

# Smart Corporate Network Infrastructure Solution

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Submitted in partial fulfillment of the requirements for the degree of  
Bachelor of Science in Computer Science and Engineering



**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
SONARGAON UNIVERSITY (SU)**

September 2022

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# APPROVAL

The project titled “**Smart Corporate Network Infrastructure Solution**” submitted by Sanjoy Sarma (CSE1901016115), Fatama Akther (CSE1901016116), Taslima Nahar Nayona (CSE1901016022) and Pobitro Kumar (CSE1901016175) to the Department of Computer Science and Engineering, Sonargaon University (SU), has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering and approved as to its style and contents.

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# DECLARATION

We, hereby, declare that the work presented in this report is the outcome of the investigation performed by us under the supervision of **Sabrina Tasnim, Assistant Professor**, Department of Computer Science and Engineering, Sonargaon University, Dhaka, Bangladesh. We reaffirm that no part of this project has been or is being submitted elsewhere for the award of any degree or diploma.

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# ABSTRACT

It is the age of Modern technology .The modern world almost wholly depends on advanced technology. Consequently, our life is fully influenced by modern technology-based devices like mobile phones, laptops, tablets, AC, Fridge, Fan, computers and so on. Nowadays, it works like all in one .Here we created a network system with smart technology. We used here a lots of IoT device and those devices are so much price .So, we used a simulation software to develop it .We expect if we get an opportunity to implement it in a network farm. However, this smart network system is not commonly available in Bangladesh. Usage is more common in foreign country. The main feature of our project is that we can monitor any network using this smart networking system. We can follow the desired devices with the help of mobile or computer and see the status of these devices and we can easily control this smart network system. Its areas of use are smart campus area, smart coffee shops, big companies, trains station, smart hospital, smart home etc. We can easily configure the Artificial Inelegancy devices used in the Smart Network System with the help of various programs. As our country has reached its advanced peak, we will soon see proper use of this smart network system in our country

# ACKNOWLEDGMENT

At the very beginning, we would like to express my deepest gratitude to the Almighty Allah for giving us the ability and the strength to finish the task successfully within the schedule time. We are auspicious that we had the kind association as well as supervision of **Sabrina Tasnim**, Assistant Professor & **Bulbul Ahamed**, Associate Professor & Head, Department of Computer Science and Engineering, Sonargaon University whose hearted and valuable support with best concern and direction acted as necessary recourse to carry out our project.

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Finally, our deepest gratitude and love to my parents for their support, encouragement, and endless love.

# LIST OF ABBREVIATIONS

AC	Air conditioner
AP	Access Point
DNS	Domain Name System
FTP	File Transfer Protocol
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
HTTPS	Hyper Text Transfer Protocol Secure
IP	Internet Protocol
IoT	Internet of things
LAN	Local Area Network
MAC	Media Access Control
RMON	Remote Monitoring Network
SMTP	Simple Mail Transfer Protocol
URL	Uniform Resource Locators
Wi-Fi	Wireless Fidelity

# TABLE OF CONTENTS

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Title	Page No.
APPROVAL.....	ii
DECLARATION .....	iii
ABSTRACT .....	iv
ACKNOWLEDGEMENT .....	v
LIST OF ABBREVIATION .....	vi
CHAPTER 1	1 – 4
INTRODUCTION TO SMART NETWORK INFARSTRUCTURE	
1.1 Introduction .....	1
1.2 Objectives.....	1
1.3 What is IoT Technology?.....	2
1.4 Introduction to IoT Devices.....	2
1.5 Important IoT Network Services .....	3
1.6 Future of IoT Network.....	3
1.7 Smart Network IoT Devices Platform.....	4
CHAPTER 2	5-10
NETWORK INFARSTRUCTURE DESIGN	
2.1 What is Network Infrastructure? .....	5
2.2 How did we get started with Network infrastructure Design.....	5-8
2.3 Use Case Diagram Sensor.....	8-9
2.4 Use Case smoke detector.....	9-10
2.5 Flowchart of IoT smart network system.....	10
CHAPTER 3	11-14
REMOTE MONITORING	
3.1 What Is Remote Network Monitoring?.....	11
3.2 How Do we Start Remote Network Monitoring?.....	12
3.3 Remote Network Monitoring 1 (RMON1).....	12
3.4 Remote Network Monitoring 1 (RMON2).....	13
3.5 Why Do we Need Remote Networking Monitoring Software?.....	13-14



CHAPTER 4	15-20
IoT REGISTRATION SERVER	
4.1 IoT Registration server.....	15
4.2 How does IoT work?.....	15-20
CHAPTER 5	21-29
SERVER MANAGMENT	
5.1 Mail Server.....	21
5.1.1 Mail services configure.....	21
5.1.2 Mail ID Adding	22
5.1.3 User PC Mail Configure	22
5.1.4 User Mail Compose process	23
5.1.5 User Mail Received process	24
5.2 Web Server	25
5.2.1 Web Services Configure	26
5.2.2 Index.html file configure	26
5.2.3 Browse my web site	27
5.3 DNS Server	28
5.3.1 DNS Service Configure	29
CHAPTER 6	30
CONCLUSION AND FUTURE WORKS	
6.1 Conclusion .....	30
6.2 Limitation of smart networking infrastructure.....	30
6.3 Future Works .....	30
REFERENCES .....	31

# LIST OF FIGURES

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<b><u>Figure No.</u></b>	<b><u>Title</u></b>	<b><u>Page No.</u></b>
Fig.1.1	Smart Office Benefits	2
Fig.1.2	Future of IoT Network	3
Fig.1.3	IoT Device Platforms	4
Fig.2.1	Network infrastructures Design	6
Fig.2.2	Kitchen infrastructures Design	7
Fig.2.3	Server room infrastructures Design	8
Fig.2.4	Use case of smart corporate network	9
Fig.2.5	Use case of Smoke detector	10
Fig.2.5	Flowchart of smart corporate network	10
Fig.3.1	Remote Network Monitoring	11
Fig.3.2	Remote Monitoring (RMON)	12
Fig.3.3	IoT Remote Monitoring	14
Fig.4.1	Add Registration Server	15
Fig.4.2	IoT Monitor	16
Fig.4.3	Create Registration Server	17
Fig.4.4	Login Registration Servers	17
Fig.4.5	Register IoT Devices	18
Fig.4.6	Verify IoT devices	19
Fig.4.7	Condition IoT Devices	20
Fig.4.8	Edit Condition IoT Devices	20
Fig.5.1	Mail services configure	21
Fig.5.2	Mails ID Adding	22
Fig.5.3	User PC Mail Configure	23
Fig.5.4	User Mail Compose process	24
Fig.5.5	User Mail Received process	25
Fig.5.6	Web Services Configure	26
Fig.5.7	Index.html file configure	27
Fig.5.8	Browse my web site	28
Fig.5.9	DNS Service Configure	29

# CHAPTER 1

## INTRODUCTION TO SMART NETWORK INFRASTRUCTURE

---

### 1.1 Introduction

Smart networks infrastructure with intelligence built in such that Monitoring and Controlling is performed by the network. In present scenario smart intelligent system is used to connect IoT Device like smart Fire Alarm System smoke detector system, smart AC Temperature control system, smart Light system, smart FAN system, smart Camera systems, smart Motion detector system networks, and others. This smart intelligent system has minimized the size of the world. The main concept behind this idea is using the Internet of Things (IoT), which is strongly associated with sensors networks.

### 1.2 What is a smart office?

A smart office is a tech-powered space geared at ensuring advanced control over the work environment by incorporating IoT technology that connects critical assets and people across the building environment. By utilizing connected technology and real-time analytics facility managers and office owners are equipped with the state-of-the-art office automation possibilities to:

- Identify key areas in the building that waste energy

- Monitor the space with connected systems allowing collecting data to transform it into meaningful insights

- Optimize business performance

- Boost employees' well-being and ensure their healthy states

- Automate business processes by leveraging remote building energy management systems (BEMS)

- Monitor and control office safety.

Smart office technology enables facility managers to accelerate their efforts toward resilient, productive, and cost/energy efficient workspaces in their buildings. Let's shed light on the advantages of implementing smart technology in offices.

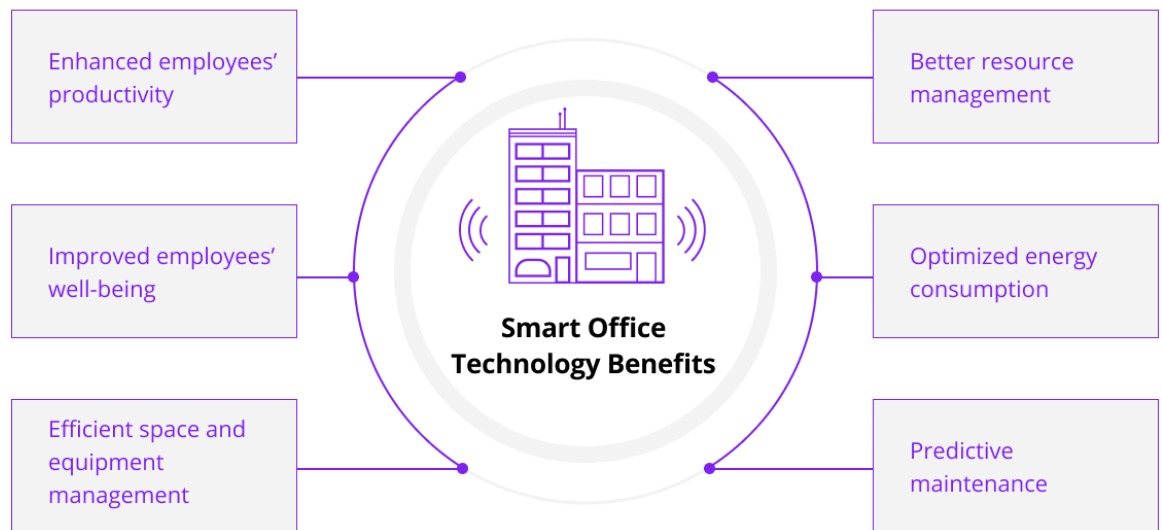


Figure: 1.1 Smart Office Benefits

### 1.3 What is IoT Technology?

IoT technology can be described as the 'Internet of Things,' wherein this technology is built based on the concept that all the desired devices can be connected inside a specific network for sharing data and information without any manual intervention. The devices used for this can be segregated conditional to their capability to send, receive and gather data in the given network. IoT is conspicuous due to its salient properties, which are secure in nature, can be used on smart devices, ability to connect to any type of network, aids for faster connectivity, etc.

### 1.4 Introduction to IoT Devices

IoT devices are about the internet of things which means things of things are connected via the internet. They are wireless sensors like Bluetooth, Wi-Fi, and computer devices. Devices are attached to the object that can operate through the internet or can communicate with a human without human interaction. It will help people to make their life easy and smart. These devices have sensors that will transmit data to user or object via the internet. Devices can be remotely monitored and controlled.

## 1.5 Important IoT Network Services

IoT lets us control the devices that are located geographically far away. It is the feature of devices connected through IoT that they can take input from the other devices that are connected through the internet. Commonly the mobile phones are being used commonly to send instructions to the device remotely. In such cases, usually, the Internet is preferred, while if the devices are connected to the same network, they can communicate using Wi-Fi. Internet of Things in short IoT is a trending technological field that converts any electronic device into a smarter one. A lot of industries are beginning to adopt this technology on to their operations to increase their productivity and improve efficiency.

## 1.6 Future of IoT Network

IoT is not limited to include the communication functionality of the things; rather, it is an integrated solution to share all manner of information among devices, users and services to provide user-preferred service. However, current research on the IoT network varies. In this paper, we specifically focus on the network issues in the IoT because the IoT network is the fundamental component that can enable IoT services.

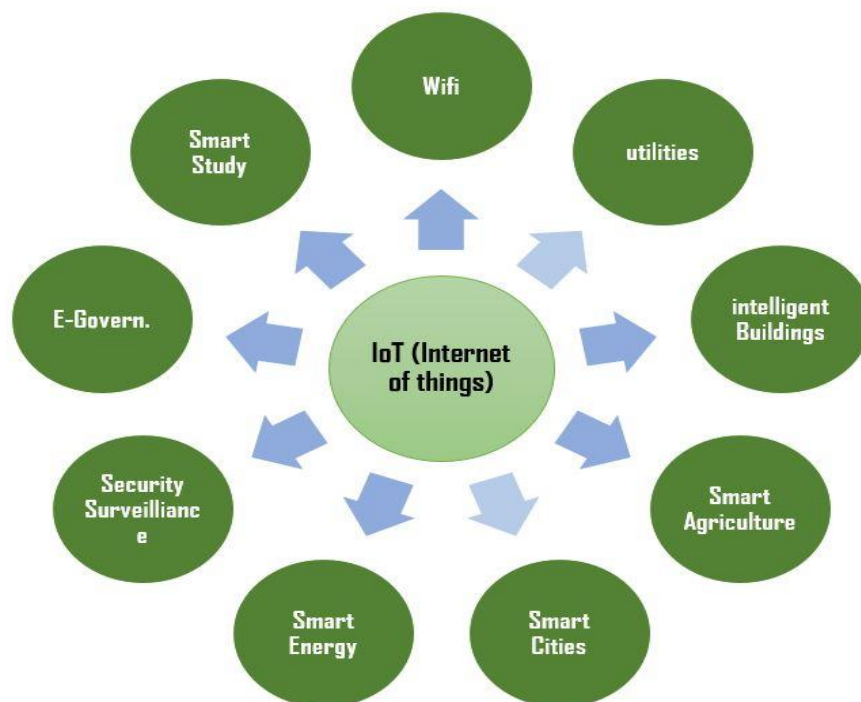


Figure: 1.2 Future of IoT Network

## 1.7 Smart Network IoT Devices Platform

Internet of Things is a multiple layer platform that executes direct management, automation, and provisioning of connected devices within the internet's circumference. It is operated with the help of the cloud, security, and expert systems connected to hardware devices. It is a ready-made platform for beginners and developers for instant use, which operates at a great speed. It is a remote device that allows the user to manage the connection between hardware and application devices. It has a good scope on business development with unique features like cloud-enabled platforms, and IoT enabled the platform.

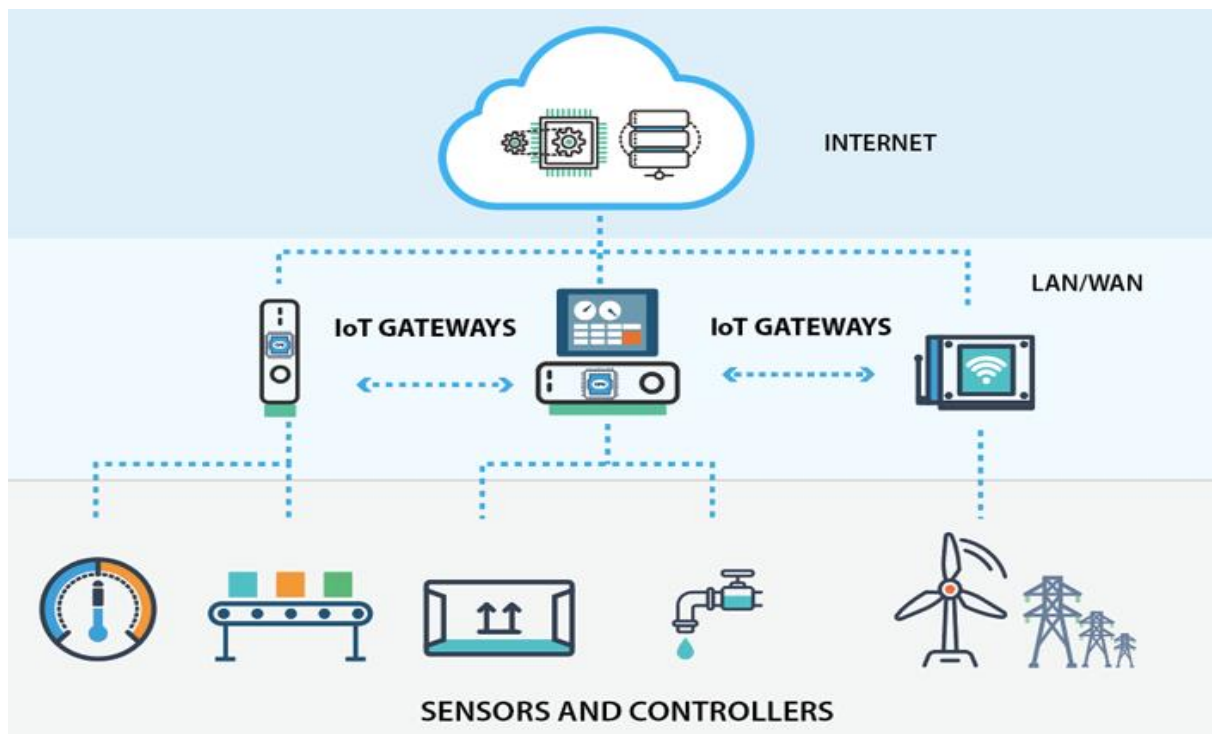


Figure: 1.3 IoT Device Platforms

# CHAPTER 2

## NETWORK INFRASTRUCTURE DESIGN

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### 2.1 What is Network Infrastructure?

Network infrastructure can be a mix of hardware devices, software applications, and network services, including: Hardware infrastructure typically includes routers, switches, server, repeaters, gateways, bridges, and modems. Software infrastructure includes monitoring and management tools and operating systems.

- **Networking Hardware :**
  - Routers
  - Computer
  - Printer
  - Switches
  - smartphone
  - LAN cards
  - Wireless routers
  - Cables
  - Modem
- **Networking Software:**
  - Network operations and management
  - cisco packet tracer
  - Operating systems
- **Network Services:**
  - Mobile Tower
  - IoT
  - Wireless protocols
  - IP addressing
- **Network IoT Devices:**
  - AC
  - Camera
  - Smoke Detector
  - Motion sensor
  - Sprinkler
  - Light
  - FAN
  - Door
  - Window
  - Thermostat
  - Furnace

## 2.2 How did we get started with Network infrastructure Design?

Network infrastructure design can help you plan how to implement, monitor, and manage an IT network. A design can be created after identifying the operational requirements in terms of capacity, quality of service, security, and resilience. First I made an AutoCAD design for smart network infrastructure. After that, I placed various networking devices and IoT devices on top of this AutoCAD design. First I have wired a router and connected a modem to the router connected a wireless router to this modem, then completed the wireless configuration in the router connected a switch to the main router connected the web server DNS server IoT server and mail server in sun then Each networking device connects to the DSP and completes the connection with the IoT server. In this network I have configured a mail server in which each department wise mail address is associated with it I have configured a DNS server in which a domain named SUBD has been created and under this domain all my countries have been connected except I have created a web server in which SU has created a website called subd.com

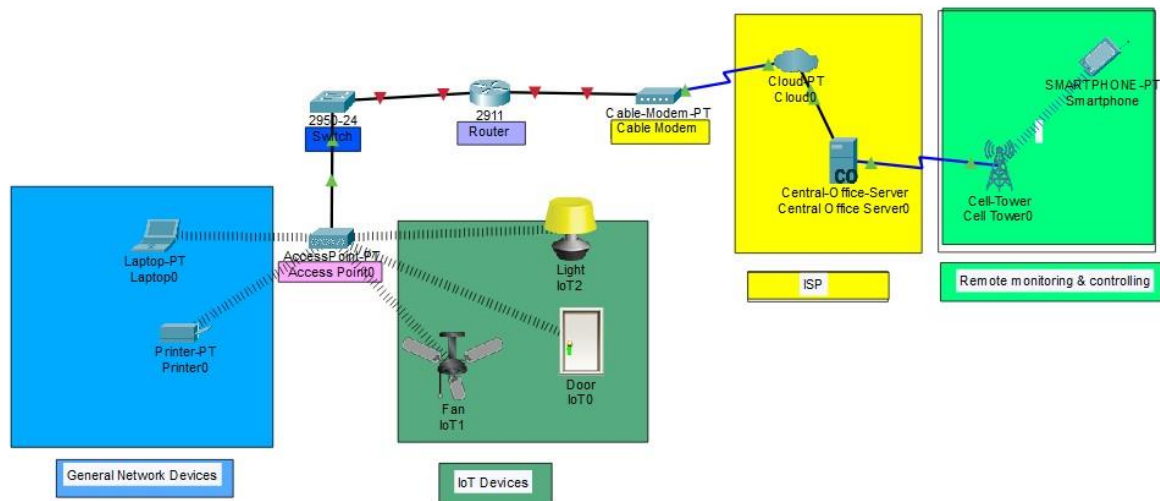


Figure: 2.1 Network infrastructures Design

Each IoT device like door light smoke detector old car sensor Thailand fan access control and other devices connected to IoT server with username and password. Then login to the IoT server and enter the server monitor option and first apply the conditions separately for the IoT devices. For example, if someone enters the office first, the automatic door-lock will be turned on through the sensor, when the door is turned on, the main gate camera will be turned on, then if a person enters the waiting room, then the waiting room camera and light will be turned on.

Similarly, IoT devices are configured using separate rooms for each person, for example, if the managing director of the company enters his room, the automatic door will turn on with the help of a sensor, and as soon as he enters the room, the SP light of the room will turn on, when the door is off, it will turn on again. Lights and sensors will be off



In smart network design project, a condition is applied for the smoke detector such as whenever the level of the smoke detector rises above 0.3% present, the silent buzzer will sound immediately and the silent buzzer will be activated at the same time as the camera, light, door and will turn on and when the smoke detector level drops below the zero point, the silent will turn off and the room's window door will be locked.

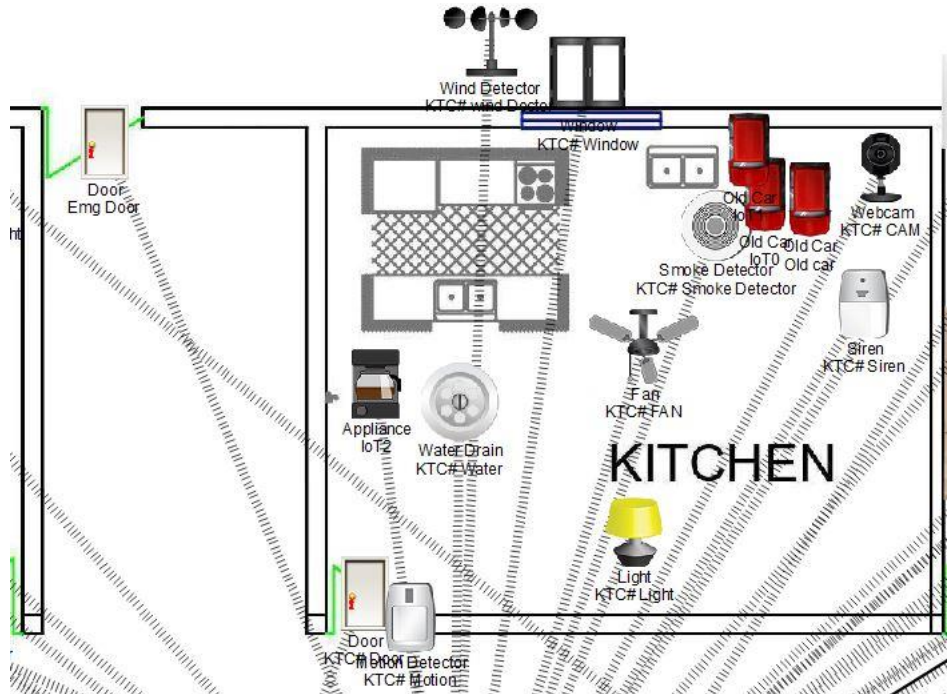


Figure: 2.2 Kitchen infrastructures Design

IoT system of each room is auto like if the room temperature rises above twenty present then the thermostat will detect it and AC will turn on and when the thermostat temperature goes below 20% then the room furnace will turn on i.e. the room temperature will balance automatically all the time.

The main goal of smart network infrastructure is that the network can be monitored and controlled from anywhere. For example, the managing director of the company can monitor and control the network from anywhere by turning on his smart phone through a browser or using third-party apps. The devices can be turned off or on by the managing director with full control remotely any smart networking can be created using this network infrastructures solution which will take very less time and every networking device can be monitored thereby ensuring security.

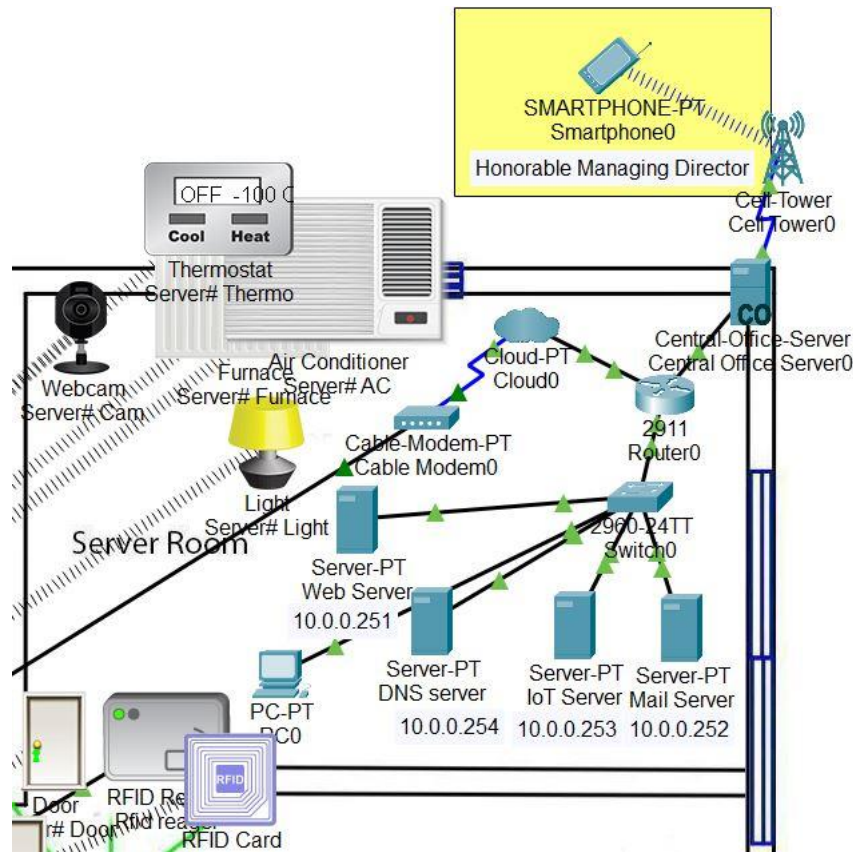


Figure: 2.3 Server room infrastructures Design

## 2.3 Use Case Diagram Sensor

### Use Case1: Trigger Wireless Sensor

Primary Actor: Machine

Goal in Context: Wireless sensor (either an access point monitor or motion detector) detects an intruder and triggers. The machine triggers the local, mobile and remote intruder alarms (wireless alarms). The remote intruder alarm or homeowner notifies the police department authority of the intruder detection (the local/mobile intruder alarm notifies the homeowner of the intruder detection)

Scope: Machine the overall home security mechanism with specific regard to the intruder monitoring system as seen by the primary and secondary actors.

Stakeholders and Interests Home Owner – wants notification of the intruder detection via the local/mobile intruder alarm. Police Department – wants notification of the intruder detection via the remote intruder alarm or homeowner.

Trigger: Access point monitor or motion detector (wireless sensors) detects an intruder in the house and triggers.

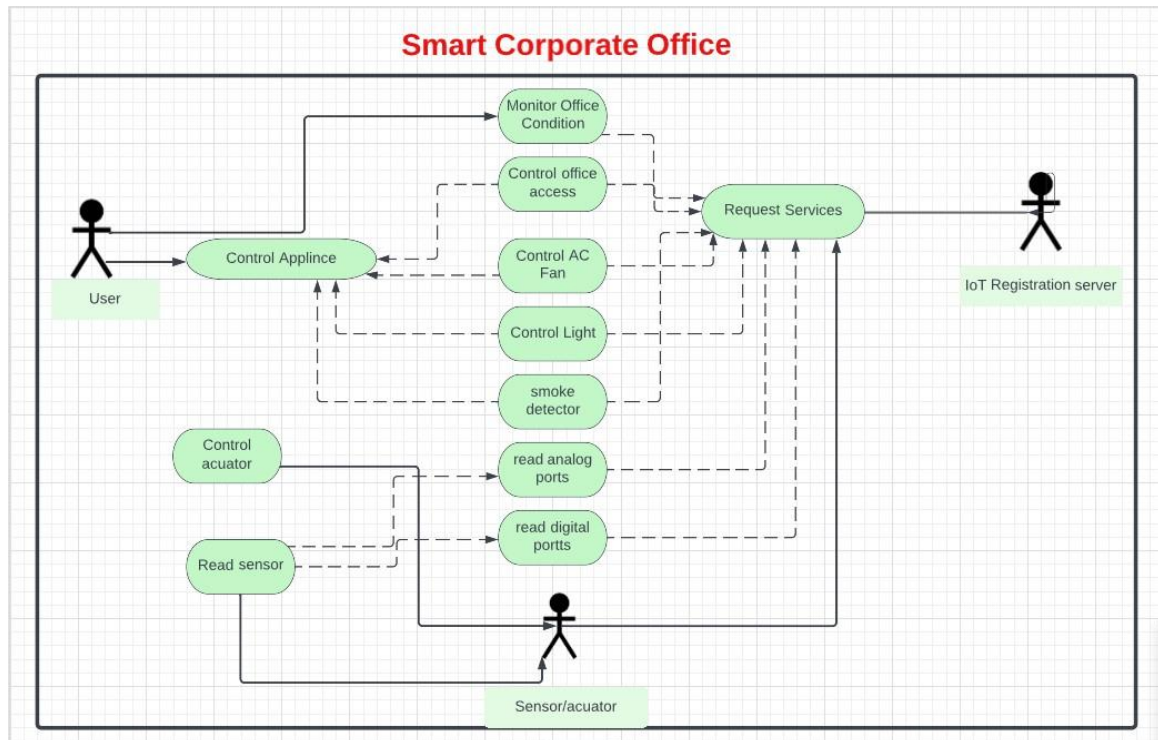


Figure: 2.4 use case of smart corporate network

## 2.4 Use Case smoke detector

### Use case 2: Trigger Smoke Detector

("A smoke detector detects smoke in the kitchen.")

Primary Actor: Machine

Goal in Context: Smoke detector (a wireless sensor integrated with the home Security system) detects smoke in the house and triggers. The machine triggers the local, mobile and remote fire alarms (wireless alarms). The remote fire alarm or homeowner notifies the fire department authority of the smoke detection (the local/mobile fire alarm notifies the home owner of the smoke detection). Scope: Machine – the overall home security mechanism with specific regard to the fire monitoring system as seen by the primary and secondary actors

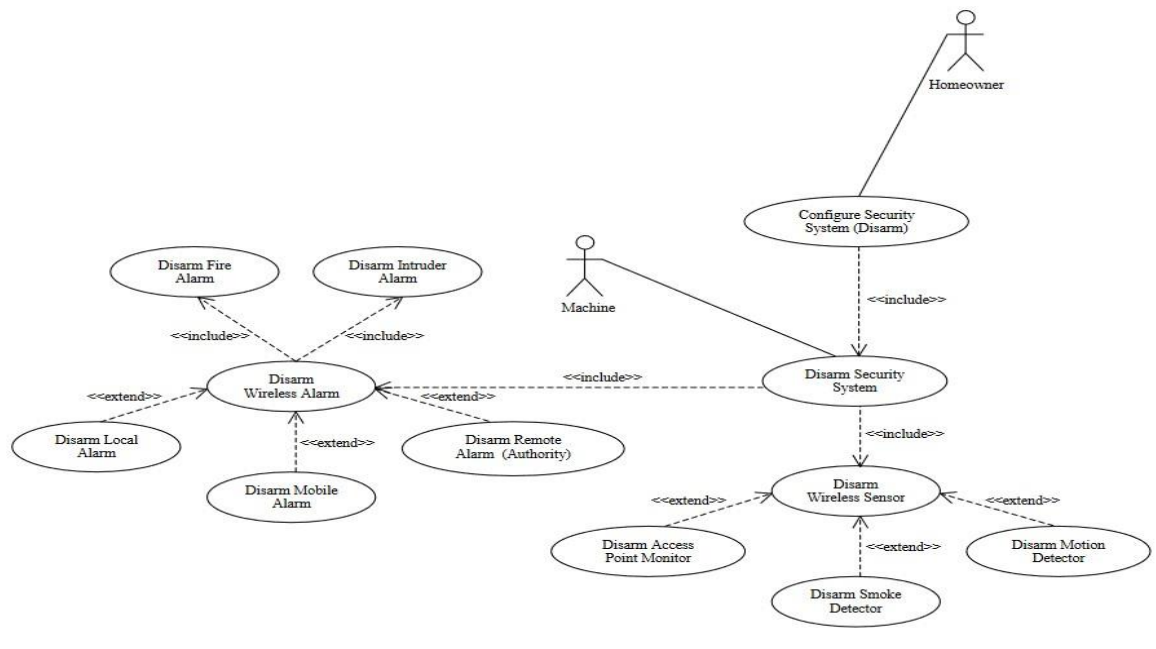


Figure: 2.5 use case of Smoke detector

## 2.5 Flowchart of IoT smart network system

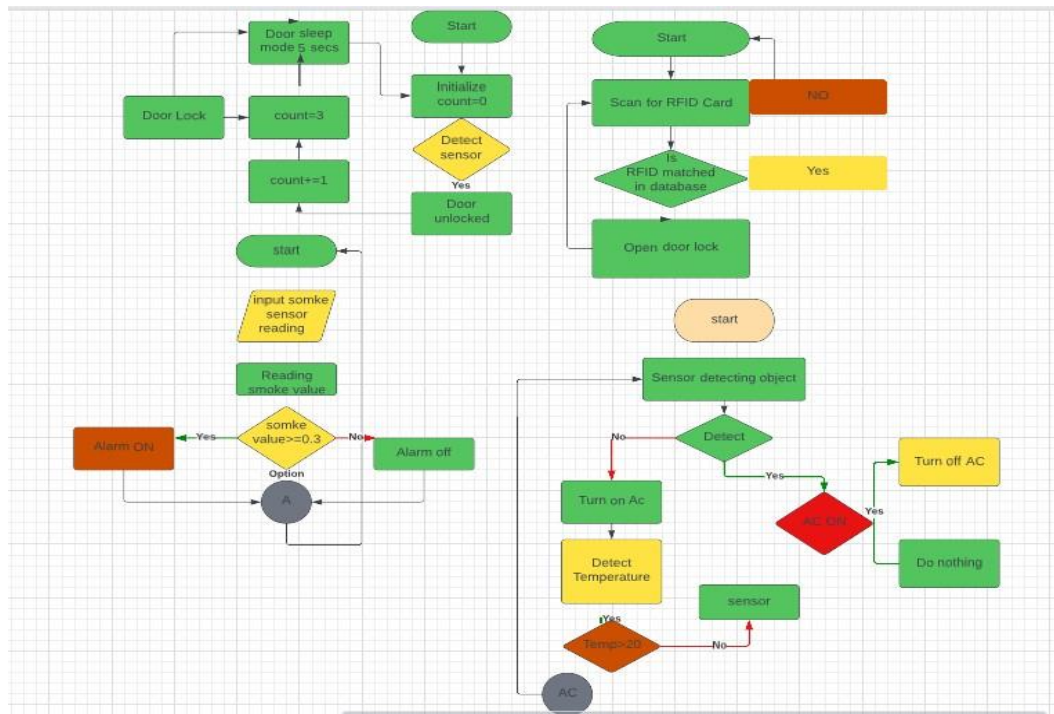


Figure: 2.6 Flowchart of smart corporate network

# CHAPTER 3

## REMOTE MONITORING

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### 3.1 What Is Remote Network Monitoring?

Remote network monitoring is the process of remotely overseeing, managing, and regulating devices on your network. Use remote network monitoring to collect your network's traffic data, and then use the information to track trends and supervise your network's performance. Remote network monitoring can also help you detect problems like network traffic congestion, collisions, and dropped packets. With this information, you can improve remote network management and troubleshooting. In a single sentence, remote network monitoring helps ensure your networking is running as it should.

You can install remote network monitoring software directly to your network, and these systems will monitor your network no matter where they, or you, are located. This means you can do the work you need from the right places, without compromising your network's safety. Remote network monitoring keeps a watchful eye on your network while saving you time, energy, and resources.



Figure: 3.1 Remote Network Monitoring

## 3.2 How Do I Start Remote Network Monitoring?

To bring remote network monitoring into your IT environment, you first must enable a remote network monitoring probe or agent, often abbreviated as RMON agent or RMON probe (RMON stands for remote network monitoring). An RMON probe is a device devoted to the task of remote network management. Here are the main ways to bring an RMON agent into your network's environment:

- **Dedicated RMON probe:** Permanently or temporarily install a standalone device focused on remote network monitoring
- **Embedded RMON probe:** Plant an RMON probe into the circuitry of an existing network device
- **Software RMON probe:** Operating systems sometimes include devices that act as remote network monitoring agents

There are two main categories of remote network monitoring.

### 3.3 Remote Network Monitoring 1 (RMON1)

RMON1 addresses the first two levels of a network—the physical layer (first level) and link layer (second level, which includes the MAC layer). RMON1 can provide data on nine entities commonly known as the nine RMON1 groups.

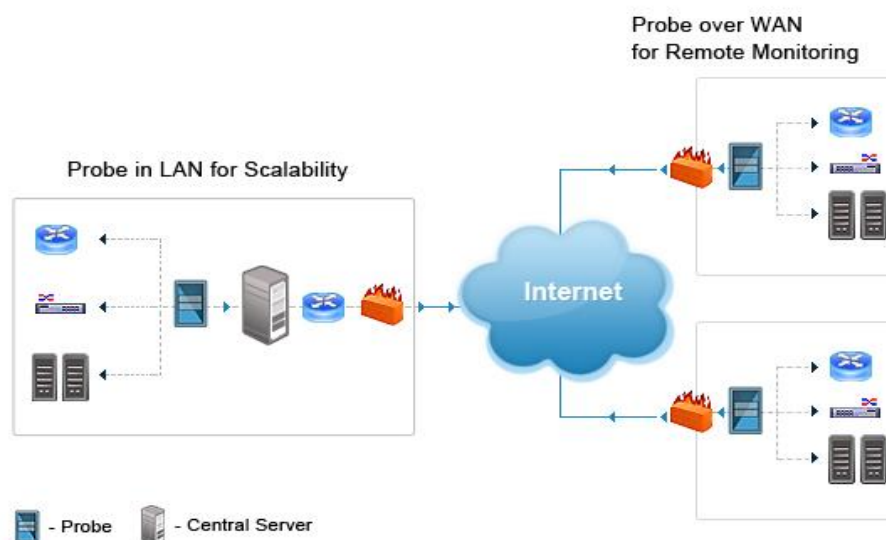


Figure: 3.2 Remote Monitoring (RMON)

### **3.4 Remote Network Monitoring 1 (RMON2)**

RMON2 extends to the seven higher protocol layers of an IT system, gathering traffic statistics by specifying protocols and applications. This knowledge is crucial to understanding your network's environment, as well as predicting and troubleshooting network issues.

Basically, RMON1 offers a segmented network view while RMON2 brings a more global perspective of a network. Using both kinds of remote network monitoring can give you the most in-depth understanding of your network.

### **3.5 Why Do we Need Remote Networking Monitoring Software?**

There are many benefits to using remote network monitoring tools, ranging from incredible features for network protection to protecting your own peace of mind. Let's go into more detail about how a remote network monitoring system can aid a network's longevity and success.

- **Access Information from Anywhere**

A remote network monitoring software is designed to supervise your network's devices from afar, so if a device goes down, you can troubleshoot from anywhere. Not only can this lower your risk of outages, but remote access is a necessity in today's virtual work world.

- **Real-Time Surveillance**

Many remote network monitoring systems offer real-time monitoring, keeping everyone on the same page regardless of physical location. Updated network maps and metrics help ensure you get a complete, accurate picture of your network environment.

- **Organize Your Network's Information**

A remote network monitoring tool can help you assemble a network's devices by size, location, and purpose. Remote network monitoring software could also automatically group different elements of your network together, saving you time and brainpower.

- **Automated Alerts**

Remote network monitoring tools often enable the creation of specific alerts, alarms, and notifications for certain issues. Some remote network monitoring software can even support follow-up tasks that automatically act when specific issues occur.

- **Customize User Access**

Nearly all remote networks monitoring software uses encrypted authentication, which helps ensure every user logs in the same way, to help protect your network from uninvited visitors. Many remote network monitoring tools can also allow for user-level options and administrators.

- **Easily Retrieve Your Devices**

You can access all critical devices using a remote network monitor, as long as you have direct access to the network. However and wherever you connect to your network, you'll be able to gain entry for all your remote network management needs.

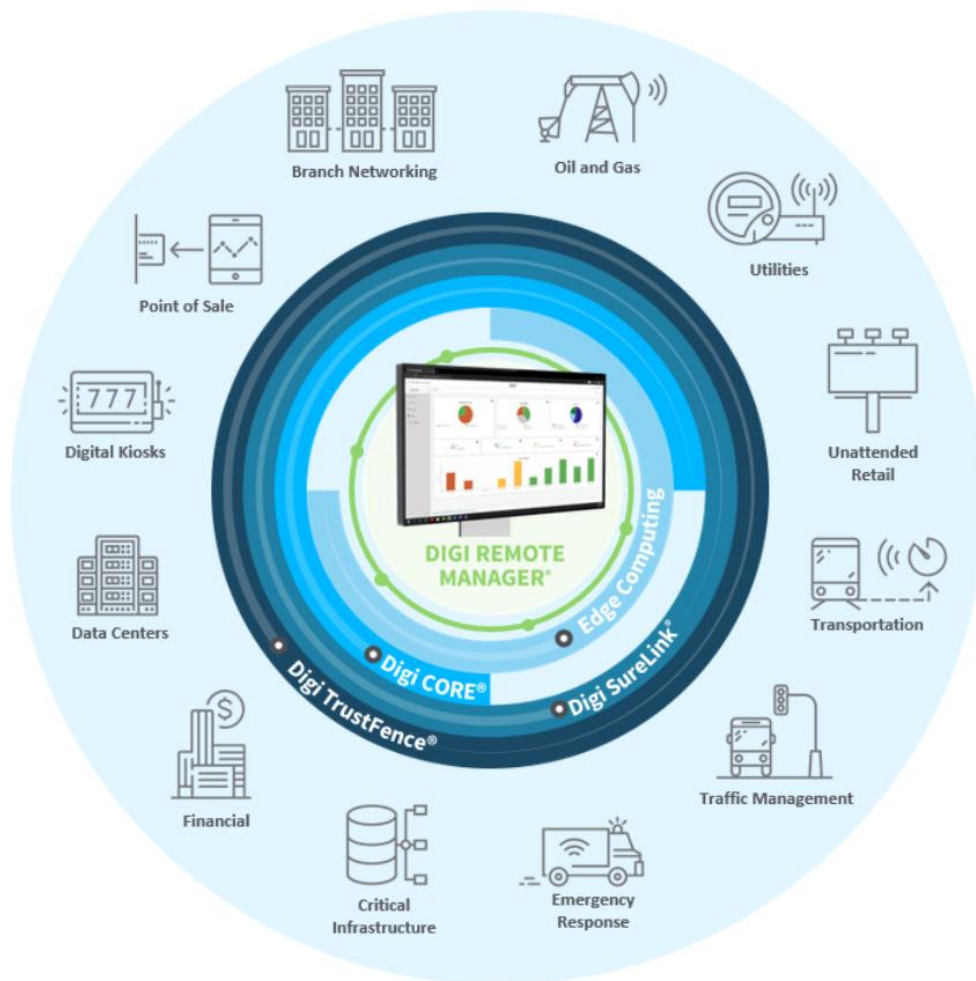


Figure: 3.3 IoT Remote Monitoring



# CHAPTER 4

## IoT REGISTRATION SERVER

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### 4.1 IoT Registration server

Registrar servers: A registrar server is responsible for registering User agents. It sends the logged information about the UA to the location server for administrative purposes and future requests. If a field technician is installing an entirely new asset like an air conditioner, and that air conditioner has an embedded IoT device or devices, they must register that device with the appropriate IoT backend in order for it to start working.

### 4.2 How does IoT work?

An IoT ecosystem consists of web-enabled smart devices that use embedded systems, such as processors, sensors and communication hardware, to collect, send and act on data they acquire from their environments. IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed or analysed locally. Sometimes, these devices communicate with other related devices and act on the information they get from one another. The devices do most of the work without human intervention, although people can interact with the devices -- for instance, to set them up, give them instructions or access the data.

### Part 1: Add a Registration Server to the Network

In this activity I will add a registration server and several IoT devices to an existing corporate network and monitor those devices through the registration server.

**Step 1:** Open the Registration server.Pkt file and save the file to our computer.

**Step 2:** Add the registration server on the network. Place the Generic server onto the workspace and connect it to the home gateway. Find the generic server in the End Device selection box and drag it to the workspace.



Figure: 4.1 Add Registration Server

Connect the server to the Wireless Route. Using a copper straight-through cable, connect the server to the wireless router. Enable the registration server service. Click the registration server in the workspace to open the registration server configuration window. Click the services tab and then click the IoT service in the left pane. Click the On button to enable the service.

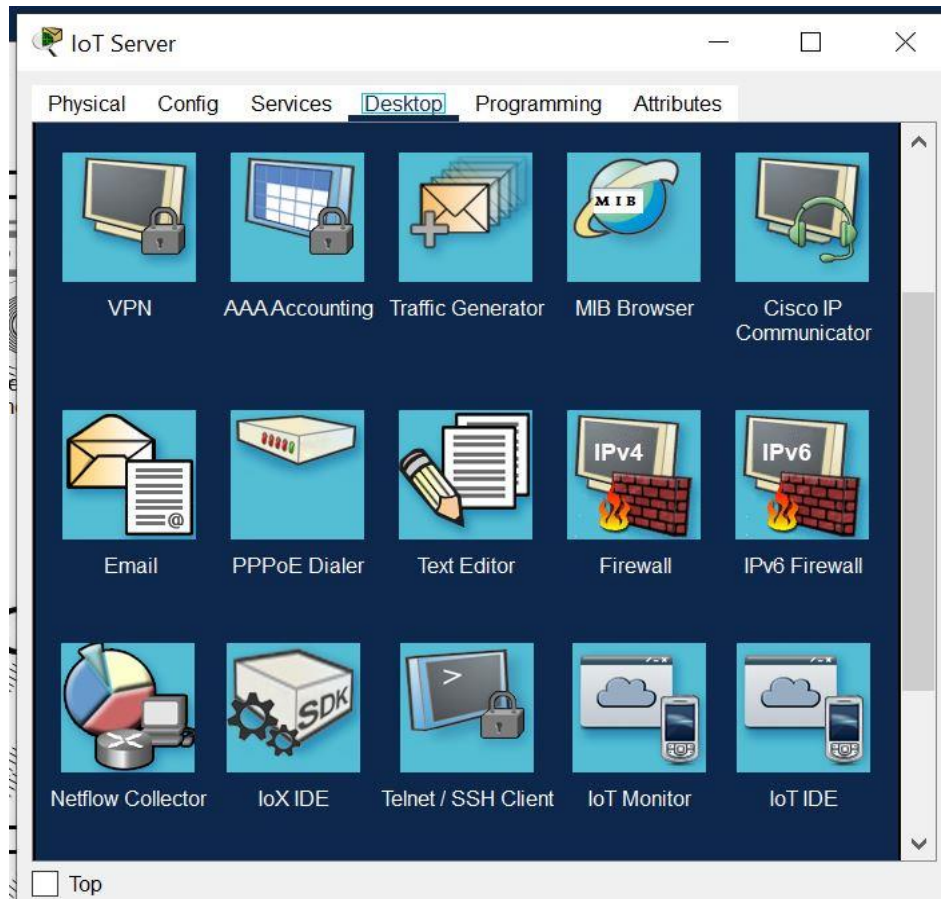


Figure: 4.2 IoT Monitor

## Part 2: Register Device to the Registration Server

Step 1: Click the server icon to open the IoT server configuration window. Click the IoT Monitor icon in the server tab. Enter the IP Address of the Registration server in the URL box and then click GO. Because there is no IoT account created yet, one will need to be created. Click the Sing Up now option. Select a username and password and then click Create to create the IoT Account.



Figure: 4.3 Create Registration Server

Step 2: When complete account create then login IoT server address user name password. Enter the login tab.

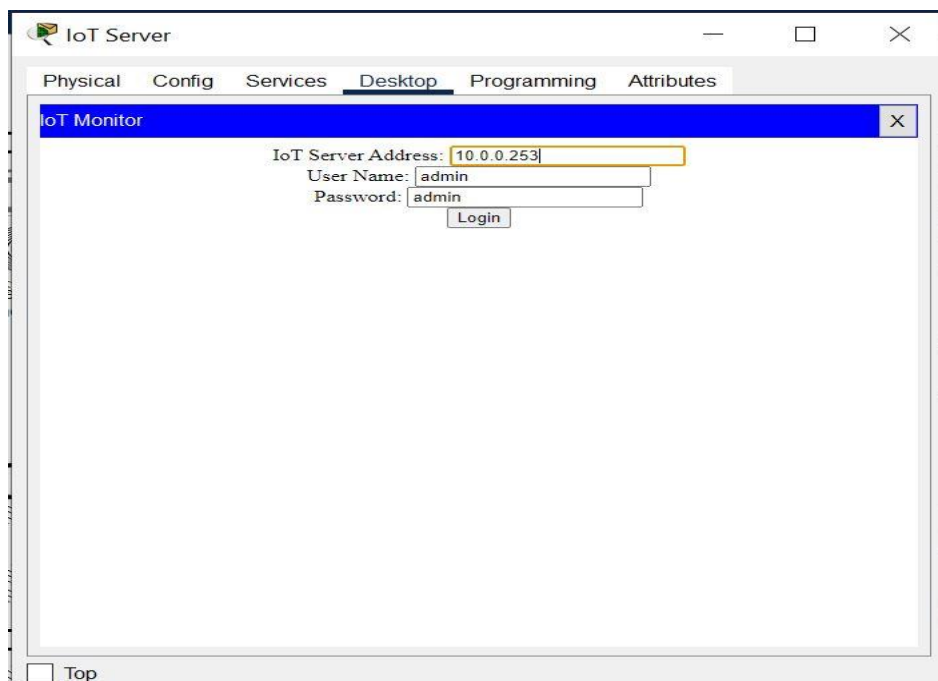


Figure: 4.4 Login Registration Servers

### Part 3: Register IoT device to the Registration Server

Step 1: configure the ceiling Fan icon in the workspace to open the device configuration windows and then click the config tab. Change the IoT server type from Home Gateway to remote server .Enter IP address of the Registration Server from Part 1, and the IoT account Username and Password created in Step 1 above, Next, Click the Connect button.

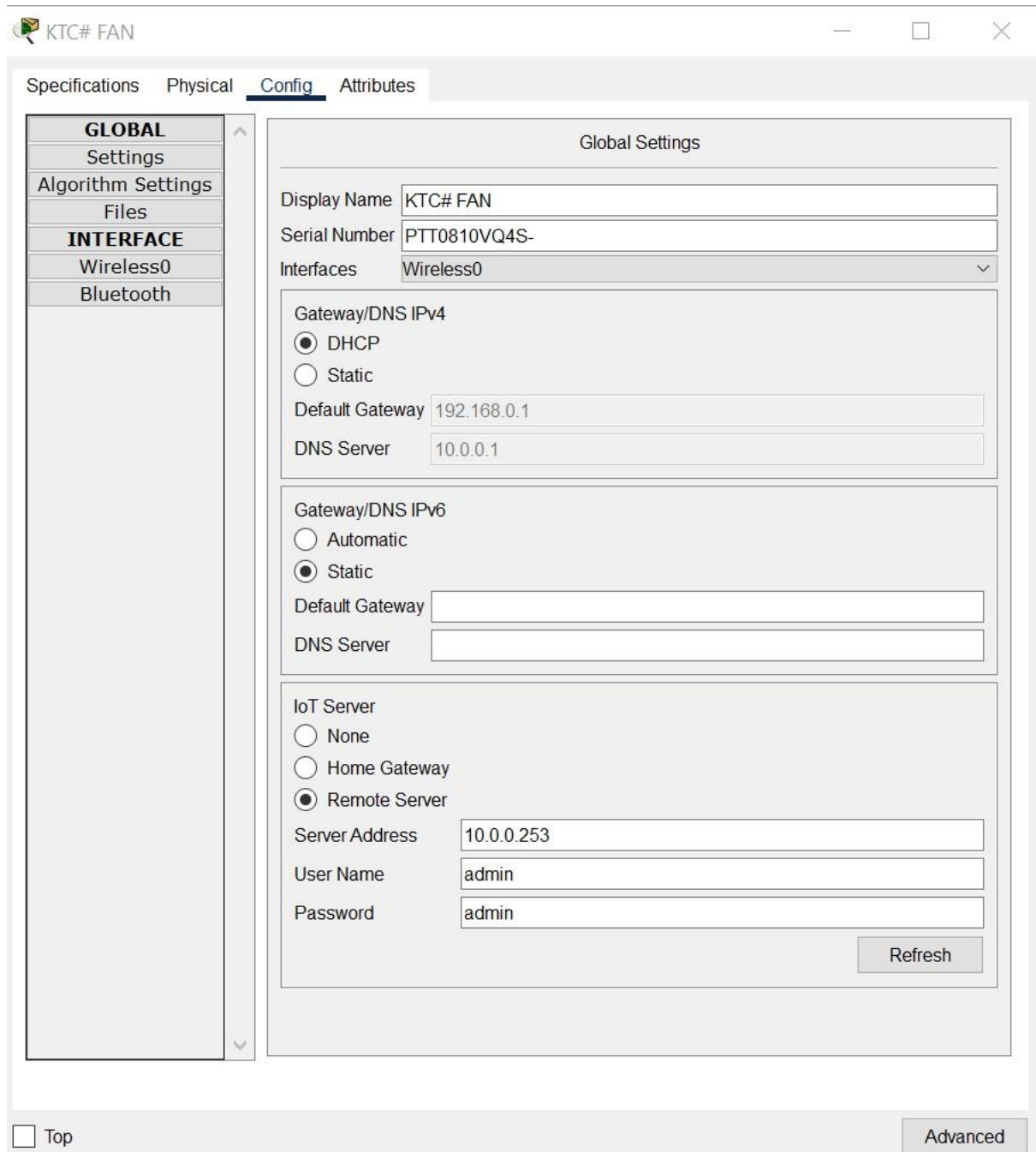


Figure: 4.5 Register IoT Devices

## Part 4: Verify IoT devices are registered to the Registration Server

**Step 2:** Access the IoT Registration Server through the wireless Tablet Web browser using credentials from above. The IoT devices, the Ceiling Fan, the Lamp, and the Door etc. should now be registered with the IoT Server. Close the Tablet PC window.

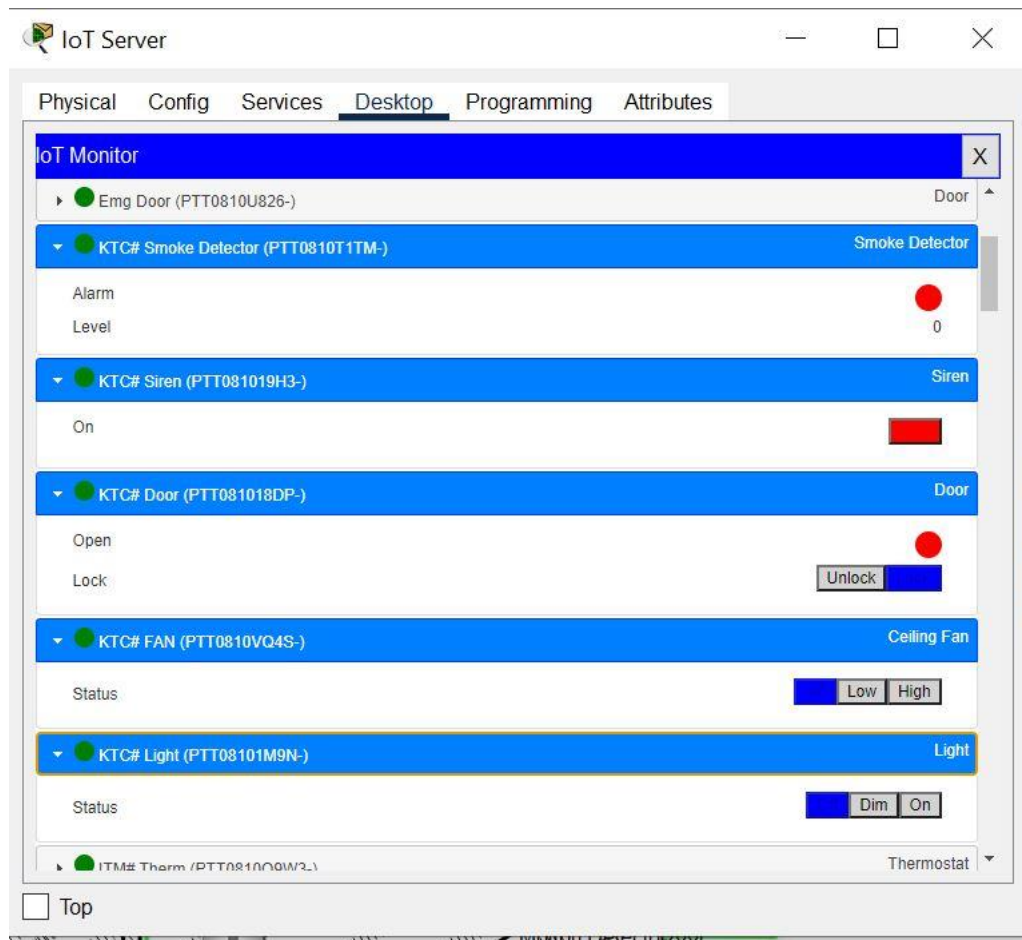


Figure: 4.6 Verify IoT devices

## Part 5: Configure IoT devices to register with the Home Gateway server

**Step 1:** Register the ceiling fan to the home gateway server.

Click the Fan icon in the workspace, click the Comfit tab, and then click Settings in the left pane. At the IoT Server options list, click the Home Gateway button. Close the Ceiling Fan window. Repeat the steps in 3a to register the Door and the Lamp devices to the home gateway.

**Step 2: Verify that the devices are now registered with the Home Gateway server.**

Click the Tablet icon in the workspace and open the Web Browser. Connect to the Home Gateway by typing 10.0.0.253 in the URL box and then click Go. Enter admin as the username and password and click Submit. After a few seconds all three devices should be listed in the Home Gateway IoT Server – Devices list

Actions	Enabled	Name	Condition	Actions
Edit Remove	Yes	WR1# AC ON	R1# Thermo Temperature >= 20.0 °C	Set R1# AC On to true
Edit Remove	Yes	WR1# Furnace ON	R1# Thermo Temperature <= 20.0 °C	Set R1# Furnace On to true
Edit Remove	Yes	ITM# AC ON	ITM# Therm Temperature >= 20.0 °C	Set ITM# AC On to true
Edit Remove	Yes	ITM# Furnace ON	ITM# Therm Temperature <= 20.0 °C	Set ITM# Furnace On to true
Edit Remove	Yes	KTC# Smoke Detector on	KTC# Smoke Detector Level >= 0.3	Set KTC# Siren On to true Set KTC# CAM On to true Set KTC# Door Lock to Unlock Set KTC# FAN Status to Off Set KTC# Light Status to On Set KTC# Water Status to true Set KTC# Window On to true Set Emg Door Lock to Unlock Set ACC# Door Lock to Unlock Set ACC# Light Status to On Set ACC# Camera On to true
Edit Remove	Yes	Account Door on	ACC# Door Motion On is true	Set ACC# Door Lock to Lock Set ACC# Light Status to Off Set ACC# Camera On to false
Edit Remove	Yes	Account Door off	ACC# Door Motion On is false	Set ACC# Door Lock to Lock Set ACC# Light Status to Off Set ACC# Camera On to false
Edit Remove	Yes	AM# door on	Account M# Motion On is true	Set Account M# Door Lock to Unlock Set Account M# Light Status to On
Edit Remove	Yes	AM# Door off	Account M# Motion On is false	Set Account M# Door Lock to Lock Set Account M# Light Status to Off
Edit Remove	Yes	AM# AC ON	Account M# Thermo Temperature >= 20.0 °C	Set Account M# AC On to true
Edit Remove	Yes	AM# Furnace ON	Account M# Thermo Temperature <= 20.0 °C	Set Account M# Furnace On to true
Edit Remove	Yes	HRM# Door UL	HRM# Motion On is true	Set HRM# Door Lock to Unlock
Edit Remove	Yes	HRM# Door Lock	HRM# Motion On is false	Set HRM# Door Lock to Lock
Edit Remove	Yes	HRM# AC ON	Account M# Thermo Temperature >= 20.0 °C	Set HRM# AC On to true
Edit Remove	Yes	HRM# Furnance	HRM# Thermo Temperature <= 20.0 °C	Set HRM# Furnace On to true
Edit Remove	Yes	GH# Door UL	GH# Motion On is true	Set GH# Door Lock to Unlock
Edit Remove	Yes	GH# Door L	GH# Motion On is false	Set GH# Door Lock to Lock
Edit Remove	Yes	GH# AC ON	GH# Thermo Temperature >= 20.0 °C	Set GH# AC On to true
Edit Remove	Yes	GH# Furnace ON	GH# Thermo Temperature <= 20.0 °C	Set GH# Furnace On to true
Edit Remove	Yes	Cam ON	ACC# Door Motion On is true	Set ACC# Camera On to true
Edit Remove	Yes	Cam OFF	ACC# Door Motion On is false	Set ACC# Camera On to false
Edit Remove	Yes	CEO# D UL	CEO# Motion On is true	Set CEO# Door Lock to Unlock
Edit Remove	Yes	CEO# D L	CEO# Motion On is false	Set CEO# Door Lock to Lock
Edit Remove	Yes	ICEO AC ON	ICEO# Thermo Temperature >= 20.0 °C	Set CEO# AC On to true

Figure: 4.7 Condition IoT Devices

### Step 3: Edit Condition IoT Devices.

To apply the condition by clicking on edit condition, name the condition, then choose the service condition that you want to condition, select the service and add the status of the service. Set and click OK button

**Edit Rule**

Name: KTC# Smoke Detector on

Enabled:

If: Match All

KTC# Smoke Detector Level >= 0.3

Then set:

- KTC# Siren On to true
- KTC# CAM On to true
- KTC# Door Lock to Unlock
- KTC# FAN Status to Off
- KTC# Light Status to On
- KTC# Water Status to true
- KTC# Window On to true
- Emg Door Lock to Unlock

OK Cancel

Figure: 4.8 Edit Condition IoT Devices

# CHAPTER 5

## SERVER MANAGMENT

### 5.1 Mail Server

A mail server works with other programs to create a messaging system. A messaging system includes all the applications necessary to keep email moving smoothly. When an email is sent, a program, such as Microsoft Outlook, forwards the message to a mail server. The mail server then forwards the message to either another mail server or to a holding area on the same server to be forwarded later.

#### 5.1.1 Mail services configure

To configure the mail server, first I open the Cisco Packet Trace software by double clicking on the mail server icon, then click on Services, click on write email from the service and turn on SMTP and POP3 Protocol.

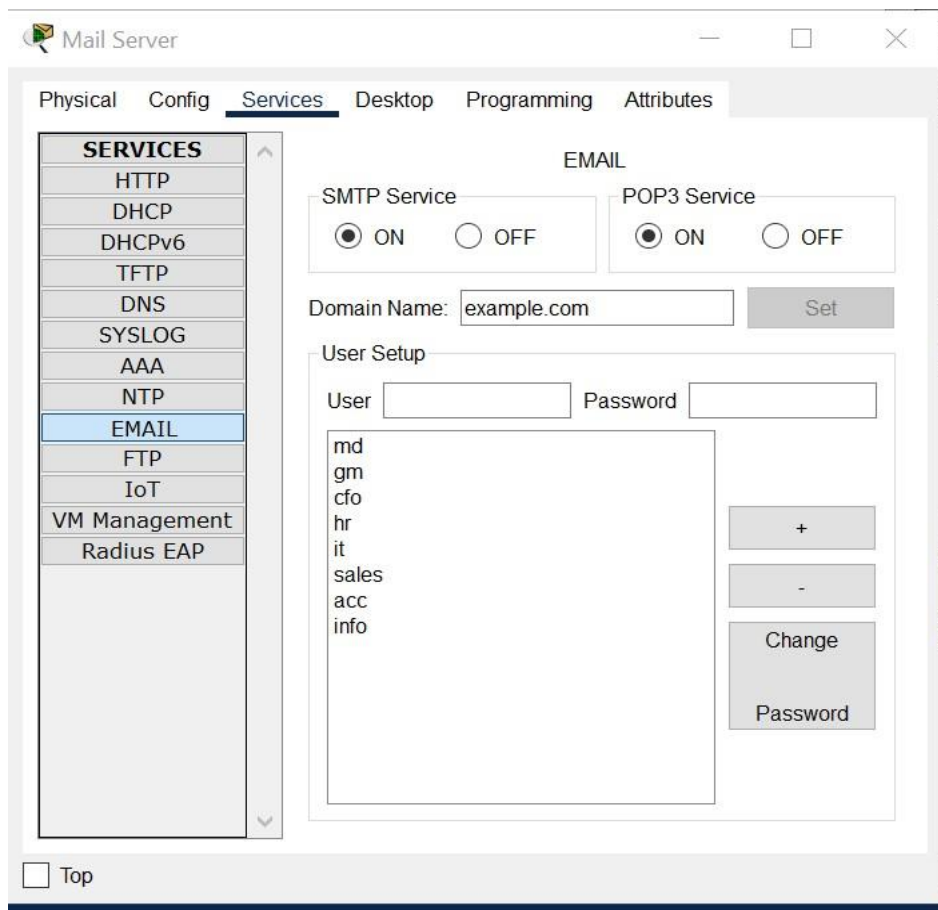


Figure: 5.1 Mail services configure

## 5.1.2 Mail ID Adding

Open the service option of the e-mail server and chat with the domain name subd.com and then click on the class with the user name and password entry and setup the new user email address.

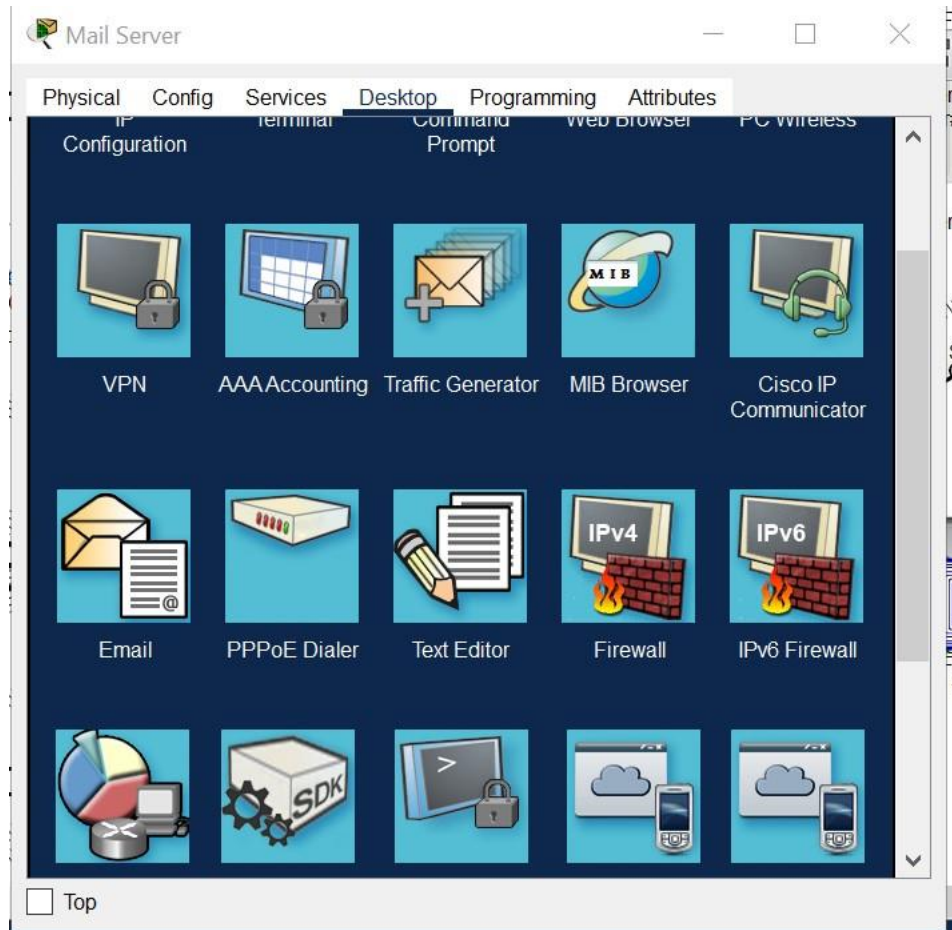


Figure: 5.2 Mails ID Adding

## 5.1.3 User PC Mail Configure

After setting up the e-mail server by clicking on the e-mail option from the e-mail server service, open the user's computer and enter the configured mail address in the user's mail address, enter the username e-mail address in the incoming mail, and save the outgoing mail ID and the user's username password.



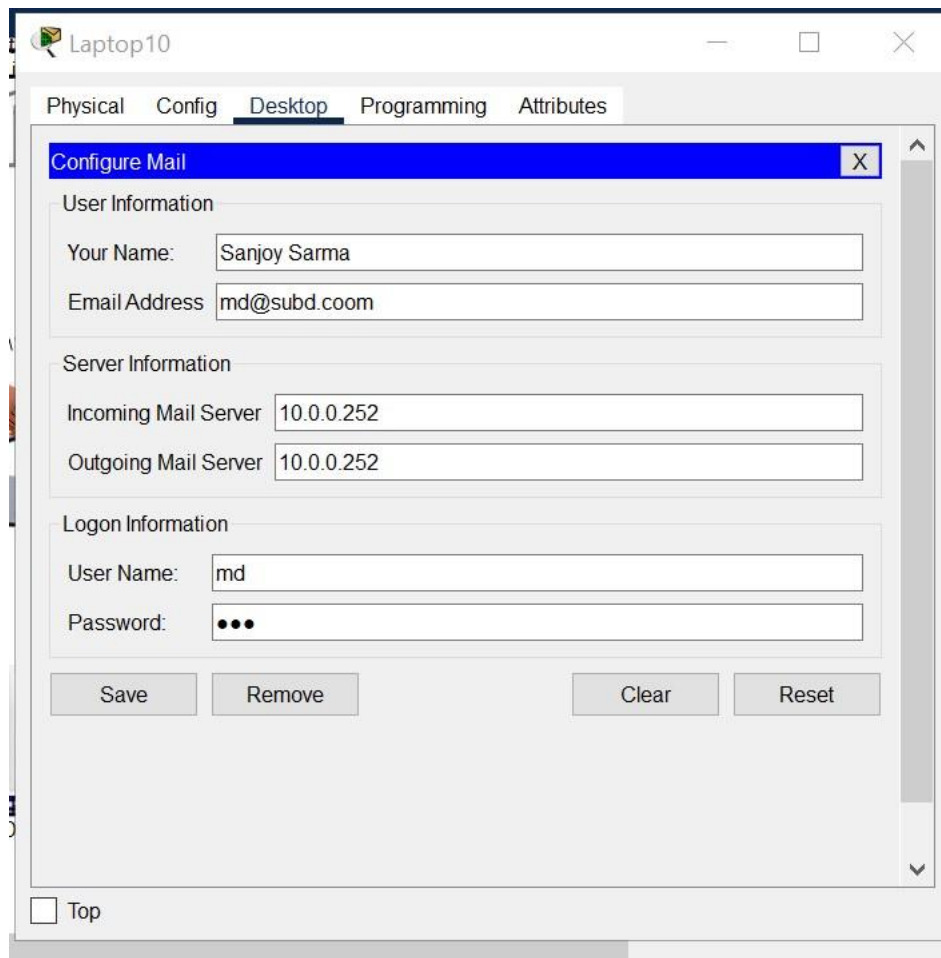


Figure: 5.3 User PC Mail Configure

#### 5.1.4 User Mail Compose process

After setting up the user's email, proceed to compose the email, add the subject and body to the address, and click the send button.

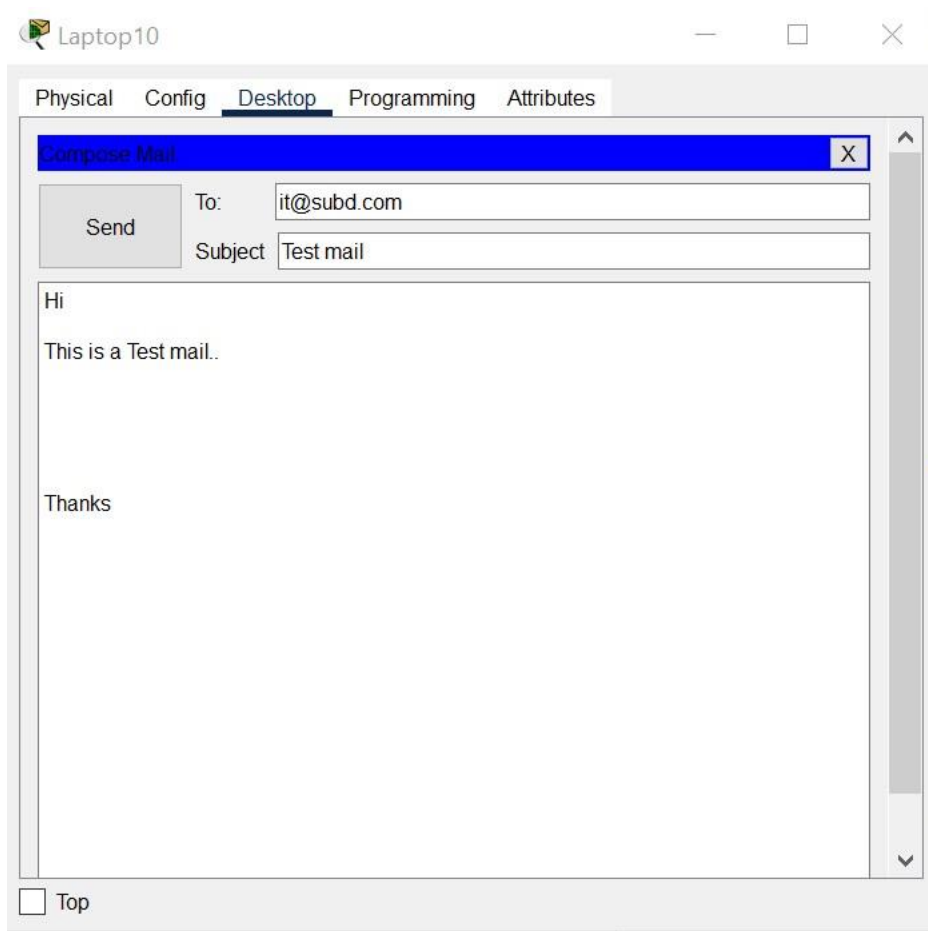


Figure: 5.4 User Mail Compose process

### 5.1.5 User Mail Received process

After sending the email from the user's computer, check the email status by clicking on the mail receives option on the recipient's computer.

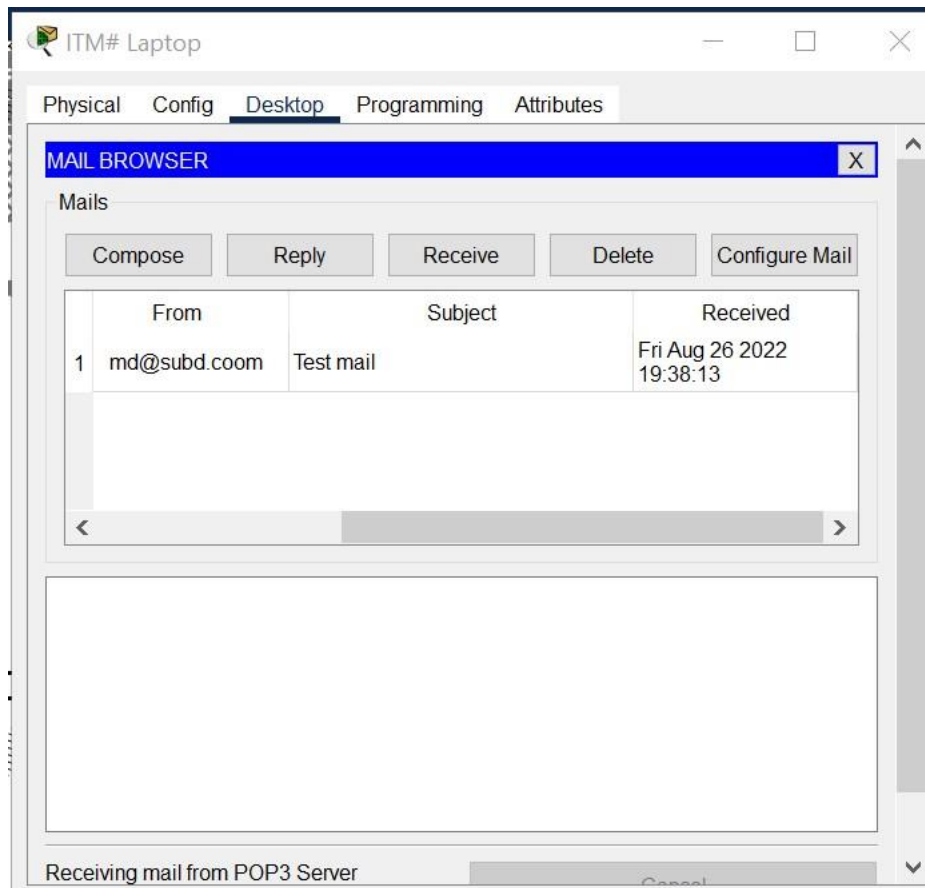


Figure: 5.5 User Mail Received process

## 5.2 Web Server

Web server is a computer that runs websites. It's a computer program that distributes web pages as they are requisitioned. The basic objective of the web server is to store, process and deliver web pages to the users. This intercommunication is done using Hypertext Transfer Protocol (HTTP). These web pages are mostly static content that includes HTML documents, images, style sheets, test etc. Apart from HTTP, a web server also supports SMTP (Simple Mail transfer Protocol) and FTP (File Transfer Protocol) protocol for emailing and for file transfer and storage.

## 5.2.1 Web Services Configure

To configure the web server, first click on the web server icon, and then enter the service option, click on HTTP service, and turn on the HTTP and HTTPS options.

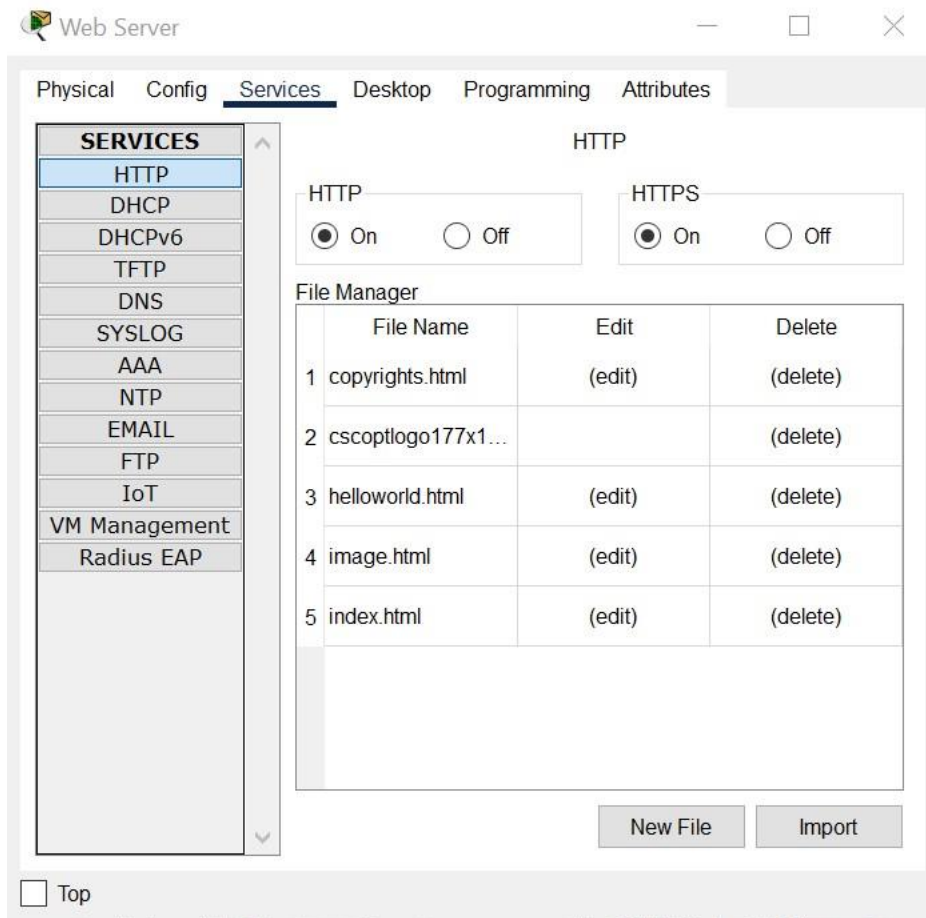


Figure: 5.6 Web Services Configure

## 5.2.2 Index.html file configure

Open the index.htm file to configure the web page, then create the HTML file and click the save button.

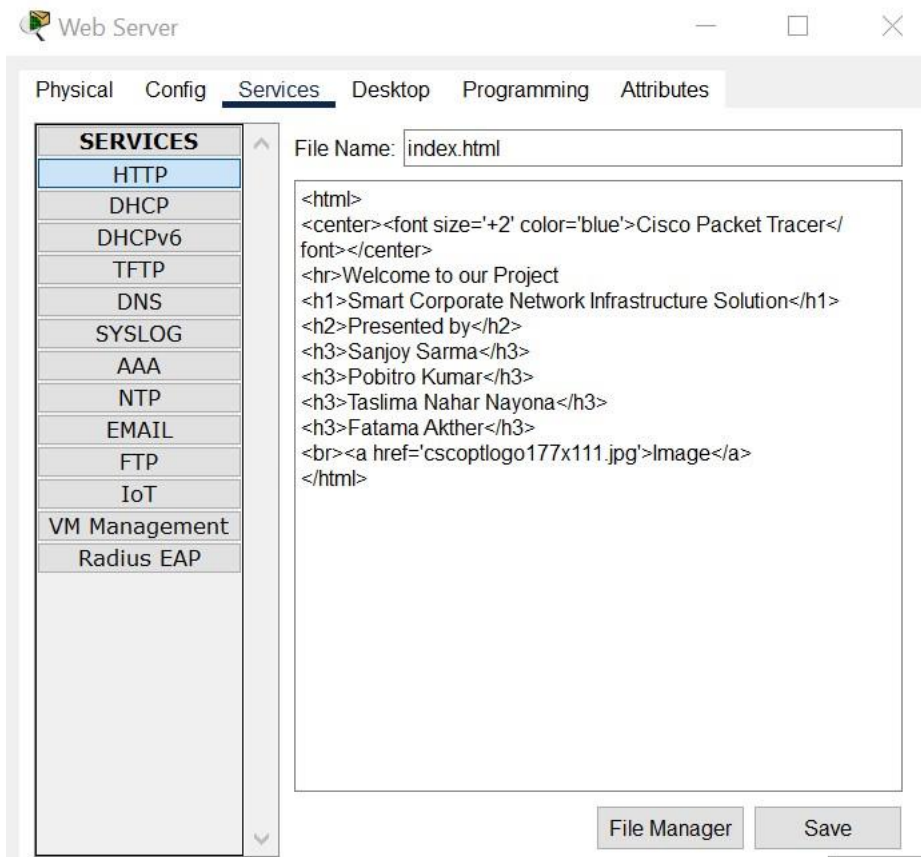


Figure: 5.7 Index.html file configure

### 5.2.3 Browse my web site

After creating the web file, click on the desktop option of the web server, open the browser, enter the address or IP of the web server in the browser, click the Go button, and then show html page. Web browsers can be used to view pages on the Internet when you have an Internet connection. To start browsing the web: When you start up Web, your cursor should be in the text entry field at the top of the window. Type in the URL of the webpage that you want to visit or your search term.

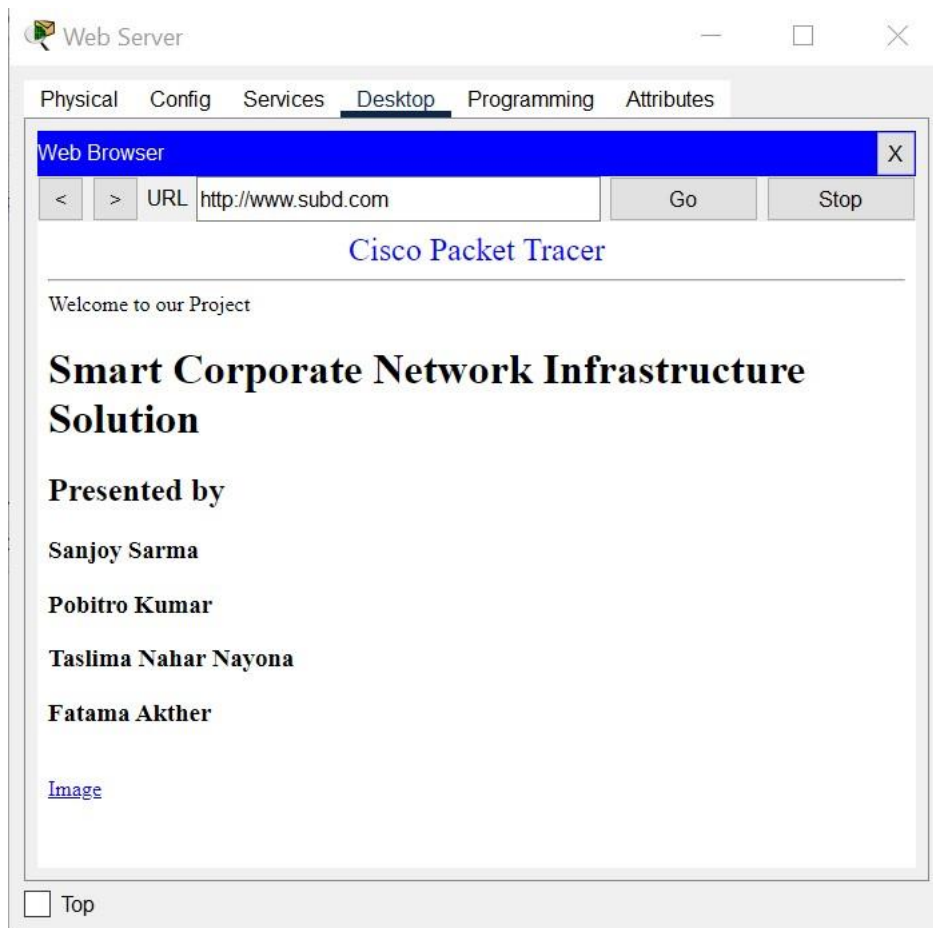


Figure: 5.8 browse my web site

## 5.3 DNS Server

A DNS server is a computer with a database containing the public IP addresses associated with the names of the websites an IP address brings a user to. DNS acts like a phonebook for the internet. Whenever people type domain names, like Fortinet.com or Yahoo.com, into the address bar of web browsers, the DNS finds the right IP address. The site's IP address is what directs the device to go to the correct place to access the site's data.

Once the DNS server finds the correct IP address, browsers take the address and use it to send data to content delivery network (CDN) edge servers or origin servers. Once this is done, the information on the website can be accessed by the user. The DNS server starts the process by finding the corresponding IP address for a website's uniform resource locator (URL).

### 5.3.1 DNS Service Configure

To configure the DNS server, click on the DNS server icon and click on the service option, click on the DNS option from the service and turn on the DNS service, then enter the name and address IP in the resource record, then click on the add button to add it, then click Save to save the DNS option.

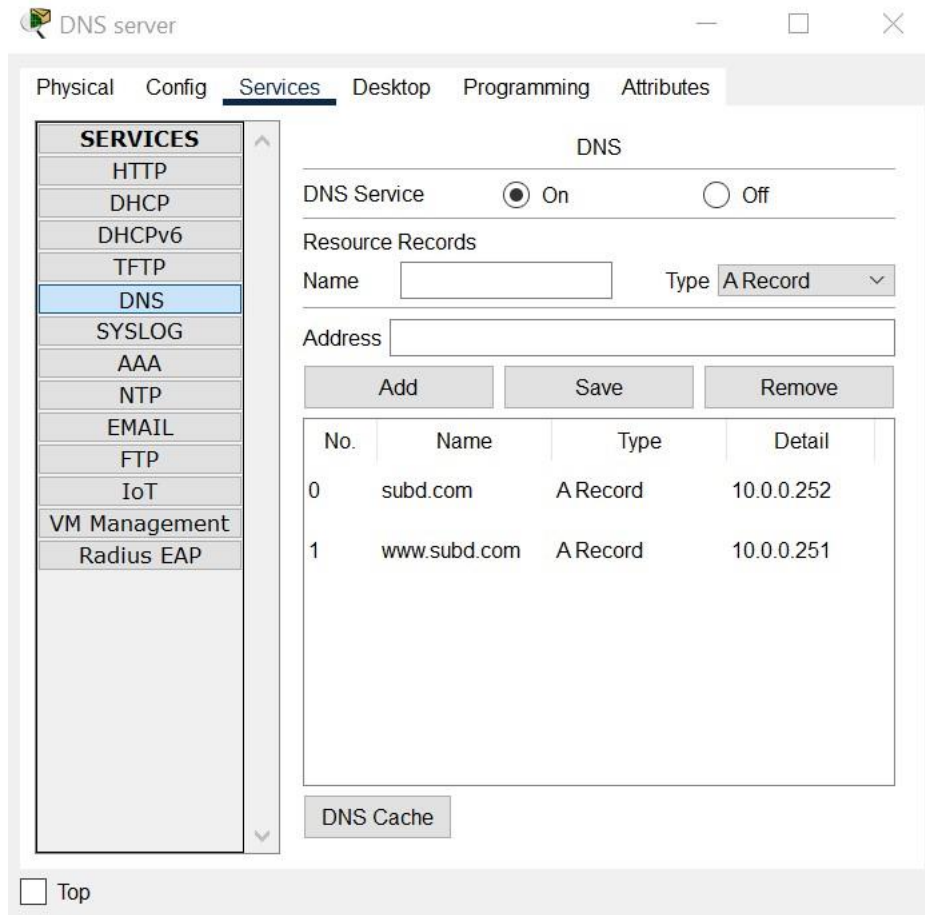


Figure: 5.9 DNS Service Configure

# CHAPTER 6

## CONCLUSION AND FUTURE WORKS

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### 6.1 Conclusion

The smart network infrastructure Design is a promising conception that supports pioneering methods to resolve power eminence and consistency issues for both service sectors and consumers. The prominent aim of the smart network infrastructure Design is to conserve a Remote real-time Monitoring & Controlling Network while sustaining the complete spectrum of activities. Conventions and protocols that support IoT technology are used for better performance of the smart network infrastructure Design Solution. This chapter provides a rational description of the challenges and major applications of IoT-based methods in different applications along with challenging protocols developed for better management of smart network infrastructure Design Solution.

### 6.2 Limitation of smart networking infrastructure

- This project is costly to implement.
- It is time consuming to build-up.
- Without internet we cannot use this project.
- We build it by using simulation software (Cisco Packet Tracer).
- Without a good configure of PC we cannot run this project.
- Without concept of Cisco Packet Tracer & IoT devices configure it will build so difficult.

### 6.3 Future works

The modern world almost wholly depends on advanced technology. Consequently, our life is fully influenced by modern technology-based devices like mobile phones, laptops, tablets, AC, Fridge, Fan, computers and so on. In the future, using this technology, we can create networks of smart campus areas, smart coffee shops, smart big companies, smart train stations, smart hospitals, smart homes, etc.



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