

Smart and secure home using IOT Simulations with Cisco Packet Tracer

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ABSTRACT

This is an era of technology; we are surrounded with the technology. Now a day's people become smarter they want to operate each and everything's with his smart phone/laptop/pc without going anywhere, it happens due to IOT devices. That's why in this paper we have design a smart home with enhance security. In smart home we can operate the household things(fan, light, ac, any applications, door, windows, etc.) with the mobile. We design a IOT based smart and secure home model in latest released cisco packet tracer. Cisco packet is basically a simulator to teach the student about the network. But in newly released cisco packet tracer 7.2.1 it have more sensors, board, Programming languages, IOE devices. In this we can design, test, see the actual working of the network/model in real time. In testing the IoT home network wireless network gateway system, multiple electronic devices can be controlled and monitored via smartphone based on predefined configuration conditions. The smart and secure home is implemented using different types of IOE devices with enhanced security, house environment prospective and safety.

Keywords : IOT, IOE, Cisco packet tracer 7.2.1, Sensors, Board, Smart phone.

I. INTRODUCTION

Smart and secure home model that include astute objects to ameliorate home activities with security in advanced. It can be habituated to perform the automating activities of smart home without user's involution, such observation and monitoring the home/house environment can be condition by variants of the sensors then ventilate predicated on the sensor's information. A smart and secure home is not designed only for the activities to be performed but additionally it implemented with the security. The IOT is incipient technology it generally refers to design that communication between the things such as technological contrivances, smart and variant of sensors. this paper deals with the designing of smart and secure home with the incipient relinquished version of a Cisco packet tracer 7.2. It has all updated

contrivances. The Cisco packet tracer simulator 7.2 version is utilized to design network as well as the designing of the Internet of everything contrivances with classically networking contrivances. In this paper the smart and secure home is designed by utilizing the house appliances such as smart lights, smart doors, smart intellectual fan, smart CCTV and perspicacious window.

II. MOTIVATION

Smart and secure implementation culled here for the simulation is Cisco packet tracer which has been using for many years to train the student's in the field of networking by Cisco. Simulation tool will provide to different network appliance which can simulate in authentication of network, contrivances would then need to be interconnected. the recently released

version(7.2) of packet tracer simulator fortifies IOE contrivances and controller/programmable boards such as SBC-PT and MCU-PT. The main advantages of this simulated system is all the IOT contrivances can be programmed with java, python or blocky.

III. METHODOLOGY

Smart and secure implementation culled here for the simulation is Cisco packet tracer which has been utilizing for many years to train the student's field of networking by Cisco field. implement is that it will offering of a different type network appliance which can simulate in authentication of networks, contrivances would then need[6] to be interconnected it is configured to engender the needful networking mechanism. The latest version (7.2) of packet tracer simulator fortifies IOE contrivances and controller boards such as SBC-PT and MCU-PT. The main advantages of this simulator is all the IOT contrivances can be programmed with java, python or BLOCKY.

Cisco Packet Tracer

The figures given below, it is possible to optically discern that, by example, the different wireless contrivances offered by latest Cisco Packet Tracer 7.2 , main difference to consider when placing of contrivances in the simulations are the possibly hardware circumscriptions that are coming with the contrivances, in terms of number of ports available, options to transmute the network interfaces, constraints etc. A attend of switches, servers, PC and laptop is additionally available in Cisco Packet Tracer simulator. The leading categories are :- sensor, smart-device, microcontroller's and Actuator's. In figure that shown below down an example of a attend of astute component those can be incorporated into the Internet of things simulation. Astute-contrivances are contrivances that are planarity capable of established connection to a both wired and wireless network and where the demeanor and interaction logic can be expeditiously set up by utilizing pre-loaded java

programs and networking commands. These sensors include perspicacious light's, alarm siren, coffee maker, RFID card readers and a long attend of other sensors, such as a Carbon Di-Oxide, Carbon mono-oxide, dehydrogenate monoxide level, sultriness, AC units, temperature sensor etc.

Wireless Router

Astute and secure domicile is designed with keenly intellectual and secure contrivances were in fact, connected with IOT in order to simulate all components inter-action and capability to remote and with all control the contrivances. A home utilizes in fact, after established the connection by the browser and passes the authentication.

Wireless router consists of 4 Ethernet ports in advisement to that a wireless access point configured with the SSID of corresponding "Default" To secure wireless connection WPA2 /WEP / WPA-PSK. In this we have to configure the remote server for IOT registration.

The figure 4 shows thirteen internet of Things contrivance connected to a wireless router by utilizing wireless port. To established the connection between the wireless router and the Internet its Internet WAN Ethernet port available on the corresponding wireless router. The IoT contrivances can be receiver side connected and managed by a web interface hosted by the server.



Figure1:- Wireless router

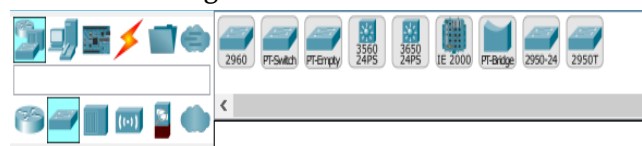


Figure2: Switch devices in Cisco Packet Tracer



Figure 3 :- Smart devices in cisco packet tracer

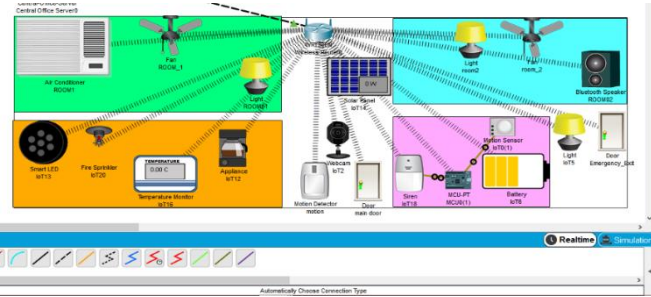


Figure-4 :- wireless router connected to smart devices

The figure-4 shows the perspicacious objects is connected to wireless router utilizing wireless medium to manage keenly intellectual contrivances locally and remotely. In Wireless router we have to make a Dynamic host configuration protocol (DHCP) server for assigning the IP addresses to each perspicacious contrivance which is connected with wireless router shown in a figure 4.

IV. IMPLEMENTATION

To implement keenly intellectual and secure home utilizing Cisco packet tracer 7.2 version. I used variants of astute contrivances to make home more astute and secure. The figure 5 represents the keenly intellectual and secure home design that connected each other utilizing wired and wireless medium. For assigning the IP address to the IOT contrivances which is connected to wireless router. We have to setup the DHCP server with IOT registration on.

When we are connecting the IOT contrivances we have to cull IOT server as remote server and then give the server address, utilize designation, password. Visually perceive figure 6.

In this wireless router is bulwarked with WPA2-PSK. As you can visually perceive the figure 5. In that there was two door one main door and one emergency exit door. All the IOT contrivances are password bulwarked and registered on server address as 192.168.1.1. Utilize name and password for all the IOT contrivances are same except four contrivances that are emergency exit door, IOT 5 light, siren, battery. These four IOT contrivances are registered with different utilize name and password. I have done this for enhancing the security. This will avail at the time of any emergency.

At main door we have setup a camera and motion sensor. If any movement is happened then camera will automatically click a picture and sent it to the server. Motion sensor and siren were connected with the microcontroller. If any motion is detected then shire will be active. To communicate between motion sensor and siren we use microcontroller. In microcontroller we have written a program in Python language.

```

from gpio import *
from time import *
def main():
    while True:
        if digitalRead(0)== HIGH:
            print("some one")
            customWrite(1, HIGH)
            sleep(100)
        else:
            print("cool")
            customWrite(1, LOW)
            sleep(5)
if __name__ == "__main__":
    main()
    
```

For security

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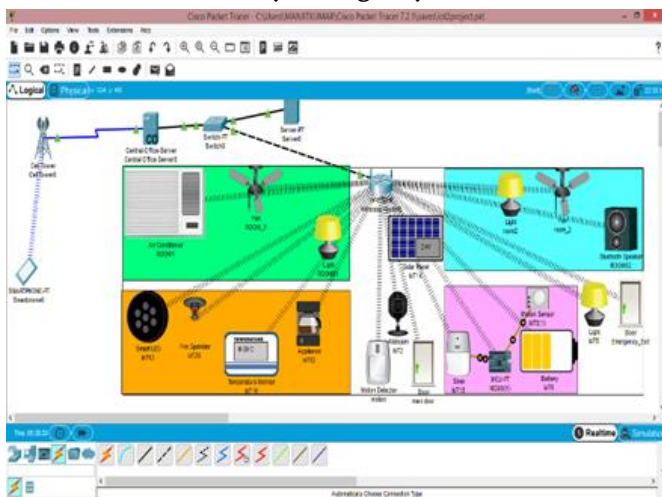


Figure 5:- Smart and secure Home Architecture

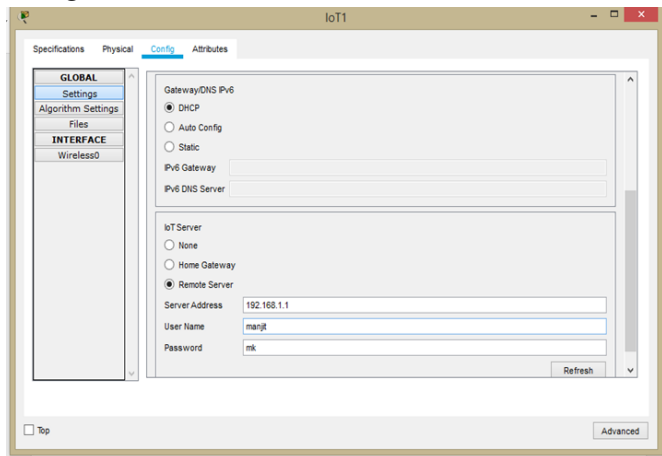


Figure 6:- IOT devices configuration

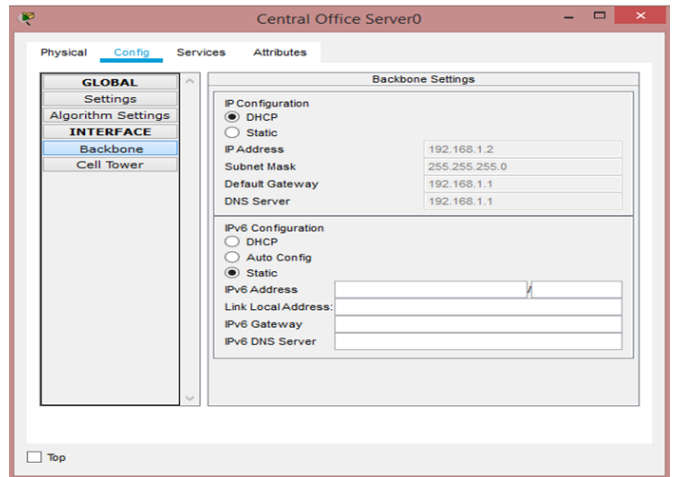


Figure 7:- Central office server obtaining IP address from Internet service provider server

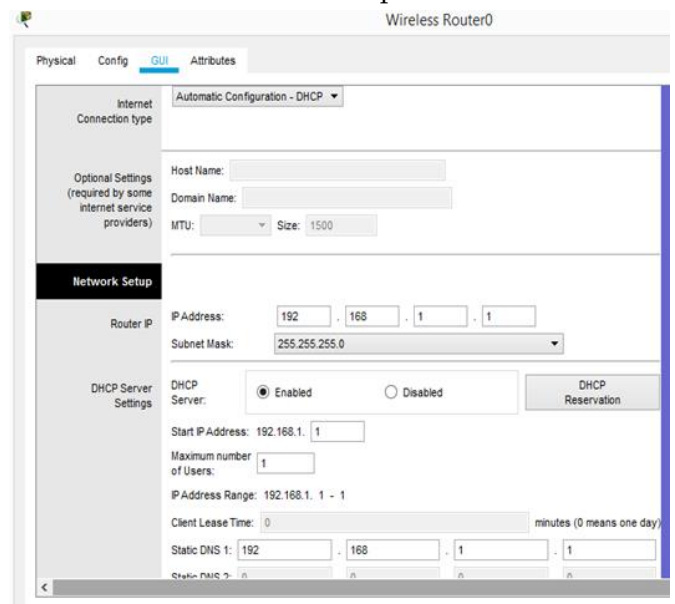


Figure 8:- Wireless router configuration

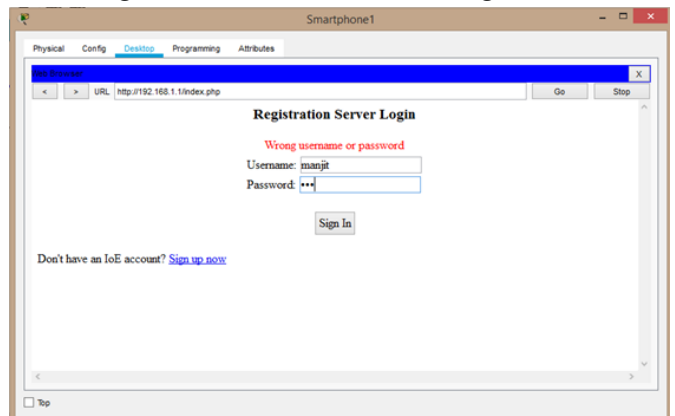


Figure 9:- Registration on server login/ sign up page

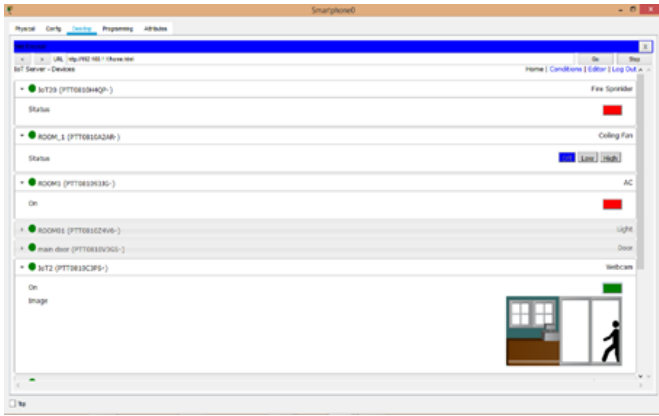


Figure 10:- Enable/Disable registering IOT devices to wireless router

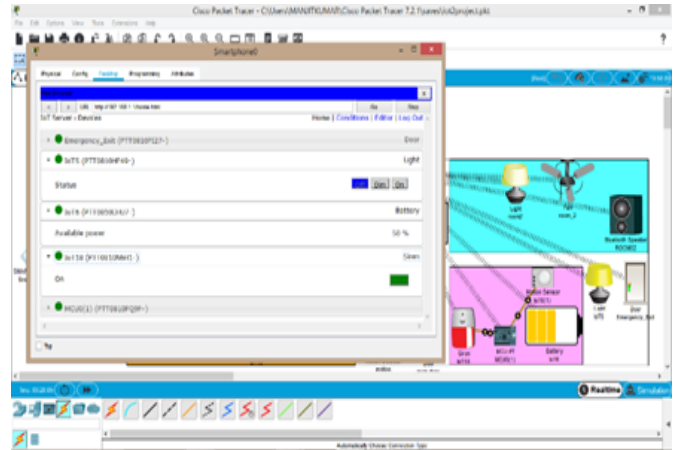


Figure:- 13 shows the working of Emergency IOT devices.

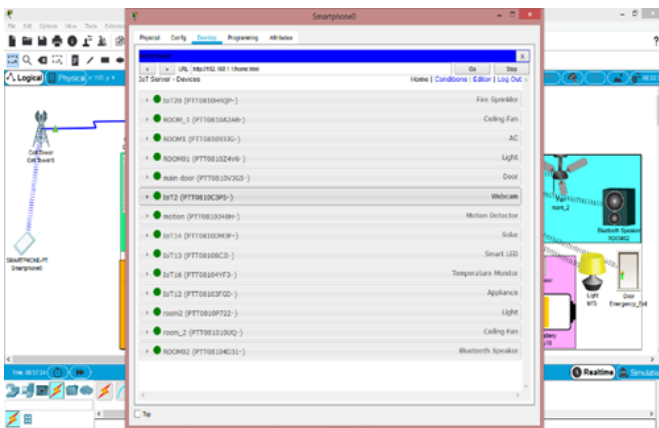


Figure 11:- Registered IOT devices to wireless router

V. RESULT

IOT based smart and secure home model has enhanced security and eco friendly in nature. In this we have used solar panel and battery for the IOT sensors. In case of electricity failure, we can use this.

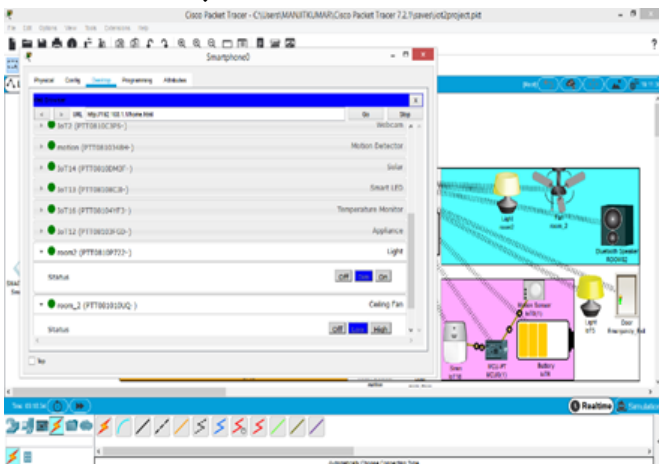


Figure:- 12 shows the working of IOT devices.

VI. CONCLUSION AND FUTURE SCOPE

Here in this paper, we have implemented astute and secure home by recently released Cisco packet tracer version 7.2, which includes latest and different IOE contrivance utilized for the automation of home. which uses server to register perspicacious contrivance on it and then control the contrivances. Different user name and password of some IOT contrivances for the security. In future we can use

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