
EE/CprE/SE 492 BIWEEKLY STATUS REPORT 6

April 2, 2020 – April 16, 2020

Group number: 37

Project title: Open-Source Prototyping of Advanced Wireless Systems for Smart Agriculture and Connected Rural Communities

Client &/Advisor: Hongwei Zhang, Matthias Sander-Frigau

Team Members/Role: Zequn Wang – Meeting Scribe
Dylan Sharp – Meeting Facilitator
Jiawei Deng – Chief Engineer
Zhenwei Su – Report Manager
Shaohang Hu – Test Engineer
Yulin Song – Test Engineer

▪ **Bi-Weekly Summary**

We revised our deliverables with our advisors of laying out implementation plan of how PRKS should fit within openwrt and also creating a PRKS mode to enable / disable with iw command and also got our hands on a physical router to test with. Development on pseudo code and mapping parameters is still in progress.

▪ **Past week accomplishments**

- Jiawei Deng
 - Work on OpenWRT implementation.
 - Look through Netlink 80211 source code to try to find where to edit.
- Yulin Song
 - Read nl80211, cfg80211 and mac80211 code.
 - Thought about PRKS mode implementation in these three modules.
- Shaohang Hu
 - Looking at header file and source code of nl80211. Find the functions to edit for implementation.
 - Keep Identifying functions that required for PRKS algorithm.
- Zhenwei Su
 - Study iw command
 - Read nl80211 source code
- Zequn Wang
 - Working with Shaohang Hu to find the functions to edit for implementation for PRKS algorithm.
- Dylan Sharp
 - Picked up router

- Setup router (I had to pick up an ethernet adapter since the WAN was disabled by default)
- Started configuring cross compile toolchain for router

- **Pending issues**

- Still have not defined which functions we will need to edit. For sure within functions along the Rx and Tx paths but those need to be defined
- Implement pseudo code into the kernel
- Build an architecture work which contains the shared library so that we can use to implement our code.
- Industry sponsors source code for implementation on top of the TVWS.
- Describe implementation strategies given current understanding of PRKS Algorithm and showcases of implementation strategy.

- **Individual contributions**

| <u>NAME</u> | <u>Individual Contributions</u> | <u>Hours this bi-week</u> | <u>HOURS cumulative</u> |
|--------------------|--|----------------------------------|--------------------------------|
| Zequn Wang | <ol style="list-style-type: none"> 1. Looking at header file and source code of nl80211. Find the functions to edit for implementation. 2. Describe implementation strategies. | 8 | 55 |
| Dylan Sharp | <ol style="list-style-type: none"> 1. Picked up router 2. Set up router 3. Started cross compile toolchain for router | 9 | 61 |
| Shaohang Hu | <ol style="list-style-type: none"> 1. Looking at header file and source code of nl80211. Find the functions to edit for implementation. 2. | 9 | 59 |
| Zhenwei Su | <ol style="list-style-type: none"> 1. Look for functions that we need 2. study | 9 | 56 |
| Jiawei Deng | <ol style="list-style-type: none"> 1. OpenWRT implementation. 2. Look through nl80211 source code. | 9 | 68 |
| Yulin Song | <ol style="list-style-type: none"> 1. Look through nl80211, cfg80211 and mac80211 code. 2. Thought about PRKS mode implementation in these three modules. | 7 | 51 |

- **Comments and extended discussion**

- **Plans for the upcoming bi-week**

- Shaohang Hu
 - Keep Implementation of PRKS.
 - Wrap up project
- Zequn Wang
 - Working with Shaohang Hu keep implementation of PRKS.
 - Describe implementation strategies.
- Jiawei Deng
 - Continue working on Openwrt implementation.
 - Try to write the dummy code (eg. When can a node transmits).
 - Describe implementation strategies given current understanding of PRKS Algorithm and showcases of implementation strategy.
- Dylan Sharp
 - Set up cross compile toolchain
 - Compile a hello world app
 - Start digging into how to use openwrt on this router.
- Yulin Song:
 - Keep implementing pseudo code in nl80211, then cfg80211 and mac80211.
- Zhenwei Su:
 - Find where to add nl80211 functions
 - Work on implementation