



# **Embedded System Architecture 2**

## **LAB 5**

**FALL 2019**

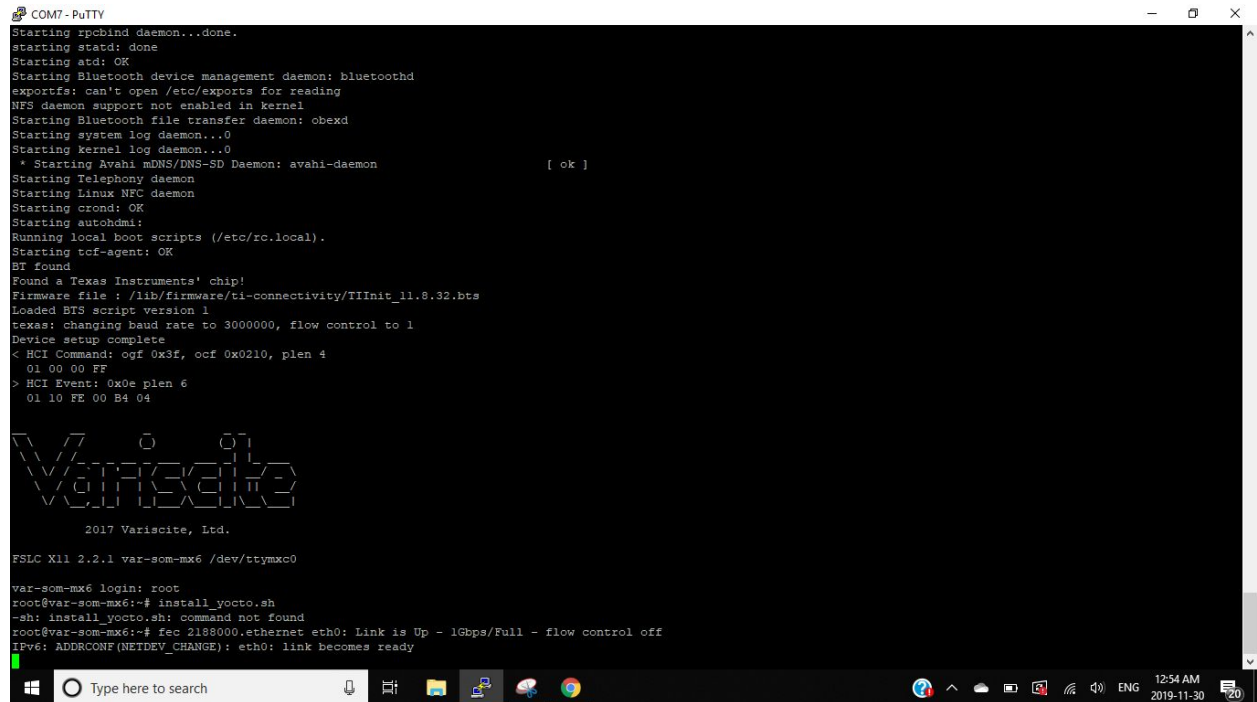
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## **Testing Ethernet connection**



```
COM7 - PuTTY
Starting rpcbind daemon...done.
starting statd: done
Starting atd: OK
Starting Bluetooth device management daemon: bluetoothd
exportfs: can't open /etc/exports for reading
NFS daemon support not enabled in kernel
Starting Bluetooth file transfer daemon: obexd
Starting system log daemon...0
Starting kernel log daemon...0
* Starting Avahi mDNS/DNS-SD Daemon: avahi-daemon [ ok ]
Starting Telephony daemon
Starting Linux NFC daemon
Starting crond: OK
Starting autohdmi:
Running local boot scripts (/etc/rc.local).
Starting tcf-agent: OK
BT Found
Found a Texas Instruments' chip!
Firmware file : /lib/firmware/ti-connectivity/TTInit_11.8.32.bts
Loaded BTS script version 1
Texas: changing baud rate to 3000000, flow control to 1
Device setup complete
< HCI Command: ocf 0x3f, ocf 0x0210, plen 4
01 00 00 FF
> HCI Event: 0x0e plen 6
01 10 FE 00 B4 04


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FSLC X11 2.2.1 var-som-mx6 /dev/ttymx0

var-som-mx6 login: root
root@var-som-mx6:~# install_yocto.sh
-sh: install_yocto.sh: command not found
root@var-som-mx6:~# fec 2188000.ethernet eth0: Link is Up - 1Gbps/Full - flow control off
IPv6: ADDRCONF(NETDEV_CHANGE): eth0: link becomes ready
```

## Testing Wireless LAN

Setting up:

 COM7 - PuTTY

```
root@var-som-mx6:~# cd /usr/bin/wlconf/
root@var-som-mx6:/usr/bin/wlconf# ifconfig wlan0 up
wlcure: PHY firmware version: Rev 8.2.0.0.242
wlcure: firmware booted (Rev 8.9.0.0.79)
IPv6: ADDRCONF(NETDEV_UP): wlan0: link is not ready
root@var-som-mx6:/usr/bin/wlconf# ./configure-device.sh

Please provide the following information.

Are you using a TI module? [y/n] : y
What is the chip flavor? [1801/1805/1807/1831/1835/1837 or 0 for unknown] : 1801
Should SISO40 support be applied? [y/n] : y
wlcure: down

The device has been successfully configured.
TI Module: y
Chip Flavor: 1801
Number of 2.4GHz Antennas Fitted: 1
Number of 5GHz Antennas Fitted: 0
Diversity Support: n
SISO40 Support: y
Japanese Standards Applied: n
Class 2 Permissive Change (C2PC) Applied: n

root@var-som-mx6:/usr/bin/wlconf# wlcure: wll8xx HW: 183x or 180x, PG 2.2 (ROM 0x11)
wlcure: loaded
wlcure: driver version: R8.7_SP2
wlcure: PHY firmware version: Rev 8.2.0.0.242
wlcure: firmware booted (Rev 8.9.0.0.79)
IPv6: ADDRCONF(NETDEV_UP): wlan0: link is not ready
^C
root@var-som-mx6:/usr/bin/wlconf# ./configure-device.sh

Please provide the following information.

Are you using a TI module? [y/n] : y
What is the chip flavor? [1801/1805/1807/1831/1835/1837 or 0 for unknown] : 1837
Should Japanese standards be applied? [y/n] : y
How many 2.4GHz antennas are fitted? [1/2] : 1
How many 5GHz antennas are fitted (using 2 antennas requires a proper switch)? [0/1/2] : 1
Should SISO40 support be applied? [y/n] : y
wlcure: down
```

Testing :

```
root@var-som-mx6:/usr/bin/wlconf# ifconfig wlan0 up
root@var-som-mx6:/usr/bin/wlconf# iw dev wlan0 scan | grep SSID
SSID: UNDA'S Wi-Fi
SSID: \x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00
SSID:
Extended capabilities: HT Information Exchange Supported, SSID List, 6
SSID: UNDA'S Wi-Fi
Extended capabilities: HT Information Exchange Supported, SSID List, 6
```

```
COM7 - PuTTY
TI Module: y
Chip Flavor: 1837
Number of 2.4GHz Antennas Fitted: 1
Number of 5GHz Antennas Fitted: 1
Diversity Support: y
SISO40 Support: y
Japanese Standards Applied: y
Class 2 Permissive Change (C2PC) Applied: n

root@var-som-mx6:/usr/bin/wlconf# wlcore: wll8xx HW: 183x or 180x, PG 2.2 (ROM 0x11)
wlcore: loaded
wlcore: driver version: R8.7_5P2
wlcore: PHY firmware version: Rev 8.2.0.0.242
wlcore: firmware booted (Rev 8.9.0.0.79)
IPv6: ADDRCONF(NETDEV_UP): wlan0: link is not ready
^C
root@var-som-mx6:/usr/bin/wlconf# ifconfig wlan0 up
root@var-som-mx6:/usr/bin/wlconf# iw dev wlan0 scan | grep SSID
SSID: UNDA'S Wi-Fi
SSID: \x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00
SSID:
Extended capabilities: HT Information Exchange Supported, SSID List, 6
SSID: UNDA'S Wi-Fi
Extended capabilities: HT Information Exchange Supported, SSID List, 6
root@var-som-mx6:/usr/bin/wlconf# connmanctl disable wifi
Error wifi: Already disabled
root@var-som-mx6:/usr/bin/wlconf# nmcli radio wifi off
~sh: nmcli: command not found
root@var-som-mx6:/usr/bin/wlconf# mv /etc/wpa_supplicant.conf /etc/wpa_supplicant.conf.org
root@var-som-mx6:/usr/bin/wlconf# ifconfig eth0 down
root@var-som-mx6:/usr/bin/wlconf# IPv6: ADDRCONF(NETDEV_UP): eth0: link is not ready
^C
root@var-som-mx6:/usr/bin/wlconf# udhcpc -i wlan0
udhcpc (v1.24.1) started
Sending discover...
Sending discover...
Sending discover...
Sending discover...
Sending discover...
Sending discover...
Sending discover...
Sending discover...
Sending discover...
Sending discover...
```

```
COM7 - PuTTY
Texas: changing baud rate to 3000000, flow control to 1
Device setup complete
< HCI Command: ocf 0x3f, ocf 0x0210, plen 4
01 00 00 FF
> HCI Event: 0x0e plen 6
01 10 FE 00 B4 04

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FSLC X11 2.2.1 var-som-mx6 /dev/ttyMX0

var-som-mx6 login: root
root@var-som-mx6:~# install_yocto.sh
~sh: install_yocto.sh: command not found
root@var-som-mx6:~# ifconfig eth0: Link is Up - 1Gbps/Full - flow control off
IPv6: ADDRCONF(NETDEV_CHANGE): eth0: link becomes ready
^C
root@var-som-mx6:~# ifconfig
eth0      Link encap:Ethernet  HWaddr f8:dc:7a:11:41:c7
          inet addr:192.168.2.200  Bcast:192.168.2.255  Mask:255.255.255.0
          inet6 addr: fe80::fadc:7aff:fe11:41cf/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:387 errors:0 dropped:0 overruns:0 frame:0
          TX packets:96 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:56309 (54.9 KiB)  TX bytes:18889 (18.4 KiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:2 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:140 (140.0 B)  TX bytes:140 (140.0 B)

root@var-som-mx6:~#
```

## Audio record/play

List device names for playback and audio playback:

```
COM7 - PuTTY
Running local boot scripts (/etc/rc.local).
Starting tcf-agent: OK
BT found
Found a Texas Instruments' chip!
Firmware file : /lib/firmware/ti-connectivity/TIInit_11.8.32.bts
Loaded BTS script version 1
texas: changing baud rate to 3000000, flow control to 1
Device setup complete
< HCI Command: ogf 0x3f, ocf 0x0210, plen 4
  01 00 00 FF
> HCI Event: 0x0e plen 6
  01 10 FE 00 B4 04

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FSLC X11 2.2.1 var-som-mx6 /dev/ttyMXC0

var-som-mx6 login: root
root@var-som-mx6:~# aplay -L
null
    Discard all samples (playback) or generate zero samples (capture)
pulse
    PulseAudio Sound Server
sysdefault:CARD=tlv320aic3xaudi
    tlv320aic3x-audio,
    Default Audio Device
root@var-som-mx6:~# amixer set PCM 127
Simple mixer control 'PCM',0
  Capabilities: pvolume
  Playback channels: Front Left - Front Right
  Limits: Playback 0 - 127
  Mono:
    Front Left: Playback 127 [100%] [0.00dB]
    Front Right: Playback 127 [100%] [0.00dB]
root@var-som-mx6:~# aplay /usr/share/sounds/alsa/Front_Center.wav
Playing WAVE '/usr/share/sounds/alsa/Front_Center.wav' : Signed 16 bit Little Endian, Rate 48000 Hz, Mono
root@var-som-mx6:~#
```

Audio record and play, Line-in jack:

```
root@var-som-mx6:~# arecord -f cd -d 10 -D hw:0,0 test.wav
Recording WAVE 'test.wav' : Signed 16 bit Little Endian, Rate 44100 Hz, Stereo
root@var-som-mx6:~# aplay test.wav
Playing WAVE 'test.wav' : Signed 16 bit Little Endian, Rate 44100 Hz, Stereo
root@var-som-mx6:~# amixer
Simple mixer control 'PCM',0
  Capabilities: pvolume
  Playback channels: Front Left - Front Right
  Limits: Playback 0 - 127
  Mono:
    Front Left: Playback 127 [100%] [0.00dB]
    Front Right: Playback 127 [100%] [0.00dB]
Simple mixer control 'Line',0
  Capabilities: pswitch
  Playback channels: Front Left - Front Right
  Mono:
    Front Left: Playback [on]
    Front Right: Playback [on]
Simple mixer control 'Line DAC',0
  Capabilities: pvolume
  Playback channels: Front Left - Front Right
  Limits: Playback 0 - 118
  Mono:
    Front Left: Playback 71 [60%] [-23.50dB]
    Front Right: Playback 71 [60%] [-23.50dB]
Simple mixer control 'Line Line2 Bypass',0
  Capabilities: volume
  Playback channels: Front Left - Front Right
  Capture channels: Front Left - Front Right
  Limits: 0 - 118
    Front Left: 71 [60%] [-23.50dB]
    Front Right: 71 [60%] [-23.50dB]
Simple mixer control 'Line PGA Bypass',0
  Capabilities: volume
```

Advanced controls, save and restore audio settings:

```
root@var-som-mx6:~# amixer sget 'HP DAC' 117 117
Simple mixer control 'HP DAC',0
  Capabilities: pvolume
  Playback channels: Front Left - Front Right
  Limits: Playback 0 - 118
  Mono:
    Front Left: Playback 118 [100%] [0.00dB]
    Front Right: Playback 118 [100%] [0.00dB]
root@var-som-mx6:~# amixer sget 'HP DAC'
Simple mixer control 'HP DAC',0
  Capabilities: pvolume
  Playback channels: Front Left - Front Right
  Limits: Playback 0 - 118
  Mono:
    Front Left: Playback 118 [100%] [0.00dB]
    Front Right: Playback 118 [100%] [0.00dB]
root@var-som-mx6:~# amixer sset 'HP DAC' 117 117
Simple mixer control 'HP DAC',0
  Capabilities: pvolume
  Playback channels: Front Left - Front Right
  Limits: Playback 0 - 118
  Mono:
    Front Left: Playback 117 [99%] [-0.50dB]
    Front Right: Playback 117 [99%] [-0.50dB]
root@var-som-mx6:~# alsactl store -f 123.conf
root@var-som-mx6:~# alsactl restore -f 123.conf
root@var-som-mx6:~#
```



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