Quick Start Guide for WPA3

Contents

Introduction

The next generation of Wi-Fi® security, bringing new capabilities to enhance Wi-Fi protections in personal and enterprise networks.:

- **WPA3-Personal (WPA3-SAE):**

  more resilient, password-based authentication even when users choose passwords that fall short of typical complexity recommendations. WPA3 leverages Simultaneous Authentication of Equals (SAE), a secure key establishment protocol between devices, to provide stronger protections for users against password guessing attempts by third parties.

- **WPA3-Enterprise (192-bit Mode/Suite B):**

  offers the equivalent of 192-bit cryptographic strength, providing additional protections for networks transmitting sensitive data, such as government or finance. The 192-bit security suite ensures a consistent combination of cryptographic tools are deployed across WPA3 networks.

1. WPA3-Peresonal Required for RTK driver

A. Linux Kernel Version

   a. Available for WPA3-Personal Station above kernel v4.17. If kernel version below v4.17, you can choose patch[1] kernel or use RTK maintain's hostapd/wpa_supplicant.

   b. Available for WPA3-Personal SoftAP above kernel v5.1. If kernel version below v5.1, you can choose patch[2] kernel or use RTK maintain's hostapd/wpa_supplicant.

   c. If you use the RTK maintain's hostapd/wpa_supplicant, it can availiable above kernel v3.8.

B. Realtek Linux Driver Version

   a. Available for WPA3-Personal Station/SoftAP above driver v5.8.

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[1] Support offloading wireless authentication to userspace via NL80211_CMD_EXTERNAL_AUTH

[2] Authentication offload to user space in AP mode

C. RTK maintain's hostapd/wpa_supplicant Version

    a. For Pure Linux, you have to use version wpa_supplicant_8_O_8x_rtw[3] above the revision 33457.

    b. For Android system, please contact the FAE.

2. WPA3-Enterpris Required for RTK driver (not ready)

A. Linux Kernel Version

B. Realtek Linux Driver Version

C. RTK maintain's hostapd/wpa_supplicant Version

3. Start the WPA3-Personal

A. For further information about wpa_cli and wpa_supplicant, please refer to: document/wpa_cli_with_wpa_supplicant.pdf.

You have to enable below settings when build wpa_supplicant.

```
CONFIG_TLS=openssl
CONFIG_IEEE80211W=y
CONFIG_SAE=y
```

You can scan two kind of WPA3 Acceess Points.

    a. **WPA3-SAE mode:**

    Only WPA3-SAE station can connect.

```
bssid / frequency / signal level / flags / ssid
00:11:22:33:44:21  2432  -37    [WPA2-SAE-CCMP][WPS][ESS]
WPA3- AP
```

    b. **WPA3-SAE Transition Mode:**

    WPA2-PSK and WPA3-SAE station can connect.

```
bssid / frequency / signal level / flags / ssid
00:11:22:33:44:21  2432  -37 [WPA2-PSK+SAE-CCMP][WPS]
[ESS]  WPA3- AP
```

You can use the same configuration to connect both Access Point.

The sample configuration as:

```
ctrl_interface=/var/run/wpa_supplicant
network={
     ssid="WPA3-AP"
     key_mgmt=SAE
     psk="87654321"
     ieee80211w=2
}
```

B. For further information about hostapd_cli and hostapd, please refer to: document/Quick_Start_Guide_for_SoftAP.pdf.

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[3] wpa_supplicant_8_O_8.x_rtw_r33457.20190507.tar.gz.

You have to enable below settings when build hostapd.

```
CONFIG_TLS=openssl
CONFIG_IEEE80211W=y
CONFIG_SAE=y
```

You can setup the WPA3 SoftAP as:

a. **WPA3-SAE mode:**

There are three setting you have to configure as:

```
auth_algs=3
ieee80211w=2
wpa_key_mgmt=SAE
```

b. **WPA3-SAE Transition Mode:**

There are four setting you have to configure as:

```
auth_algs=3
ieee80211w=1
sae_require_mfp=1
wpa_key_mgmt=SAE WPA-PSK
```

The sample configuration:

```
ctrl_interface=/var/run/hostapd
interface=wlan0
driver=nl80211
ssid=WPA3-SAE
channel=1
beacon_int=100
hw_mode=g
ieee80211w=1
auth_algs=3
ignore_broadcast_ssid=0
wpa=2
wpa_passphrase=87654321
wpa_key_mgmt=SAE WPA-PSK
sae_require_mfp=1
wpa_pairwise=CCMP
rsn_pairwise=CCMP
max_num_sta=16
wmm_enabled=1
```

4. **Start the WPA3-Enterprise** (not ready)

not ready

5. Document revision history

Version	Date YYYY-MM-DD	Remarks
1.0	2018-05-28	Initial release