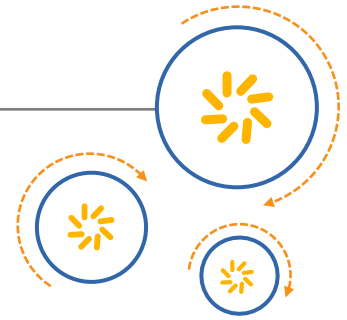




Qualcomm Technologies, Inc.



DragonBoard™ 410c based on Qualcomm® Snapdragon™ 410E processor

Setting Wi-Fi MAC Address on DragonBoard™ 410c Application Note

September 2016

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Questions or comments: <https://www.96boards.org/DragonBoard410c/forum>

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Revision history

Revision	Date	Description
B	September 2016	Update to 'E' part
A	November 13, 2015	Initial release

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1 Introduction

1.1 Purpose

All internet connected devices have a globally unique address used for Media Access Control. This “MAC” address, sometimes referred to as the physical address, serves as your device’s unique identity when accessing a network. The MAC address can be used for internet packet routing, this allows messages to be moved through the network to a specific device. If multiple devices share the same MAC address, packets may be directed to the wrong device.

Just like a serial number, DragonBoard™ 410c devices are also given a unique MAC address during production. This 12-digit address is printed on a sticker, and can be found below the analog expansion header on the reverse side of your board.

This document shows users how to program a unique MAC address into a DragonBoard 410c board. If at any point the board’s flash memory is rewritten (changing between operating systems, etc.) the MAC address will once again need to be reprogrammed.

1.2 Acronyms, abbreviations, and terms

Table 1-1 provides definitions for the acronyms, abbreviations, and terms used in this document.

Table 1-1 Acronyms, abbreviations, and terms

Term	Definition
MAC	Media Access Control
OTA	Over The Air
WLAN	Wireless Local Area Network

1.3 Additional information

For additional information, go to <http://www.96boards.org/db410c-getting-started/>.

2 Wi-Fi MAC Address Programming

This Wi-Fi MAC address programming section describes how to write the MAC address to the DragonBoard 410c device manually in order to have a unique MAC address.

2.1 Setting the Wi-Fi MAC address on DragonBoard 410c

2.1.1 Android

Each board needs a unique MAC address so the network can talk to a specific board. You need to set the MAC address for your board. You can find the MAC address on a sticker on the back of the board. The MAC address will be 12 characters long, where the characters are from 0-9 and A-F. There may be colon ':' characters between pairs of characters.

To set the Wi-Fi MAC address:

1. On the board, turn off Wi-Fi.
2. Connect the host computer to the DragonBoard 410c board and run the following commands:

```
adb devices
adb root
adb remount
adb pull /data/misc/wifi/WCNSS_qcom_cfg.ini
```

3. With a local editor, edit the file `WCNSS_qcom_cfg.ini` and change the MAC address:

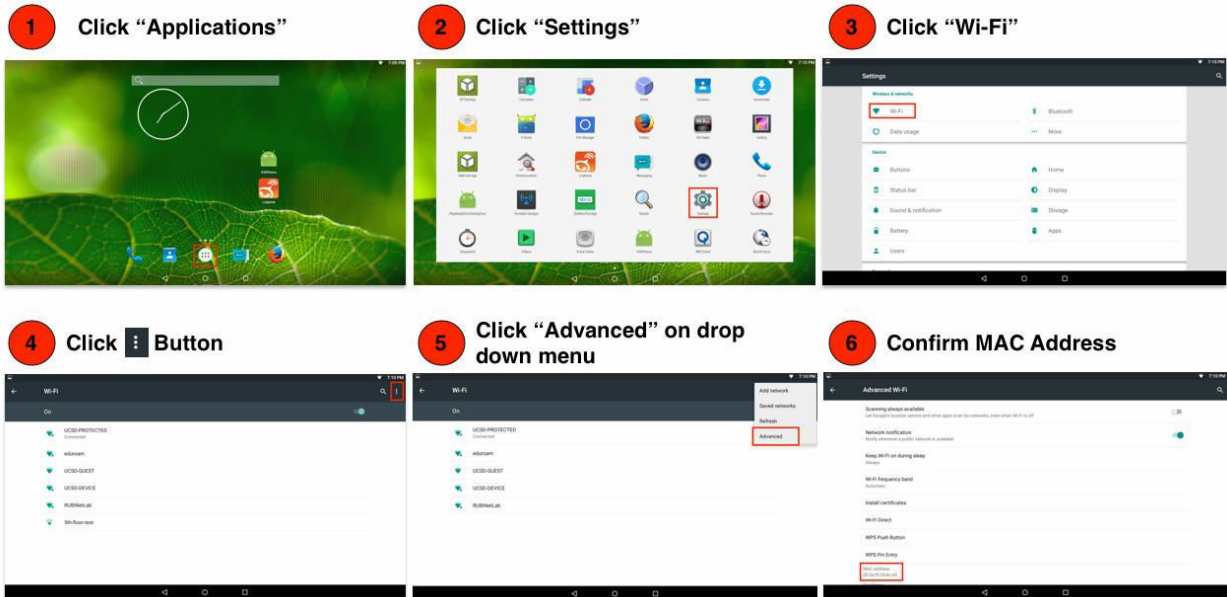
```
# Each byte of MAC address is represented in Hex format as XX
Intf0MacAddress=8CFDF00123EA
Intf1MacAddress=8CFDF00123E9
Intf2MacAddress=8CFDF00123E8
Intf3MacAddress=8CFDF00123E7
```

NOTE: The `Intf0MacAddress` should match the address printed on your board (all uppercase letters, with the colons removed). The last character of the remaining addresses should each be one letter or digit smaller than the preceding one.

4. Write the MAC address back to the board and reboot:

```
adb push WCNSS_qcom_cfg.ini /data/misc/wifi/
adb reboot
```
5. Use one of the following methods to confirm the MAC address has been changed (you have the option to check via the DragonBoard 410c connected display or through your host computer command line).

- ❑ Option 1. On the board, look at the Wi-Fi advanced settings and ensure that your MAC address is correct (as seen on the sticker).



- ❑ Option 2. This method allows you to continue working in the shell (through the host computer) without needing to hook up a display or mouse to confirm the changed MAC address.
 - Ensure the DragonBoard 410c device Wi-Fi is connected.
 - From Android shell run: `netcfg`.

`netcfg` provides information on the current status of a specific WLAN/Ethernet interface. The output will include information such as:

\$ `wlan0 UP [IP] [NETMASK] [MAC]`, etc.

```
[shell@mmsm8916_64:/ $ netcfg
```

```
wlan0    UP                137.110.83.140/24  0x00001043 00:0a:f5:24:8c:60
sit0     DOWN              0.0.0.0/0         0x00000080 00:00:00:00:00:00
p2p0     UP                0.0.0.0/0         0x00001003 02:0a:f5:24:8c:60
lo       UP                127.0.0.1/8      0x00000049 00:00:00:00:00:00
dummy0   DOWN              0.0.0.0/0         0x00000082 0a:b4:ba:cd:ff:25
```

NOTE: If you are unable to follow this procedure, re-image your DragonBoard 410c device and repeat this section.

2.1.2 Linux

If you are running Linux based Ubuntu release 15.07 or newer, your board should already be equipped with a unique MAC address. Therefore, you should not experience a random MAC address issue, as with prior releases. Instructions below are only relevant for those who wish to use the DragonBoard 410c assigned MAC address. You can find the DragonBoard 410c MAC address on a sticker on the back of your board. The MAC address will be 12 characters long,

where the characters are from 0-9 and A-F. There may be colon ':' characters between pairs of characters.

To set the Wi-Fi MAC address:

1. From a command prompt, run the following command (MAC address is in lowercase):

```
sudo su
echo "8d:fd:f0:01:22:d7" > /lib/firmware/wlan/macaddr0
```

Run the 'echo' command once, using the MAC address from the sticker on the DragonBoard 410c device.

2. Reboot the device.
3. Validate the MAC address across reboots by entering the following command:

```
root@linaro-developer:~$ ifconfig wlan0
```

Observe the print out and confirm the MAC address.

```
wlan0      Link encap:Ethernet WHaddr 8d:fd:f0:01:22:d7
           inet addr:A:B:C:D Bcast:E:F:G:H Mask:I:J:K:H
           inet6 addr: fe00::8efd:f0ff:fe01:7a5b/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
           RX packets:22 errors:0 dropped:0 overruns:0 frame:0
           TX packets:22 errors:0 dropped:0 overruns:0 carrier:0
           Collisions:0 txqueuelen:1000
           RX bytes:8264 (8.2 KB) TX bytes:8145 (8.1 KB)
```

NOTE: If you are unable to follow this procedure, re-image your DragonBoard 410c device and repeat this section.

For Linux based **Ubuntu 15.07 and newer**, if this procedure is not followed, onboard software will generate a MAC address for you. This MAC address is expected to be unique and **should not** cause any issues.

For Linux based **Ubuntu older than 15.07**, if this procedure is not followed, onboard software will recognize that the MAC address has not yet been set. A temporary MAC address will be generated, which is not guaranteed to be globally unique. The use of this address **may cause** unexpected behaviors when accessing a network

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