An Iot Enable Smart Home Automation Using Cisco Packet Tracer

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Abstract- The 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 human to lead his/her life comfortably is a home. A home with updated latest technology which means a smart home. This paper gives the basic idea use Cisco packet tracer to implement smart home. One is needed to create a smart home when electronic devices are switched on and off. Smart home development is achieved by simulation via testing system, network setup and wireless home gateway computer network equipment required by a smart home network Cisco packet tracer using Internet Thing (IoT)/IoE command. 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. Cisco implemented (IoT) functionalities in the latest version of the platform, and now it is possible to add all the smart devices, sensors, actuators and also devices, which simulate microcontrollers like Arduino or Raspberry Pi to the network. All IoT devices can be run on generic programs or modified by Java, Python or Blocky programming them. This makes Cisco Packet Tracer a perfect method to construct functional simulations for IoT.

Index Terms- iot,smart home, Cisco Packet Tracer 7.2, Simulations.

I. INTRODUCTION

This article This article In today's technologically growing world technological development without becoming a requirement that is frequently used in today's human life. Living home that includes smart objects with specific functions is called 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[1], [2]. And there are usually monitoring tools, and the devices that are controllable and automatic this can be accessed via an internet-connected computer or smart mobile device. Instead of providing security that is safe, smart home can provide different features to provide automatic security using various alarm systems, as LCD display and siren sound and by sending email to valid users if sensor detects security issues [3]. Home automation states handling and monitoring home items using microcontroller or computer technology. Automation is common because it makes the process simple [4], productive and secure. All smart devices are registered at the home gateway in this paper and operated by a legitimate person [5]. By including different sensors in home automation, Smart Home eliminates user engagement in tracking home settings and operating home appliances. IOT (Internet of Things) is a system in which people, objects with a specific identity and moving capacity information without needing a dual human-to-human origin [6], i.e. destination or contact between people and computers IoT and IoE are a well versed technology which optimizes the life based on

smart sensors and smart devices which operate together on the internet. All(IoE) web is a theory that extends machine-tomachine communication (M2M) emphasis of the Internet of Things (IoT) to describe a more complex system that also includes people and processes[7], [8]. Over the past few years, IoT has become one of the most important technologies of the 21st century. Now that we can connect everyday objects—kitchen appliances, cars, thermostats, baby monitors—to the internet via embedded devices, seamless communication is possible between people, processes, and things.[9]. 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.[10]. 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[11]. In this paper the smart and secure home is designed by utilizing the house appliances such as smart lights, smart doors, smart intellective fan, smart CCTV and perspicacious window.[12] Chic lights, chic windows, chic fans, chic doors with different detectors and sensors are some of the devices [13]. Latest version the simulation program for cisco packet tracer modelling and configuration of IOE systems with conventional networking system to implement smart home.

II. METHODOLOGY

The smart home is implemented with new released version of cisco packet tracer 7.2, which further included withdifferent smart object used for the home automation such as AC,Home speaker,lawn sprinkler, web cam,siren,portable music player, garage door, web cam smart fan, and different sensors are included.

In order to control these all smart objects and sensor, microcontroller (MCU-PT) and Home Gateway used, since it also provide programming environment for controlling smart object connected to it and to provide a controlling mechanisms by registering a smart device to corresponding Home Gateway respectively

3.1 Cisco Packet Tracer

In the figure below it is possible to see, as an example, the different routers offered by Cisco Packet Tracer, main difference toconsider when placing the device in the simula-tions are the possibly hardware limitations that are coming with the devices, in terms of number of ports available, options to change the network interfaces, number of expan-sion slot etc. An extensive list of switch, server, PC and laptop is also available in the tool.

3.2 Home Gateway

Smart home is designed with smart devices were in fact connected to Internet of things in order.
Smart home is designed with smart devices were in fact connected to Internet of things in order to simulate full components inter-action and capability to remote and also control the devices. Home user in fact, after connecting through browser and pass the authentication.
Home Gateway consist of 4 Ethernet ports in addition to that a wireless access point configured with the SSID of corresponding "Home Gateway" To secure wireless connection WPA2 /WEP / WPA-PSK

Figure 1 - List of routers in Cisco Packet Tracer

Smart-devices are devices that are fully capable of connecting to a both wired and wireless network and where the behavior and interaction logic can be quickly set up by utilizing pre-loaded Phyton programs or networking commands. These sensors include smart lights, alarm sirens, coffee maker, RFID readers and a long list of other sensors, such as carbon di-oxide, water level, humidity, AC units, temperature etc.

to simulate full components inter-action and capability to remote and also control the devices.3.1 HOME GATEWAYenterprise can be configured on home gateway server. The figure 3 shows seven internet of Things device connected to a Home Gateway by using Ethernet cable as well as wireless. To connect the Home Gateway to the Internet its Internet WAN Ethernet port available on the corresponding home getaway. The IoE devices can be remotely connected and managed through a web interface hosted by the Home Gateway.

Carbon Monoxide Detector

Figure 2 - List of smart device in packet tracer

The figure 2 shows the smart object is connected to the home Gateway using Ethernet cable as well as wireless medium to manage smart devices locally and remotely. Home gateway also works as Dynamic host configuration protocol(DHCP) server by

assigning IP address to each smart device which are connected to Home gateway as shown in figure 3

The Home Gateway internal(LAN) IP address is 192.168.25.1 but it can also be accessed through its Internet facing IP address.
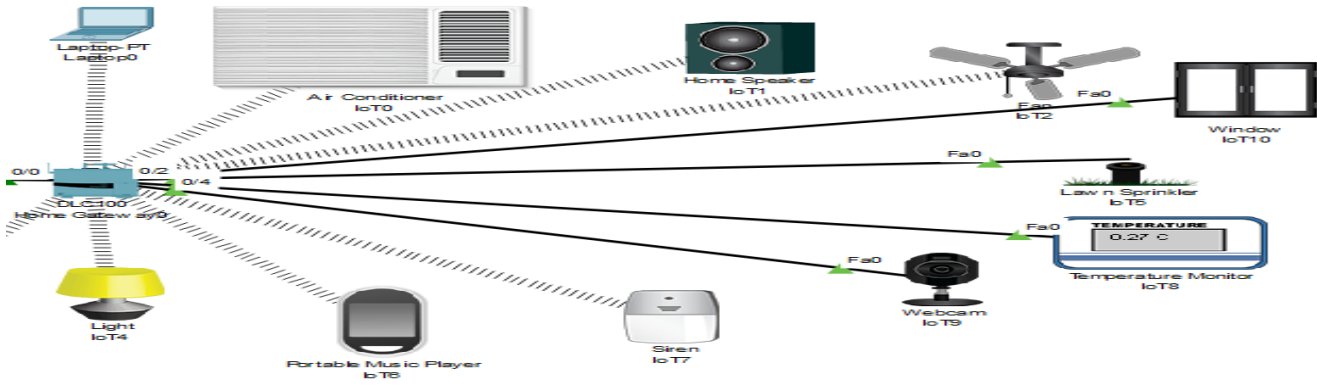
Figure 3. Home gateway with several smart things connected to Home gateway
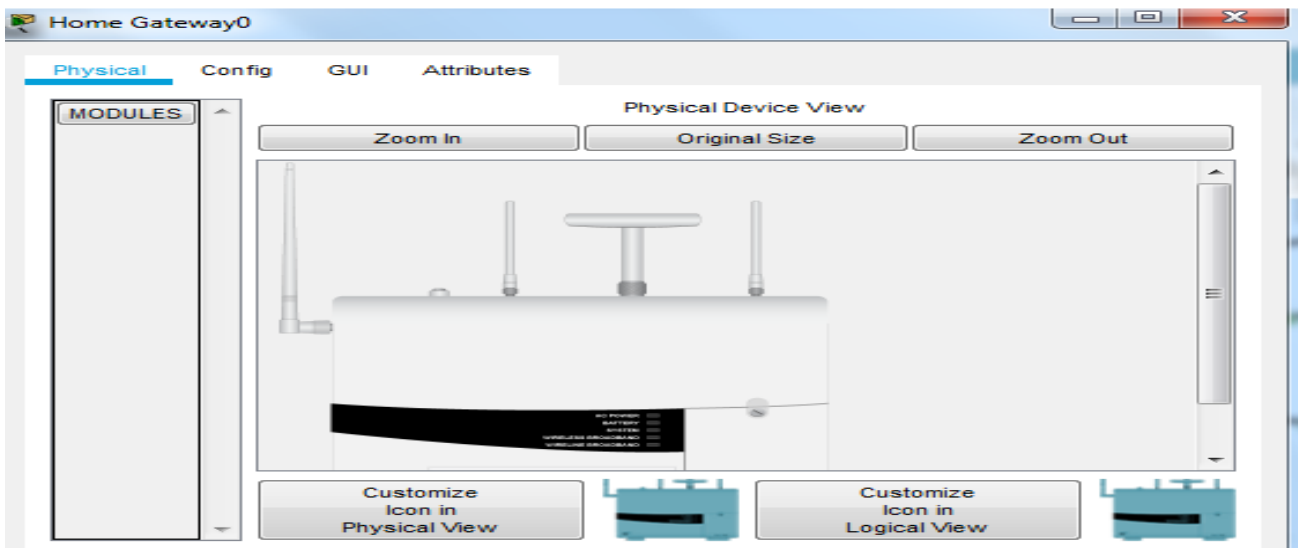

Figure 4 Home gateway Ethernet and internet port

III. **IMPLEMENTATION**

To implement smart home using cisco packet tracer 7.2. I used different types of smart devices to make home smarter. The figure 5 represent the smart home architecture that connected each other using wired and wireless medium.
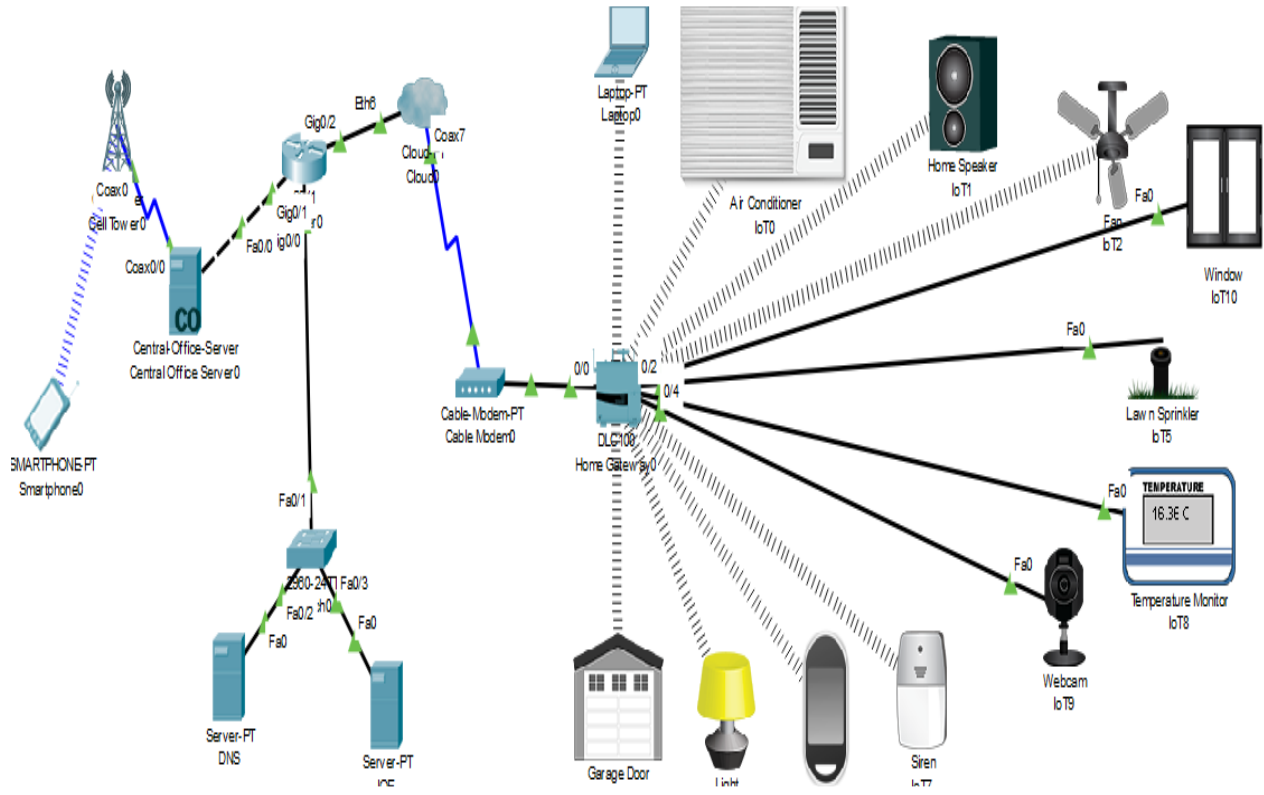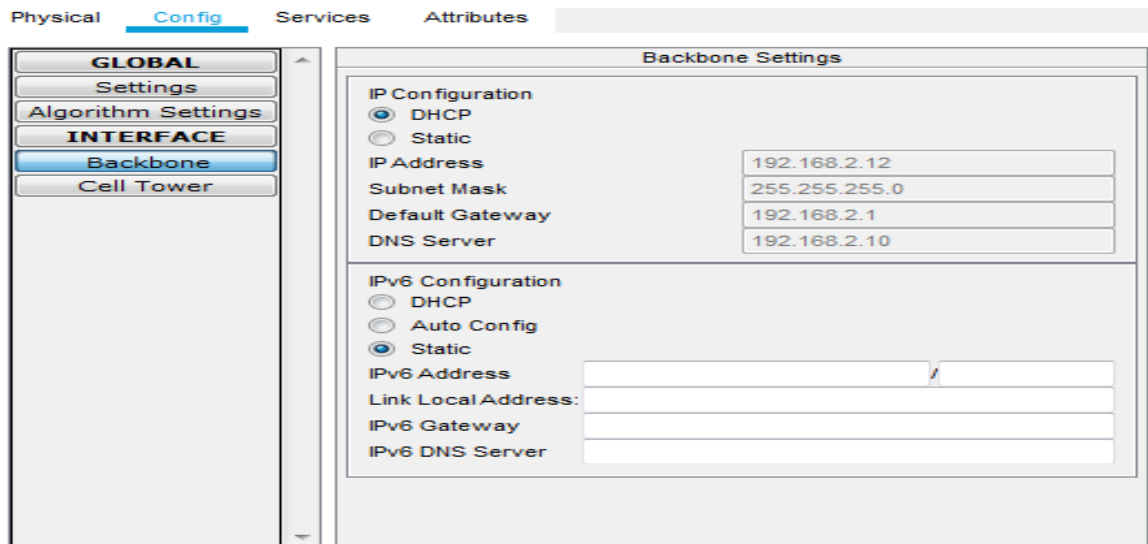
Figure 5 Smart Home Architecture

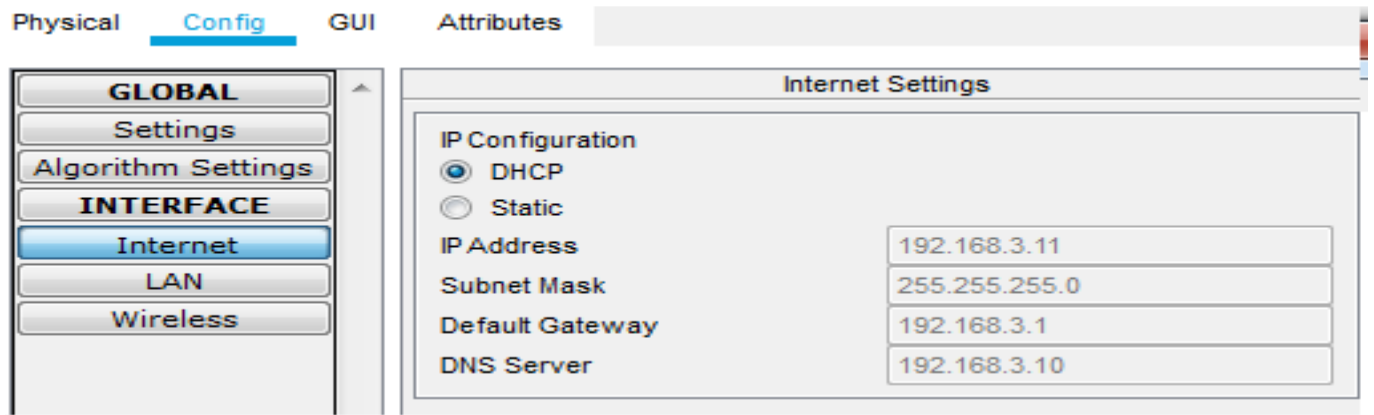**Figure 6** Central office server obtain IP address from ISP server

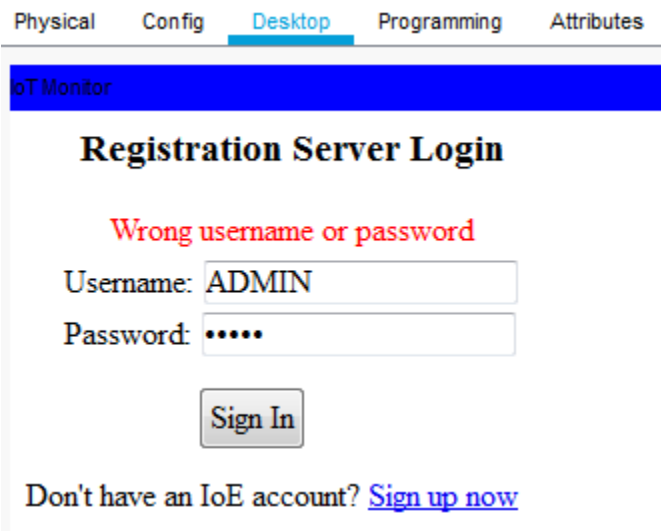**Figure7** Home Gateway obtain IP address from ISP server

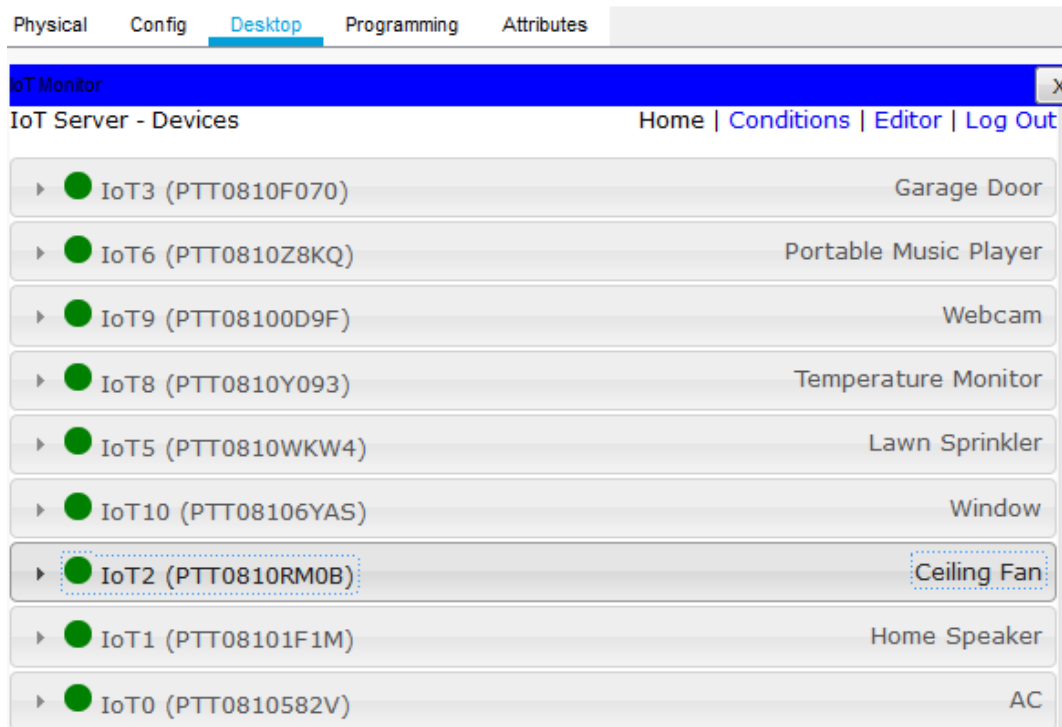**Figure 8**: Registration server login

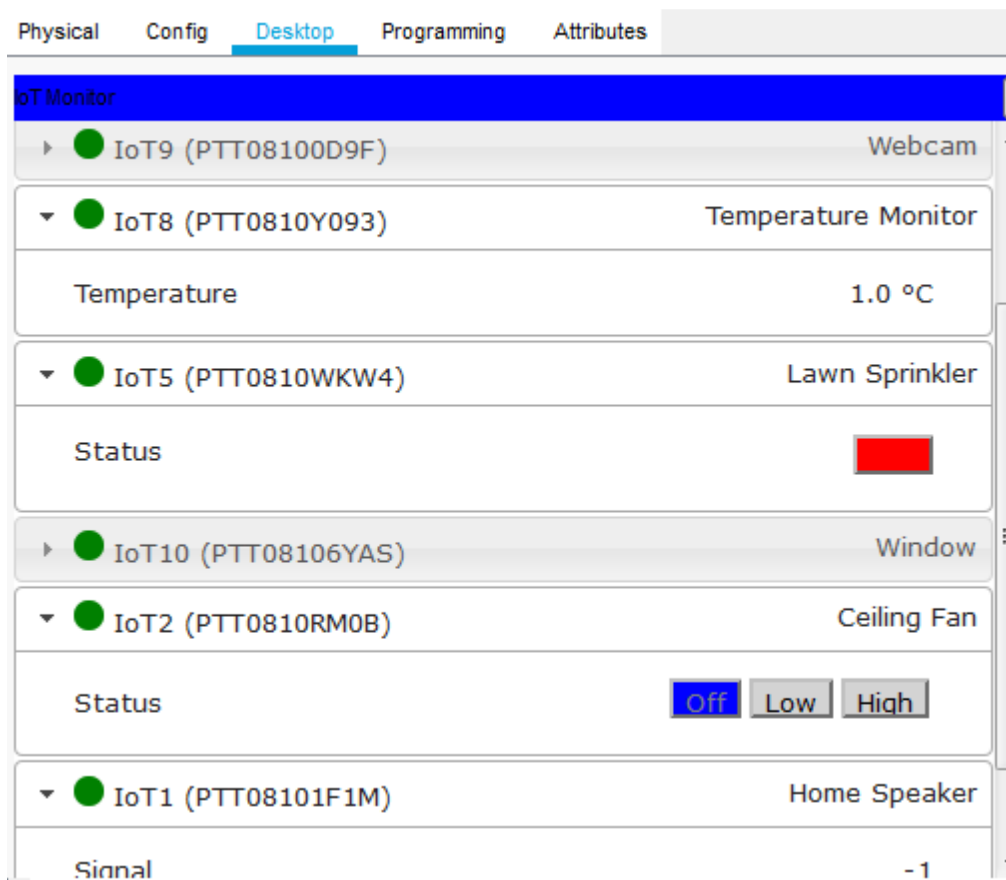**Figure 9** Registering IO device to Home Gateway

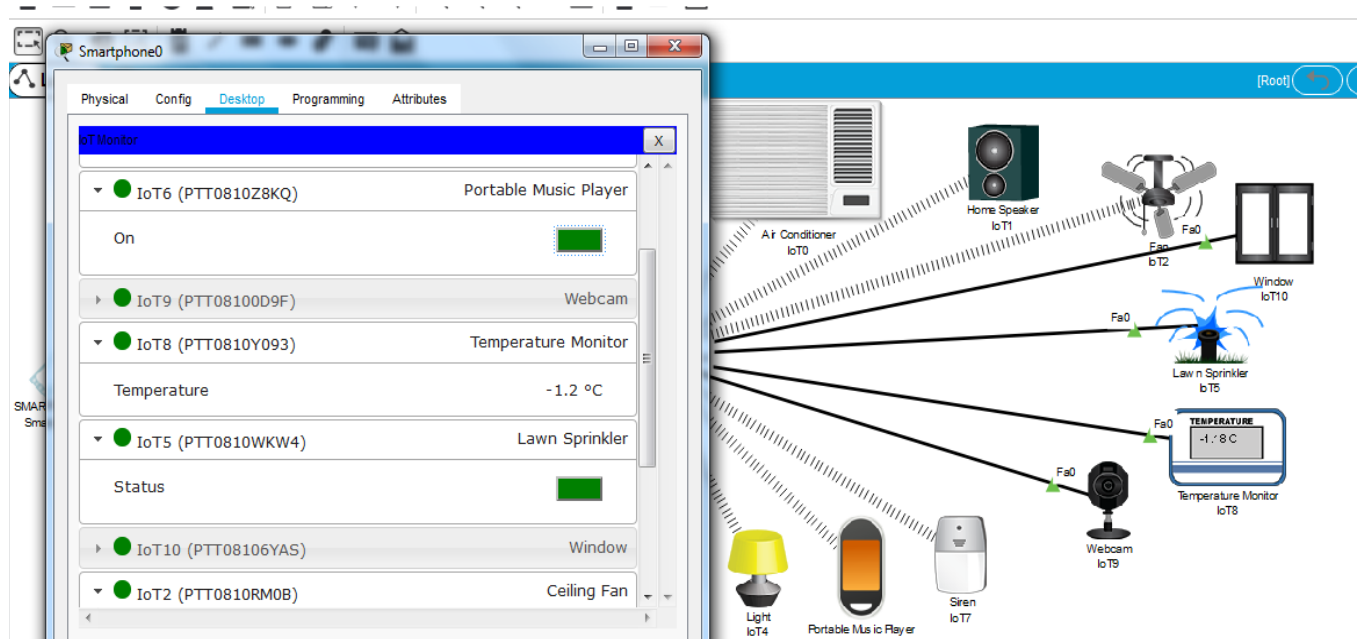**Figure 10** Enable/Disable registering IO device to Home Gateway

Figure11 Working operation of registering IO device to Home Gateway

IV. CONCLUSION

In this paper, We used the latest cisco packet tracer version to introduce smart home, as this version includes numerous IOE devices. We used the home portal for home automation and record smart devices for monitoring them and Microcontroller (MCU-PT) to connect various sensors as well as IOE devices. MCU moreover offers computing environment for different devices and different language of programming.

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