This document had described the way to inform the wpa_supplicant to do the WiFi connection by using the wpa_cli. The wpa_supplicant had supported all kinds of security connections and WPS defined in the 802.11 specification. So, we suggest use the wpa_supplicant to do the WiFi connection rather than the iwconfig wireless tool.

(A) WPA_SUPPLICANT + WPA_CLI User Guide

1.start wpa_supplicant in the background
wpa_supplicant –Dnl80211 -iwlan0 -c /tmp/net/wpa.conf –B
or
wpa_supplicant -Dwext -iwlan0 -c /tmp/net/wpa.conf -B

2.Scaning AP and See Results
wpa_cli -p/var/run/wpa_supplicant scan
wpa_cli -p/var/run/wpa_supplicant scan_results

3.Connect to AP
a.OPEN
wpa_cli -p/var/run/wpa_supplicant remove_network 0
wpa_cli -p/var/run/wpa_supplicant ap_scan 1
wpa_cli -p/var/run/wpa_supplicant add_network
wpa_cli -p/var/run/wpa_supplicant set_network 0 ssid '"dlink"'
wpa_cli -p/var/run/wpa_supplicant set_network 0 key_mgmt NONE
wpa_cli -p/var/run/wpa_supplicant select_network 0

b.WEP40 with open system
wpa_cli -p/var/run/wpa_supplicant remove_network 0
wpa_cli -p/var/run/wpa_supplicant ap_scan 1
wpa_cli -p/var/run/wpa_supplicant add_network
wpa_cli -p/var/run/wpa_supplicant set_network 0 ssid '"dlink"'
wpa_cli -p/var/run/wpa_supplicant set_network 0 key_mgmt NONE
wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_key0 1234567890
wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_tx_keyidx 0
wpa_cli -p/var/run/wpa_supplicant select_network 0

c.WEP40 with shared key mode
wpa_cli -p/var/run/wpa_supplicant remove_network 0
wpa_cli -p/var/run/wpa_supplicant ap_scan 1
wpa_cli -p/var/run/wpa_supplicant add_network
wpa_cli -p/var/run/wpa_supplicant set_network 0 ssid '"dlink"'
wpa_cli -p/var/run/wpa_supplicant set_network 0 key_mgmt NONE
wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_key0 1234567890
wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_tx_keyidx 0

wpa_cli –p/var/run/wpa_supplicant set_network 0 auth_alg SHARED
wpa_cli -p/var/run/wpa_supplicant select_network 0

d.WEP104 with open system
wpa_cli -p/var/run/wpa_supplicant remove_network 0
wpa_cli -p/var/run/wpa_supplicant ap_scan 1
wpa_cli -p/var/run/wpa_supplicant add_network
wpa_cli -p/var/run/wpa_supplicant set_network 0 ssid '"dlink"'
wpa_cli -p/var/run/wpa_supplicant set_network 0 key_mgmt NONE
wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_key0
12345678901234567890123456
wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_tx_keyidx 0
wpa_cli -p/var/run/wpa_supplicant select_network 0

e.WEP104 with shared key mode
wpa_cli -p/var/run/wpa_supplicant remove_network 0
wpa_cli -p/var/run/wpa_supplicant ap_scan 1
wpa_cli -p/var/run/wpa_supplicant add_network
wpa_cli -p/var/run/wpa_supplicant set_network 0 ssid '"dlink"'
wpa_cli -p/var/run/wpa_supplicant set_network 0 key_mgmt NONE
wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_key0
12345678901234567890123456
wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_tx_keyidx 0
wpa_cli –p/var/run/wpa_supplicant set_network 0 auth_alg SHARED
wpa_cli -p/var/run/wpa_supplicant select_network 0

#If wep key is ASCII type,use the following cmd:
#WEP40: wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_key0 '"12345"'
#WEP104: wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_key0
'"1234567890123"'

#WEP key index is X from 0 to 3, change X for other key index and select it.
#wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_keyX
12345678901234567890123456
#wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_tx_keyidx X

f.TKIP and AES
wpa_cli -p/var/run/wpa_supplicant remove_network 0
wpa_cli -p/var/run/wpa_supplicant ap_scan 1
wpa_cli -p/var/run/wpa_supplicant add_network
wpa_cli -p/var/run/wpa_supplicant set_network 0 ssid '"dlink"'
wpa_cli -p/var/run/wpa_supplicant set_network 0 key_mgmt WPA-PSK
wpa_cli -p/var/run/wpa_supplicant set_network 0 psk '"12345678"'
wpa_cli -p/var/run/wpa_supplicant select_network 0

4.Ad-hoc mode

a.OPEN

wpa_cli -p/var/run/wpa_supplicant scan

wpa_cli -p/var/run/wpa_supplicant scan_results

wpa_cli -p/var/run/wpa_supplicant remove_network 0

wpa_cli -p/var/run/wpa_supplicant ap_scan 2

wpa_cli -p/var/run/wpa_supplicant add_network

wpa_cli -p/var/run/wpa_supplicant set_network 0 ssid '"Adhoc_test"'

wpa_cli -p/var/run/wpa_supplicant set_network 0 mode 1

wpa_cli -p/var/run/wpa_supplicant set_network 0 key_mgmt NONE

wpa_cli -p/var/run/wpa_supplicant set_network 0 frequency 2412

wpa_cli -p/var/run/wpa_supplicant select_network 0

#frequency is to set the channel frequency for Ad-hoc master.

b.WEP40

wpa_cli -p/var/run/wpa_supplicant scan

wpa_cli -p/var/run/wpa_supplicant scan_results

wpa_cli -p/var/run/wpa_supplicant remove_network 0

wpa_cli -p/var/run/wpa_supplicant ap_scan 2

wpa_cli -p/var/run/wpa_supplicant add_network

wpa_cli -p/var/run/wpa_supplicant set_network 0 ssid '"Adhoc_test"'

wpa_cli -p/var/run/wpa_supplicant set_network 0 mode 1

wpa_cli -p/var/run/wpa_supplicant set_network 0 key_mgmt NONE

wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_key0 1234567890

wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_tx_keyidx 0

wpa_cli -p/var/run/wpa_supplicant set_network 0 frequency 2412

wpa_cli -p/var/run/wpa_supplicant select_network 0

c.WEP104

wpa_cli -p/var/run/wpa_supplicant scan

wpa_cli -p/var/run/wpa_supplicant scan_results

wpa_cli -p/var/run/wpa_supplicant remove_network 0

wpa_cli -p/var/run/wpa_supplicant ap_scan 2

wpa_cli -p/var/run/wpa_supplicant add_network

wpa_cli -p/var/run/wpa_supplicant set_network 0 ssid '"Adhoc_test"'

wpa_cli -p/var/run/wpa_supplicant set_network 0 mode 1

wpa_cli -p/var/run/wpa_supplicant set_network 0 key_mgmt NONE

wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_key0
12345678901234567890123456

wpa_cli -p/var/run/wpa_supplicant set_network 0 wep_tx_keyidx 0

wpa_cli -p/var/run/wpa_supplicant set_network 0 frequency 2412

wpa_cli -p/var/run/wpa_supplicant select_network 0

5.Save the Current Connection AP configuration file

wpa_cli -p/var/run/wpa_supplicant save_config

6.WPS Connection
Push Button:
wpa_cli -p/var/run/wpa_supplicant remove_network 0
wpa_cli -p/var/run/wpa_supplicant wps_pbc any
Pin Code:
wpa_cli -p/var/run/wpa_supplicant remove_network 0
wpa_cli -p/var/run/wpa_supplicant wps_pin any 12345670
or
wpa_cli -p/var/run/wpa_supplicant remove_network 0
wpa_cli -p/var/run/wpa_supplicant wps_pin any

7.Get Current Status of wpa_supplicant
wpa_cli -p/var/run/wpa_supplicant status

8.Disable current network connection
wpa_cli -p/var/run/wpa_supplicant disable_network 0

(B) WPA_SUPPLICANT + WPA_CLI - Control interface commands

Following commands can be used with wpa_cli

PING
This command can be used to test whether wpa_supplicant is replying to the control interface commands. The expected reply is PONG if the connection is open and wpa_supplicant is processing commands.

STATUS
Request current status information. The output is a text block with each line in variable=value format. For example:

```
bssid=02:00:01:02:03:04
ssid=test network
pairwise_cipher=CCMP
group_cipher=CCMP
key_mgmt=WPA-PSK
wpa_state=COMPLETED
```

LIST_NETWORKS
List configured networks.

```
network id / ssid / bssid / flags
0 example network any [CURRENT]
```

(note: fields are separated with tabs)

SCAN
Request a new BSS scan.

SCAN_RESULTS

Get the latest scan results.

bssid / frequency / signal level / flags / ssid
00:09:5b:95:e0:4e 2412 208 [WPA-PSK-CCMP] jkm private
02:55:24:33:77:a3 2462 187 [WPA-PSK-TKIP] testing
00:09:5b:95:e0:4f 2412 209 jkm guest
(note: fields are separated with tabs)

ADD_NETWORK

Add a new network. This command creates a new network with empty configuration. The new network is disabled and once it has been configured it can be enabled with ENABLE_NETWORK command. ADD_-NETWORK returns the network id of the new network or FAIL on failure

SELECT_NETWORK <network id>

Select a network (disable others). Network id can be received from the LIST_NETWORKS command output.

ENABLE_NETWORK <network id>

Enable a network. Network id can be received from the LIST_NETWORKS command output.

DISABLE_NETWORK <network id>

Disable a network. Network id can be received from the LIST_NETWORKS command output. Special network id all can be used to disable all network.

.

REMOVE_NETWORK <network id>

Remove a network. Network id can be received from the LIST_NETWORKS command output. Special network id all can be used to remove all network.

SET_NETWORK <network id> <variable> <value>

Set network variables. Network id can be received from the LIST_NETWORKS command output.
This command uses the same variables and data formats as the configuration file.

- ssid (network name, SSID)
- psk (WPA passphrase or pre-shared key)
- key_mgmt (key management protocol, NONE, WPA-PSK, WPA-EAP)
- proto (WPA WPA2)
- pairwise (CCMP TKIP)
- group (CCMP TKIP WEP40 WEP104)
- wep_key0 (set wep key for key index 0)
- wep_tx_keyidx (select wep key index)
- frequency (Channel frequency in megahertz (MHz) for IBSS)

GET_NETWORK <network id> <variable>

Get network variables. Network id can be received from the LIST_NETWORKS command output.

SAVE_CONFIG

Save the current configuration.

AP_SCAN <ap_scan value>

Change ap_scan value: 0 = no scanning, 1 = wpa_supplicant requests scans and uses scan results to select the AP, 2 = wpa_supplicant does not use scanning and just requests driver to associate and take care of AP selection