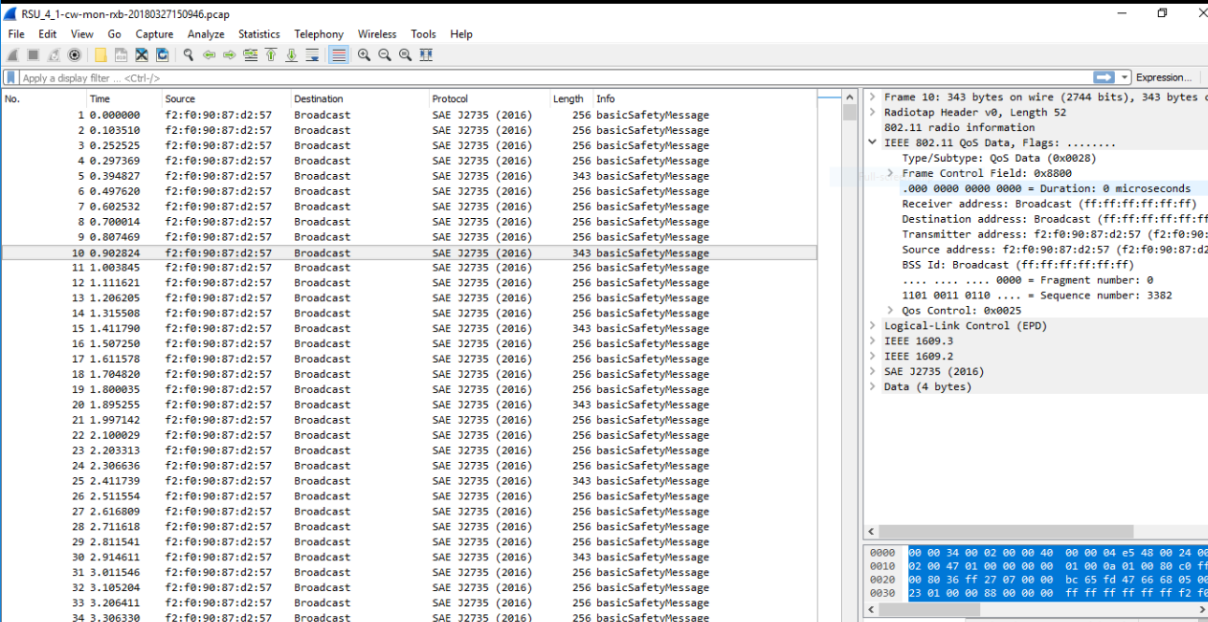
Validation Laboratory Testing

Week of March 26, 2018

**Testing of Units**

Cohda RSU/Cohda OBU/Naztec (re-test using RSU 4.1 application, not example 1609)

1. Putty Session for RSU: 192.168.1.30
2. Putty Session for OBU: 192.168.1.40
3. Reset to factory. The application should auto-start as opt/cohda/application/rc.local is called at boot-up.
   * RSU:
   * Command: “Fim -a factory”
   * Command: “reboot”
4. Check GPS command: “gpspipe -r”
5. Time lock command: “chronyc tracking”
6. Able to see Cohda OBU transmitting BSMs and Cohda RSU receiving BSMs:



1. For SpA, thru Naztec, followed commands using new MIB 3/13/18 received
2. LOST GPS at Line 92 Command:
   * snmpset -v3 -lauthPriv -ursu -Arsuadmin -Xrsuadmin -aSHA -xAES -mRSU-MIB -M/mnt/rw/rsu1609/snmp/mibs -O T 127.0.0.1 iso.0.15628.4.1.99.0 i 2

snmpset -v3 -lauthPriv -ursu -Arsuadmin -Xrsuadmin -aSHA -xAES -mRSU-MIB -M/mnt/rw/rsu1609/snmp/mibs -O T 127.0.0.1 \

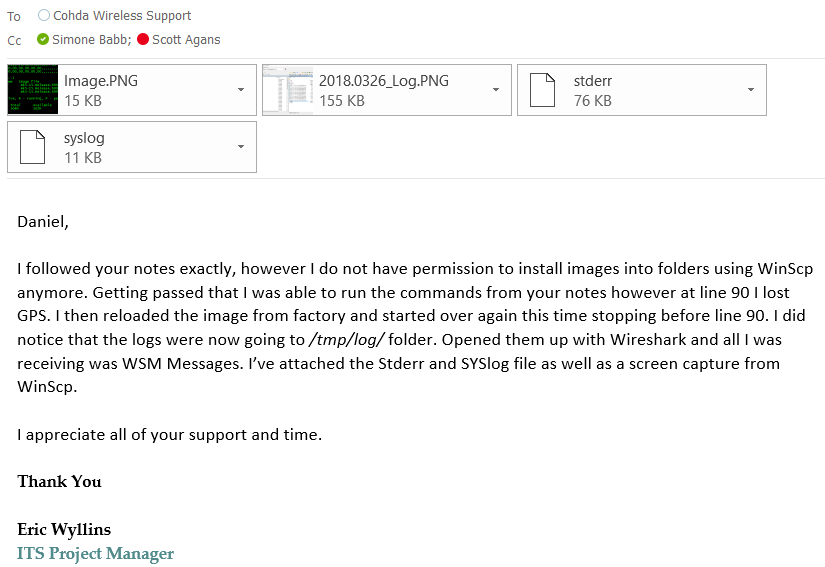
iso.0.15628.4.1.8.1.0 i 2021 \

iso.0.15628.4.1.8.2.0 x 0x000000000000000000000000c0a8014F \

iso.0.15628.4.1.8.4.0 i 1 \

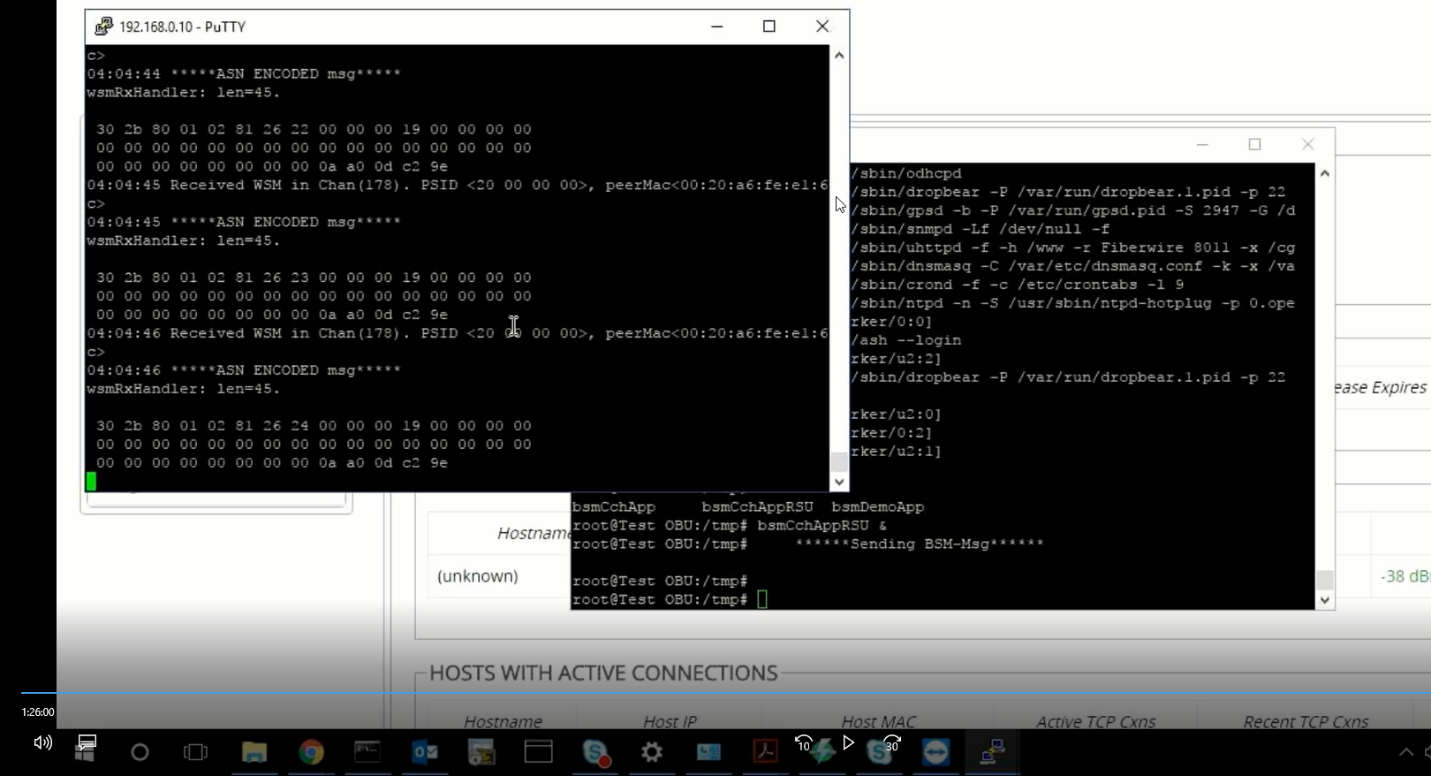
iso.0.15628.4.1.99.0 i 4

1. Restarted from step 3 above and stopped at command line 85.
2. Confirmed gpspipe -r
3. Viewed WinSCP to review pcap file
   * Observed error file growing
   * Unable to get working to see messages being received/transmitted
   * Suspect it may be /mnt/rw file structure lock-out
4. Further testing: Recopy image file:
   * Fim –l lists all the images
   * Fim –a image-b (to select image b)
   * reboot
   * Fim -l (to verify running on image b)
   * Restarted testing using new MIB notes
   * Observed error file growing
   * Unable to get working to see messages being received/transmitted
5. Emailed Daniel w/ Error file 3/26/18.

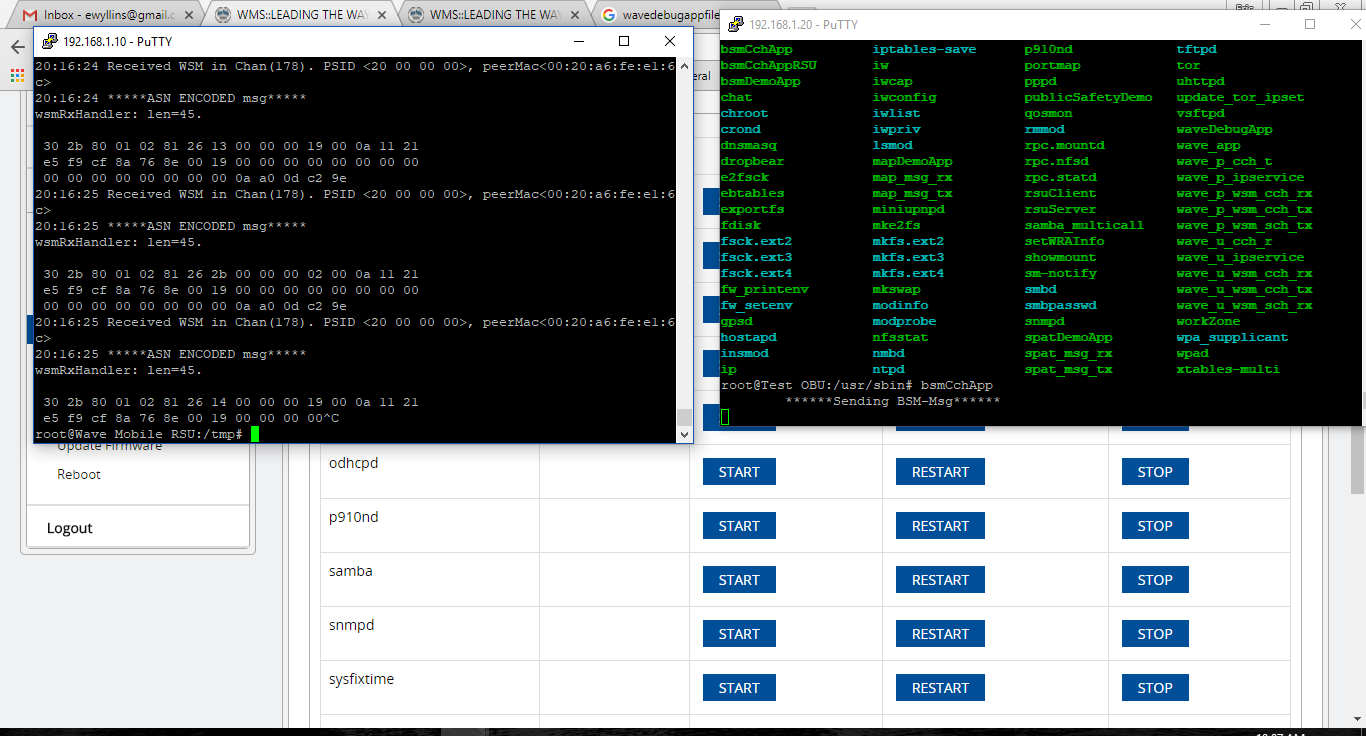


Wavemobile RSU/WaveMobileOBU/Naztec (re-test) 3/26/18

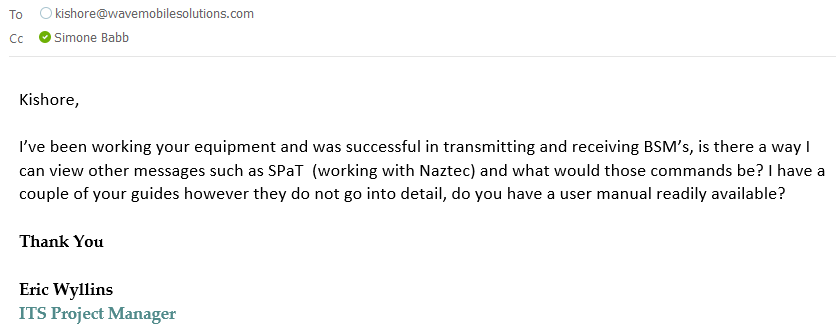
1. Previous testing – was only able to see BSMs. No other messages being transmitted/received
2. Ping GUI RSU 192.168.1.10
3. Ping GUI OBU 192.168.1.20
4. Verified the OBU is reading the RSU
5. Checked to see if signals are being received RSU:
   * GPS Command: “cat /dev/ttyS0”. OBU side it worked. RSU side it didn’t work.
   * Enable the GPS server on the RSU: Command: sty -F /dev/ttyS0 4800
   * GPS Command: “cat /dev/ttyS0”
   * Command: “ps”. RSU Server is running. On the OBU, the bsmCchApp is running.
   * Command: “killall bsmCchAppRSU”
   * On the OBU: cd/usr/sbin#” Command: bsmCchApp &”.
     1. Verified that the OBU is sending BSMs.
6. 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: cd/usr/sbin# rsuServer & and on OBU is: usr/sbin# bsmCchAppRSU
   2. On OBU: 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 waveDebugAppFile.log file)
3. Then run the “tail -f waveDebugAppFile.log”. This verifies OBU was receiving BSMs 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 verified that their units can talk to Intelight controller, and they are still in testing with Naztec.
4. Emailed Kishor on 3/26/18 requesting commands to transmit/receive messages other than BSMs.



WaveMobile RSU/Commsignia OBU/Naztec

1. Can only test status of BSMs due to WaveMobile
2. CommSignia Ping GUI OBU 192.168.1.55
   * V2X-DSRC tab
   * Checked to see if receiving GPS
   * CommSignia sending BSMs
   * CommSignia is not receiving BSMs from WaveMobile even though WaveMobile verified it was sending messages (below)
3. WaveMobile Ping GUI RSU 192.168.1.10

* Checked to see if receiving GPS
  + GPS Command: “cat /dev/ttyS0”
  + Enable the GPS server on the RSU: Command: sty -F /dev/ttyS0 4800
  + GPS Command: “cat /dev/ttyS0”
* Verified that WaveMobile was sending BSMs
  + Cd/usr/sbin# ./bsmCchAppRSU
  + Cd/usr/sbin# ./bsmCchAppRSU &
    - Unable to see CommSignia receiving the BSMs being sent from WaveMobile RSU
* Need to see if WaveMobile is receiving BSMs (what’s being transmitted from the RSU side and what’s being received on the OBU side)
  + Command: ps (to see that rsuServer is running)
  + Usr/sbin# waveDebugApp &
  + Cd /tmp ls
  + Tmp# tail -f bsmCchAppRSU.log
  + Tmp# killall bsmCchAppRSU
  + Tmp# killall bsmCchAppRSU
  + Ps
  + Cd /tmp# tail -f waveDebugAppFile.log
  + WaveMobile returned message “program terminated”

WaveMobile RSU/Lear OBU/Naztec

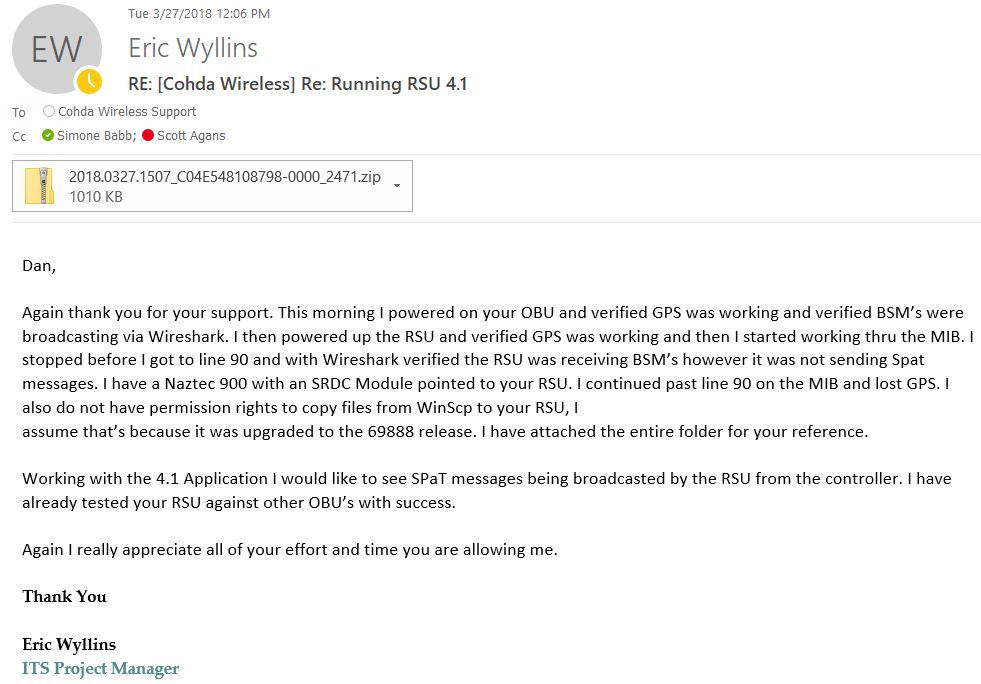
1. Can only test status of BSMs due to WaveMobile
2. Lear Ping OBU 192.168.1.50
   1. Command: show application summary egoprocess
   2. Lear is sending BSMs.
   3. Lear is not receiving BSMs from WaveMobile even though WaveMobile verified it was sending messages (below)
3. WaveMobile Ping GUI RSU 192.168.1.10

* Checked to see if receiving GPS
  + GPS Command: “cat /dev/ttyS0”
  + Enable the GPS server on the RSU: Command: sty -F /dev/ttyS0 4800
  + GPS Command: “cat /dev/ttyS0”
* Verified that WaveMobile was sending BSMs
  + Cd/usr/sbin# ./bsmCchAppRSU
  + Cd/usr/sbin# ./bsmCchAppRSU &
    - Unable to see Lear receiving the BSMs being sent from WaveMobile RSU
* Need to see if WaveMobile is receiving BSMs (what’s being transmitted from the RSU side and what’s being received on the OBU side)
  + Command: ps (to see that rsuServer is running)
  + Usr/sbin# waveDebugApp &
  + Cd /tmp ls
  + Tmp# tail -f bsmCchAppRSU.log
  + Tmp# killall bsmCchAppRSU
  + Tmp# killall bsmCchAppRSU
  + Ps
  + Cd /tmp# tail -f waveDebugAppFile.log
  + WaveMobile returned message that no such file or directory exists

RE-TESTING:

3/27 - Cohda RSU/Cohda OBU/Naztec

1. Re-ran this test
2. Same problem with losing GPS after MIB command line #92. Email sent to Dan with full package error zip file



1. GPS satellites picked up after some time.
2. Command: ./rc.local restart
3. Checked pcap files – still not transmitting SpAT but still transmitting BSMs. Another email error package sent to Dan.

3/27 – 3/30

* Continued and repeat testing across various RSUs/OBUs. Summary of findings:
* Commsignia – interop checks works across all units w/ Naztec.  With regards to m60 however, we are unable to verify SPAT.

* Cohda – when running their package example1609, units work w/ sending & receiving spat from the Cohda RSU, however, outside of their example packet, we are not able to test/verify sending or receiving SPAT with either Naztec or m60.
  + Aslo Cohda RSU is not sending BSMs to Commsignia OBU

* Lear – interop checks works across all units, but like Cohda, it is running on their example packet so we are not able to verify spat. Lear RSU is saying its sending out spat messages when connected to the various OBUs but the OBUs are not seeing spat. Something is wrong here but unable to verify what.

* Wavemobile – unable to test for anything other than BSMs. Vendor was to send commands sheet and/or call Eric but that did not happen.