

**DYNAMIC NETWORK CONFIGURATION FOR SMALL ORGANIZATION USING
PACKET TRACER**

BY

Md. Sourov Hossen

ID-213-15-4326

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

Supervised By

Mr. Narayan Ranjan Chakraborty

Associate Professor and Associate Head

Department of CSE

Daffodil International University

Co-Supervised By

Md. Abbas Ali Khan

Assistant professor

Department of CSE

Daffodil International University



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APPROVAL

This Internship titled “**INTERNSHIP ON COMPUTER NETWORKING (CCNA)**”, submitted by “**Md. Sourov Hossen**” and ID:213-15-4326 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 “**16, July, 2024**”

BOARD OF EXAMINERS



Dr. Sheak Rashed Haider Noori

Professor and Head

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Daffodil International University

Chairman



.....
Dr. Md. Zahid Hasan

Associate Professor

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Daffodil International University

Internal Examiner



.....
Mr. Abdus Sattar

Assistant Professor

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Daffodil International University

Internal Examiner



.....
Dr. Md. Manowarul Islam

Associate Professor

Department of Computer Science and Engineering

Jagannath University

External Examiner

DECLARATION

I hereby make a declaration that this internship has been finished by me under the foreperson of **Mr. Narayan Ranjan Chakraborty, Associate Professor and Associate Head, Department of CSE Daffodil International University**. I also make a declaration that neither this internship nor any fragment of this internship has been submitted somewhere else for an award of any degree.

Supervised by:



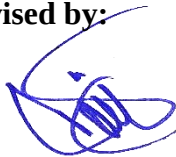
Mr. Narayan Ranjan Chakraborty

Associate Professor and Associate Head

Department of CSE

Daffodil International University

Co-Supervised by:



Md. Abbas Ali Khan

Assistant professor

Department of CSE

Daffodil International University

Submitted by:



Md. Sourov Hossen

ID-213-15-4326

Department of CSE

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ABSTRACT

I would like to present a report on my internship experience, where I worked as an Organize Engineer. During my internship, my primary focus was to enhance my organizational skills and learn about networking, IP addressing, and different types of protocols. Nowadays, many network engineers work with advanced technologies, and I wanted to acquire a knowledge of about the differences between protocols of routing and switching, as well as the IPv4(Internet Protocol version-4) and the upcoming IPv6(Internet Protocol version-6). I also wanted understand how these protocols work in actual projects. My ultimate goal is to pursue a career in network engineering. Working at Atova Technology provided me with immense experience for my future career. Dealing with actual client issues was another key aspect of gaining valuable experience. This report provides a detailed account of the certain project I worked on during my four-month internship.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Computers are the most troublesome calling in IT commerce. The basic fundamental work of computers organizing is interface individuals so they can communicate. Numerous organizing is presently enlisting organize specialists to establish or rehabilitation their networks. The computer industry is a steadily come into existence and convoluted meadow that can offer an amazing career convenience for those studying it. CCNA is supreme entrance in computer organization designing. Organize professionals, chairmen, network back engineers, and organize masters all require to pick up CCNA. These things widely used and safe. The lion's share of organizing corporations all through the world are looking for CCNA-valid experts. This capability not as it were enhancing, proficient progression openings, however it moreover permits candidates for multistorey reward computations. By winning the CCNA parchment, professionals not as it were progress their organizing capacities and information, but they too increment their reparation probable.

1.2 Motivation:

I have assembled a part of hypothetical information as science of computer and designing students. Be that as it may, I am not a master in this division. Commonsense information is more pivotal in genuine life than scholarly information. To move forward my abilities, I require more viable awareness. Which will assist me in my job.', as well as the following sentence: 'The outcomes of this study will be useful for developing new approaches in my profession.' This is one area that interests me and I intend to become efficient and effective organizer once the right structures are put in place. The purpose of this internship is to know the functioning of the IT firms and to gain networking skill. Sometime recently beginning my work, I was fair an understudy who needed to collect substance modern. These grounding decide permit me to make strides in my aptitudes, get effective encounter, and give me with a great juncture to progress my lifework.

1.3 Internship Objectives:

Without adequate and satisfactory capacities, it is very troublesome to get strong work in the current competitive work advertise. Grounding is fundamental for our proficient victory futurity.

It's a necessity for ability change. I finished my grounding situated on the CCNA parchment. My grounding's essential reason is to offer assistance me developing as an arrangement design. This externship has effectual me a part of unused things that will offer assistance me shaping my lifework.

1.4 Introduction to the Company

In turn, Atova Technology Ltd. receives an alert for the entire preparing program. It also bargains with hardware, which partitions gadgets and programming, and is one of the chief ICT distribution houses in Bangladesh. This institute holds accreditation for some of the many organizations. Atova Technology Ltd. 's targeted employees' of notable professionals offer great performance of the company. Atova Technology Ltd is a customer benefit and regulation grouping which has a rather tall degree of toughness. For making us understand this, out of control dreams can be made real by our specialized team. otherwise, irrespective of their age and rank, they have kicked the bucket explanatory in the ranges such as computer organizing, programming, planning equipment/planning instruments and among the other things.

1.5 Report Layout

I have mentioned the conceptualization of my work here – and from the previous 4 months I studied the concept which is the actual basis of my work. Chapter 1, I have attempted to define the nature of externship, the function of grounding and the reasons why the externship is so important. In Chapter 2, I explained the organization in which I finished my basic training as a second chapter to provide a brief overview of this company. I also clarified with examples to show the type of work that is being done. In 'Chapter 4 and chapter 5' I think I had to tone extract and end. Inserts his previous work at their place and includes some examples of that work.

CHAPTER 2

ORGANIZATION

2.1 Introduction

The whole preparing arrangement is managed beneath Atova Innovation Ltd. They bargain with apparatus, organize gadgets, and computer program dispensation associations. Atova Innovation Ltd. is an accredited wholesaler for a number of famous administrations, counting Cisco, Micro-Tik, Fortinet, to title a few. This institute personnel include well specialized, profoundly talented, and sophisticated specialists. Atova Innovation Ltd. is a purchaser Benefit and regulation administration and this kind of organization rests on a tall stage of strictness. Our specialized squad is able past your most out of control dreams. they have already illustrated their capabilities in ranges such as organizing, squaring away, plan, equipment, and collaborating apparatuses.

2.2 Product and Market Situation

Atova Technology Ltd. is a type of business firm offering services on computer and communication technologies. Here it is also active in the provision of a number of benefits to customers. Located in Bangladesh, This institute is the biggest provider of collaborating equipment. They are in search of the best hot services corporation master plan that would enable them to meet their customer needs. Atova Technology Ltd. also provides number of related IT solutions and benefits.

These are shows below:

- Demand for a wide range of networking products
- Network support in emergency situations
- Computer security solutions
- All types of computer peripherals
- All types of open-source application solutions
- CCTV surveillance, etc.

2.3 Target Group

Through speedy globalization of the global, each company and organization has to uplift laptop and era expertise with a view to sustain its competitiveness and excellence. Today I will present to you a combination of ability sets which are most demanded in the contemporary business world by Studio Mason Limited. To achieve the above objectives Studio Mason Limited, need to undertake the right plan in the future. Undefined

- Marketing of Solution to the business prospectus in Enterprise and Corporate business division.
- ICT System Integration that closely aligns with the specifications of the corporates relevant to the concern.
- It is also recognized that distribution of ICT products was one of the key factors of success.

2.4 SWOT Analysis

SWOT inspection is more beneficial, as a tool that tells more about strengths and weaknesses. I will make use of it in every company for improved evaluation of its or their adequacy and demerits, strength and weaknesses, chances, and imminences. firepower.

Strength:

- It is relatively costly and difficult to enter the market once the firm has established itself.
- He only managed few vehicles as an owner operator and it involves experience and expertise.

Faintness:

- Determined malleability in deeming.
- Challengers can propose immediately.

2.5 Organizational Structure

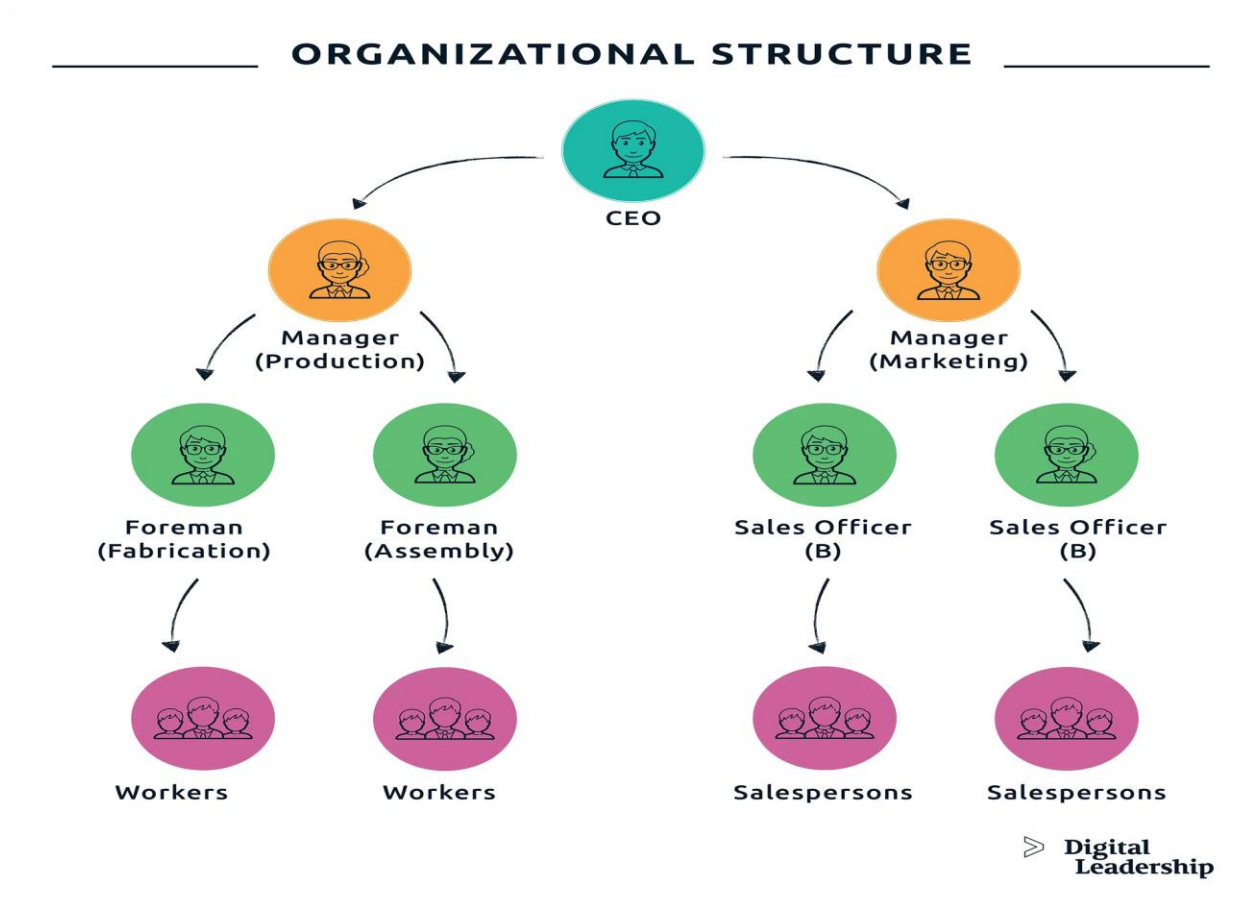


Figure 2.1: Organizational Structure.

CHAPTER 3

DAILY TASK AND ACTIVITIES

3.1 Introduction to the OSI Model

The Open System Interconnection (OSI) demonstrate of reference is an information transmission framework that facilitates the understanding of the reference interconnection between any two planned frameworks. It breaks down the communication forms into seven distinct layers. Every one of the layers has its very own specific responsibilities to support the layer above it as well as render its administrations to the layer under it. The three most diminished layers focus on conveying action through the official to a finish sequential arrangement. In the conclusion framework, the best four layers are used to bring the total procedure in the context. In this white paper you will be presented with information on each of the layers described above and their relations and roles. It will certainly offer you with a diagram of the setup prepare, which can at that opportunity ess these unofficial layers too. In conclusion, this paper will explain how it is possible to compare the hypothetical OSI with a system for dissecting the fine aspects of computer networking. Since the concept of organizing often involves discussion of ‘overlay’, this paper will consider and analyze the utilitarian TCP/IP model. While TCP/IP has been used for arrange communications some time recently the appreciation of the OSI exhibit, it carries out the same acceptations and features in an unforeseen layered procedure course of action. While the contemporary Internet is not based on OSI, it was developed based on the optimal four-layered TCP/IP model. However, up to this date, OSI 7-layer model cannot be left out of the equation, particularly because it has characteristics of modeling and describing network conditions and is ideal in facilitating and defining network conditions. It was developed in 1983 by the representatives of the principal computer and telecommunication companies as the conceptual framework for the principal reference model recommended by the international standards organization (ISO) that endorsed it in 1984.

3.1.1 An Overview of the OSI Model

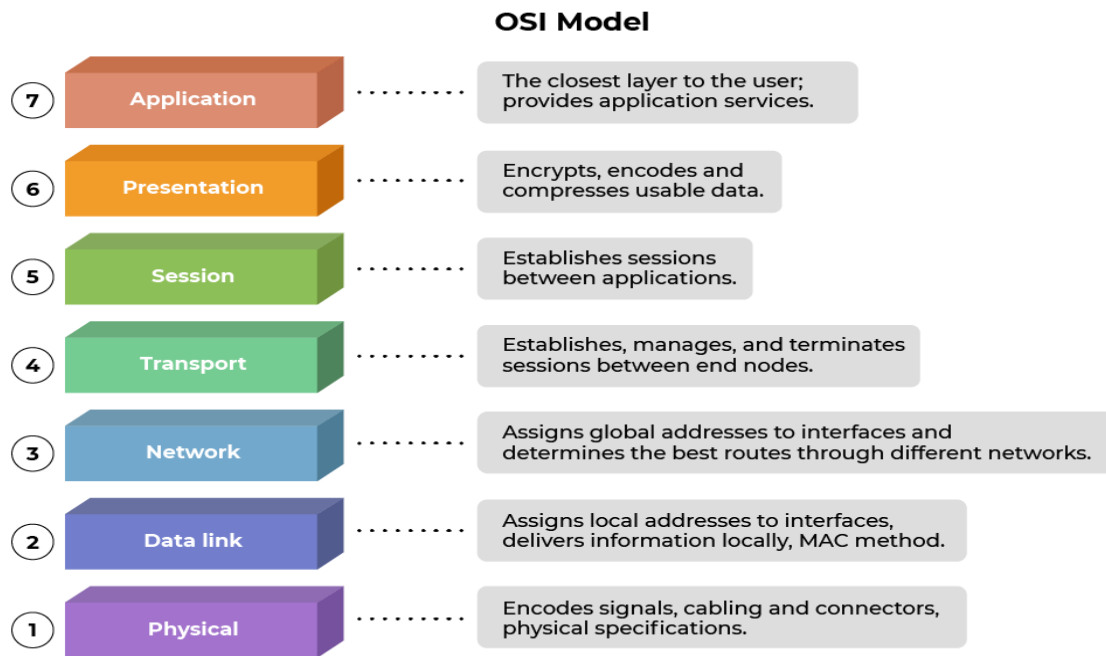


Figure 3.1: OSI Model.

3.2 TCP/IP Model

Every time we have to send something over the network using the TCP/IP Model, the TCP/IP Model breaks the message into packets at sender end and the same packets need to be reconstructed from the packet at the receiver end to form the same message, so this is done in order to maintain the integrity of the message. TCP/IP show sub divides this information in a four-tier manner in a way that the information first enters this tier in one orientation and in a switch tier orientation to get reoriented in the same manner at the receiver's end. For more, it is possible to refer TCP/IP in Computer Organizing. From a purely technical point of view the main activity of TCP/IP is to convey data of one computer to another piece of equipment. The need for this process is based on one basic requirement that was presented in the communication model, and this is that the receiver should receive data which is provided by the sender.

3.2.1 Layers of TCP/IP Model

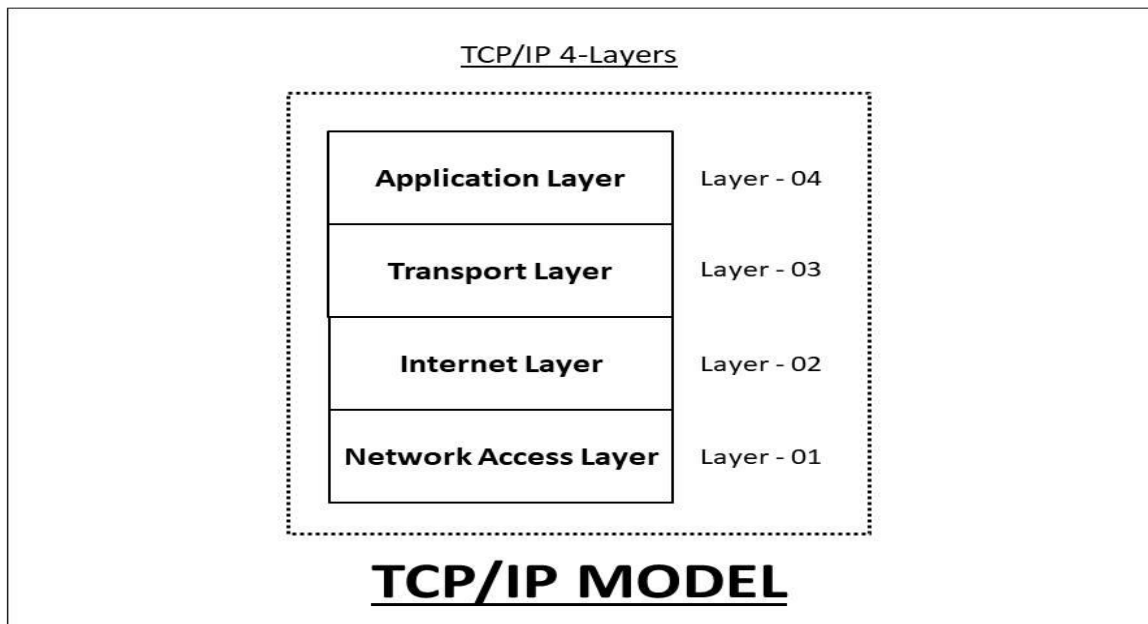


Figure 3.2: TCP/IP Model.

3.3 OSI and TCP/IP MODELS Architecture with their Layers

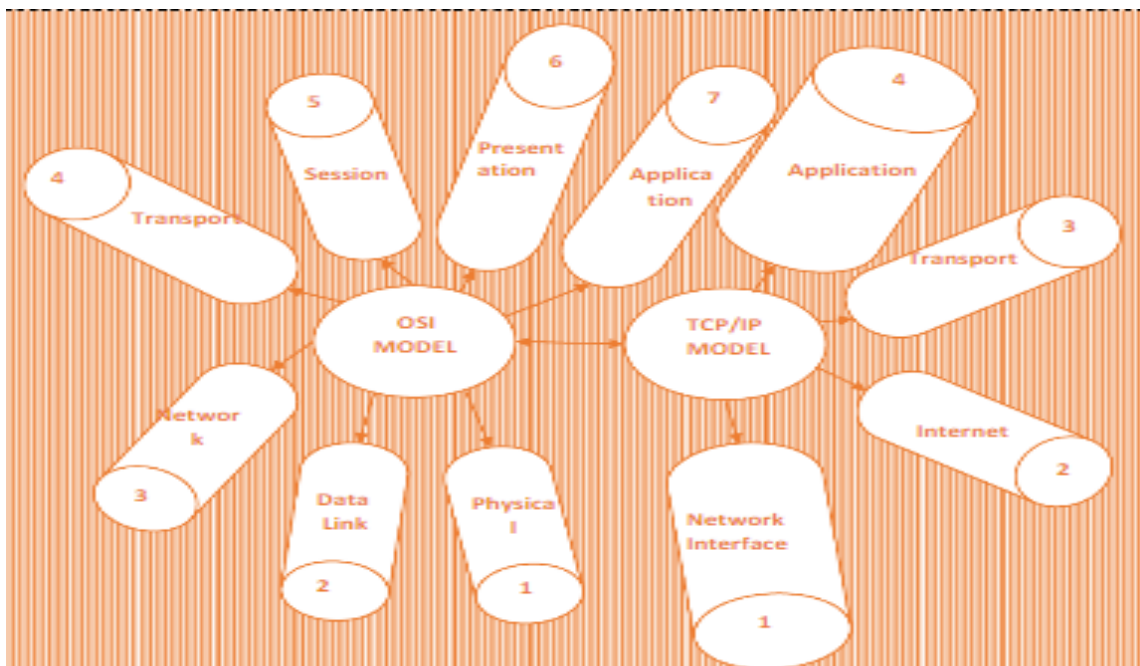


Figure 3.3: OSI and TCP/IP MODELS Architecture with their Layers.

3.3.1 Differences between OSI Model and TCP/IP Model

Parameters	OSI Model	TCP/IP Model
Full Form	OSI stands for Open Systems Interconnection.	TCP/IP stands for Transmission Control Protocol/Internet Protocol.
Layers	It has 7 layers.	It has 4 layers.
Usage	It is low usage.	It is more used.
Approach	It is vertically approached.	It is horizontally approached.
Delivery	Delivery of the package is guaranteed in OSI Model.	Delivery of the package is not guaranteed in TCP/IP Model.
Replacement	Replacement of tools and changes can easily be done in this model.	Replacing the tools is not easy as it is in OSI Model.
Reliability	It is less reliable than TCP/IP Model.	It is more reliable than OSI Model.

3.4 IP Addressing

There are five different classes of networks:

- Class A
- Class B
- Class C
- Class D
- Class E

Class D is reserved for multicasting and Class E is used for research purpose.

Table 1: Table one shows the IP address ranges.

For class- A	For class-B	For class- C	For class- D	For class-E
0-128	129-191	192-223	224-239	240-255

For class A, the network bits are eight and the host bit are twenty-four.

Table 2: Network bit and host bit for class A.

Octette-1(eight bits)	Octette-2(eight bits)	Octette-3(eight bits)	Octette-4(eight bits)
NNNNNNNN	HHHHHHHH	HHHHHHHH	HHHHHHHH

For class B, the network bits are sixteen and the host bits are sixteen.

Table 3: Network bit and host bit for class B.

Octette-1(eight bits)	Octette-2(eight bits)	Octette-3(eight bits)	Octette-4(eight bits)
NNNNNNNN	NNNNNNNN	HHHHHHHH	HHHHHHHH

Table 4: Network bit and host bit for class C.

Octette-1(eight bits)	Octette-2(eight bits)	Octette-3(eight bits)	Octette-4(eight bits)
NNNNNNNN	NNNNNNNN	NNNNNNNN	HHHHHHHH

3.4.1 Public IP Address

A base deployment's primary IP address that is used to assign an organization out-of-doors. The publicized IP address is in fact distributed among the Internet Service Provider So examining the entire OSI model from the physical layer up to the application layer is possible to identify exactly how this occurs, let us instead consider the situation on a much simpler level So essentially the process of acquiring an IP address is the following Publicized IP address is primarily practiced among the Internet Service Provider Yard: All the IP Addresses that are assigned except private are public IP addresses.

3.4.2 Private IP Address

A private IP address refers to an IP address that is used to connect internally to an institute. By the utilization of Private IP records, or data may be transmitted or received within a comparable institute. Range:

10.0.0.0 – 10.255.255.255

172.16.0.0 – 172.31.255.255

192.168.0.0 – 192.168.255.255

3.5 Subnetting

Subnetting is the procedure utilized to allocate a singular genuine undertaking in to different more noteworthy median viable subnetworks. An IP address with incorporates an undertaking strength a have part. Subnets are pondering among enduring parcels from the IP address have parcel and exploiting this fraction to allocate different more prominent unassuming subnetworks in the to begin with organize. Sub organize licenses an affiliation to include sub-networks absent the requirement to accumulate another organize number among the Internet Service Provider. Subnetting helps with lessening the institute activity and stows away arrange complexity. Sub organizes is elemental when a singular affiliation number imposed above varied segments of a LAN.

Example: The following figure 3.4 shows an example of subnetting.

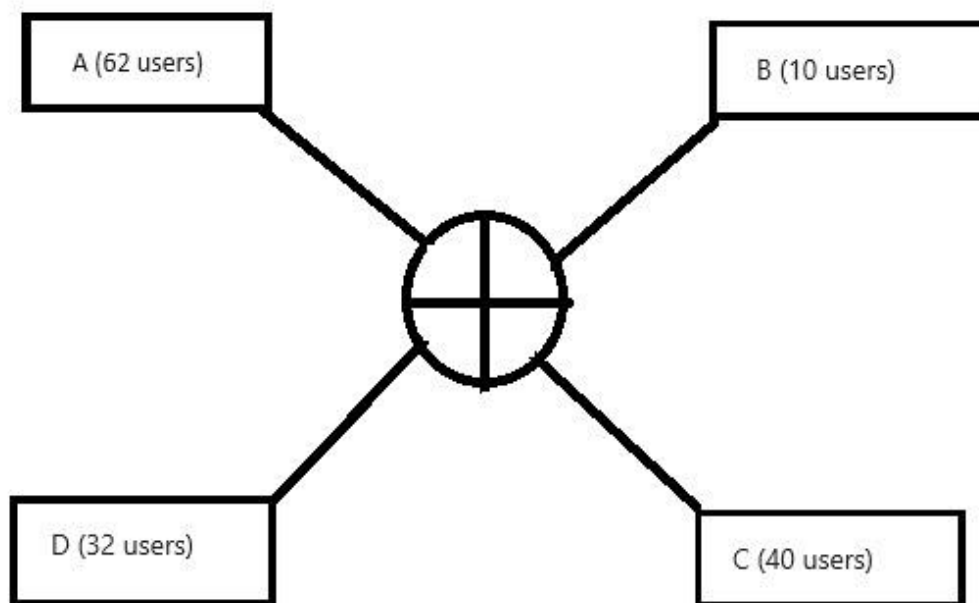


Figure 3.4: Example of Subnetting.

3.6 Twisted Pair Cable

Twisted Pair Cable is a type of cabling is used for telephone intersections and very modern Ethernet systems. Sets of two or three joins make a equator that can pass on data. The lays are bowed to donate affirmation and against discourse, the upsetting influence given by quilting lays.

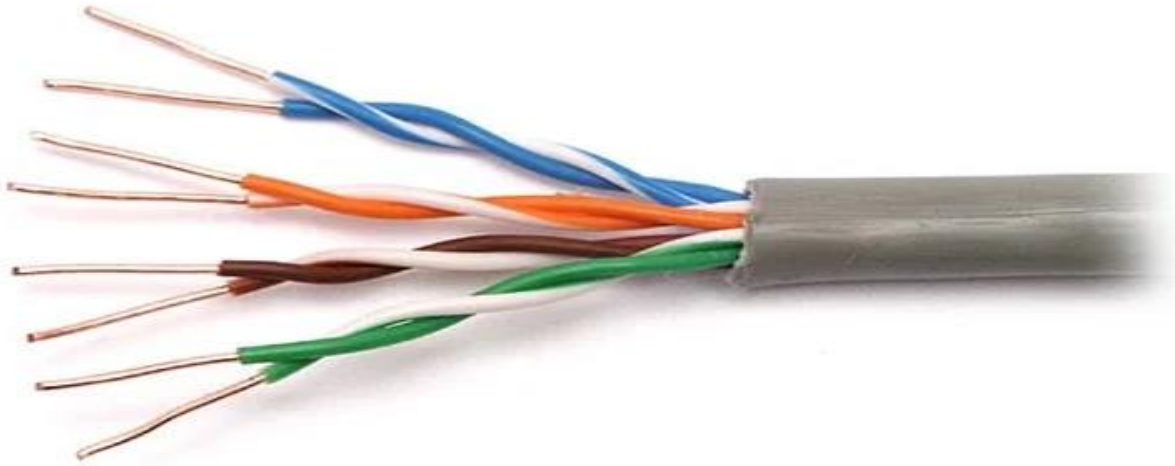


Figure 3.5: Twisted Pair Cable.

When thrilling influx arrives among a queue, it creates a small band tempting hill beside the electrical queue. Just what two joins in an electrical circuit as far as is fixed near to each other, their charming areas are the distinct opposite of each other. thus, the two attractive fields take the place of each other. They, too, negate any tempting fields outside of it. Such an alteration can be provided by twisting the cables of this scrape-off collision. Combining this with wrestling the cables, interface originators can bring forth re-securing to queue lays inside the affiliation media cost.

3.7 UTP Cable

UTP string is something that is between copper and foil string produced from coalitions of cables. UTP cord is used in a label of webbings namely. Each of the disparate constable wires in UTP link is enveloped by a protecting material. Subhead four: Riser Rated Cables VII When used in a riser rated system, UTP links have a guarding material for each copper cable. Further to the wires in each bracket are looped around each other.

Figure 3.6 shows UTP Cable:



Figure 3.6: UTP Cable.

In the case of UTP cable, no attempt is made to separate the transmission lines but depends on what is obtainable simply from the twisting of the cable lines to minimize EMI and RFI effects which will otherwise degrade the signals transmitted on those particular twisted line pairs. In the cable, UTP should be able to give the correct information as to the range or the number of repeats allowed.

3.8 STP Cable

STP string combines the accouterments of safeguarding, tossing, and channel twirling. A metallic antipode encloses each couple of cables. The four preparations of channels also however are enclosed within a total silvery shift or antithesis, normally being 150-ohm juncture. As indicated for use in Ethernet internet bases, STP eradicates electrical interference both within the connection (Noise) and from vane desires of the relation. STP is normally offered with the STP material joint which is built surprisingly for specific STP chain.

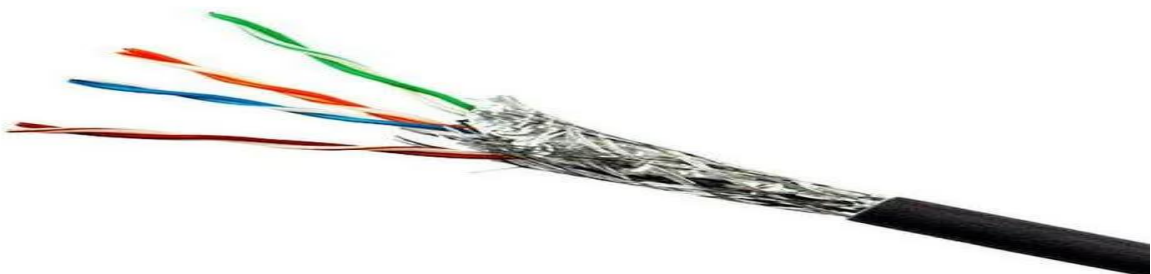


Figure 3.7: STP Cable.

3.9 Fiber Optic Cable

A fiber optical wire is a petty sort of a fiber whereby strands of filamentary glass are enclosed in a casing; organization hyperlink. They are meant for high level mass distance, best records of performance, and media management. It started focusing on stressed hype links that are far better to fiber optic cables in terms of higher carrying capacities and sending records over far distances. With reference to the three internet-based aspects of our world namely web, virtual television and contact frame through optic fiber cable there would be a number of aspects.



Figure 3.8: Fiber Optic Cable.

3.10 Routing Protocol Introduction

Routing is essentially the movement of data from a specific network or one particular point to another. Every time the packet travels on the router and gets to a location on the router, the location IP address is sort of searched from the header of the packet and compared with the routing protocol. One method of transferring a bundle to another location is called conveying. In primitive laterally, a switch has to first decipher the destination address of a packet and then determine which of its interface the traffic should be forwarded out of. When a bundle enters the goal on a switch, the intention tends to scan to look for the goal IP address located in the header part of the goal and look it up in the directing table. The direction table within the switch RAM on the pc tells the switch on which interface the packet should exit in order to get to the target.

There are three ways to control routing decisions on your router:

- Static Routing Protocol
- Default Routing Protocol
- Dynamic Routing Protocol

3.11 Static Routing Protocol

Static routing is the routing that does not change automatically in its table and may be changed by router administrator only.

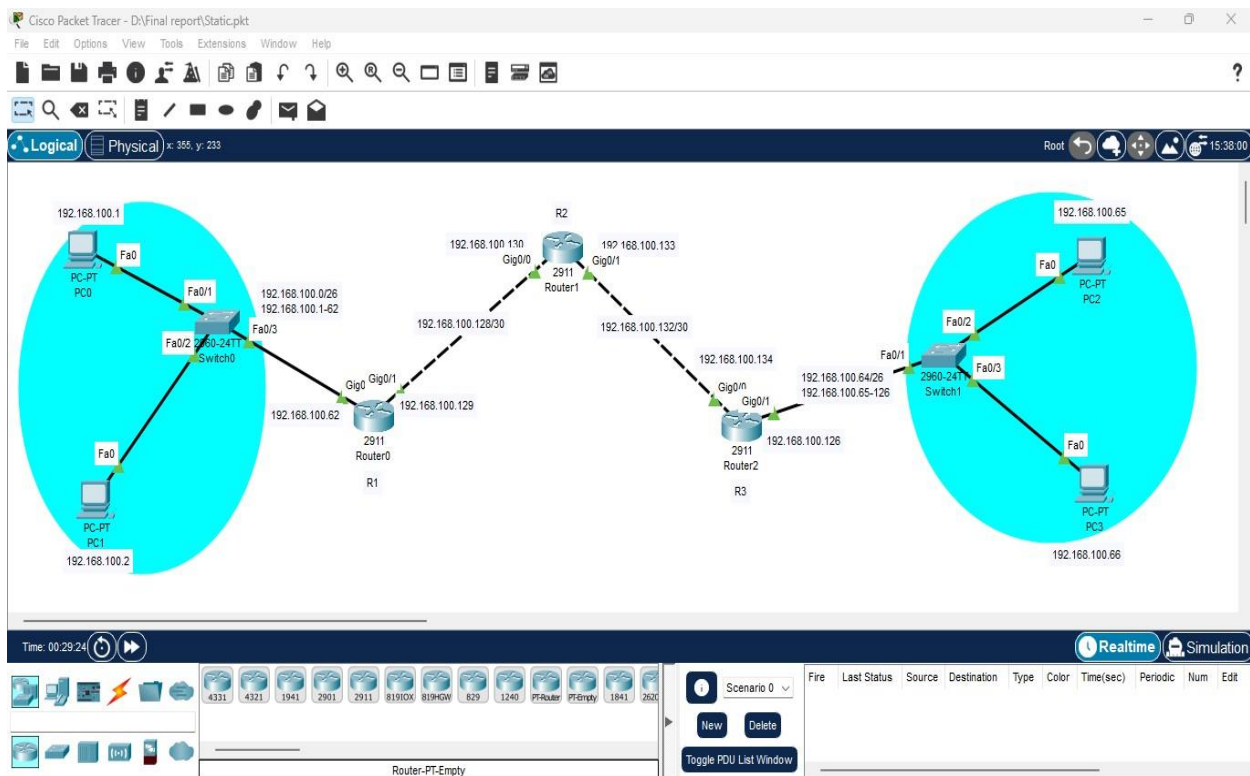


Figure 3.9: Static Routing.

Static routing involves to routing that is determined from a manually configured routing table, instead of routing information protocol. Unlike dynamic routing where routers establish a communication between each other or two different networks, static routes are set up by a static method added by a network administrator to the routing table though this is not always the case. Static routing is the routing that does not change automatically in its table and may be changed by router administrator only. In case of network also if few routers are very close then static routing is better. As a result, bandwidth consumption will be less and the network will also be secure.

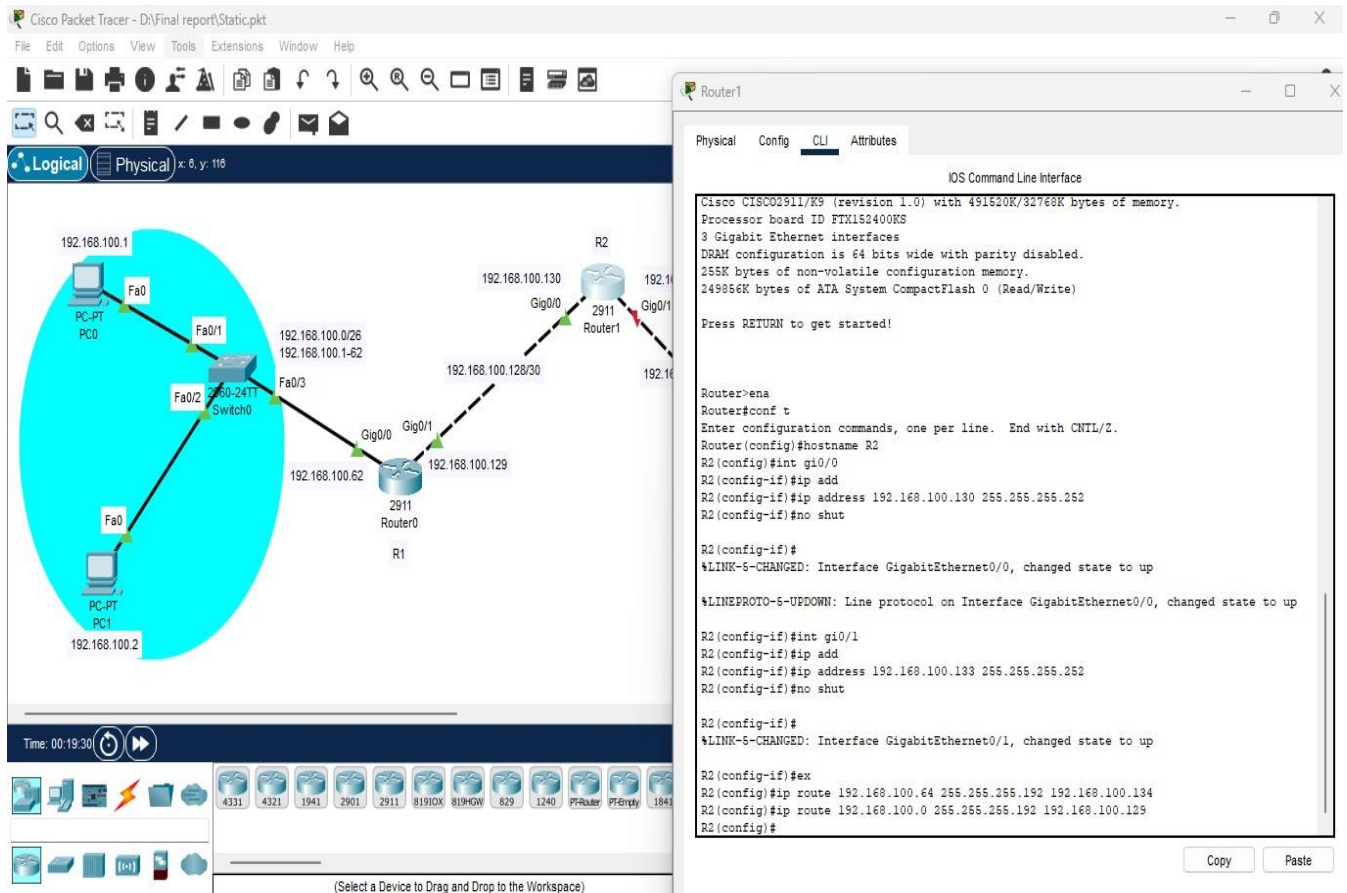


Figure 3.11: Static Routing Router 2 configuration.

To configure Router 2, first go to the command line interface and enable the router. Then take global configuration mode through configure terminal. Then select the specific interface to be configured. Then set the specific IP address and give no shutdown, only then the interface will be up. Then the task is to give the IP route, which is shown figure 3.11.

In case of network too, if few routers are very close then static routing is better. As a result, bandwidth consumption will be less and the network will also be secure. Routing Efficiency: A router works very fast in static routing. As a result, network bandwidth is consumed less. Security: You can control which way your data is transported by manually configuring some routes. Maintenance: If the route on the network changes, it needs to be changed manually. While this is possible for small networks, it becomes difficult for large networks. Accuracy: There is a high chance of error as routes have to be configured manually.

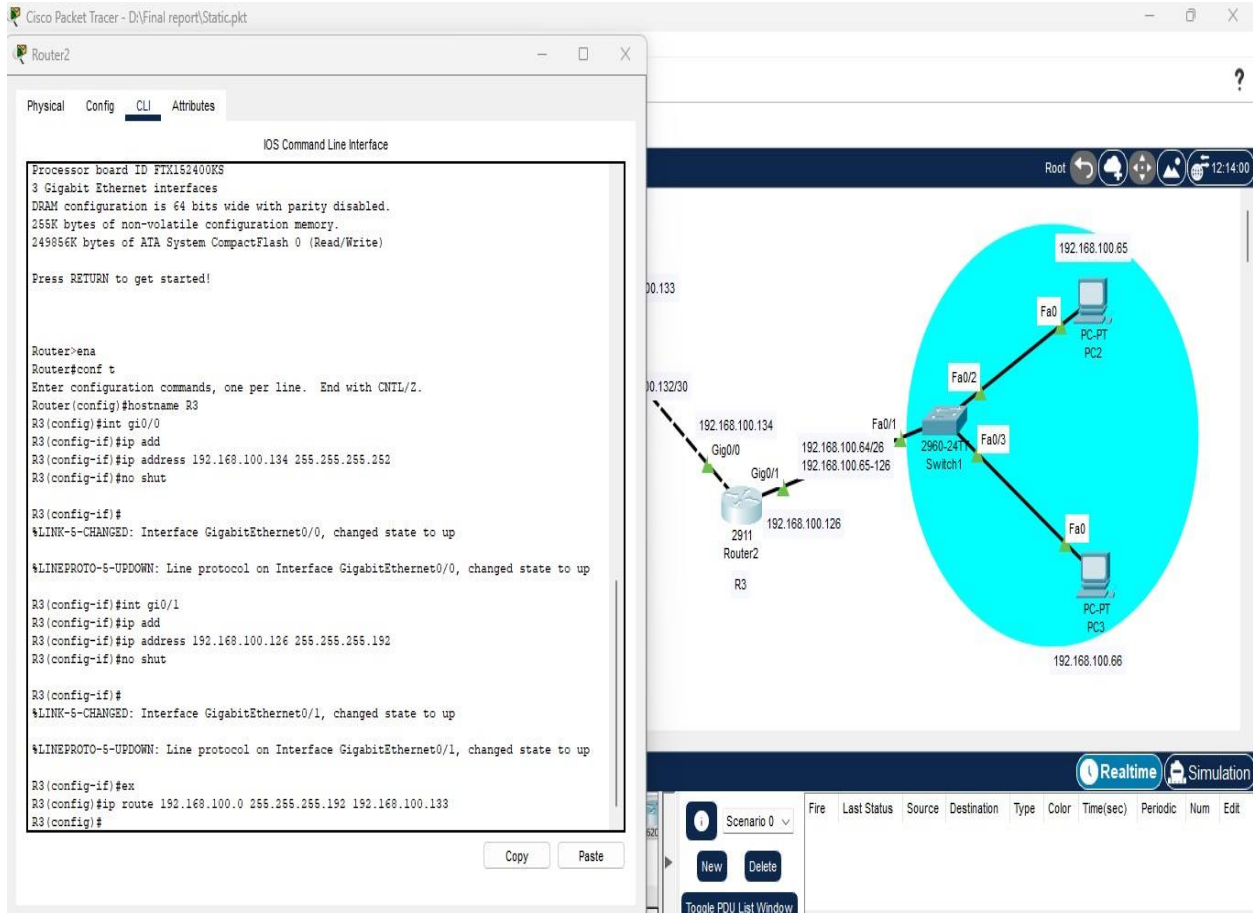


Figure 3.12: Static Routing Router 3 configuration.

Router 3 configuration same as the Router 1.

3.12 Default Routing

This route is set with the purpose of using a single route that is the next router to forward all the packets.

- ☐ For routing traffic to the path not defined earlier. ☐ It is also deployed at the end of the router.
- ☐ Among them it plays some important role in minimizing the number of routing tables.
- ☐ and when setting up the first and the last routers use the default option while in the middle position, it must use the static.
- ☐ The support router. IP route 0. 0. 0. 0 0. 0. 0. 0 <next hop address>.
- ☐ Accommodating to the static, configure IP route <Subnet Mask><next hop address>.

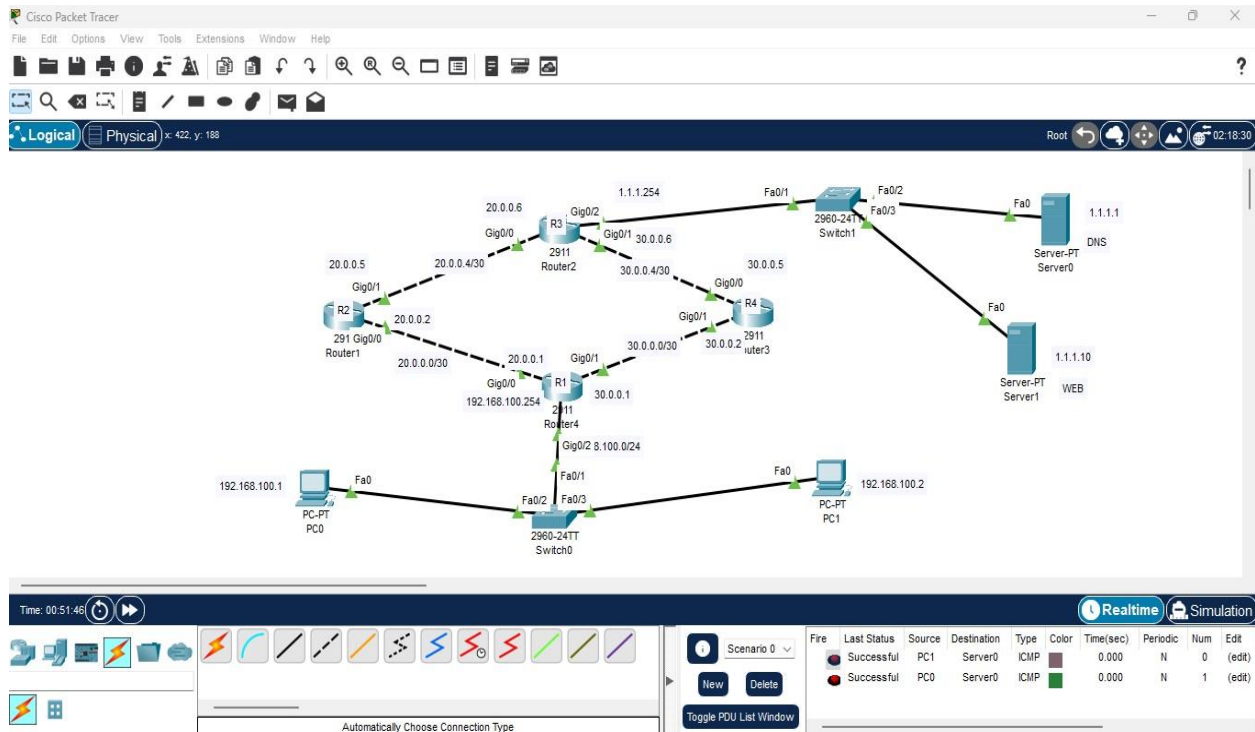


Figure 3.13: Default Routing.

Default route is the one that is used in a network in case no path to specify intentional internet protocol destination address can be found.

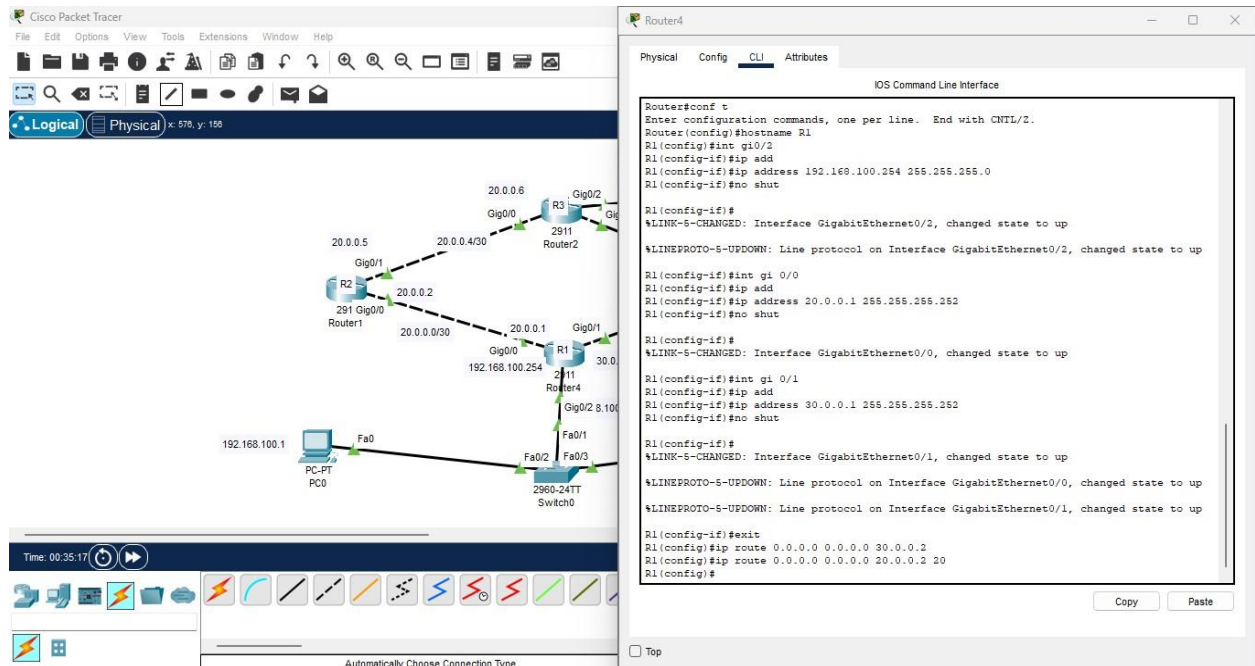


Figure 3.14: Default Routing Router 1 configuration.

To configure Router 2, first go to the command line interface and enable the router. Then take global configuration mode through configure terminal. Then select the specific interface to be configured. Then set the specific IP address and give no shutdown, only then the interface will be up. Then the task is to give the Ip route, which is shown in the router to configuration figure.

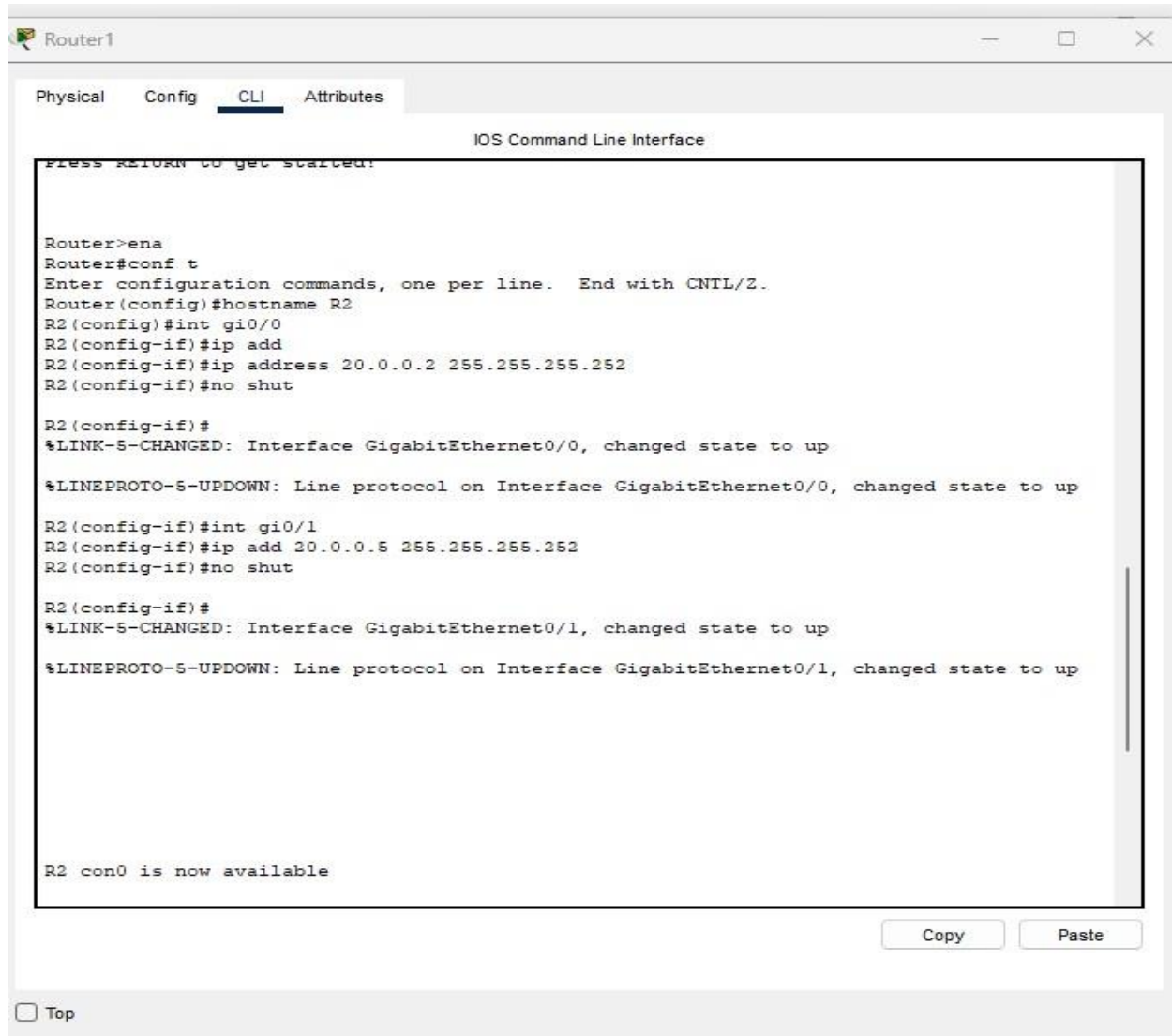


Figure 3.15: Default Routing Router 2 configuration.

Router 2 Default Routing command:

```
R2(config)#ip route 0.0.0.0 0.0.0.0 20.0.0.6
```

```
R2(config)#ip route 192.168.100.0 255.255.255.0 20.0.0.1
```

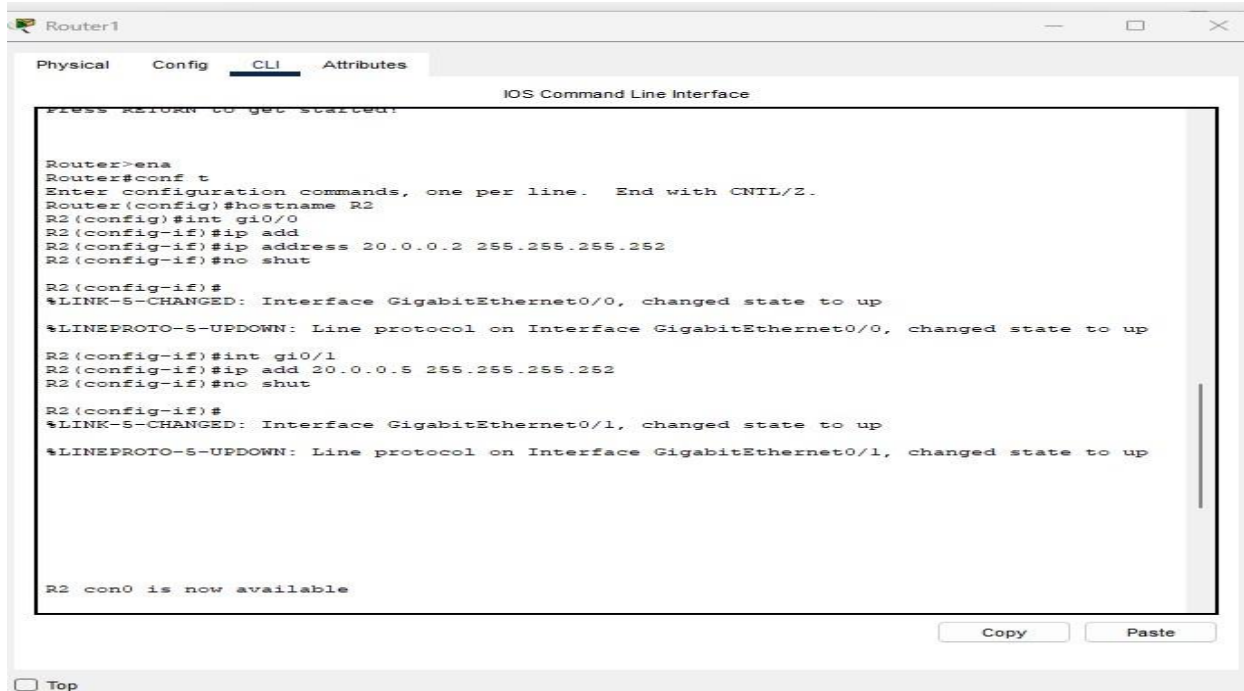


Figure 3.16: Default Routing Router 4 configuration.

For configure Router 4, first go to the command line interface and enable the router. Then take “Global Configuration Mode” through configure terminal. Then select the specific interface to be configured. Then set the specific IP address and give no shutdown, only then the interface will be up. Then the task is to give the Ip route, which is shown in the router 4 configuration figure.

3.13 Dynamic Routing Protocol

Routing ways are consequently balanced by energetic steering based on their instant footing in the directing buffet. Conventions are utilized to discover the organize goal and the ideal course to that goal. Key highlights of energetic steering:

- The switch trades directing data in genuine time, and it determines and negotiates to corrections in genuine time.
- Implement in any arrange (great/little).
- Minor forfend. It better perform in huge arrange foundation.
- Employments more assets than inactive steering.

Dynamic IP Routing Protocol:

- RIPv1

- RIPv2
- EIGRP
- OSPF
- IS-IS

3.14 Routing Information Protocol (RIPv2)

RIP derive from Routing Information Protocol and the full name of RIP is also RIP. This tradition involves partition vector estimation is the readiest coordinating traditions for division vector system which use the bounce tally and convey the bundle for the taking after banish for the reaction as a guiding metric. This brings out the fact that the average number of bounces is 4 trusts while the highest bounce being 15 trusts. Thus, it is conceivable that at most only fifteen frameworks can be incorporated into Tear.

- ❖ When one wants to build a network in a short/ limited range.
- ❖ Indeed, the objectivity is to simplify that occasionally your network is not supported to scale up.
- ❖ This occurs when you rout in one autonomous When and is easily avoided by paying attention to other areas of a game.

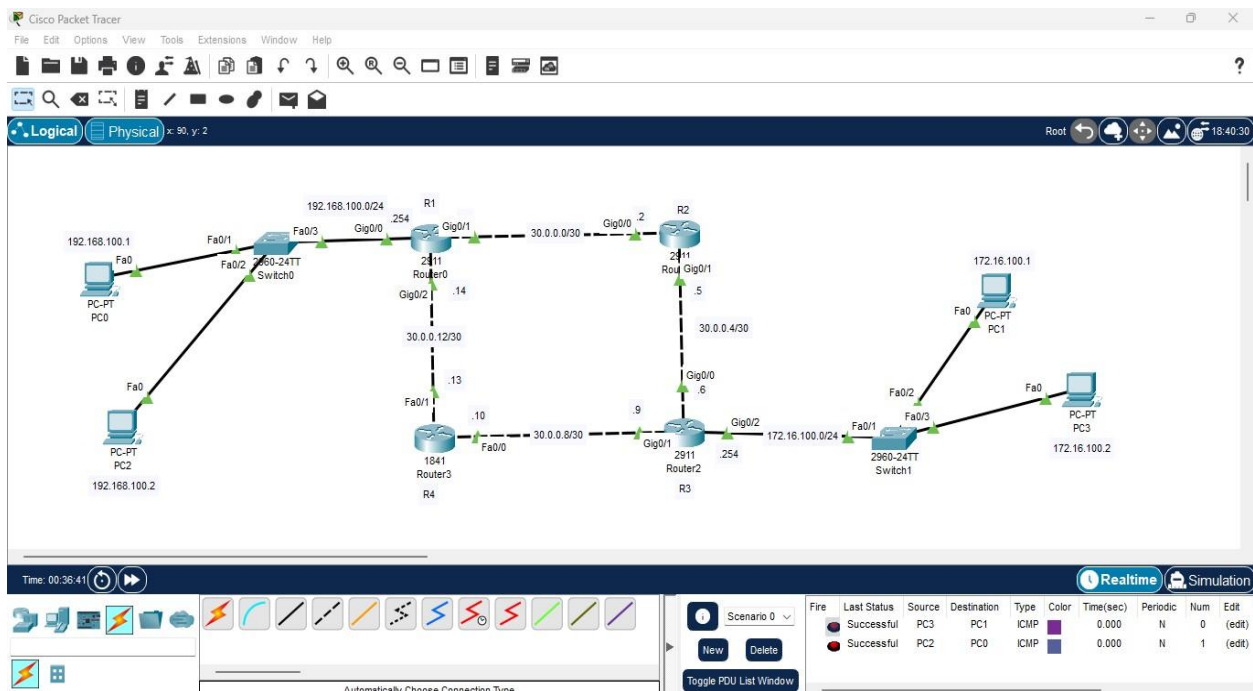


Figure 3.17: RIP Version 2.

RIP stand for Routing Information Protocol which is also commonly known as RIP version 1 and is a fairly old and distance vector routing protocol. In OSPF, it relies on a hop count with a maximum ceiling of fifteen routers from the information provided one can infer that the OSPF uses a hop count as its metric and the maximum hop limit is fifteen routers. There are two variants of RIP, firstly RIP version 1 which sends full updates every 30seconds while employing broadcast, Secondly RIP version2 which sends updates only when there is change, and uses multicast.

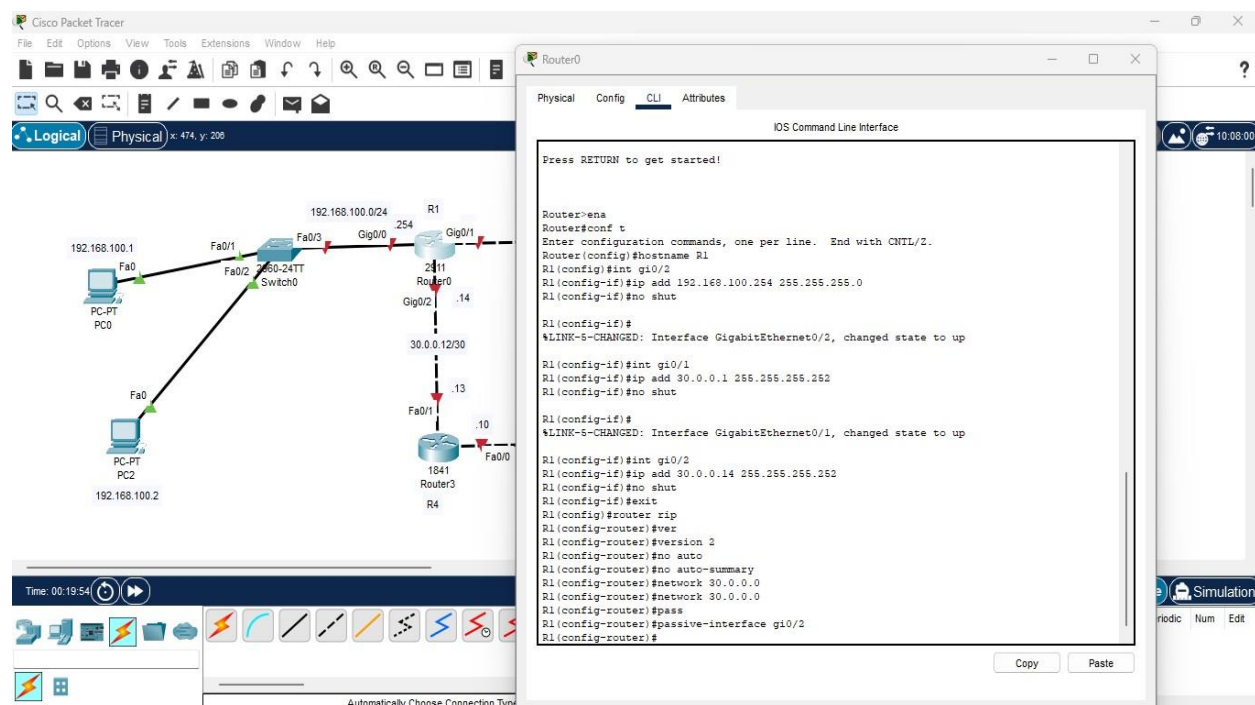


Figure 3.18: RIP Version 2, Router 1 configuration.

To configure RIP version 2 Router 1, first go to the command line interface and enable the router. Then take global configuration mode through configure terminal. We can give the router a name. Then select the specific interface to be configured. Then set the specific IP address and give no shutdown, only then the interface will be up. In this way, all the interfaces have to be configured. Then what should be done is to select rip version 2 from global configuration mode and give the no auto summary command. Finally, specify all the networks on the interface of that router as shown in figure 3.18.

The routing information protocol, RIP is configured on Cisco IOS using the “router rip” command. The version command that is used is used to tell RIP the type of the RIP version to be

used either RIP version 1 or version 2. If the version command is not typed then by default the router transmits and receives RIPv1 but at the same time it can transmit and receive both RIPv1 & RIPv2. The “network” command is used for identifying the directly connect to subnets of the router which is to be configured and that has to be included in the routing update. This is borrowed from the classful addressing where the subnets of that classful network are learnt and form part of the routing update. Routing based summarization is turned on by default for network boundary. Auto summarization of route information can however be disabled in RIP version through entering the command “no auto summary”. However, manual process of Summarization can be done based on the user interface.

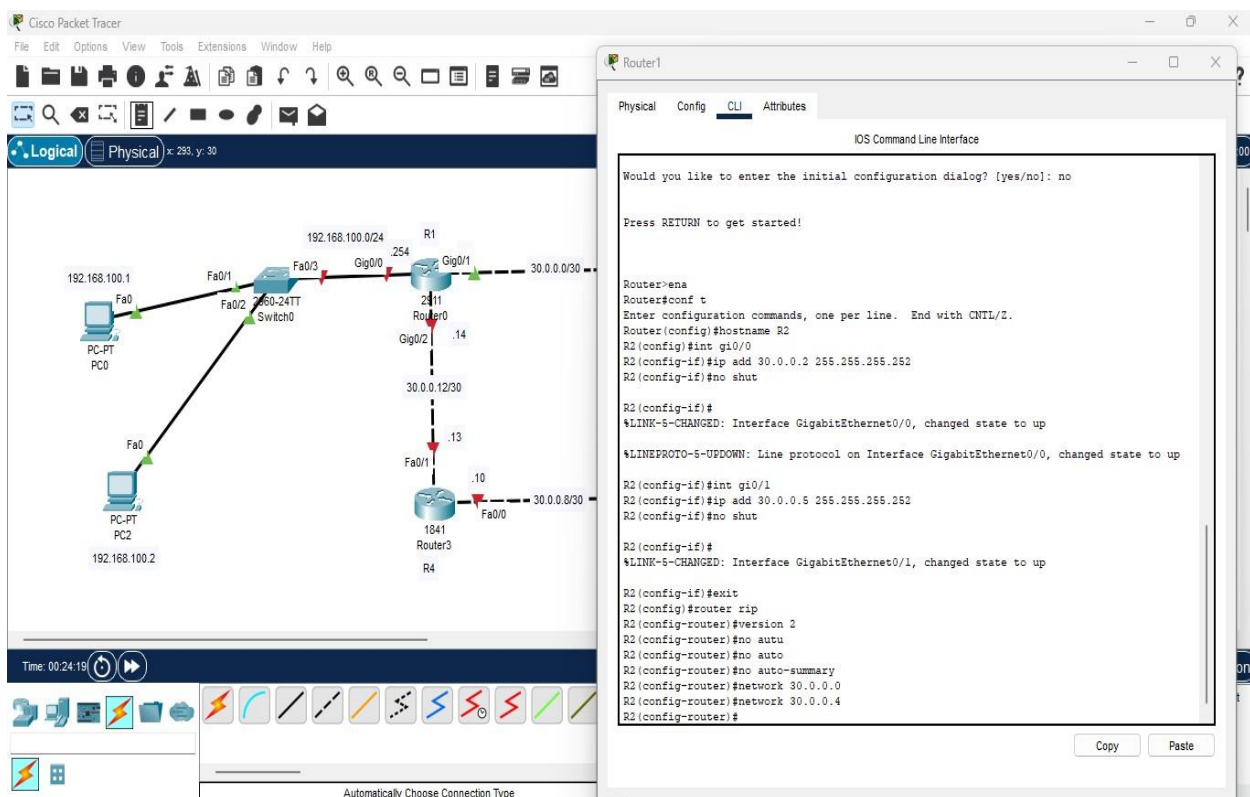


Figure 3.19: RIP Version 2, Router 2 configuration.

To configure RIP version 2 Router 2, first go to the command line interface and enable the router. Then take global configuration mode through configure terminal. We can give the router a name. Then select the specific interface to be configured. Then set the specific IP address and give no shutdown, only then the interface will be up. In this way, all the interfaces have to be

configured. Then what should be done is to select rip version 2 from global configuration mode and give the no auto summary command.

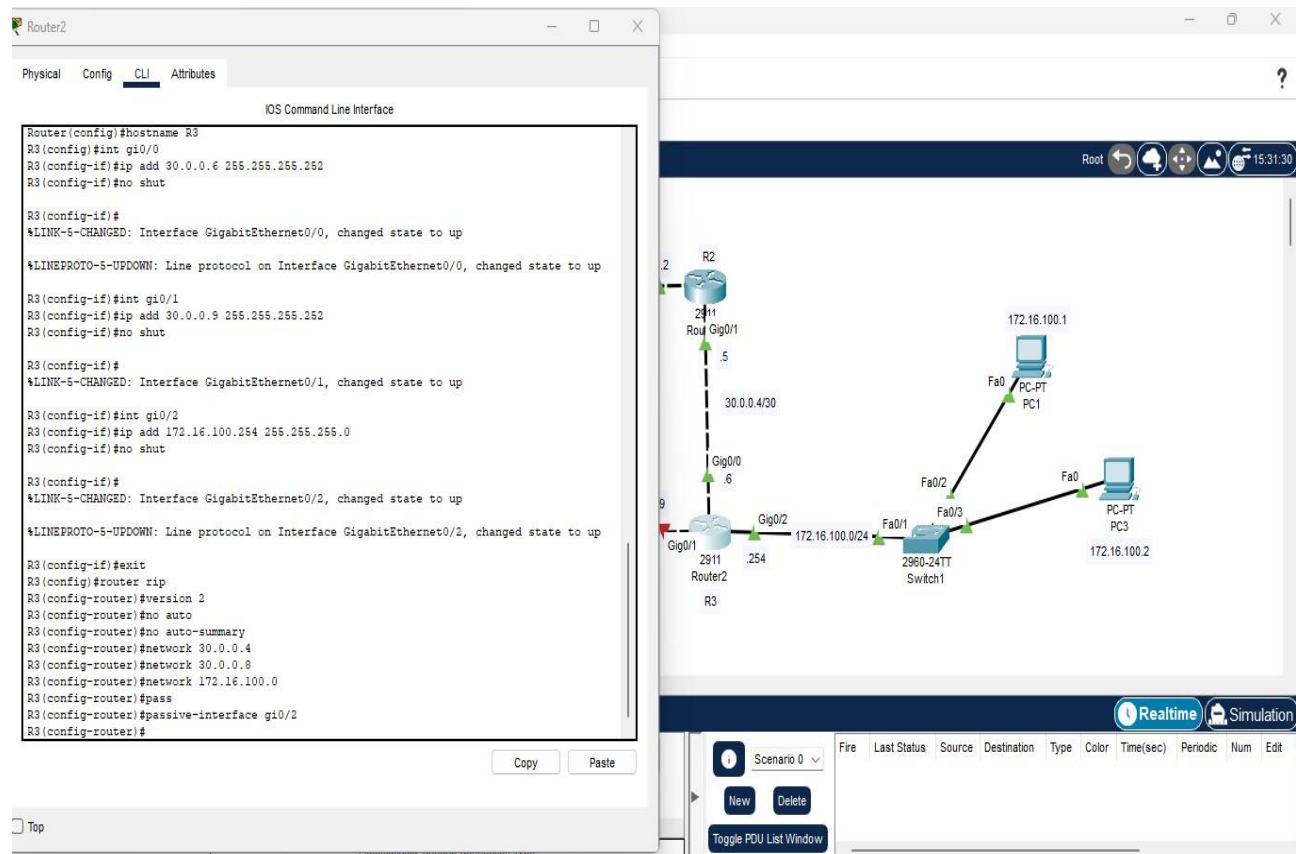


Figure 3.20: RIP Version 2, Router 3 configuration.

For configure RIP version 2 Router 3, first go to the command line interface and enable the router. Then take global configuration mode through configure terminal. We can give the router a name. Then select the specific interface to be configured. Then set the specific IP address and give no shutdown, only then the interface will be up. In this way, all the interfaces have to be configured. Then what should be done is to select rip version 2 from global configuration mode and give the no auto summary command. Finally, specify all the networks on the interface of that router as shown in figure 3.20.

3.15 Enhanced Interior Gateway Routing Protocol (EIGRP)

EIGRP is a classless progressed distance-vector convention that gives us critical diligent vantage over other Cisco exclusive conventions. The Improved Insides Portal Steering Convention is the improved adaptation of Interior Gateway Protocol (IGRP). The convention was set up to fathom

the issues with the Steering Data Convention (Tear). When the EIGRP switch is running, it spares all the encompassing steering data and looks for other courses. If the switch is incapable to find an appropriate way, EIGRP helps its fellows in finding one. It's a Half breed Steering Convention with No Classes. When alterations course overhauls. It utilizes the default transmission capacity and inactivity compound measurements.

The following figure 3.21 shows EIGRP configuration:



Figure 3.21: EIGRP.

A sample EIGRP model is shown here. Once EIGRP was proprietary of CISCO. All routing protocol support ECMP (Equal Cost Multiple Path) load balance but only EIGRP support “Unequal Cost Multiple Path” load balance. In default condition EIGRP also support ECMP (Equal Cost Multiple Path). It is possible to configure unequal cost multiple path load balance by changing variance value. Unequal cost multiple path load balance is possible if meet the feasibility condition. EIGRP stands for Enhanced Interior Gateway Routing Protocol. It is a

protocol that actually has the features of Link State Routing Protocol and it has many features of Distance Vector Routing Protocol. Considering these, EIGRP is called a hybrid routing protocol. Through distance vector routing protocol, the router can know about the neighboring routers of the network and about the location of all the routers, i.e. how far the routers are located. And through the link state routing protocol, the router can know about the difficulty of each link and selects the best path.

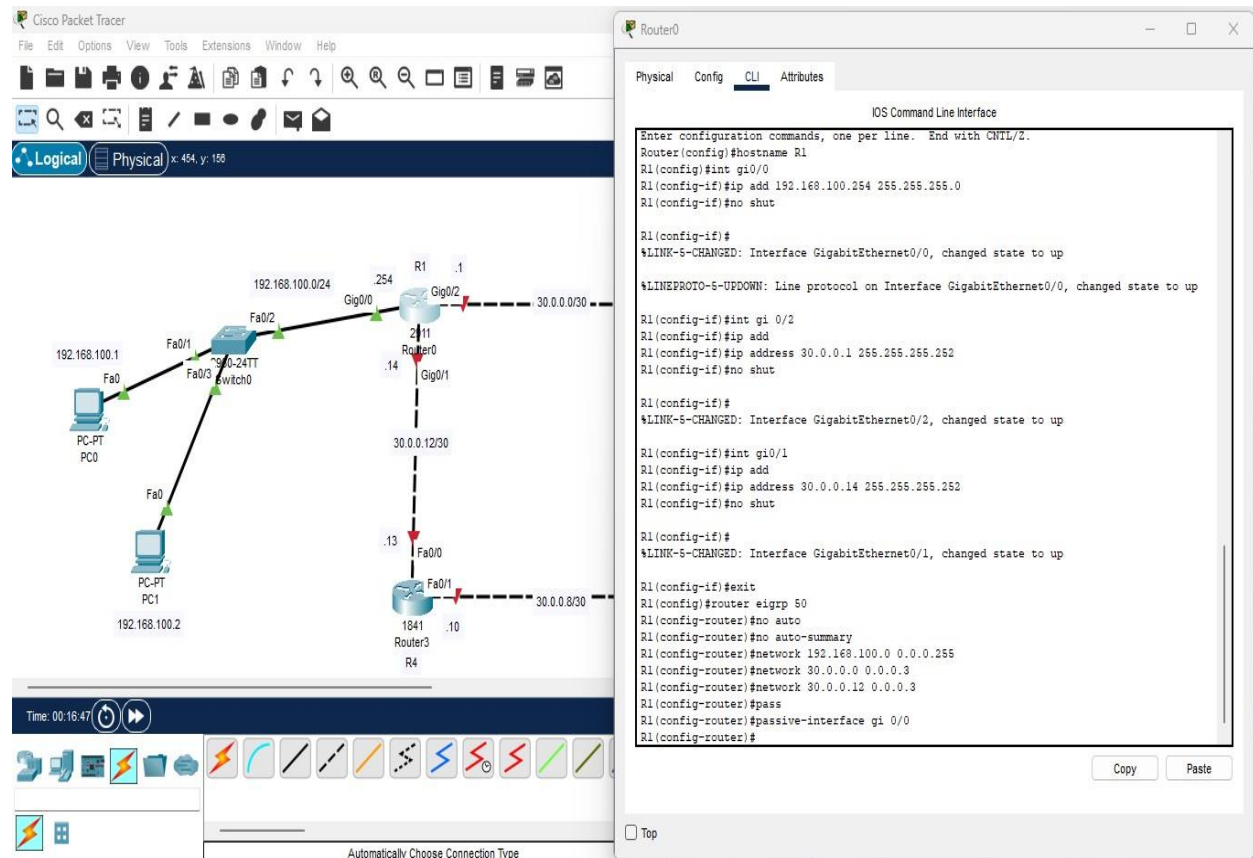


Figure 3.22: EIGRP Router 1 configuration.

To configure EIGRP Router 1, first go to the command line interface and enable the router. Then take global configuration mode through configure terminal. We can give the router a name. Then select the specific interface to be configured. Then set the specific IP address and give no shutdown, only then the interface will be up. In this way, all the interfaces have to be configured. Then what should be done is to select rip version 2 from global configuration mode and give the no auto summary command. Finally, all the networks on the interface of the router should be specified and the wildcard mask should also be specified as shown in figure 3.22.

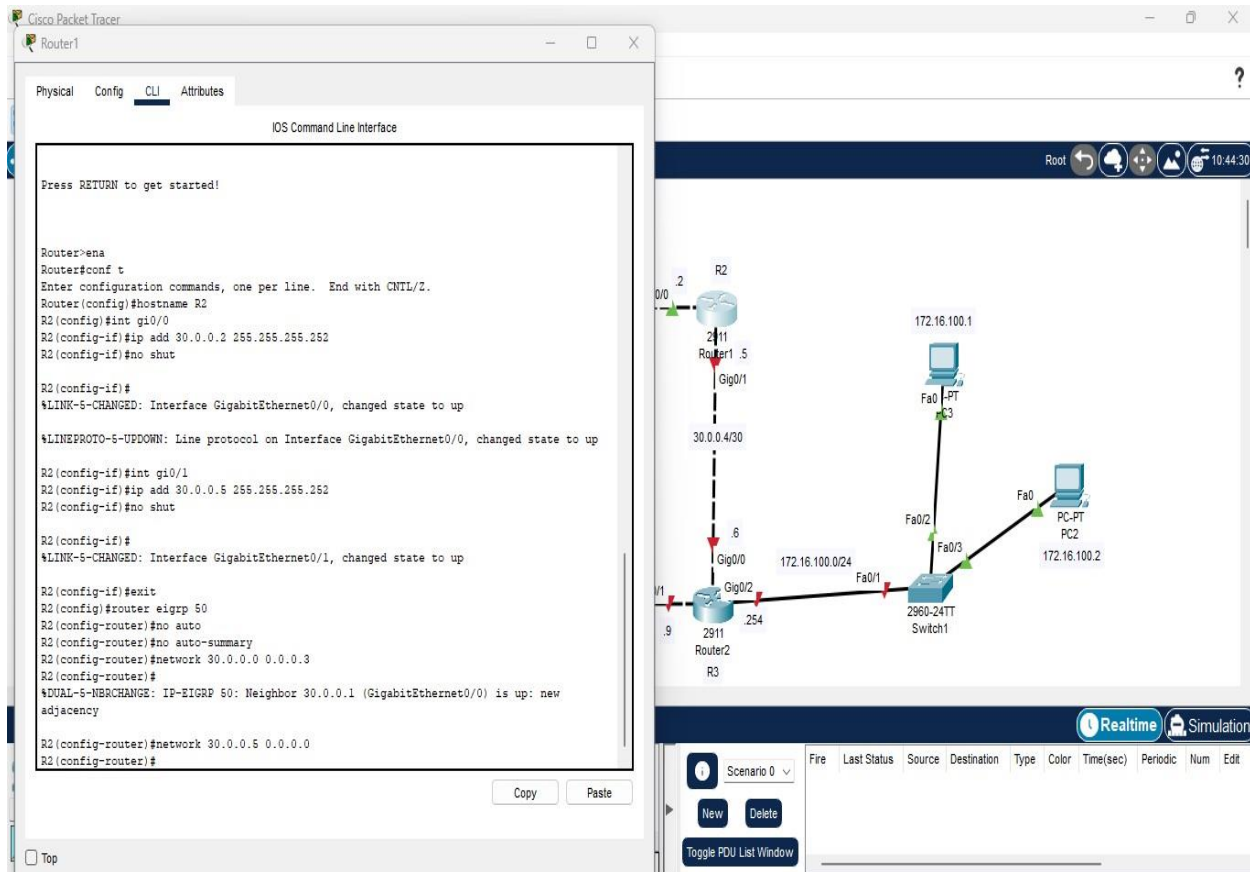


Figure 3.23: EIGRP Router 2 configuration.

For configure EIGRP Router 2, first go to the command line interface and enable the router. Then take global configuration mode through configure terminal. We can give the router a name. Then select the specific interface to be configured. Then set the specific IP address and give no shutdown, only then the interface will be up. In this way, all the interfaces have to be configured. Then what should be done is to select rip version 2 from global configuration mode and give the no auto summary command. Finally, all the networks on the interface of the router should be specified and the wildcard mask should also be specified as shown in figure 3.23.

Once EIGRP was proprietary protocol of CISCO, after it is open for all. ECMP all routing protocol support ECMP (Equal Cost Multiple Path) load balance. But only EIGRP support Unequal Cost Multiple Path load balance. In default condition EIGRP also support ECMP. It is possible to configure Unequal Cost Multi Path load balance by changing variance value. Unequal Cost Multi Path load balance is possible if meet the feasibility condition.

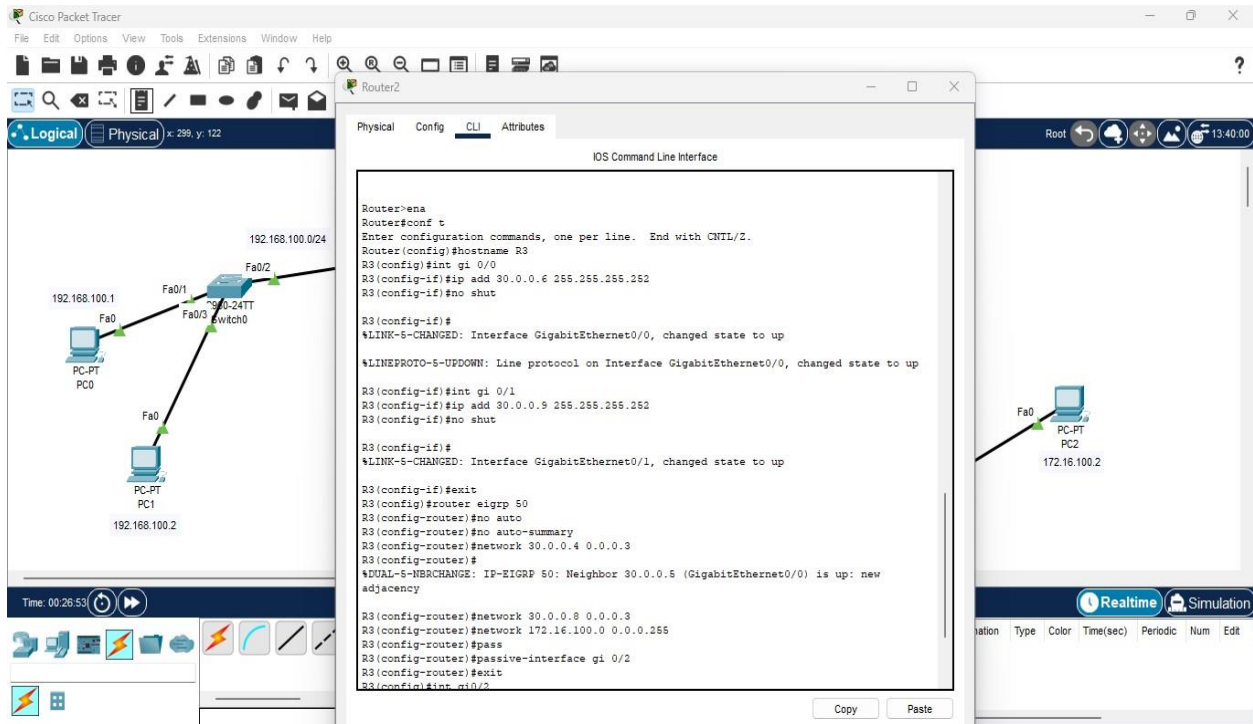


Figure 3.24: EIGRP Router 3 configuration.

For configure EIGRP Router 3, first go to the command line interface and enable the router. Then what should be done is to select rip version 2 from global configuration mode and give the no auto summary command. Finally, all the networks on the interface of the router should be specified and the wildcard mask should also be specified as shown in figure 3.24

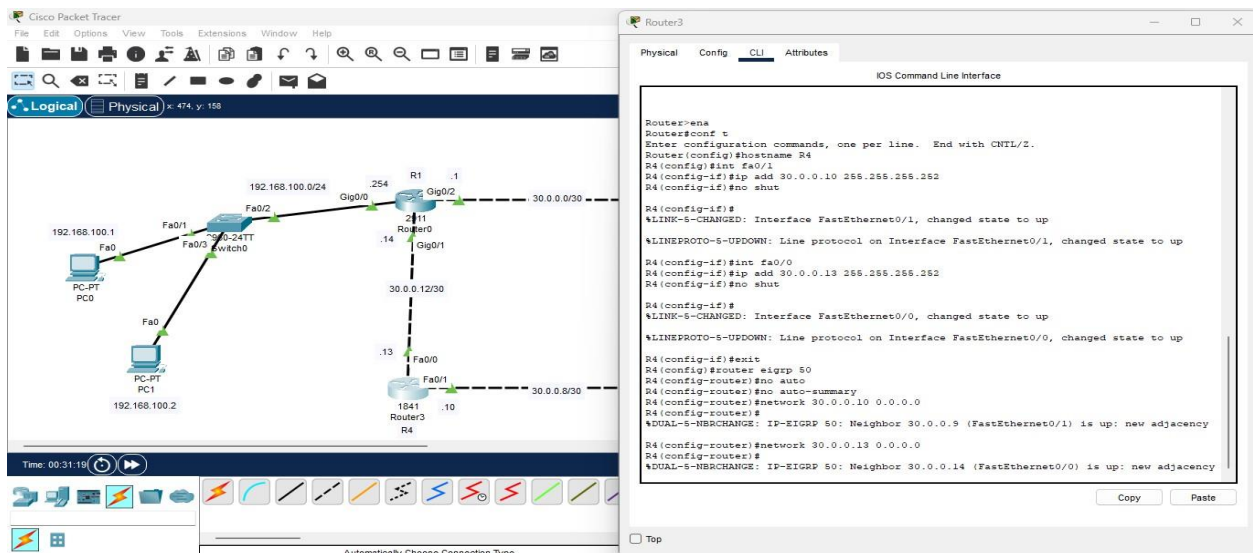


Figure 3.25: EIGRP Router 4 configuration.

For configure EIGRP Router 3, first go to the command line interface and enable the router. Then take global configuration mode through configure terminal. We can give the router a name. Then select the specific interface to be configured. Then set the specific IP address and give no shutdown, only then the interface will be up. In this way, all the interfaces have to be configured. Then what should be done is to select rip version 2 from global configuration mode and give the no auto summary command. Finally, all the networks on the interface of the router should be specified and the wildcard mask should also be specified as shown in figure 3.25

3.16 Switch

Switches interface different gadgets on the equal organize interior the limits of an edifice or yard. A switch can connect your pc, printers, and servers together to frame a network for shared resource instances. The specific switch will act as a regulator that will allow various devices swap data and deliver it to farther switch. The switch is a type of multiport bridge that has a buffer to upgrade productivity and adaptability which is a big advantage. Switches are used for data interface layer. A table of MAC addresses should still be directed to a piece of data to select and thus reduce all network activity. The switch may do mistake checking some time recently exchanging information, it checks for mistake and as it were sends genuine. The switch isolates the impact site by obscuring the broadcast site. The distinguishing feature of switches are that it runs much faster than bridges and offers a wider range of certifications. Separating at layer 2 of the interconnection OSI show open system can diminish blockage of the accessibility, and expansions were an early way to do this. This topic depicts how scaffold help Arrange blockage.

- Tall thickness harbor.
- Buffers Expansive outline
- Harbor speeds.
- Exchanging Quick inside.
- Exchanging Cut-through.
- Exchanging Store and forward.
- Switching Fragment-free.



Figure 3.26: Switch.

3.17 Virtual Local Area Network (VLAN):

VLAN divides the broadcast space as the systems to ensure accurate and reliable security. Each different switch has a default VLAN.

VLAN Features:

- VLAN is a layer two security.
- VLAN creates multiple impact points from a single broadcast point.
- VLAN like as produced from an assortment of sources.
- A feature of VLAN is where a single switch can be setup.

VLAN Benefits:

- ❖ Assurances.
- ❖ Expense-bitter.
- ❖ Progressed execution.
- ❖ Expanded IT staff efficiency.
- ❖ Administration of a small framework or application.

The following figure 3.27 shows Virtual Local Area Network (VLAN):

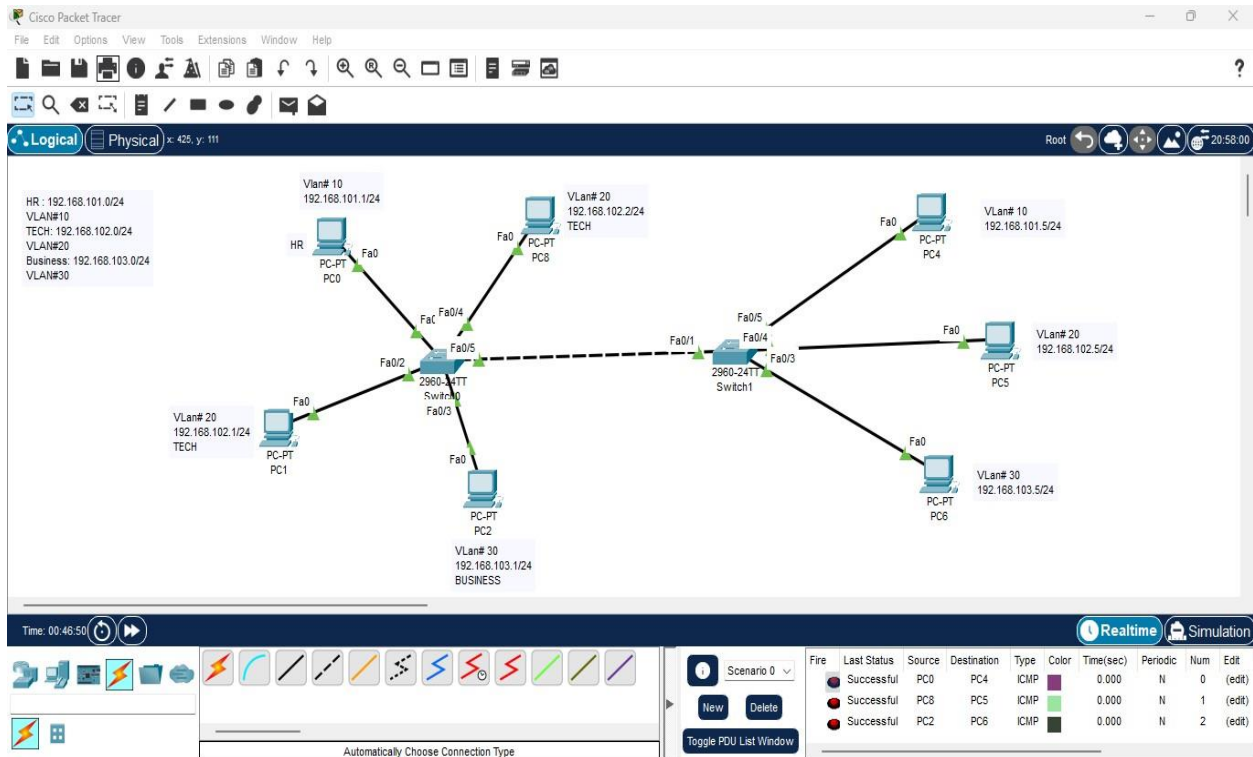


Figure 3.27: VLAN.

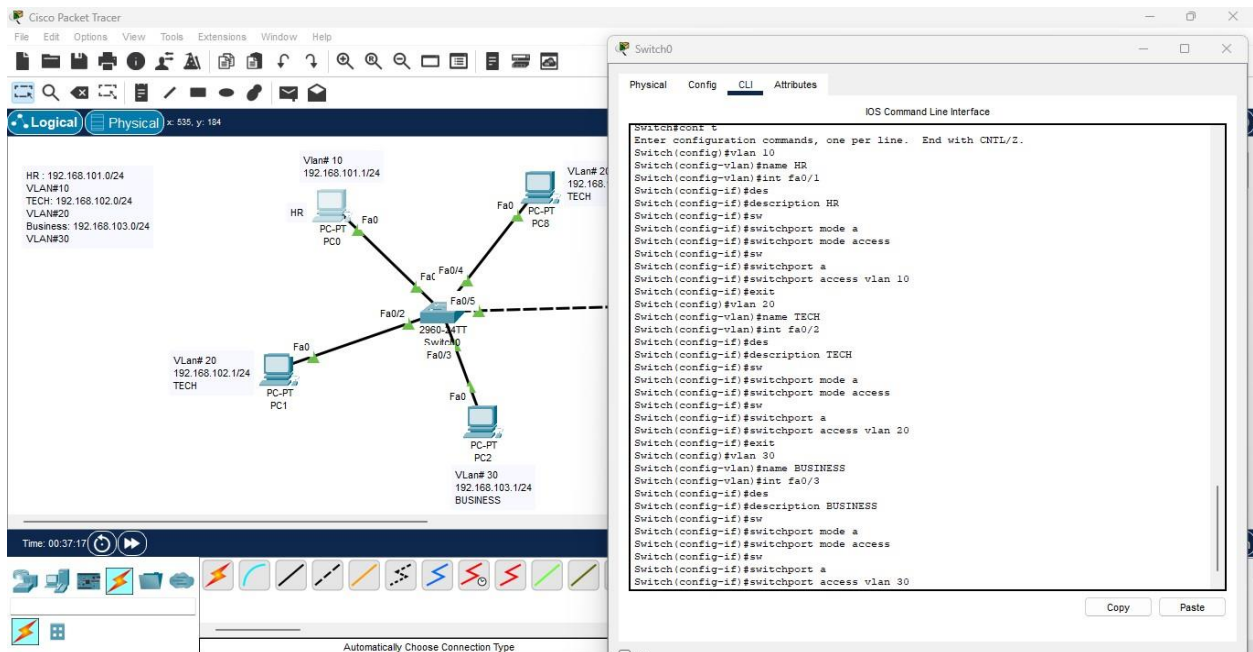


Figure 3.28: VLAN switch 1 configuration.

To configure Switch 1, first enable the switch. Then create VLAN and give a name to the VLAN. Then go to the global configuration mode, all the interfaces of the switch that we have used, separate the description, switchport mode access and the VLAN that has been created on that specific interface should be mentioned through the switchport access VLAN, which is shown in Figure 3.28. This is shown.

The following figure 3.29 and 3.30 shows VLAN switch 2 configurations:

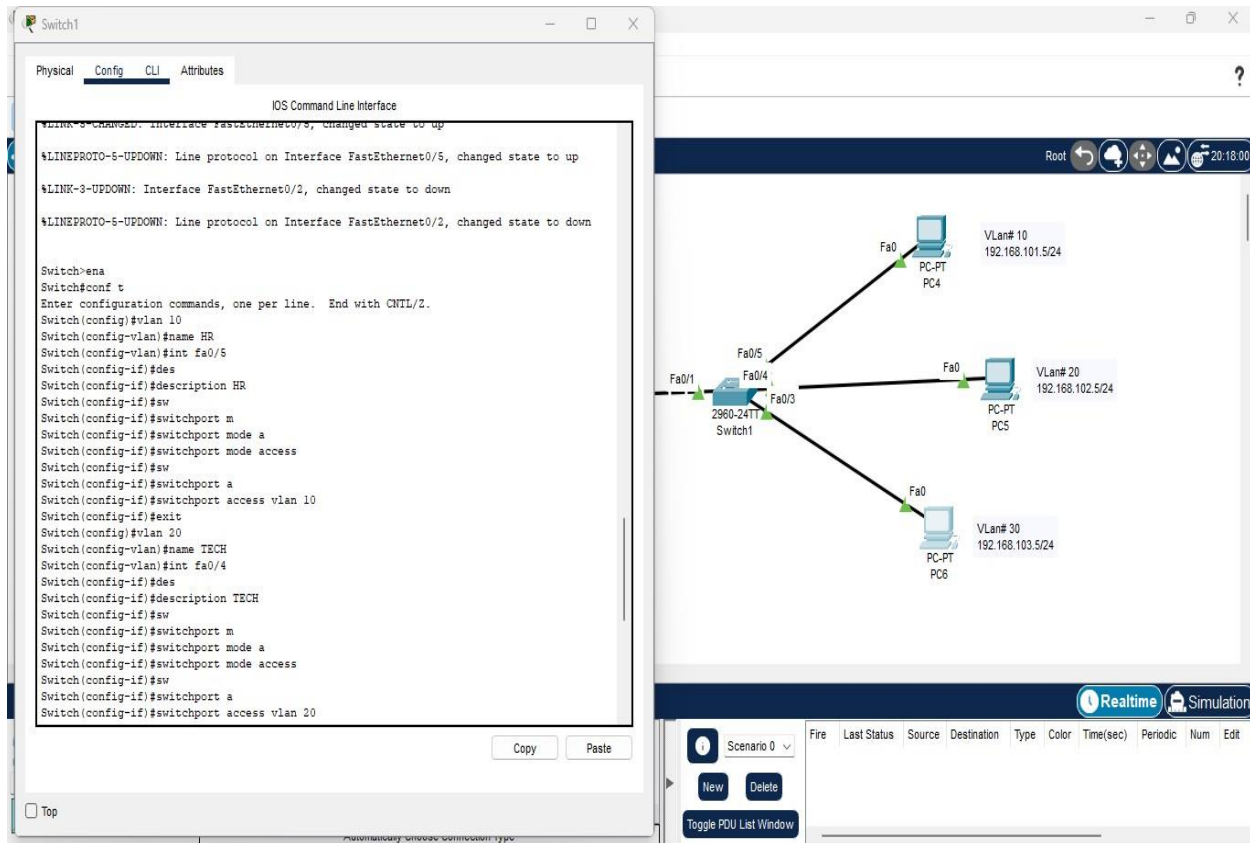


Figure 3.29: VLAN switch 2 configurations.

To configure Switch 2, first enable the switch. Then create VLAN and give a name to the VLAN. Then go to the global configuration mode, all the interfaces of the switch that we have used are described separately, switchport mode access and the VLAN that has been created on that specific interface should be specified through the switchport access VLAN and the VLAN of switchport must be allowed. All VLAN should be allowed through this command as shown in figure 3.29 and 3.30.

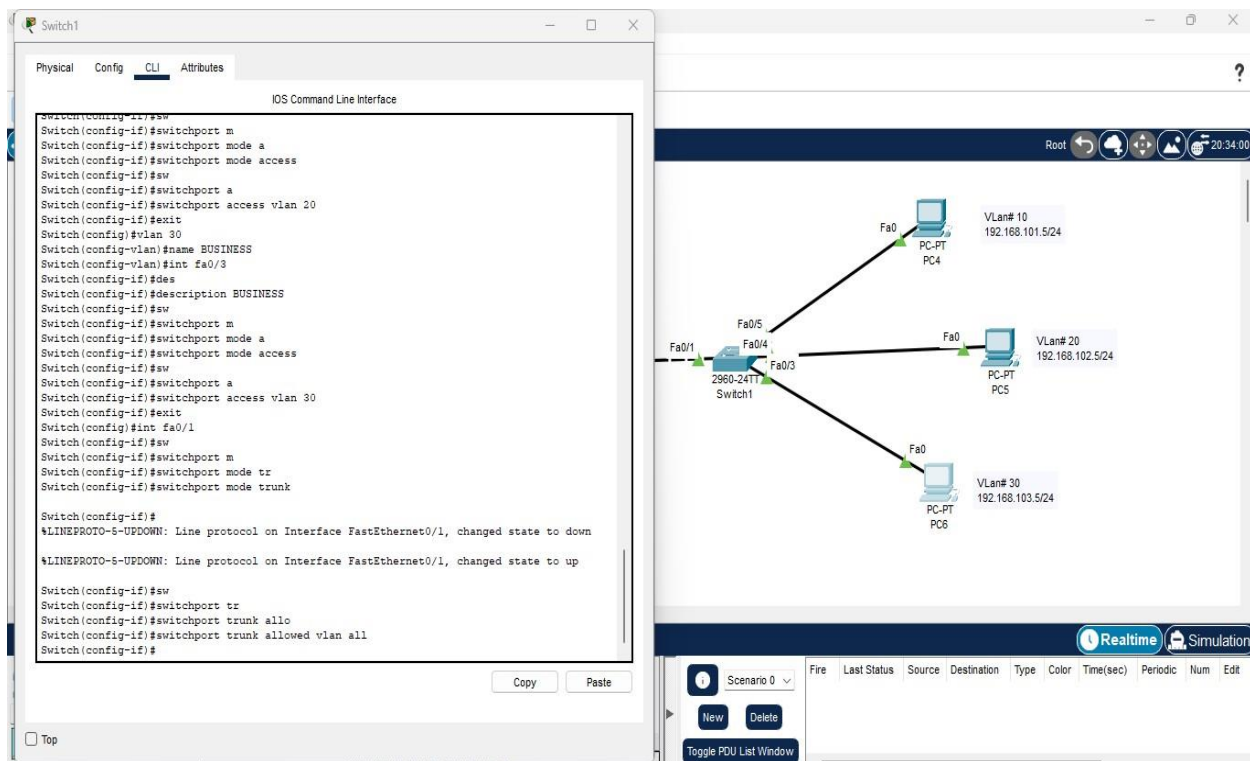


Figure 3.30: VLAN switch 2 configurations.

3.18 Inter VLAN Routing

In past chapters, we learnt how VLANs fragment broadcast activity on a switch and portion a exchanged organize into diverse LANs, we too learnt how VLAN data can be transmitted to other switches in the arrange utilizing VTP and how we can dodge layer two circles utilizing STP. Consider, this, as the organize chairman, one of your assignments is to make and dole out diverse clients to VLANs in you organize, you have three primary divisions which ought to be coherently portioned utilizing VLANs, VLAN 10 – Back, VLAN 20 – Deals and VLAN 30 – HR. The utilize of VLANs implies that clients would not be able to communicate over offices, i.e. a client in Back, would not be able to send a message to a client in Deals since they are on diverse broadcast domains. In numerous undertakings, you will discover that data sharing over divisions is a necessity, in this manner, the address asks, how do you make clients in the Deals and Back office communicate, however they are on distinctive VLANs? In this chapter, we will examine the part played by inter-VLAN directing in communication between diverse VLANs. We will learn how it works, consider the different strategies that can be utilized to execute it, arrange inter-VLAN directing utilizing router-on-a-stick and conventional inter-VLAN steering,

compare the two styles of execution and at long last confirm and troubleshoot inter-VLAN steering.

The following figure 3.31 shows Inter VLAN Routing:

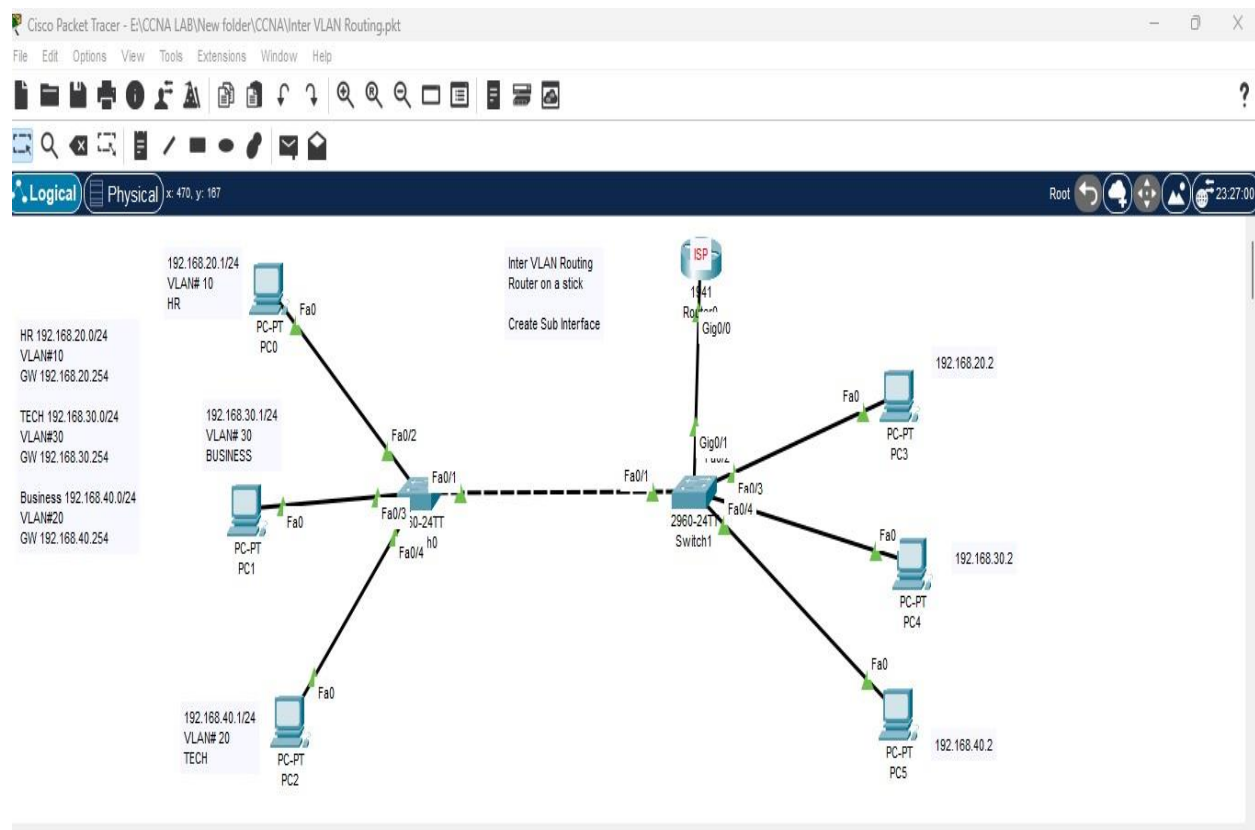


Figure 3.31: Inter VLAN Routing.

To configure Inter VLAN Switch 1, first enable the switch. Then create VLAN and give a name to the VLAN. Then go to the global configuration mode, all the interfaces of the switch that we have used, separate the description, switchport mode access and the VLAN that has been created on that specific interface should be mentioned through the switchport access VLAN.

#Inter VLAN Routing configuration of Switch 2 is same as Switch 1. The only thing to configure here is that the interface of Switch 2 to which Switch 1 is connected should be trunked. Below is the trunking configuration of switch 2:

```
Switch>enable
```

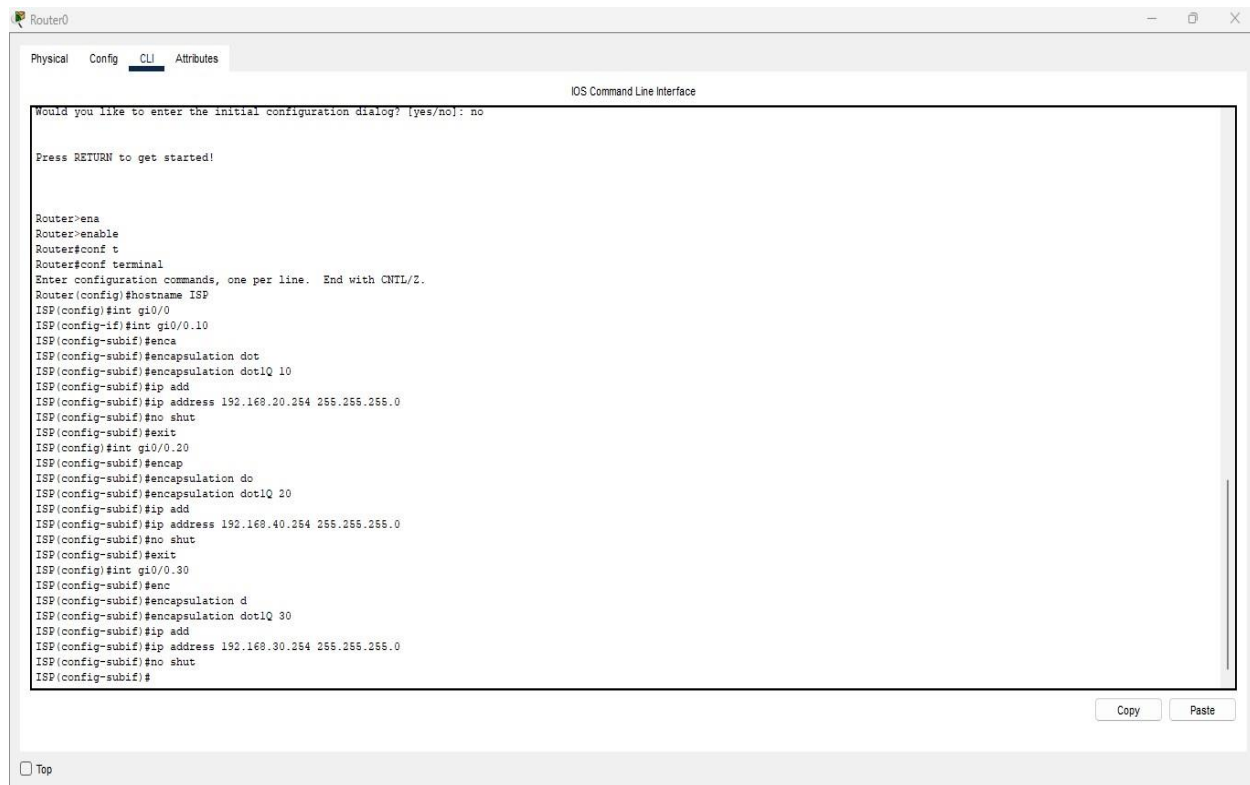
```
Switch#Configure terminal
```

```
Switch(config)#interface fa0/1
```

```
Switch(config-if)#switchport mode trunk
```

```
Switch(config-if)#switchport trunk allowed vlan all
```

The Following figure 3.23 shows Inter VLAN Routing Router configuration:



```
Router0
Physical Config CLI Attributes
IOS Command Line Interface

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>ena
Router>enable
Router>conf t
Router#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname ISP
ISP(config)#int gi0/0
ISP(config-if)#int gi0/0.10
ISP(config-subif)#encap
ISP(config-subif)#encapsulation dot
ISP(config-subif)#encapsulation dot1Q 10
ISP(config-subif)#ip add
ISP(config-subif)#ip address 192.168.20.254 255.255.255.0
ISP(config-subif)#no shut
ISP(config-subif)#exit
ISP(config)#int gi0/0.20
ISP(config-subif)#encap
ISP(config-subif)#encapsulation do
ISP(config-subif)#encapsulation dot1Q 20
ISP(config-subif)#ip add
ISP(config-subif)#ip address 192.168.40.254 255.255.255.0
ISP(config-subif)#no shut
ISP(config-subif)#exit
ISP(config)#int gi0/0.30
ISP(config-subif)#enc
ISP(config-subif)#encapsulation d
ISP(config-subif)#encapsulation dot1Q 30
ISP(config-subif)#ip add
ISP(config-subif)#ip address 192.168.30.254 255.255.255.0
ISP(config-subif)#no shut
ISP(config-subif)#
ISP(config-subif)#
```

Figure 3.32: Inter VLAN Routing Router configuration.

Inter VLAN Routing, sub-interfaces need to be created between routers during router configuration. Create as many sub-interfaces as there are VLANs.

3.19 Challenges

In every work place is very challenge full ‘meaningful work’ and can best be described as work that has inherent interest and purpose for the employees. Like in any other work, there are always obstacles to the task that has been assigned. Therefore, it is necessary for us to proceed to our work appropriately and do it to be seriously. Internship in four months is very beneficial in gaining knowledge and also in sharing friends when troubleshooting our weaknesses regarding

our training period. These are some of the essential aspects to grab and comprehend unknown things and many more many issues we have to face to solve the solutions. In my training periods to the company there have insufficient works to solve Tagged: Training period Leave a Reply Cancel reply Your email address will not be published. Most of the work I do that are to standard, I finish them to my company supervisor to his mail. Some of the works that have been executed here are some of the works which I have done by myself, some of the works done by my supervisors and some of the works are done by labors. Thus, in the capacity of being a youthful labor I have accomplished some of the works during training periods. This pertains to how I understand the ways in which I can finish my job without getting into accidents. So, in every work at first, I am careful to about injuries and avoid of it so, I have already given some of the items of injury that may occur in work. I may not know every single thing that one could possibly learn, but I tried my best to try and learn about the things that interested me. And I labor to asking any questions and labor to be an independent laborer. In the last contend luckily, I have been able to complete the grounding periods without encountering any difficulty. During these periods I also learn how to work with others, sharing jobs and dealing with customers. Everyone is a great manner-trainer-scheme that I have received many tricks about corporate life and how to be polite all the time and don't get temper in office. That is for me the end of my studying in this university and I am going to change my life and begin my carrier in addition to it also being an honor for me to make a worthy attempt in improving the identity of our varsity in what I know and through work. The hours I have selected for commencement of a new life with job involving a big number of hours is from 9 am to 5 pm and I have had been living this habit by the internments of such periods.

CHAPTER 4

COMPETENCIES AND SMART PLAN

4.1 Competencies Earned

These days, any business capital or somewhere else is crammed with abilities, which is why we must ensure our down to earth information. Since of the edification, capacities offer assistance to gain or learn for the result, which is a announcement of what an alternate is incumbent to know, be included in, or have the volume to. PC frameworks director is a futurity winning situation for me. Some aspects are related to the functional characteristics and technical documentation of two datacenters where most of the system and server tools are marked for display and decommissioning. That is what switch configuration entails; you are the one who makes those decisions. Abstracting from the conditions of my business experiences, I have presented more than a few problems, and hence, it will set me up in the future that when given some large issues, it will be possible for me to think clearly and systematically, you will introduce and arrange switches and switches, as well as arrange and utilize administrations such as VLAN design, OSPF arrangement, EIGRP arrangement, and Tear arrangement. Separated from that, I am invariable in my conviction that the grounding will give positive results. At the same time, I was receiving an introduction from the Location Supervisor on some major frameworks and logic that was applied to that mechanical skill.

4.2 Smart Plan

After finishing my basic training at Atova Technology, I am presently centered and anxious of my lifework. I have an unambiguous point and mentality. Amid the basic training, I pick-up real-world involvement that will help me in my futurity work in the organizing range. It is a onerous and diligent tenacity. Presently My objective is to ace progressed organize designing and set up a career.

4.3 Reflections

Atova Technology gives a tall level of client benefit. They have been fully high concerned around giving their benefit since initiation date. They are an intranet arrangement and broadcast communications agency that gives its specialized bunch with a highly and maybe most profitable association and they really take unbelievable care of their clients and energize rehash buys. They created with numerous institutions and numerous ventures and accomplished the notoriety which

is exceptionally supportive of them. They are utilizing the most up-to-date stock and moving forward administrations as essential.

CHAPTER 5

CONCLUSION AND FUTURE CAREER

5.1 Discussion and Conclusion

My internship was finished effectively. This internship is basic for picking up down to earth experience. Too, self- momentum to execute great work and unravel difficulties. I work five-six days a week and this internship has made a difference in building these trends. As I have unveiled, the essential interests of time are kept up by self-admiration and driven by basic training. This preparing session enables maintenance of time-orientation, which is very commonplace and fundamental not only for organizational and business activities. My basic training, I achieved numerous crucial angles of my course's related subjects, critical abilities that will be valuable in my futurity work. It instructs me how to hold my serene in the working environment when the work weight is as well serious. I picked up data and will proceed to work difficult as a result of my work and futurity yearnings. I got it how to alter my boss's thinking and pick up advancement through my work and state of mind. This internship has made me fairer and more propelled to work difficult. At last, I'd need to stress the need of basic training in any informative foundation or work environment for picking up real-world encounter and ability.

5.2 Scope for Further Career

Nowadays, organizing is an exceedingly requesting work and there is moreover a tall request for network engineers. It is a harrowing persistence and the request for talented staff is rapidly extending. In Bangladesh's organizing commerce, many lifework openings. An insight of US Bureau of Labor appears that by 2024, certified IT organizing pro like CCNA is anticipated to grow by 8%.

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APPENDICES

Appendix A: Internship Reflection

Internship is how imperative in our corporate level or our information accomplishment is to unsalable. So, the internship time is exceptionally valuable for our ability created in our genuine life. When I was preparing in the company I work each step exceptionally carefully. The internship learns to me how to keep up the client, how to bargain a extend, and how keep up to unravel the issue. In the internship time I work and interface with other master laborer who instructs me exceptionally carefully. I know how to dealt with a difficult venture to effortlessly illuminate. I am an affiliation greatest aim or chimera is actualized, with accomplices The basic training empowers me to arrange for life and around the world society, Career arrange. The internship teaches me how to oversees bosses and master way and distinctive agents pick up from this preparing. The internship reflection impact in my entire life to know how keep up practical life and how to carry on to corporate life, how to cool my head in a basic put. Also, it makes strides our genuine life circumstance and how to taken care of it to make a shining future. Internship is a way to meet the proficient level master and it's a chance to work of them. Which is exceptionally critical to know how to they fathom numerous basic works.

Appendix B: Company Details

Name	Atova Technology
Address	3rd Floor, Satmasjid Super Market, Mohammadpur Bus Stand, Dhaka, Bangladesh.
Phone	01713-615831
Email	support@atovatech.com
Website	https://www.atovatech.com/
Type of Organization	Training Institute

ORIGINALITY REPORT

12%

SIMILARITY INDEX

12%

INTERNET SOURCES

1%

PUBLICATIONS

6%

STUDENT PAPERS

PRIMARY SOURCES

1

dspace.daffodilvarsity.edu.bd:8080

Internet Source

5%

2

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