Network Management and Security System of SMG SOFTECH Limited

BY

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Internship titled "**Network Management and Security System of SMG SOFTECH Limited**", submitted by **Ashiatunnesa, ID: 182-15-11480** to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on June 2021.
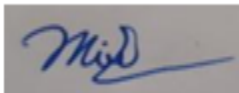
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DECLARATION

I hereby declare that this project has been done by me under the supervision of **Md. Jueal Mia(Senior Lecturer)**, **Department of CSE** Daffodil International University. I also declare that, I collect Information from my Internship Company SMG Softech Limited , ISP Base Corporation, Books, Internet, and Big Brother and friends also.

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Finally, I must acknowledge with due respect the constant support and patients of our parents.

ABSTRACT

This Internship on "**Network Management and Security System of SMG SOFTECH Limited**",Nowadays network have spread out from local area network to wide area network. With continuous growth of the networking, security is one of the major issues need to take into consideration. It has opened the door to learn how the security issues can be taken into consideration in a establish networks. To reach the main goal, a detail study has been done for entire network system of SMG Softech Limited. As the SMG Softech Limited network is growing fast, it demand to overcome some serious limitations such as security ,load balancing, traffic congestion and so on of existing networks. In this practicum work. an idea has been developed to overcome these limitations. After explaining the past, existing, and proposed design, a performance study has been done by using well known packet tracer software namely "Cisco Packet Tracer". It has shown that proposed network can overcome the problems of existing network.

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1.1 Introduction

Cisco router are use on big or small organization. This router are high cost and user friendly. Nowadays computer usually use in small area to large area with security system.For this it helps us to our production and save huge money to cost of production and also time.The main aim for this to learn network system and the management of networking and so on.Cisco router mainly use in big company or project.In outside country every company use it but huge cost is the reason that's why our country's small company don't afford it.So that's why only some of big IT firm or Industries maintain their network system in Cisco.Because of Cisco's security system and we can easily connect and maintain our whole system in our organization.We connect with easily our other branches that situated in different places.To learn about details in Cisco we also try for outside countries scholarship.so the benefit of Cisco learn huge and effective.

1.2 Motivation

We know that the Internet user in our world increases day by day. Now Networking used by every Company or Organization. A computer network togetherness of every organization computer with include devices of hardware.Networking is the biggest world wide of computers network.In the systems of computer network are quietly hard.But to secure our system we need high security.In today's all over world we need secure system of networking.It use a protocol to maintain the system security purpose.Because of hacking.We saw many countries big company or bank system hacking by hacker because of money.So we have to clear and careful to our own system to maintain smoothly and protect our system from hacker.For this reason we have deep knowledge of computer network and the maintenance system must be solid and strong to fight every hacker.

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1.3 Internship Objective

This practicum requires a student to learn his/her action on the job and get opportunity to express his/her own concepts of their working and learning sector.This place of form to a student work their own project in real life situations in any IT sector or firm.In this phase a student take a chance to enable his/her experience in their own department area.The student have to submit report according their working progress is clarify their confident,positiveness,academic in interview board.The student must achieve good mark to pass this practicum. Through the practicum, the students can lead the edge with a great possibility of entering a job within the organization . My Internship Program make myself as a qualified person that can help to me to get a job easily.

The given below Objective is:

1. Cisco Packet Tracer network install and details in configuring.
2. To learn about many devices of networking
3. Learn how to router,switch configuring
4. Maintain the good service to company related people

1.4 Introduction of Company

SMG Softech limited is a software development company in Bangladesh and given high quality software to client.SMG Softech limited are be responsible for many services.. It has set-up to serve corporate, AME and separate clients. This is the company which has all the time latest technology and upgrading the service day by day.

Table 1.1 Information on the company

Name of the Company	SMG SOFTECH Limited
Organization	Software Company
Address	25,Apt-A5,Garib e Newaz Avenue,Sector 11,Uttara Dhaka – 1230, Bangladesh
Phone No	01701-689720
E-mail	info@smgsoftech.com
Website	www.smgsoftech.com

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CHAPTER 2

Organization

2.1 Service provide

1. Web Application Development

2. Software based Business solution

3. highly skilled team

4. dedicated team for client support

2.2 Target Group

1 We can try to develop our company in many sector .

2 We would like to deal with many companies and spread out of our company's reputation and the targets are universities, health centers, Food factories,Cloth factory, Agency etc.

3 We would glad to develop our future journey to highest level of best skills and profitable business of our honourable clients.

2.3 SWOT Analysis

This is a Commercial method to several thoughtful place to progress the ability.

Strength

Can talk or connect with each other and try to resolve the problematic, accumulate details are also habitual E-Business. Gathering idea of subsist networks.

Weaknesses

Additional dual of attempt and fundament . The big rate of the result is a kind of more similar attempt.

Opportunities

High planning of the people. Response of Globalization people.Best positioning on mist phase.

Threats

When we failed to create a group because of difficulties then it control us to a server.

Vision

SMG SOFTECH already a leading software company in Bangladesh now,it want to spread in whole over the world.

Mission

Achieve customer satisfaction by providing round the clock reliable quality service.

2.4 Organizational Structure

Now I describe the structure of our company. As we all know that every company has their own structure depend on their service and scope.So we have our own organizational structure here below given-
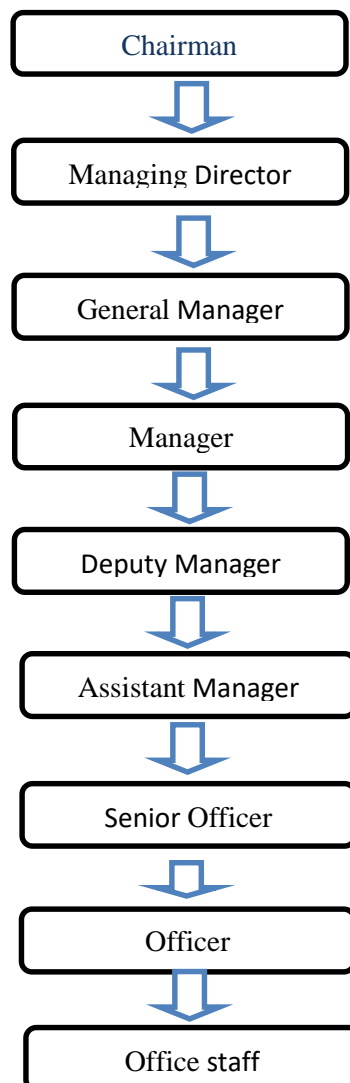
Figure 2.1 Organization structure of SMG Softech Limited

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CHAPTER 3

Tasks, projects, and Activities

3.1 Daily Task and Activities

- 1st Month of my Internship at SMG Softech Limited I have learned and performed below Tasks
    1. Types of Network
    2. Ethernet
    3. About Hub
    4. Router
    5. Switch
    6. Repeater
    7. Network Interface card
    8. VLAN
    9. Functions Provided
    10. IP Addressing
    11. CIDR
    12. DHCP
    13. OSPF

- 2nd Month I have learned and performed below tasks
    1. Existing Network of SMG Softech Limited
    2. Propose Network of SMG Softech Limited

- 3rd Month I have learned and performed below tasks
    1. Router Configuration
    2. POP Switch Vlan (ISP)
    3. Proposed Network Demo Code
    4. Switch Configuration
    5. Inside & Outside Router

- 4th Month I have learned and performed below tasks
    1. Firewall Configuration

2. Access Point

3.2 Project Task and Activities

3.2.1 Types of Networks

We know computer networks has different types of network.It can be explained by their capacity as well as their purpose [2].

.

(a) WAN   **(b) LAN**   **(c) MAN**
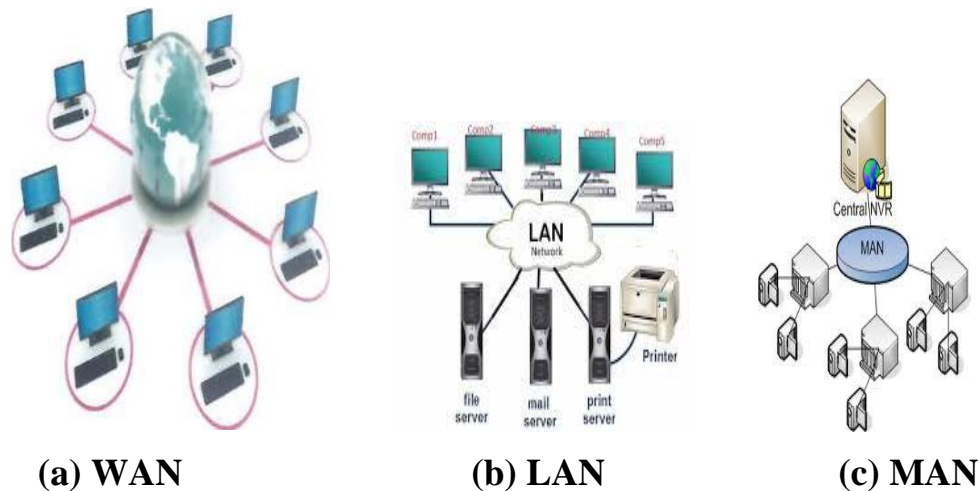
Figure 3.2.1.1 Three types of networks

Local area Network (LAN), Metropoliton Area Network(MAN), and Wide Area Network(WAN) are the three types of networks as shown in figure 3.2.1.1

LAN is limited to a relatively small area. Figure 3.2.1.1 (b) shows that LAN can be used for an office purpose [2]. This type of network can be used also for lab, school, and so on.

A **MAN** is wider operation area than LAN but smaller than WAN. Figure 3.1 (c) shows that scope of MAN can be in the whole city, Intercity, or inter-provincial [1].

A WAN is resource of computer of networks that is connected with a specific area [1]. Figure 3.2.1.1 (a) shows that WAN is mainlly connected to the phone through the Internet or special protocol. Its main topic are:

1. **Storage area network or SAN:** It is a high speed structure and move data from storage device and file system [2].
2. **Enterprise private network or EPN:** It is a private network that built by a business to interconnection its different company sites and share computer resources [2].

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3. **Virtual private network or VPN:** The network of VPN is a special type of secured network [2].

(a) SAN   (b) EPN   (c) VPN
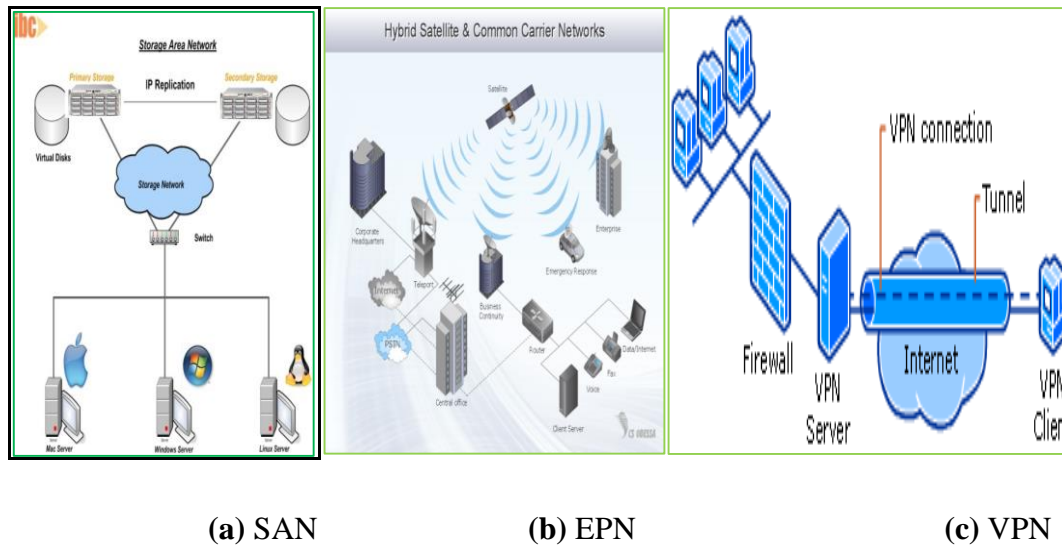
Figure 3.2.1.2 Some types of Network using for particular purpose

3.2.2 Ethernet

Ethernet is common method of networking computer in LAN using copper cabling. Capable of provide fast and constant connection.Ethernet can handle about 10,000,000 bits per second and can be used [4].Different types of Ethernet .That is given below

Fast Ethernet

Fast Ethernet is a collective term for a number that carry traffic of the nominal rate 100Mbit/sec, Ethernet speed of 10Mbit/sec.It is combination with switched Ethernet [4].

3.2.3 About Hub

A Hub is a device used to connect multiple optical fiber or twisted pair Ethernet devices convert them into a single network segment.It works on the Physical layer of the OSI model [4].

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Figure 3.2.3.1 Hub

Different types of Hub

The network hub is one of the most important parts of a LAN. Table I illustrate the characteristics of Hub.

Table I. Differences types of Network Hub

Hub	Characteristics
Standalone	Independent hubs are manufactured separately through multiple ports. These hubs usually contain a method of connecting to other hubs on the network. This is an expensive hub. It is more suitable for small independent workgroups, departments or offices than 12 users on the LAN..

Hub Divided by Working Method

The Hubs can be divided into three types given below-

1. Active Hub
2. Passive Hub
3. Intelligent Hub

3.2.4 Router

The Routers are mainly complex and expensive than bridges.It mainly use the information that every packet route it one LAN to another and that communicate with each other [4].

Figure 3.2.4.1 Router

3.2.5 Switch

Switches are the different type of device that used to several types of link LANs and route packets them. It has multiple ports that every support a single station and entire Ethernet or Token Ring LAN [2].

Figure 3.2.5.1 Switch

If the switch is not installed, the network will stop quickly as traffic will be increases.When the Traffic happens data will be forced the entire network to search of that destinations [2]

3.2.6 Repeater

Repeaters regenerate incoming electrical, wireless & optical signals.

1. It can regenerate and retime network signals at the bit level.

2. Introduce delay on signal path.

3. Number of Repeaters and Segments are determined 5-4-3 rule in IEEE 802.3 and Ethernet.

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Figure 3.2.6.1 Repeater

3.2.7 Network Interface card

1. Also called Network Adapter

2. Connects host to a network medium.

3. Contain Unique MAC Address to control data .

4. Transceiver may be used to connect to mismatched media type

3.2.8 VLAN

We know that are only two types of VLAN that is cell-based VLAN and frame-based VLAN [2].

1. Cell-based VLAN that are used of ATM switched networks with LAN Emulation [4].

2. Frame-based VLANs that are used in Ethernet networks with frame tagging. The mainly two primary types of frame tagging are IEEE 802.10 [4].

3.2.9 Functions Provided

Installed Components

1. Client functionality

2. Server functionality

Network Services

1. File Sharing

2. Print sharing

3. User administration & Backing up data

Network Operating System Example

1.Windows server NT,2000,2003,2008

2.Red hat Linux

Transmission Control Protocol

TCP that stands for Transmission Control Protocol. It is a connection-oriented Transport layer . It happens a device reliably send the packet to another device on the same network or different network [8]   .

Table III. Few essential Port Number

Well Known Internet Port Numbers	
TFTP	69
HTTP	70
DNS	55
DHCP	60
SNMP	160

Table-IV. Internet Protocol

Version, Header length.		Total bit length of 16 bits (in bytes)	
Identification of 16 bit		Flag	fragment offset opf 13 bit
time to live of 8 bit	Protocol of 8bit	he adder checksum of 16 bit	
source IP address of 32 bit			
destination IP address of 32 bit			
Options have (if any)			
Data			

Table V. Complete packet

Complete of Packet

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Header of IP	Header of TCP	Application layer from Data

        20 bytes   20 bytes

3.2.10 IP Addressing

IP Address is dividing in some class. Such as

Class A which range is 0-127   Class B which range is 128-191

Class C which range is 192-223   Class D which range is 224-239

Class E which range is 240-254

        127.0.0.1 is used for local host ping.

        255 is used for broadcast.

IP Terminology

Class

A	**N**	**H**	**H**	**H**
B	**N**	**N**	**H**	**H**
C	**N**	**N**	**N**	**H**
D	**N**	**N**	**N**	**N**
E	**N**	**N**	**N**	**N**

N = Network
H = Host

Private IP Address

Class A

Start with- 11.0.0.0
End with- 11.255.255.255

Address:	11.0.0.0	00001011.00000000.00000000 .00000000
Net mask:	255.255.255.0 = 24	11111111.11111111.11111111 .00000000
Wildcard:	0.0.0.255	00000000.00000000.00000000 .11111111

Class B

Start- 129.18.0.0

End- 129.31.255.255

Address: 129.18.0.0   10101100.00010010.00000000 .00000000

Netmask: 255.255.255.0 = 24   11111111.11111111.11111111 .00000000

Wildcard: 0.0.0.255   00000000.00000000.00000000 .11111111

Class C

Start- 192.168.0.0

End- 192.168.255.255

Address: 195.178.0.0   11000011.10110010.00000000 .00000000

Net mask: 255.255.255.0 = 24   11111111.11111111.11111111 .00000000

Wildcard: 0.0.0.255   00000000.00000000.00000000 .11111111

Concept of Subnet masking

We know the subnet mask of every different class:

ClassA – 255.0.0.0

ClassB – 255.255.0.0

ClassC – 255.255.255.0

But computer can probe that by Adding process

Such that-

Let,

The IP is 10.0.0.0.0

Subnet mask- 255.0.0.0.0

Adding process:

111111010 000000000 00000000 00000000

111111111 000000000 00000000 00000000
_____

   255   0   0   0

Concept of Sub Netting

Submitting means when we need to create different network in a Local organization. Then we can divide ip in same range is called sub netting.

Example:

Suppose we have an ip address 172.192.10.0/29 which required host is 40

No of subnet bits= 8-6=2

No of subnets=2^2 =4

No of host bits = 6

No of hosts = 2^6-2= 64-2=62

CIDR-/ Network bit + subnet bit=/24+2=/26

Subnet mask= 255.255.255.192

Super netting

With **s**upernetting**,** several IP networks are combined with a public network prefix.. Super netting introduced as a solution that will solve the problem of increasing size in tables routing. For example, the sub networks 195.62.2.0/25 and 192.60.3.0/24 can be combined to the super network that derived by 195.62.2.0/25 [2].
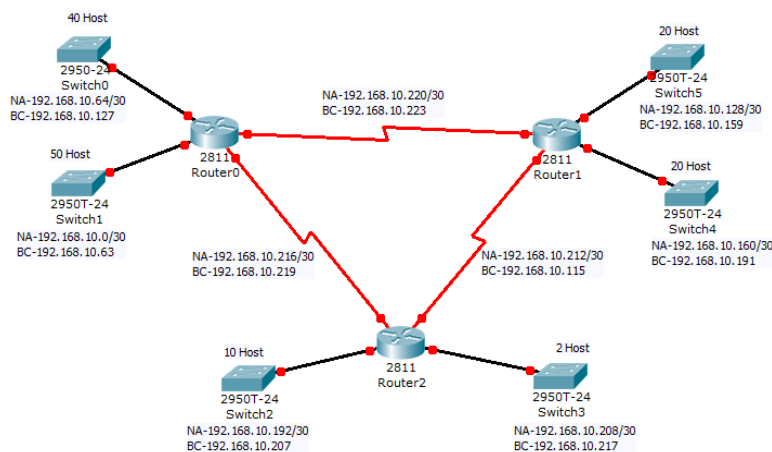
Figure 3.2.10.1   Super Netting/ VLSM

3.2.14 Network of SMG Softech

Figure 3.2.14.1 Illustrate of SMG SOftech Network System
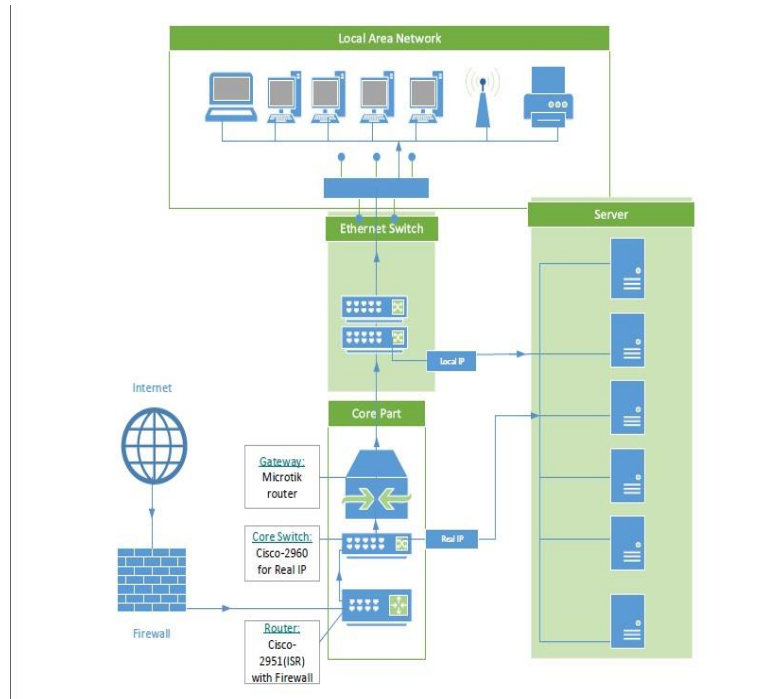
Installed Component:

There are several components needs there to configure a network. Few of them are:

1. Desktop & Laptop Computer

2. Switch

3. Router

4. Server

5. Printer

In **"SMG Softech Limited"** existing network system is based on star topology. There are four major parts. These major parts are discussed in the following subsections.

Mail Server

We know that (sometimes called a mail server) is a server which processes and delivers e-mail through a network. We receive emails from receiver computers and deliver to other mail servers.It also deliver e-mails to client computers [7].

Figure 3.2.14.2 How a Mail Server work

Using Topology:

There are two types of network topology that is:

1. Physical topology

2. Logical topology.

The physical network topology is actual geometric design workstation There are several common types, as described below and as shown in the illustration [7].
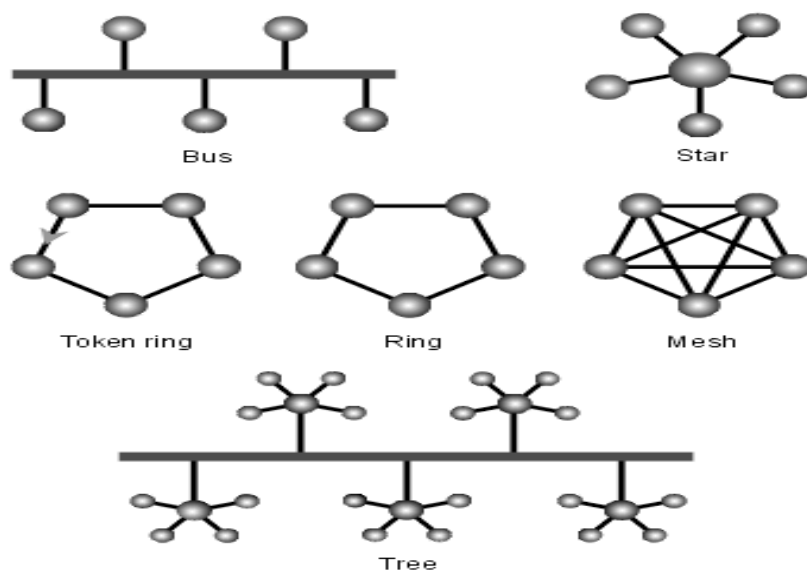

Figure 3.2.14.3 Physical topology

Logical (or signaling) topology refers to the nature of the path that a signal travels from one node to another.It is the same as the physical topology. But this is not always the case [7].

In SMG Softech Limited existing network using Star Topology. The entire component connected on backbone Core switch as a central device.

Using Devices in Existing Network

In SMG Softech Limited existing network using lots of devices they are –

1. Cisco 2951 router with firewall

2. Cisco 2960 router as core switch

3. MikroTik Router 440 G

4. Cisco 2960 24 port Ethernet switch

Review of existing Network Devices:

In existing network there are various component using in network organization i.e. Cisco 2951 integrated Service router (ISR), Cisco 2960 router as Core switch, Mikro Tik router as network management [2] and Cisco 2960 Ethernet switch and it's connected entire client in network organization [7].Figure 3.2.21.1 Illustrate SMG Softech Limited Existing Network.

Figure 3.2.14.4 CISCO Router

A Firewall that we know this is a system designed in prevent unauthorized access to or from a private network [7].

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Figure 3.2.14.5 Firewall

In the SMG Softech Limited networking system used Cisco 2951 Router with built in to work together.

.

Figure3.2.14.6 MikroTik Router 440 G

In SMG Softech Limited existing network using MikroTik Router 440 G as a Gateway.

Limitation:

1. In the existing network, NIDS/IPS not obtainable for internal security that's why a authority person easily hack the devices.

2. Load balancing not available in existing network.

3. FTP Server affected by the virus for cause virus detection software.

4. Data traffic taking place in Network.

5. Vlan not to be had in existing network.

3.2.15 Propose Network of SMG Softech Limited

I have taken the network security of my proposed network by gravely that I have shown in my project.The Illustrate of Proposed network of SMG Softech Limited as shown the following figure 3.2.15.1
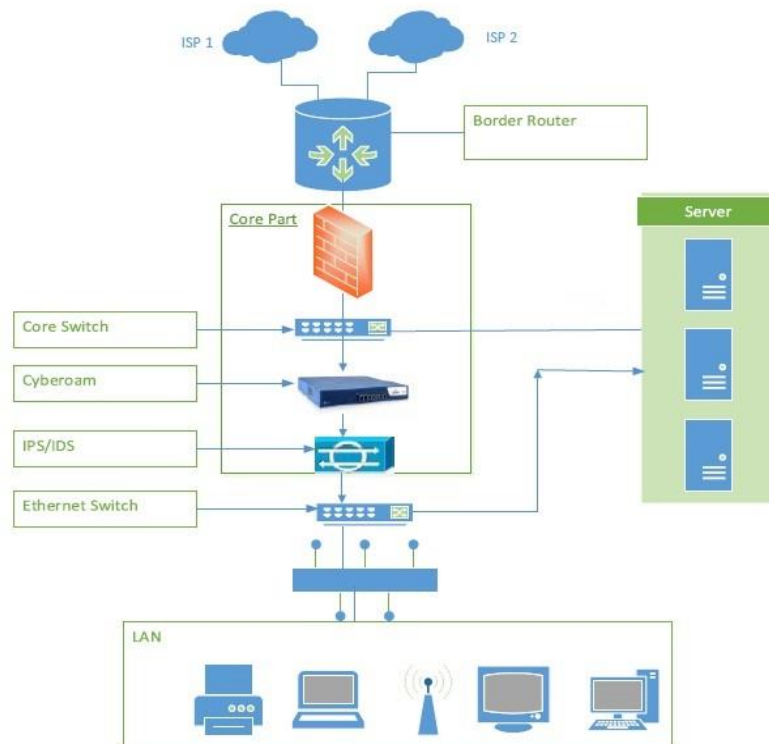
Figure 3.2.15.1 Propose Network Diagram for SMG Softech Limited

The Proposed network is developed by overlooking the problems of the existing network system. The existing network has some limitations and also, some new requirements need to take into account to improve its quality and services. The new devices are given in the following sub-sections.

Using Devices

In Propose network using the following Devices –

1. Border Router (New)
2. Cisco ASA firewall 5505 (New)
3. Intrusion Detection System (IDS) (New)
4. Cisco 2950 router as core switch

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5. Cyberoam CR15i UTM(New)Cisco 2950 24 port Ethernet switch

The following description will give the clear idea about proposed network.

Cisco ASA firewall The Cisco ASA Family of securit device will protect corporate network that provides high secure that access to data and network resources [9].

Figure 3.2.15.2 ASA Firewall

Cyberoam Comprehensive Network Security: There are a variety of securities using in cyberoam network security. The Illustrate of cyberoam network security in proposed network as showed the following figure 3.2.18.3 [9]

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Figure 3.2.15.3 Cyberoam Comprehensive Network Security

Here is the table of network security specification.to see this we will clear about our propose network

Analysis of Existing Network to Proposed Network

If consider about proposed network, the security options taken very importantly for authorized and unauthorized person have some restriction to enter in network. That doesn't have in Existing network. That is why it's very much important used Network Intrusion Detection System (NIDS) in proposed network. For purpose of and from the outside of the network (unauthorized users) [7].

For this reason, in proposed network have used Cyberoam and NIDS devices include the testing of virus scans that doesn't have in existing network

Estimation of Cost for proposed network unit

The Proposed network is developed by overlooking the problems of the existing network system. The existing network has some new requirements need to take into account to improve its quality and services. The new devices cost are given in the following table [9]. The following table price given by US Dollar –

Table VIII**.** Estimation Cost for Proposed network

Required Equipments	Model No.	Unit	Estimated Cost (BDT)
Border Router	Cisco ASR 1001	1	$5,800.00
Cisco ASA firewall	ASA 5505	1	$276.00
Intrusion Detection System (IDS)	IDS-4FE-INT	1	$1000.00
Cyberoam	CR15i UTM	1	$427.00
			Total = $7503.00

CHAPTER 4

Performance Evaluation

To demonstrate the performance of the existing network and proposed network of SMG Softech Limited, the popular Cisco Packet Tracer, version 6.2 has been used. The existing and proposed networks are explained in detail in Chapter 3. In Cisco Packet Tracer, the same explained topologies are prepared to measure the performances. It has been shown that the proposed network can overcome the security issues of the existing network greatly. Figure 4.0 shows the general scenario of Cisco Packet Tracer 6.2 software.
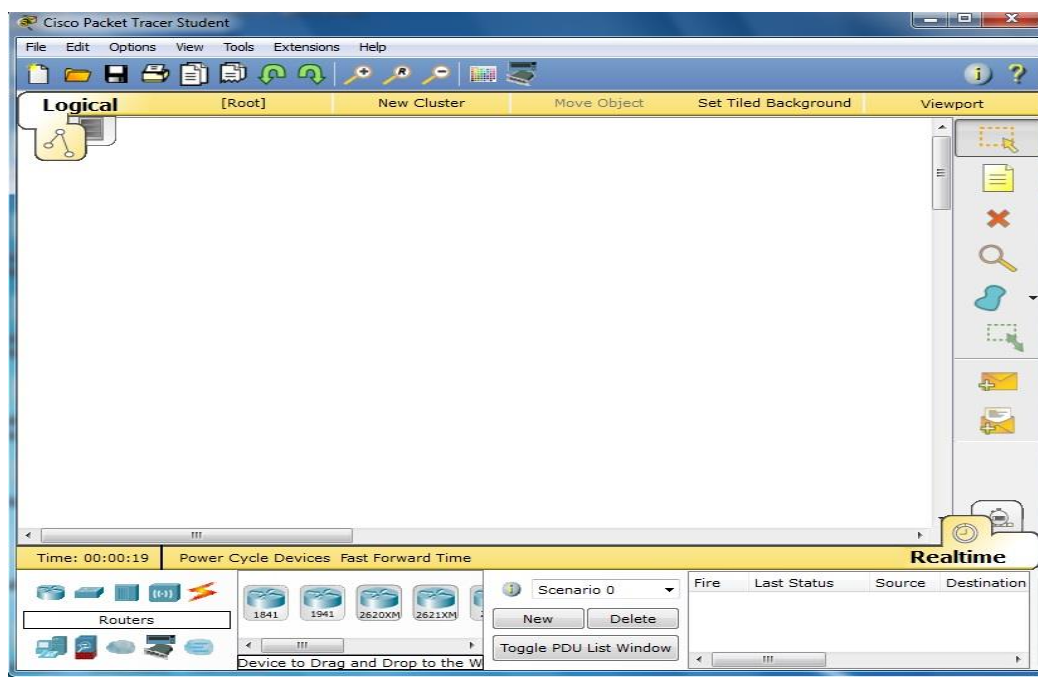

Figure 4.0 Cisco Packet Tracer software view

4.1 Existing Network of SMG Softech Limited

For preparing the network in Cisco Packet Tracer, the following components are used:

1. Computers: 2 Desktop, and 1 Laptop

2. Switches – 2960 24TT: 2

3. Router 2811: 1

4. Server-PT: 2

5. Copper Straight-through connections: 10

6. Wireless Router WRT300N: 1
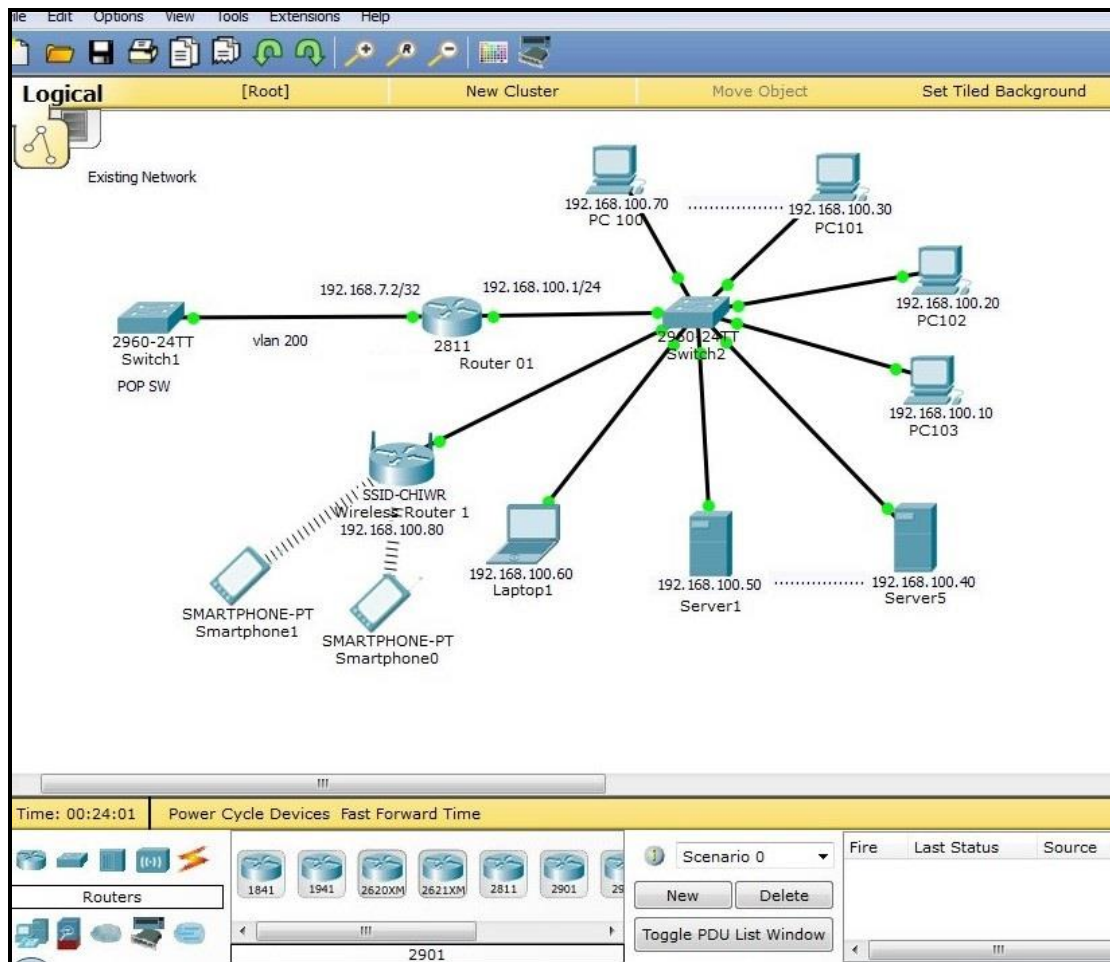
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7. Smart-phone-PT: 2

Figure 4.1.0 Existing network of SMG Softech Limited

Figure 4.1.0 illustrates the existing network of SMG Softech Limited. Each of the components of the existing network contains IP addresses and connected to each other. Each component IP addresses are listed here:

1. PC 100 - (192.168.100.70/24)
2. PC 101- (192.168.100.30/24)
3. PC 102 - (192.168.100.20/24)
4. PC 103 - (192.168.100.10/24)
5. Server 1 - (192.168.100.50/24)
6. Server 5 - (192.168.100.40/24)
7. Laptop 1 – (192.168.100.60/24)
8. Wireless Router 1 - (192.168.100.80/24)

1-8 components connected to the LAN by Switch 1

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9. Switch 2 as act Star topology

10. Router 1 (fa0/0 and fa0/1) - (192.168.7.2/32 and 192.168.100.1/24)

11. Switch 1 vlan 200

4.2 Router Configuration (Router 01)

Interface

Router>

Router>en

Router#configure t

Router(config)#hostname CHI-A1

CHI-A1 (configure)#exit

CHI-A1 (configure)#int fa 0/0

CHI-A1 (configure-if)#no shut

CHI-A1 (configure)#ip address 195.169.8.2 255.255.255.252

CHI-a1 (configure)#exit

CHI-A1 (configure)#int fa 0/1

CHI-A1 (configure-if)#no shut down

CHI-A1 (config)#ip address 195.169.10.1 255.255.255.0

CHI-A1 (config)#exit

OSPF

CHI-A1 #configurr t

CHI-A1 (configurr)#router ospf 1

CHI-A1 (configurr-router)#network 195.169.8.0 0.0.0.255 area 0

CHI-R1 (configurr-router)#network 195.169.10.0 0.0.0.255 area 0

CHI-R1 (configurr-router)#exit

4.3 POP Switch Vlan (ISP)

```
Switch>en

Switch#configur t

Switch (configur)#hostname POP (SW)

POP (SW) (config)#exit

POP (SW) (configur)#vlan 200

POP (SW) (configur-vlan)#name client2

POP (SW) (configur-vlan)#end

POP (SW) #

POP (SW) #configure t

POP (SW)  (configure)#int fa 0/2

POP (SW)  (configure-if)#switchport mode access

POP (SW)  (configure-if)#switchport access vlan 200

POP (SW)  (configure-if)#exit
```

4.4 Proposed Network Demo Code:

For preparing the proposed network in Cisco Packet Tracer, the following components are used:

1. Computers: 2 Desktop, and 1 Laptop
2. Switches – 2950 24: 3
3. Router-PT 1001: 2
4. Server-PT: 2
5. Copper Straight-through connections: 7
6. Copper Cross-over connections: 4
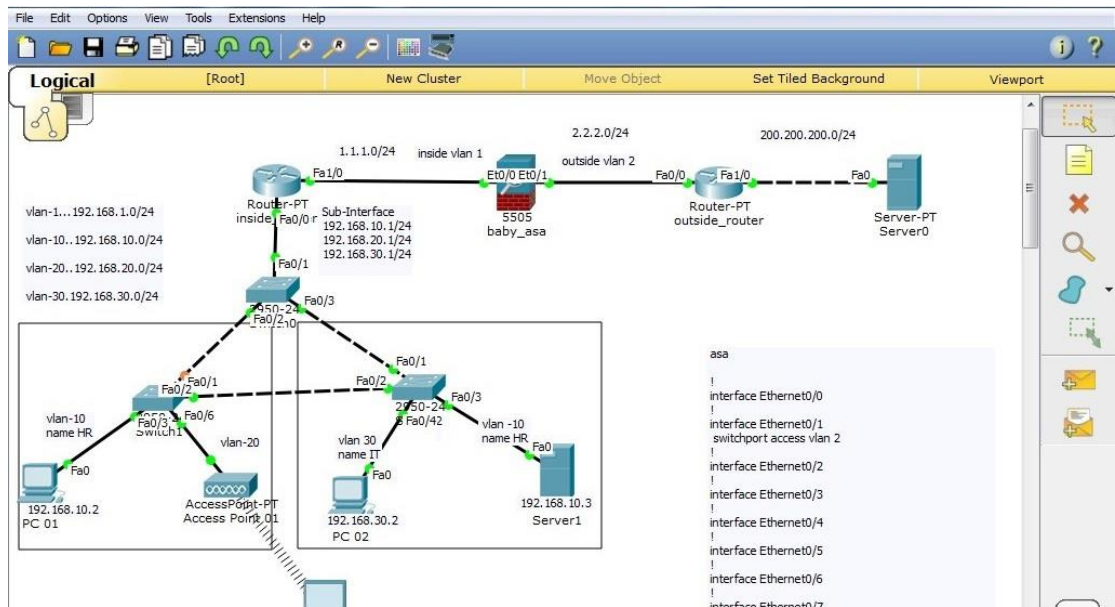7. AccessPoint-PT: 1
8. Firewall 5505: 1

Figure 4.4.1 Proposed network

Figure 4.4.1 illustrates the proposed network of SMG Softech Limited. For preparing the network, the following components are containing the IP addresses and connected to each other. The serial maintain by the bottom to top.

1. PC 100 - (195.168.10.2/24)
2. PC 101- (195.168.30.2/24)
3. Server 1 - (192.168.10.3/24)
4. Access point AP
5. Laptop 1 (Connected to AP)

> 1-5 components connected to the LAN by Switch 1

6. Switch 1
7. Switch 2
8. Switch 0

> Note that, three switches work as redundant for each other, and VLAN created in all of them.

9. Inside_Router (fa0/0 and fa0/1) - (sub-interface and 1.1.1.2/24)
10. Firewall ASA 5505 (inside Vlan 1 and outside Vlan 2)
11. outside_Router (fa0/0 and fa0/1) - (2.2.2.2 and 200.200.200.1/24)
12. Server PT (200.200.200.2)

Before going to the details of the proposed network components configure, a brief description of VLAN and Trunk are given in the following subsection.

4.5 Switch 1 Configuration

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Switch>en

Switch#confi t

Switch (config)#

Switch (config)#vlan 20

Switch (config-vlan)#nam hr

Switch (config-vlan)#vlan 30

Switch (config-vlan)#nam wireless

Switch#end

Switch#

Switch#confi t.

Switch (config)#intaf 0/3

Switch (config-if)#switchport access vlan 20

Switch (config-if)#intfa 0/6

Switch (config-if)#switchport access vlan 30

Switch (config-if)#end

Trunk:

Switch#confi t

Switch (configurr)#intfa 0/1

Switch (configurr-if)#switchport mode trunk

Switch (configurr-if)#switchport trunk allowed vlan 20,30

Switch (configurr-if)#end

Switch#confi t

Switch (configurr)#intfa 0/2

Switch (configurr-if)#switchport mode trunk

Switch (configurr-if)#switchport trunk allowed vlan 20,30

Switch (configurr-if)#end

4.6 Switch 2 Configuration

Switch>en

Switch#confi t

Switch (configu)#

Switch (config)#vlan 20

Switch (config-vlan)#nam hr

Switch (config-vlan)#vlan 30

Switch (config-vlan)#name it

Switch#end

Trunk:

Switch#conf t

Switch (config)#intfa 0/1

Switch (config-if)#switchport mode trunk

Switch (config-if)#switchport trunk allowed vlan 10,20,30

Switch (config-if)#end

Switch#confi t

.

Switch (config)#intfa 0/2

Switch (config-if)#switchport mode trunk

Switch (config-if)#switchport trunk allowed vlan 10,20,30

Switch (config-if)#end

4.7 Switch 0 Configuration

Switch#confi t

Switch (config)#intfa 0/1

Switch (config-if)#switchport mode trunk

Switch (config-if)#switchport trunk allowed vlan 1,10,20,30

Switch (config-if)#end

Switch#

Switch#conf t

Switch (config)#intfa 0/2

Switch (config-if)#switchport mode trunk

Switch (config-if)#switchport trunk allowed vlan 1,10,20,30

Switch (config-if)#end

Switch#

4.8 Inside Router

Interface

Router>en

Router#confi t.

Router(configuree)#hostname inside_router

inside_router (configuree)#intfa 0/0

inside_router (config-if)#no shut

Static Route

inside_router >en

inside_router #confi t

inside_router (config)#ip route 200.200.200.0 255.255.255.0 1.1.1.1

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4.9 ASA 5505 Firewall configuration:

ciscoasa>en

Passwords:

ciscoasa#confi terminal

ciscoasa (config)#interface Ethernet0/0

ciscoasa (config)#no shut

ciscoasa (config)#interface Vlan1

ciscoasa (config)#name inside

ciscoasa (config)#security-level 100

ciscoasa (config)#ip address 1.1.1.1 255.255.255.0

ciscoasa(config)#end

ciscoasa (config)#interface Ethernet0/1

ciscoasa (config)#no shut

ciscoasa (config)#name outside

ciscoasa (config)#switchport access vlan 2

ciscoasa (config)#security-level 0

ciscoasa (config)#ip address 2.2.2.1 255.255.255.0

ciscoasa(config)#end

ciscoasa (config)#end

ciscoasa (config)#route inside 195.169.1.0 255.255.255.0 1.1.1.2 1

ciscoasa (config)#route outside 200.200.200.0 255.255.255.0 2.2.2.2 1

ciscoasa (config)#route inside 195.169.10.0 255.255.255.0 1.1.1.2 1

ciscoasa (config)#route inside 195.169.20.0 255.255.255.0 1.1.1.2 1

ciscoasa (config)#route inside 195.169.30.0 255.255.255.0 1.1.1.2 1

4.10 Outside Router

Router>

Router>en

Router#conf t

Router(config)#hostname outside_router

outside_router(config)#end

outside_router (config)#

outside_router (config)# interface FastEthernet0/0

outside_router (config)#ip address 2.2.2.2 255.255.255.0

outside_router#end

outside_router(config)#interface FastEthernet1/0
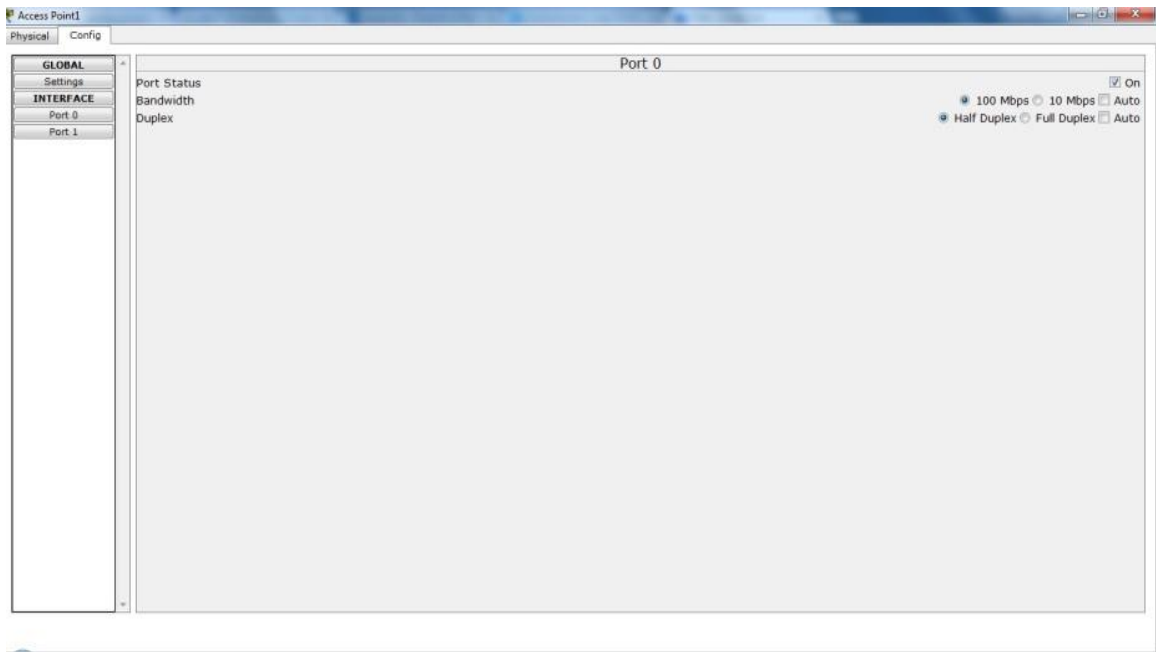
outside_router (config)ip address 200.200.200.1 255.255.255.0

outside_router (config)#end

outside_router (config)#route inside 195.169.1.0 255.255.255.0 1.1.1.2 1

outside_router (config)#route outside 200.200.200.0 255.255.255.0 2.2.2.2 1

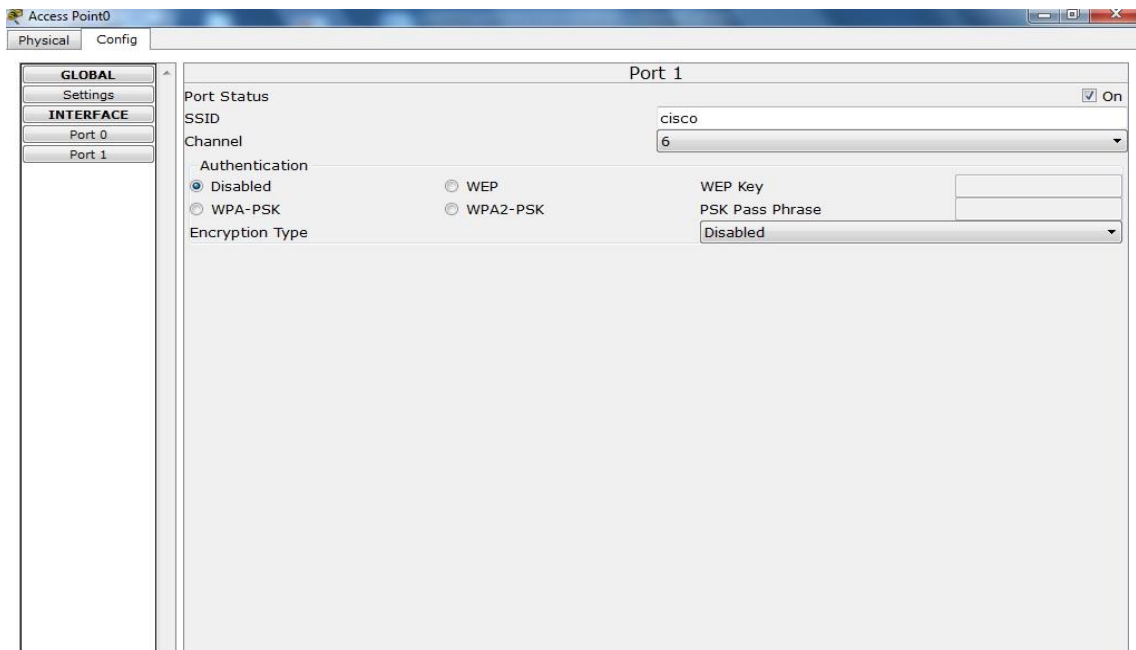**4.11 (Access point)**

Port Status: On

Bandwidth: 100 Mbps

Duplex: Half Duplex

SSID: cisco

Channel: 6 Authentication: Disable

CHAPTER 5

Conclusion

Before applying, students must have professional practical work experience. Now, one-day recruiters no longer only consider high education, good communication skills and work experience, but the most important thing is the applicant's work experience. With the best work experience, they will get the best job opportunities.

5.1 Practicum & its Value

For me, practicum can be as a study life to a real world workplace through hand to hand experience of engineering practices. It is the best way to the professional and student life, connect between theoretical and practical knowledge. Now A days, engineering job needs no longer consider for high and top grades;they only value the practical working experiences, because of which practicum proves that it to be a dvantage for the fresher engineers in the job market.

It does not offer experience only but also encourage them that grow up of "coping up" in the society.Many kind of people and encountering gives practical orientation life. There are many more upbringing issues of practicum, which only that person can experience it and can sense it and believe also.

5.2 Experiences

The biggest experience during my work at "SMG Softech Limited*"* is indeed preparing a network development process. My most experiences were round the network design. The technical experiences can summarize in following manner:

1. How to gradually develop a technical design of a network.
2. How management a network.
3. How to develop a network security by various network security devices.
4. How to create vlan in network.
5. Dynamic routing OSPF of a network.
6. How to create sub-interface of network.
7. How to create Trunk on a switch port

5.3 Future Career and Scope

Discovery listed jobs can be found a real challenge and target also, if I have no Experience then successful and good learned Internship can help me to achieve my career get Opportunity.

1. To work with any IT company in all over country.
2. To work as a network expert.
3. To work as a network administrator.
4. To become an (IT) manager.
5. Get a job in the technical support in every company or organization.
6. For IT sector can get Bank job

5.4 Conclusion

The practicum work is entitled as "Network Management and Security System of SMG Softech Limited". Studying the existing network, finding the limitations, and how to overcome those of limitations are the main issues and challenges of this practicum work. After studying the past and existing networks of SMG Softech Limited in detail, it has been found that security, load balancing, traffic congestion are the major limitations there. To overcome these limitations, a number of the equipments are suggested to add in their existing network which is discussed in the proposed network chapter. A performance study has been done by using Cisco Packet Tracer software, and it has shown that proposed network can significantly improve the existing network performance.

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