How to append vendor specific IE in driver management frames

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Introduction

This document can teach user, how to append vendor specific IE in Realtek driver management frames by iwpriv (rtwpriv) command.

Please follow those steps to set vendor ie setting.

Driver setting.

 Please enable append vendor ie feature from Makefile CONFIG_APPEND_VENDOR_IE_ENABLE = n ==> CONFIG_APPEND_VENDOR_IE_ENABLE = y

Step.

- 1. Insert Realtek driver
 - Ex: insmod 8821au.ko
- 2. Up interface
 - Ex: ifconfig wlan0 up
- 3. Use iwpriv tools (or rtwpriv tools) and command "vendor_ie_set" to set vendor ie Ex: iwpriv wlan0 vendor_ie_set 0,5,dd3300e04c0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef
- 4. Can use iwpriv tools (or rtwpriv tools) and command "vendor_ie_get" to get vendor ie setting
- 5. Run hostapd or wpa_supplicant

Note: If want to change vendor \mathbf{IE} , after setting, must restart hostapd or $\mathbf{wpa_supplicant}$.

Command usage

1. vendor ie set:

```
iwpriv [interface_name] vendor_ie_set [vendor_ie_number],[vendor_ie_mask],[vendor_ie_context]
             interface_name: wifi interface name (ex: wlan0)
             vendor_ie_number: want to append vender ie number, can support number 0~4, totals 5 groups vendor ie.
             vendor_ie_mask: which management frame want to add vendor ie.
                           Bit(0) beacon
                           Bit(1) probe request
                           Bit(2) probe response
                           Bit(3) association request
                           Bit(4) association response
ex: If you want to add vendor ie to beacon and probe response, vendor_ie_mask will be set "5", (5 = binary 0000
0101)
             vendor_ie_context: Full vendor ie Hexadecimal context.
             ex: [Element ID][Length][OUI][Value]
dd3300e04c0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef01234
56789abcdef
[dd] = decimal 221 = Vendor specific Element ID
[33] = decimal 51 bytes = IE Length
[00e04c] = REALEK SEMICONDUCTOR CORP
[0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef01256789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcde
f] = Value

→ Y WPS ID=221 WPS Len=24 OUI=00-50-F2 MICROSOFT CORP. OUI Type=4 Version=0x1€

                          Vendor Specific
                                 Element ID:
                                                                                                  221 Vendor Specific [205]
                                Length:
                                                                                                  51 [206]
                                                                                                  00-E0-4C REALTEK SEMICONDUCTOR CORP. [207-209]
                                 OUI:
                          🗑 Value:
                                                                                                  (48 bytes) [210-257]
                                                                                             FCS=0xB6DD9729
                 [258-261]
                                                 FCS:
Setting example: To set group 0 or group 3
iwpriv wlan0 vendor_ie_set
0,5,dd3300e04c0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef
0123456789abcdef
```

or

iwpriv wlan0 vendor_ie_set

3, 3, dd 3300 e 04 c 0123456789 abc def 012345678

0123456789abcdef



2. vendor_ie_get:

iwpriv [interface_name] vendor_ie_get [vendor_ie_number]

interface_name: wifi interface name

 $vendor_ie_number: want check appended vender ie number , can support number 0~4 , totals 5 groups \\ vendor ie.$

ex: To get group 0 setting or get group 3 setting

iwpriv wlan0 vendor_ie_get 0

wlan0 vendor_ie_get:

Vendor IE num 0, Mask:5 [Beacon][Probe Resp]

Vendor IE:

56789abcdef

or

iwpriv wlan0 vendor_ie_get 3

wlan0 vendor_ie_get:

Vendor IE num 3, Mask:3 [Beacon][Probe Req]

Vendor IE:

dd3300e04c0123456789abcdef01234567869abcdef01234567869abcdef01234567869abcdef0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcde

56789abcdef

3. Clear vendor ie setting:

ex: To clear vendor ie number 1 group

iwpriv wlan0 vendor_ie_set 1,0,0

Can use vendor_ie_get to check

iwpriv wlan0 vendor_ie_get 0

wlan0 vendor_ie_get:

Vendor IE num 0, Mask:0

Vendor IE: