

Changing Wifi Settings

RACHEL-Pi provides an open wireless hotspot for anyone to connect to. In some deployments you may want to change the name (SSID), the channel, or even secure this network with a password. This will show you how to edit your wifi settings which are stored in the `hostapd.conf` file

Start Editing `hostapd.conf`

- We will be editing using SSH by connecting to the RACHEL-Pi. If you are editing while connected over wifi and a mistake is made causing wifi to not turn on, you will need to either plug a monitor and keyboard into your RACHEL-Pi and log in, plug your RACHEL-Pi into your router and connect using the router assigned IP, or as a last resort you can re-flash your storage device to start over
1. Login in to your RACHEL-Pi using SSH (see the "Logging in with SSH" tutorial)
 2. Type `cd /etc/hostapd` and press enter
 3. Type `ls` you should see the file `hostapd.conf`
 4. Type `sudo cp hostapd.conf hostapd.conf.bak`
 5. Type `ls` and you should see `hostapd.conf` and `hostapd.conf.bak` which is your backup `hostapd.conf` file

```
pi@rachel: /etc/hostapd
pi@rachel:~$ cd /etc/hostapd
pi@rachel:~/etc/hostapd$ ls
hostapd.conf  ifupdown.sh
pi@rachel:~/etc/hostapd$ sudo cp hostapd.conf hostapd.conf.bak
pi@rachel:~/etc/hostapd$ ls
hostapd.conf  hostapd.conf.bak  ifupdown.sh
pi@rachel:~/etc/hostapd$
```

6. Type `sudo nano hostapd.conf` to start editing your `hostapd.conf` file

```
GNU nano 3.2 hostapd.conf
interface=wlan0
driver=nl80211
ssid=RACHEL-Pi
hw_mode=g
channel=6
auth_algs=1
wmm_enabled=0
```

7. We can now start changing these settings
- When editing settings make sure not to leave spaces directly before or after the =. For example `channel =6` and `channel= 6` have spaces while `channel=6` does not.
 - If wifi doesn't work after reboot, you can always restore from backup to get back to default settings by following "Restoring `hostapd.conf` From Backup"

Changing Wifi Channel

1. Started editing `hostapd.conf` (see "Start Editing `hostapd.conf`")
2. Navigate to the end of the "channel" line using the down arrow key and the right arrow key
3. Press backspace once to delete the channel "6" in this example.
4. Enter a new channel number. It is suggested to use channel 1, 6, or 11, but any number between 1 and 11 are accepted for the 2.4ghz range and allowed in most countries. We will change it to 1 in this example

```
GNU nano 3.2 hostapd.conf Modified
interface=wlan0
driver=nl80211
ssid=RACHEL-Pi
hw_mode=g
channel=1
auth_algs=1
wmm_enabled=0
```

5. Press `CTRL+X`

```
GNU nano 3.2 hostapd.conf Modified
Save modified buffer? (Answering "No" will DISCARD changes.)
Yes
No
```

6. Press `y`
7. Press `Enter`
 8. The wifi channel should now be changed when you reboot your device. You can reboot with `sudo reboot now`

- When configuring multiple RACHEL-Pi's in the same area it is suggested to set different channels for each so they don't interfere with each other. Set one to channel 1, another to channel 6, and another to channel 11
- While 5ghz is available on the Raspberry Pi 3B+ and 4B, they can't broadcast both 2.4ghz and 5ghz at the same time like with the RACHEL-Plus. It's not recommended to only use 5ghz unless you are sure the devices connecting are compatible so it will not be covered here. Please ask on the RACHEL forums at <http://community.rachelfriends.org/> if you have any questions about wifi settings

Changing Wifi SSID

The name of the wifi hotspot RACHEL-Pi broadcasts is "RACHEL-Pi" by default. In some situations you may want to change this to be more unique to your deployment or if you have two RACHEL-Pis, you may want to change the name of one to distinguish them from each other

1. Start editing `hostapd.conf` (see "Start Editing `hostapd.conf`")
2. Navigate to the "SSID" line using the down arrow key and then the right arrow key to get to the end of the line
3. Press backspace to delete the name after the =. It should read "SSID="

```
GNU nano 3.2 /etc/hostapd/hostapd.conf Modified
interface=wlan0
driver=nl80211
ssid=RACHEL-Pi Class 01
hw_mode=g
channel=1
auth_algs=1
wmm_enabled=0
```

5. Press `CTRL+X`

```
GNU nano 3.2 /etc/hostapd/hostapd.conf Modified
Save modified buffer? (Answering "No" will DISCARD changes.)
Yes
No
```

6. Press `y`
7. Press `Enter`
 8. Your SSID should now be changed when you reboot your RACHEL-Pi. You can reboot now using `sudo reboot now`

Setting Wifi Security

There are many different settings available for wifi security, some of which affect compatibility with old devices, and some of which provide better security. This will cover using an existing settings file for the RACHEL-Pi to set up basic wifi security

1. Download `hostapd_secure.conf` to your PC from https://raw.githubusercontent.com/rachelpi/rachelpiOS/raspbian_stretch/files/networking/hostapd_secure.conf
2. When you view the contents it should look like this

```
interface=wlan0
driver=nl80211
ssid=RACHEL-Pi
hw_mode=g
channel=1
auth_algs=1
wpa=2
wpa_passphrase=WorldPossible
wpa_key_mgmt=WPA-PSK
wpa_pairwise=TKIP
rsn_pairwise=CCMP
ieee80211n=1 # 802.11n support
wmm_enabled=1 # QoS support
ht_capab=[HT40+][SHORT-GI-20][DSSS_CCK-40]
country_code=US
```

3. Connect to your RACHEL-Pi using WinSCP by following the "Transferring Modules with WinSCP" tutorial
4. On the left side browse to the folder where you downloaded `hostapd_secure.conf`
5. On the right side browse to `/etc/hostapd/`

6. If you don't have a backup of your `hostapd.conf`, right click `hostapd.conf` and select "Duplicate". When prompted enter `hostapd.conf.bak` and press OK

7. On the left side, rename the `hostapd_secure.conf` file to `hostapd.conf`

8. After making sure you have a backup, on the right side delete `hostapd.conf`

9. Drag `hostapd.conf` from the left side to the right side to copy it to your RACHEL-Pi

10. Your wifi settings should now be changed once you reboot your device. You can reboot using `sudo reboot now`

11. The password by default is "WorldPossible". To change this follow "Start Editing `hostapd.conf`"

12. Navigate to the end of the `wpa_passphrase=WorldPossible` and delete `WorldPossible`

```
GNU nano 3.2 /etc/hostapd/hostapd.conf Modified
interface=wlan0
driver=nl80211
ssid=RACHEL-Pi
hw_mode=g
channel=1
auth_algs=1
wpa=2
wpa_passphrase=NewWorldPossiblePassword
wpa_key_mgmt=WPA-PSK
wpa_pairwise=TKIP
rsn_pairwise=CCMP
ieee80211n=1 # 802.11n support
wmm_enabled=1 # QoS support
ht_capab=[HT40+][SHORT-GI-20][DSSS_CCK-40]
country_code=US
```

13. Enter a new passphrase
14. Press `CTRL + X` to save changes
15. Press `y` to confirm
16. Press `Enter` to confirm the file name is still `hostapd.conf`
17. When you reboot the wifi password should now be changed

- It is always suggested to edit this file on the RACHEL-Pi using nano instead of editing it on your PC and transferring as some notepad programs can cause compatibility issues

Restoring `hostapd.conf` From Backup

If you've made a mistake or the new settings are not working you can restore your settings from the `hostapd.conf.bak` file we copied earlier

1. Login in to your RACHEL-Pi using SSH (see the "Logging in with SSH" tutorial)
2. Type `cd /etc/hostapd`
3. Type `ls` and check to see that you still have your `hostapd.conf.bak` file

```
pi@rachel: /etc/hostapd
pi@rachel:~$ cd /etc/hostapd
pi@rachel:~/etc/hostapd$ ls
hostapd.conf  hostapd.conf.bak  ifupdown.sh
pi@rachel:~/etc/hostapd$ sudo rm hostapd.conf
pi@rachel:~/etc/hostapd$ sudo cp hostapd.conf.bak hostapd.conf
pi@rachel:~/etc/hostapd$
```

4. Type `sudo rm hostapd.conf` to delete your `hostapd.conf` file
5. Type `sudo cp hostapd.conf.bak hostapd.conf` to copy the backup
6. Reboot with `sudo reboot now` and your and your settings should be restored