

# Raspberry Pi WiFi Router Setup for Notautomatic Scoring System

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## Overview

This document describes how to configure a WiFi router for use with the NotauScore/Notautomatic scoring system. The original instructions are based on the TP-Link WR940N router, but the same principles apply to most routers.

The benefit of using an external router is that the WiFi range is greatly improved compared to the RPi internal WiFi. Both the Raspberry Pi 4 or 5 computer boards and the Raspberry Pi Zero models have an integrated PCB antenna that is not nearly as effective as an external antenna. Most of the communication issues in the Notauscore system are caused by the limited WiFi range.

## Wiring

The NotauScore server (Raspberry Pi) LAN port connects to one of the LAN ports of the router. Do not use the WAN port of the router since it is reserved for the Internet connection and has different functionality. Most often the WAN port is clearly marked as "WAN" or different color (blue is quite common).

In some cases, the router can detect WAN traffic automatically and configure one of the ports as WAN. In this case you can use any of the available ports to connect the RPi.

## Operation

The easiest way to deploy correct settings to the NA devices is to set the parameters in Notauscore → Administration → Settings menu as follows:

Settings	Value
DEFAULT_COUNTRY	FRA
DEFAULT_LANG	EN
DISPRANK	YES
DISPRANKROW	55
HOME_SORT	empid
INSTALL_HARDWARE	RASP
MODE_MAINTENANCE	OFF
MULTIPLEFLIGHTLINE	NO
NATIONAL_ORG	FFAM
NEXT_COMP_DAY	1
NEXT_COMP_STATE	false
NOTAUTOMATIC_CJ	1
NOTAUTOMATIC_IPServer	192.168.200.200
NOTAUTOMATIC_NOTnet	1
NOTAUTOMATIC_NRT	1
NOTAUTOMATIC_PW	ctamutation
NOTAUTOMATIC_SSID	notautomatic-router
NOTAUTOMATIC_URLServer	192.168.200.200
NOTAUTOMATIC_WPI	1
REDUNDANCY	-
SHORT_DESC	false
START_TIME_D1	0930
START_TIME_D2	0900
START_TIME_D3	0900
START_TIME_D4	0900
SYNCPUBLIC	--
TIMEZONE	Europe/Helsinki

**Parameters description**

Below list of available parameters:

- DEFAULT\_COUNTRY** => - FRA for France  
- AUS for Australia  
- ARG for Argentina  
- POR for Portugal  
- SAI for Switzerland  
- RSA for South Africa
- DEFAULT\_LANG** => default language FR, DE, EN, ES
- DISPRANK** => Allows non-administrators to view the provisional ranking
- DISPRANKROW** => Number of rows to be displayed on public screens. Needed to adapt display to screen size
- HOME\_SORT** => Competition sorting method
  - empid : by descending Competition ID
  - empday : by ascending Competition ID
  - empdate : by descending Competition beginning date
  - empdate2 : by descending Competition ending date
  - empday2 : by descending Competition pace
  - empday3 : by Competition Date
- INSTALL\_HARDWARE** => System installation: XAMP (PC), RASP (Raspberry), LAMP (MAC/Linux)
- MODE\_MAINTENANCE** => Put software in maintenance mode. This mode is required for example to delete all data
  - ON => maintenance mode ON
  - OFF => maintenance mode OFF
- SHORT\_DESC** => true: Prints the short description of the manovers on the score sheets
- MULTIPLEFLIGHTLINE** => Set to SLAVE to allow scores export via Competition admin page. Remove for master server
- NATIONAL\_ORG** => define national federation etc. correct logo
  - FFAM for France
  - AUS for Australia
  - ARG for Argentina
  - POR for Portugal
  - SAI for Switzerland
  - RSA for South Africa
- NET COMPETITION** => Parameters:
  - NEXT\_COMP\_STATE => true activates the functionality that will be automatically closing and opening flight. Also deactivates it requiring manual operations
  - NEXT\_COMP\_DAY => Next Comp will be activated for the selected day (values 1 or 2)
- REDUNDANCY** => Set to a valid IP address (xxxx.xxxxx) to forward scores to another NotauScore. Set to - to disable.
- SYNCPUBLIC** => a valid IP address (xxxx.xxxxx) of a host where data will be sent (FTP)
- TIMEZONE** => a valid Linux time zone string, e.g. Australia/Melbourne or EU/GMT-10 (https://en.wikipedia.org/wiki/List\_of\_tz\_database\_time\_zones)

**Notautomatic parameters (NOTAUTOMATIC\_xxx):**

- **NOTset** => number of tickets edited (1 or 2)
- **SSID** => WiFi access point SSID
- **PW** => WiFi access point password
- **IPServer** => URLServer => IP address of the server
- **WPI** => YES = Use of the WPI by the Notautomatic
- **NRT** => YES = Sending of each note, NO = Sending only to the end of the flight
- **CJ** => YES = The judge can modify the parameters of the first screen of the Notautomatic

The IP addresses should be already correct by default (192.168.200.200). The NOTAUMATIC\_PW and NOTAUMATIC\_SSID parameters should match those you set in the router.

All the parameters on this page will be transferred to the NA device if you go to “Maintenance” menu and select “Update params”. The NA device must be connected to RPi internal WiFi network before this for the parameter update to succeed. If all goes well, the NA will swiftly change to the router WiFi after 10 seconds or so.

It may happen that the RPi WiFi is too weak to operate reliably and in this case, you must update the SSID and WiFi password manually. After this change is done, the NA device will always use the router Wifi to communicate and other parameter changes as well as sequence changes and software updates work more reliably than with the RPi WiFi.

If something goes wrong, it is very easy to return to the default WIFI setup (Rpi). Just go to “Maintenance” menu and select “Restore def. params”.

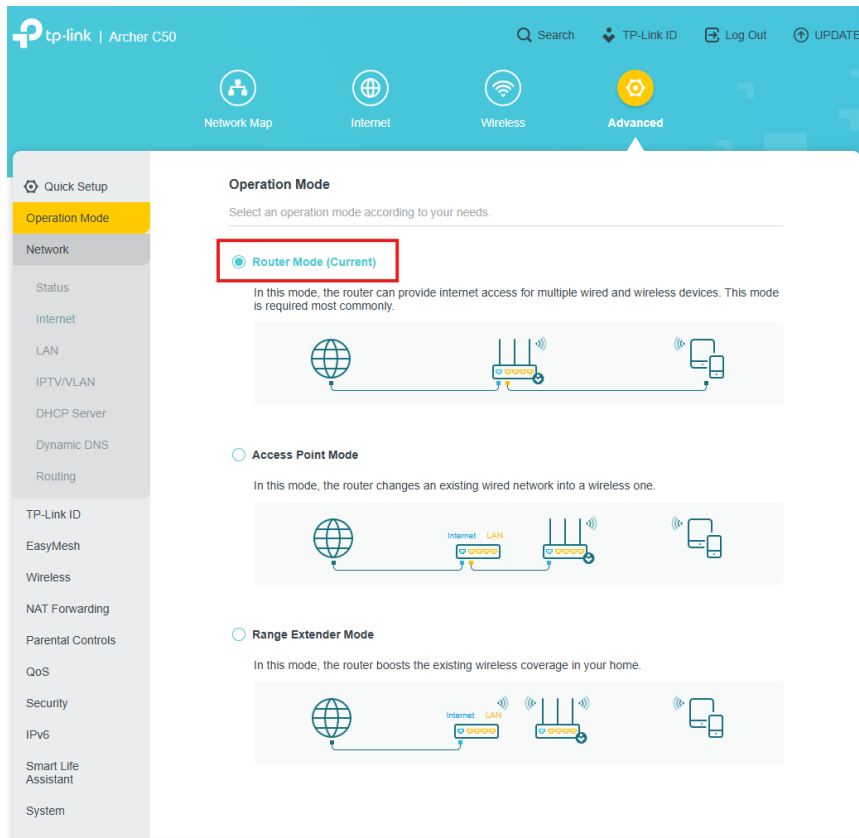
## Setting up TP-Link Archer C50 v. 6.20



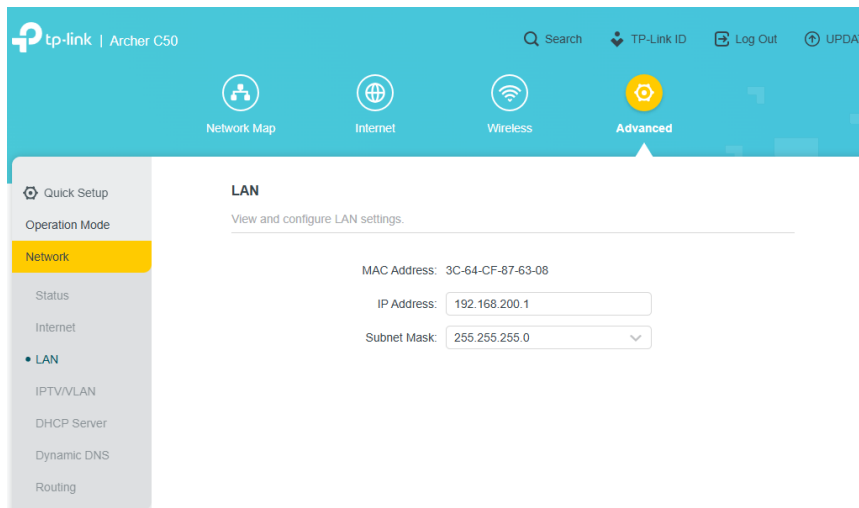
Follow these steps to set up the TP-Link C50 to your Notauscore system as a Wifi router.

1. Make sure the IP address of your computer is configured as ***Obtain an IP address automatically*** and ***Obtain DNS server address automatically***
2. Connect your laptop to the router using a LAN cable. Use any of the four yellow/orange LAN ports. Do NOT use the blue WAN port.
3. Make sure you enter the correct IP address to log in: ***<http://tplinkwifi.net>*** or ***192.168.0.1***.
4. If this is the first time you log in, the router asks you to create a password. The next time you log in, you must use this password to access the settings. There is no username for this purpose. In the User's Guide this is referenced as the "local management password". It can be changed under Advanced → System menu.
5. If this does not work, consult the router manual FAQ section for login instructions and resetting the password

6. Set up the router as a standard wireless router and save the settings.



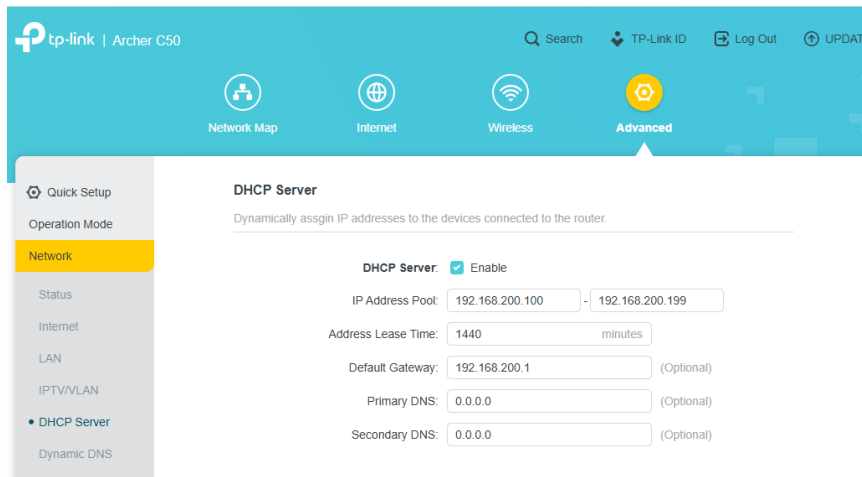
7. Under Advanced → Network → LAN, set IP address to 192.168.200.1 and subnet mask to 255.255.255.0, then save.



At this point the router reboots and you must log in again, now using the new IP address **192.168.200.1**. The URL address <http://tplinkwifi.net> should also work.

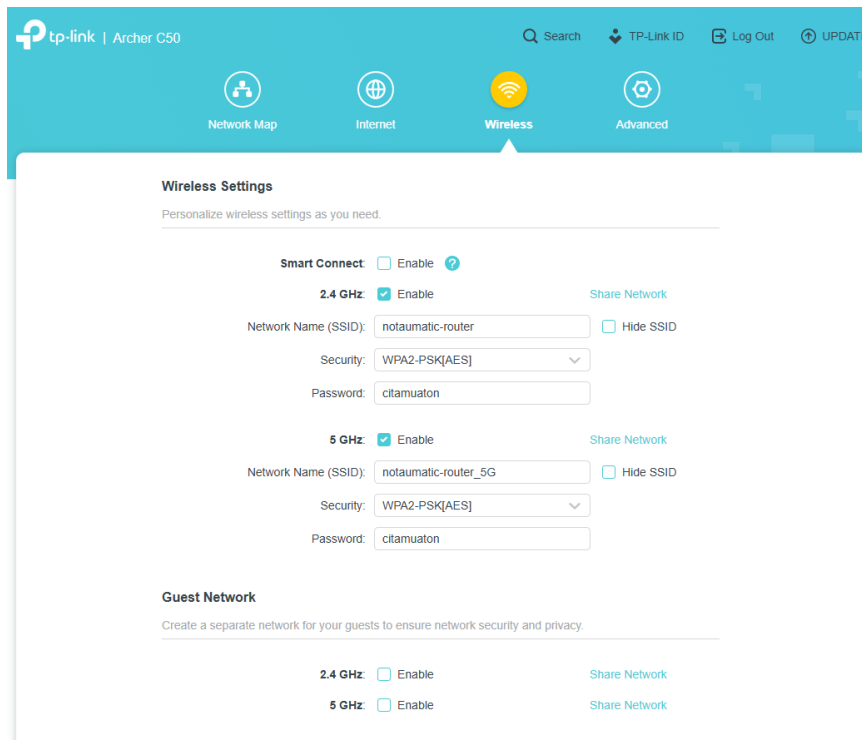
8. Set the correct address range for the DHCP server of the router. This is important since the Noutascore server LAN port uses address 192.168.200.200 which must not be overlapped by the router or other devices. Go to Advanced → Network and change the following details:

- a. Make sure that the DHCP Server is enabled (should be active already)
- b. Set IP Address Pool to 192.168.200.100 – 192.168.200.199
- c. Set Address Lease Time to 1440 minutes (one day)
- d. Set Default Gateway to 192.168.200.1



At this point the router may reboot again to take the new DHCP settings into use.

9. Go to Wireless section of the TP-Link menu and set the SSID, security level and WiFi password:

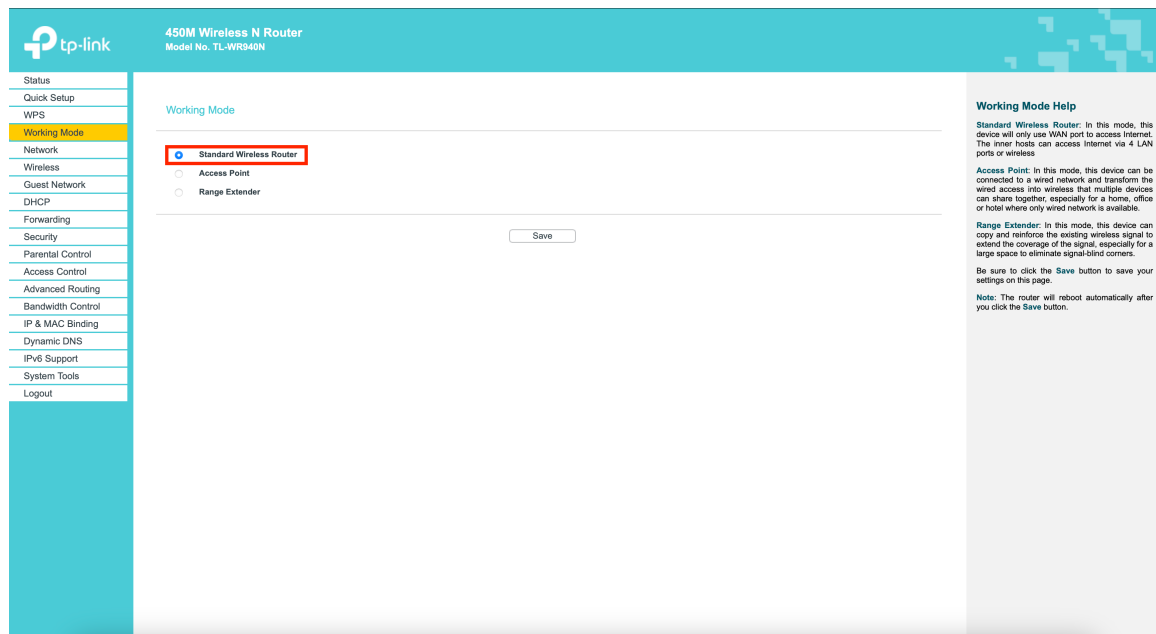


Here the 2.4 GHz network must be enabled, security should be WPA2-PSK and **SSID as well as the Password must match the values you have in the Notaumatic devices. Do not use the same SSID as in the Raspberry Pi WiFi (ffam-notaumatic).** The WiFi passwords can be the same.

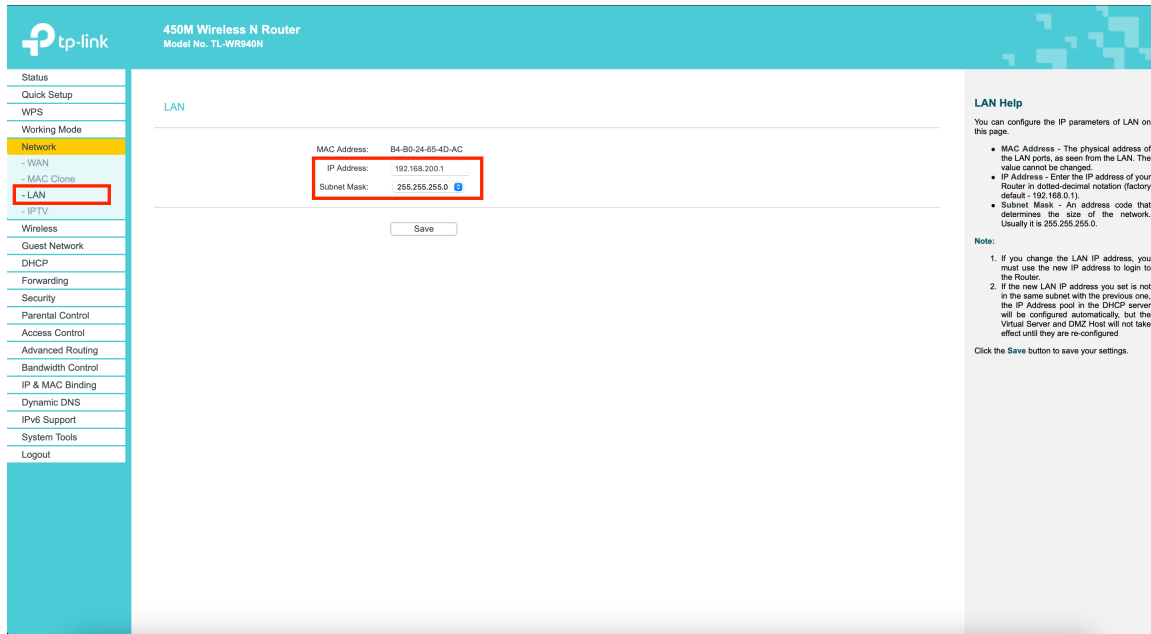
## Setting up TP-Link WR940N

The following steps reproduce the original TP-Link WR940N instructions.

1. Connect your laptop to the router using an LAN cable. Use any of the four yellow/orange LAN ports. Do NOT use the blue WAN port.
2. Open a web browser and navigate to <http://192.168.0.1> and log in with username: admin, password: admin. **NOTE: It is highly recommended to change the default login to something else before taking the system into operational use!**
3. If this does not work, consult the router manual for login instructions.
4. Set up the router as a standard wireless router and save the settings.



5. Under Network → LAN, set IP address to 192.168.200.1 and subnet mask to 255.255.255.0, then save.



## DHCP Configuration (TP-Link WR940N)

Set the following DHCP values:

- Start IP address: 192.168.200.100
- End IP address: 192.168.200.199
- Default gateway: 192.168.200.1

Tip: Set the "Address Lease Time" to 1440 to keep the IP-addresses unchanged for a day.

Save settings and reboot the router.

**450M Wireless N Router**  
Model No. TL-WR940N

**DHCP Settings**

DHCP Server:  Disable  Enable  
 Start IP Address: 192.168.200.100  
 End IP Address: 192.168.200.199  
 Address Lease Time: 1 minutes (1-2880 minutes, the default value is 120 min)  
 Default Gateway: 192.168.200.1 (Optional)  
 Default Domain: (Optional)  
 Primary DNS: 0.0.0.0 (Optional)  
 Secondary DNS: 0.0.0.0 (Optional)

**DHCP Settings Help**

This device is set up by default as a DHCP (Dynamic Host Configuration Protocol) server, which provides the TCP/IP configuration for all the PCs that are connected to this device in the LAN.

- **DHCP Server** - Enable or Disable the Server, you must have another DHCP server within your network or else you must configure the IP address of the computer manually.
- **Start IP Address** - This field specifies the first address in the IP Address pool. 192.168.0.100 is the default start IP address.
- **End IP Address** - This field specifies the last address in the IP Address pool. 192.168.0.199 is the default end IP address.
- **Address Lease Time** - The Address Lease Time is the length of time a network user will be allowed to keep connecting to this device with the current DHCP Address. Enter the amount of time, in minutes, that the DHCP address will be "leased". The time range is 1-2880 minutes. The default value is 120 minutes.
- **Default Gateway** - (Optional) Suggest to input the IP Address of the LAN port of this device. The default value is 192.168.0.1.
- **Default Domain** - (Optional) Input the domain name of your network.
- **Primary DNS** - (Optional) Input the DNS IP address provided by your ISP. Or consult your ISP.
- **Secondary DNS** - (Optional) You can input the IP Address of another DNS server if your ISP provides two DNS servers.

**Note:** To use the DHCP server function of this device, you should configure all computers in the LAN as "Obtain an IP Address automatically" mode. This function will take effect until this device reboots.

Click Save to save the changes.

## Wireless Settings (TP-Link WR940N)

Change SSID and WiFi password as required. Here we use "notautomatic-router" as the SSID. **Do not use the same SSID as in the Raspberry Pi WiFi (ffam-notautomatic).** The WiFi passwords can be the same.

**450M Wireless N Router**  
Model No. TL-WR940N

**Wireless Settings**

Wireless Network Name: notautomatic-router (Also called the SSID)  
 Mode: 11bgn mixed  
 Channel Width: Auto  
 Channel: Auto

Enable Wireless Router Radio  
 Enable SSID Broadcast  
 Enable WDS Bridging

**Wireless Settings Help**

**Note:** The operating distance or range of your wireless connection varies significantly based on the physical placement of the Router. For best results, place your Router.

- Near the center of the area in which your wireless stations will operate.
- In an elevated location such as a high shelf.
- Away from the potential sources of interference, such as PCs, microwaves, and cordless phones.
- With the Antenna in the upright position.
- Away from large metal surfaces.

**Note:** Failure to follow these guidelines can result in significant performance degradation or inability to wirelessly connect to the Router.

**Wireless Network Name** - Enter a value of up to 32 characters. The same Name (SSID) must be assigned to all wireless devices in your network.

**Mode** - Select transmission mode according to your wireless devices.

**Channel Width** - The bandwidth of the wireless channel.

**Channel** - This field determines which operating frequency will be used. It is not necessary to change the wireless channel unless you notice interference problems with another nearby access point. If you select auto, then AP will choose the best channel automatically.

**Enable Wireless Router Radio** - The wireless radio of the Router can be enabled or disabled to allow wireless stations access. If enabled, the wireless stations will be able to access the Router. Otherwise, wireless stations will not be able to access the Router.

**Enable SSID Broadcast** - If you select the Enable SSID Broadcast checkbox, the wireless router will broadcast its name (SSID) on the air.

**Enable WDS Bridging** - You can select this to enable WDS Bridging. With this function, the Router can bridge two or more WLANs. **NOTE:** If this checkbox is selected, you had better make sure the following settings are correct.

**SSID (to be bridged)** - The SSID of the AP your Router is going to connect to as a client. You can also use the survey function to select the SSID to join.

The wireless password setting can be found under "Wireless Security" in TP-Link WR940N:

tp-link 450M Wireless N Router Model No. TL-WR940N

Wireless Security

Disable Security  
 WPA/WPA2 - Personal(Recommended)  
 WPA/WPA2 - Enterprise  
 WEP

Version: WPA2-PSK  
 Encryption: AES  
 Wireless Password: citamunton  
(You can enter ASCII characters between 8 and 63 or Hexadecimal characters between 8 and 64.)  
 Group Key Update Period: 0 Seconds  
(Keep it default if you are not sure, minimum is 30, 0 means no update)

Version: Automatic  
 Encryption: Automatic  
 Radius Server IP:  
 Radius Port: 1812 (1-65535, 0 stands for default port 1812)  
 Radius Password:  
 Group Key Update Period: 0 (in second, minimum is 30, 0 means no update)

Type: Automatic  
 WEP Key Format: Hexadecimal  
 Key Selected: Key 1: Disabled, Key 2: Disabled, Key 3: Disabled, Key 4: Disabled

Save

**Wireless Security Help**

You can select one of the following security options:

- Disable Security - The wireless security function can be enabled or disabled. If disabled, the wireless stations will be able to connect this device without encryption. It is recommended strongly that you choose one of following options to enable security.
- WPA/WPA2 - Personal - Select WPA based on pre-shared passphrase.
- WPA/WPA2 - Enterprise - Select WPA based on Radius Server.
- WEP - Select 802.11 WEP security.

Each security option has its own settings as described follows.

**WPA/WPA2 - Personal**

Version - You can select one of following versions.

- Automatic - Select WPA-PSK or WPA2-PSK automatically based on the wireless station's capability and request.
- WPA-PSK - Pre-shared key of WPA.
- WPA2-PSK - Pre-shared key of WPA2.

Encryption - You can select either Automatic or TKIP or AES.

Wireless Password - You can enter ASCII or Hexadecimal characters. For Hexadecimal, the length should be between 8 and 64 characters; for ASCII, the length should be between 8 and 63 characters.

Group Key Update Period - Specify the group key update interval in seconds. The value can be either 0 or at least 30. Enter 0 to disable the update.

**WPA/WPA2 - Enterprise**

Version - You can select one of following versions.

- Automatic - Select WPA or WPA2 automatically based on the wireless station's capability and request.
- WPA - WPA-Protected Access.
- WPA2 - WPA version 2.

Encryption - You can select either Automatic or TKIP or AES.

## Final Verification (for all router models)

Disconnect the LAN cable from your laptop and connect it to the Raspberry Pi. Connect your laptop to the WiFi network of the router and browse to <http://192.168.200.200>.

The Notautomatic login screen should appear.

NotauScore Login

Login / Password

ID

admin 192.168.1.77

Other Passwords for 192.168.1.77...

Login