

Practical 9: Wireless Network Configuration

Practical Title: Setup SSID, WPA2 security; simulate mobile client access.

Aim: To configure a basic wireless network with an SSID and WPA2 security and to connect a wireless device to it using Cisco Packet Tracer.

Objective:

- To understand the components of a wireless network.
- To configure a wireless router with a Service Set Identifier (SSID).
- To enable WPA2 security on the wireless network.
- To connect a mobile device or a laptop with a wireless adapter to the network.

Theory: A wireless network uses radio waves to connect devices. The **SSID (Service Set Identifier)** is the name of the wireless network that is broadcast to identify it. **WPA2 (Wi-Fi Protected Access 2)** is a security protocol that encrypts wireless traffic to prevent unauthorized access. Using WPA2 with a strong password is a best practice for wireless network security.

Steps:

1. Create the Network Topology:

- Open Cisco Packet Tracer.
- Drag and drop a Wireless Router (e.g., WRT300N) from the device menu.
- Add a Laptop (or a smartphone). For the Laptop, you will need to replace its wired adapter with a wireless one (turn off the device, remove the old adapter, drag in the wireless one, and turn the device back on).
- Connect the Laptop to the Wireless Router.

2. Configure the Wireless Router:

- Click on the Wireless Router.
- Go to the **GUI** tab.
- Under the **Setup** tab, ensure the IP address is configured (e.g., 192.168.0.1).
- Go to the **Wireless** tab.
- Change the **SSID** to a desired name, for example, MySecureWiFi.
- Under **Wireless Security**, select **WPA2 Personal**.
- Set a strong **passphrase**, for example, CiscoPacketTracer.

3. Connect the Wireless Client:

- Click on the Laptop.
- Go to the **Desktop** tab, then click **PC Wireless**.
- Click the **Connect** tab.
- The SSID MySecureWiFi should appear in the list. Select it and click **Connect**.
- Enter the WPA2 passphrase you configured earlier.

- The device should now be connected and receive an IP address from the router's DHCP server.
- 4. **Verify Connectivity:**
 - From the Laptop's **Command Prompt**, use the command `ipconfig` to view the assigned IP address.
 - Use the `ping` command to test connectivity to the router's IP address (e.g., `ping 192.168.0.1`).

Conclusion: This practical successfully demonstrated the setup of a basic wireless network with a custom SSID and WPA2 security. We were able to simulate a wireless client connecting to the network, confirming that the security and connectivity settings were configured correctly.

Viva / Oral Questions:

1. What is an SSID, and what is its purpose?
2. What is the difference between WPA and WPA2 security?
3. Why is it important to secure a wireless network?
4. What is a MAC address filter, and how can it be used for security?
5. How does a wireless router typically assign IP addresses to clients?

VERIFY CONNECTIVITY

Cisco Packet Tracer PC Command Line 1.0

```
C:\>ping 192.168.0.1
```

Pinging 192.168.0.1 with 32 bytes of data:

Reply from 192.168.0.1: bytes=32 time=17ms TTL=255

Reply from 192.168.0.1: bytes=32 time=18ms TTL=255

Reply from 192.168.0.1: bytes=32 time=20ms TTL=255

Reply from 192.168.0.1: bytes=32 time=9ms TTL=255

Ping statistics for 192.168.0.1:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 9ms, Maximum = 20ms, Average = 16ms