KPSPIN

NETWORK MANAGEMENT HANDBOOK

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CONTENT

Vimeo Video Link to training: https://vimeo.com/565530221

1. OBJECTIVES

Overall Objectives:

- Familiarize users with the router interface, menu and settings.
- Equip and enable users to easily manage and troubleshoot basic network problems.
- Allow users to login into the router and perform basic router configurations.
- Allow users to report on the network failure.
- Allow users to control network access.

Specific Objectives:

- Access router interface using PC
- Create Wireless Network
- Create Guest Network
- View connected devices to the internet
- Create and Modify Wireless password
- Create and manage administrators
- Create , Modify the DHCP server Settings
- Learn about things to AVOID / ‘DO NOT CHANGE’ settings.

2. TPLINK ROUTER INTERFACE AND SETUP

Requirements:

- Working Laptop/ Tablet/ Smartphone/ Desktop Computer
- Wired or Wireless Connection to the router (Preferably cable)
- Router (in this case Tplink router)
- Basic knowledge on IT (Using computer)
- Working Modern Internet Browser (Chrome, Edge, Opera)

2.1 Router Interface:

Model installed at KPSPIN locations: TP-LINK RW840N

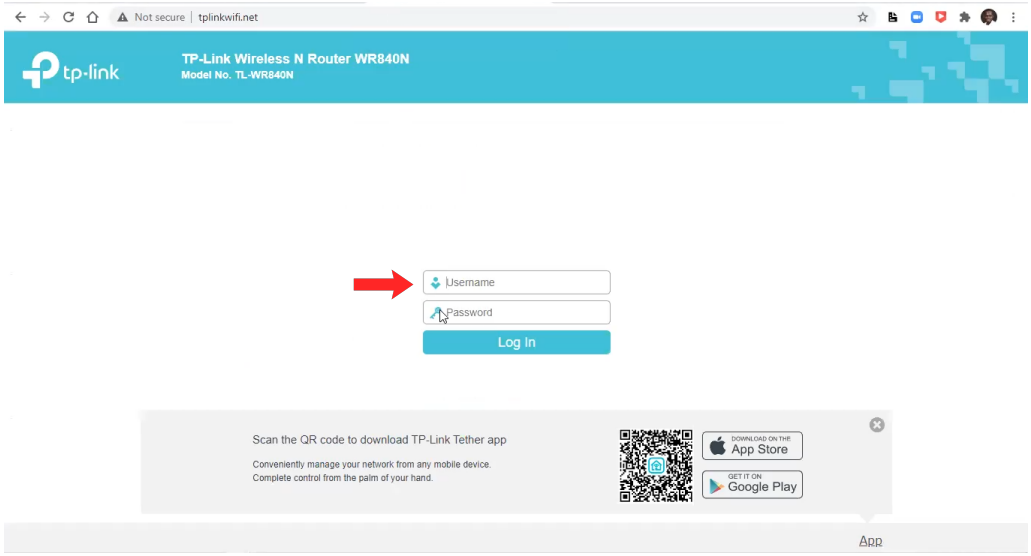
2.2 Connecting the router:

- Using Ethernet cable, connect the router to a laptop on any of the **yellow ports** of the router (do not use the blue port on the router).
- Power the router and laptop pc.
- Give the router about 2 minutes to boot/ load /start up.

3. TP LINK ROUTER MANAGEMENT PORTAL

Login and Network Setup (11:55 in video)

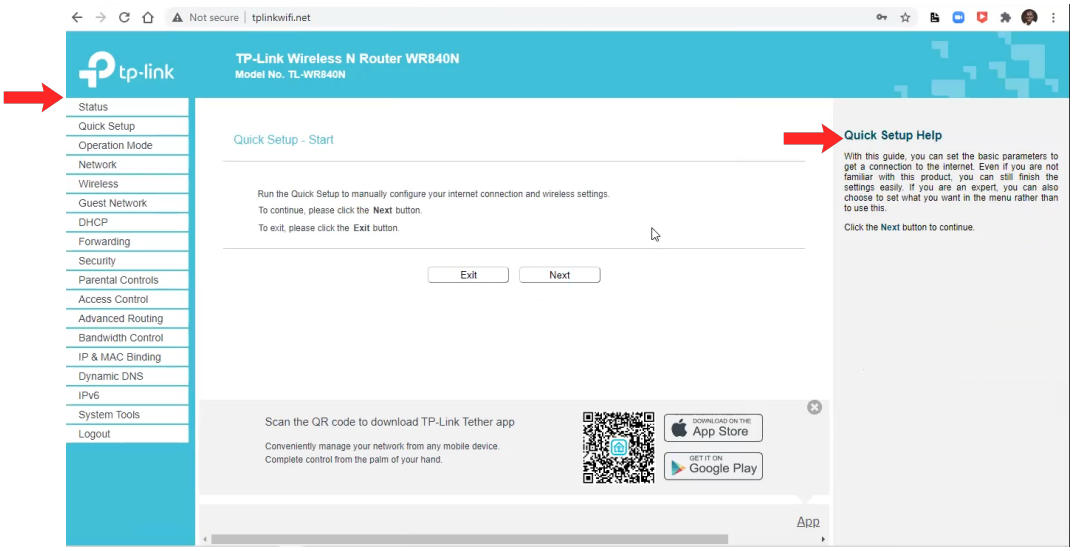
- After setting up the router, Open internet browser and type **http://tplinkwifi.net or the ip (192.168.0.1)**



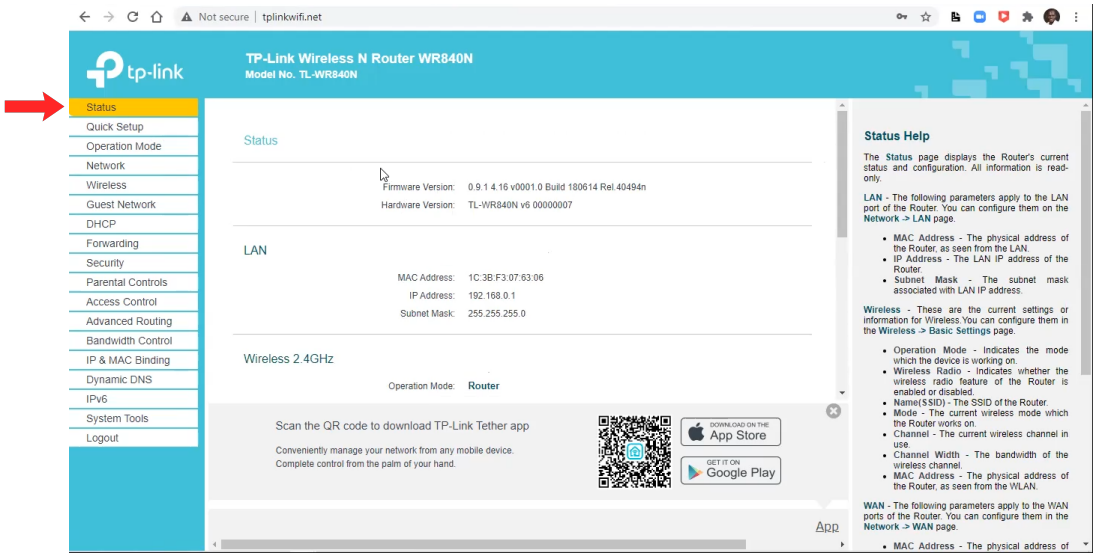
- You will be asked to enter password (for current router firmware) or to enter username and password (for old firmware or routers).
- Enter **admin** for both username and password (lowercase)
- You can later choose to change the username and password of the router for security reasons.

Management Portal (17:35)

- On the left side there is a menu list with various management options. The **Quick Setup Help** on the right side is a handy guide for information about each feature.

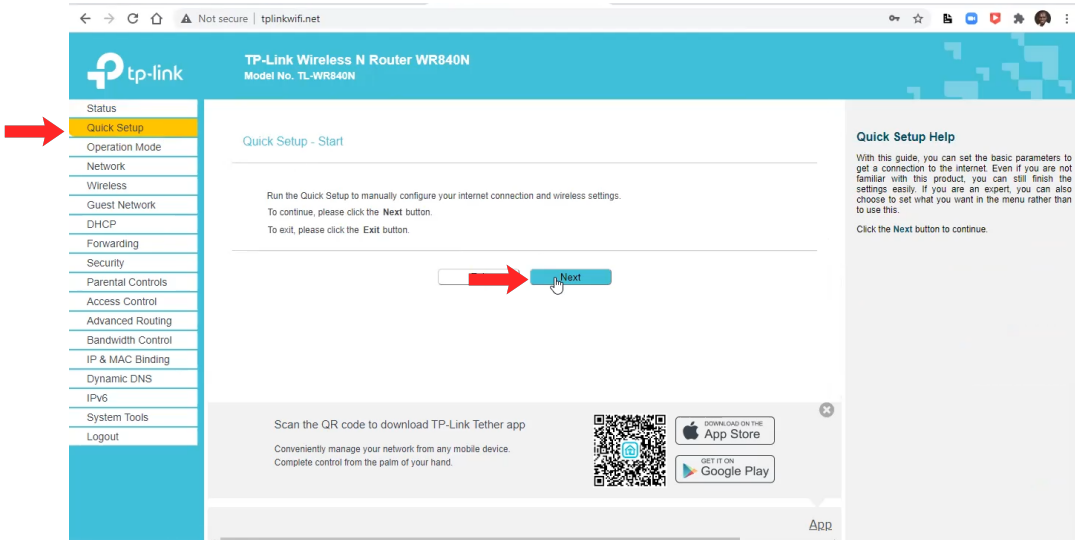


- **Status**: information about connections and summary of all the current settings

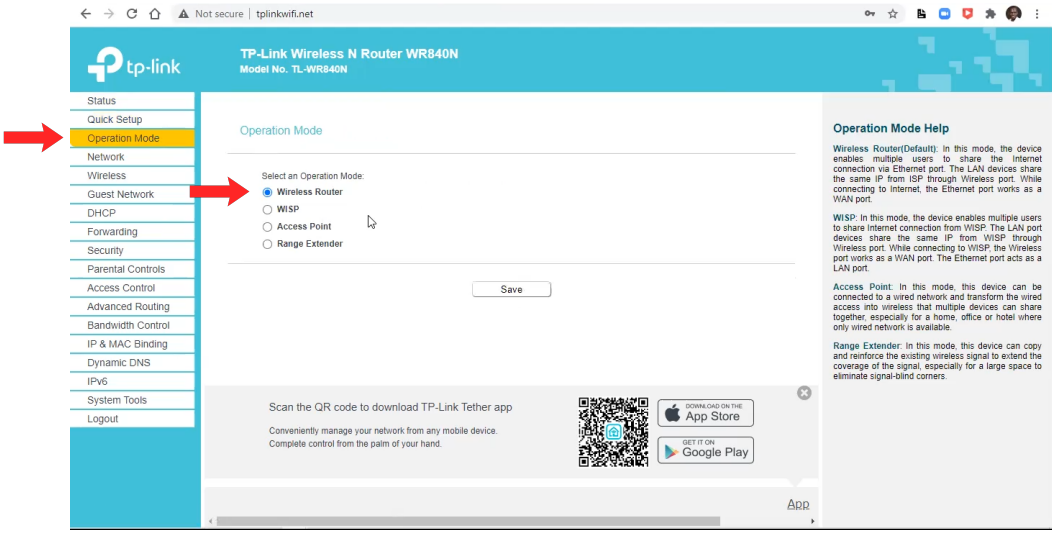


- Mac address, IP Address
- Firmware and Hardware version
- LAN (Local Area Network: MAC address, IP)
- Wireless 2.4 GHz
- WAN: Router IP given by Internet Service provider, Default Gateway IP
- (17:43)

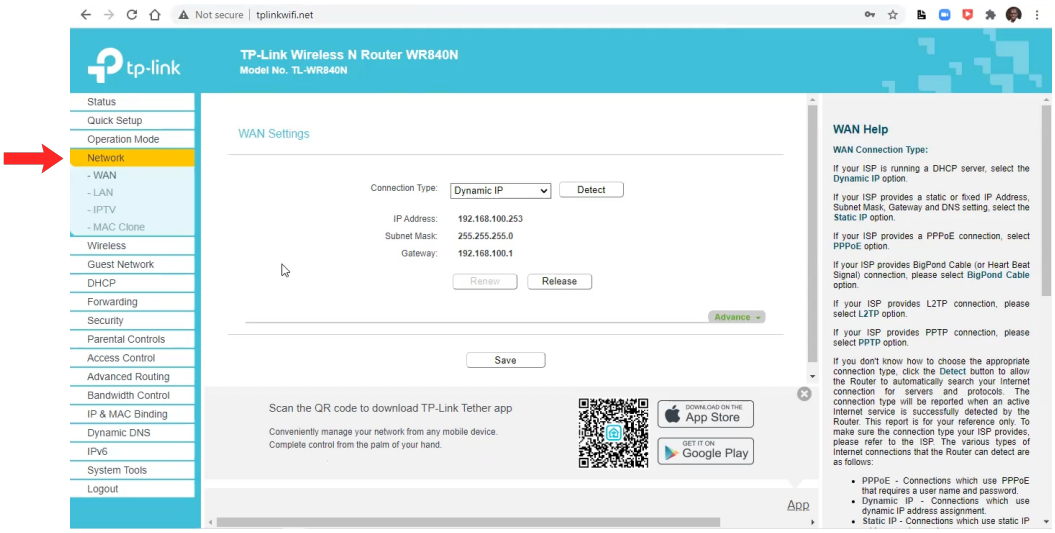
- **Quick Setup**: helps to set up the network connection



- **Operation Mode**: provides various modes for how the router can be used: in the case of KPSPIN, they are used as **Wireless Routers**.



- **Network Tab**: provides various network options for the router



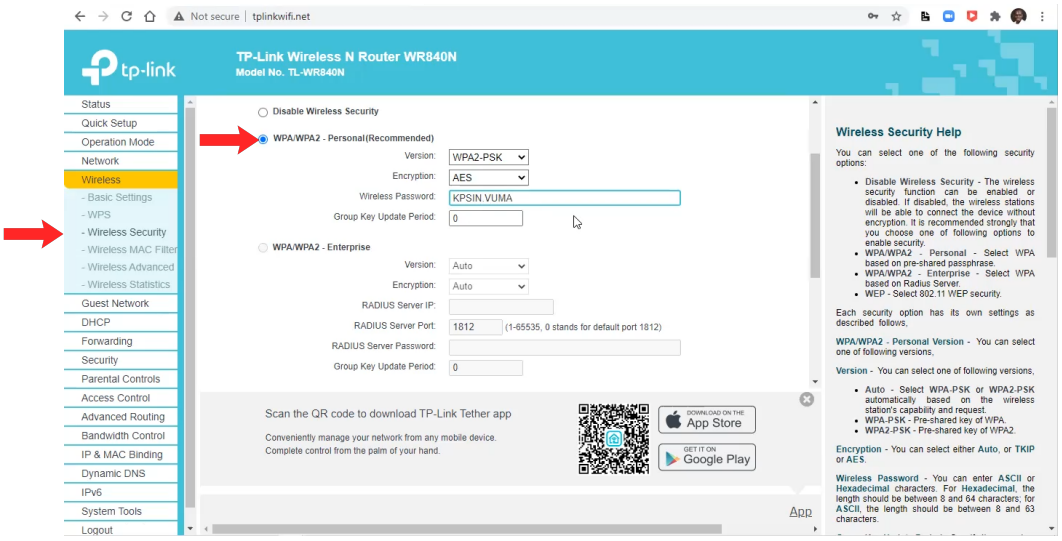
4. SETTING UP WIFI

Router Management Portal -> Wireless Tab

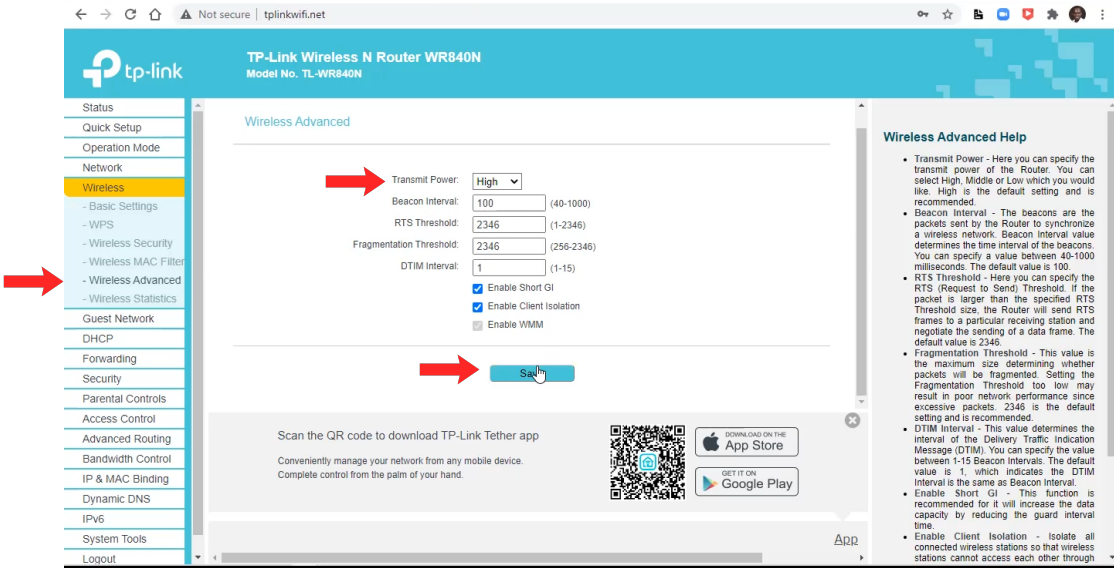
- Click on the Wireless tab in the wifi management portal navigation pane on the left.
- In the section under the Wireless tab, you will see several options like Basic Settings, WPS, Wireless Security, etc.

    - **Basic Settings** (21:35)
        - Under the Wireless Tab, select the Basic Settings option.
        - In the **Wireless Network Name**, enter the preferred name of the Wi-Fi, for example, KPSPIN@VUMA
        - Leave mode , channel and channel width as set (DO NOT CHANGE)
        - Check **Enable SSID Broadcast**
        - **Save** and wait until changes are saved successfully!

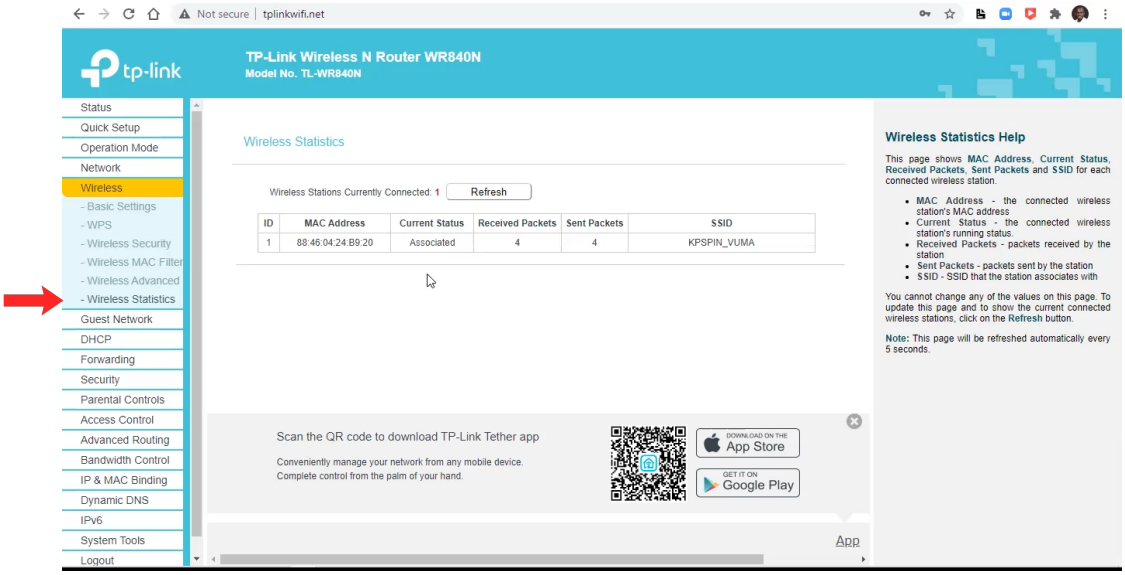
    - **Wireless Security** (24:00)
        - Next, click on the Wireless Security section.
        - Select the wireless security mode which is recommended (mostly is WPA/WPA2-Personal)
        - In the **Version** drop-down, select WPA2-PSK
        - Go to **Wireless password** and enter your secure and preferred password. (This is what people will use to access Wi-Fi)
        - Leave the other setting unchanged and click save.
        - Setting the Wi-Fi Coverage area: (You can choose to reduce the distance from which someone can connect to the Wi-Fi)
        - Scroll down and click **Save.**



- **Wireless Advanced** (28:30)
  - Next, click on the Wireless Advanced section.
  - In the **Transmission Power** drop-down list, select High for maximum range (about 100 meters coverage)
  - Check the **Enable Short GI** and **Enable Client Isolation** options.
  - Leave the other setting unchanged and click **Save**.



- **Wireless Statistics** (31:00)
    - Finally, click on the Wireless Advanced section.
    - Under the wireless tab go to wireless statistics and view devices that are connected to the Wi-Fi, the amount of traffic (packets/load) each device consumes and the SSID it connects from. NOTE: You CAN NOT block user from using the Wi-Fi from here)

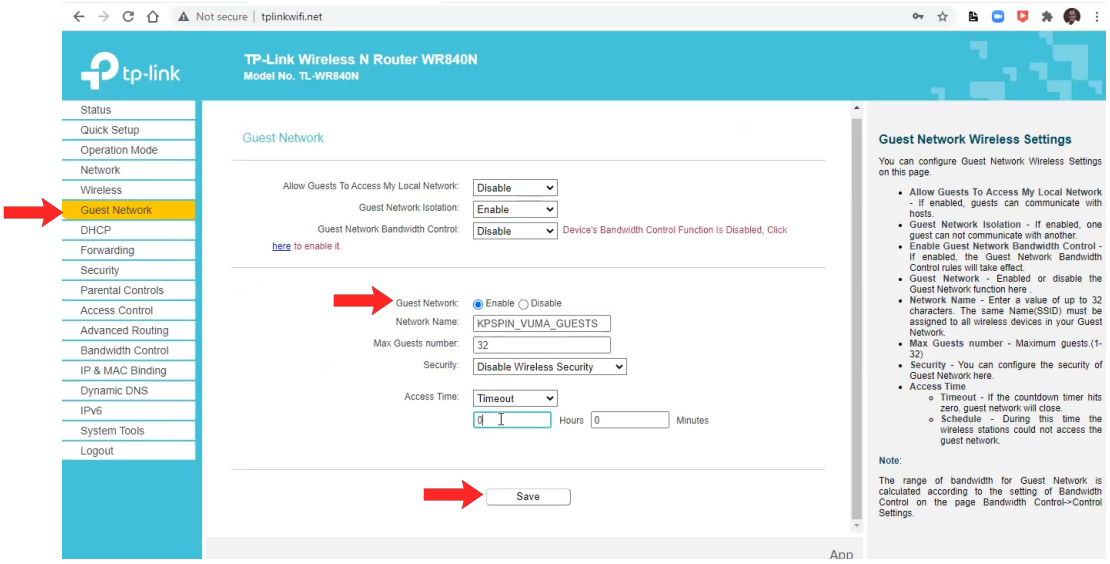


5. SETTING UP GUEST WIFI

- Guest network allows you to specify the time duration for which users/guests can use the internet.
- You can control the bandwidth / internet speed guests can consume.
- You can set timeout for all / specific users e.g. at 8pm internet goes off and reconnects maybe at 9am.
- You can specify the maximum number of guests who can connect to the Wi-Fi e.g. maybe 10 guests.

Router Management Portal -> Guest Network (35:40)

- Select the Router Management option in the navigation panel on the left.
- Enable **Guest Network**.
- In **Network Name**, enter the preferred name of the Guest network e.g. KPSPIN_VUMA_GUESTS.
- Set the **Maximum Guests number** e.g. 32
- Under **Security** select WPA/WPA2-Personal
- Enter **Wireless Password**.
- In the section of **Wireless Schedule** click disable (But if you wish to set time schedule you can enable and specify time limits)
- Leave other settings unchanged and click **Save.**



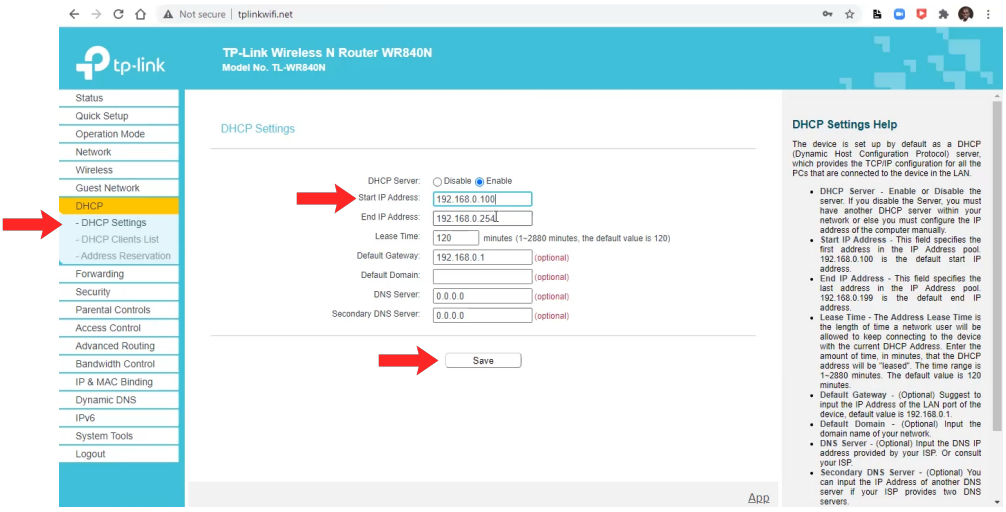
6. DHCP SETTINGS

- Every device that will be connected to your network will require and must have a unique identifier assigned by the router to access the internet. This identifier is called Internet Protocol (IP).
- IP is allocated or given out by DHCP Server.
- IP address looks like this one: 192.168.1.20 and every device must have a number like this which is not similar to any other address (must be unique).
- In most cases you might need to leave these settings unchanged unless you have a specific reason as to why.
- By default TPLink Router assign DHCP Server to allocate 99 set of IP addresses. This means that only 99 devices / users can connect to the router at a given period/time.
- However, this is something you can change, for example from 192.168.100.4-192.168.100.254 to allow for 250 devices to connect to the router at the same time. (The difference between 254 and 004 is the number of allowed devices)
- Note: you should be mindful of the quality of service and performance as 99 clients is the number that allows TPLink to serve best).

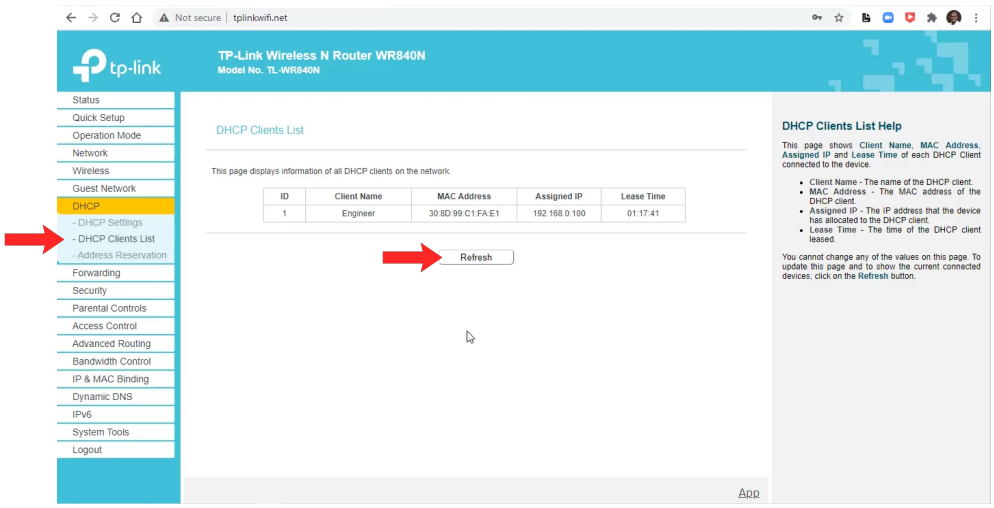
Router Management Portal -> DHCP (41:55)

- Click on the Wireless tab in the wifi management portal navigation pane on the left.
- In the section under the DHCP tab, you will see several options like DHCP Settings, DHCP Clients List, Address Reservation.

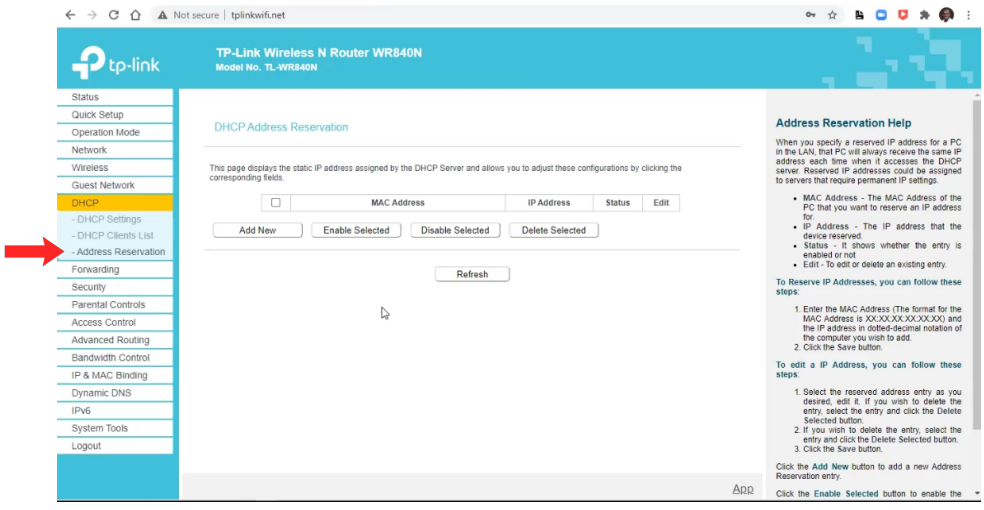
    - **DHCP Settings**
        - Under the DHCP tab, select DHCP Settings.
        - Enable **DHCP Server.**
        - Enter **Start IP Address** e.g. 192.168.100.5
        - Enter **End IP Address** E.g. 192.168.100.254
        - Leave other settings unchanged and **Save**.



- **DHCP Clients List**
  - To view the current connected devices, click on DHCP Clients List.
  - You will see **Client Name:** device name (Sometime vendor name e.g. OPPO) under.
  - **MAC address:** Device ID
  - **Assigned IP:** IP Address allocated to devices
  - **Lease Time:** Amount of time allocated to the device before the IP is assigned to another device
  - You can click the **Refresh** button to see the current list.
  - NO CHANGES SHOULD MADE HERE.



- **Address Reservation**
  - Can be used to reserve an IP address for specific devices in the network (for example: the server).
  - Under the address reservation selection, you can add the device's **MAC Address** and **IP Address**.
  - Select **Status** as Enabled to activate the reservation.



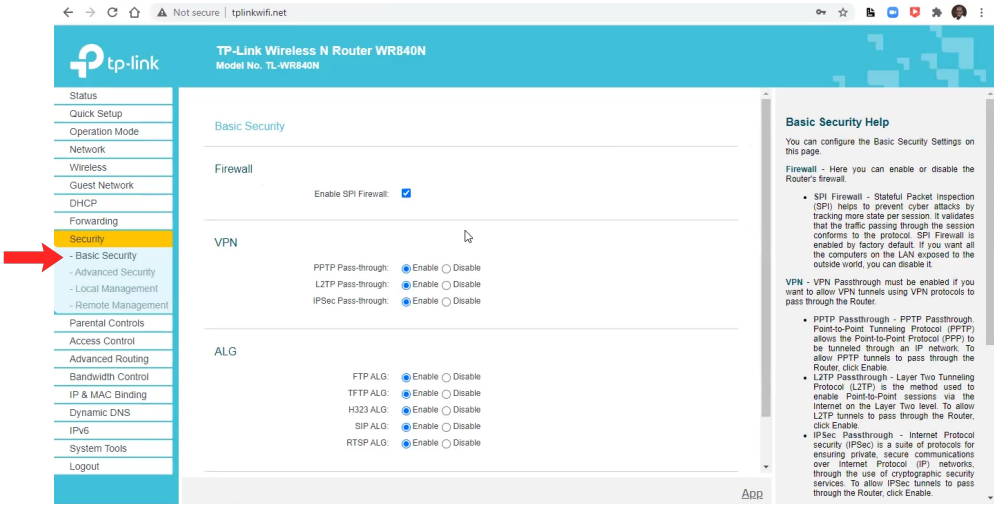
7. CREATE AND MANAGE NETWORK ADMINISTRATORS

- This setting will allow you to restrict devices that can access the router web interface and settings.
- To do this you can specifically identify devices which are known to you and you trust can perform router settings. We call these devices as administrators.

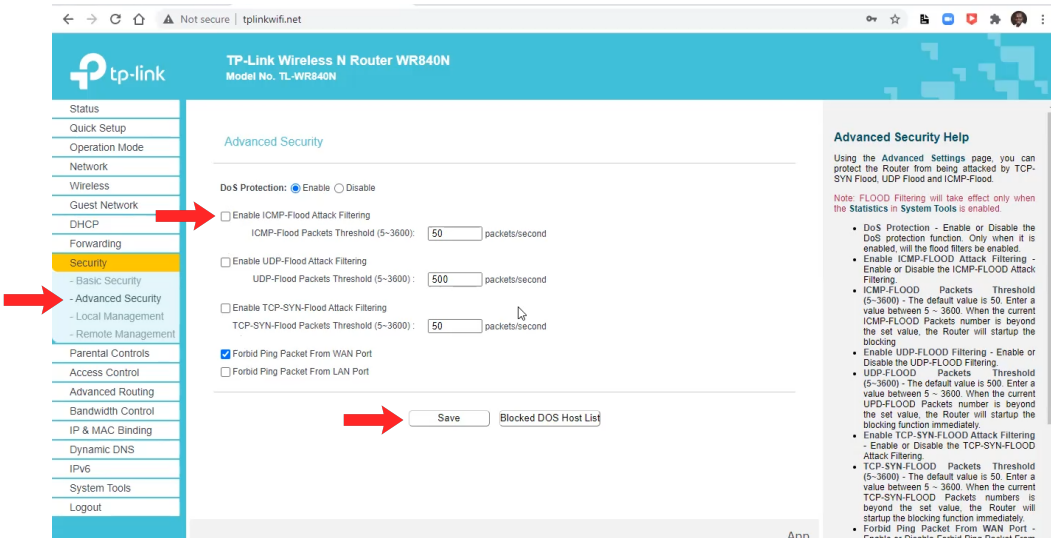
Router Management Portal -> Security (53:30)

- Click on the Security in the wifi management portal navigation pane on the left.
- In the section under the Security tab, you will see several options like Basic Security, Advanced Security, Local Management and Remote Management

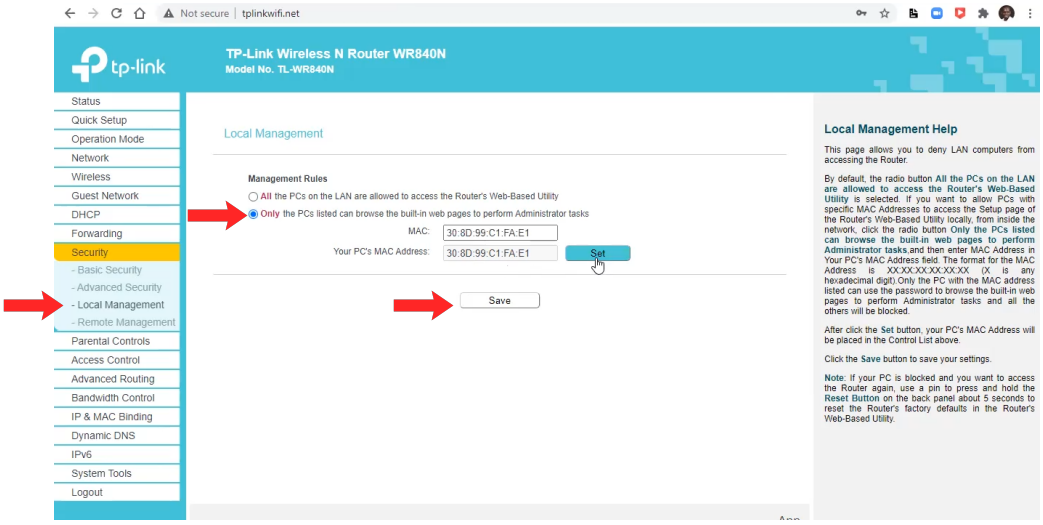
    - **Security**
        - Under the Security tab, you will see the Basic Security page.
        - By default, all basic security measures are activated. DO NOT CHANGE anything.



    - **Advanced Security**
        - Under the Security, select Advanced Security.
        - DoS should always be enabled to protect the network from cyber attacks.
        - (Check all the following checkboxes)
        - Enable ICMP- Flood Attack Filtering.
        - Enable UDP- Flood Attack Filtering.
        - Enable TCP- SYN- Flood Attack Filtering.
        - Enable Forbid Ping Packet From WAN Port.
        - Enable Forbid Ping Packet From LAN Port.
        - Click **Save**



- **Local Management**
  - Under local management, you can restrict which devices can access the Router Management Database.
  - Under the Security tab, open the Local Management page.
  - Click the second option which says **ONLY PCs listed …**
  - NOTE: The first option is always you PCs MAC address thereafter you can add others (people/devices with management roles).
  - **Set** and click **Save**.



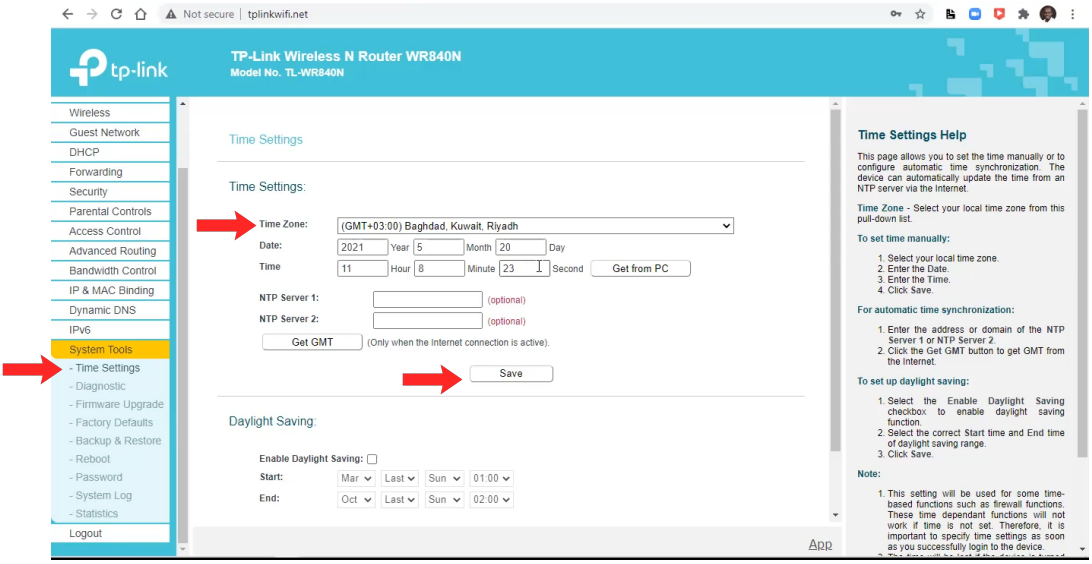
8. CHANGING MANAGEMENT ACCESS RIGHTS

Here you will learn how to change the username and password of the router from default values. These are the rights administrators will use to login into the router interface. Please keep them safe and secure!

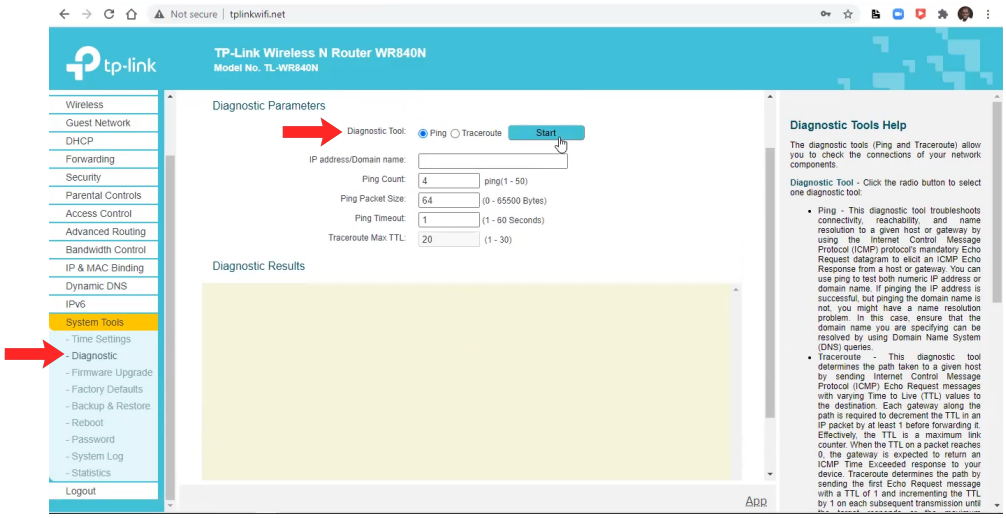
Router Management Portal -> System Tools (59:30)

- Click on the System Tools in the wifi management portal navigation pane on the left.
- In the section under the System Tools tab, you will see several options like Time Settings, Diagnostics, Firmware Upgrade, etc.

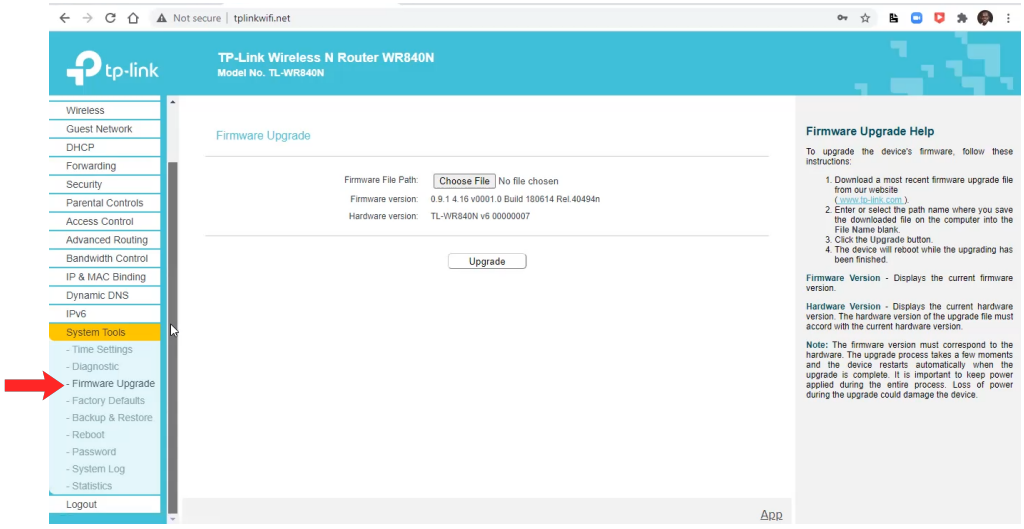
    - **Time Settings** (59:50)
        - Under the System Tools tab, open the Time Settings page.
        - Set the **Time Zone** to your preferred time zone, for eg GMT+3 for Nairobi.
        - You can set the current **Date** and **Time** to allow the system to maintain accurate logs.
        - Click **Save**.



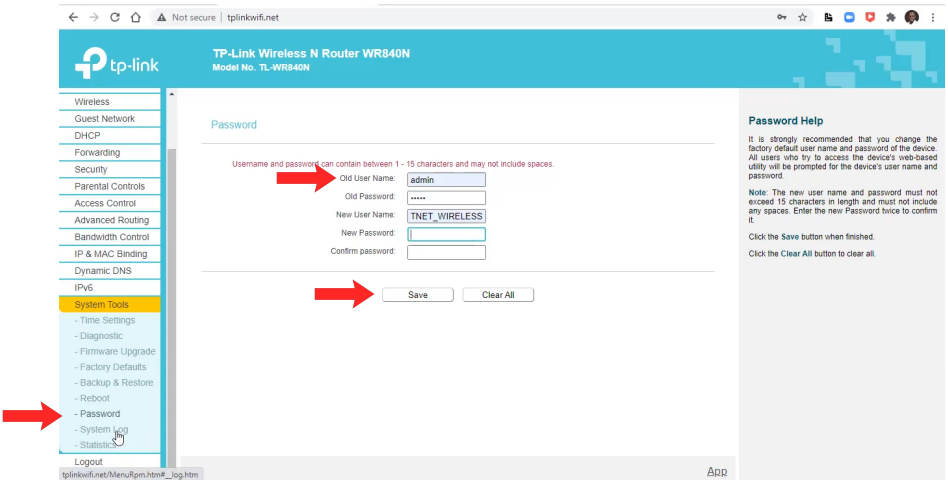
    - **Diagnostic Tools** (1:01:17)
        - To test whether the router is receiving network connection or not, open the Diagnostics page.
        - You can select **Ping** to reach a certain device/ IP to check if there is a complete connection.
        - Disconnected- no results, Connected- results



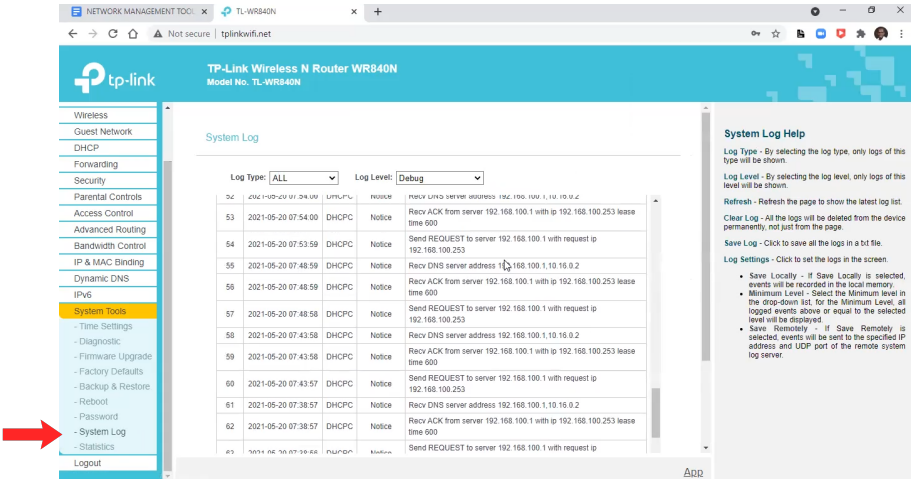
- **Firmware Upgrade** (1:02:20)
  - Used to upgrade the firmware (software) of the router.
  - It is automatically set to upgrade the router at a time when there is least activity on the Network.

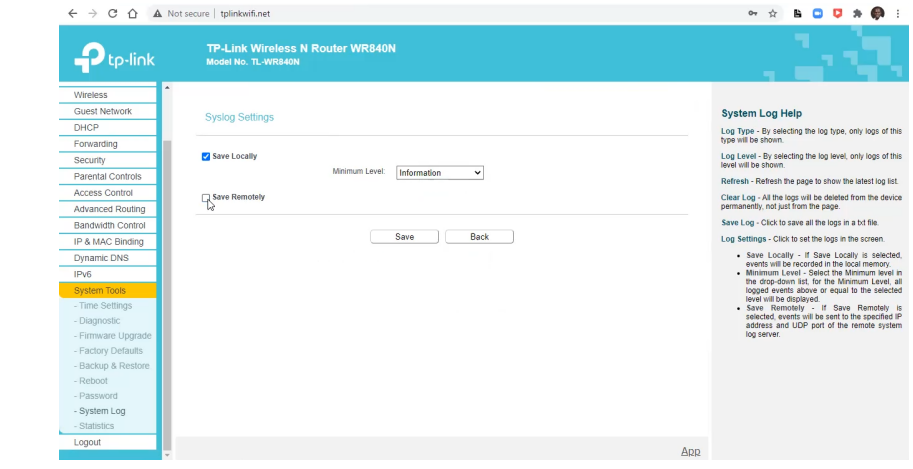


- **Password** (1:03:45)
  - You will be asked to enter both **Old Username** and **Old Password**. (Use admin for both).
  - Then enter your preferred **New Username** and **New Password** and then confirm the new password to make sure they are similar.
  - Click **Save** (router automatically reboots upon updating password).

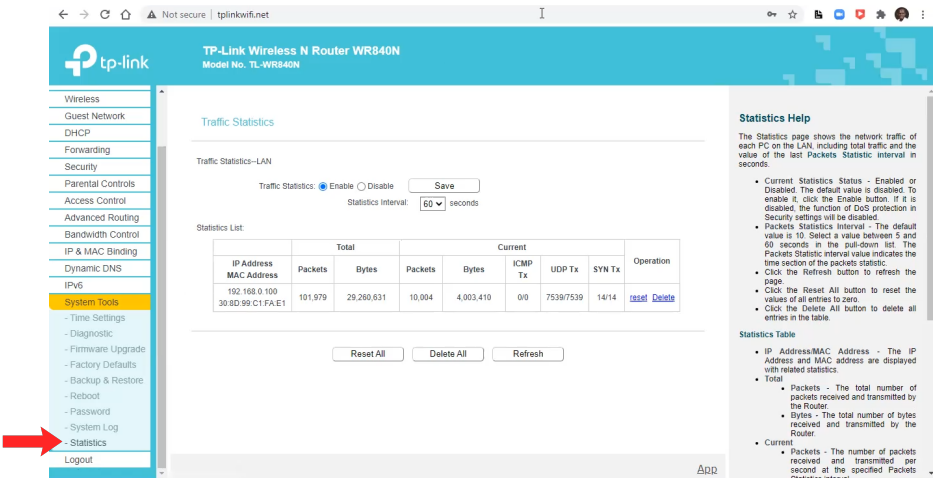


- **System Log** (1:04:00)
  - They collect information and maintain log of all the changes that happen in the router.
  - You can save these logs manually/ automatically under the System Logs tab.



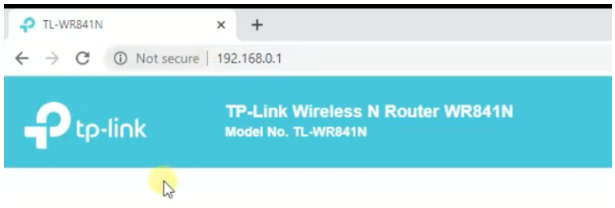


- **Statistics** (1:06:50)
    - Under Statistics, you can see the current users connected to their network and their bandwidth usage.



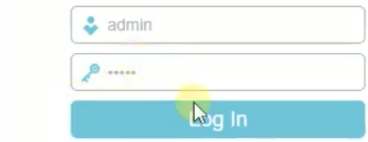
9. CHECKING FOR DEVICES CONNECTED TO THE NETWORK

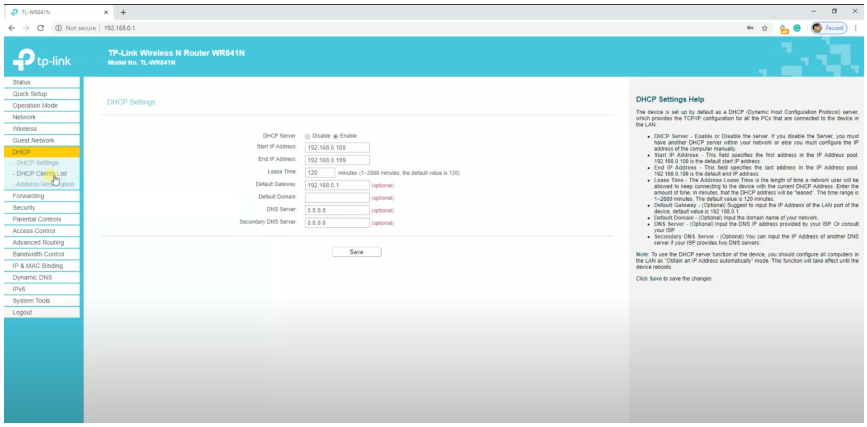
- Enter IP address in browser search bar



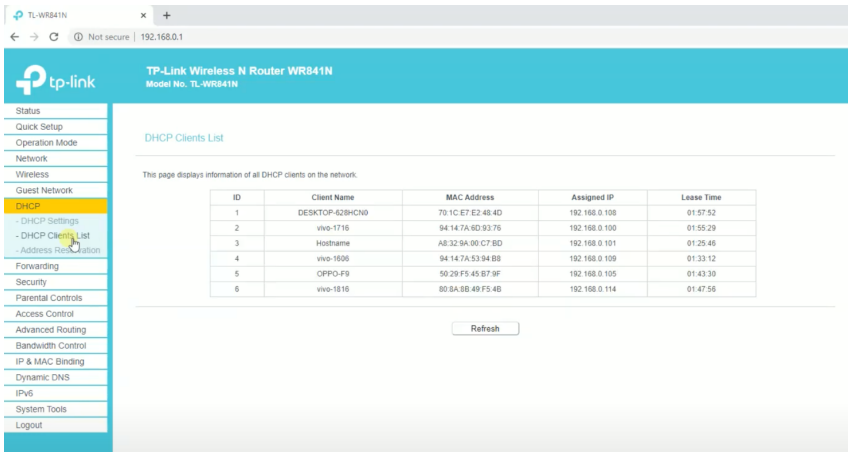
- Login to the tp-link router management portal.

- On the menu to the left of the page, scroll and select “DHCP Client List”





- Clients on the network will be displayed on the page. Page displays different devices connected to the network.



10. FAQ's

Does allowing for additional users negatively impact the speed of each user?
Yes - there is only a certain amount of connectivity that is shared among all the users on the network. More users on the network means each user gets a smaller share.

How do we change the number of guests allowed on the network?
In the menu on the left, click "Guest Network". From the form in the center of the webpage, change the value of "Max Guests number".

What does client isolation mean, and should it be enabled?
With client isolation enabled, users connected to the internet cannot look at what other users are sending over the internet. This is an important feature to have enabled because we do not want a malicious user stealing personal information or data from other users without them knowing.

How can we monitor which users are using greater amounts of data?
In the menu on the left, click System Tools > Statistics. In the center of the webpage, there is a list of the IP Addresses of the devices on the network. The total number of bytes is an appropriate measure of network usage for the device.

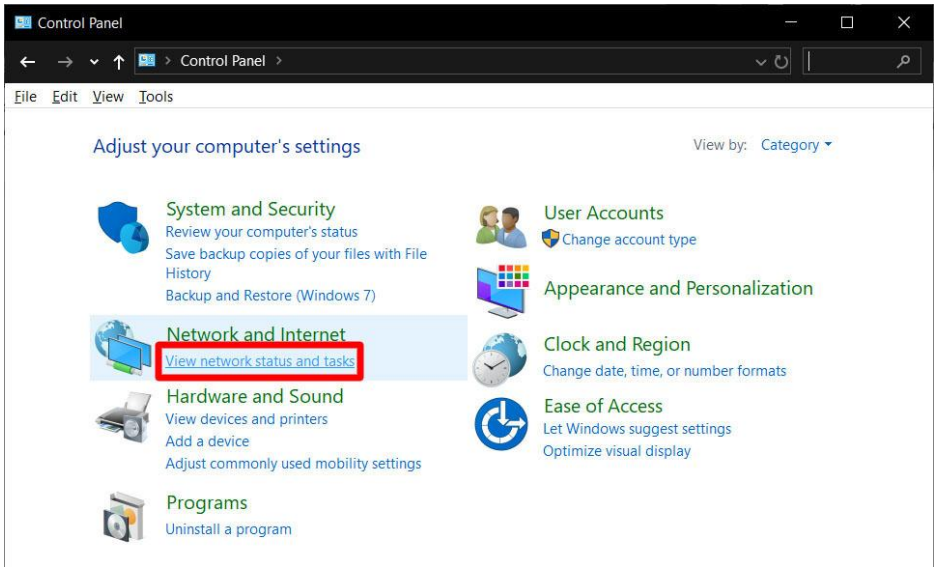
Is there a way to physically reset the router?
Yes, there is a button on the router that can be held down to reset the router to factory settings. However, resetting the router will also require reconfiguration, which requires Tunapanda to send a network engineer.

11. APPENDIX: FINDING YOUR ROUTER'S DEFAULT GATEWAY IP

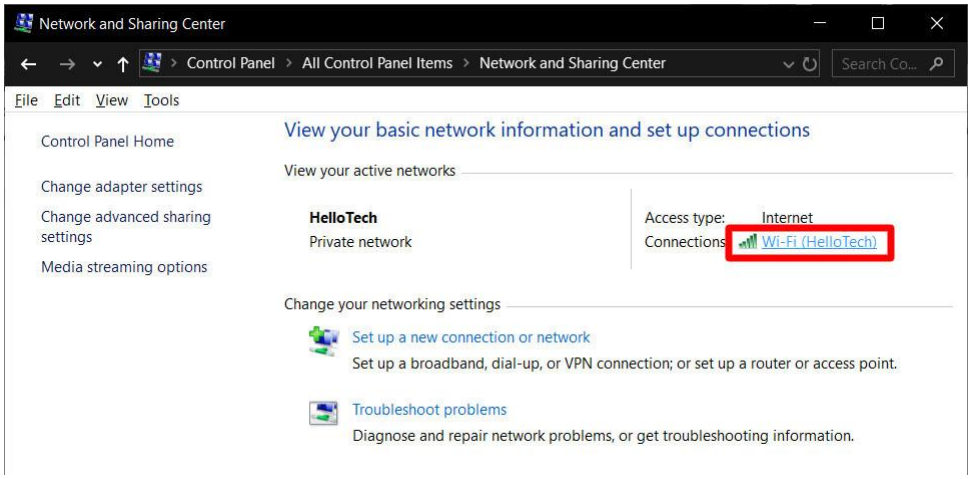
You can use the following steps to find your router's Default Gateway IP address to access its relevant WiFi Management Portal.

11.1. Finding Router Default Gateway IP Address Via Control Panel

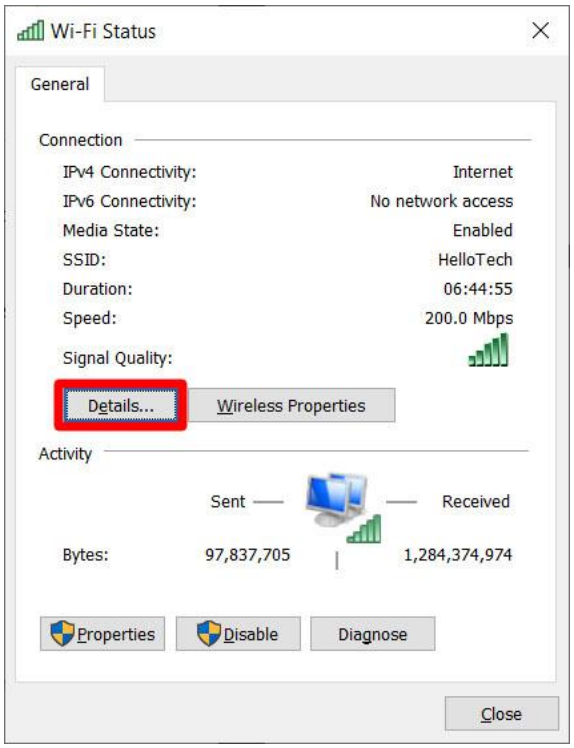
- Open the Windows search bar and type **Control Panel** in the search box.
- Hit Enter. You can also double click on the Control Panel app.
- Under **Network and Internet**, click on **View network status and tasks**.



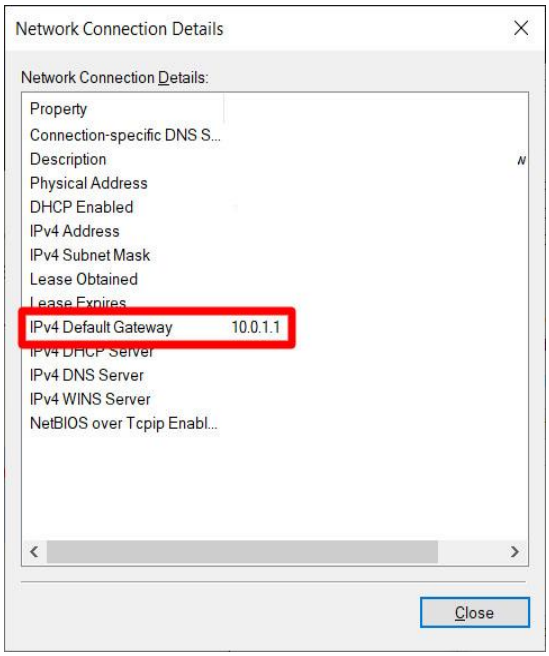
- Then click on the link for Connection: WiFi. If you are connecting directly to your router with an Ethernet cable, this might say Connection: Ethernet instead.



- Then click on Details in the pop-up box.

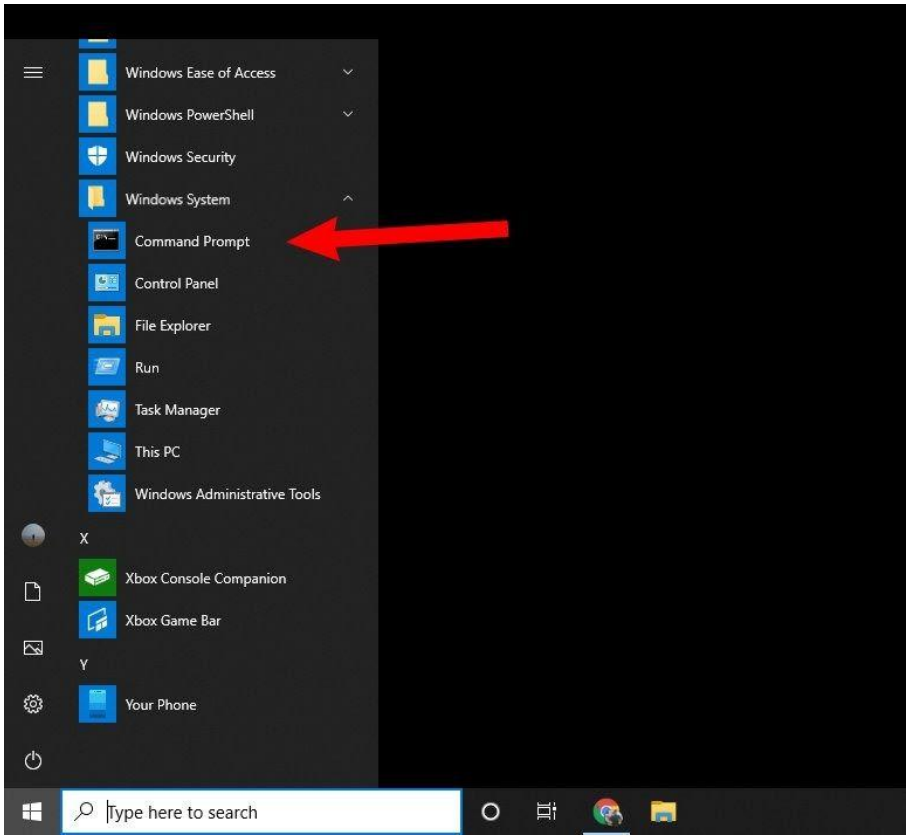


- Your router's IP address will be next to IPv4 Default Gateway.

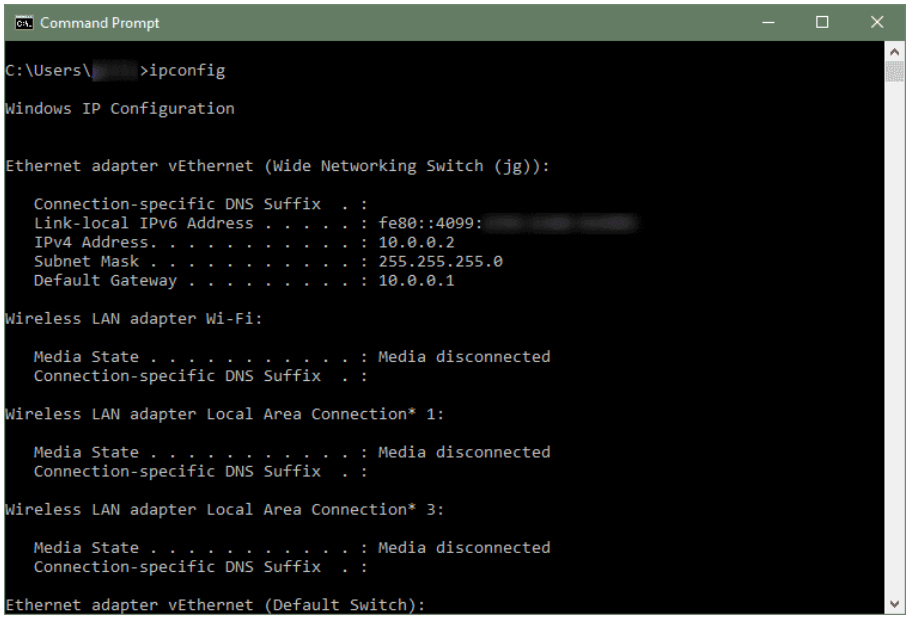


11.2 Finding Router Default Gateway Ip Address Via Command Prompt

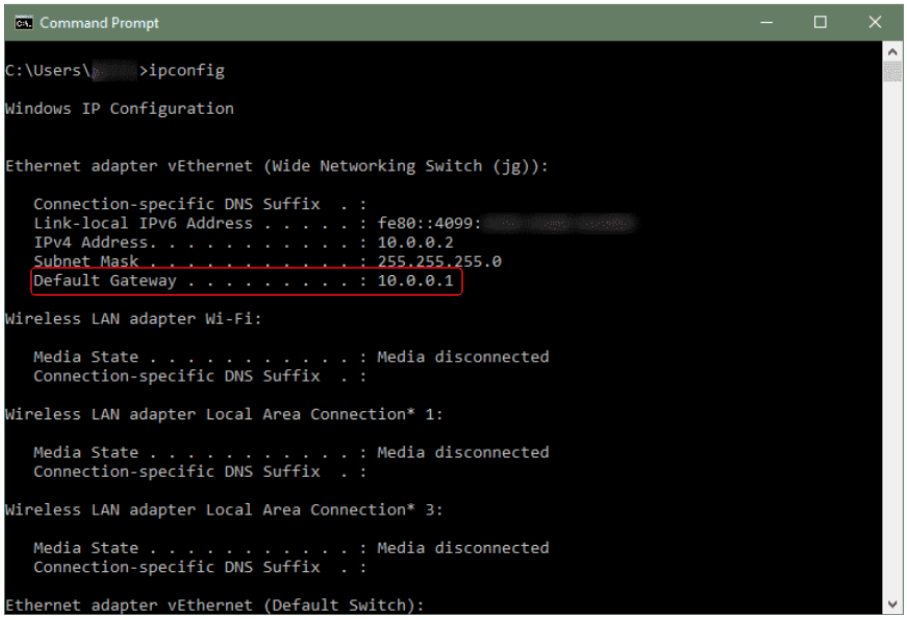
- Open command prompt using the bottom search toolbar. A window named ‘Command Prompt’ should pop-up.



- Type ‘ipconfig’ and press Enter/Return



- Read the value of ‘Default Gateway’



- Video walk through: https://www.youtube.com/watch?v=X8SFK609WOA