

MODERN EDUCATION SOCIETY'S WADIA COLLEGE OF ENGINEERING, PUNE

Fourth Year of Computer Engineering (2019 Course)

410247: Laboratory Practice IV

410244(C): Cyber Security and Digital Forensics

NAME OF STUDENT:	CLASS: BE
SEMESTER/YEAR: VII	ROLL NO:
DATE OF PERFORMANCE:	DATE OF SUBMISSION:
EXAMINED BY:	EXPERIMENT NO:

**TITLE: Configure a Wi-Fi adapter and Access Point.**

**AIM:** To prohibit the unauthorized access to Wi-Fi network (wired/wireless), Deny unethical access to different IP resources connected to the network using router and its features.

**OBJECTIVES:** To understand various vulnerabilities and use of various tools for assessment of vulnerabilities

**OUTCOMES:** Identify various vulnerabilities and demonstrate using various tools.**PRE-**

**REQUISITES:** Knowledge of Networking, Access Point, ARP - Binding, IP Address, MAC Address. Basic knowledge of computer, routers, network and security information.

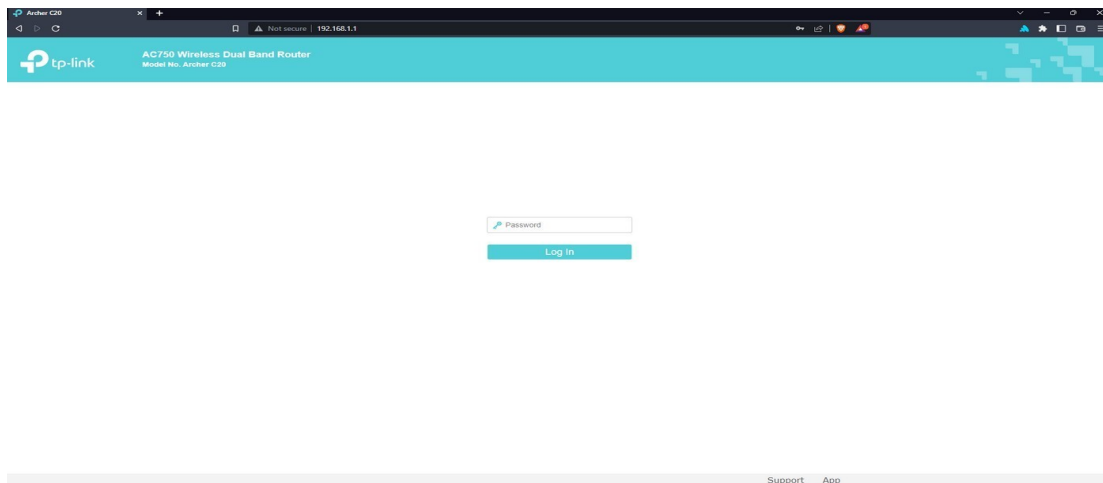
**THEORY:**

A **wireless router** is a device that performs the functions of a router and also includes the functions of a wireless access point. It is used to provide access to the Internet or a private computer network. Depending on the manufacturer and model, it can function in a wired local area network, in a wireless-only LAN, or in a mixed wired and wireless network. Wireless routers typically feature one or more network interface controllers supporting Fast Ethernet or Gigabit Ethernet ports integrated into the main system on a chip (SoC) around which the router is built. An Ethernet switch as described in IEEE 802.1Q may interconnect multiple ports. Some routers implement link aggregation through which two or more ports may be used together improving throughput and redundancy. All wireless routers feature one or more wireless network interface controllers.

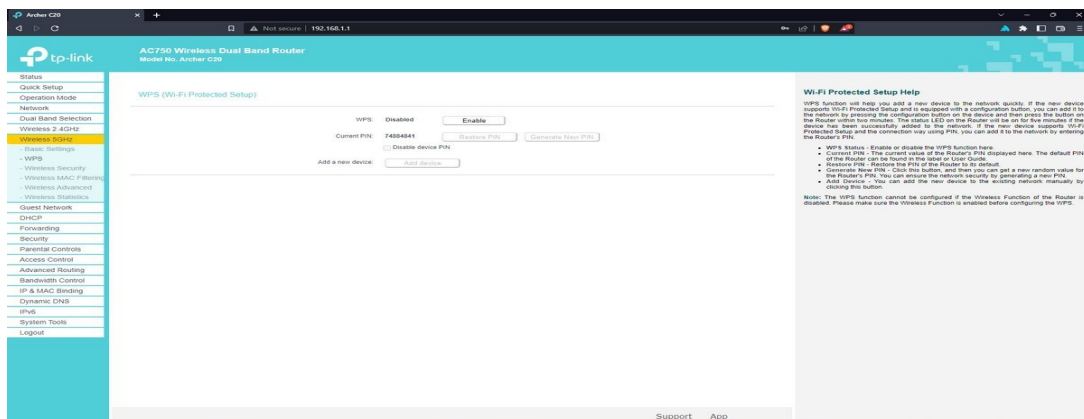
These are also integrated into the main SoC or may be separate chips on the printed circuit board. It also can be a distinct card connected over a MiniPCI or MiniPCIe interface. Some dual-band wireless routers operate the 2.4 GHz and 5 GHz bands simultaneously. Wireless controllers support a part of the IEEE 802.11-standard family and many dual-band wireless routers have data transfer rates exceeding 300 Mbit/s (For 2.4 GHz band) and 450 Mbit/s (For 5 GHz band). Some wireless routers provide multiple streams allowing multiples of data transfer rates (e.g. a three-stream wireless router allows transfers of up to 1.3 Gbit/s on the 5 GHz bands). Some wireless routers have one or two USB ports. These can be used to connect printer or desktop or mobile external hard disk drive to be used as a shared resource on the network.

A USB port may also be used for connecting mobile broadband modem, aside from connecting the wireless router to an Ethernet with xDSL or cable modem. A mobile broadband USB adapter can be connected to the router to share the mobile broadband Internet connection through the wireless network. Some wireless routers come with either xDSL modem, DOCSIS modem, LTE modem, or fiber optic modem integrated.

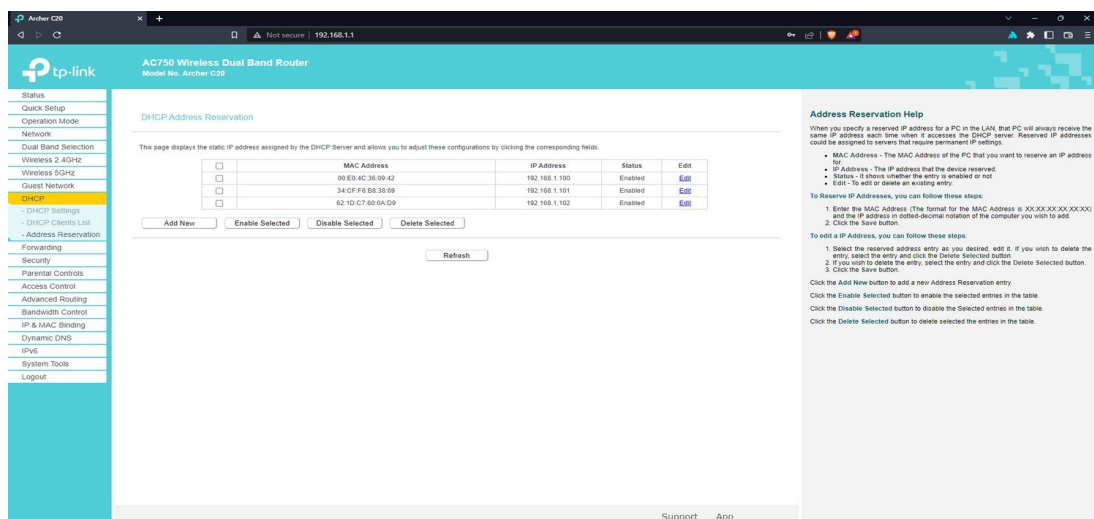
## Local Login Page For Wifi Configuration



## Disable WPS mode, No-one can brute-force on the SSID



## Displaying all devices connected to the network



## Performing Address Reservation via MAC address

The screenshot shows the TP-Link Archer C20 web interface. The left sidebar contains navigation links: Status, Quick Setup, Operation Mode, Network, Dual Band Selection, Wireless 2.4GHz, Wireless 5GHz, Guest Network, DHCP, DHCP Settings, DHCP Clients List (highlighted), Address Reservation, Forwarding, Security, Parental Controls, Access Control, Advanced Routing, Bandwidth Control, IP & MAC Binding, Dynamic DNS, IPv6, System Tools, and Logout. The main content area is titled 'DHCP Clients List' and displays a table of connected clients. A 'Refresh' button is located below the table. The right sidebar contains 'DHCP Clients List Help' text.

ID	Client Name	MAC Address	Assigned IP	Lease Time
1	RedmiNotePro-Redmi	88:AD:10:A4:65:35	192.168.1.107	01:14:44
2	ADUSVoicebox	34:CF:F9:83:38:69	192.168.1.101	Permanent
3	OnePlus 7	62:45:72:98:67:43	192.168.1.124	01:30:25
4	Unknown	7A:FF:A2:8E:93:45	192.168.1.119	01:07:55
5	MTV	8C:94:42:8D:7D:55	192.168.1.156	01:00:06
6	DESKTOP-HPMADUHS	E8:9E:84:04:EF:21	192.168.1.115	01:54:27

## Making Check at System Log Files

The screenshot shows the TP-Link Archer C20 web interface with the 'System Log' section selected. The left sidebar is the same as in the previous screenshot. The main content area is titled 'System Log' and includes a 'Log Type' dropdown (set to 'ALL') and a 'Log Level' dropdown (set to 'Information'). Below these is a table of log entries. At the bottom of the table are buttons for 'Refresh', 'Clear Log', 'Save Log', and 'Log Settings'. The right sidebar contains 'System Log Help' text.

Index	Time	Type	Level	Content
1	2022-11-11 20:19:10	DHCPD	Notice	Send ACK to 192.168.1.110
2	2022-11-11 20:19:10	DHCPD	Notice	Recv REQUEST from D8:2B:FF:90:A0:FC Transaction ID 54654437
3	2022-11-11 20:03:23	DHCPD	Notice	Send ACK to 192.168.1.115
4	2022-11-11 20:03:22	DHCPD	Notice	Recv REQUEST from E8:9E:84:04:EF:21 Transaction ID 63aa56b1
5	2022-11-11 20:03:22	DHCPD	Notice	Send OFFER with ip 192.168.1.115
6	2022-11-11 20:03:22	DHCPD	Notice	Recv DISCOVER from E8:9E:84:04:EF:21 Transaction ID 63aa56b1
7	2022-11-11 20:03:16	DHCPD	Notice	Recv INFORM from E8:9E:84:04:EF:21
8	2022-11-11 20:03:16	DHCPD	Notice	Recv INFORM from E8:9E:84:04:EF:21
9	2022-11-11 20:03:13	DHCPD	Notice	Recv INFORM from E8:9E:84:04:EF:21
10	2022-11-11 19:57:08	DHCPD	Notice	Send ACK to 192.168.1.101
11	2022-11-11 19:57:08	DHCPD	Notice	Recv REQUEST from 34:CF:F9:83:38:69 Transaction ID 77982c4d
12	2022-11-11 19:47:43	DHCPD	Notice	Send ACK to 192.168.1.121
13	2022-11-11 19:47:43	DHCPD	Notice	Recv REQUEST from 98:09:CF:A7:9E:F1 Transaction ID 64d263c
14	2022-11-11 19:47:43	DHCPD	Notice	Send OFFER with ip 192.168.1.121
15	2022-11-11 19:47:43	DHCPD	Notice	Recv DISCOVER from 98:09:CF:A7:9E:F1 Transaction ID 64d263c
16	2022-11-11 19:41:38	DHCPD	Notice	Send ACK to 192.168.1.103
17	2022-11-11 19:41:38	DHCPD	Notice	Recv REQUEST from D8:00:17:80:5A:84 Transaction ID 87aa27fc
18	2022-11-11 19:40:40	DHCPD	Notice	Send ACK to 192.168.1.112
19	2022-11-11 19:40:40	DHCPD	Notice	Recv REQUEST from 0E:8B:EE:C8:13:82 Transaction ID 16099bc

## CONCLUSION:

- Hence, by doing the basic configuration's in local Wi-Fi console we can prohibit the unauthorized and unethical use of network.

## QUESTIONS:

1. Describe the process of building a wireless network.
2. How to ensure that Wi-Fi is Blocking Hackers?
3. Explain the modes of wireless security in brief.