SMART HOME SIMULATION

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Smart Home Network Design

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1 Abstract

This project results in a networking design of Smart Home using Networking and IOT based concepts using virtual environment software cisco packet tracer 7.2.1. Through this we achieve home of modern era where it uses modern devices like smart windows, doors, garage, AC, light, fan, temperate monitor, sensors and many more to automate the things or hands over the control of devices to the hands of the user who has computer machine connected to internet and he/she can easily control all devices without any physical effort from one place.

2 Network Design

The Smart Home Network Design is consist of:

1. Bed Rooms
   (a) light
   (b) windows
   (c) doors
   (d) fan
2. Living Rooms
   (a) Air Conditioner
   (b) LCD

(c) ALARM
(d) Motion Detector
(e) Home Speaker
(f) light
(g) Furnance
(h) Temperature Monitor

3. Study Rooms
   (a) Webcam
   (b) Portable Music Player
   (c) Appliance
4. garage
   (a) Motion Detector
   (b) Siren
   (c) Old Cars
   (d) CO Detector
   (e) CO2 Detector
   (f) Smoke Detector
   (g) Garage door
5. Home Gateway
6. MCU
7. Routers
8. Switches
9. Central Office Server
10. Cell Tower
11. DNS Server
12. IOE Server
13. SMTP/FTP Server

3 Features And Services

This Network Design fulfills services which are as:

1. VLSM (Variable Length Sub-net Masking)
2. VLAN (Virtual Local Area Network)
3. DHCP (Dynamic Host Configuration Protocol)
4. DNS (Domain Name System)
5. IOE (Internet of Everything)
6. RIP V2 (Routing Information Protocol)
7. OSPF (Open Shortest Path First)

4 Network Topology Diagram

Refer to Figure 1

5 Discussion

This project is consist of 2 rooms, living room, study room, garage, and server room. Furthermore it uses IOT devices as described above to achieve the desired goal like uses concept of VLAN on room 1 and room 2 to achieve separation between them, it utilizes concept of VLSM from every router in addition with RIP V2 and OSPF. Every part of Home has separate Home Gateway which gives access to their home member every right to control their devices without any extra effort. This project also uses old cars and CO, CO_2, and smokes detector which after detecting 0.4 percent level of any thing automatically opens the garage door and siren, furthermore on motion detector it activates the webcam, and on motion sensor it uses alarm as signal, It also automates the use of AC with the help of Temperate Monitor. Other things can be controlled using any computing device like pc, laptop, smart phone, tablet to operate these devices.

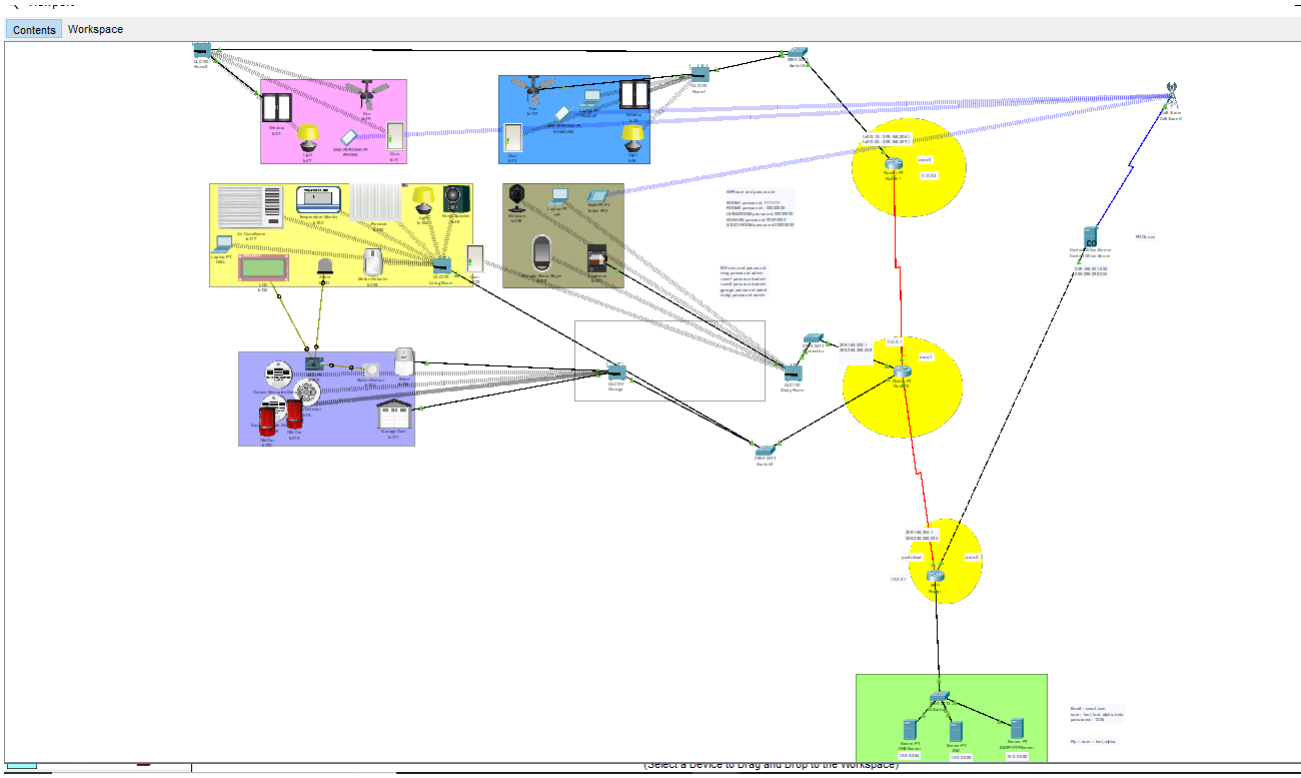

Figure 1: Figure 1

6 Summary

In short this project achieves networking practices in virtual environment platform provided by CISCO packet tracer, through with we have used concepts like DHCP, DNS,FTP,SMTP, RIP V2, OSFP, VLAN,VLSM, IOT devices in example of Smart Home Simulation.