Designing a Network for a Smart Home

18CSS302J - Computer Networks
Course Project: Review - I

Problem Statement and Identifying Objectives

Project Objective:

Design a Network for a smart home with Internet of Things (IoT)

Project Overview

- We propose to design a simple network for a smart home with the help of Cisco Packet Tracer. We can design a ***smart*** network with the help of IoT.
- An IoT Network refers to a collection of interconnected devices that communicate with each other via the internet, without the need of human involvement.
- Essential IoT characteristics, by definitions, are:
  - on-demand self-service
  - broad network
  - access
  - resource pooling
  - rapid elasticity and measurable services.

Networking Overview

- Computers and Information are critical to the success of almost any project or business, be it large or small and this is where networking comes into play.
- They help connect people, support applications and services and also provide access to multiple resources.
- Some of those steps one should follow to build a good network:
  - Verifying our Goals
  - Identifying and assessing the requirements
  - Creating a proper plan
  - Building the network

Network Design Methodology

Network Requirements

- Document the goals of the customer which have to be met by the network.
- Goals are separated into two categories:
  - Business Goals
  - Technical Goals

Characterise Networks

- Gather information about the current network and its services
- Compare the functionalities and protocols of the existing network with the newly defined goals.

Design the Network

- Finally, we can design the network, based on the conclusions drawn from the previous steps.
- We will use a top-down approach to design the network.

Comparing and contrasting selected method to other alternative methods

Why We Need IoT in a Smart Home

With comfort and convenience as a priority, IoT has changed the way we go on about our daily tasks. A home with IoT-enabled devices will go quite well with your daily routine.

Here are a few reasons why you need IoT in a smart home.

- Enhanced Communication
- Automation and Control
- Enhanced Knowledge
- Monitoring and Sensing
- Convenience and Efficiency
- Hope For a Better Future

What is special about our Network?

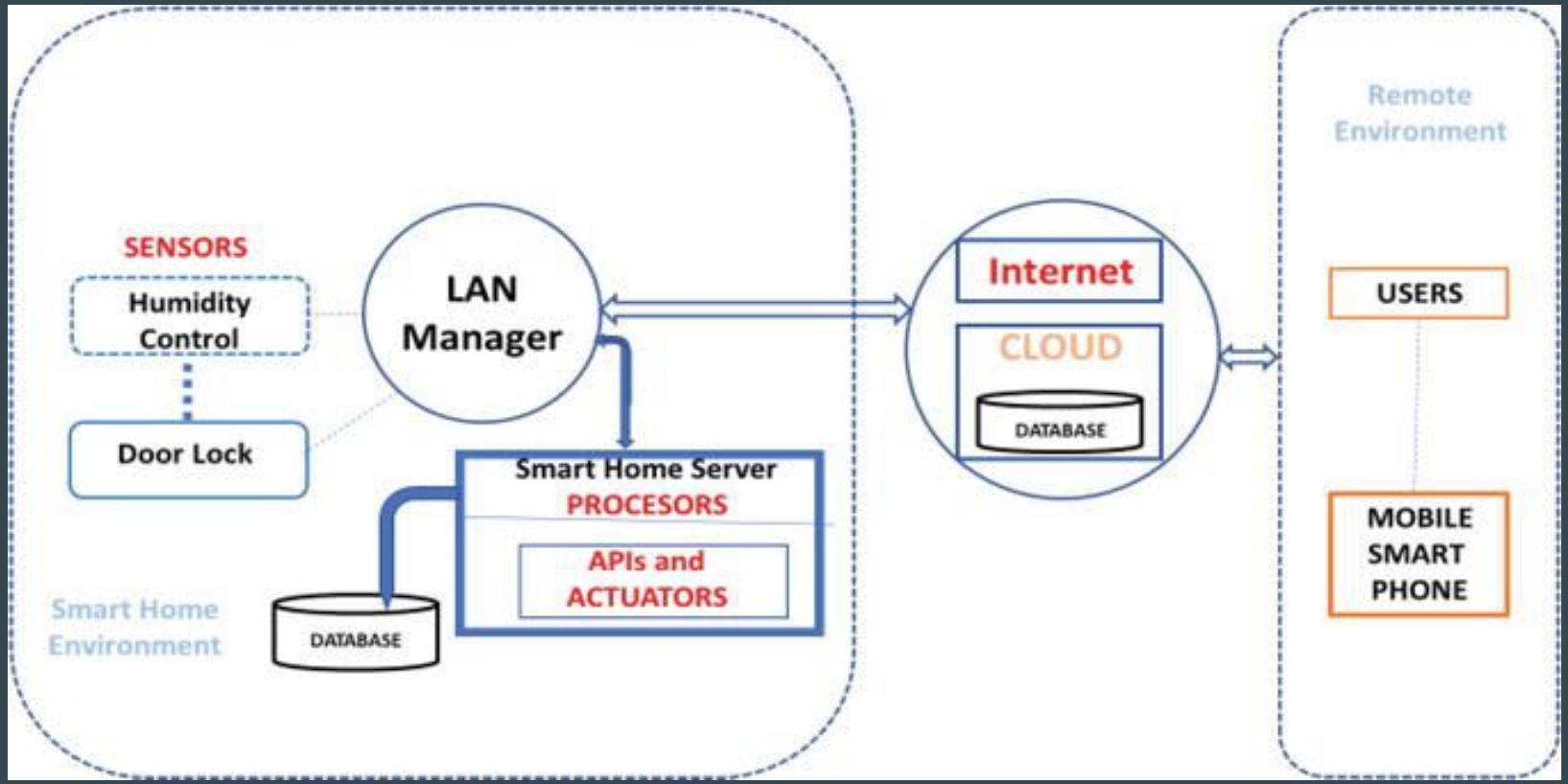
- A smart home will be automated.
- Our smart home can make our lives easier and secure.
- It also saves energy and time.
- The house is being monitored all the time by a webcam.
- The most important thing is the owner of the house can access the house with the help of his/her smartphone.

References :

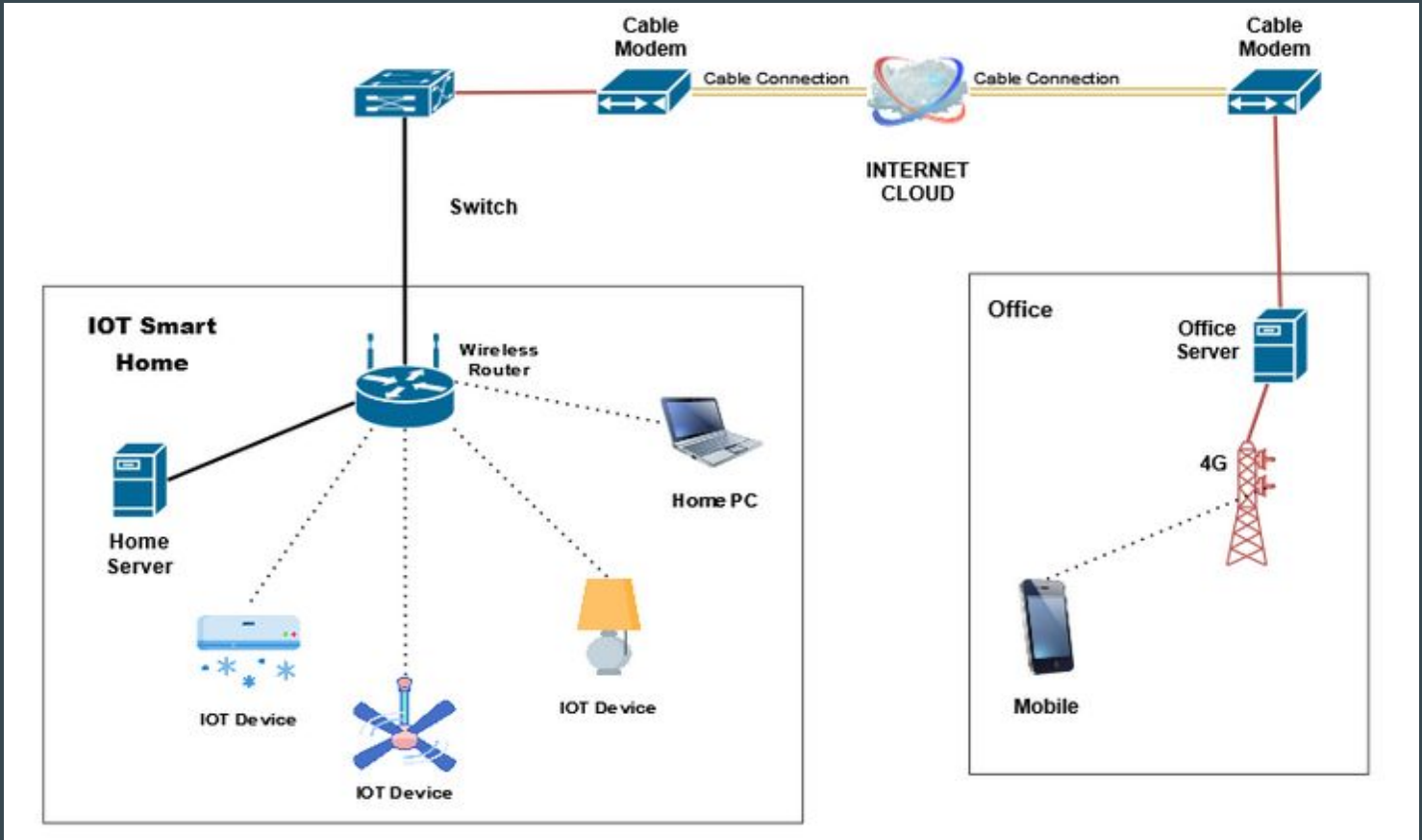
- We have Referred from the Documentation of Cisco packet tracer

Architecture Diagram, Network Design and Operations Performed

Architecture



Network Design



Operations Performed

Operation 1	• Setting up SSID to the network
Operation 2	• Enabling the required network adaptor to all the devices
Operation 3	• Following DHCP protocol.
Operation 4	• Configuring EIGRP routing protocol
Operation 5	• Creating DNS server
Operation 6	• Connecting all devices to the remote server

Identifying Functionalities and Computing Resources

Computing Resources

Cisco Packet Tracer :

- Motion Detectors
- Computers and Laptops
- Controllers and modules
- Access Pointers
- Modems
- Routers
- Servers
- Switches
- IoT Devices (WebCam, Lamp, Fan, etc.)

Thank you

The Team

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