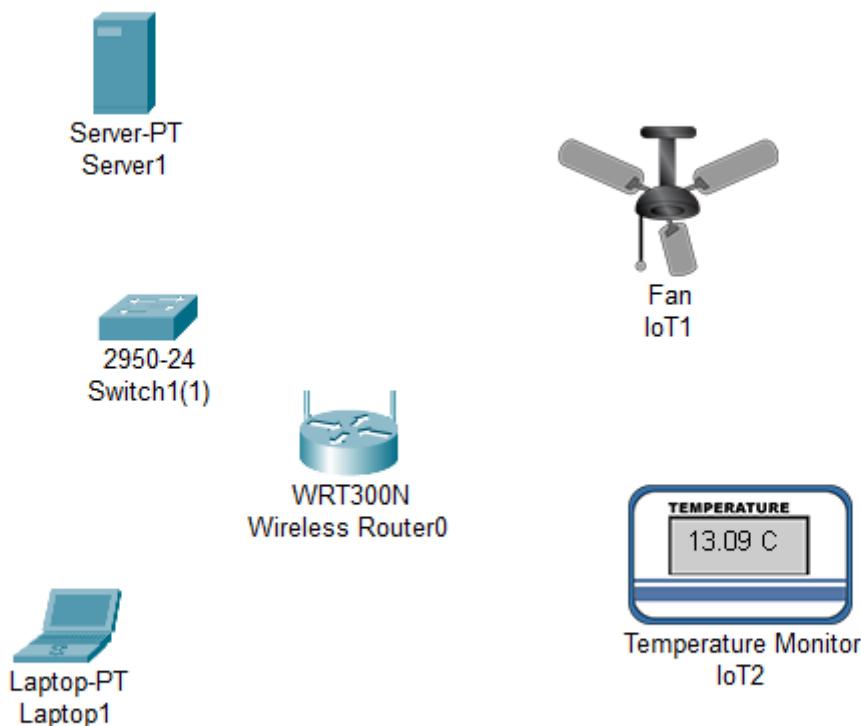


 Marwadi University <small>Marwadi Chandarana Group</small>	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
Subject: Computer Networks (01CT0503)	Aim: Design and simulate IoT scenario	
Experiment No: 13	Date:	Enrolment No: 92301733041

IoT Scenario: Here I have made an automatic speed controller for fan using temperature controller. Components used: Fan, temperature monitor device, wireless router, a laptop and a server for IoT registration.

Step 1: Take all the components from the panel



Step 2: Connect the router and switch with cross cable , and laptop and server to switch with straight copper cable.



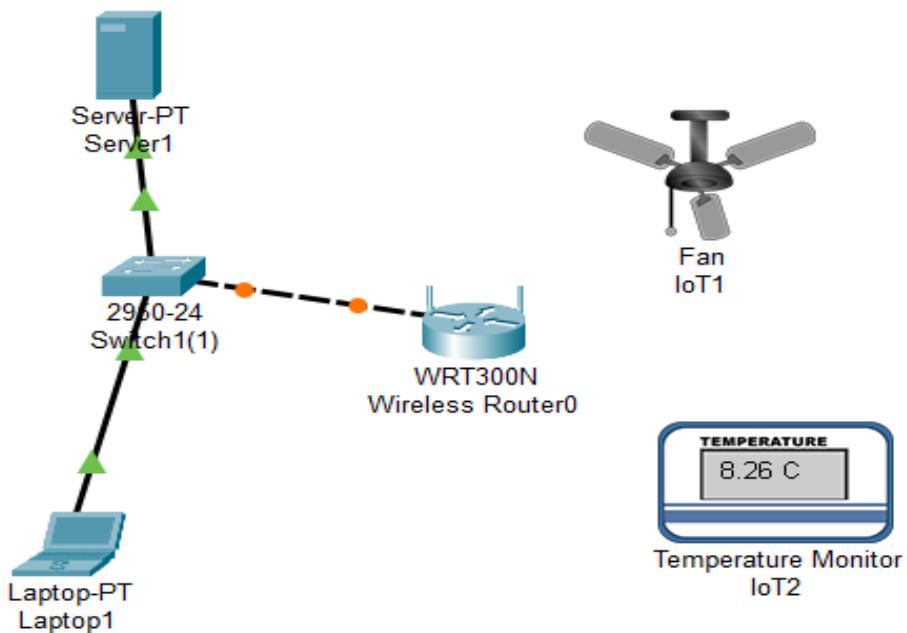
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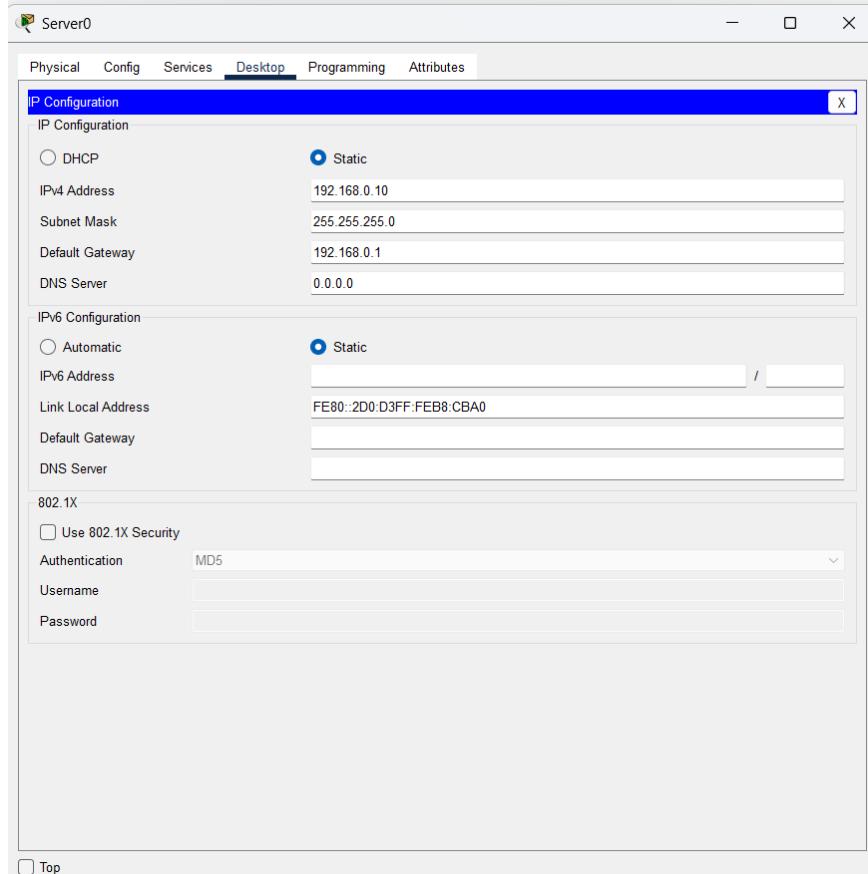
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Step 3: Give Ip add to server and laptop (used any static or DHCP)



(Server->desktop->ip config)

Step 4: Open server and goto services and open AAA(Authentication ,Authorization .Accounting) and make enter the details of router and make radius client, and make one secret key which will router use for authentication.

Client Name= anything (ex: home)

Ip= routers ip

Below that add devices which were used in IoT scenario

Ex: name : fan , pass is also fan



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Server0

Physical Config Services Desktop Programming Attributes

SERVICES

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG**
- AAA
- NTP
- EMAIL
- FTP
- IoT**
- VM Management
- Radius EAP

AAA

Service On Off Radius Port 1645

Network Configuration

Client Name	Client IP	Server Type	Key
1 home	192.168.0.1	Radius	pass123

Add Save Remove

User Setup

Username Password

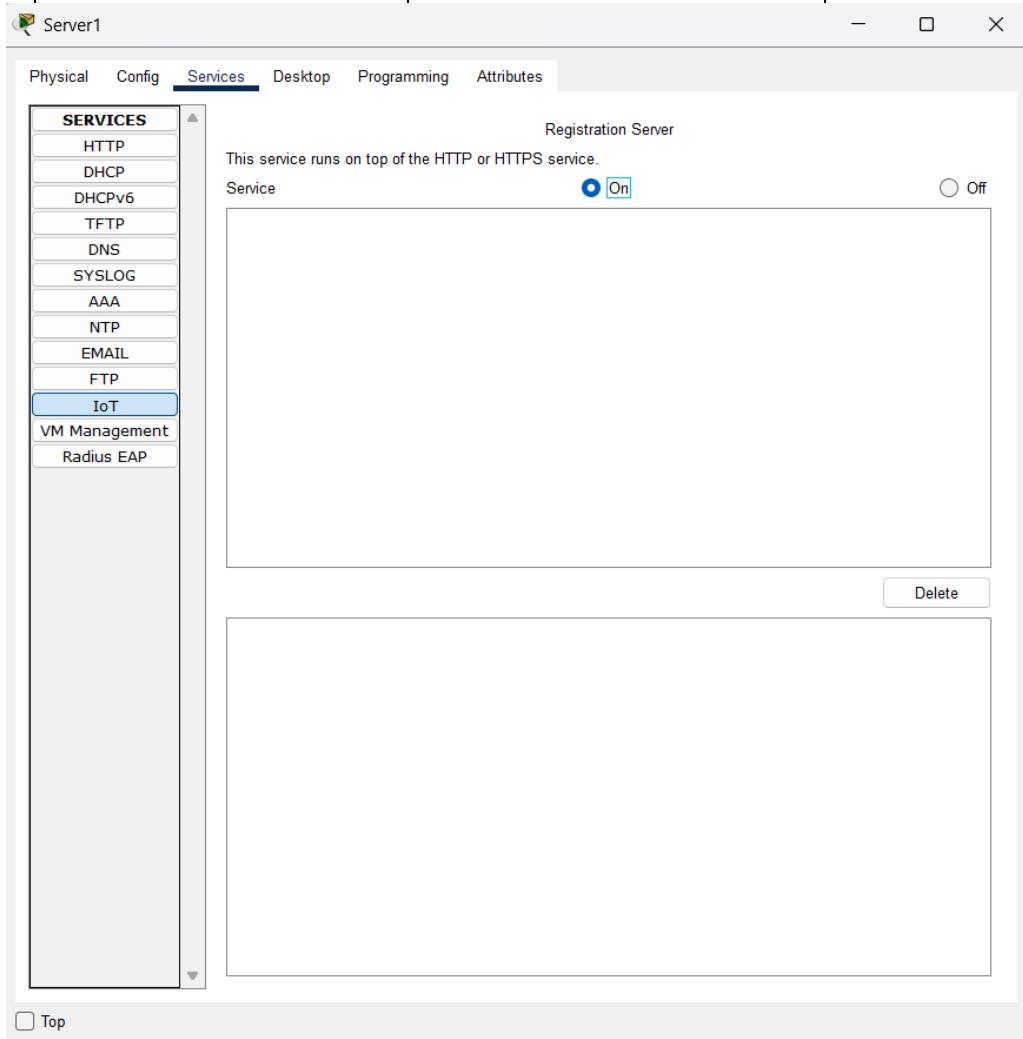
Username	Password
1 fan	fan
2 heat	heat
3 temp	temp

Add Save Remove

Top

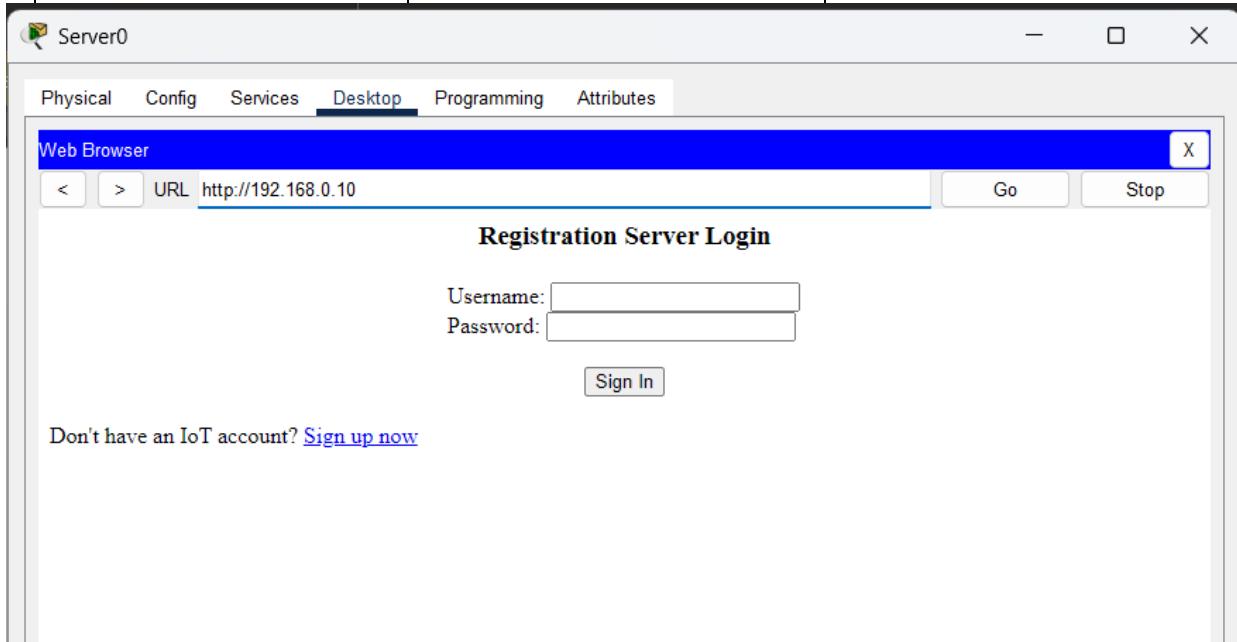
Step 5: Tap on IoT and enable it

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Step 6: Goto server->desktop->web browser and enter server's Ip add to make IoT server from which we can see the status of IoT devices from remote places. Also manipulate it
 One login page will open , click sign up now

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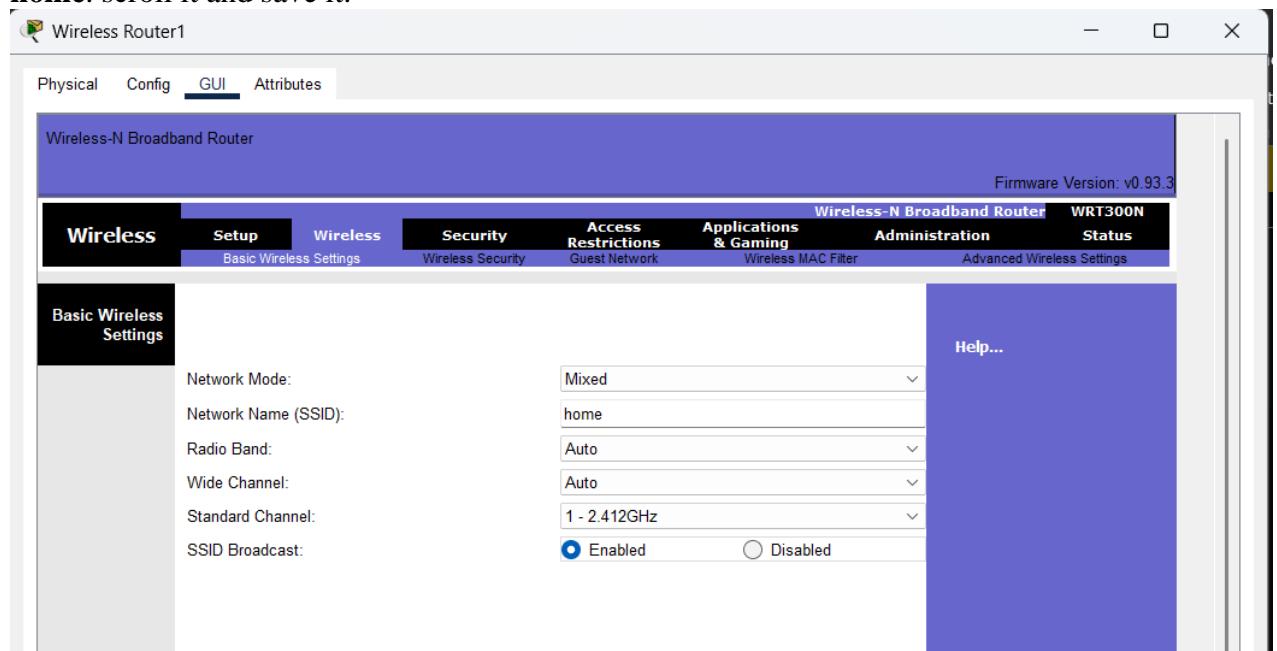


And create a user and pass.

Also U can verify your server in server->services-> IoT

Step 7:

- I. Open **router->wireless** and set the **ssid** as client name saved earlier at **server side** , in my case it is **home**. scroll it and save it.



- II. And then in the same section goto **wireless security** , select **WPA2 Enterprise** in security mode ,
- III. enter ip add of server in **radius** server , ans **secret code** which was again set earlier in **server side** and scroll it and save it.



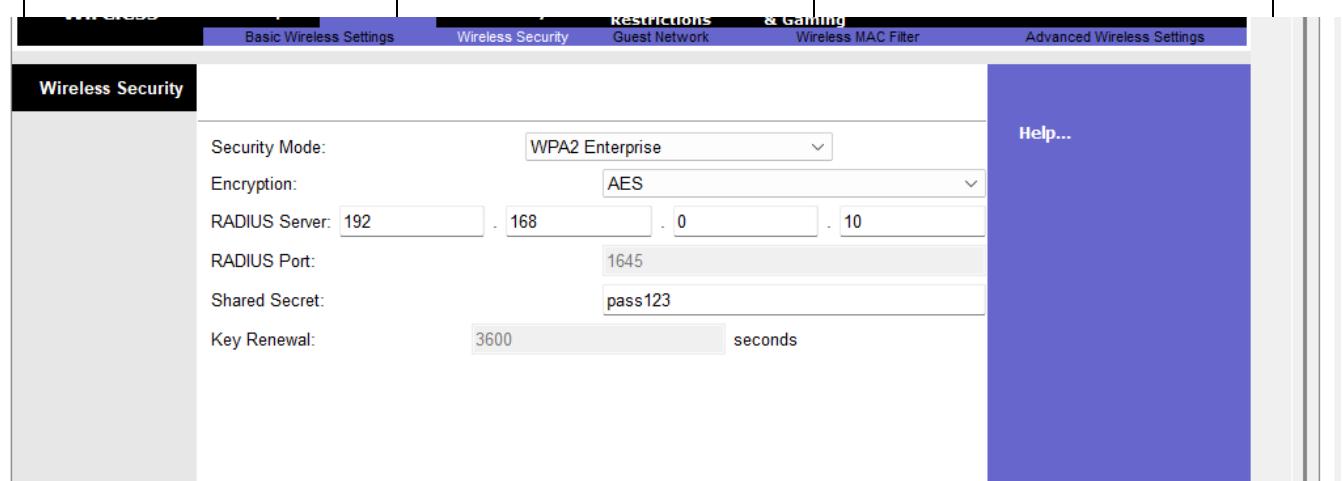
Subject: Computer Networks (01CT0503)

Aim: Design and simulate IoT scenario

Experiment No: 13

Date:

Enrolment No: 92301733041

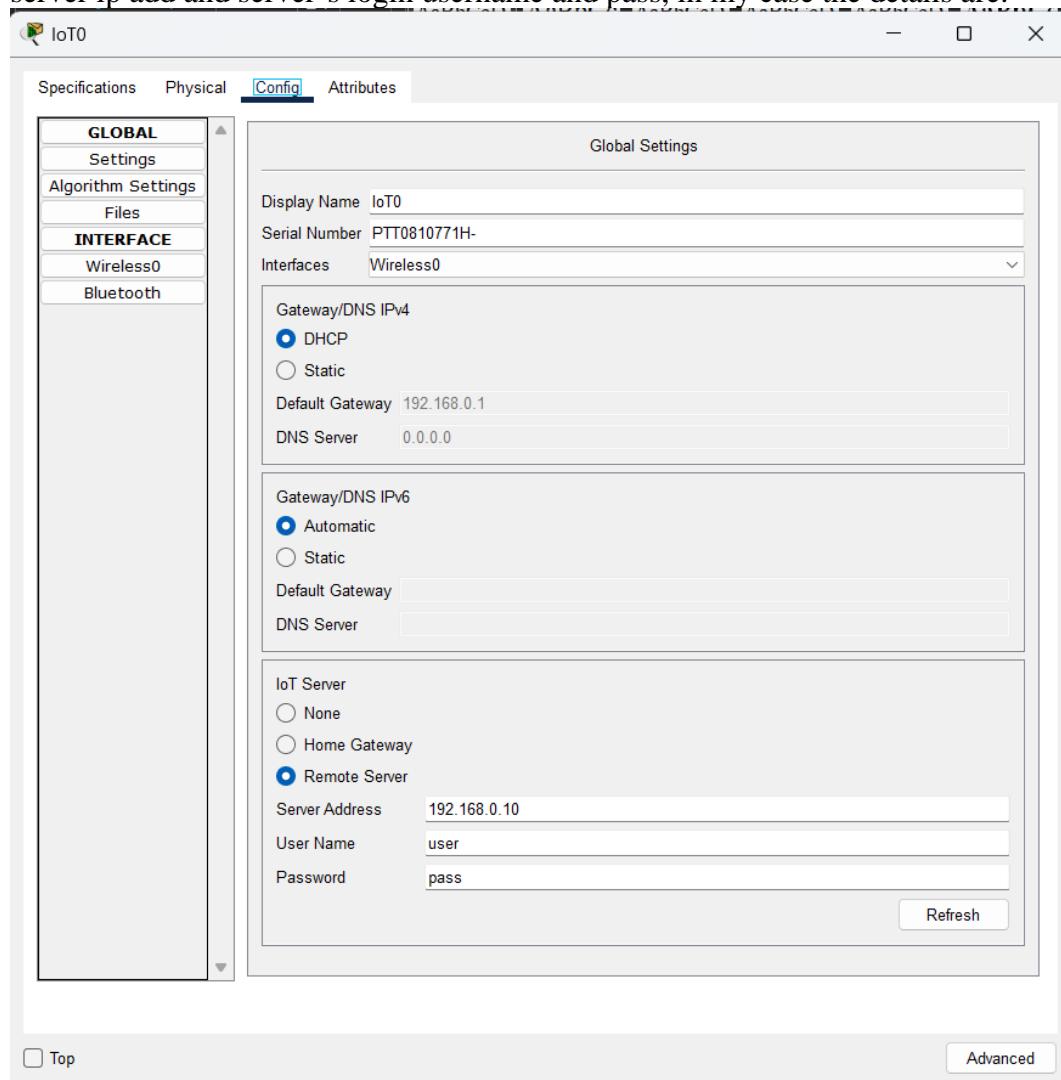


The screenshot shows a software interface for configuring wireless network settings. The main window has tabs at the top: Basic Wireless Settings, Wireless Security, Guest Network, Wireless MAC Filter, and Advanced Wireless Settings. The Wireless Security tab is active, displaying the following configuration parameters:

- Security Mode: WPA2 Enterprise
- Encryption: AES
- RADIUS Server: 192.168.0.10
- RADIUS Port: 1645
- Shared Secret: pass123
- Key Renewal: 3600 seconds

Step 8: Now after doing this all , configure the IoT components

- I. Open Fan->config , in that at bottom side tap remote server under IoT server , and fill the details , enter server ip add and server's login username and pass, in my case the details are:

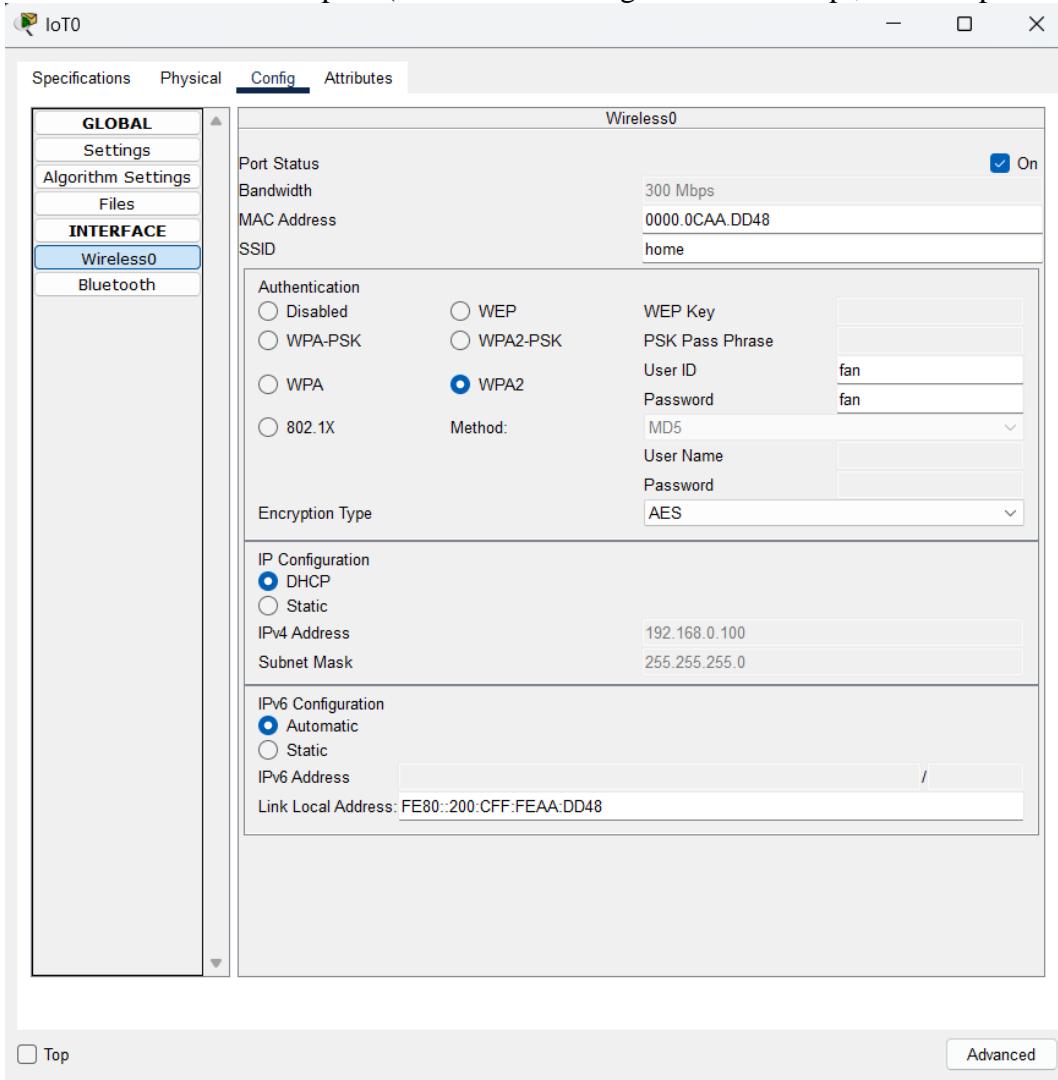


The screenshot shows the configuration window for the IoT0 device. The left sidebar has tabs for Specifications, Physical, Config (which is selected), and Attributes. The main panel displays the following configuration:

- Global Settings:**
 - Display Name: IoT0
 - Serial Number: PTT0810771H-
 - Interfaces: Wireless0
- Gateway/DNS IPv4:**
 - Method: DHCP (selected)
 - Default Gateway: 192.168.0.1
 - DNS Server: 0.0.0.0
- Gateway/DNS IPv6:**
 - Method: Automatic (selected)
 - Default Gateway: (empty)
 - DNS Server: (empty)
- IoT Server:**
 - Selection: Remote Server (selected)
 - Server Address: 192.168.0.10
 - User Name: user
 - Password: pass

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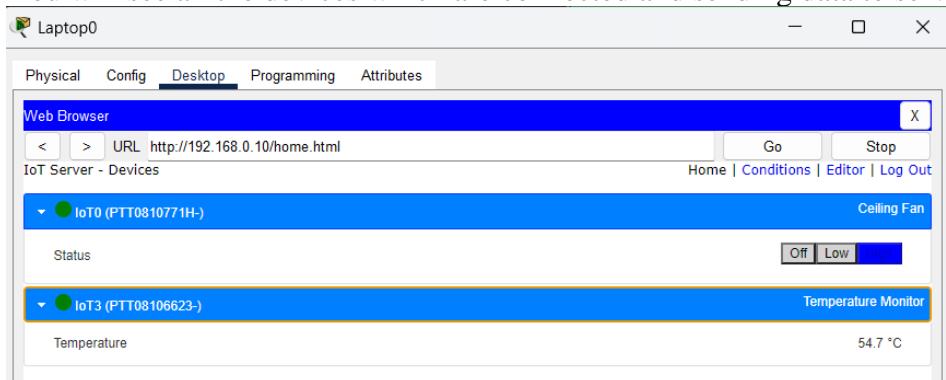
- II. In the same section goto wireless 0 and enter ssid as home , and tap WPA2 under authentication and enter user id and pass (that was set during the server setup , IoT components config under AAA section)



Step 9: Repeat this step 8 for all IoT devices and enter details accordingly.

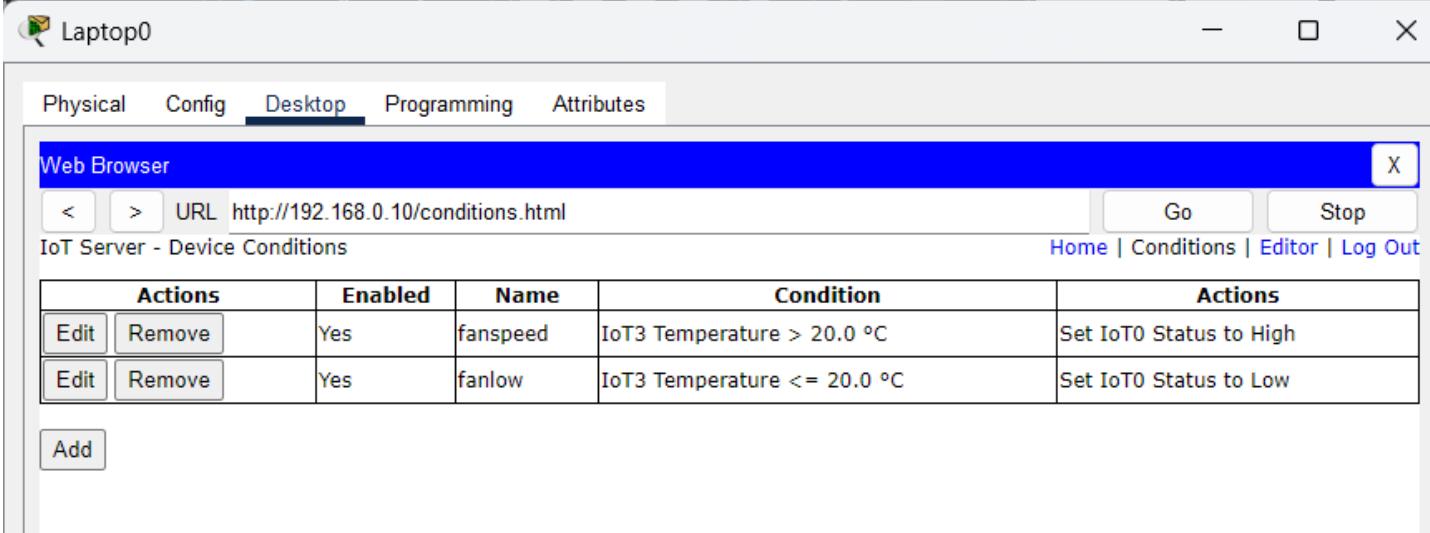
Step 10:

- I. Open laptop -> desktop->web browser->search server ip add
- II. Login with server user and pass
- III. You will see all the devices which are connected and sending data to server



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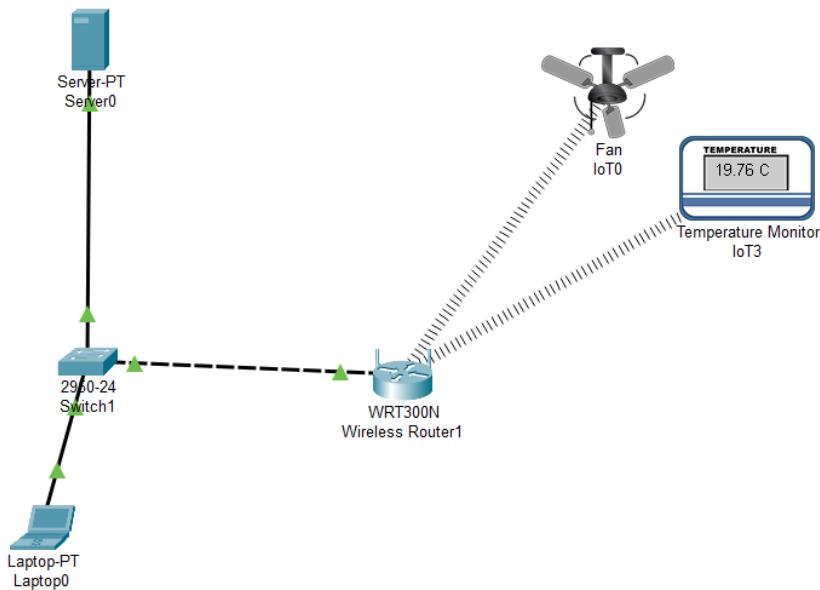
IV. Goto right side condition and set conditions accordingly (ex like if this happen then do this)



Actions	Enabled	Name	Condition	Actions
Edit Remove	Yes	fanspeed	IoT3 Temperature > 20.0 °C	Set IoT0 Status to High
Edit Remove	Yes	fanlow	IoT3 Temperature <= 20.0 °C	Set IoT0 Status to Low

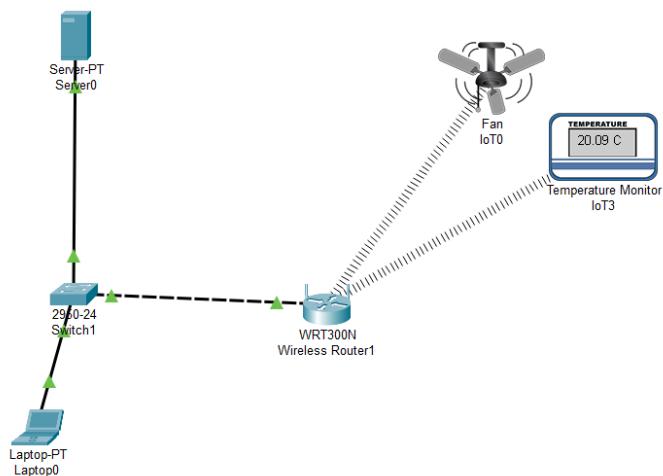
Step 11: verify the results

- I. When temp is <20 fan is slow (one circular line means fan is slow)



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II. When temp >20 fan is fast (one circular line means fan is fast)



Conclusion: In this experiment I learnt how to make IoT based scenario, how to use AAA, server and in that how to make IoT registration, how to manipulate that and put conditions.