

**FINAL YEAR INTERNSHIP REPORT ON CORPORATE NETWORKING  
SOLUTION**

**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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DHAKA, BANGLADESH  
6 JANUARY**

## APPROVAL

This Project/internship titled “**Corporate Networking Solution**”, submitted by **Ujjal Kumar Pall**, ID No: **Student ID:191-15-12890** 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 **JANUARY 6, 2022**.

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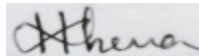
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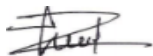
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## DECLARATION

We hereby declare that, this project has been done by us under the supervision of Ms. Subhenur Latif, **Designation: Assistant Professor, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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We would like to express our heartiest gratitude to -----, -----, and Head, Department of CSE, for his kind help to finish our project and also to other faculty member and the staff of CSE department of Daffodil International University.

We would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

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

## **ABSTRACT**

Computer Networks have turned into a fundamental apparatus in numerous angles: human correspondence, assembling, trade and sharing of data, appropriated workplaces, admittance to far off assets (information and registering power) and some more. Beginning from a chronicled outline, this paper will give a prologue to the hidden thoughts and advances. The subsequent half will focus on the most ordinarily utilized organization innovation today (Ethernet and TCP/IP) and give a prologue to the correspondence instruments utilized.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction to Computer network

A computer network is a process of connecting multiple computers using different types of media such as cable telephone lines, satellites, etc. to share resources between different users such as files, printers, scanner, etc.

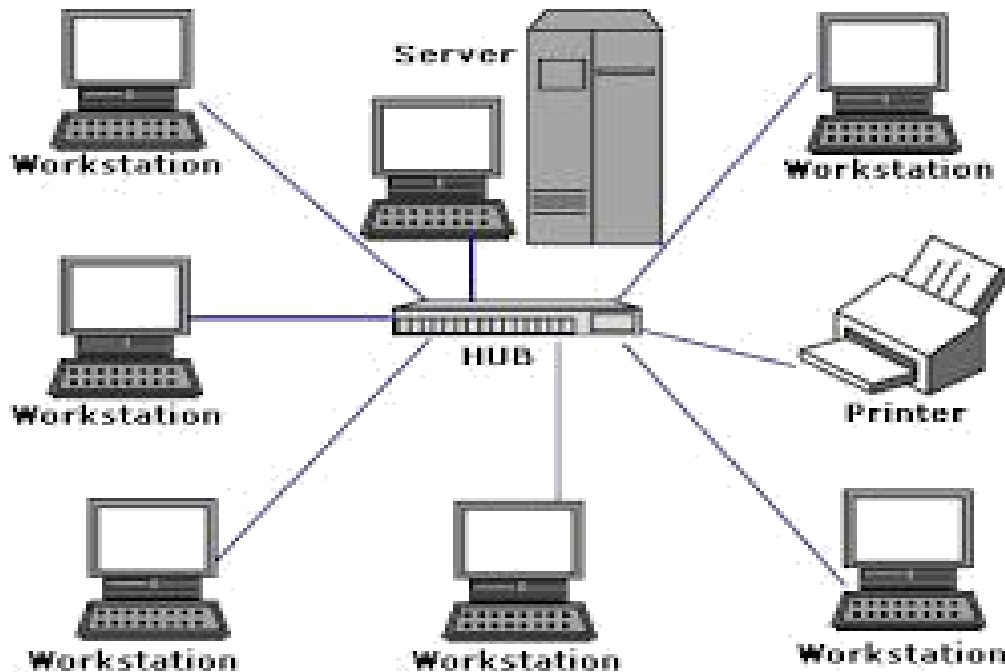
Let's talk about an example in order to understand Computer networking, Assume that an office consists of 50 computers and every computer needs a printer of price 5000 taka. So, the total amount comes to purchase 50 printers is 250000 taka. No doubts that it's huge and we can reduce the amount by using the single printer through the computer networking. If we connect a single printer with 50 computers through computer networking, then it will reduce the cost 245000 taka which is equivalent price of 49 printers. Overall from the above discussing data, we can feel the actual importance of computer networking.

### 1.2 Networking Types

LAN stands for Local Area Network. It implies to the affiliation between computers and other network gadgets that are found interior a small physical range.

- **Local Area Network (LAN)**
- **Metropolitan Area Network (MAN)**
- **Wide Area Network (WAN)**

**Local Area Network (LAN):** Local Area Network associates local area devices in such how that private computer and workstations can share information, instruments and projects. The group of PCs and gadgets are connected all things considered with the assistance of a switch, or heap of switches, utilizing an individual tending to conspire as depicted through the TCP/IP convention. Private locations are extraordinary concerning other PC frameworks on the close by network. Not really settled At the limit of a LAN, interfacing them to the bigger WAN.

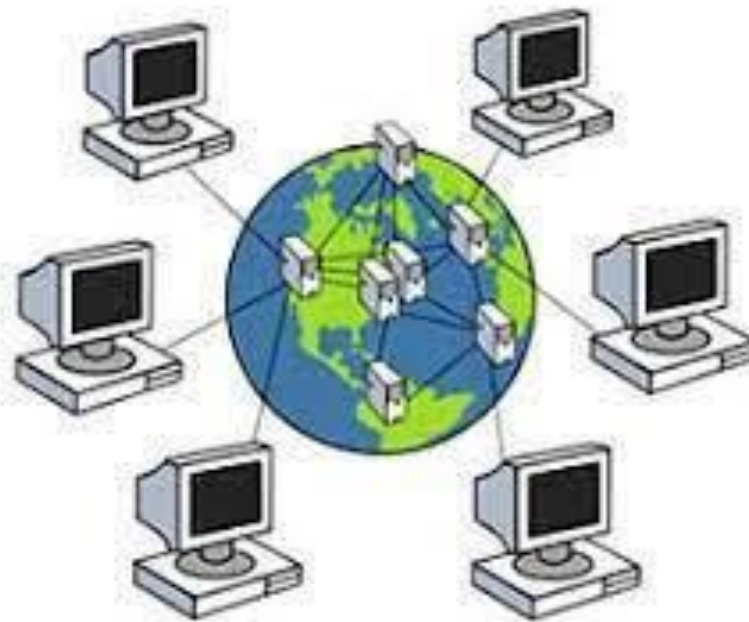


**Metropolitan Area Network (MAN):** Metropolitan region Network covers a greater region Than that of a LAN and more modest region as opposed to WAN. It interfaces two or more prominent PC frameworks that are separated anyway dwells inside the equivalent or particular urban communities. It covers an enormous topographical area and ought to also work an ISP (Internet Specialist organization). MAN is intended for customers who need a rapid network. Rates of MAN levels in expressions of Mbps. It's hard to outline and save a Metropolitan Region Network.

### Metropolitan area network (MAN)



**Wide Area network (WAN):** Wide Area Network might be a PC organization that stretches out over a gigantic geographic region, in spite of the fact that it will be obliged inside the limits of a country or country. A WAN should be an association of LAN interfacing with distinctive LAN's through advanced cell strains and radio waves and may furthermore be restricted to work environment (an organization or an association) or accessible to the overall population . The science is high velocity and inconceivably profoundly valued



### 1.3 Internship Objective

I even have completed my internship in the duration of three months. As I already completed my internship

From my point of view, nowadays Networking is the most fascinating sector to build up a career and I personally feel so interested to make my future career in this way. For this

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reason, I started the networking course and felt that it's not sufficient for me. So, I took the internship based on this course and my intern company trained me to make me perfect. I have learnt a lot during my internship and I strongly believe that the experience I have got during my internship will help me much to get a good job and position in any company. It will also help me to get job not only in Bangladesh but also the outside of Bangladesh.

#### **1.4 Introduction of Company**

Excel Technologies Ltd an Information Technology (IT) company in House:13, Road:07, Block: F, Level:7, Banani Dhaka1208.Excal Technologies Ltd is a software development and IT outsourcing company that gives both offshore and onshore technological solutions to business enterprises. We have confirmed information in encompassing low cost, however excessive first-class and dependable software program answers and offerings in regions like IT consulting, reporting solutions, web development and providing database related solutions.

#### **1.5 Report Layout**

In my report, I actually have cited approximately the fundamental idea of Computer networking that I actually have learnt throughout my 3 months internship. I have divided my learning into several chapter in order to get the clear view about my report. In “chapter 1”, I have discussed about the advent of Computer Networking, my objectives about this internship and a brief introduction about my intern company. In rest of the chapter, I have discussed about the task, project that I have performed and a roles that I have played throughout this internship.

## CHAPTER 2

### IP ADDRESSING AND SUBNETS

#### 2.1 IP Address

An Internet Protocol address (IP address) to connect from one computer in the network to another computer, first some of the required computers have an address. All computers in the network have a specific address and this address is called IP address.

- Bit – a touch may be a single digit with a fee of 0 or 1.
- Byte –Eight bits synthesis a byte.
- Octet – An octet is moreover produced the usage of 8 pieces. All thru this phase the expressions byte and octet are compatible.
- Network Address – This alludes to an unusual enterprise as some distance as directing. All hosts within the remote nearby vicinity fall internal this location.

An IP address is 32 portions in length.to form the vicinity simpler to peruse, it is separated into 4 segments of 8 portions every partitioned thru a period. Each phase is thusly, 1 byte (too alluded to as octet) long. To additionally simplify it to take a gander at and recall, the parallel numbers are modified over to decimal.

- Class A - the primary byte (8 pieces) is that the organization component and for this reason the extra 3 bytes (24 pieces) are have component (network. host. host. host). This magnificence is for an internetwork with modest variety of groups and high-quality variety of hosts consistent with networks
- Class B - the primary bytes (16 pieces) are the organization component and ultimately the extra 3 bytes are have parts (network. network. Host .host). This elegance overcomes any barrier among Class A and refinement C through accommodating medium wide variety of corporations with medium wide variety of hosts.

- **Class C** - The initial three bytes (24 pieces) are the organization part and subsequently the last byte (8 pieces) is that the host parts (network. network. network. host). This class accommodates monster number of organizations with less has per network.
- Class D – Used for multicasting
- Class E – Reserved addresses

## **2.2 Public And Private IP Address**

### **Public IP Address**

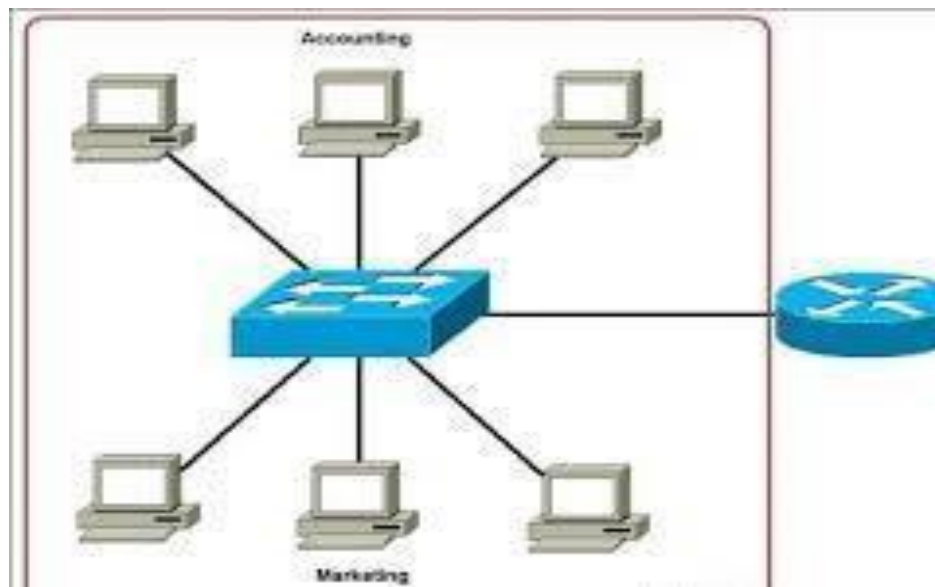
A public IP address is that the vicinity this is relegated to a PC framework to permit direct get entry to over the net A net employee, electronic mail employee and any employee framework at the double handy from the net are contender for a public IP deal with. A public IP address is universally special, and might simply be relegated to a specific gadget.

### **Private IP Address**

A private IP address is that the area location assigned thru Inter NIC to allow institutions to make their personal non-public organization. There are 3 IP blocks (1 grouping A, 1 B and 1 category C) stored for an man or woman use. The PCs, boxes and superior cells sitting behind your home, and on this way the computer frameworks interior institutions are normally appointed non-public IP addresses. A human beings institution printer residing for your homegrown is allotted an man or woman address all collectively that predominant your own circle of relatives can print for your community printer

## 2.3 Subnetting

Subnetting is that the act of separating an organization into at least two more modest organizations. It increments directing effectiveness, improves the security of the organization and decreases the size of the distributed space.

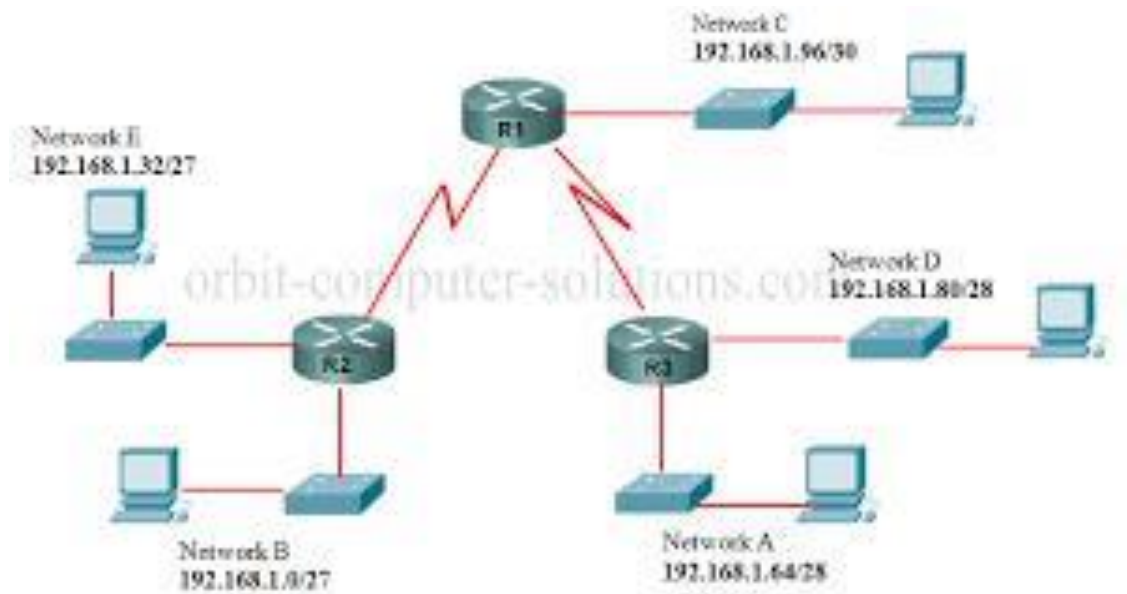


In the image above we have one tremendous organization: 192.168.1.0/24. All hosts at the organisation are interior an equal subnet, which has the subsequent burdens: A single broadcast domain – all hosts are interior a similar transmission space. A broadcast dispatched via way of means of any machine at the organisation are having the danger to be dealt with via way of means of all hosts, making numerous pointless traffic. Network security – every gadget can come to the inverse gadget on the organization, which can introduce security issues. For instance, a worker containing delicate data shouldn't be inside a comparable organization as client's workstations. Organizational problems – during an outsized organizations, unique offices are generally gathered into various subnets. For instance, you will be prepared to bunch all gadgets from the Accounting division inside a comparable subnet then, at that point offer admittance to delicate monetary information just to has from that subnet. The organization above could likewise be subnetted like this:

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## 2.4 Variable Length Subnet Masks (VLSM)

Variable Length Subnet Masking – VLSM – can be a manner that licenses community administrators to partitioned an IP address area into subnets of assorted sizes, divergent to important same-length Subnetting. Variable Length Subnet Cover (VLSM) amid how, implies



subnetting a subnet. For assist disentanglement, VLSM is to break IP addresses into subnets (numerous layers) and designate them as demonstrated by the solitary necessities of an organization. it'll indeed be known as a silly IP tending to. A classful tending to keeps a authoritative standard that has been illustrated to include up to IP address wastage.

The principal thing to appear to be out for is that the quantity of subnets and number of hosts. during this case, an ISP dispensed 192.168.1.0/24. Class C

IT = 120 host

Admin = 50 host

Accounts = 30 host

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WAN links We are going endeavor to subnet 192.168.1.0 /24 to sooth this network which permits a total number of 254 has i like to prescribe you get familiar in this table underneath. I never take off domestic without it!

Let's start with IT with 120 has, utilizing the table above:

We'll borrow 1 bits with the value of 128. Usually frequently the closest we get for IT 120 hosts.

IT = 192.168.1.0/25 Network address

TI = 192.168.1.1 Gateway address

192.168.1.2 To begin with usable address

191.168.1.126 Final usable address

Total address space 192.168.1.1 to 192.168.1.126 192,168.1.127 are attending to be the printed address keep in mind to arrange the essential and final address for the Arrange and Broadcast.

IT Subnet cover 255.255.255.128 we got the 128 by including the bit esteem from the cleared out to the worth we borrowed = 128 IT address will show up as in the event that this 192.168.1.0/25

### **Admin = 50 hosts**

Variable Length Subnet Masking – VLSM – may be a way that licenses network directors to partitioned an IP address location into subnets of various sizes, divergent to vital same-We'll borrow 2 bits with the value of 64. This once more is that the nearest we can get to the quantity of host needed.

Admin address will begin from 192.168.1.128 Network address

Now we can upload 128 to 64 we needed to borrow before =  $128 + 64 = 192$

Admin = 192.168.1.129 Gateway address

192.168.1.130 first usable IP Address

192.168.1.190 Last usable IP address

192.168.1.191 Broadcast address

period Subnetting. Variable Length Subnet Cover (VLSM) amid how, implies

Total address space 192.168.1.130 to 192.168.1.190 Subnet mask

255.255.255.192

Admin address will appear as if this 192.168.1.128/26

**Accounts = 30 hosts**

Account = 192.168.1.192 network address

We borrow 3 bits with the really well worth of 32. This the nearest we can go.

192.168.1.193 Gateway address

192.168.1.194 first usable address

192.168.1.222 Last usable address

192.168.1.223 Broadcast

Total host address area 192.168.1.194 to 192.168.1.222

Subnet masks 255.255.255.224

## CHAPTER 3:

### Network Media, Cabling and Topology

#### 3.1 Network media

Co-axial cable, fiber optical cable, UTP / STP cable or wireless media (such as radio wave, microwave, infrared wave, etc.) are usually used as channels to transfer data from one computer to another computer or from one network to another. Is used. These are called network media.



### **3.2 UTP Cable, Advantages and disadvantages**

(UTP - Unshielded Bent Combine) UTP cable can be a 100 ohm copper cable that comprises of 2 to 1800 unshielded turned sets included by an outside coat. They have no metallic shield. This makes the cable small in breadth but unprotected against electrical impedances

#### **Advantages**

- EMI, RFI, cross-talk almost free from effects.
- Cabling can be done easily by looking at the color code.
- Data can be transmit up to a distance of about 100 meters.
- Data transmission speed 100 Mbps.

#### **Disadvantages**

- Attenuation problem exists.
- Data cannot be transmit over long distances.
- EMF, RFI is not completely free from cross-talk effects.
- Although it is said that the data transmission speed of UTP cable is 100 Mbps but in reality it is available at 32-36 Mbps.

### **3.3 Cabling**

Cabling is the set of wires product of both copper or glass this is applied to place thru computer systems and different arrange additives to permit them to communicate, therefore forming a orchestrate of computer systems.

There are 2 types of cabling according to the color code.

- Straight Through Cabling
- Crossover Cabling

### **3.4 Straight through Cabling**

A straight through connect is a sort of bowed pair interface that is used in neighborhood to interface a PC to an association community like a switch. This sort of connection is in like manner sometimes called a fix interface and is an alternative rather than far off affiliations in which some thing like one PCs get entry to a transfer thru a far flung sign. On a directly thru connect, the stressed out pins match. Straight thru interface use one wiring popular: the two completes use T568A wiring popular or the two terminations use T568B wiring popular. The going with parent suggests a directly thru connection of which the two terminations are stressed out because the T568B popular.

- Straight through cable is usually used between two different devices.
  - Computer to switch.
  - Switch to printer.
  - Switch to router etc.

### 3.5 Crossover Cable

A crossover Ethernet join is a form of Ethernet interface used to interface figuring devices collectively directly. Rather than instantly through interface, the RJ45 crossover join makes use of special wiring standards: one cease makes use of the T568A wiring standard, and the furthest facet makes use of the T568B wiring standard. The inside wiring of Ethernet half breed joins pivots the impart and get signals. It is habitually used to relate two devices of a comparable sort: for instance two PCs (through association interface controller) or two changes to each other.

- Usually cross cable is used between two similar devices.
  - Computer to computer.
  - Switch to switch.
  - Router to router.
  - Router to computer etc.

## CHAPTER: 4

### Configuring Switches with VLANs

#### 4.1 About VLAN

All of the computers in a company are connected with a single switch to build up a Network known as Local Area Network (LAN). Every computer connected with this switch belongs to the same broadcast domain. On the other hand, VLAN is a modified technology where a single switch is used physically to connect the all computers but it divides the computers into LAN which means a single switch acts like a multiple LAN switch logically.

#### 4.2 The VLAN advantage

1. **Cost Reduction:** for non-VLAN network, multiple switch are required to make a subnet work or local area network but in the case of VLAN based network, a single switch is sufficient. So, it reduces the cost.
2. **Security:** Although computers are physically connected with a single switch but logically it divides the computers from different department into subnet work. Hence, to access into a computer from different department is quite impossible. As a result, it ensures the security of data.
3. **Broadcast domain:** Since it logically divides the connecting computers into subnet work in spite of connecting with a single switch, it also divides the broadcast domain. Finally, it ensures the better performance in network.

#### 4.3 VLAN ID

VLAN id is used to identify VLAN separately.

1. **Normal range VLAN:** in the case of normal range VLAN, the numerical value from 1 to 1005 is used as VLAN id. Among this value, 1 is constructed by default into switch which can't be changed and 1002 to 1005 VLAN id are used as Token

ring and FDDI VLAN. Normal range VLAN are usually used into small and simple type Network.

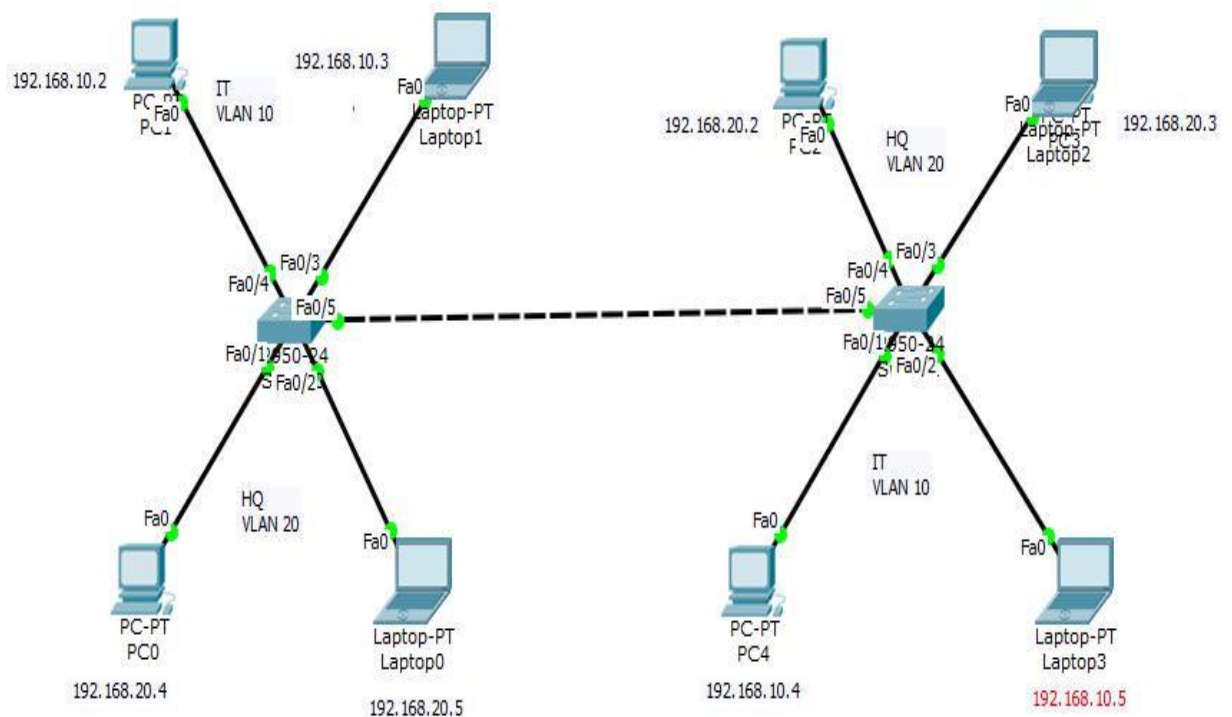
2. **Extended range VLAN:** In the case of extended range VLAN, the numerical value from 1006 to 4094 are used as a VLAN id. It is usually used for large range of network. In the case of extended range VLAN, VLAN configurations remain in the running configuration of switch.

#### 4.4 Switch port Mode

There are two ways to configure the switch port in VLAN based network.

1. **Access port:** It is a port through which only users connected known as access port.
2. **Trunk port:** It is a passage through which a data from more than two VLAN can pass known as trunk port. Trunk port is used to make a connection between two switch of VLAN based network.

#### 4.5 Configuring VLAN Basic Network



```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name IT
Switch(config-vlan)#exit
Switch(config)#
Switch(config)#vlan 20
Switch(config-vlan)#name HQ
Switch(config-vlan)#exit
Switch(config)#int fa0/1
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#int fa0/2
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#int fa0/3
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#int fa0/4
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#int fa0/5
Switch(config-if)#switchport mode trunk

Switch(config-if)#exit
Switch(config)#interface range fa0/1-4
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#exit
Switch(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up
|
```



```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name IT
Switch(config-vlan)#exit
Switch(config)#
Switch(config)#vlan 20
Switch(config-vlan)#name HQ
Switch(config-vlan)#exit
Switch(config)#int fa0/4
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#int fa0/3
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#int fa0/1
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#int fa0/2
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#int fa0/5
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#interface range fa0/1-4
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#exit
Switch(config)#
```

## **CHAPTER 5: CCTV and Security Camera:**

### **5.1 What is Security Camera and CCTV**

#### **Security Camera:**

Security cameras are regularly utilized in participation with observation gear, whether it be for burglar alerts or to screen individual arrive or a shop. Security cameras are webcams that are exclusively expecting to watch a certain area. They are habitually put in open areas to protect the more extensive masses by disheartening criminal conduct or to serve as prove in the event that a wrongdoing is recorded on video. CCTV cameras and IP cameras (advanced security cameras) are the two major sorts of proficient security cameras. They are an critical component of security frameworks and are accessible in a assortment of frame components with a assortment of capacities. In today's world, security cameras are regularly respected as the finest arrangement. Security camera frameworks are a incredible arrangement for any range since of the extra capacities they provide.

#### **What is CCTV?**

CCTV, or reconnaissance cameras, is the shortened form for closed-circuit tv. In differentiate to "usual" tv, which is dispersed to the common open, "closed-circuit" tv is transmitted to a little (closed) sum of shows. CCTV frameworks are as a rule prepared for observation and checking purposes. German creators concocted CCTV innovation in 1942 to watch the sending of V2 rockets. Imminent wrongdoers may be hindered by CCTV reconnaissance. When a wrongdoing is committed, video film can help police divisions in their examination and hence serve as prove in courts of law. Sound-related, infrared, and other sorts of sensors, when utilized in pair with CCTV, can inform authorities of unordinary occasions, such as a fire or discharges at a place.

CCTV cameras in businesses can distinguish and track in-house illicit movement. Video checking may be utilized in jails to anticipate rambles from carrying opiates and other booty to detainees. CCTV cameras can screen areas that are troublesome to get to, such as roofs.

### **5.2 Main Differences Between CCTV and Security Camera**

- I. CCTV stands for 'closed-circuit television' whereas security cameras are also called IP aka internet protocol cameras.
- II. CCTV cameras use coaxial wires whereas security cameras work using Power over Ethernet (POE).
- III. CCTV uses television to broadcast the telecast whereas security cameras broadcast live to the internet.
- IV. In a system, only a limited number of CCTVs can be equipped whereas an unlimited number of security cameras can be equipped.
- V. CCTV is less in price when compared to security cameras with IP modules.

### **5.3 CCTV vs Security Camera**

The differentiate between CCTV and security cameras is that CCTV stands for 'closed-circuit television' and is dazzling much stand still night vision perception cameras utilized for security reasons in spite of the fact that display day security cameras are much more progressed and controllable. The capacities advertised on security cameras that utilize the web convention (IP) are broad. Container, tilt and center are illustrations of how you'll move the IP security cameras around to obtain a picture of anything in a given region. CCTV stands for 'closed-circuit television' cameras. In 1942, Siemens AG built an test CCTV camera at Test Ground VII in Peenemunde, East Germany, to screen the launch of V-2 rockets, at that point after a few of a long time, the full-fledged fabricating of CCTV units overflowed the market. A CCTV camera is an auto-monitoring framework that employments hub wiring to send video recordings from connected cameras to a Vcr or DVR (Computerized Video Recorder). The framework is respected as the foremost proficient and cheap strategy of video observing since it employments classic radio recurrence (RF). A security camera or IP camera may be a much more feature-rich and solid alternative than the CCTV but there are a few impediments they bear as well. To exchange information to a show, modern security camera frameworks utilize a number of strategies. IP is the foremost frequently utilized method (web convention). This approach conveys the information through a neighborhood organize, permitting you to observe your cams in real-time from all over on the LAN. Since these cameras are associated to your system, they may be broadcast over the net and seen from anyplace. That suggests you'll screen these observation gadgets from anyplace with an online benefit. That's how the video framework may be gotten to by security checking destinations and the cops.

### **5.4 Conclusion**

For all of your security needs, video reconnaissance frameworks are accessible in a run of designs and styles. Activity cameras, for illustration, are utilized to control and administer activity stream over the city. CCTV and security cameras are as often as possible thought of as a security apparatus, but it moreover serves as a estimation and administration device.

t has demonstrated to be an critical instrument for companies managing with security, versatile journey control, swarm control, and other related issues. The objective remains the same: to supply a video security arrangement that's accessible 24 hours a day, seven days a week for any security require. You'll continuously select what's perfect for your needs, whether that's a domestic alert alternative or a checking framework for any private place.

## **CHAPTER 6: Network Video Recorder:**

### **6.1 What is NVR.**

A Network Video Recorder (NVR) can be a framework highlighting a software program application. This framework is deliberate to collect and shop the recordings captured through all cameras related to the arrange. NVR information those recordings on mass capability gadgets. Not in any respect like different capability gadgets, it highlights no unique video seize equipment, and this system is labored on a dedicated gadget. NVR is greater frequently than now no longer applied at the IP video reconnaissance frameworks, and they're capin a position of spilling video/audio facts on a single cable.

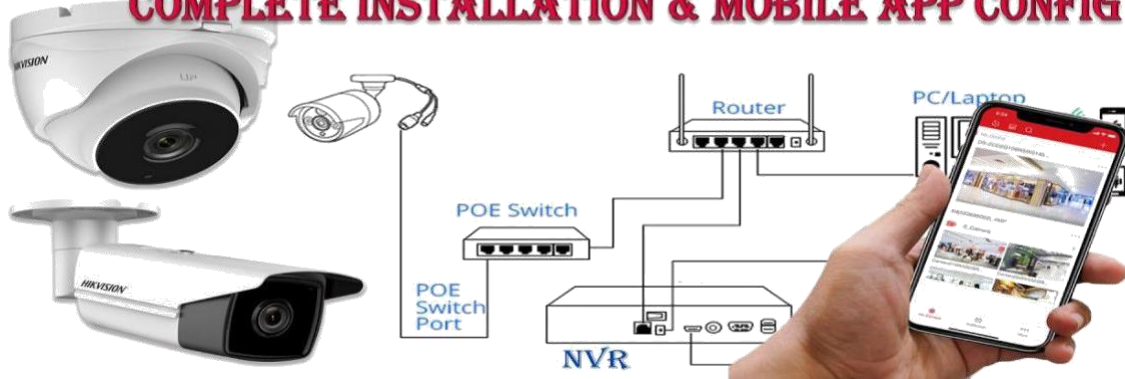
### **6.2 How to Configure NVR for IP Camera on a Network.**

Security of belongings and people is an crucial vital for any trade. Nowadays, agencies are contributing in exclusive forms of safety preparations to transport ahead their trade safety. Over the a protracted time, Organize Video Recorders (NVR) have advanced as one of the famous safety preparations. They are applied with IP cameras to development the safety. What makes them predominant? How to setup NVR for IP digital digicam at the organize? This put up examines the whole thing you need to understand round NVR and designing it for IP cameras.

### **6.3 A Brief Introduction to NVR Setup.**

NVR may be installation without or with a Control over Ethernet (PoE) or Non-PoE switch. PoE switches are applied with PoE constant cameras. The cameras are stopped into the PoE ports of NVR and that they require no character manage connectors to operate. Non-PoE fashions consist of no ports for preventing for cameras. Be that because it may, they consist of an in-built clear out out paintings that could clear out out the digital digicam at the identical network. The test consist of is moreover used by PoE fashions. For designing, the NVR for IP digital digicam at the arrange using PoE switch, you could require some additives and elaborations counting a manage cable, an Ethernet cable, SATA cables, protection screw, and a manage deliver cable for hard force establishment. Most manufacturers supply specialised assist amid the affiliation put together or they furthermore deliver an easy-to-recognize practise guide with the object and accessories. NVR is notably a good deal corresponding to automated video recorders (DVR). DVR is mostly applied with analog cameras, aleven though NVR is applied with IP Cameras. It

## **HIKVISION® NVR, IP CAMERAS & POE SWITCH COMPLETE INSTALLATION & MOBILE APP CONFIG**



### 6.4 How to Configure NVR for IP Camera with a PoE Switch.

You can locate Ethernet switches for IP surveillance in special configurations. The configuration begins offevolved with a hardware setup. Here is how you could continue with the hardware setup:

- Take the Ethernet cable from the router and join it behind NVR. Ensure that NVR is hooked up to the Internet.
- Use Ethernet cables to attach the IP cameras to PoE NVR. As the NVR is enabled with the PoE technology, it may effortlessly strength the IP cameras.
- Take an HDMI cable or a VGA cable to attach NVR and TV or monitor. Ensure which you use the proper enter to attach the TV or the monitor— HDMI 1, HDMI 2, or VGA.

When those steps are completed well then NVR and IP digital digicam connection may be effortlessly made. Software setup is the subsequent step withinside the configuration, and this may be effortlessly accomplished through following the coaching guide supplied through the manufacturer.

### 6.5 How to Configure NVR for IP Camera without PoE Switch.

As mentioned a while recently, NVR with out PoE transfer has no Ethernet ports at its returned board. It makes use of an out of doors manage connector or an out of doors PoE transfer to manipulate every IP digital digicam. Like NVR with a PoE transfer, the setup of NVR for IP digital digicam with out a POE transfer too begins offevolved with the device setup. Here is a way to continue:

- Take an Ethernet cable to position via the LAN harbour at the out of doors PoE transfer and the transfer. At that factor interface the router with the non-PoE NVR.
  
- Use Ethernet cables to companion all IP cameras to the PoE transfer RJ45 ports. The PoE transfer will supply electricity in addition to bolster video transmission.
  
- Use an HDMI cable or VGA cable to companion the display screen and the NVR. Ceaselessly make use of the best enter for making the association. Recording can be empowered because it had been while customers upload the cameras to NVR. This might be correctly achieved via way of means of alluding to the stairs in the training manual.

### **6.6 Why NVR must be connected to the Internet.**

NVR when connected to the Web offers easy farther get to of the recordings. It sends cautions or notices to customers mechanically and makes reinforcement of the recordings on cloud ability arrangements. Within the nonattendance of the Web, NVR will document and move the recordings, however they'll now no longer be remotely to be had to customers.

### **6.7 What is the maximum transmission distance of the camera from the NVR**

The most extreme transmission remove of the Ethernet cable interfacing the NVR and an IP digital digicam is one hundred meters. This eliminate restricted because of the weakening of signals. The Ethernet extender is applied to make bigger the transmission separate beyond one hundred meters.

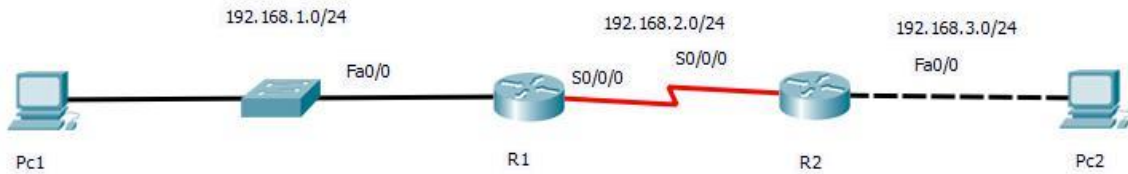
In improvement to all of the steps and facilities secured within the post, it's miles constantly fundamental to test the compatibility of NVR with the IP cameras at the Organize. Moreover, it's miles critical to assure that the NVR underpins the digital digicam resolutions when you consider that severa of them can't returned 12MP or 4K safety cameras. Along Side these, it's miles moreover critical to make use of great PoE switches for the connection. Version gives PoE media converters and switches in special configurations.

## CHAPTER 7

### Configuration

#### 7.1 Basic Router Configuration

##### Topology Diagram



##### Addressing Table

Device	Interface	IP Address	Subnet Mask	Def. Gateway
<b>R1</b>	<b>Fa0/0</b>	<b>192.168.1.1</b>	<b>255.255.255.0</b>	<b>N/A</b>
	<b>S0/0/0</b>	<b>192.168.2.1</b>	<b>255.255.255.0</b>	<b>N/A</b>
<b>R2</b>	<b>Fa0/0</b>	<b>192.168.3.1</b>	<b>255.255.255.0</b>	<b>N/A</b>
	<b>S0/0/0</b>	<b>192.168.2.2</b>	<b>255.255.255.0</b>	<b>N/A</b>
<b>PC1</b>	<b>N/A</b>	<b>192.168.1.10</b>	<b>255.255.255.0</b>	<b>192.168.1.1</b>
<b>PC2</b>	<b>N/A</b>	<b>192.168.3.10</b>	<b>255.255.255.0</b>	<b>192.168.3.1</b>

##### Step2: Enter privileged EXEC mode.

```
Router>enable
```

##### Step3: Enter global configuration mode.

```
Router>#configure terminal
```

Enter configuration commands, one per line. End with CTRL/Z

```
Router(config)#
```

**Step4: Configure the router name as R1.**

Enter the command hostname R1 at the prompt.

```
Router(config)#hostname R1
```

```
R1(config)#
```

**Step5: Disable DNS lookup.**

Disable DNS lookup with the no ip domain-lookup command.

```
R1(config)#no ip domain-lookup
```

```
R1(config)#
```

**Step6: Configure the EXEC mode password.**

Configure the EXEC mode password utilizing the enable mystery password command. Utilize class for the password.

```
R1(config)#enable secret class
```

```
R1(config)#
```

**Step7: Configure a message –of-the-day banner using the banner motd command.**

```
R1(config)#banner motd &
```

Enter TEXT message. End with the character.

```
R1(config)#
```

**Step8: Configure the console password on the router.**

Utilize DIU as the secret word. After you are wrapped up exit from line arrangement mode

```
.R1(config)#line console 0
```

```
R1(config)#password DIU
```

```
R1(config)#login
```

```
R1(config)#exit
```



**Step9: Configure the password for the virtual terminal lines.**

```
R1(config)#line vty 0 4
```

```
R1(config)#password DIU
```

```
R1(config)#login
```

```
R1(config)#exit
```

**Step10: Configure the FastEthernet0/0 interface.**

Configure the FastEthernet0/0 interface with the IP address 192.168.1.1/24

```
R1(config)#interface fastethernet 0/0
```

```
R1(config-if)#ip address 192.168.1.1 255.255.255.0
```

```
R1(config-if)#no shutdown
```

```
R1(config-if)#
```

Interface FastEthernet0/0, changed state to up

Line protocol on Interface FastEthernet0/0, change state to up

**Step11: Configure the Serial0/0/0 interface.**

Configure the Serial0/0/0 interface with the IP address 192.168.2.1/24

```
R1(config-if)#interface serial 0/0/0
```

```
R1(config-if)#ip address 192.168.2.1 255.255.255.0
```

```
R1(config-if)#no shutdown
```

```
R1(config-if)#
```

**Step12: Return to privileged EXEC mode.**

Use the end command to return to privileged EXEC mode.

```
R1(config-if)#end
```

```
R1(config-if)#
```

**Step13: Save the R1 configuration.**

Save the R1 configuration using the copy running- config startup-config command.

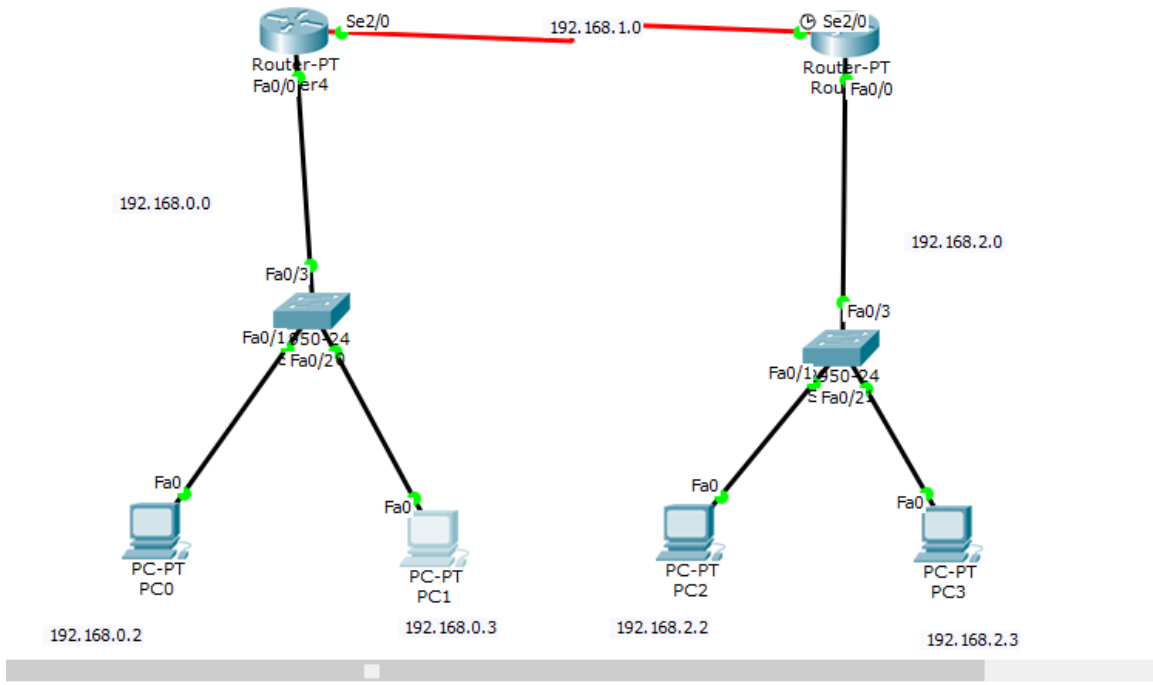
```
R1#copy running-config startup-config
```

```
R1#
```

**Step1: Configure the host pc1.**

Configure the host pc1 that's connected to R1 with an IP address of 192.168.1.10/24 and a default portal of 92.168.1.1.

### 7.3 RIP Routing Configuration



### Addressing Table

Device	Interface	IP Address	Subnet Mask	Def.Gateway
<b>Router-PT</b>	<b>Fa0/0</b>	<b>192.168.0.1</b>	<b>255.255.255.0</b>	<b>N/A</b>
	<b>Se2/0</b>	<b>192.168.1.1</b>	<b>255.255.255.0</b>	<b>N/A</b>
<b>PC0</b>	<b>N/A</b>	<b>192.168.0.2</b>	<b>255.255.255.0</b>	<b>192.168.0.1</b>
<b>PC1</b>	<b>N/A</b>	<b>192.168.0.3</b>	<b>255.255.255.0</b>	<b>192.168.0.1</b>

<b>PC2</b>	<b>N/A</b>	<b>192.168.2.2</b>	<b>255.255.255.0</b>	<b>192.168.2.1</b>
<b>PC3</b>	<b>N/A</b>	<b>192.168.2.3</b>	<b>255.255.255.0</b>	<b>192.168.2.1</b>

We have to be orchestrate IP address and other parameters on interface a few time as of late we may truly utilize at that point for directing. Interface mode is utilized to dole out IP address and other parameters. Interface mode can be gotten to from worldwide setup mode. Taking after commands are utilized to urge to the around the world course of action mode.

```
Router >en
```

```
Router>#
```

```
Router>conf t
```

```
Router(config)#
```

```
Router(config)#Network 192.168.1.0
```

```
Router(config)#Network 192.168.0.0
```

```
Router(config)#
```

From global configuration mode we are able enter in interface mode. From there ready to configure the interface. Taking after commands will allot IP address on FastEthernet0/0.

```
Router(config)#interface FastEthernet0/0
```

```
Router(config-if)#no shutdown
```

```
Router(config-if)#ip address 192.168.0.1 ,255.255.255.0
```

```
Router(config-if)#
```

```
Router(config-if)#exit
```

```
Router(config)#
```

Interface fastethernet 0/0 command is used to enter in interface mode.

Ip address 192.168.0.1 255.255.255.0 command will assign IP address to interface.

No shutdown command will bring the interface up.

Exit command is utilized to return in global configuration mode.

```
Router(config)#interface serial2/0
```

```
Router(config-if)#no shutdown
```

```
Router(config-if)#ip address 192.168.1.1 ,255.255.255.0
```

```
Router(config-if)#
```

```
Router(config-if)#exit
```

Router(config)#interface serial2/0 command is used to enter in interface mode.

Router(config-if)#ip address 192.168.1.1 ,255.255.255.0 command assigns IP address to interface. For serial line we usually use IP address from /24 subnet.

Router(config-if)#no shutdown command brings interface up.

Router(config-if)# exit command is utilized to return in global configuration mode.

```
Router(config-if)#router rip
```

```
Router(config-router)#network 192.168.0.0
```

```
Router(config-router)#network 192.168.1.0
```

```
Router(config-router)#network 192.168.2.0
```

```
Router(config-router)#
```

Router RIP command tell router to enable the RIP routing protocol.

Network command permits us to indicate the systems which we need to promote. We as it were have to be indicate the systems which are straightforwardly associated with the router.

## **CHAPTER 8:**

### **FUTURE OPPERTUNITY & CONCLUTION**

#### **8.1 Conclusion of Internship**

Nowadays, Bangladesh is developing dramatically and growing them in the field of modern Technology. Bangladesh Government has also taken some major step and making a vision in the IT field. For this, to implement dreams into reality, the Government of Bangladesh has developed industries in the Information Technology (IT) sector and also building up a training center to trained the youth to make them enthusiasm in this field. Government has named this project as “Digital Bangladesh”.

For this, the computer science students will be given the most prior to head them first. For the science students, Internship is the place where a student can implement their theoretical knowledge into practical before entering into job market and I fell thankful to Excel Ethnologies Ltd” to give me chance to work with them which book knowledge is mandatory along with the practical knowledge because it will make them more perfect. is contributing a great role to make Bangladesh as Digital country. I have learned a lot of experience in the field of “Networking” and I am pretty sure that it will help me to touch the next level of my dream.

#### **8.2 Future Opportunity for Career**

In Networking, I have a great future not only in Bangladesh but also outside of Bangladesh and the demand of this subject is increasing day by day. There are lot of company, industries in Bangladesh who are hiring the Networking expert and I strongly believe that the knowledge I have gained during this internship is sufficient to meet up with the every challenges.

## **APPENDIX**

### **Introduction:**

Internship is the platform of learning, implementing the theories of the study and familiarize with the work environment before entering into the job market. University students often choose this internship as their initial stage of their career. This is the real work environment where the students are involved with a project and apply their theoretical knowledge. This is the opportunities for every student to make them perfect and to make their base strong for solving the practical problems. The things which I have learnt throughout my internship are given below.

### **Discipline:**

Throughout my internship, I have learnt to be a discipline person at workplace which is important for my future career. In the workplace, a person obviously has to follow some rules and regulation and maintaining the well behavior towards the team members and employee.

### **Punctuality:**

In my entire internship, I have learnt to be punctual in life if I want to achieve something special. I have learnt how to maintain the work hours and the office and submit the work project before the deadline. For me, I think it is very important things that I have learnt.

### **Team work:**

Team work means to work with a group member as a whole and it is very important tools for all types of work. No work can be done perfectly without having a great team member. The benefits to work with a team member is to understand everyone conception, idea about a specific task and come to the accurate conclusion of that task. It gives me the good lesson.

### **Understanding Responsibilities:**

All types of work have a responsibilities and you have to meet with this but there is no chance to avoid my responsibilities. I have learnt this throughout my internship. The project given by the authority must complete before the deadline in a responsible way. This is the important things that I have learnt during my internship.

## **APPENDIX A**

### **COMPANY INFORMATION**

Excel Technologies Ltd. could be a leading ICT company in Bangladesh that has built up a solid toehold in this competitive advertise. Since the initiation within the year 1999, the company is attempting within the most down to business way to supply brilliance in items and administrations to its clients that suits their intrigued superbly. With the gigantic run of items from internationally presumed equipment makes the company emphasize on giving clients with provoke, successful and advanced items and administrations that's uncommonly outlined for them.

Today, Excel Technologies Ltd has emerged as a respected ICT company by upholding high ideals and values, solemn integrity & honesty, excellence, service and innovation in all spheres of the company's activities building on the already established foundation.

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Excel Technologies Limited

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Banani Dhaka1208.

Phone:



## REFERENCES

### References

- [1] Learn about ETL, available at <<https://www.excelbd.com/>>, last accessed on 18/09/2021 at 9:30 AM
- [2] Learn about CCTV Advantage available at <<<https://askanydifference.com/difference-between-cctv-and-security-camera-with/>>>, last accessed on 12/11/2021 at 9:45PM.
- [3] Learn about NVR ip camera available at <<<https://www.versitron.com/blog/how-to-configure-nvr-for-ip-camera-on-a-network/>>>, last accessed on 17/11/2021 at 11PM
- [4] Learn about basic router configuration available at <<[https://courses.cs.ut.ee/LTAT.06.004/2020\\_spring/uploads/Main/lab03\\_1\\_routerConf.pdf](https://courses.cs.ut.ee/LTAT.06.004/2020_spring/uploads/Main/lab03_1_routerConf.pdf)>>, last accessed on 30/11/2021 at 12:45 AM



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