SMART SECURITY ALERT SYSTEM

A COURSE PROJECT REPORT

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BONAFIDE CERTIFICATE

Certified that this mini project report "**SMART SECURITY ALERT SYSTEM**"
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who carried out the project work under my supervision.

SIGNATURE

TABLE OF CONTENTS

1. ABSTRACT

With many cases of theft and robbery in the whole world, the number of robberies reached 57,396 during 2011 including 65 armed robberies and those numbers are increasing every year , so we decided to use Cisco Packet Tracer, to establish a high smart security alert system for homes. Smart Security Alert System consists of modules like Web Camera, Raspberry Pi, PIR Sensor, Alarm, Door Rules. The Web Camera captures the images of any inactivity happening at home while the user is not available at home. The PIR sensor detects any inactivity in the home and instantly sends signals. Raspberry Pi then fetches the signal from webcams and PIR sensors and sends captured images to Homeowners. Various conditions and constraints are programmed based on the smart object connected to the home gateway. Once any movement is detected, a loud alarm is produced to alert those nearby of the unauthorized entry.

2. INTRODUCTION

2.1 Objective

With the increase of thefts and the speed of their spread,peop1e's fear and anxiety increased,concern and afraid of being psychologically or physically harmed by the robber,the developers of computer technologies began to create different and diverse protection and security system to protect and secure home by informing owners that a stranger is in their house or alarm them when danger occurs.

The objective of this project is to come up with a simulation of smart security devices that can be controlled by the end-user smart device remotely and then show the concept called smart security alert home. Use of Cisco Packet Tracking Features Simulated smart security alerts home and IoT devices are monitored.This gives protection and Safety to home and reduces exposures to common hazards and theft,it alerts the user as soon as they occur.

3. LITERATURE SURVEY

In this section, we are presenting earlier home security system suggested by various researchers. Following are the contributions of various researcher done in this domain: K. Balasubramanian et al.[4] proposed home automation and security system which can remotely control the home appli-ances and alert owner on presence of intruder and occurrence of fire at home. Dey S. et [5]alworked with web based home security system utilizing Arduino Uno microcontroller with Wi-Fi switch. Router was used to provide an IP address through an Ethernet module to the device. This ethernet module provides a static IP address, so that all devices related with same router uses TCP/IP based communication. P. Vigneswari et al.[6] introduced smart automated security system with surveillance. When an intruder entered the room, camera should be switched on and it captured pictures of an intruder.Shaligram A. et al.[7] introduced home security system based on GSM technology. They proposed few techniques for home security framework. The first one used web-cams for security alert to the owner, when there were movements in front of the camera. Second technique sent SMS with the help of GSM and GPS Module. In this system, user will get real-time status of house weathers it is secured or not and any unwanted motion occurred in house can be detected.

4. REQUIREMENTS

4.1 Requirement Analysis

The following the requirements for the project:

1. **Webcam:** Webcam is used in a proposed approach that captures the images of any inactivity happening at home while the user is not available at home. Webcam and PIR sensor detects any inactivity in home and instantly sends signals and captures images to Raspberry PI.

2. **PIR Sensor (Passive Infrared Sensor):** PIR sensor is used in a proposed approach that is frequently utilized as a part of movement detectors by measuring infrared lights which are transmitting from the object over sensor range. For home security, we have used it for motion detection in home. PIR sensors also work in darkness, so we get more security instead ofjust using a camera for detection.

3. **Alarm:** A burglar alarm system consists of a series of electrical components that are connected to a property. Via sensors and contacts, they detect movement or the opening of doors and windows, upon which a loud alarm is produced to alert those nearby of the unauthorized entry.Often deemed to be a security essential, these systems are a universal fixture of most premises.

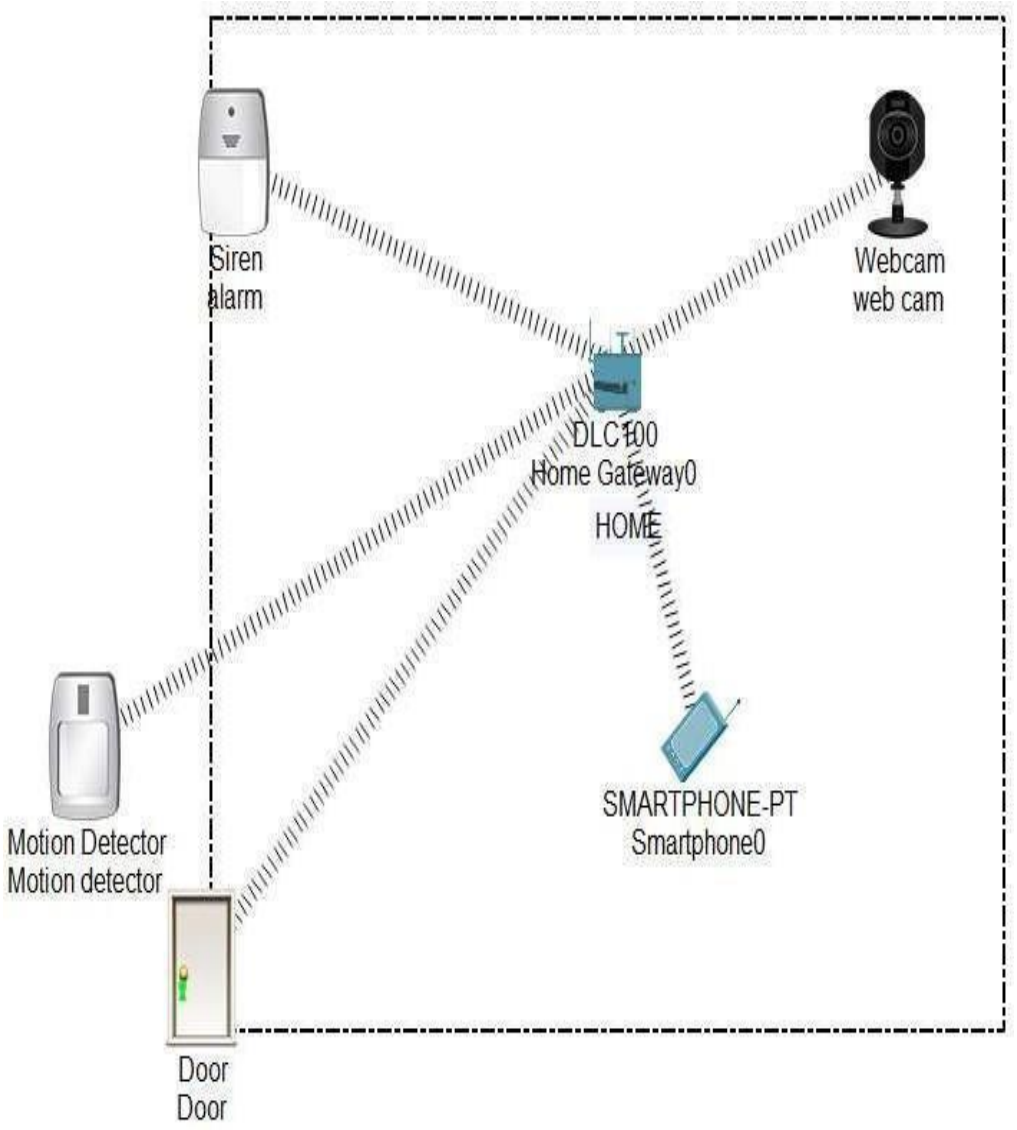
4. **Door** Rules:Different conditions and rules are programmed based on the smart object connected to the home gateway. These steps have to be repeated for all objects.

5. **Device Led Conversion:Device** Led Conversion (DLC) is the process where a new device or a product instance is upgraded from Traditional to Smart Licensing when registered in Cisco Smart Software Manager (CSSM). All licenses on the device automatically convert from Classic or Perpetual Right-to-Use (RTU) License to Smart License without the need for any manual conversion.

5. ARCHITECTURE AND DESIGN

5.1 Network Architecture

The network architecture is as follows:



The architecture consists of four major networks:

- Motion Detector
- Smartphone
- Webcam
- Siren

These networks are interconnected with each other with varying degrees (discussed in the implementation chapter).

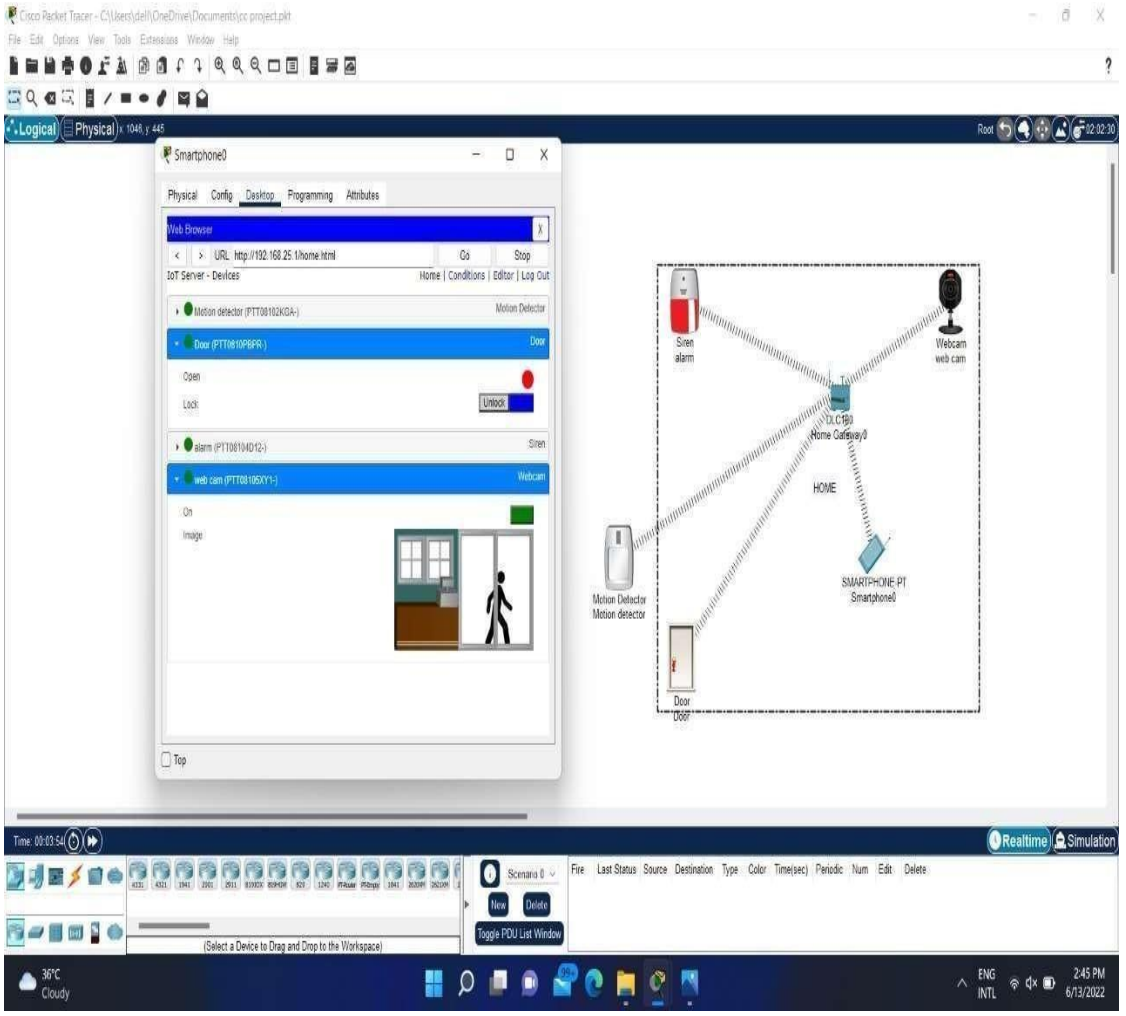
6. IMPLEMENTATION

The system can be connected with a smart house be associated with a government system to report by the competent authorities if there is a dangerous situation for a particular area such as earthquakes or volcanoes by sending an alert message to the homeowner's number associated with the system.

Such a smart security alert system that considers one of the most important ways of protection that majority of society seeks to own their homes and use because it is one of the latest ways of protection for homes and the most easy use will be a desirable one in today's world where there is a constant increase of thefts and the speed of their spread,peop1e's fear and anxiety increased,concern and afraid of being psychologically or physically harmed by the robber.

7. EXPERIMENT RESULT AND ANALYSIS

7.1 Result



7.2 Result Analysis

To create a Smart Home Security Alert System we have modules like Home gateway,Doors, Web camera,Siren,Motion Detector and Smartphone. First select Home Gateway 100(DLC) from wireless devices, from end devices select smartphone and from home select Door, Motion Detector, Web Camera and Siren.All the home devices will be connected to Home Gateway automatically. To create a better view for Smart Home Security Alert System we need to create home by making rectangle and name it as Home.Put every home components inside home box except Motion Detector. To connect home devices wirelessly to home gateway we need to follow steps:

- First select home gateway and click on configure and go to wireless and then name SSID as home gateway, then in authentication select WPA2-PSK,set the password as getconnect.
- Now we have to connect home devices to home gateway, so first select motion detector go to configure set the display name as motion detector and set loT server as home gateway.then click on advance and click on I/O configure.Set the Network Adapter as PT-IoT-NM-TW,then click on configure,click wireless and in authentication select WPA2-PSK and enter password getconnect.
- Connect other home devices to the same as the connection of the motion detector to the home gateway.
- Select smart phone,click on configure then click on wireless,set SSID as home gateway and in authentication select WPA2-PSK and enter password getconnect.
- Now go to the desktop of smartphone,click on the web browser and type the URL as 192.168.25.1 and click go.
- Put Username and password as admin for both,and now we can see all home devices connected to home gateway by logical connection.
- Now set conditions if any person is trying to enter or leave the house.
- If person presents at the doorstep,the motion detector is ON is TRUE.Set the actions, web camera is ON is TRUE and Alarm sound is ON is TRUE.
- If no person is present at the doorstep,the motion detector is ON is FALSE Set the actions, web camera is ON is FALSE and Alarm sound is ON is FALSE.
- Now verify if the person is there on the doorstep or not,so go home,click on the web camera and door set the door in lock condition.

- To enable motion detector click alt put the mouse pointer on motion detector,now motion detector is ON and siren goes ON,the owner can see the webcamera by using the smartphone if anyone present at the doorstep or not. According to that the owner can let the person in or not.
- Now set the door in unlock condition:
- If no person is present at the doorstep,the motion detector is OFF,web camera is OFF and Alarm sound is OFF.
- If a person presents at the doorstep,the motion detector is ON,web camera is ON and Alarm sound is ON,then the owner can look at the web camera and lock the door.

8. CONCLUSION AND FUTURE ENHANCEMENT

We designed a smart home security alert system using Cisco packet tracer and tried to make it as secure as possible by linking it to the owner of the house. All the information of anything happening in thc house will bc sent to the owner via text message or phone alarm.

It is one of the most important ways of protecting the majority of society that seeks to own their homes and use because it is one of the latest way for protection of homes and the most easy use has been established, the system of the protection of the home using cisco packet tracer.

It can be concluded that the proposed system present the basic level of home security and remote monitoring while the required objectives of home security system have been achieved. This low-cost home security system has minimum delay during process of email alert. In future, we will enhance the security level of smart home. By addressing the issues of flexibility, low cost home security and monitoring system.

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