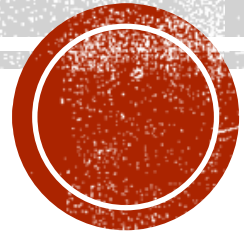
WI-FI BASED HOME AUTOMATION SYSTEM



INTRODUCTION

- In this presentation, we will explore the revolutionary approach to home automation using a wireless network with Cisco Packet Tracer. We will delve into the benefits and potential of this innovative technology.
- Understanding the fundamentals of wireless networks is crucial for implementing home automation. We will cover the key concepts of Wi-Fi and Bluetooth technologies, and their role in smart home systems.

SMART HOME AUTOMATION DEVICES

- Discover a range of smart devices that can be integrated into a wireless network for home automation. From smart thermostats to security cameras, these devices offer convenience and energy efficiency.

- Secure Wi-Fi technology is used by server, and hardware interface module to communicate with each other. User may use the same technology to log in to the server web-based application. If server is connected to the internet, so remote users can access server web-based application through the internet using a compatible web browser. For example, The home automation system can control the following appliances:

REQUIREMENT ANALYSIS

- ● **REQUIREMENT SPECIFICATION** :-
- Server Router WRT-300N
- Switch
- Laptop
- IOT Smart Fan
- window
- Air Conditioner
- Siren
- Web Cam
- Motion Sensor
- Smoke Detector

Software Requirements:-

Operating System: Windows

Platform: Cisco Packet Tracer

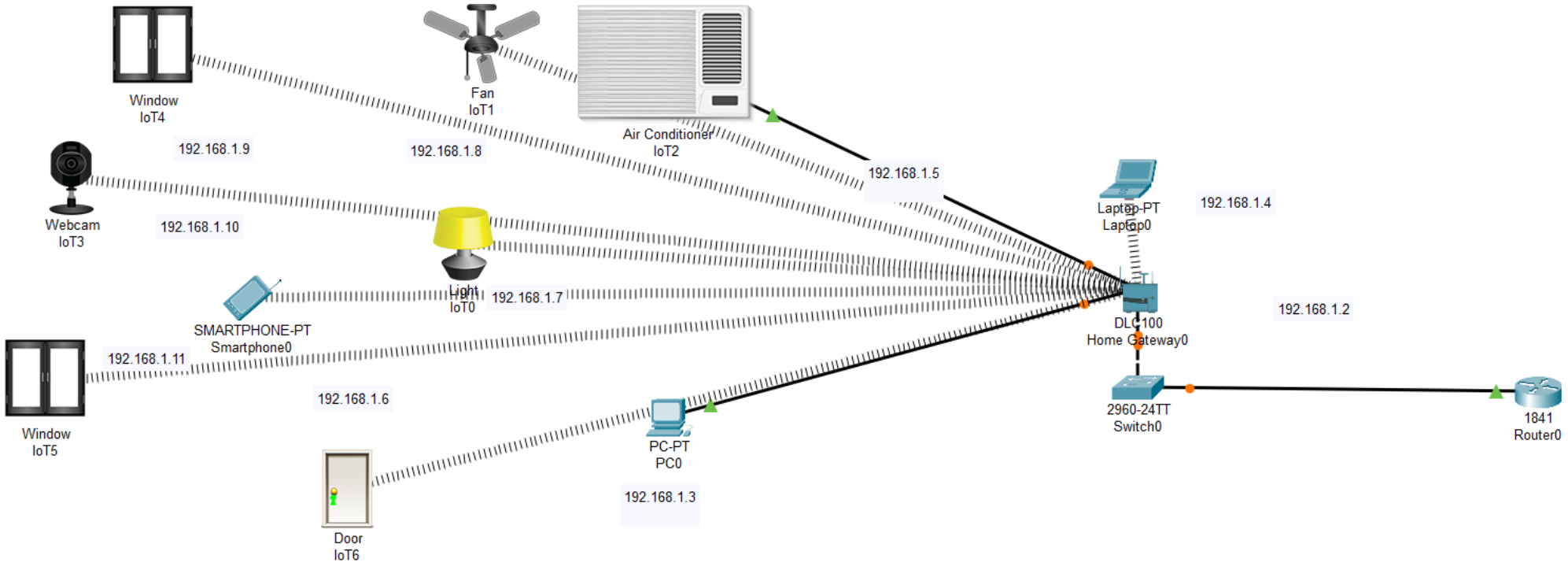
Back end: IOT Serve

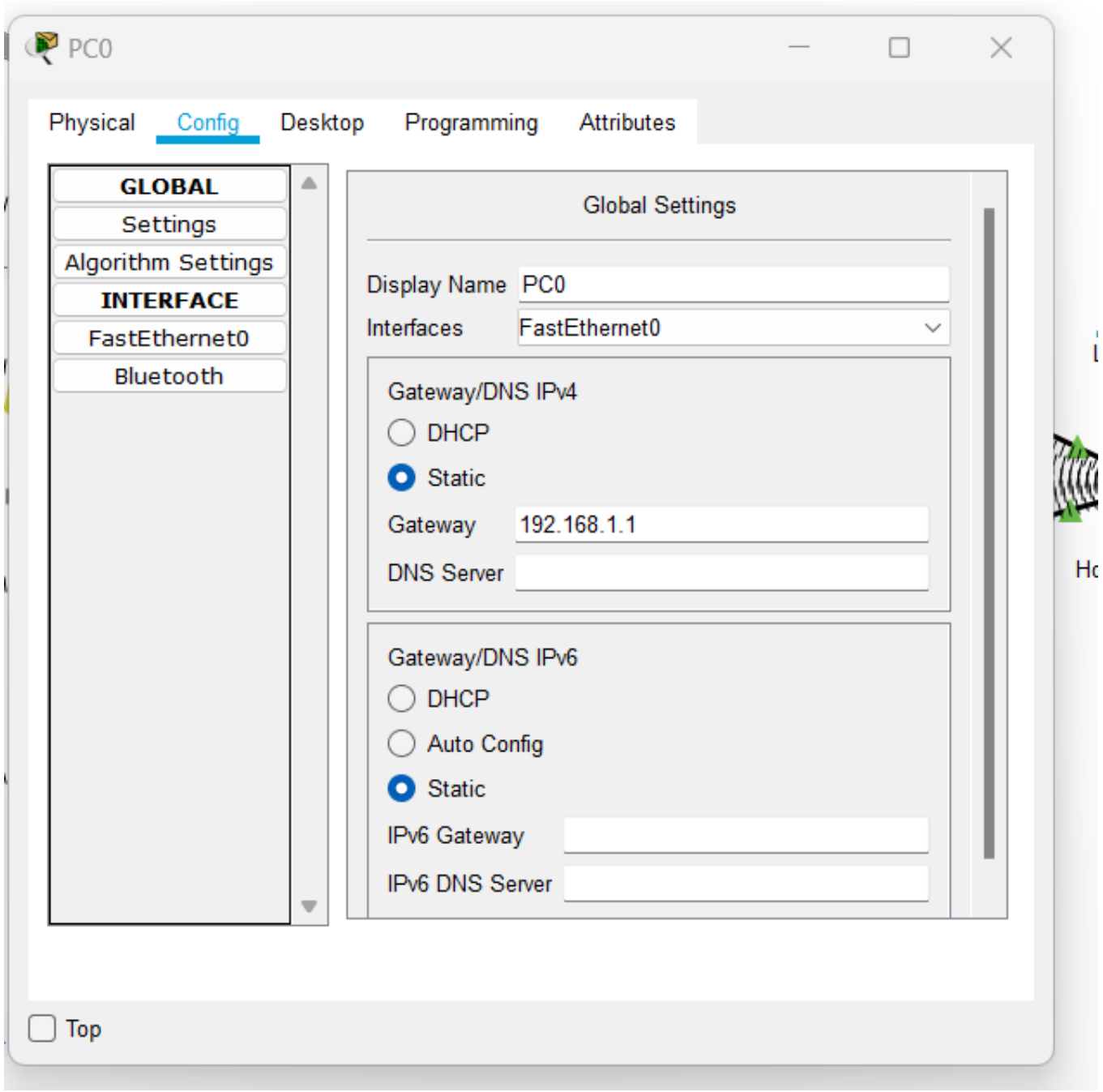
IMPLEMENTATION

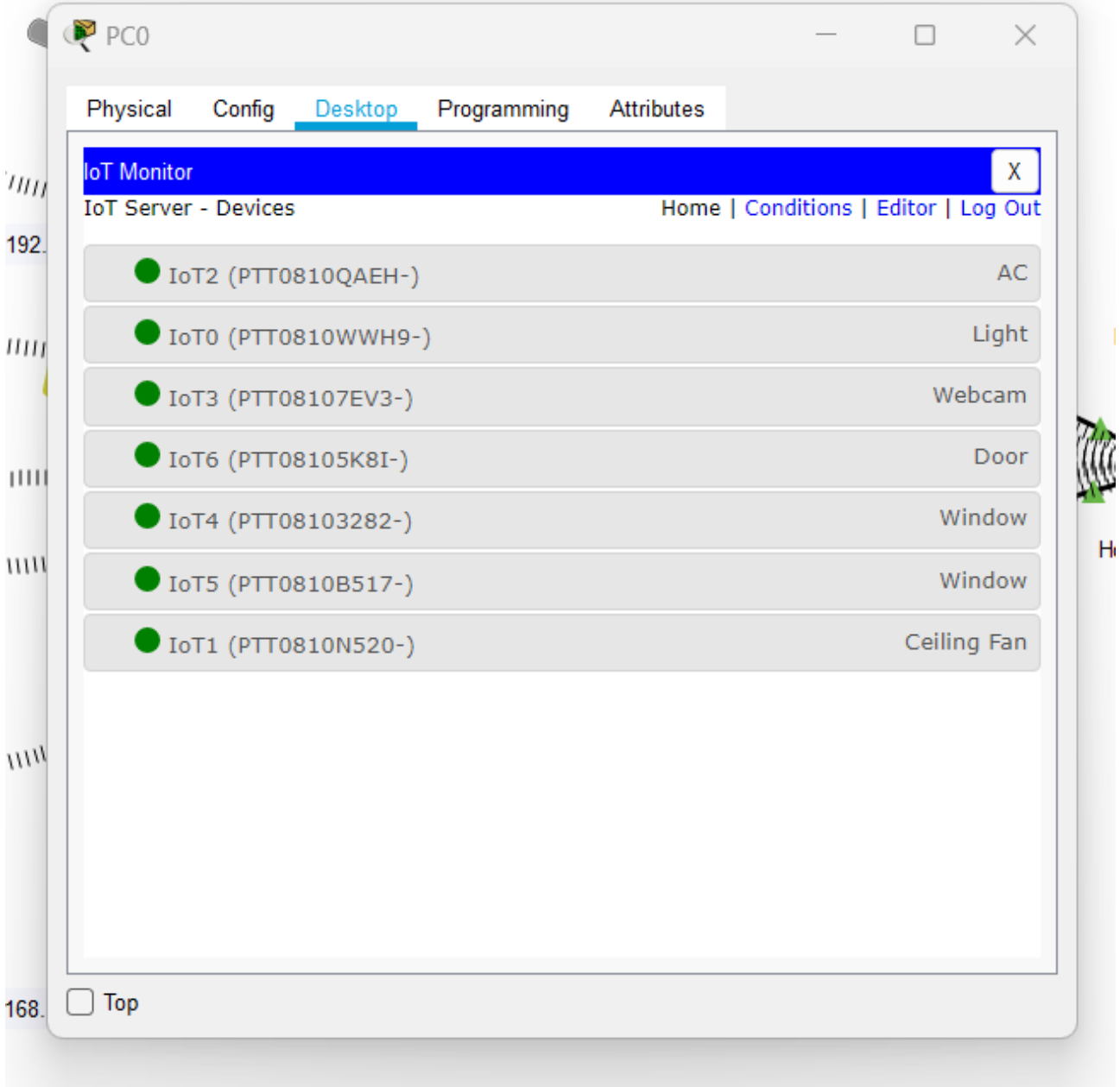
- The router is set up with an IP address and default gateway. Then we change the network SSID name to "Home". In the wireless security section the network mode is selected to WPA2 Enterprise. Then the encryption is selected which we set to AES here. We set the radius server option here to what we registered our server with. Here we also provide the shared password for the router. The figure below show the different configurations of the router.

- We connect a laptop to the router by setting up the IP configurations and then register to the server by providing a username and a password. After registering we can login with same credentials to viewthe devices which have been connected to our network and access them.

- For every device the network adapter is set to PT-IOT-NM-1W-AC.After that IoT server is selected as remote server and we provide the IP address of the router along with the password that we registered on the server with. In the wireless configuration part we provide the SSID along with authentication type, encryption type and username, password of the device with which it has been registered on the server


Window
IoT4
Fan
IoT1
Air Conditioner
IoT2
192.168.1.9
192.168.1.8
192.168.1.5
Webcam
IoT3
192.168.1.10
Laptop-PT
Laptop0
192.168.1.4
Light
IoT0
192.168.1.7
SMARTPHONE-PT
Smartphone0
DLC-100
Home Gateway0
192.168.1.2
192.168.1.11
Window
IoT5
192.168.1.6
2960-24TT
Switch0
1841
Router0
PC-PT
PC0
192.168.1.3
Door
IoT6
192.168.1.12
192.168.1.1


PC0
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth
Global Settings
Display Name
PC0
Interfaces
FastEthernet0
Gateway/DNS IPv4
DHCP
Static
Gateway
192.168.1.1
DNS Server
Gateway/DNS IPv6
DHCP
Auto Config
Static
IPv6 Gateway
IPv6 DNS Server
Top


PC0
Physical
Config
Desktop
Programming
Attributes
IoT Monitor
X
IoT Server - Devices
Home | Conditions | Editor | Log Out
IoT2 (PTT0810QAEH-)
AC
IoT0 (PTT0810WWH9-)
Light
IoT3 (PTT08107EV3-)
Webcam
IoT6 (PTT08105K8I-)
Door
IoT4 (PTT08103282-)
Window
IoT5 (PTT0810B517-)
Window
IoT1 (PTT0810N520-)
Ceiling Fan
Top

- The main focus of the project report is the implementation of a Wi-Fi based home automation system using IoT devices and sensors. The report discusses the requirement analysis, architecture and design, implementation, experiment results and analysis, and future scope of home automation systems. It emphasizes the use of smart devices, sensors, and networking protocols to automate and control various aspects of a home, such as lights, HVAC, door locks, windows, and security systems. The report also highlights the benefits of smart home technology in terms of safety, comfort, efficiency, and energy conservation.

CONCLUSION

- The potential of revolutionizing home automation through a wireless network approach with Cisco Packet Tracer is vast. With the right knowledge and tools, creating a secure and efficient smart home network is within reach.