

# Telemetry Support in RDKB Emulator - User Manual - M4 - 2020

- [Telemetry Introduction:](#)
- [RDKB Telemetry Components:](#)
- [RDKB Telemetry Architecture:](#)
- [XConf Server Configuration procedure:](#)
- [Emulator side process:](#)
- [Telemetry testing process:](#)

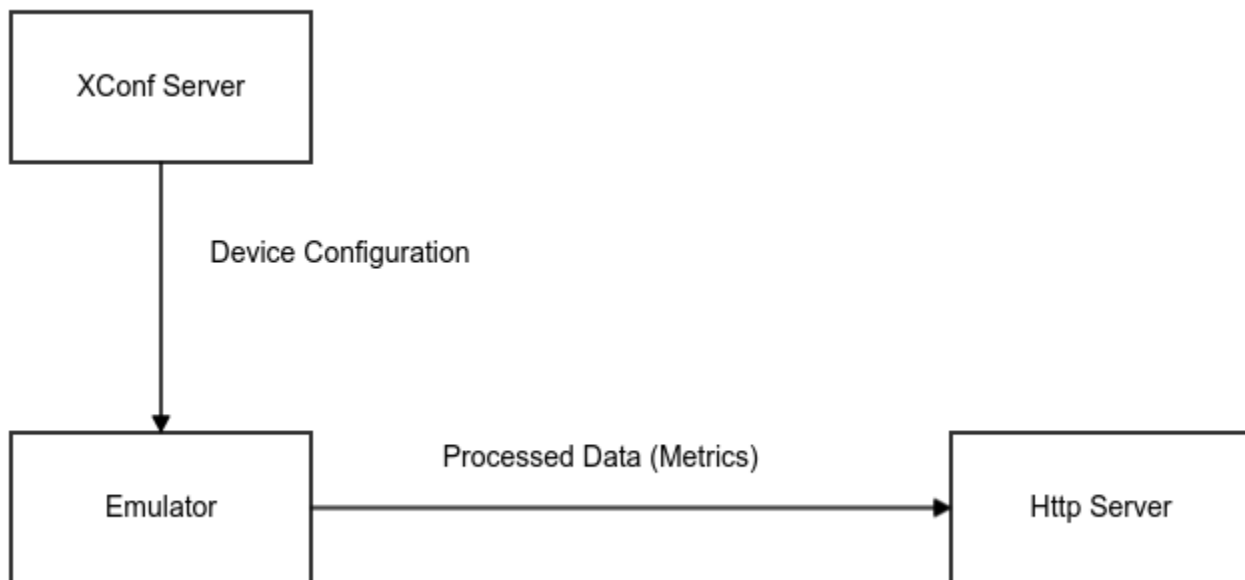
## Telemetry Introduction:

Telemetry is the automatic recording and transmission of data from remote or inaccessible sources to an IT system in a different location for monitoring and analysis.

## RDKB Telemetry Components:

1. Xconf Server
2. Virtual box version 6.0 loaded with RDK Broadband Emulator (EMU) image
3. http Server

## RDKB Telemetry Architecture:



EMU will connect to Xconf Server to get the device configuration information, telemetry profile information and log upload repository (URL of http server). It will search for the markers (contents mentioned in the permanent profile) in the mentioned log file. If it is found in the log file, it will process those information and create a text file and upload that file in the http server. This way all the critical data related to device health will be available on timely basis in the http server for further analysis.

## XConf Server Configuration procedure:

1. Load the RDKB-EMU image in Virtual box and once image boots up, take a note of HWaddr (MAC address) and IP address of interface eth0. Login to the EMU box by doing ssh to eth0 IP address from local host terminal.

```
root@gemux86broadband-morty:~# ifconfig eth0
eth0      Link encap:Ethernet  HWaddr 08:00:27:00:E4:66
          inet addr:192.168.1.103  Bcast:192.168.1.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1060 errors:0 dropped:0 overruns:0 frame:0
          TX packets:372 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:184109 (179.0 KiB)  TX bytes:65863 (64.3 KiB)

root@gemux86broadband-morty:~# cat /version.txt
image: X86EMLRBB_default_20200409084834
BRANCH=default
VERSION=0.0.0.0
SPIN=0
BUILD-TIME="2020-04-09 08:48:34"
Generated on Thu Apr 09 08:48:34 UTC 2020
root@gemux86broadband-morty:~#
```

A secondary terminal window is open, showing the same commands and output as the main terminal.

2. Open the XConf URL page and add the MAC address there.

The XConf web interface is shown with the 'Editing MAC List' page. The 'Name' field contains 'EMU-telem-test1'. The 'Data' field contains '08:00:27:00:E4:66'. The 'Save' button is highlighted.

A terminal window is overlaid on the bottom right, showing the same commands and output as the first screenshot.

3. Create Firmware rule (type: MAC rule) with MAC address of interface eth0 of EMU.

35.155.171.121:9093/admin/ux/#/firmwarerule/edit/d30b6c3a-9abc-4318-bc99-6bff5aa6f00c

## Edit Firmware Rule

**PROPERTIES**

Name
Telem-MacRule

Type
MAC\_RULE

**BUILD CONDITIONS**

eStbMac
IN\_LIST
EMU-telem-test1

AND
OR
☐ not
IS
+

Please provide value for each condition in the rule:  
click condition, enter fixedArg value, then click Plus button to save that condition.  
**Note:** Key value in condition can't be modified. It's not allowed to add new conditions.

**ACTION**

Action Type
RULE

35.155.171.121:9093/admin/ux/#/firmwarerule/edit/d30b6c3a-9abc-4318-bc99-6bff5aa6f00c

**BUILD CONDITIONS**

eStbMac
IN\_LIST
EMU-telem-test1

AND
OR
☐ not
IS
+

Please provide value for each condition in the rule:  
click condition, enter fixedArg value, then click Plus button to save that condition.  
**Note:** Key value in condition can't be modified. It's not allowed to add new conditions.

**ACTION**

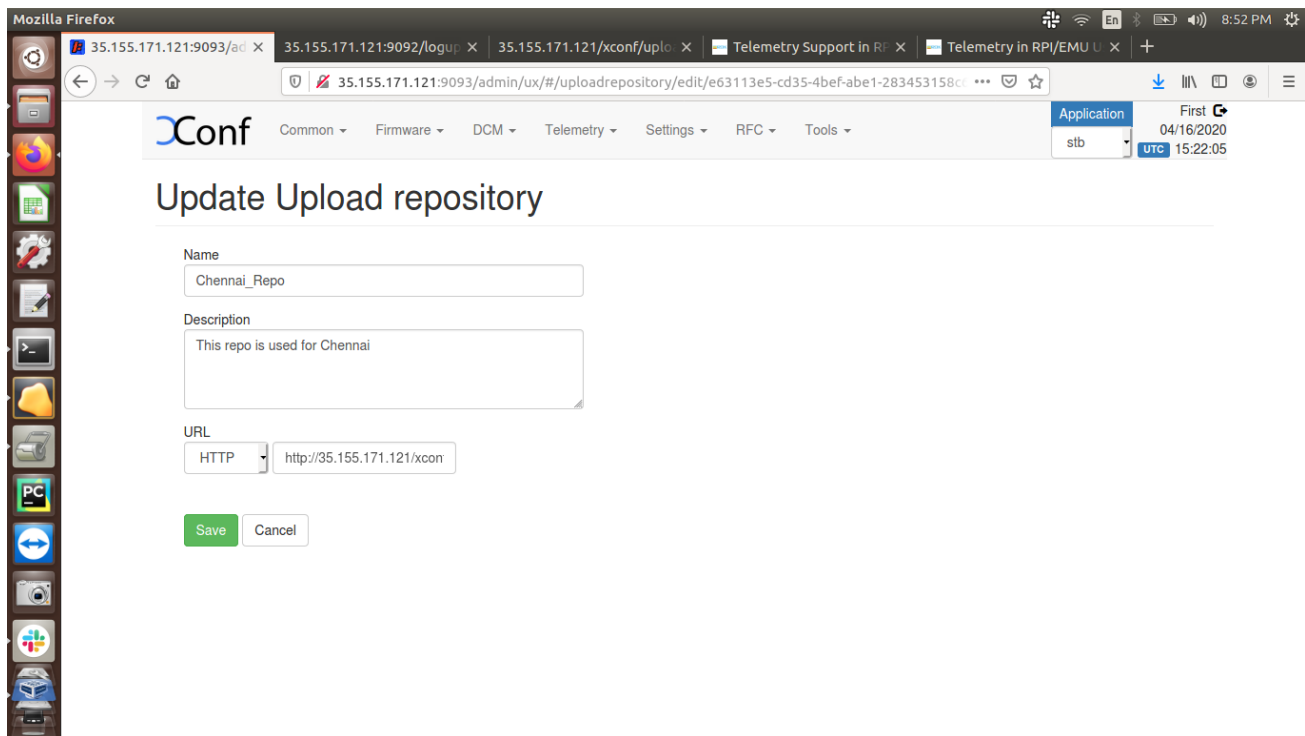
Action Type
RULE

NoOp
false
☐

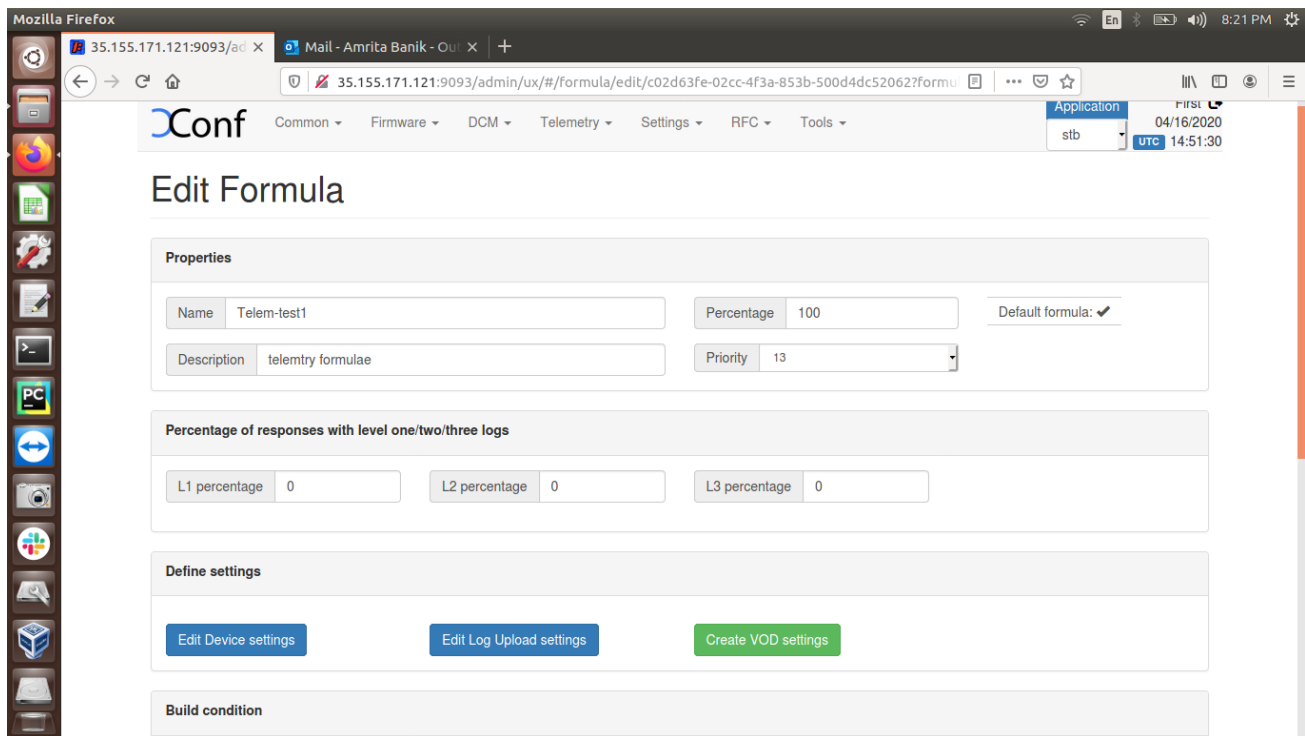
Firmware Config
FWConfig-EMU

Save
Cancel

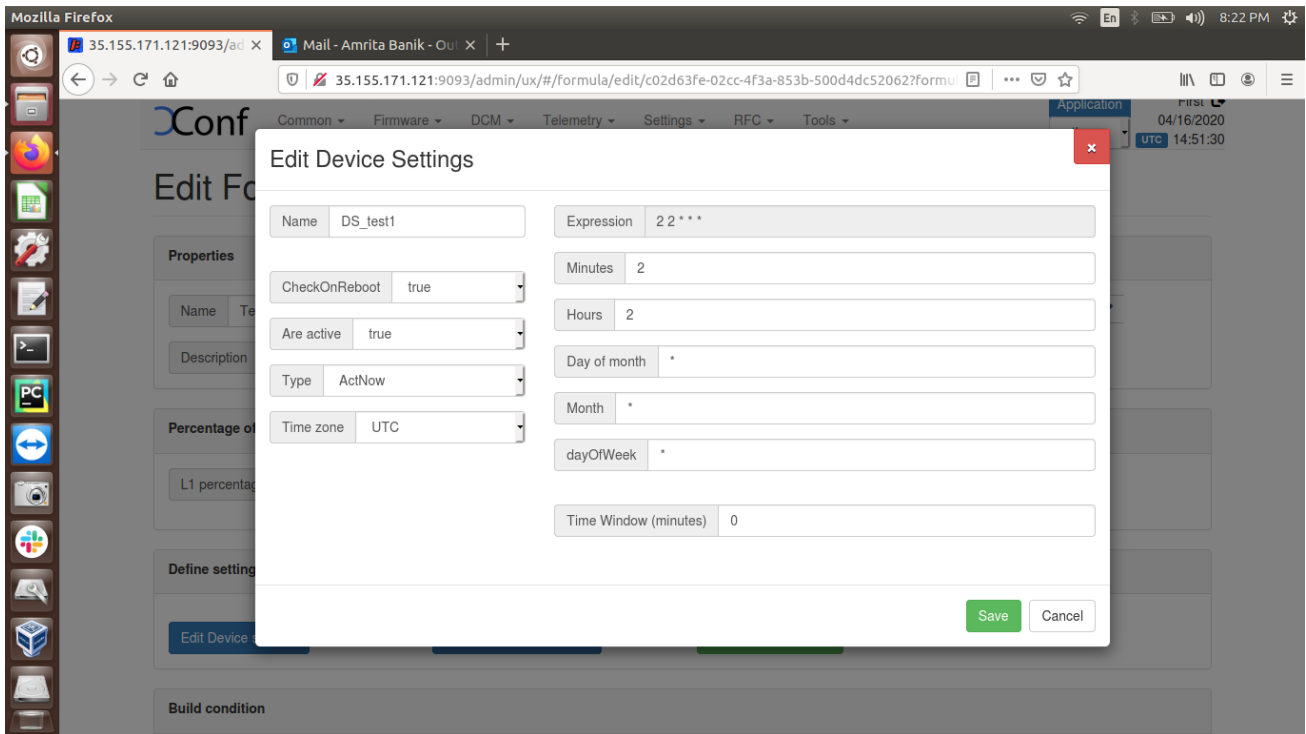
4. Select the Application: 'stb'. Go to DCM Upload repository, create a repository by providing http protocol with http URL.



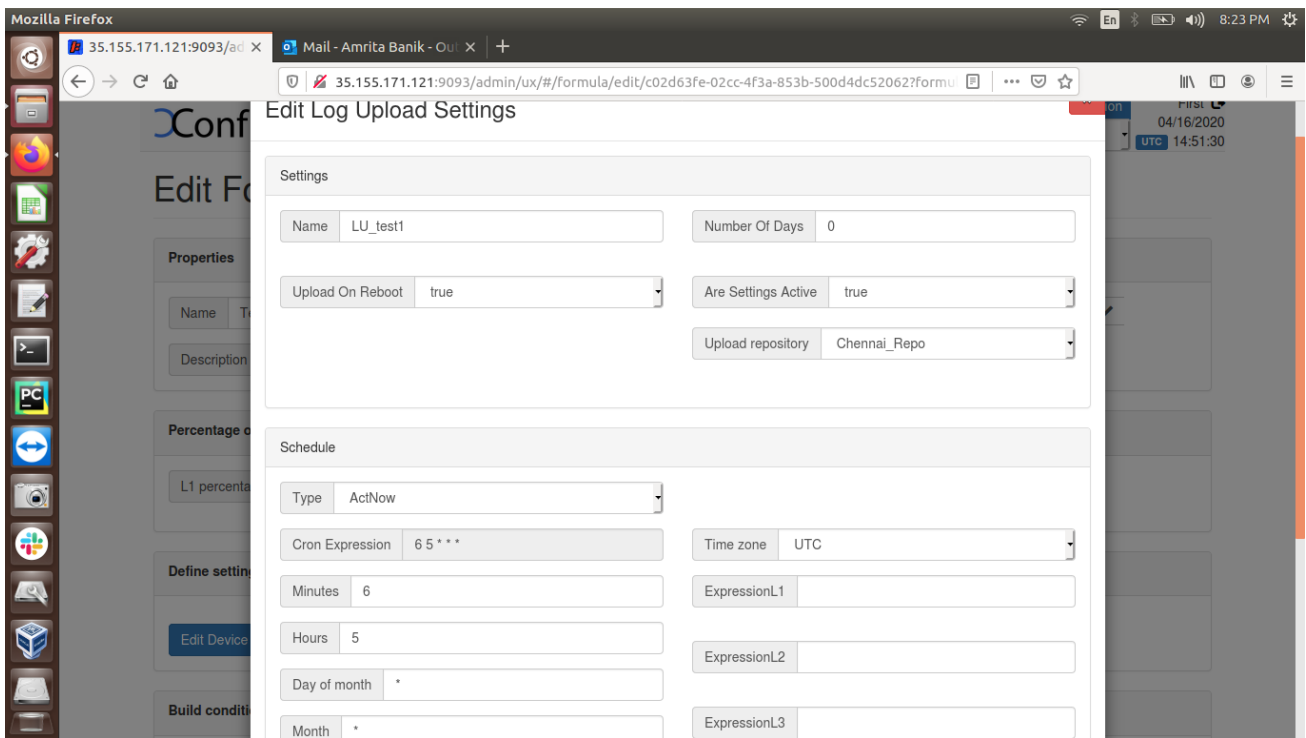
5. Create a formula under DCM Formula Click on 'Create' button



6. Edit Device settings



7. Edit Log Upload settings and save the formula



8. Go to the menu Telemetry and click on Permanent profile and create one with different markers (for ex. PAM, WIFI, PSM etc.) and select particular content (string) from the log file and provide in the "Content" field. Mention the log file name in the "type" field, skip frequency is 0.

**Permanent profile**

Name: EMU-Profile

Schedule: 2

Upload repository: HTTP http://35.155.171.121/xconf

Telemetry profile entries:

Name	Content	Type	Skip frequency
PAM	CosaDmiEthLinkLoadPsm	PAMlog.txt.0	0
WIFI	Wifi Agent loaded success!	WifiLog.txt.0	0
PSM	PSM started	PSMlog.txt.0	0

Save Cancel

#### Telemetry profile entries -

First field is **"Header"** - This is the name for the particular logs collection. This is a custom name and can be decided based on the use case or error condition or any other scenario.

Second field is **"Content"** - This is the "log message string" that appears in the RDK logs.

Third field is **"type"** - This is the name of the log file where the above log message string needs to be searched.

Fourth field is **"Skip frequency"** - This is a skip frequency. It can have values like 0, 1, 2 etc.

0 - This particular log message is never skipped.

1 - Skip every alternate occurrence of this log message.

2 - Skip 2 consecutive log message occurrences and then collect 1 occurrence and then again skip 2 occurrences.

9. Create Targeting Rules from Telemetry menu item, provide the MAC address of eth0 interface and select the Permanent profile created in above step.

**Targeting rule**

Rule name: test\_rule1

estbMacAddress IN\_LIST EMU-telem-test1

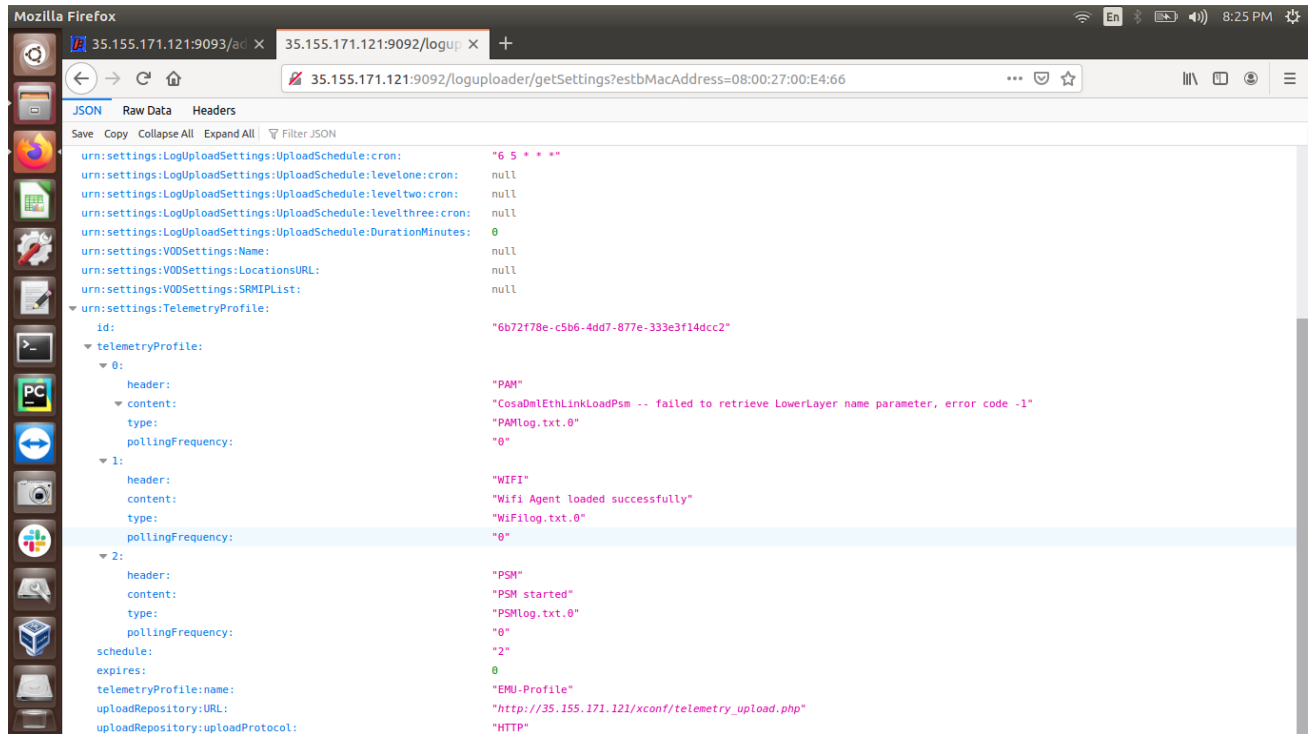
AND OR not [ ] IS [ ]

Bound profile: EMU-Profile

Save Cancel

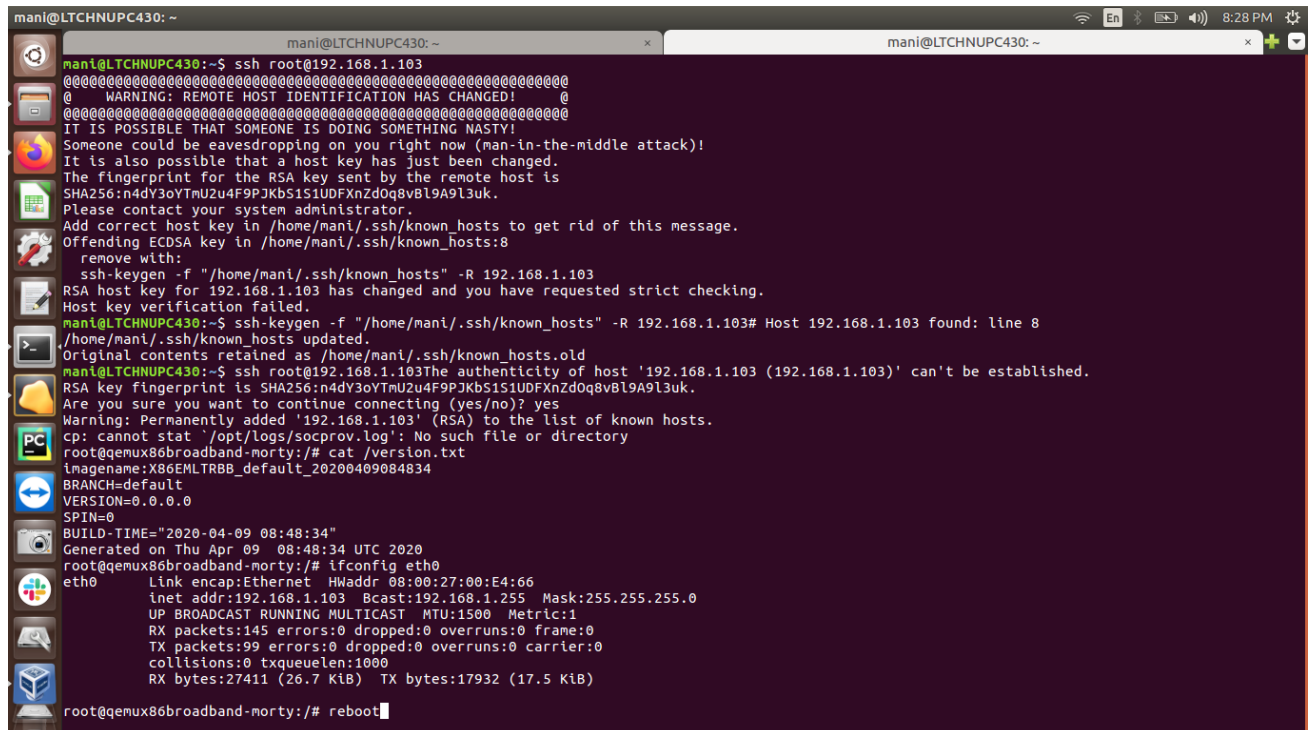
10. Verify that data related to telemetry is displayed under the URL as mentioned : <http://35.155.171.121:9092/loguploader/getSettings?estbMacAddress=<MAC address of eth0 interface>>

The markers (for example, PAM, WIFI, PSM) mentioned in the Permanent profile (ex. EMU-Profile) are listing under Telemetry profile



## Emulator side process:

Login to the EMU using ssh to eth0 IP address from local terminal and perform "reboot" operation



## Telemetry testing process:

1. Verify the Telemetry log file (telemetry.log) is created under the path `cd /rdklogs/logs`. Content of this log file will display the log upload URL with MAC address of eth0 interface and model (for ex. EMULATOR)

```
mani@LTCHNUPC430: ~  
200409-15:16:48.992871 Starting execution of DCMscript.sh  
200409-15:16:49.020211 URL: http://35.155.171.121:9092/loguploader/getSettings  
200409-15:16:49.053924 BOOT_FLAG: 0  
200409-15:16:49.059952 CHECK_ON_REBOOT: 1  
200409-15:16:49.124606 waiting for IP  
200409-15:16:51.615380 waiting for IP  
200409-15:16:53.644003 waiting for IP  
got IP in eth0-----  
call sendHttpRequestToServer-----  
filename--args in sendHttpRequestToServer-----/nvram/DCMresponse.txt  
url---args in sendHttpRequestToServer-----http://35.155.171.121:9092/loguploader/getSettings  
-----CURL_CMD:curl -w %{http_code} 'http://35.155.171.121:9092/loguploader/getSettings?estbMacAddress=08:00:27:00:E4:66&model=EMULATOR' -o /nvr  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec0  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec1  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec2  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec3  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec4  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec5  
sleep for :-----30  
Trying to Retry connection with XCONF server...  
Error in establishing communication with xconf server.  
Trying to Retry connection with XCONF server...  
Error in establishing communication with xconf server.  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec6  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec7  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec8  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec9  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec10  
Trying to check if rtl_json files exists ...  
still file is not there sleep for 5 sec11  
- telemetry.log 1/849 0%
```

2. Go to the URL of http server (for ex. <http://35.155.171.121/xconf/upload>) and search with MAC address of eth0 interface (for .tgz - search with colon in the MAC address and for .json, search removing the colons in the MAC address) verify that .tgz file and .json file with MAC Address of eth0 interface is mentioned in the file name, and these files are available in that URL page. (Note: It will take some time to upload the .tgz log files and .json file in the http server)

3. Download the .tgz file then extract and verify all the device log files are available there.

Firefox Web Browser

35.155.171.121:9093/ad x 35.155.171.121:9092/logup: X Index of /xconf/upload x +

35.155.171.121/xconf/upload/

## Index of /xconf/upload

Name	Last modified	Size	Description
<a href="#">Parent Directory</a>	-	-	-
<a href="#">001018000000_Logs_04-15-20-01-48AM.tgz</a>	2020-04-15 17:17	108K	
<a href="#">001018000000_Logs_04-15-20-05-42PM.tgz</a>	2020-04-15 17:43	98K	
<a href="#">001018000000_Logs_04-15-20-06-07PM.tgz</a>	2020-04-15 18:32	96K	
<a href="#">001018000000_Logs_04-15-20-07-16PM.tgz</a>	2020-04-15 19:17	83K	
<a href="#">001018000000_Logs_04-15-20-10-57PM.tgz</a>	2020-04-15 22:58	99K	
<a href="#">001018000000_Logs_04-16-20-01-12AM.tgz</a>	2020-04-16 01:13	77K	
<a href="#">001018000000_Logs_04-16-20-02-16AM.tgz</a>	2020-04-16 02:17	71K	
<a href="#">001018000000_Logs_04-16-20-12-07AM.tgz</a>	2020-04-16 00:08	77K	
<a href="#">08:00:27:00:E4:66-Logs-04-09-20-03-35PM.tgz</a>	2020-04-09 15:37	20K	
<a href="#">08:00:27:00:E4:66-Logs-04-16-20-11-19AM.tgz</a>	2020-04-16 11:20	17K	
<a href="#">08:00:27:40:F2:38-Logs-04-08-20-04-07PM.tgz</a>	2020-04-08 16:09	18K	
<a href="#">08:00:27:40:F2:38-Logs-04-08-20-04-14PM.tgz</a>	2020-04-08 16:16	11K	
<a href="#">08:00:27:48:A2:73-Logs-04-08-20-05-30PM.tgz</a>	2020-04-08 17:32	18K	
<a href="#">08:00:27:48:A2:73-Logs-04-08-20-05-43PM.tgz</a>	2020-04-08 17:45	11K	
<a href="#">08:00:27:48:A2:73-Logs-04-09-20-03-30PM.tgz</a>	2020-04-09 15:32	11K	
<a href="#">08:00:27:48:A2:73-Logs-04-09-20-04-01PM.tgz</a>	2020-04-09 16:02	15K	
<a href="#">08:00:27:48:A2:73-Logs-04-09-20-05-26PM.tgz</a>	2020-04-09 17:27	12K	
<a href="#">08:00:27:F8:7D:FF-Logs-04-08-20-02-45PM.tgz</a>	2020-04-08 14:47	11K	
<a href="#">08:00:27:F8:7D:FF-Logs-04-08-20-02-54PM.tgz</a>	2020-04-08 14:56	11K	

08:00:27:00:E4:66 Highlight All Match Case Match Diacritics Whole Words 1 of 2 matches X

Opening 08\_00\_27\_00\_E4\_66-Logs-04-16-20-11-19AM.tgz

You have chosen to open:

08\_00\_27\_00\_E4\_66-Logs-04-16-20-11-19AM.tgz  
which is: Gzip archive (16.9 KB)  
from: http://35.155.171.121

What should Firefox do with this file?

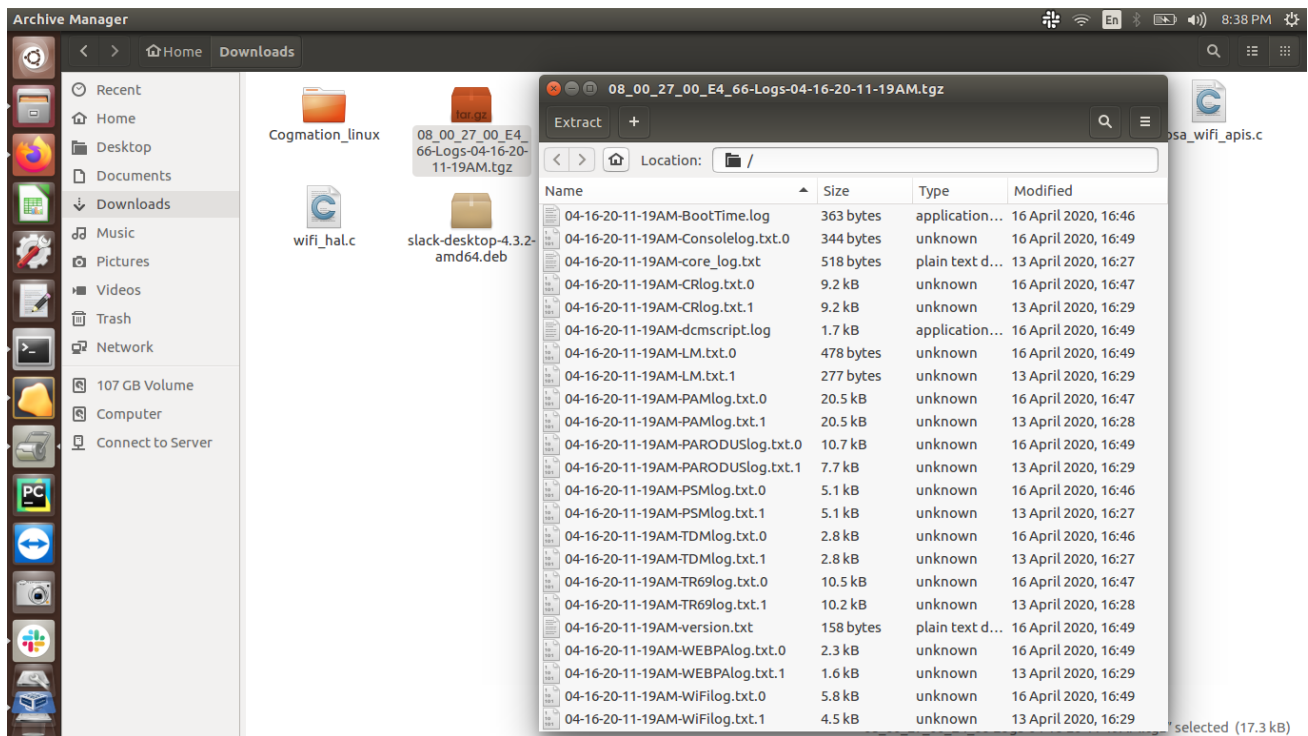
☐ Open with Archive Manager (default)

☒ Save File

☐ Do this automatically for files like this from now on.

Cancel OK





4. Open the respective .json file in the browser and verify the markers as mentioned in the Permanent profile and IP address of EMU box and image version will be displayed:

[/http://35.155.171.121/xconf/upload/<MAC address of eth0>\\_TELE\\_04-16-2020-03-01PM.json](http://35.155.171.121/xconf/upload/<MAC address of eth0>_TELE_04-16-2020-03-01PM.json)

