# SMART HOME IMPLEMENTATION USING CISCO PACKET TRACER

## A COURSE PROJECT REPORT

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## BONAFIDE CERTIFICATE

Certified that this mini project report **"Smart Home implementation using Cisco Packet Tracer"** is the bonafide work of **Manu Srivastava (RA2011003010150), Prastuti Sarma (RA2011003010164), Pradipta Nandi (RA2011003010154) and Satvik Dwivedi (RA2011003010140)** who carried out the project work under my supervision.

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# SMART HOME

**Smart home implementation using Cisco Packet Tracer**

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# **ABSTRACT**

Technology has been growing from day to day in human life. The necessity for the development of technology is to lead human life comfortably. The basic need of a human to lead his/her life comfortably is a home. A home with the updated latest technology means a smart home. This paper gives the basic idea of using a Cisco packet tracer to implement smart homes. One is needed to create a smart home when electronic devices are switched on and off. Smart home development is achieved by simulation via the testing system, network setup, and wireless home gateway computer network equipment required by a smart home network cisco packet tracer. The software chosen for the simulations is Cisco Packet Tracer, the tool's main strength is to offer a variety of network components that represent a real network, and then interconnect and configure devices to create a network and add all the smart devices, sensors, and actuators.

# OBJECTIVE

The main objectives of the smart home are to ease daily life by increasing user comfort. It does this by automating typical routines as well as giving homeowners the power to manage their home systems remotely. By automating many aspects of daily living through remote technology, a smart home provides the ability to control electronics and appliances from a smartphone, tablet, or laptop. It adds an extra level of convenience and comfort while eliminating the burden of manually maintaining home systems.

A smart home with integrated e-health and assisted living technology can play a pivotal role in revolutionizing the healthcare system for the elderly, the disabled, and those with functional limitations.

The big advantages of smart house

1.      **Managing all your home gadgets from a single venue:** - The convenience factor here is enormous. Being able to keep all of the technology in your home connected through one interface is a massive step forward for technology and home management.

2**. Flexibility for modern appliances and computers**: - When it comes to accommodating modern gadgets and appliances and other technologies, smart home solutions seem to be wonderfully versatile. No matter how state-of-the-art your appliances seem today, as time goes by, newer, more amazing versions will be created.

3.      **Maximizing comfort at home**: - Your home security can skyrocket when you integrate security and surveillance features into your smart home network. There are lots of possibilities here—only a few hundred of which are being discussed at present.

4.      **External Home Feature Power**: - Do not underestimate the strength of being able to control the operations of your home from a distance. You will order your house to become cooler in just enough time on a scorching day before you get home from work.

 5.      **Increased quality of electricity**: - It's important to make your room more energy efficient based on how you use your smart-home technology.

6.      **Insights into Home Management**: - There's also plenty to be said for your desire to think about how your house works.

# INTRODUCTION

In today's technologically growing world technological development without becoming a requirement that is frequently used in today's human life. A living home that includes smart objects with specific functions is called a smart home. i.e aimed to improve safety, comfort, and efficiency, which can be used to automate home activities without users using various sensors (Temperature, Humidity, Smoke, Wind, Sound) to monitor the home environment. And there are usually monitoring tools, and the devices that are controllable and automatic can be accessed via an internet-connected computer or smart mobile device. Instead of providing security that is safe, smart homes can provide different features to provide automatic security using various alarm systems, such as LCD display and siren sound, and by sending emails to valid users if the sensor detects security issues. Home automation states handling and monitoring home items using microcontrollers or computer technology. Automation is common because it makes the process simple, productive, and secure. All smart devices are registered at the home gateway in this paper and operated by a legitimate person. By including different sensors in home automation, Smart Home eliminates user engagement in tracking home settings and operating home appliances. This paper describes the implementation of a smart home with the use of the latest version of the cisco packet tracer as this version includes different sensors, actuators, and smart devices used for home automation. Chic lights, chic windows, chic fans, and chic doors with different detectors and sensors are some of the devices.

# COMPONENTS

• Temperature sensor - Used for sensing the home temperature

•      Ceiling sprinkle - Used to ventilate the home area, the water level is disturbed at a rate of 0.1 cm per second

•      Home speaker -Simulation of the sound sensor influences the volume of sound at 65 dB.

• Sound Sensor- Used for sensing the sound

• Smoke detector- Used for sensing the smoke level

• Lawn Sprinkler- Used for sprinklers dependent on ambient water levels

• Water level monitor - Used to detect the amount of water in home environments

• Co2- Used to detect Co2

• Tablet- Used for control the home from outside

•      Cell tower- Provide home users with cellular device coverage to monitor the remote form of the home appliance.

• Smart door- our home getaway and has event-based features

• Motion detector- Link to the home getaway and have a motion detector

• Light- provide light

• Siren- Provide tone in the home for a certain case

• Fan- Centered on a certain state, used to ventilate the home air

• Pc- Link to a home gateway for smart object control

• Central office server- Used to connect to the router's cellular device

•      Home gateway- Used for smart object registration and smart object IP address transmission

• Cable modem - Use to connect a home to the internet

# MODULES

1. The below figure indicates that the smart entity is connected via Ethernet cable and wireless media to the home gateway to manage the smart system locally and remotely
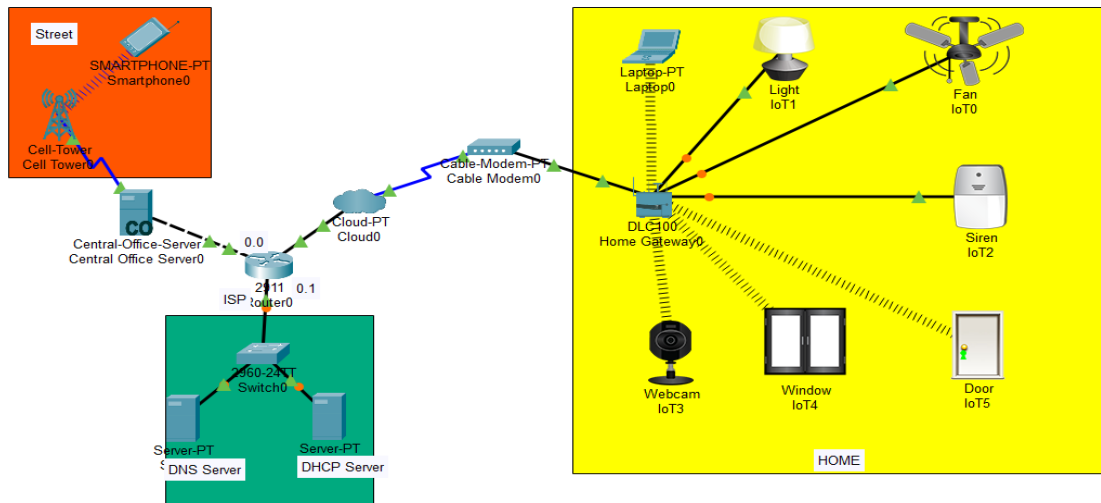


2. In addition to a wireless access point equipped with the "Home Gateway" SSID, the Home Gateway has 4 Ethernet ports (see Fig 2). WEP / WPA-PSK / WPA2 can be configured on the home gateway for secure wireless connection.
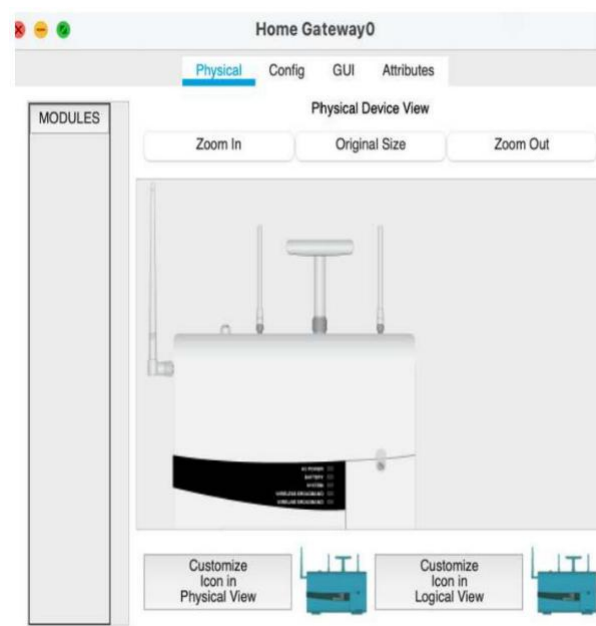
3.  The microcontroller board is used to interconnect numerous smart artifacts including JavaScript, Python, and visual simple programming environments with distinct languages. Monitor the smart object attached to it.
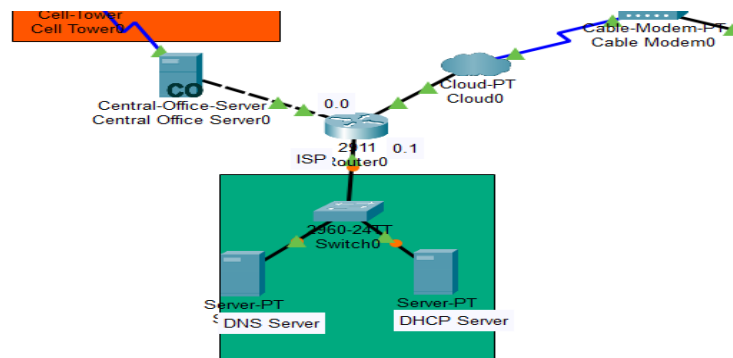


4.  We used multiple sensors, smart devices, and detectors to make them smarter to incorporate smart home using a cisco packet tracer. The following figure represents the home architecture that uses wireless and wired media to communicate with each other.
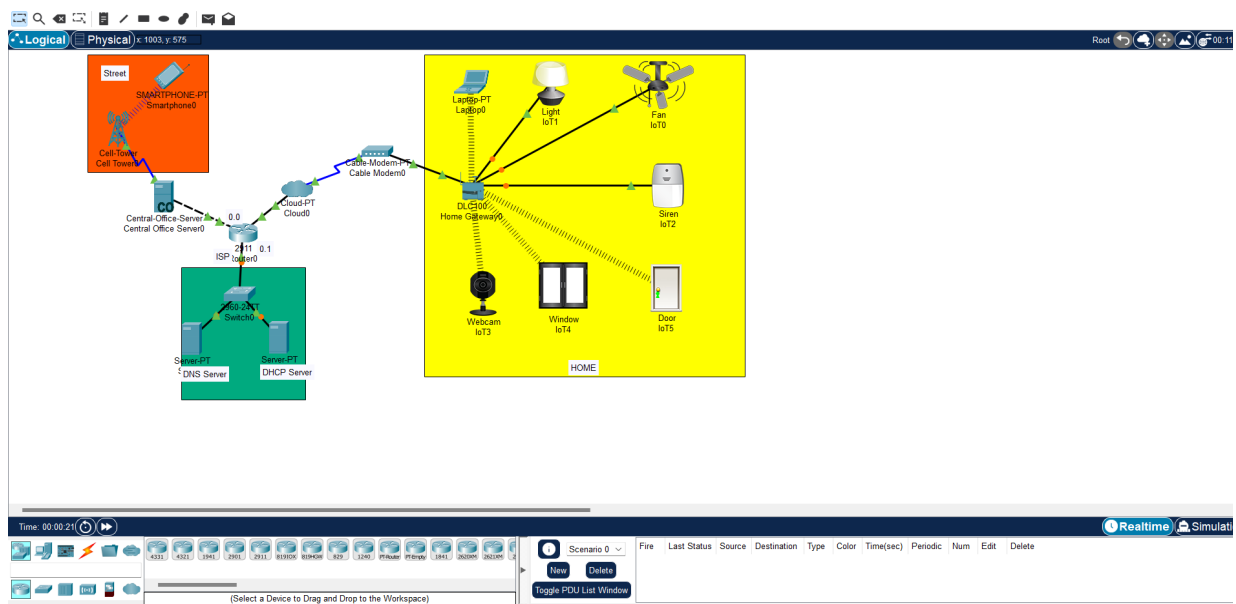
# DEVICE CONFIGURATION

**ISP router configuration**
**Assigning hostname and IP address for ISP router**

Router>enable
Router#conf term
Router(config)#int g0/0
Router(config-if)#ip address 10.0.0.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#int g0/2

Router(config-if)#ip address 209.165.201.225 255.255.255.224
Router(config-if)#no shutdown
Router(config-if)#int g0/1
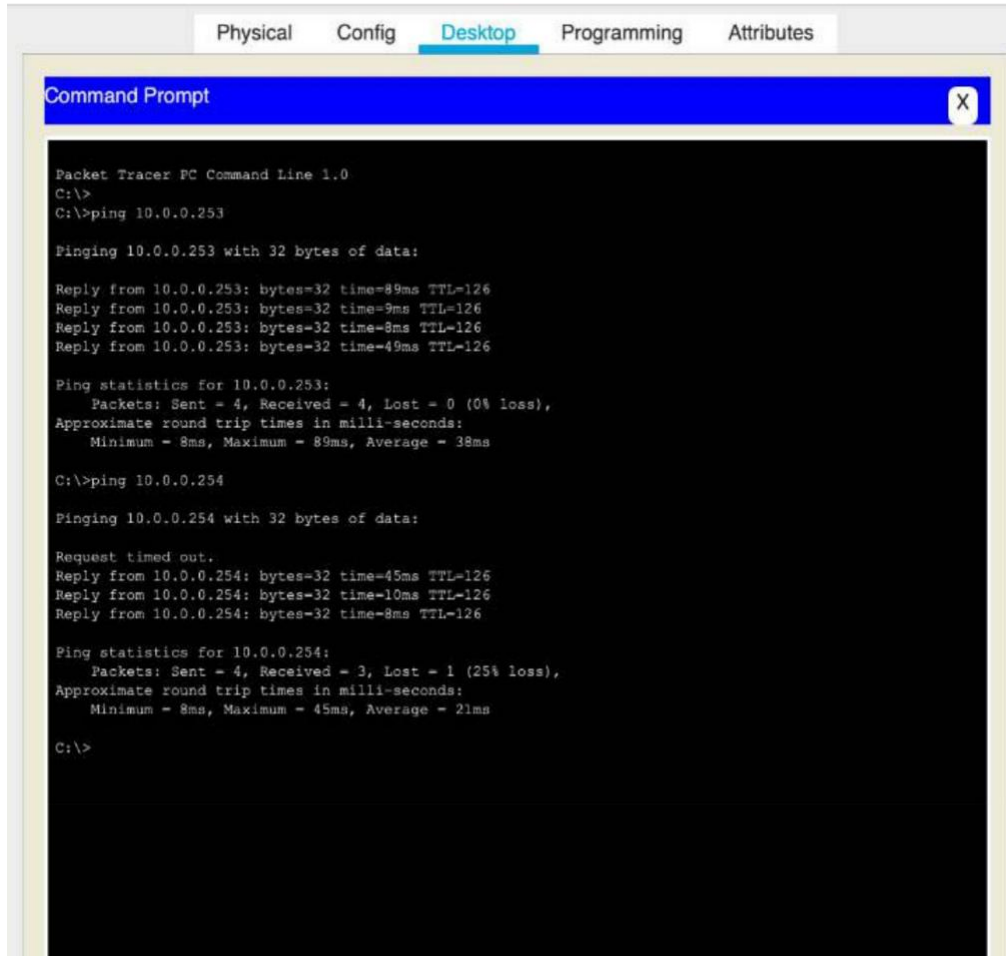Router(config-if)#ip address 209.165.200.225 255.255.255.224
Router(config-if)#no shutdown

# **RESULT**

The paper outlined the steps involved in structure network design and deployment for a small office home office need. It presented the steps (or phases) of a structured network design and demonstrated a practical implementation of the steps. The design was first simulated using Cisco Packet Tracer software

| Physical | Config | Desktop | Programming | Attributes |

**Command Prompt**                                                                    X

```
Packet Tracer PC Command Line 1.0
C:\>
C:\>ping 10.0.0.253

Pinging 10.0.0.253 with 32 bytes of data:

Reply from 10.0.0.253: bytes=32 time=89ms TTL=126
Reply from 10.0.0.253: bytes=32 time=9ms TTL=126
Reply from 10.0.0.253: bytes=32 time=8ms TTL=126
Reply from 10.0.0.253: bytes=32 time=49ms TTL=126

Ping statistics for 10.0.0.253:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 8ms, Maximum = 89ms, Average = 38ms

C:\>ping 10.0.0.254

Pinging 10.0.0.254 with 32 bytes of data:

Request timed out.
Reply from 10.0.0.254: bytes=32 time=45ms TTL=126
Reply from 10.0.0.254: bytes=32 time=10ms TTL=126
Reply from 10.0.0.254: bytes=32 time=8ms TTL=126

Ping statistics for 10.0.0.254:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 8ms, Maximum = 45ms, Average = 21ms

C:\>
```

# **REFERENCES**

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