How to enable driver to support 802.11k

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Version	Date	Description	Author
V1.0	2020/06/01	Initial version	Vincent_Fann

V1.1	2020/06/04	Add a description of STA mode and AP mode	Vincent_Fann

Introduction

The 802.11k protocol provides mechanisms for APs and clients to dynamically measure the available radio resources. In an 802.11k enabled network, APs and clients can send neighbor reports, beacon reports, and link measurement reports to each other. This allows the APs and clients to take appropriate connection actions.

Radio Resource Measurement is a key enabler to the next generation of Wireless LANs (WLANs). Radio Resource Measurement addresses some of the existing issues in using unlicensed radio environments to meet the requirements of emerging technologies. In addition, Radio Resource Measurement provides knowledge about the radio environment to improve performance and reliability.

Driver version and support

feature

V5.3 – V5.7

- **Channel load report**
- **Noise Histogram report**
- **Beacon report**
- **Neighbor request**

V5.8 and up

- **Channel load report**
- **Noise Histogram report**
- **Beacon report**

- **Neighbor request**
- **Link Measurement Report**

Enable 802.11K

Define CONFIG_RTW_80211K in Include/autoconf.h and rebuild driver.

```
#define CONFIG_RTW_80211K
```

How 802.11K works

STA mode

When 802.11k was enabled, STA replies AP's 802.11K request automatically.

AP mode

AP mode depends on the software design of the product. It should be a third party application runs in user space. This application generates 802.11K request and sends it via hostapd or nl80211 interface to driver.

Driver doesn't involve in 802.11K request and response process when running in AP mode. Driver simply forwards the management packet which receives from hostapd to the peer STA. Driver also forward packets to hostapd which receives from peer STA.

Here is an example to use hostapd_cli to send a beacon request to a connected client (30:07:4d:36:e4:51):

```
hostapd_cli -i wlan0 req_beacon 30:07:4d:36:e4:51 req_mode=00
010014000d0001ffffffffffff000e3030305f72747761705f7365616e0
20100
```

req_mode=00 : Measurement Request Mode

Above command ask hostapd to send a beacon request to 30:07:4d:36:e4:51 with the following HEX data. For more detail please refer to IEEE802.11 specification.