Werror*, that shows compiling errors when variables are not used.
 - Made a new manual for running OCB mode
- IPv6 ND is not automatically running on the interface.
 - No Carrier shown on the interface
 - Need to manually configure IPv6 address and neighbors

Wrap Up

Team members:

Champions:

- Jaehoon Paul Jeong (SKKU)
- Younghan Kim (SSU)

Students:

- Yiwen Chris Shen (SKKU)
- Zhong Xiang (SKKU)
- Bien Aime Mugabarigira (SKKU)
- Kyoungjae Sun (SSU)

First timers @ IETF/Hackathon:

Hyojoon Han (Dongguk Univ.)

Video clip demo:

<https://youtu.be/gQxOLU740b4>

Where to get code (manual):

<https://github.com/ipwave-hackathon-ietf/ipwave-hackathon-ietf-106>

Original contributors:

Czech Technical University and
Volkswagen:

<https://ctu-iig.github.io/802.11p-linux/>