Quick Start Guide for Station Mode

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1. Connecting with Network Manager

For Linux distributions such as: Fedora, Ubuntu, etc., using Network Manager GUI utility to connect wireless networks is easy and intuitive.

1.1. Prevent Conflicting

If you want to use the following command-line method to connect wireless network instead of Network Manager, please disable the Network Manager and wpa_supplicant running in background. Because both Network Manager and wpa_supplicant will conflict with other tools.

To stop the Network Manager utility in Ubuntu:

```
# service network-manager stop
```

In Fedora:

```
# /etc/init.d/NetworkManager stop
```

And then, to stop the wpa_supplicant running in background, first searching the PID of wpa_supplicant, and stopping it with ‘kill’ command:

```
# ps aux | grep wpa_supplicant
root   673   0.0  0.1  4828  1704  ?     S    Nov21  0:00 /sbin/wpa_supplicant -u -s
root  16416  0.0  0.0  3328  796  pts/0   S+   17:04   0:00 grep wpa_supplicant
# kill 673
```

2. Connecting with Linux wireless tools

Because connecting to AP with WPA/WPA2 authentication method and WPS connection method is not supported, using Wi-Fi functionality through the command-line Linux wireless tools is not recommended. Otherwise, it is useful for some situations such as debugging.

Most of Linux distributions have Linux wireless tools inside. For systems which do not have wireless tools, we provide wireless tools in our software packages. Please refer to:

wireless_tools/wireless_tools.30.rtl.tar.gz

and

document/ Wireless_tools_porting_guide.pdf.

2.1. ifconfig - Bring up Wi-Fi Interface

Before using the Wi-Fi functionality, we should bring up the Wi-Fi interface, for example wlan0, with 'ifconfig' command:

```
# ifconfig wlan0 up
```

2.2. iwlist - Show the device status of NIC

Usage: iwlist [iface_name] [parameters]

[parameters]	paarmeter explaination
Scan[ning]	Show and Scan BSS and IBSS
freq / channel	Show available chan and freq
rate / bit[rate]	Show supported bit-rate

Example:

```
# iwlist wlan0 scan
# iwlist wlan0 channel
# iwlist wlan0 rate
```

2.3. iwconfig - Manipulate driver private ioctls, to set MIBs.

Usage: iwconfig [iface_name] [parameters] [val]

[parameters]	parameter explaination	[val] constraints
ap	Connect to AP by address	[mac_addr]
essid	Set the essid, join (I)BSS	[essid]
mode	Set operation mode	{Managed|Ad-hoc}
key/enc[ryption]	Set keys and security mode	{N|open|restricted|off}

Example – connect AP with essid SSID:

```
# iwconfig wlan0 mode Managed
# iwconfig wlan0 essid "SSID"
```

Example – connect AP with mac address XX:XX:XX:XX:XX:XX:

```
# iwconfig wlan0 mode Managed
# iwconfig wlan0 ap XX:XX:XX:XX:XX:XX
```

Example – connect IBSS with essid SSID:

```
# iwconfig wlan0 mode Ad-hoc
# iwconfig wlan0 essid "SSID"
```

Example – set key for WEP encryption:

```
# iwconfig wlan0 key 0123456789
```

3. Connecting with wpa_cli and wpa_supplicant

To use authentication method such as WPA/WPA2 and connection method such as WPS, we can use the supplicant daemon, wpa_supplicant, with the control program, wpa_cli. Please refer to:

document/wpa_cli_with_wpa_supplicant.pdf

Most of Linux distributions have wpa_supplicant and wpa_cli inside. And actually, Network Manager utility takes use of wpa_supplicant to control Wi-Fi functionality. For systems which do not have wpa_supplicant, we provide a wpa_supplcant package in our software release packages. Please refer to:

wpa_supplicant_hostapd/

and

document/ Wireless_tools_porting_guide.pdf.

4. DHCP/Setting Manually

After starting up the Wi-Fi interface and connect to AP successfully, the network needs to obtain an IP address and other settings such as netmask, gateway and DNS, before transmit/receive data and access networks. This can be done by DHCP or setting manually.

4.1. dhclient

To acquire the network settings with DHCP protocol, you can use dhclient daemon:

```
# dhclient wlan0
Listening on LPF/wlan0/00:1b:fc:85:5e:1e
Sending on   LPF/wlan0/00:1b:fc:85:5e:1e
Sending on   Socket/fallback
DHCPREQUEST of 172.21.69.92 on wlan0 to 255.255.255.255 port 67
DHCPACK of 172.21.69.92 from 172.21.69.254
bound to 172.21.69.92 -- renewal in 265914 seconds.
```

4.2. ifconfig

To set network settings manually, you can use ifconfig command. Here we simply set IP address and netmask:

```
# ifconfig wlan0 172.21.69.92 netmask 255.255.255.0
```