WICED Studio

WICED WFA Sigma DUT Endpoint

Doc. No.: 002-20871 Rev. **

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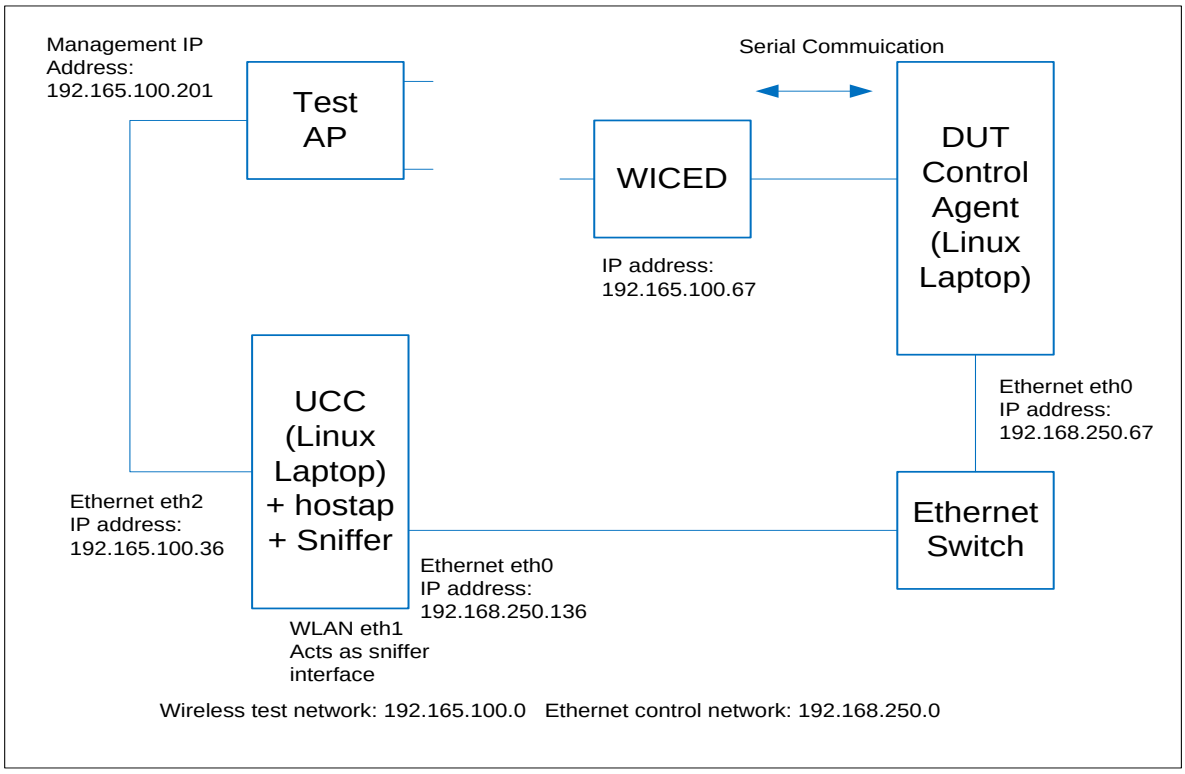
1 WICED WFA Sigma DUT Endpoint

1.1 Requirements

A possible setup for a Sigma test bed that includes WICED is shown below. Note that this is a simplified diagram and that IP addresses may change depending on the scripts from Wi-Fi.



1.2 IoT Resources and Technical Support

Cypress provides a wealth of data at http://www.cypress.com/internet-things-iot to help you to select the right IoT device for your design, and quickly and effectively integrate the device into your design. Cypress provides customer access to a wide range of information, including technical documentation, schematic diagrams, product bill of materials, PCB layout information, and software updates. Customers can acquire technical documentation and software from the Cypress Support Community website (http://community.cypress.com/).

1.3 Components of the WICED Sigma DUT Endpoint

The WICED Sigma DUT Endpoint consists of: WICED board

- The sigma_dut application that runs on the WICED board (see the apps/test/sigma_dut directory)
- Ubuntu controller laptop that connects to the Wi-Fi test control network via Ethernet and to WICED via USB
- dut_ca.py script that runs on the controller laptop and which relays commands from Wi-Fi's UCC (overall test manager) to WICED and relays responses from WICED back to the UCC. This script can be found in the apps/test/sigma_dut/dut_ca_scripts directory.

1.4 Installing the WICED Sigma DUT Endpoint

These steps have been tested with Ubuntu 11.x. There is a shell script in the apps/test/sigma_dut/dut_ca_scripts directory that includes these steps.

1. Configure the laptop Ethernet port for the test control network (assuming that 192.168.250.40 is the address of the DUT laptop on the control network):

```
$ sudo ifconfig eth0 down
$ sudo ifconfig eth0 192.168.250.40 netmask 255.255.0.0 up
```

2. Before plugging the WICED board into the USB port of the Ubuntu laptop check which USB ports are already initialised:

```
$ sudo ls -l /dev/ttyUSB*
```

3. Then plug the WICED board into the laptop and load the ftdi_sio driver using modprobe with the Broadcom vendor ID and WICED product ID:

```
$ sudo modprobe ftdi_sio vendor=0xa5c product=0x43fa
```

4. dmesg, or ls -l /dev/ttyUSB*, may be used to find which two ttyUSB ports have been assigned to WICED:

```
$ dmesg
[789.529180] usb 2-1: Detected FT2232H
[789.529183] usb 2-1: Number of endpoints 2
[789.529185] usb 2-1: Endpoint 1 MaxPacketSize 512
[789.529187] usb 2-1: Endpoint 2 MaxPacketSize 512
[789.529189] usb 2-1: Setting MaxPacketSize 512
[789.529690] usb 2-1: FTDI USB Serial Device converter now attached to ttyUSB1
[789.529719] usbcore: registered new interface driver ftdi_sio
[789.529721] ftdi_sio: v1.6.0:USB FTDI Serial Converters Driver
```

If there were no USB ports prior to loading the driver then WICED will be assigned /dev/ttyUSB0 and /dev/ttyUSB1. The second port will be used by the dut_ca.py script.

1.5 Orienting Your WICED Endpoint

To get the best performance from your WICED board, orient the long axis of the board at right angles to the AP antenna array:

Maintain 1.5 to 2m distance between the AP and WICED.

Test in an anechoic shielded room if possible.

1.6 Running the WICED Sigma DUT Endpoint Script

1. Copy the dut_ca.py script to a convenient directory
2. Run the script with the --help option to see the help menu:

```
lab@lab-Vostro-1520:~/dev/Wifi-Cert/wiced_dut_ca$ ./dut_ca.py --help
Usage:
./dut_ca.py -l <IP address of local interface> -p <port number> -t <terminal> [-b
<baud>] [-h] [--help]
       -l <interface IP address> The IP address of a specific netwrok interfac
       -p <port number>          The port number to listen on
       -t <terminal>             Path to a uart terminal device for conn the user UART.
       -b <baud>                 Optional bit rate parameter for configuring serial
                                 port.
       -i                        Interactive mode. Use this mode with console
                                 applications.
                                 No timestamping of screen output occurs in this mode.
                                 File output can be timestamped.
        -o, --output=FILE        Optional output file.
        -r                       Overwrite output file if it already exi
        -a                       Append to output file if it already exi
        -f [h|f|i|d|b|n]         Format of timestamp: human, float, integ float+diff(b),
                                 none.
        -q                       Don't prepend output with a brief banne
        --help | -h              This help message.
```

3. Run the script specifying only the serial port, leaving the other parameters as defaults (or modify them as required):

```
lab@lab-Vostro-1520:~/dev/Wifi-Cert/wiced_dut_ca$ ./dut_ca.py -t /dev/ttyUSB1
============== Dec 21 10:26:32    ==============
```

4. Start a test script on the UCC for example:

```
> 11nTest.bat N-5.2.3
```

5. Check that the UCC has connected to the WICED Sigma DUT Endpoint and that the test is running:

```
========================================
Connection from ('192.168.250.10', 3948)
========================================
From UCC> ca_get_version
To UCC< status,RUNNING
To UCC< status,COMPLETE,version,4.2
From UCC> device_get_info
To UCC< status,RUNNING
To WICED< device_get_info
device_get_info status,COMPLETE,vendor,Broadcom,model,BCM94319WICED1,version,1
To UCC< status,COMPLETE,vendor,Broadcom,model,BCM94319WICED1,version,1
From UCC> device_list_interfaces,interfaceType,802.11
To UCC< status,RUNNING
To WICED< device_list_interfaces,interfaceType,802.11
From WICED> device_list_interfaces,interfaceType,802.11
status,COMPLETE,interfaceType,802.11,interfaceID,wlan0
To UCC< status,COMPLETE,interfaceType,802.11,interfaceID,wlan0
From UCC> sta_preset_testparameters,interface,wlan0,supplicant,ZeroConfig
To UCC< status,RUNNING
To WICED< sta_preset_testparameters,interface,wlan0,supplicant,ZeroConfig
From WICED> sta_preset_testparameters,interface,wlan0,supplicant,ZeroConfig
status,COMPLETE
To UCC< status,COMPLETE
From UCC> sta_get_info,interface,wlan0
To UCC< status,RUNNING
To WICED< sta_get_info,interface,wlan0
From WICED> sta_get_info,interface,wlan0
status,COMPLETE,vendor,Broadcom,model,BCM94319WICED1,version,1,firmware,1.1.DEVELOPMENT,
mac,70:F3:95:8D:4F:DF
To UCC<
status,COMPLETE,vendor,Broadcom,model,BCM94319WICED1,version,1,firmware,1.1.DEVELOPMENT,
mac,70:F3:95:8D:4F:DF
```

```
From UCC>

sta_set_psk,interface,wlan0,ssid,wpa2,passphrase,12345678,encpType,aes-ccmp,keymgmttype,
wpa2

To UCC< status,RUNNING

To WICED<

sta_set_psk,interface,wlan0,ssid,wpa2,passphrase,12345678,encpType,aes-ccmp,keymgmttype,
wpa2

From WICED>

sta_set_psk,interface,wlan0,ssid,wpa2,passphrase,12345678,encpType,aes-ccmp,keymgmttype,
wpa2

status,COMPLETE

To UCC< status,COMPLETE

From UCC> sta_set_ip_config,interface,wlan0,dhcp,0,ip,192.165.100.40,mask,255.255.0.0

To UCC< status,RUNNING

To WICED< sta_set_ip_config,interface,wlan0,dhcp,0,ip,192.165.100.40,mask,255.255.0.0

From  WICED>  sta_set_ip_config,interface,wlan0,dhcp,0,ip,192.165.100.40,mask,255.255.0.0
status,COMPLETE

To UCC< status,COMPLETE

From UCC> sta_associate,interface,wlan0,ssid,wpa2

To UCC< status,RUNNING

To WICED< sta_associate,interface,wlan0,ssid,wpa2

From WICED> sta_associate,interface,wlan0,ssid,wpa2 status,COMPLETE

To UCC< status,COMPLETE

... etc ...
```

6. After the test has completed, and if the test has failed, the WICED board can be reset by pressing the white reset button.

Document Revision History

Document Title: WICED WFA Sigma DUT Endpoint

Document Number: 002-20871

Revision	ECN	Issue Date	Description of Change
**	5860489	08/22/2017	Initial release

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