

**Quick Start Guide for Realtek Mesh
ver. 1.0.0**

Contents

1. Introduction	3
2. Software Requirements	3
2.1. Driver Configurations	3
2.2. Wpa_supplicant Configurations	3
3. Setup Mesh using wpa_supplicant	3
3.1. Open Mesh Setup	4
3.2. Secured Mesh Setup	4

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Release History

Ver.	Date	Description	Author
1.0.0	2018/01/12	1. First version	Jeff

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1. Introduction

This document describes the requirements of software components including driver and wpa_supplicant for Realtek mesh function which is compatible with IEEE 802.11s standard; also provides examples to setup mesh network using wpa_supplicant.

2. Software Requirements

Below are the requirements of each software components which are needed to enable Realtek mesh function:

Software Component	Requirement
Kernel	ver. >= 3.11, with CFG80211
Driver	ver. >= 5.3, with CFG80211
wpa_supplicant	wpa_supplicant_8_O_8.x_rtw_r26058 or later

2.1. Driver Configurations

I CONFIG_RTW_MESH

I CONFIG_IOCTL_CFG80211

To enable driver's mesh function, these two shall be defined before compilation.

2.2. Wpa_supplicant Configurations

I CONFIG_MESH=y

To enable wpa_supplicant's mesh function, adding this configuration to wpa_supplicant/wpa_supplicant/.config before compilation.

3. Setup Mesh using wpa_supplicant

Mesh is setup using wpa_supplicant with mesh specific global field configurations and mesh network profile in runtime wpa_supplicant configuration file.

I Global Field Configurations

Configuration	Descriptions
user_mpm	0: MPM handled by driver 1: MPM handled by wpa_supplicant Shall be 1 for Realtek mesh
max_peer_links	Maximum number of mesh peering allowed. Maximum is 8 for Realtek mesh.
mesh_max_inactivity	Timeout in seconds to detect STA inactivity

I Network Field Configurations

Configuration	Descriptions
ssid	Mesh ID for this mesh network
Mode	5: Mesh
frequency	Operating frequency for this mesh network
key_mgmt	NONE: For open mesh network SAE: For secured mesh network
Below is for secured mesh	
psk	PSK used by secured mesh network

3.1. Open Mesh Setup

Below is a sample runtime wpa_supplicant configuration file for an open mesh network profile:

```
ctrl_interface=/var/run/wpa_supplicant
user_mpm=1
max_peer_links=8
mesh_max_inactivity=20

network={
    ssid="open_mesh"
    mode=5
    frequency=2432
    key_mgmt=NONE
}
```

Execute the mesh function enabled wpa_supplicant with the above configuration file (ex: open_mesh.conf) on Realtek WLAN interface (ex: wlan0) in background:

```
root@rtkpc #./wpa_supplicant -Dnl80211 -iwlan0 -c./open_mesh.conf -B
```

3.2. Secured Mesh Setup

Below is a sample runtime wpa_supplicant configuration file for a secured mesh network profile:

```
ctrl_interface=/var/run/wpa_supplicant
user_mpm=1
max_peer_links=8
mesh_max_inactivity=20

network={
    ssid="secured_mesh"
    mode=5
    frequency=2432
    key_mgmt=SAE
    psk="password"
}
```

Execute the mesh function enabled wpa_supplicant with the above configuration file (ex: secured_mesh.conf) on Realtek WLAN interface (ex: wlan0) in background:

```
root@rtkpc #./wpa_supplicant -Dnl80211 -iwlan0 -c./secured_mesh.conf -B
```

※ Multiple mesh network profiles and even profiles of other mode (ex: Infrastructure or ad-hoc mode) can exist in the same configuration file and then switched by “select_network” command.