Validation Laboratory Testing

Week of March 19, 2018

**Testing Of Units**

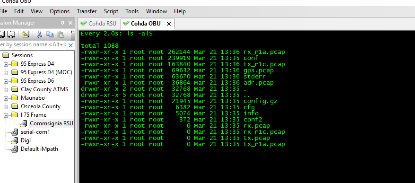
Cohda RSU/Cohda OBU/Naztec

1. Putty Session for RSU: 192.168.1.30
2. Putty Session for OBU: 192.168.1.40
3. Checked to see that the new image file is loaded on Cohda OBU:
   * Command to see if running latest release: “fim –l” (flexibile image management)
   * Check GPS command: “gpspipe -r”
   * Time lock command: “chronyc tracking”
   * Go to the persistent directory root @MKS:/mnt/rw#: command “ls -al”
     1. You will see there is a log directory file
   * See if micro SD card is mounted: Command: “mount|grep src”
   * Go to the example1609 directory: root@MKS:/mnt/row/example1609# (shows the contents)
   * Cd/opt/cohda/application#: Command: “ls -al”
     1. Will see .tgz file
   * root@MKS:/opt/cohda/application/example1609# : Command: “ls”
   * root@MKS:/opt/cohda/application/example1609# : Command: “./rc.example1609 stop”
   * root@MKS:/opt/cohda/application/example1609# : Command: “./rc.example1609 start”
   * check to see if the process is alive:
   * root@MKS:/opt/cohda/application/example1609# : Command: “./rc.example1609 start”

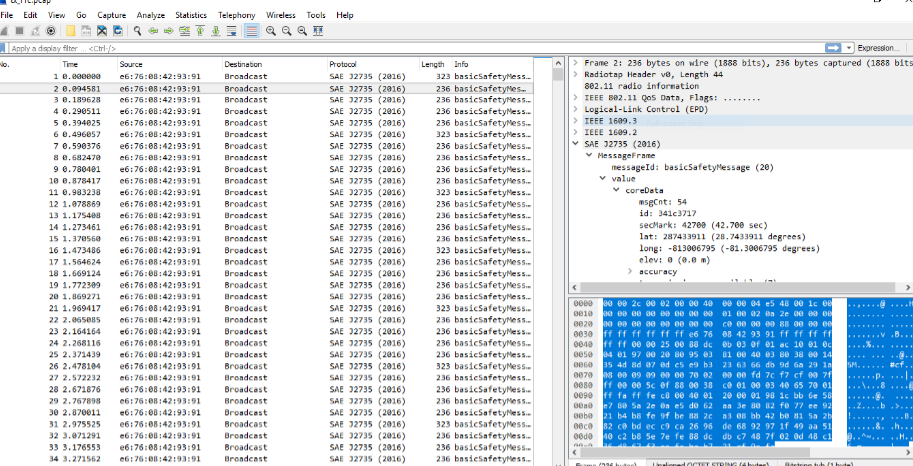
“ps -A|grep example”

* go back to the log directory to see what was created: root@MKS:/mnt/rw/log# “ls -al”
* root@MKS:/mnt/rw/log# “clear”
* remove the old files:
  + root@MKS:/mnt/rw/log# Command: “rm -rf 2018.0314.1\*”
* root@MKS:/mnt/rw/log# “ls”
* root@MKS:/mnt/rw/log# “cd/[enter the file you’re working with now] [enter] to get to the root of this particular file
* root@MKS:/mnt/rw/log# “cd/[enter the file you’re working with now]# “watch ls -alS” (see if these pcap rx files are growing to see if the BSMs are transmitting)
  + Need to see what error:
    1. root@MKS:/mnt/rw/log# “cd/[enter the file you’re working with now]# “tail -f stderr”
    2. You will notice a “dot 2” message which means it is failing security
  + At this time, need to enable SECURITY for the Cohda OBU:
* To fix security:
  + - Cd/opt/cohda/application/example1609#
    - Command: “./rc.example1609 stop”
  + “cd..” go back the root@MKS:/opt/cohda/application#
    - rm -rf example1609
    - rm -rf/ mnt/rw/example1609
    - ls
      * will see the .tgz file
    - tar -xzvf example1609-mk5-69933.tgz
    - clear
    - dmesg -c
    - opt/cohda/application/example1609#
      * ./rc.example1609 start
    - ps -A|grep example
    - Cd /mnt/row/log
* root@MKS:/mnt/rw/log#:
  + - Command: “ls”
    - Command: “cd 2018.0302…”(current log file)
      * 1. Enter command: “watch ls -alS”
        2. At this time the files should be growing to ensure receiving BSMs

1. Verified that both units were sending/receiving – only able to verify BSMs messages.

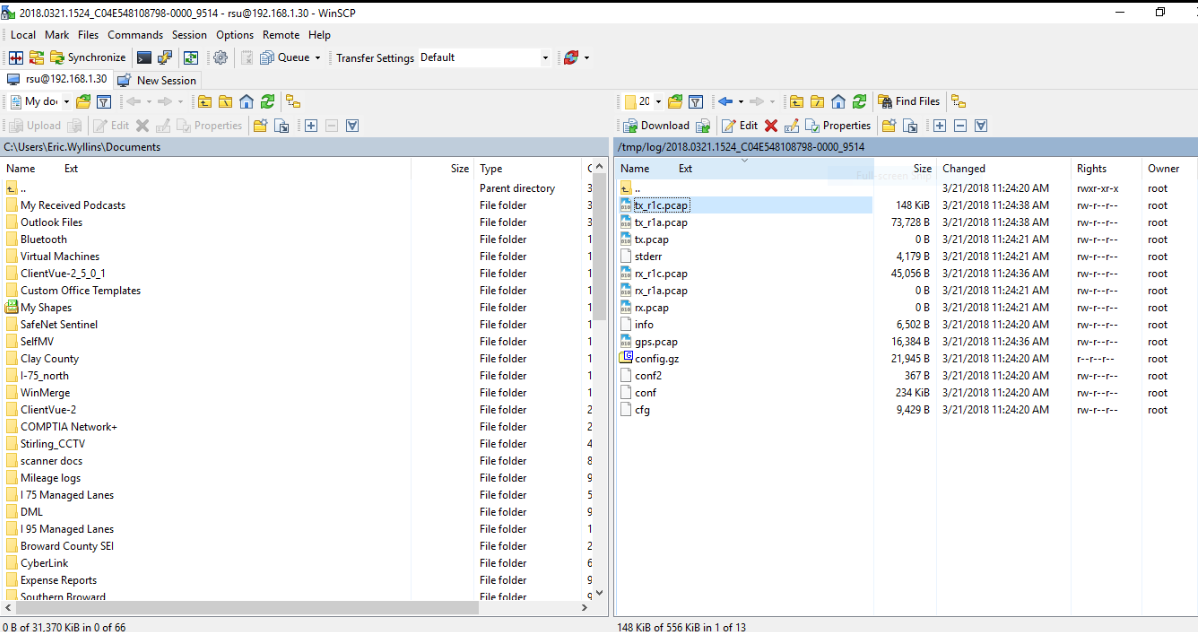


1. Open the .pcap file with WinSCP:
   * Directory: mnt/rw/log: “txr1c.pcap”

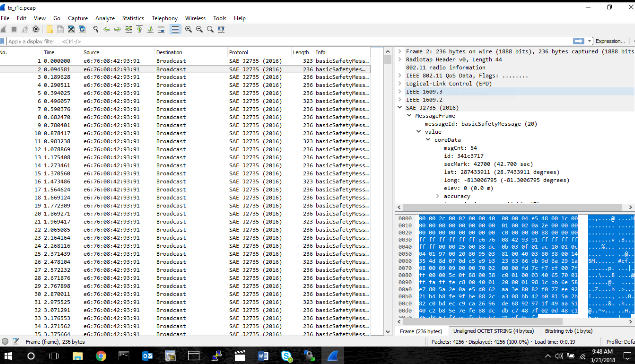


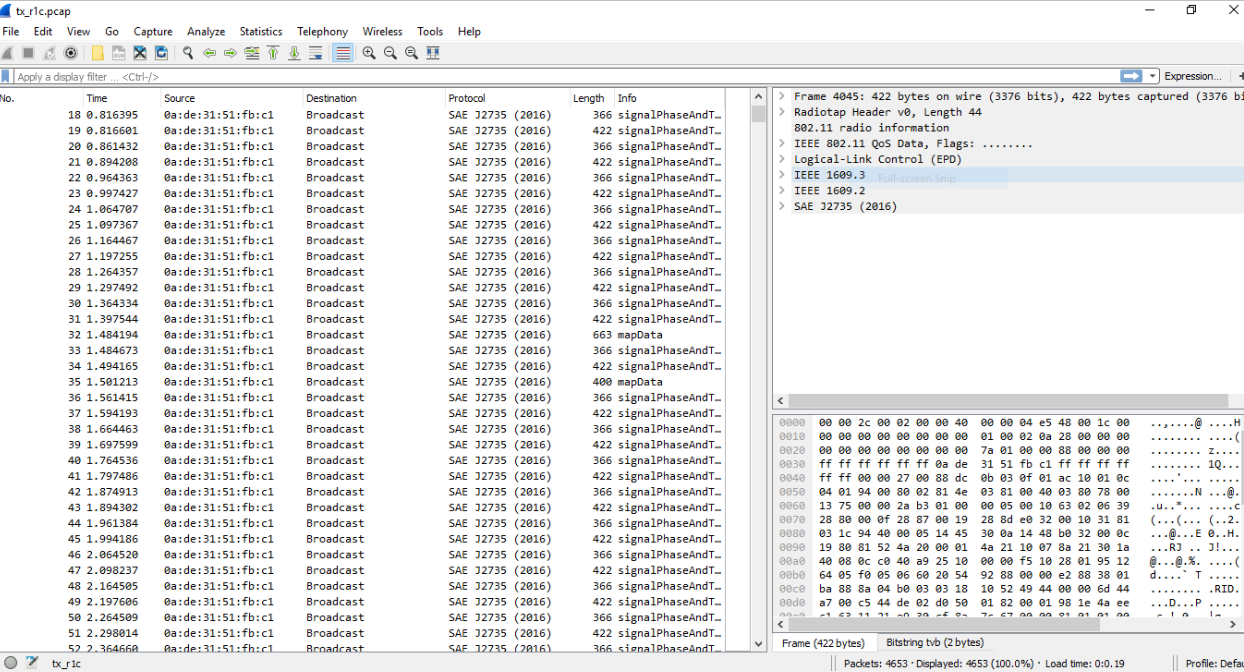
ON THE COHDA RSU:

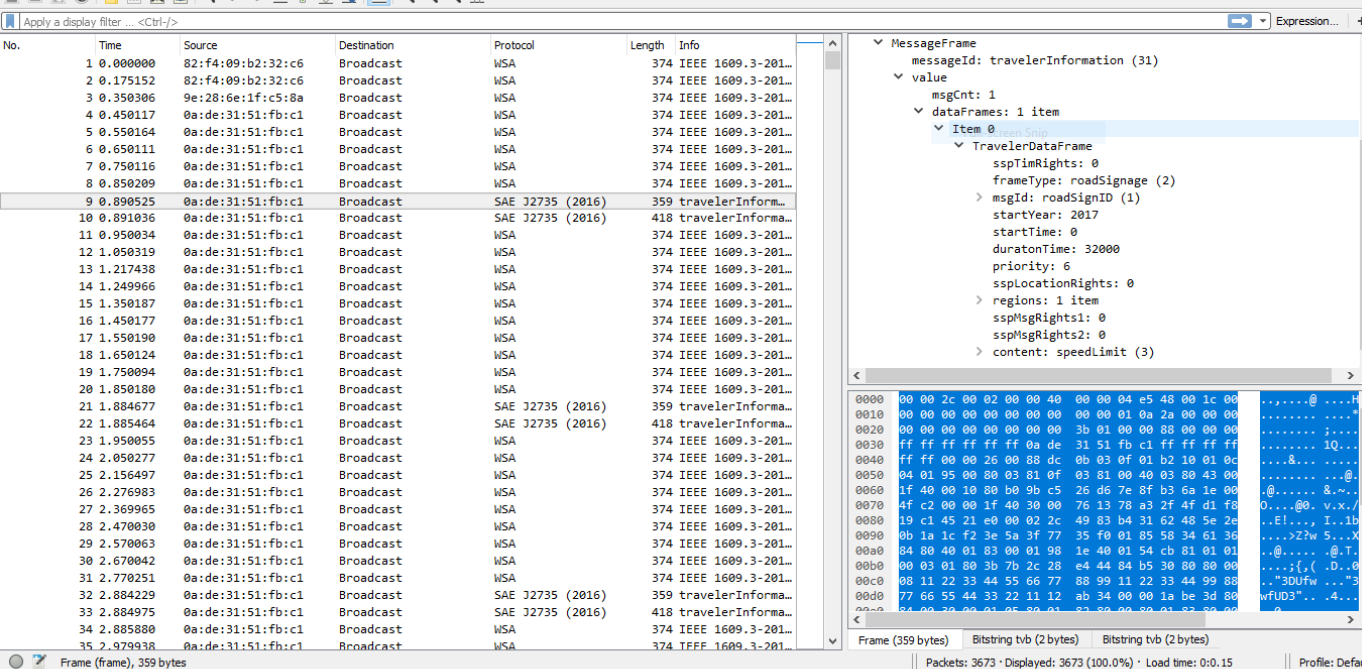
1. Putty 192.168.1.30
2. root@mks:/mnt/rw/log#
   * Command to see if running latest release: “fim –l” (flexibile image management). Verified current image is loaded: “mk5-15.Release.69988.sqsh”
   * Actively running image A
   * Check GPS command: “gpspipe -r”
   * Time lock command: “chronyc tracking”
3. @MKS:/mnt/rw#: clear
4. @MKS:/mnt/rw#: “ls -al”
5. @MKS:/mnt/rw#: “fim -l”
6. Open MIB.txt file
7. Set up an SNMP account. Stop the application and restart the application
   * /opt/cohda/application/rc.local stop
   * Open the MIB file in notepad and copy the line #36 (net-snmp-config…)
   * /opt/cohda/application/rc.local start
8. @MKS:/mnt/: “ls”
   * Will see a log directory
9. @MKS:/mnt/rw/log#: “clear”
10. @MKS:/mnt/rw/log#: “ls”
    * Will see a bunch of logs listed
11. Encountered problem with log file/directory not existing
12. Reset to manufacture default
13. Installed example1609 by unpacking MK5 application:
    * root@mks:/opt/cohda/application/ tar -xzf example1609-mk5-69988.tgz
14. root@mks:/opt/cohda/application/example1609# vi rsu.cfg
15. root@mks:/opt/cohda/application/example1609# ./rc.example1609 start rsu
16. Opened WinSCP/tmp/log/[current log]. Opened tx.r1c.pcap in notepad



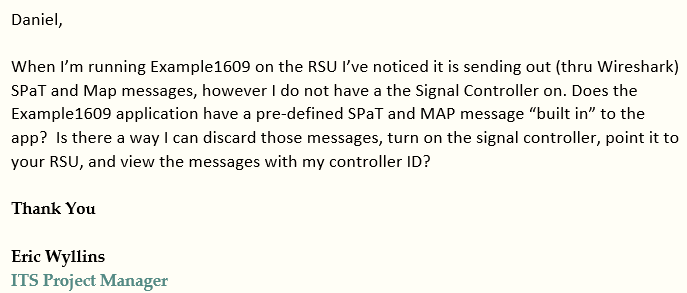
1. Verified RSU Is sending/receiving BMS, SPAT, MAP, TIM. File size was increasing indicating messages were being transmitted and received.



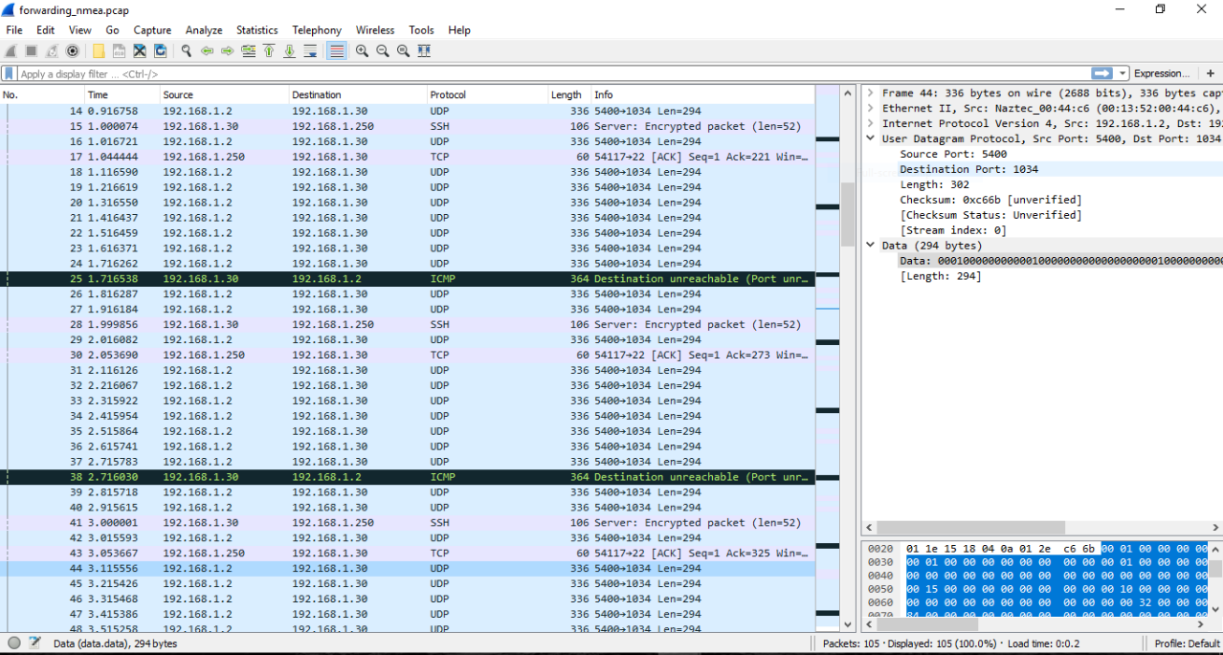




1. Another test was done to see if, with the NazTec Controller UNPLUGGED, whether the messages would still be sent/received (indicator is the increasing file size). It was determined that the RSU/OBU were STILL sending/receiving messages when disconnected from the controller box. Need to verify if messages are being transmitted thru the controller or if it is using the example file. Contacted the vendor to see if there is a way to view messages with the controller ID



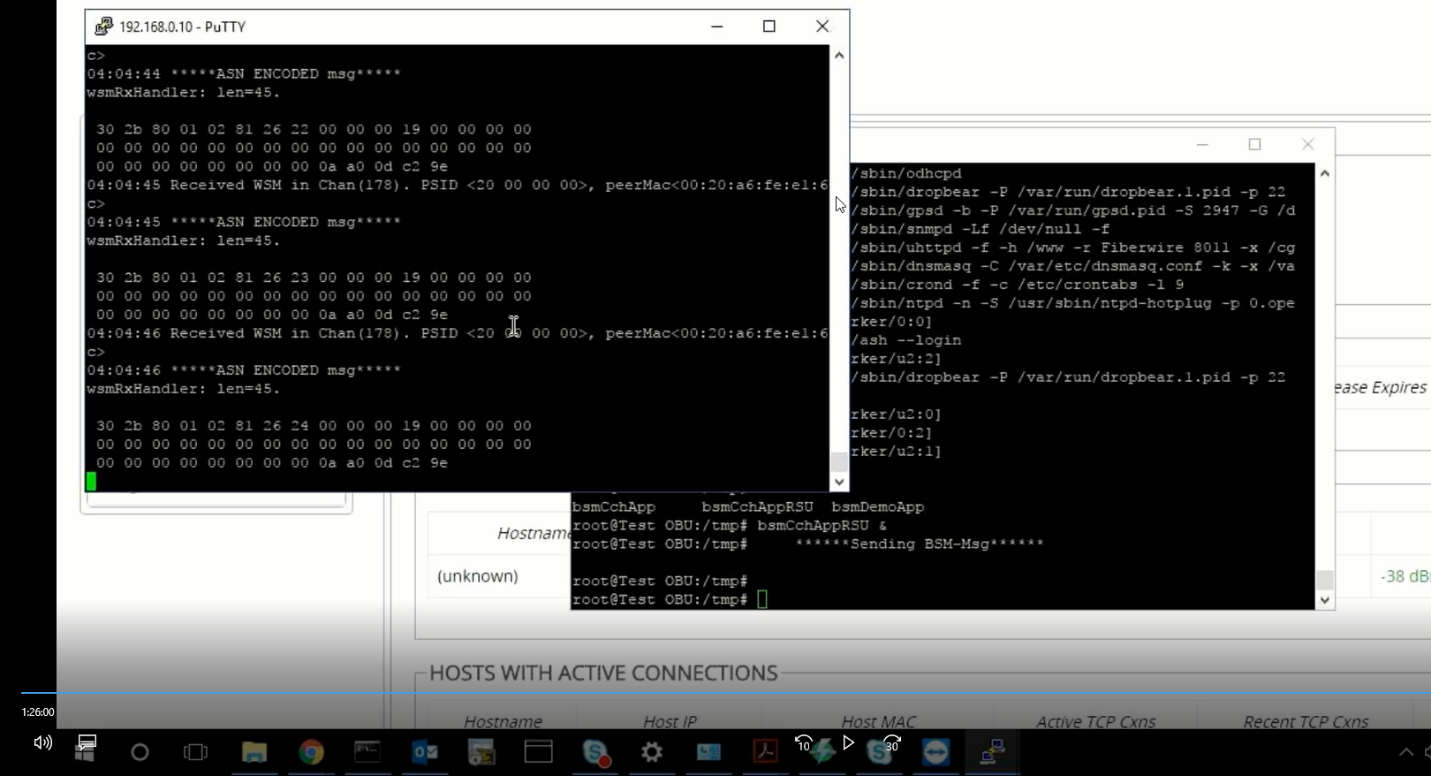
1. Daniel responded with attachment notes and instructions to use the RSU 4.1 application rather than the example1609. The application should auto-start as /opt/cohda/application/rc.local is called at boot-up.
2. Re-ran the test with newly received instructions. The controller is forwarding ‘something’ to the RSU, but not able to verify what.



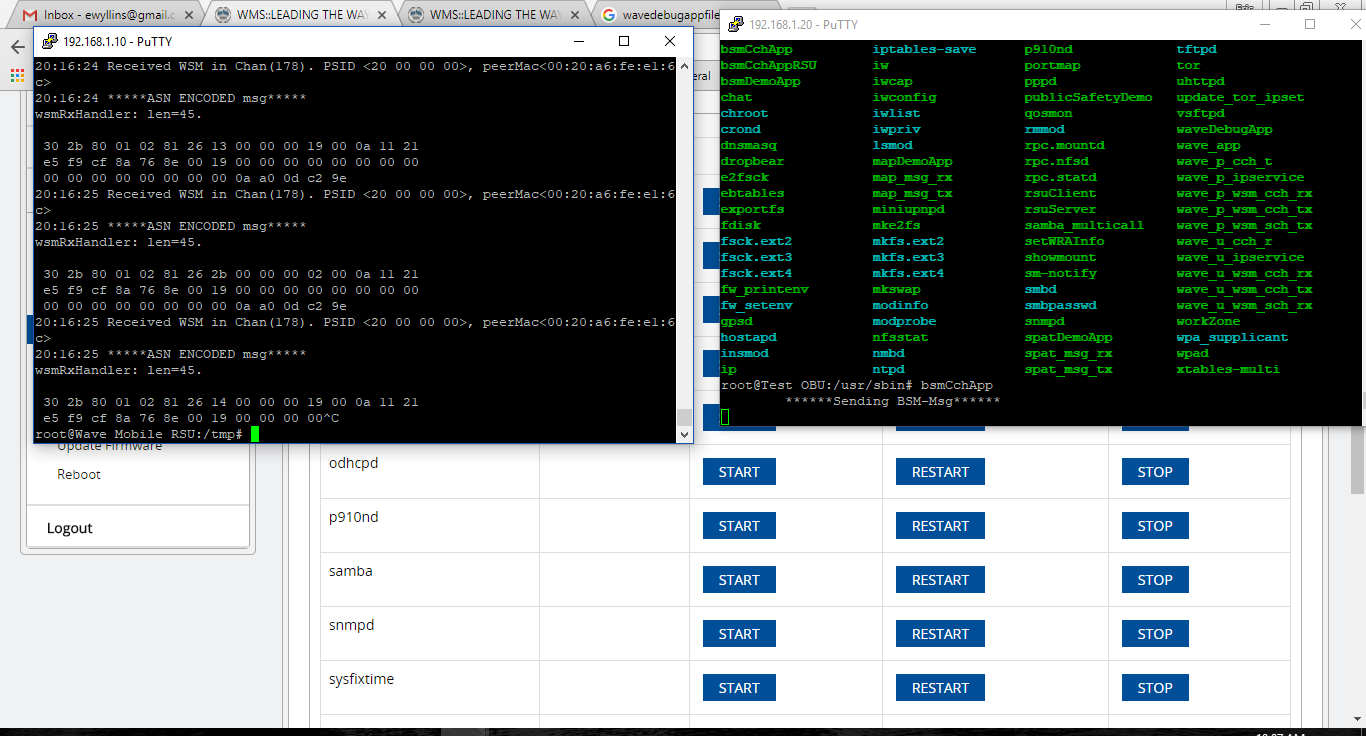
1. Checked GPS. GPS is not picking up. Reset to manufacture. Checked GPS again, and GPS signal regained. Reran the Code received from Daniel and something in the code is disabling GPS.

Wavemobile RSU/WaveMobileOBU/Naztec

1. Configured IP for RSU: 192.168.1.10
2. Updated RSU Bridge IP: 192.168.2.10
3. Refer to Laboratory Notes dated February 12, 2018 for RSU/OBU test rerun screencaps and commands
4. Verified BSM message was being transmitted between the RSU and OBU
   1. To confirm BSM Message are being transmitted on RSU use an SSH session to verify RSU Server Service is running: /usr/sbin/rsuserver & and on OBU is: usr/sbin/bsmCchAppRSU
   2. To verify the BSM messages are being transmitted between the RSU and OBU you must enable to the Debugging file application and use the following command: tail -f waveDebugAppFile.log



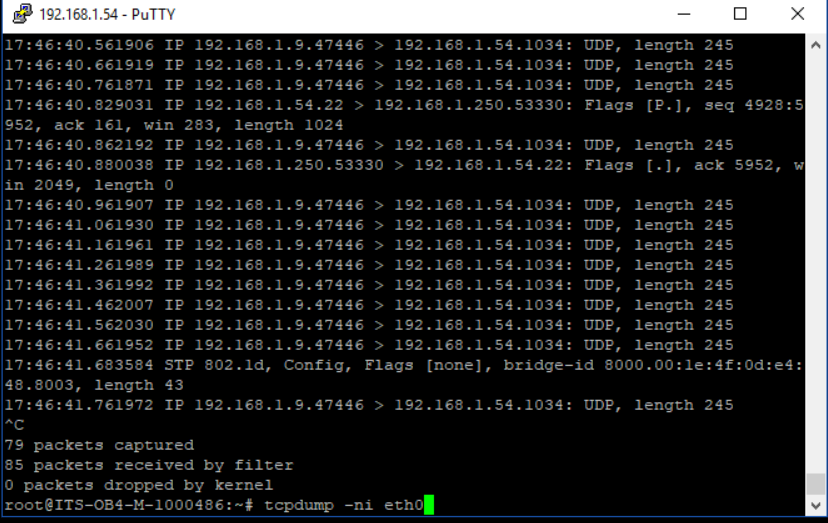
1. On the OBU, run command CD/etc/. When in the etc#: waveDebugApp &
2. On the OBU, run command: tmp#: cd /tmp: ls (to confirm the waveDebugAppFile01.log file)
3. Then run the tail “-f waveDebugAppFile.log”. This verifies OBU was receiving BSs from the RSU. The MAC address will show up in the log which can then be verified with RSU GUI/Host Mac address.
4. The same commands noted above were applied to the RSU. The RSU was verified to be receiving BSMs from the OBU.



1. Confirm messages by checking log files on the OBU. This command confirms that the Wave devices sends/receives BSM messages:
   1. Command: RSU:/usr/sbin# “ifconfig wlano” The MAC address shown should match the MAC address on the GUI for the OBU
2. Verified that both units were sending/receiving – only able to verify BSMs messages. Unable to test for transmitting/receiving other messages. Need to reach out to WaveMobile vendor and come back to this unit for further testing.
3. WaveMobile units can only talk to Intelight controller per video recording with vendor training.

CommSignia RSU/CommSignia OBU/Siemens m60

1. Powered up Commsignia RSU. Check to see if receiving GPS signal through the GUI.
   * IP 192.168.1.54
2. Powered up Commsignia OBU. Check to see if receiving GPS signal through the GUI.
   * IP 192.168.1.55
3. Ran Command: “tcpdump -ni eth0” – to check to see if receiving signal from the Siemens m60 Controller. Verified that it is pushing messages to the RSU IP 192.168.1.54

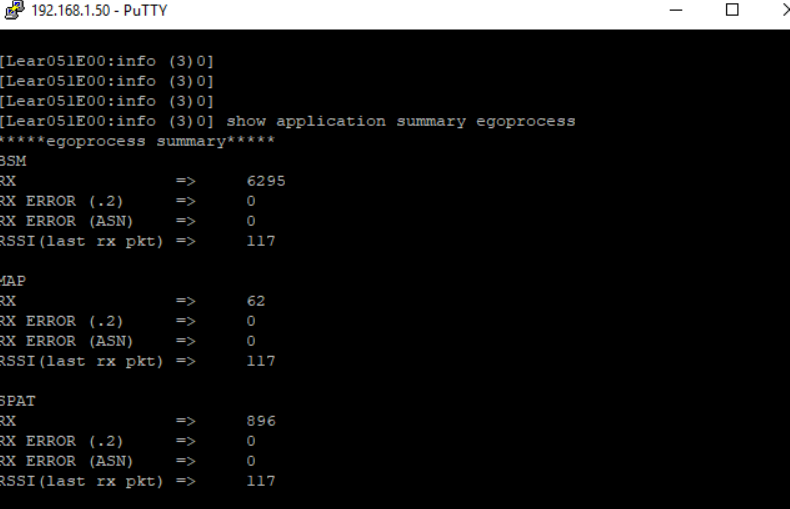


* + Connection from Controller to RSU established, still to verify what messages are being transmitted on the Siemens m60 Controller.
    - Package length = “245” on the m60 Controller
    - Package length = “294” on the Naztec Controller

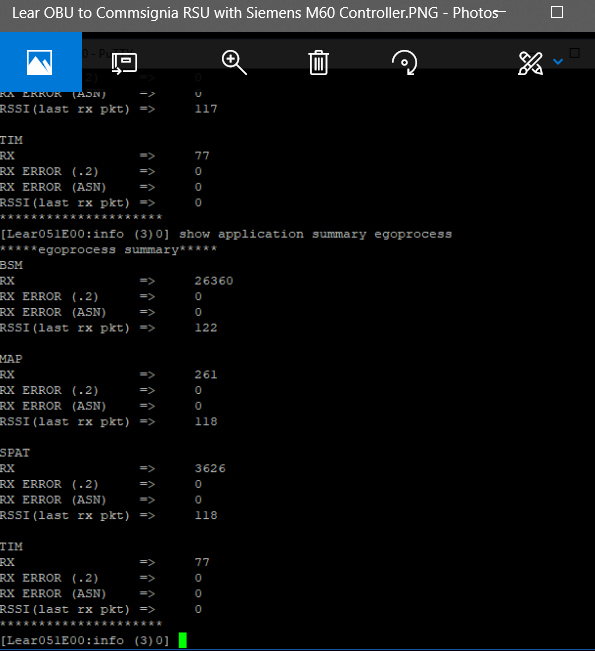
1. Logged into Commsignia OBU GUI, navigated to the V2X-DSRC tab and click on Status.
   * + The OBU is receiving SpAT and MAP data from the RSU.
2. Logged into Commsignia RSU GUI, navigated to the V2X-DSRC tab and click on Status.
   * + The RSU is sending BSM, MAP, SPAT messages

CommSignia RSU/Lear OBU/Siemens m60

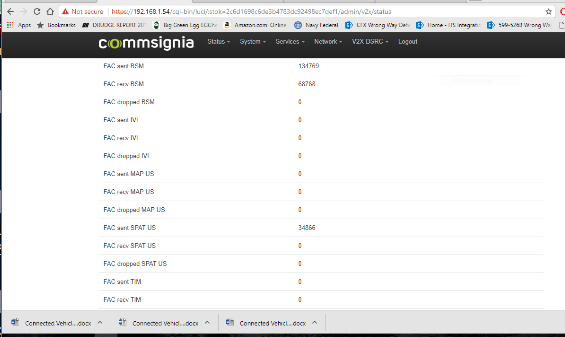
1. Powered up Lear OBU
2. Powered up CommSignia RSU
3. Checked to see if receiving GPS signal:
   * On CommSignia: on the GUI V2X-DSRC tab/Status
   * Lear Ping: 192.168.1.50
     + Command: “enable”
     + Command: “Priv@321#”
     + Command: Check the time sync – “show time” (with the current time, we should be able to get the gps)
     + Command: “request system shell”
4. Check Lear OBU to see if receiving/sending messages first on the Naztec Controller (baseline test):
   * Command: “show application summary egoprocess”
     + Receiving BSM, MAP, SPAT
     + Transmitting BSM
     + Able to see SpAT/MAP message signals on CommSignia’s tablet



1. With the verification that messages are being transmitted to/from the Naztec controller, next, check Lear OBU to see if receiving/sending messages first on the Siemens m60 Controller:
   * Command: “show application summary egoprocess”
     + Receiving BSM, MAP, SPAT increasing counters
     + Transmitting BSM



1. Verified the Commsignia GUI for the RSU is receiving and sending BSMs
   * Ping GUI IP 192.168.1.54
   * Checked V2X-DSRC tab and click on Status

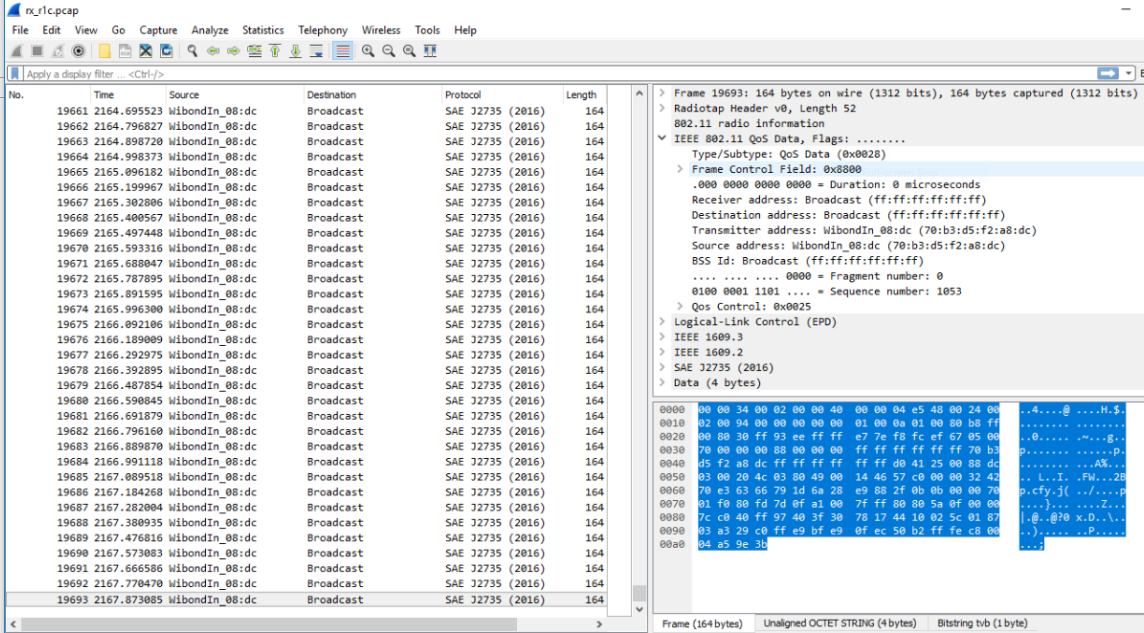


CommSignia RSU/WaveMobile OBU/Siemens m60

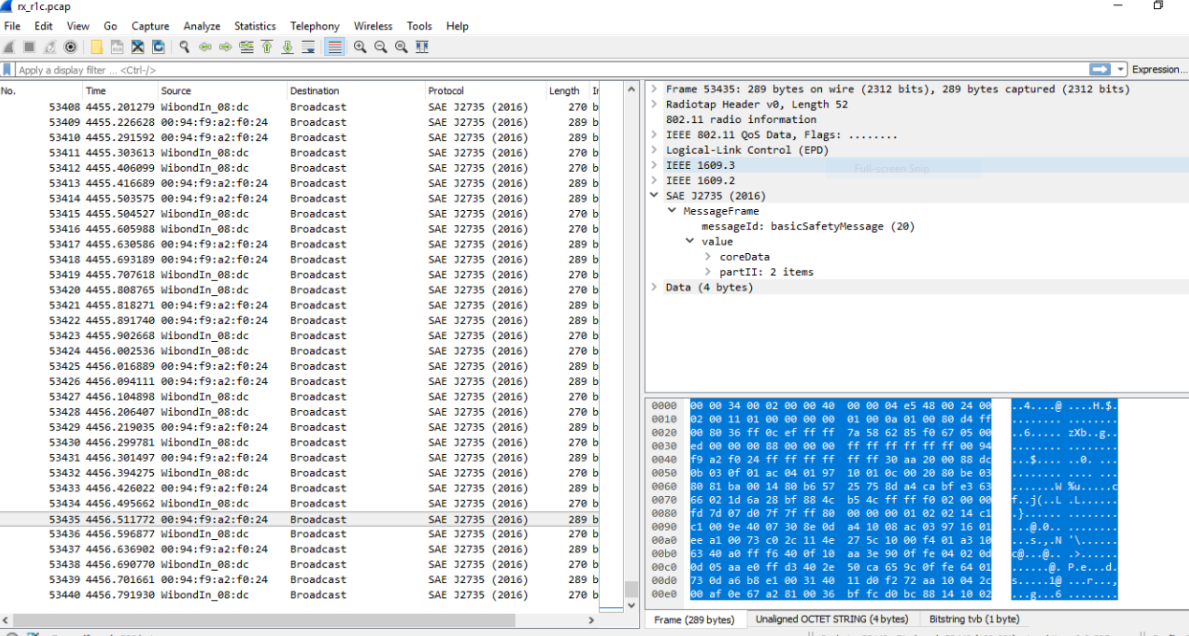
1. Powered up WaveMoblie OBU
2. Powered up CommSignia RSU
3. Checked to see if receiving GPS signal:
   * On CommSignia: on the GUI V2X-DSRC tab/Status
   * WaveMobilie Ping: 192.168.1.20
   * Putty Command: “cat/dev/ttys0”
   * Command: “ps” to see what is running
   * Command: “killall bsmCchAppRSU”
   * cd/usr/sbin#” Command: bsmCchApp &”
4. **Determination**: Commsignia RSU sending messages but not receiving messages. WaveMobile OBU not receiving/sending messages. This test was redone on 3/20/18. Will be re-testing WaveMobile in its entirety.

Cohda RSU/CommSignia OBU/Naztec

1. Ping Cohda OBU: 192.168.1.30
2. Commsignia OBU GUI: 192.168.1.55
3. On the Commsignia side, selected V2X-DSRC tab/Status
   * Confirmed GPS positioning
   * Verified WSMP being sent/received (wifi)
   * Verified BSMs being sent from Commsignia and being received by Cohda RSU
4. On the Cohda side, verified that the Cohda RSU is receiving BSMs from CommSignia OBU.



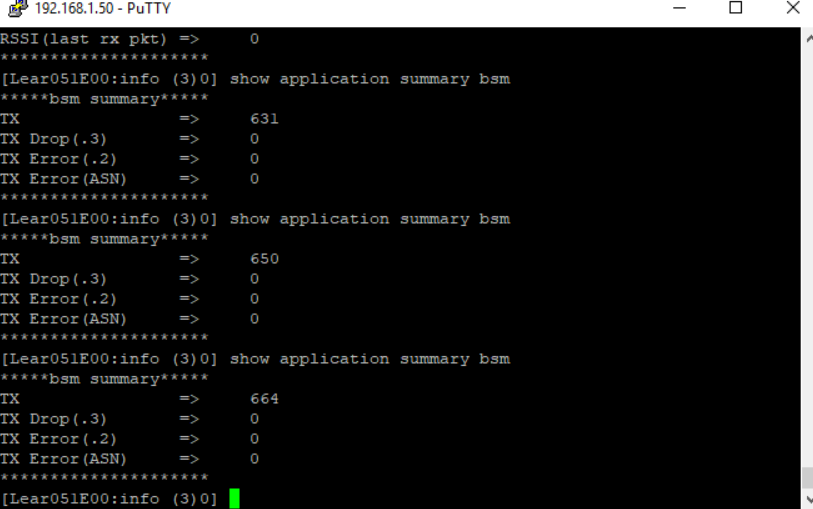
* + - Verified Commsignia RSU is receiving BSMs
      1. Will notice MAC …”08:dc”



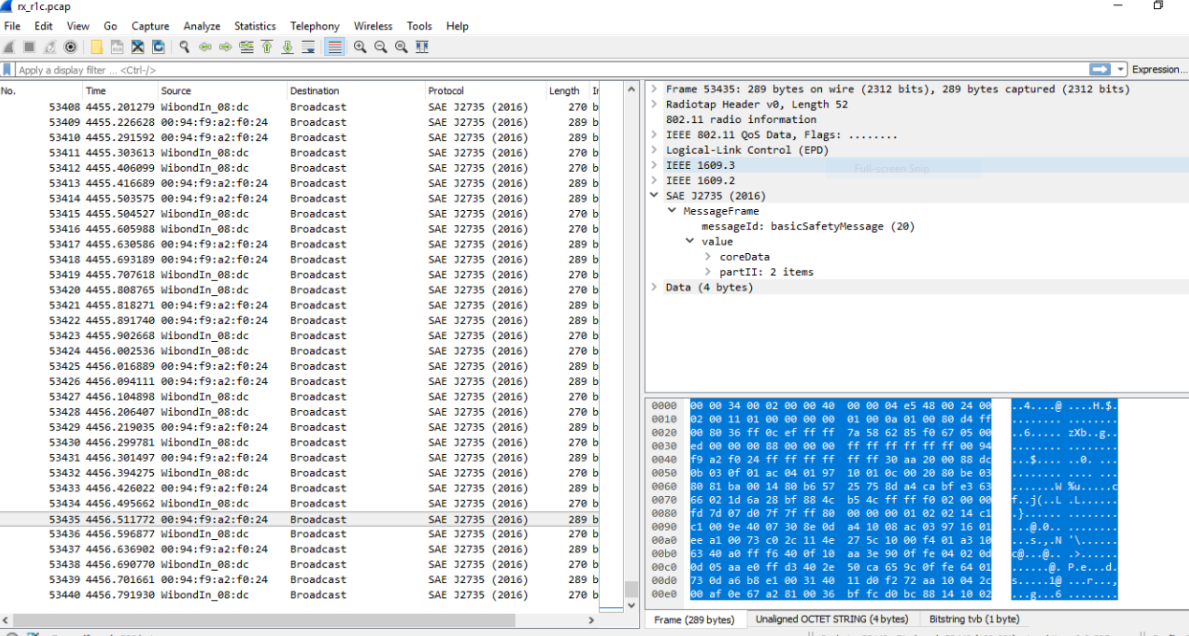
1. **Need to verify that the Cohda RSU is sending SPAT through the controller. SPAT is working with the example1609. Contacted the vendor to see if there is a way to view messages with the controller ID.**

Cohda RSU/Lear OBU/Naztec

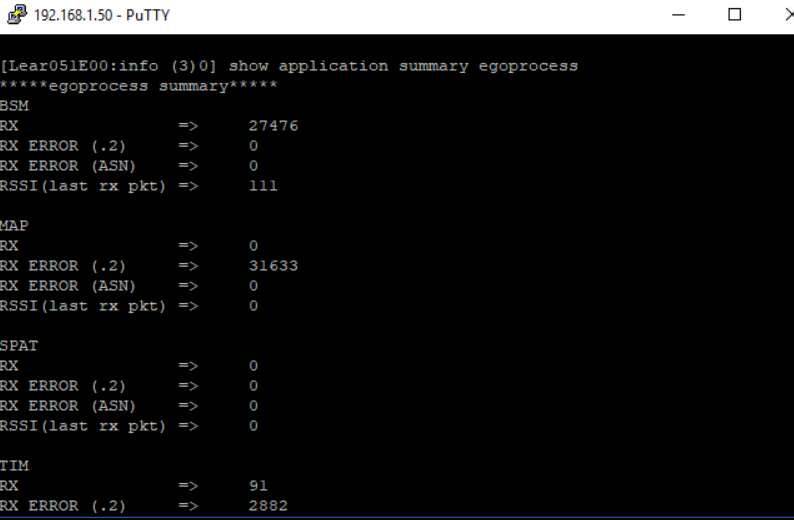
1. Ping Cohda OBU: 192.168.1.30
2. Ping Lear OBU: 192.168.1.50
3. On Lear:
   * Command: “enable”
   * Command: “Priv@321#”
4. Lear OBU:
   * Check Lear OBU to see if it is sending BSMs: “show application summary bsm”
     + Verified it is sending BSMs



* + - Verified Cohda RSU is receiving BSMs



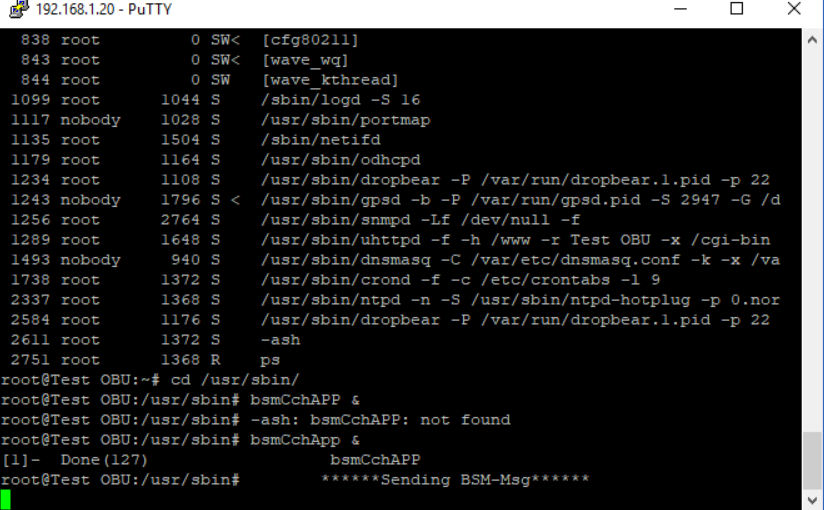
* + Command: “show application summary egoprocess”
    - Verified that the Lear OBU is receiving BSM messages only



1. **Need to verify that the Cohda RSU is sending SPAT through the controller. SPAT is working with the example1609. Contacted the vendor to see if there is a way to view messages with the controller ID. Further testing needed.**

Cohda RSU/WaveMobile OBU/Naztec

1. Ping Cohda OBU: 192.168.1.30
2. WaveMobile OBU GUI: 192.168.1.20
3. On the WaveMobile side:
   * Putty Command: “cat/dev/ttys0”
   * Command: “ps” to see what is running
   * Command: “killall bsmCchAppRSU”
   * cd/usr/sbin#” Command: bsmCchApp &”
   * Verified WaveMobile sending BSMs:



* + On the OBU there is no mechanism/dashboard to show a view of the alerts or messages. On the OBU, the only way to confirm messages are being received is thru the OBU log files.
    1. Opened the GUI IP 192.168.1.20 to see MAC address and signal strength (this verifies messages being received)
  + Unable to see Codha RSU is receiving BSMs
    1. Command: cd/usr/sbin# ./sbmCchAppRSU &

1. Unable to see if Cohda RSU is sending SpAT, BSM, MAP. **Need to verify that the Cohda RSU is sending SPAT through the controller. SPAT is working with the example1609. Contacted the vendor to see if there is a way to view messages with the controller ID.**

CommSignia RSU/CommSignia OBU/Siemens m60

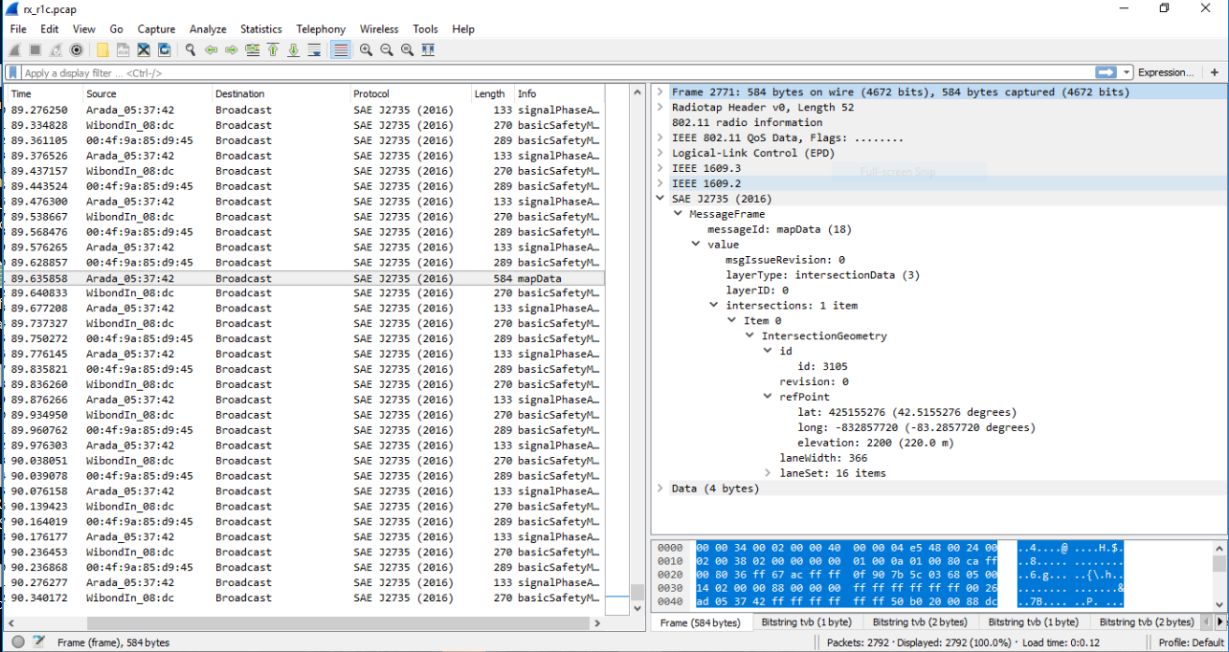
1. Ping Commsignia RSU via GUI: 192.168.1.54
2. Ping Commsignia OBU via GUI: 192.168.1.55
3. On the Commsignia GUI, check to see if receiving/sending messages:
   * Navigate to the V2X-DSRC tab and click on Status. The “sent and recv” areas will show increasing numbers
   * No SpAT messages being sent nor received from the controller

Lear RSU/CommSignia OBU/Siemens m60

1. Ping Commsignia OBU via GUI: 192.168.1.55
2. Putty Session to Lear RSU: 192.168.1.45
3. On the Lear RSU, check to see if receiving/sending messages:
   * Command: “show application summary”
   * Verified receiving/sending messages
4. On the Commsignia GUI, check to see if receiving/sending messages:
   * Navigate to the V2X-DSRC tab and click on Status. The “sent and recv” areas will show increasing numbers
5. Verified both units are receiving and sending BSM, MAP, TIM, SPAT messages

Lear RSU/Cohda OBU/Siemens m60

1. Putty Session to Lear RSU: 192.168.1.45
2. Putty Session to Cohda OBU: 192.168.1.40
3. Verified GPS signal still running on Cohda OBU
4. Command to see if messages are being transmitted on Cohda OBU:
   * Cd/opt/cohda/application/example1609#
     + ./rc.example1609 start
       - Cd /mnt/rw/log#
     + Log#
       - Cd /[log file name][hit enter]
       - Enter command: “watch ls -als”
5. Command to see if messages are being transmitted on Lear RSU:
   * + - Command: “show application summary”
6. Verified all messages were being sent/received between both Lear RSU and Cohda OBU.
7. Cohda OBU receiving SPAT from Lear RSU:



Lear RSU/Lear OBU/Siemens m60

1. Putty Session to RSU: 192.168.1.45
2. Putty Session to OBU: 192.168.1.50
3. Command: “show application summary”
4. Verified all messages are being sent/received between units.