

**INTERNSHIP ON NETWORK SECURITY: AN APPROACH FOR ROUTING  
SECURITY**

**BY**

**Nahima Hossain  
ID: 201-15-14000**

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

Supervised By

**Mr. Md. Aynul Hasan Nahid**  
Lecturer  
Department of CSE  
Daffodil International University

Co-Supervised By

**Ms. Sharmin Akter**  
Lecturer  
Department Of CSE  
Daffodil International University



**DAFFODIL INTERNATIONAL UNIVERSITY  
DHAKA, BANGLADESH  
DECEMBER 2022**

## APPROVAL

This Project/internship titled **Internship on Network Security: An Approach for Routing Security**, submitted by Nahima Hossain, ID No: 201-15-14000 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 19-01-2023.

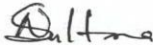
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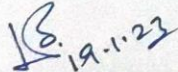


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Faculty of Science & Information Technology  
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Jahangirnagar University

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## DECLARATION

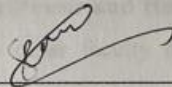
I hereby declare that, this project has been done by me under the supervision of **Md. Aynul Hasan Nahid, Lecturer, Department of CSE** Daffodil International University and co-supervision of **Ms. Sharmin Akter, Lecturer, Department of CSE** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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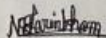
**Md. Aynul Hasan Nahid,**  
Lecturer  
Department of CSE  
Daffodil International University

Co-Supervised by:



**Sharmin Akter,**  
Senior Lecturer  
Department of CSE  
Daffodil International University

Submitted by:



**Nahima Hossain**  
ID: 201-15-14000  
Department of CSE  
Daffodil International University

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Thanks to all course mates at Daffodil International University for contributing to this discussion while completing their coursework.

Finally, we must respectfully thank our parents for their constant support and our patients.

---

## **ABSTRACT**

I completed my internship at an IIG business. Windstream Communication LTD was the name of the business. The six-month internship was offered. My mentor during my internship was Mr. Anirban Datta. In the six months I spent working for him, I learnt a lot from him. I acquired a great deal of knowledge over the course of these six months with the support of thorough reports and live sessions, as well as the fundamental information I need to be an expert in routing security. I received the support and direction I required during the entire month from the appropriate mentor (Mr. Anirban), regardless of the time. I knew very little about routing protocols and routing security before to this internship. I also gained knowledge of VLAN configuration, a few routing security measures, and various routing protocols (including OSPF, BGP, default routing, and static routing). To learn about routing protocols and routing security, I have utilized certain virtual tools like Cisco Packet Tracer and GNS3. I also tested my skills on some actual routers, including Cisco Routers. I tried to learn about routing security and protocols while using all the aforementioned technologies in practice. There was a ton of new knowledge, learning opportunities, tools, and live sessions for the entire six-month period.

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# CHAPTER 1

## Introduction

### 1.1 Introduction of Internship

Internships are a crucial way to get practical work experience. The internship is a terrific chance for us to develop our skills and learn real-world tasks as I become prepared for the workforce. My internship experience in a genuine company has helped me get to know and understand myself better. It supports me in maintaining control over and refining my attitude and behavior when interacting with various types of people and circumstances.

I decided to sign up for an internship at Routing Security to seize the chance to put theory and knowledge to use in a real-world working setting. I had the opportunity to complete my training at an IIG company. Windstream Communication LTD was the name of the business. On June 6th, 2022, I started working for the corporation as an intern. Mr. Anirban Datta served as my mentor while I was an intern.

While my undergraduate education provided me with theoretical knowledge, an internship taught me how to put that information to use in the real world. I am very thankful for the internship because it helped me identify and clarify my strengths and weaknesses. I choose the training to get ready for a tricky work environment and situations. Because it requires so much work, commitment, and bravery, working life is tremendously challenging. These are the things for which I must.

### 1.2 Motivation

I'm now pursuing a Bachelor of Science in Engineering in Computer Science at Daffodil International University. I appreciate the importance of practical experience, which is full of comprehension from textbooks and problem-solving in the actual world.

Network security is something I wish to master. And I had a blast the entire time I was doing my networking internship. During my training, I've made a point to talk to people because I can better understand their needs and meet them where they are. My strengths continue to be my ability to grasp and comprehend the issue at hand, as well as my ability to complete tasks quickly and beautifully. I could also see how accountable and diligent the server was. My chances of succeeding in life, in my opinion, will be improved by my efforts.

I took a few networking-related classes during my academic career, including (Data Communication, Communication Engineering, Computer, and Network Security, etc.). I became interested in networking and troubleshooting using the internet to resolve elementary system problems.

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### **1.3 Internship Objectives**

The main goals of this report are to demonstrate the knowledge and information gained throughout the organization's internship time and to meet the standards of the CSE program.

- Using the knowledge I've gained during my studies at Daffodil International University.
- The internship will boost my practical skills and give me more confidence.
- The internship will improve my public relations by dealing with diverse employees and managers.
- The internship will instruct me on how to conduct myself in an office setting and deal with issues when they arise.
- The network-related activities of network design, maintenance, and troubleshooting encouraged me during my internship at the organization.
- My excellence throughout the internship will assist me in finding a decent career.

### **1.4 Introduction to the Company**

One of the leading IIG operators in the private sector of Bangladesh is Windstream Communication Limited. It launched in 2012. The Bangladesh Telecommunication Regulatory Commission held an open auction for WCL's IIG license. Numerous CDNs and IXs in various geographical areas are attached to them. It is one of Bangladesh's biggest IIG operators in the private sector. It is a leading supplier of cutting-edge network communications and technology solutions to consumers, small businesses, and large corporations. Windstream Communication Limited's IPv4 upstreams include TATA COMMUNICATIONS (AMERICA), NTT America, Inc., Voxility LLP, Bangladesh Submarine Cable Company Limited (BSCCL), Bharti Airtel Ltd, and Hurricane Electric LLC. Core-Backbone GmbH, TATA COMMUNICATIONS (AMERICA) INC, NTT America, Inc., Voxility LLP, Bangladesh Submarine Cable Company Limited (BSCCL), Bharti Airtel Ltd, and Hurricane Electric LLC are the upstreams of Windstream Communication Limited for IPv6.

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## **1.5 Report Layout**

In my internship report, I described the task I had learned to do; it had been operational for six months.

1st Chapter: I made an effort to describe the introduction of my internship, the motivation behind it, its goal, and the description of the organization where I had the opportunity to complete it in the first chapter.

2nd Chapter: I must discuss the company introduction, the firm's Products and market situation, the target markets of WCL, the SWOT analysis of Windstream Company Limited, and the Organizational Structure of the company where I did my internship in the second chapter.

3rd Chapter: I made an effort to outline my working method and my activities during the internship in the third chapter. I tried to describe the work done there, provided some instances, and included some of the work's figures.

4th Chapter: I made an effort to write something about competencies and SMART Plans in the fourth chapter.

5th Chapter: I made an effort to compose the conclusion and future career in the fifth chapter.

---

## CHAPTER 2

### Internship at Windstream Communication Limited

#### 2.1 Introduction

A technology business from Bangladesh is called Windstream Communication Limited. It started in 2012 as a private limited company. WCL's registered office is in Kaliakair, Dhaka, whereas Ramna, Dhaka, serves as the company's corporate office. One of the biggest IIG operators in Bangladesh's private sector is WCL. It is a leading supplier of cutting-edge network communications and technology solutions for consumers, small businesses, and enterprises. Broadband, security features, telephony, and digital TV are a few services that Windstream offers its consumers as part of its service packages. WCL's AS number is 139009. IPLC, IP bandwidth, IIG services, and other IT-related services are all provided by WCL. It offers broadband, MPLC, IPLC, and IP bandwidth for worldwide contact centers with local and national communication services.



Fig-1: Logo of WCL

---

## 2.2 Product and Market Situation

### Products:

- **IP Transit:** Networks can use the IP Transit service to connect via BGP to the rest of the Internet. In contrast to peering, when AS networks only share their customer routes, IP Transit allows one network to provide access to the entire Internet routing table in exchange for a fee. Payment for IP Transit services is frequently made monthly in advance or based on usage.

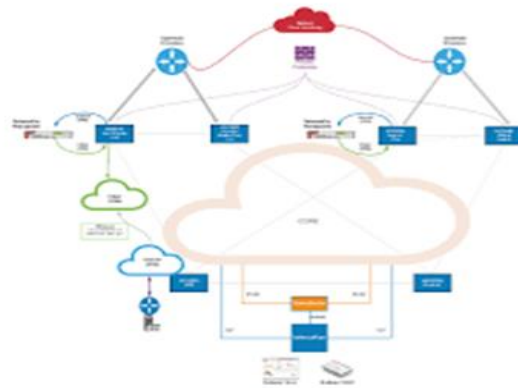


Fig-2: IP Transit

- **Multi-Protocol Label Switching (MPLS):** To handle forwarding over private wide area networks, the networking technology known as Multiprotocol Label Switching, or MPLS, uses "labels" network addresses to determine the quickest path for traffic. When dependability and speed are crucial, MPLS can be employed.

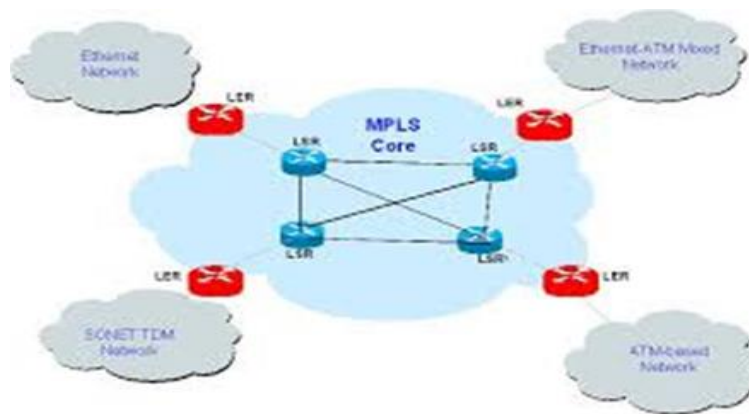


Fig-3: MPLS

- **International Private Leased Circuit (IPLC):** When a company has offices around the world, it connects them using a point-to-point private connection called an international private leased circuit (IPLC). With an IPLC, it is possible to access the internet, exchange data, hold video conferences, and engage in other types of communication.

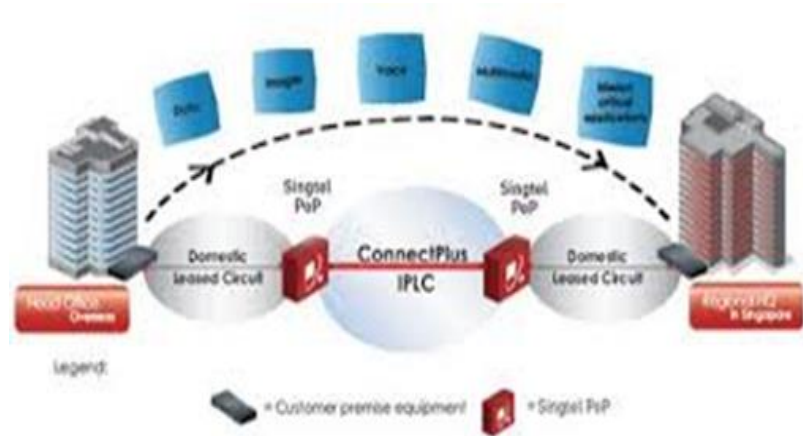


Fig-4: IPLC

- **VoIP Services:** You can make calls using a VoIP phone system instead of a landline or cellular network, which allows you to use your Internet connection. VoIP systems convert analog speech impulses into digital signals and transmit them over broadband connections. VoIP servers use call routing to send calls to different phone networks.



Fig-5: VoIP

- **IIG Bandwidth:** One of the leading international internet gateway (IIG) service providers in Bangladesh is WCL, which connects to the global internet via BSCCL (SMW4, SMW5), Tata Communications, Bharti Airtel, and Singapore Telecommunications.

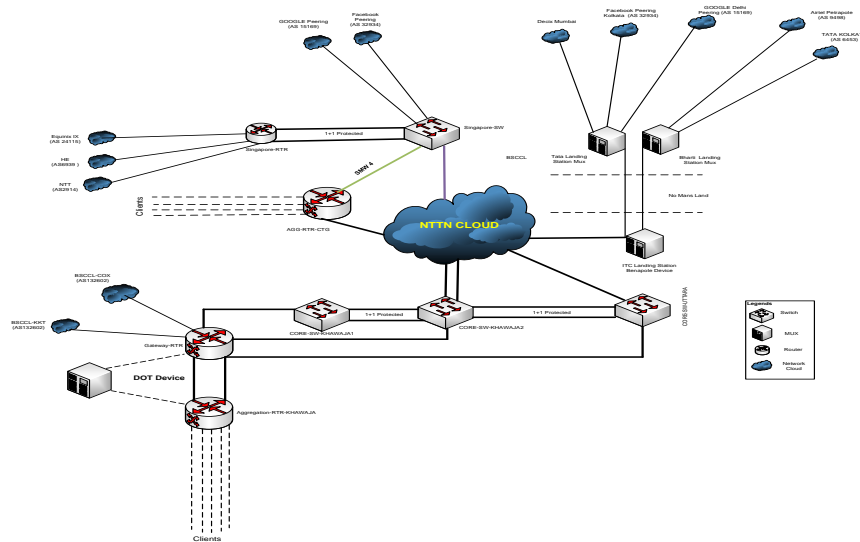


Fig-6: IIG Bandwidth

### Market Situation:

According to the BTRC, IIG offices must be set up at the district levels by December 2021, and Upazila and union levels would soon see an increase in services. Live and streaming services are becoming more commonly used by internet users in the country for gaming, entertainment, and commerce, and this trend is only expected to persist in the future. As a result, there will be an increase in the broadband internet consumption. If payment methods are made more straightforward and available, broadband internet usage can rise.

### 2.3 Target Group

- Internet Service Provider (ISP),
- Government Organizations,
- Digital Cable TV Operator,
- Mobile Network Operator



---

## **2.4 SWOT Analysis**

### **Strength**

The basic operations of Windstream that provide it a competitive edge in the markets are regarded as its strengths. Several factors contribute to a brand's strength, including its financial status, its workforce's expertise, the uniqueness of its products, and intangible assets like brand value. The following is a list of the SWOT analysis' strengths for Windstream:

1. A robust network facilitates good service.
2. Providing its customers with extensive offerings.
3. Effective R&D helps to create new products.
4. Powerful branding and promotion.

### **Weakness**

The company's weaknesses are certain areas where a brand should make adjustments to solidify its position. The weaknesses of a firm can be characterized as areas where it falls short or where its competitors flourish. The Windstream SWOT Analysis has the following drawbacks:

1. Presence with a concentrated geographic reach.
2. Inefficient operations that lower returns
3. The effects of declining cash on operations.

### **Opportunities**

Any brand can get better, which might increase sales. A brand may have opportunities for geographic expansion, product improvements, better communication, etc. The following are the opportunities identified by Windstream's SWOT analysis:

1. Plans for strategic growth to broaden the geographic and commercial reach
2. The Evolution of Communications Services in Various Markets

## Threats

Any company could be threatened by factors that could harm it. Threatening factors include rising rivalry, changing legal requirements, substitute products or services, etc. The following threats were noted in Windstream's SWOT analysis:

1. The rapid advancement of technology is having an impact on services.
2. The pricing pressure brought on by intense competition.
3. Comparably Lower Returns from the Base Market.

## 2.5 Organizational Structure

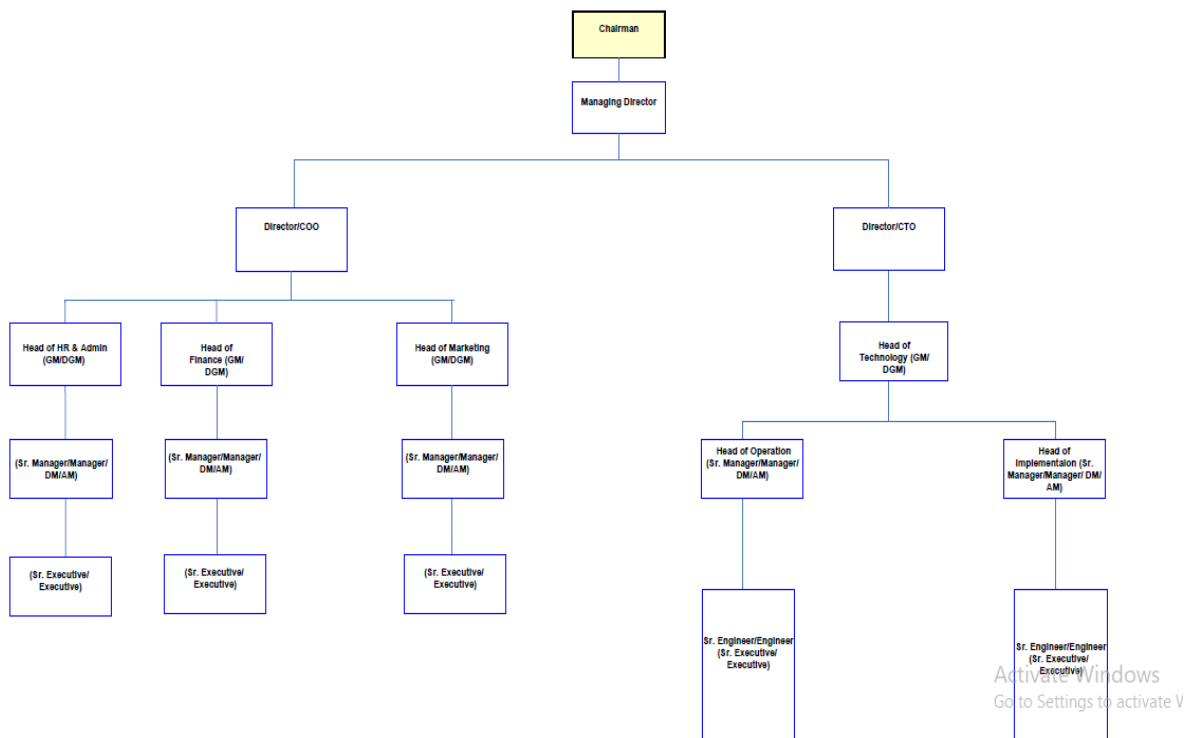


Fig-7: Organizational Structure of WCL

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## CHAPTER 3

### Tasks, Projects and Activities

#### 3.1 Daily Task and Activities

My internship at Windstream Communication Limited's Network Operation Center (NOC) Department is complete. They treated me as if I were a worker. My intern hours were from 8:00 AM to 4:00 PM. My internship began on June 6, 2022, and ended on December 6, 2022. I read a lot of other everyday tasks while working throughout this time.

- My trainer and I talk about routing security as I learn more about it.
- Go over our tasks for the last day once again. Try to correct any errors I may have with our trainer or a fellow student.
- Exactly, I want to attempt studying the material taught in our daily session using modules.
- Make a documentary for our class.
- If I encounter difficulties, I won't be dazed and will work with our trainer as soon as possible.
- Telephone and postal correspondence with clients.
- Using tools for surveillance (Cacti Graphs, PRTG, Smoke Ping, etc.).
- Monitoring client status (if they are down or not).
- Examining the downstream or client down (event).

#### 3.2 Events and Activities

My internship provided me with a wide range of opportunities. I only went to one event. The occasion was known as "Nou ICT Mela 2022." IT Polly coordinated the event. The Nou ICT Mela was IT Polly's fifth. On Tuesday, September 27, 2022, the event featured more than 2,700 tech exhibitors. The event had 10 stalls in all, including those from IT Palli, Maxhub, the gold sponsor, and Windstream, which had 8 additional stalls. There were several talks planned. As the chief guest, BTRC Chairman (Senior Secretary) Shyam Sundar Shikder was present.

### 3.3 Project Task and Activities

#### IP Address

##### What is IP Address?

A device can be recognized on the internet or within a local network thanks to its IP address, which is a distinctive address. The term "Internet Protocol," or IP, refers to the rules governing the arrangement of data conveyed across a local or wide-area network.

An IP address is made up of a string of integers, each separated by a period. Four numbers are used to denote IP addresses; 192.168.2.37 is an illustration. The range of each number in the set is 0 to 255. Therefore, the complete IP addressing range is 0.0.0.0 to 255.255.255.255.

**Type of Internet Protocol (IP) Address:** Type of IP addresses are given below:

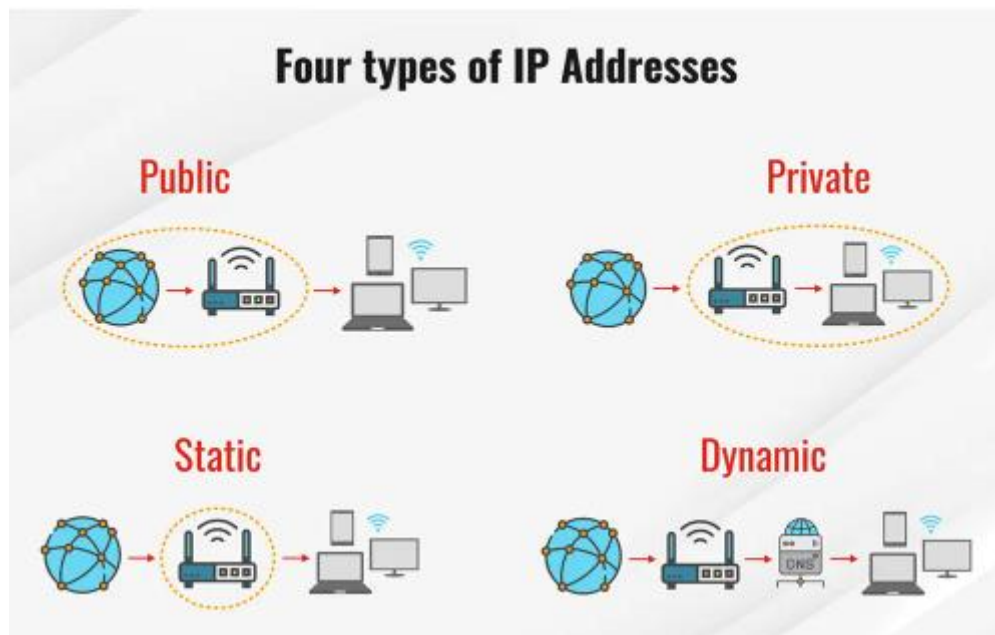


Fig-8: Type of IP Addresses

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## **Subnet Mask**

### **What is Subnet Mask?**

By changing the host bits to all 0, and the network bits to all 1, a 32-bit integer known as a subnet mask is produced. The subnet mask divides the IP address into the network address and host address in this manner.

While the "0" address is always linked to a network address, the "255" address is always tied to a broadcast address. Since both are set aside for these specific purposes, neither may be distributed around hosts.

To enable device communication, the majority of networks employ the Internet Protocol, which is composed of the IP address, subnet mask, and gateway or router.

### **How does Subnet Mask works?**

For the construction of quick and effective computer networks, sub-netting is necessary. Effective network structure and administration are essential for large firms trying to develop digitally as organizations throughout the world grow.

Complex networks become resilient when traffic has effective routes through the network. In the absence of appropriate data channels, all network traffic would flow haphazardly over all available paths, causing congestion and bottlenecks that would lower network performance.

With the help of subnets, network traffic can pass through fewer routers, reducing the amount of distance that data packets must travel to reach their destination within a larger network.

---

## Routing Protocol

### What is Routing Protocols?

A routing protocol is a set of predetermined rules that routers employ to interact with sources and destinations. Instead of sending the information from the origin to the destination, they only update the routing table that contains it. Thanks to the router protocol, we can describe how routers communicate. It allows the network to select a route between any two nodes in a computer network.

**Type of Routing Protocol:** Types of routing protocol are given below:

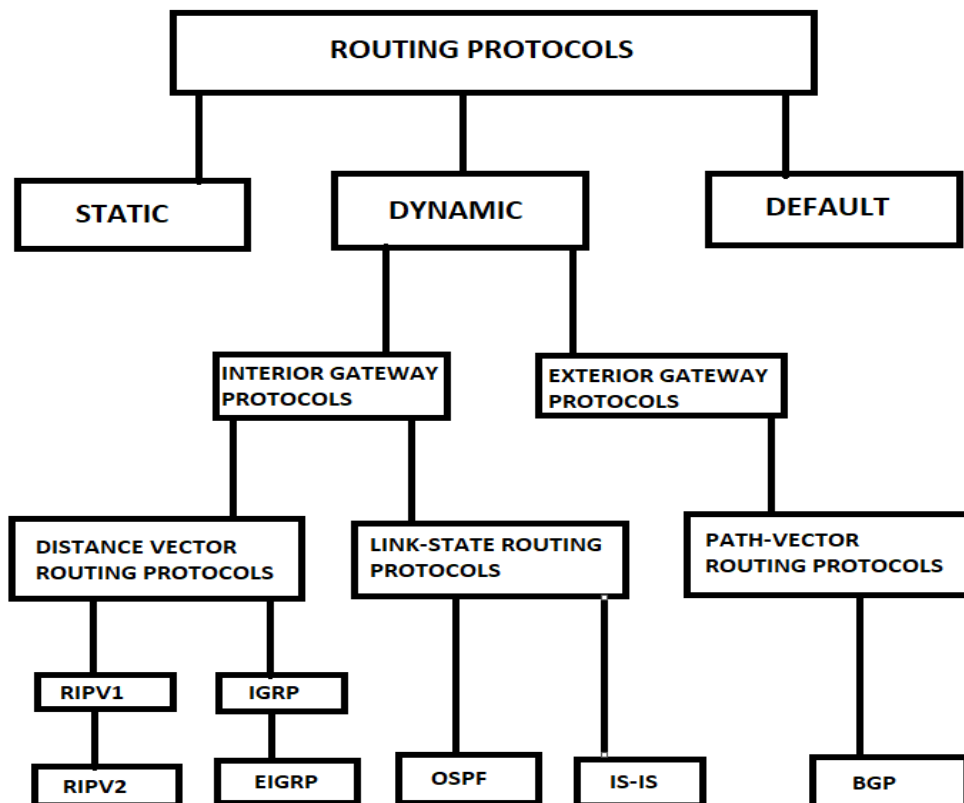


Fig-8: Type of Routing Protocol

## Static Routing Configuration Work-01

**Static routing:** Static routing is one of the network routing techniques. It is not a routing protocol; rather, it is a manually designed and selected network route, usually made by the network administrator. It is utilized when it is predicted that neither the network settings nor the surrounding environment will change.

Static routing is only the best choice in a select few situations. Network deterioration, latency, and congestion are caused by the rigidity of static routing since no adjustments are performed when the primary route is unavailable.

Static routing makes routing decisions based on established paths from the routing database, which can only be manually modified by administrators. When there are limited possibilities for choosing a route or just one feasible approach, static routes are frequently employed.

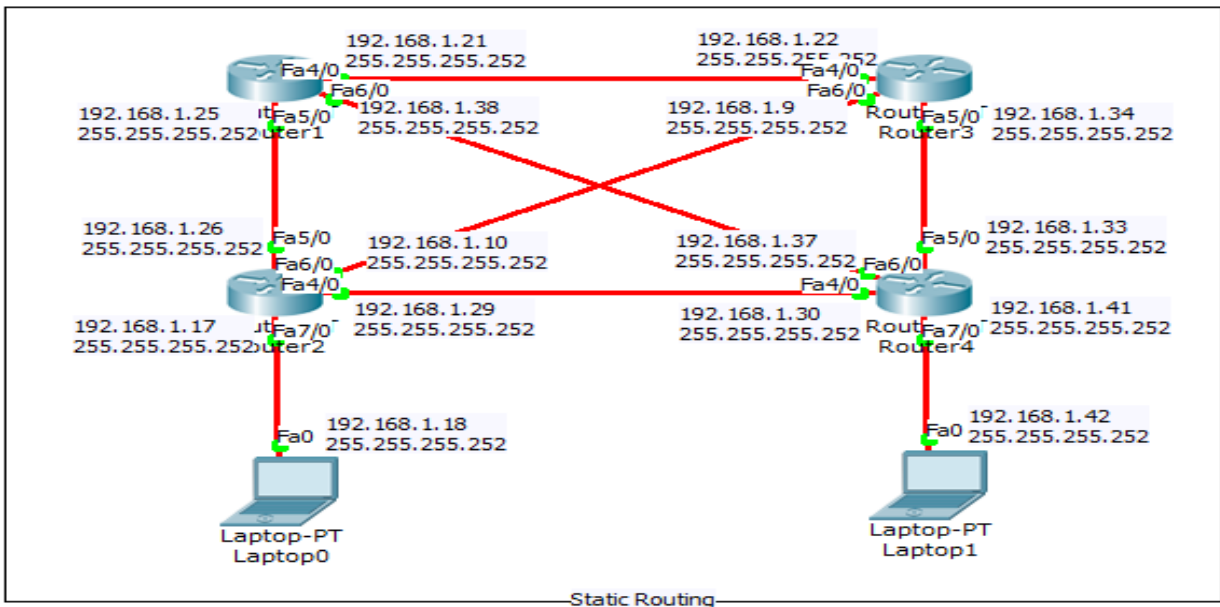


Fig-9: Static Route

```

interface FastEthernet4/0
  ip address 192.168.1.21 255.255.255.252
!
interface FastEthernet5/0
  ip address 192.168.1.25 255.255.255.252
!
interface FastEthernet6/0
  ip address 192.168.1.38 255.255.255.252
!
interface FastEthernet7/0
  no ip address
  shutdown
!
interface FastEthernet8/0
  no ip address
  shutdown
!
ip classless
ip route 192.168.1.40 255.255.255.252 192.168.1.37
ip route 192.168.1.16 255.255.255.252 192.168.1.26
!

```

Fig-10: Router-1 Static Configuration

```

interface FastEthernet4/0
  ip address 192.168.1.29 255.255.255.252
!
interface FastEthernet5/0
  ip address 192.168.1.26 255.255.255.252
!
interface FastEthernet6/0
  ip address 192.168.1.10 255.255.255.252
!
interface FastEthernet7/0
  ip address 192.168.1.17 255.255.255.252
!
interface FastEthernet8/0
  no ip address
  shutdown
!
router rip
!
ip classless
ip route 192.168.1.40 255.255.255.252 192.168.1.9
ip route 192.168.1.16 255.255.255.252 192.168.1.18
!

```

Fig-11: Router-2 Static Configuration



```

interface FastEthernet4/0
 ip address 192.168.1.22 255.255.255.252
 !
interface FastEthernet5/0
 ip address 192.168.1.34 255.255.255.252
 !
interface FastEthernet6/0
 ip address 192.168.1.9 255.255.255.252
 !
interface FastEthernet7/0
 ip address 192.168.1.46 255.255.255.252
 !
interface FastEthernet8/0
 no ip address
 shutdown
 !
ip classless
ip route 192.168.1.40 255.255.255.252 192.168.1.21
ip route 192.168.1.16 255.255.255.252 192.168.1.21
 !

```

Fig-12: Router-3 Static Configuration

```

interface FastEthernet4/0
 ip address 192.168.1.30 255.255.255.252
 !
interface FastEthernet5/0
 ip address 192.168.1.33 255.255.255.252
 !
interface FastEthernet6/0
 ip address 192.168.1.37 255.255.255.252
 !
interface FastEthernet7/0
 ip address 192.168.1.41 255.255.255.252
 !
interface FastEthernet8/0
 no ip address
 shutdown
 !
router rip
 !
ip classless
ip route 192.168.1.40 255.255.255.252 192.168.1.42
ip route 192.168.1.16 255.255.255.252 192.168.1.34
 !

```

Fig-13: Router-4 Static Configuration

## OSPF Configuration Work-02

**OSPF:** OSPF is the name of a routing protocol for IP networks. It functions within a single AS and uses an LSR algorithm, making it a member of the IGP class.

Using link status information gathered from accessible routers, OSPF creates a topology map of the network. The Internet Layer sees the topology as a routing table to help with packet routing depending on the destination IP address. OSPF supports both IPv4 and IPv6 networks, as well as the CIDR addressing architecture.

OSPF is used by many large enterprise networks. IS-IS is typically used by large service provider networks more often than other LSR-based protocols.

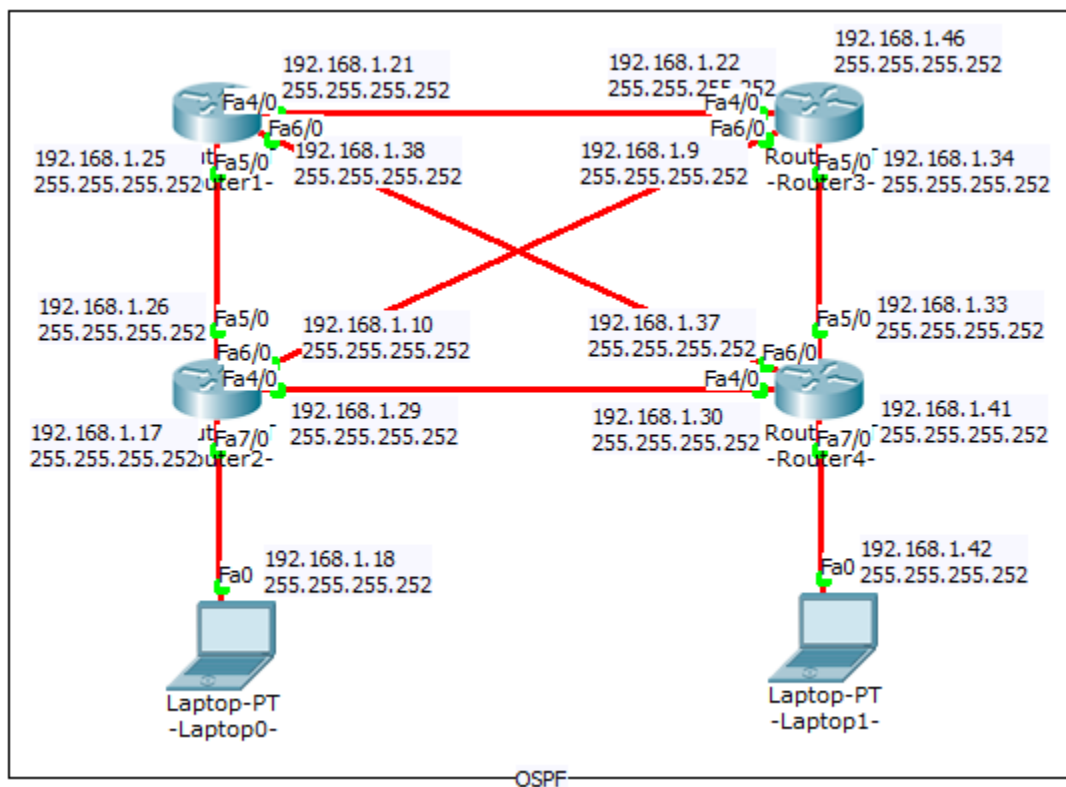


Fig-14: OSPF

```

interface FastEthernet4/0
 ip address 192.168.1.21 255.255.255.252
 !
interface FastEthernet5/0
 ip address 192.168.1.25 255.255.255.252
 !
interface FastEthernet6/0
 ip address 192.168.1.38 255.255.255.252
 ip ospf cost 300
 !
interface FastEthernet7/0
 no ip address
 shutdown
 !
interface FastEthernet8/0
 no ip address
 shutdown
 !
router ospf 1
 log-adjacency-changes
 network 192.168.1.24 0.0.0.3 area 1
 network 192.168.1.36 0.0.0.3 area 1
 network 192.168.1.20 0.0.0.3 area 1
 !

```

Fig-15: Router-1 OSPF Configuration

```

interface FastEthernet4/0
 bandwidth 4000
 ip address 192.168.1.29 255.255.255.252
 ip ospf cost 700
 !
interface FastEthernet5/0
 bandwidth 5000
 ip address 192.168.1.26 255.255.255.252
 ip ospf cost 500
 !
interface FastEthernet6/0
 bandwidth 6000
 ip address 192.168.1.10 255.255.255.252
 ip ospf cost 600
 !
interface FastEthernet7/0
 ip address 192.168.1.17 255.255.255.252
 !
interface FastEthernet8/0
 no ip address
 shutdown
 !
router ospf 1
 log-adjacency-changes
 network 192.168.1.16 0.0.0.3 area 1
 network 192.168.1.28 0.0.0.3 area 1
 network 192.168.1.24 0.0.0.3 area 1
 network 192.168.1.8 0.0.0.3 area 1
 !

```

Fig-16: Router-2 OSPF Configuration

```

interface FastEthernet4/0
 ip address 192.168.1.22 255.255.255.252
 !
interface FastEthernet5/0
 ip address 192.168.1.34 255.255.255.252
 !
interface FastEthernet6/0
 ip address 192.168.1.9 255.255.255.252
 !
interface FastEthernet7/0
 ip address 192.168.1.46 255.255.255.252
 !
interface FastEthernet7/0.10
 encapsulation dot1Q 10
 ip address 192.168.1.2 255.255.255.252
 !
interface FastEthernet7/0.20
 encapsulation dot1Q 20
 ip address 192.168.2.2 255.255.255.252
 !
interface FastEthernet8/0
 no ip address
 shutdown
 !
router ospf 1
 log-adjacency-changes
 network 192.168.1.8 0.0.0.3 area 1
 network 192.168.1.20 0.0.0.3 area 1
 network 192.168.1.32 0.0.0.3 area 1
 !

```

Fig-17: Router-3 OSPF Configuration

```

interface FastEthernet4/0
 bandwidth 4000
 ip address 192.168.1.29 255.255.255.252
 ip ospf cost 700
 !
interface FastEthernet5/0
 bandwidth 5000
 ip address 192.168.1.26 255.255.255.252
 ip ospf cost 500
 !
interface FastEthernet6/0
 bandwidth 6000
 ip address 192.168.1.10 255.255.255.252
 ip ospf cost 600
 !
interface FastEthernet7/0
 ip address 192.168.1.17 255.255.255.252
 !
interface FastEthernet8/0
 no ip address
 shutdown
 !
router ospf 1
 log-adjacency-changes
 network 192.168.1.16 0.0.0.3 area 1
 network 192.168.1.28 0.0.0.3 area 1
 network 192.168.1.24 0.0.0.3 area 1
 network 192.168.1.8 0.0.0.3 area 1
 !

```

Fig-18: Router-4 OSPF Configuration

## Default Route Configuration Work-03

**Default Route:** The router uses the default route to forward an incoming packet when the routing database does not include other options. Routers make traffic forwarding decisions using the routing table. The two elements of a routing table entry are the remote network and the local interface that is connected to it.

When a packet arrives on one of the router's interfaces, the router reads the destination network address and finds that network address in the routing table. The router sends the incoming packet from the interface designated next to the destination network in the routing table if the destination network is in the routing table and the router has an entry for it.

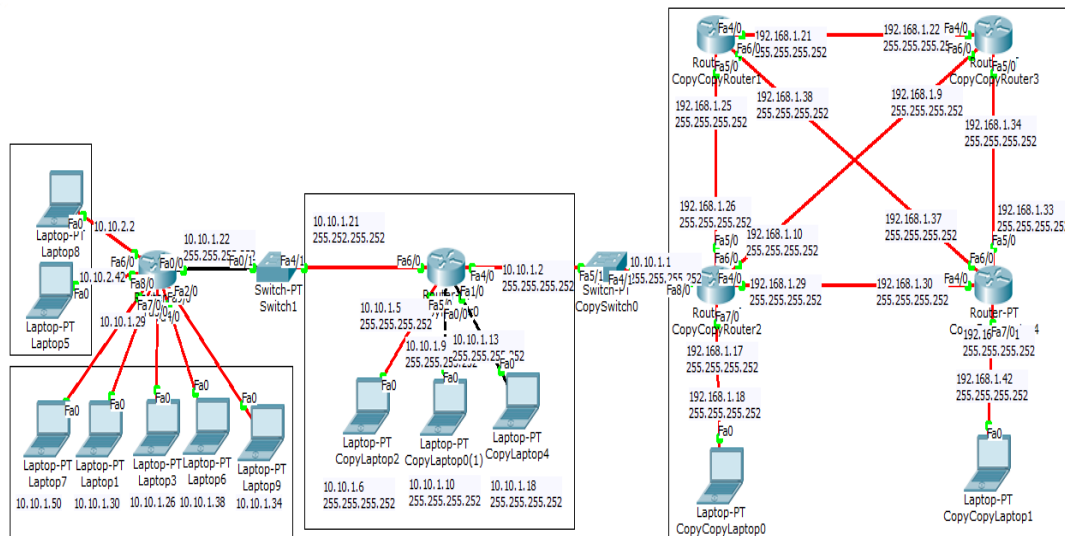


Fig-19: Default Routing

```

interface FastEthernet0/0
  ip address 10.10.1.9 255.255.255.252
  duplex auto
  speed auto
!
interface FastEthernet1/0
  ip address 10.10.1.17 255.255.255.252
  duplex auto
  speed auto
!
interface FastEthernet4/0
  ip address 10.10.1.2 255.255.255.252
!
interface FastEthernet5/0
  ip address 10.10.1.5 255.255.255.252
!
interface FastEthernet6/0
  ip address 10.10.1.21 255.255.255.252
!
ip classless
ip route 0.0.0.0 0.0.0.0 10.10.1.22
ip route 0.0.0.0 0.0.0.0 10.10.1.1
ip route 192.168.1.16 255.255.255.252 10.10.1.1
ip route 192.168.1.40 255.255.255.252 10.10.1.1
!

```

Fig-20: Default Client Router Configuration

```

interface FastEthernet0/0
  ip address 10.10.1.22 255.255.255.252
  duplex auto
  speed auto
interface FastEthernet2/0
  ip address 10.10.1.33 255.255.255.252
!
interface FastEthernet4/0
  ip address 10.10.1.25 255.255.255.252
!
interface FastEthernet5/0
  ip address 10.10.1.29 255.255.255.252
!
interface FastEthernet6/0
  ip address 10.10.2.1 255.255.255.252
!
interface FastEthernet7/0
  ip address 10.10.1.49 255.255.255.252
!
interface FastEthernet8/0
  ip address 10.10.2.41 255.255.255.252
!
interface FastEthernet9/0
  ip address 10.10.1.37 255.255.255.252
!
ip classless
ip route 0.0.0.0 0.0.0.0 10.10.1.21
!

```

Fig-21: Default Sub-Client Router Configuration



```
interface FastEthernet4/0
 ip address 192.168.1.21 255.255.255.252
 !
interface FastEthernet5/0
 ip address 192.168.1.25 255.255.255.252
 !
interface FastEthernet6/0
 ip address 192.168.1.38 255.255.255.252
 ip ospf cost 300
 !
interface FastEthernet7/0
 no ip address
 shutdown
 !
interface FastEthernet8/0
 no ip address
 shutdown
 !
router ospf 1
 log-adjacency-changes
 network 192.168.1.24 0.0.0.3 area 1
 network 192.168.1.36 0.0.0.3 area 1
 network 192.168.1.20 0.0.0.3 area 1
 !
ip classless
 !
 !
 !
 !
 !
 !
line con 0
 password 12345
 login
 !
line aux 0
 !
line vty 0
 password 12345
 login
line vty 1 4
 login
```

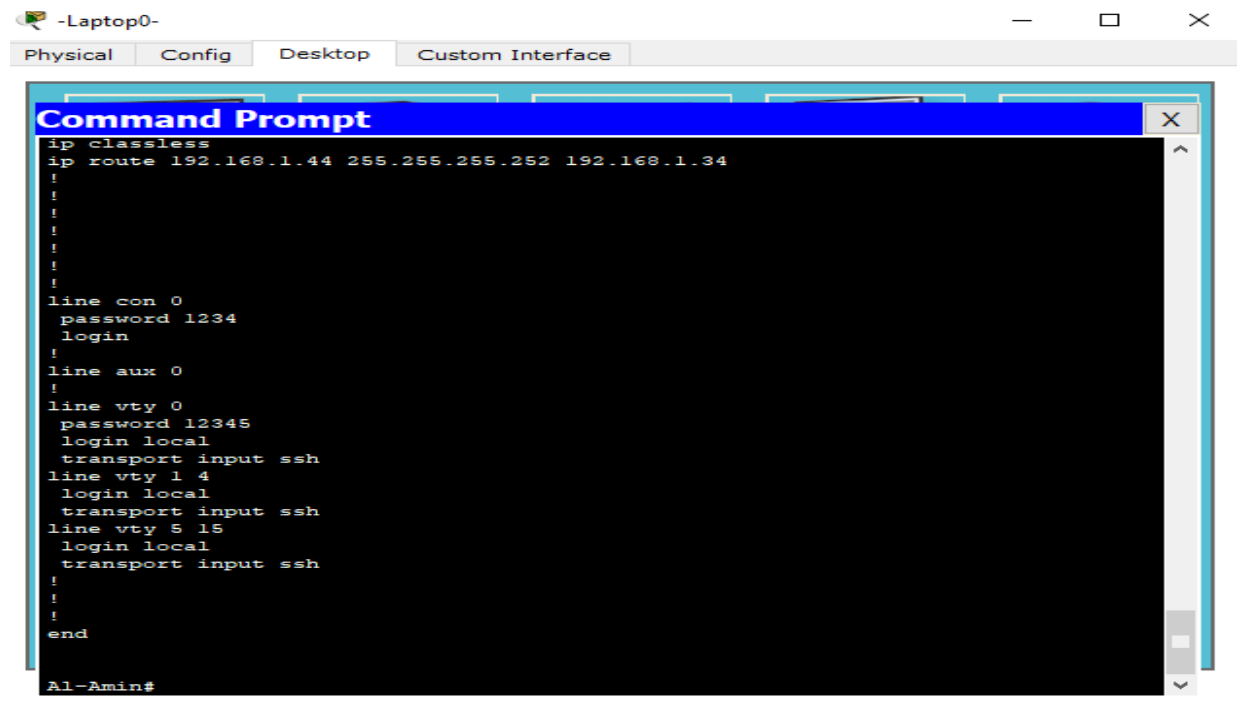
Fig-24: Remote Login (Telnet)

### Remote Login (SSH):

```
interface FastEthernet4/0
 ip address 192.168.1.30 255.255.255.252
 !
interface FastEthernet5/0
 ip address 192.168.1.33 255.255.255.252
 !
interface FastEthernet6/0
 ip address 192.168.1.37 255.255.255.252
 !
interface FastEthernet7/0
 ip address 192.168.1.41 255.255.255.252
 !
interface FastEthernet8/0
 no ip address
 shutdown
 !
router ospf 1
 log-adjacency-changes
 network 192.168.1.28 0.0.0.3 area 1
 network 192.168.1.40 0.0.0.3 area 1
 network 192.168.1.36 0.0.0.3 area 1
 network 192.168.1.32 0.0.0.3 area 1
 !
router rip
 !
ip classless
 ip route 192.168.1.44 255.255.255.252 192.168.1.34
```

Fig-25: Remote Login (SSH) Configuration-1





The image shows a screenshot of a Cisco Packet Tracer interface. At the top, there are tabs for 'Physical', 'Config', 'Desktop', and 'Custom Interface'. The 'Config' tab is selected. A 'Command Prompt' window is open, displaying the following configuration commands:

```
ip classless
ip route 192.168.1.44 255.255.255.252 192.168.1.34
!
!
!
!
!
!
!
!
line con 0
  password 1234
  login
!
line aux 0
!
line vty 0
  password 12345
  login local
  transport input ssh
line vty 1 4
  login local
  transport input ssh
line vty 5 15
  login local
  transport input ssh
!
!
!
end
Al-Amin#
```

Fig-26: Remote Login (SSH) Configuration-2

## VLAN Configuration Work-4

**VLAN:** A bespoke network called a VLAN. It is built from one or more local area networks. It makes it possible to integrate a collection of devices that could be found on several networks into a single logical network. The outcome is a virtual LAN that is managed similarly to a physical LAN. Virtual Local Area Network is the name of the full version of VLAN.

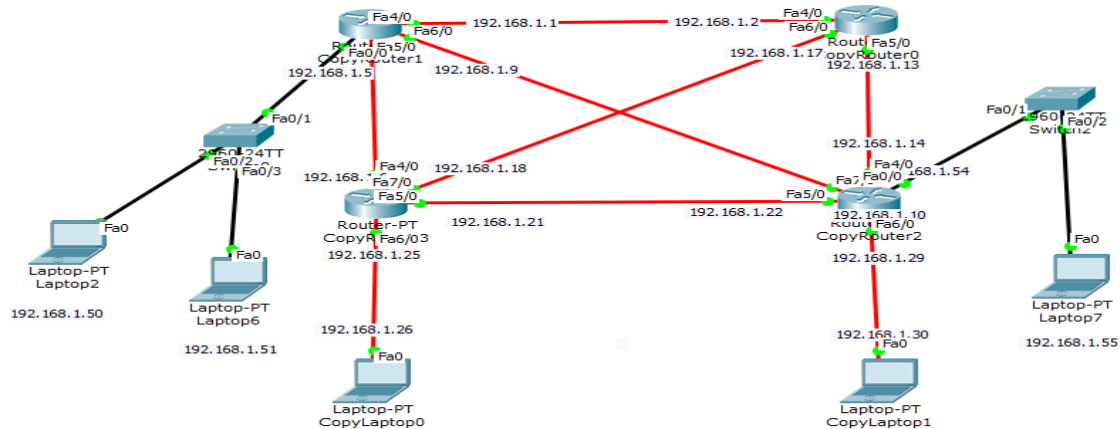


Fig-28: VLAN

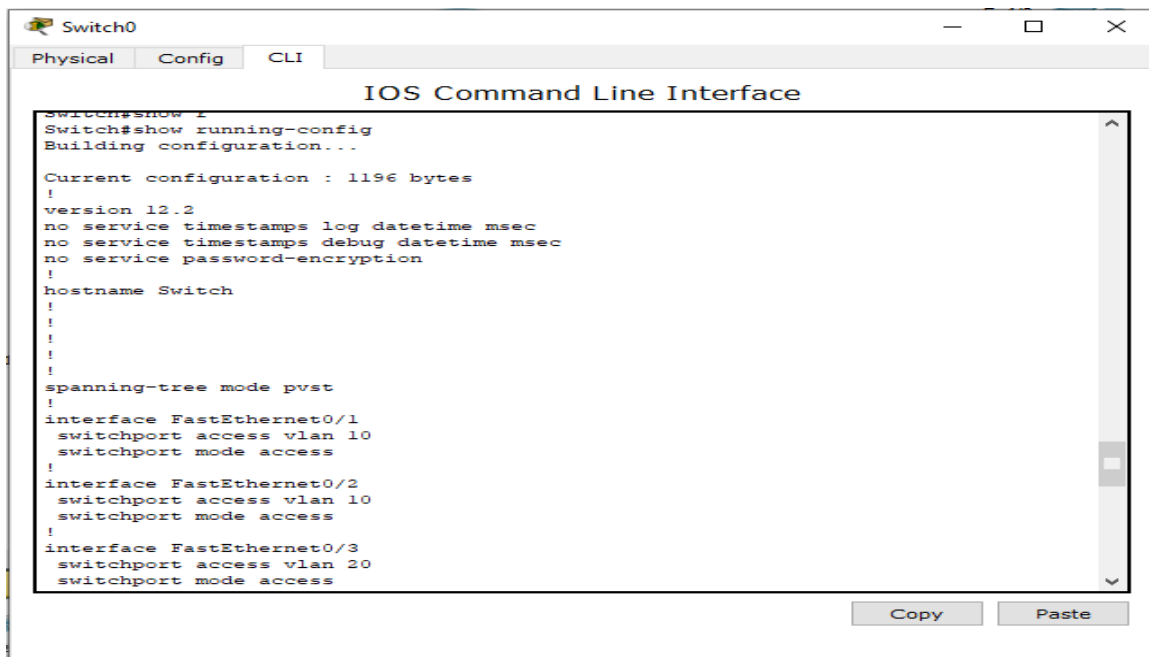


Fig-29: VLAN Configuration

---

## RIR

The responsibility for distributing and registering internet number resources within a specific geographical area falls to an organization called an RIR. Examples of resources for internet numbers include IP addresses and AS numbers. In the end, five different registries were responsible for managing the system of regional Internet registrations. Among the Five RIRs are:

**ARIN:** Responsible for overseeing the administration of Internet names and addresses for North America, including Canada.

**RIPE NCC:** Responsible for overseeing the management of Internet names and addresses for Europe, the Middle East, and Central Asia.

**APNIC:** The management of Internet names and addresses for Asia and the Pacific is the responsibility of APNIC. It is based in Japan's Tokyo.

**LACNIC:** The management of Internet names and addresses for Latin America and the Caribbean is the responsibility of LACNIC.

**AFRINIC:** Responsible for overseeing the management of Internet domain names and addresses for Africa.

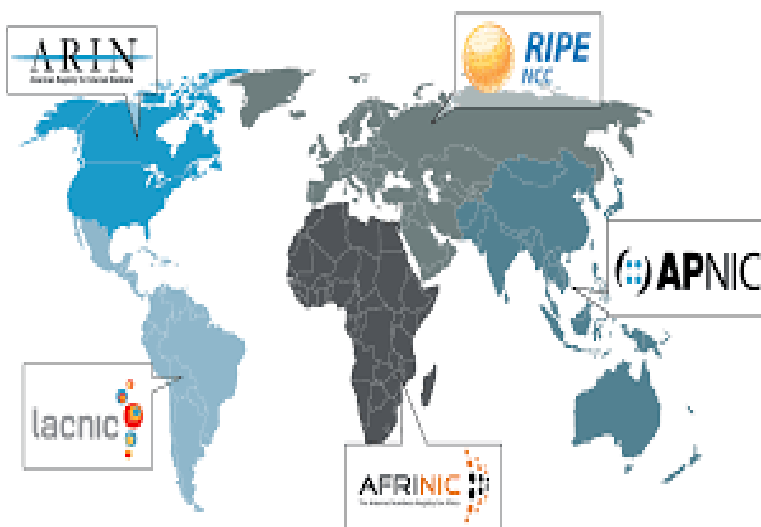


Fig-30: RIR

---

## EBGP

### What is EBGP?

An addition to the Border Gateway Protocol (BGP), called the External Border Gateway Protocol (EBGP), enables communication between various Autonomous Systems (AS). Between autonomous systems and autonomous systems of BGP implementations, EBGP offers network communication. It is the basic protocol that supports all global AS or Internet connections.

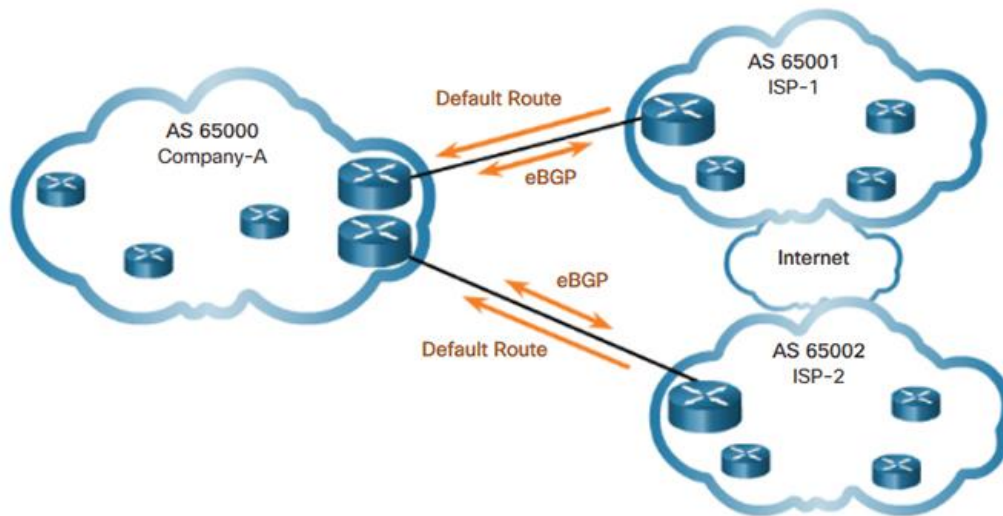


Fig-32: EBGP

### Why EBGP Used For?

EBGP is frequently used to link networks for different businesses or the global Internet. These organizations may be ISPs, colleges, or major corporations with extensive network infrastructure. For EBGP to work, each AS needs to implement BGP for internal communications.

The edge or border router, which connects two or more autonomous systems, employs and implements EBGP. In order to transfer data from the external Internet/AS to the internal Internet/AS and vice versa, it works in conjunction with the Internal Border Gateway Protocol (IBGP).

## IBGP

### What is IBGP?

The official name of this protocol is Internal Border Gateway Protocol (IBGP). In an autonomous system, it is utilized. Prefix learning requires either a confederation with route reflectors or a full mesh topology formed by all devices in the same autonomous system. Within the same autonomous system, it is used to link two BGP routers. The default setting for the administrative distance is 200. An EBGP peer may receive an advertisement for an IBGP route that was learned from an IBGP peer but cannot be published to other IBGP peers. To IBGP peers, attributes like local settings are provided. When a route advertises to an IBGP peer, the next hop remains unchanged.

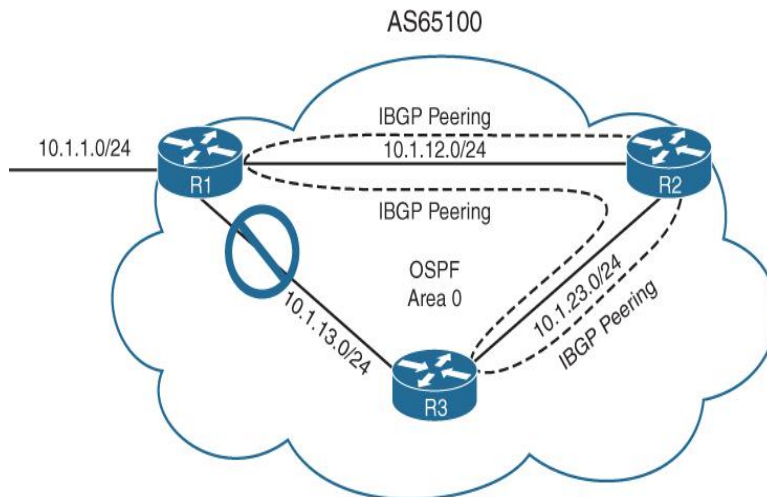


Fig-33: IBGP

## BGP Configuration Work-5

**BGP:** In some aspects, BGP is similar to the postal service of the Internet. The Postal Service determines the best way to send a letter to its intended destination after receiving it in a mailbox and inspecting it. BGP is in charge of identifying all open paths that could receive data sent across the Internet and choosing the best way, which requires switching between independent systems. The BGP protocol, which facilitates data routing, powers the Internet. When a user in Bangladesh loads a website with origin servers in Canada, BGP is the protocol that makes speedy and effective communication possible.

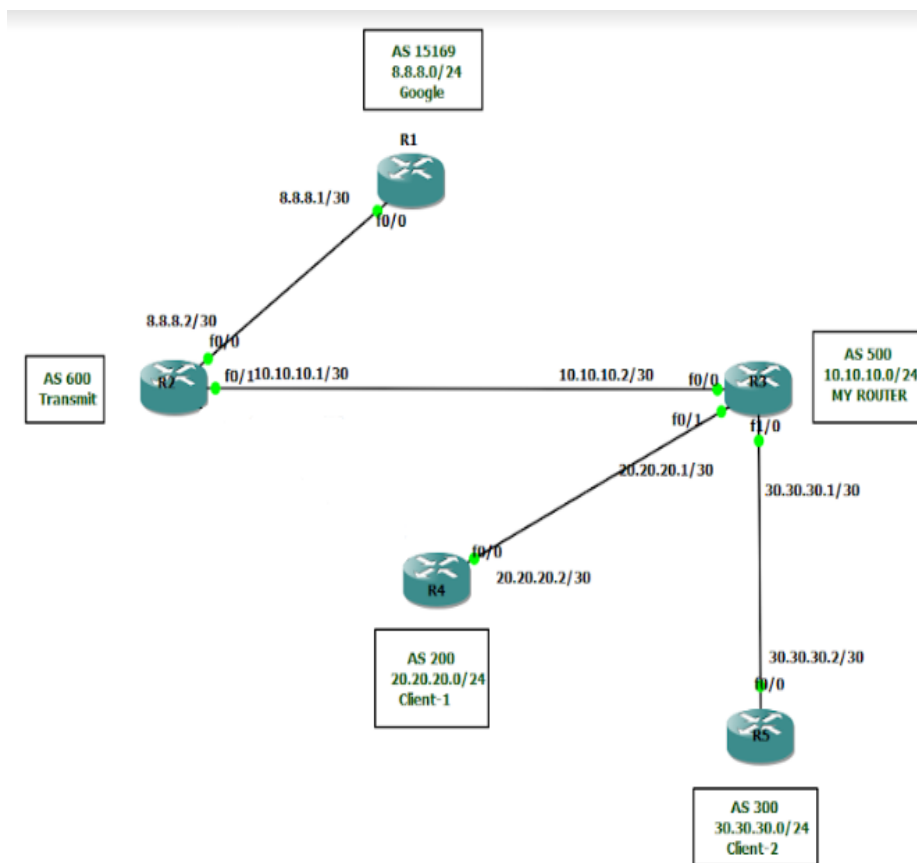


Fig-31: BGP

```

R1#show running-config | section bgp
router bgp 15169
no synchronization
bgp log-neighbor-changes
network 8.8.8.0 mask 255.255.255.0
neighbor 8.8.8.2 remote-as 600
no auto-summary
R1#show ip route
 21.0.0.0/24 is subnetted, 1 subnets
B    21.21.21.0 [20/0] via 8.8.8.2, 00:02:38
 20.0.0.0/24 is subnetted, 1 subnets
B    20.20.20.0 [20/0] via 8.8.8.2, 00:02:38
 8.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    8.8.8.0/30 is directly connected, FastEthernet0/0
S    8.8.8.0/24 is directly connected, Null0
 10.0.0.0/24 is subnetted, 1 subnets
B    10.10.10.0 [20/0] via 8.8.8.2, 00:02:38
 30.0.0.0/24 is subnetted, 1 subnets
B    30.30.30.0 [20/0] via 8.8.8.2, 00:02:39
R1#show ip bgp
BGP table version is 10, local router ID is 8.8.8.1
  Network          Next Hop           Metric LocPrf Weight Path
 *> 8.8.8.0/24      0.0.0.0            0         32768 i
 *> 10.10.10.0/24   8.8.8.2            0         600 500 i
 *> 20.20.20.0/24   8.8.8.2            0         600 500 200 i
 *> 21.21.21.0/24   8.8.8.2            0         600 500 200 i
 *> 30.30.30.0/24   8.8.8.2            0         600 500 300 i
R1#show ip bgp summary
BGP router identifier 8.8.8.1, local AS number 15169
Neighbor        V    AS MsgRcvd MsgSent  TblVer  InQ OutQ Up/Down State/PfxRcd
8.8.8.2         4    600    4      17      10     0    0 00:07:14 4
R1#traceroute 20.20.20.2
Tracing the route to 20.20.20.2
 1 8.8.8.2 20 msec 20 msec 16 msec
 2 10.10.10.2 [AS 500] 32 msec 28 msec 36 msec
 3 20.20.20.2 [AS 200] 48 msec 36 msec 44 msec
R1#traceroute 30.30.30.2
Tracing the route to 30.30.30.2
 1 8.8.8.2 12 msec 8 msec 12 msec
 2 10.10.10.2 [AS 500] 24 msec 24 msec 32 msec
 3 30.30.30.2 [AS 300] 44 msec 40 msec 36 msec

```

Fig-32: Router-1 BGP Configuration

```

R2#show ip bgp
BGP table version is 10, local router ID is 21.21.21.1
  Network          Next Hop           Metric LocPrf Weight Path
 *> 8.8.8.0/24      8.8.8.1            0         15169 i
 *> 10.10.10.0/24   10.10.10.2         0         500 i
 *> 20.20.20.0/24   10.10.10.2         0         500 200 i
 *> 21.21.21.0/24   10.10.10.2         0         500 200 i
 *> 30.30.30.0/24   10.10.10.2         0         500 300 i
R2#traceroute 20.20.20.2
Tracing the route to 20.20.20.2
 1 10.10.10.2 [AS 500] 8 msec 16 msec 16 msec
 2 20.20.20.2 [AS 200] 20 msec 40 msec 20 msec
R2#traceroute 30.30.30.6
Tracing the route to 30.30.30.6
 1 10.10.10.2 [AS 500] 20 msec 24 msec 8 msec
 2 30.30.30.2 [AS 300] 28 msec 20 msec 40 msec
 3 *
 30.30.30.6 [AS 300] 32 msec 68 msec
R2#show running-config | section bgp
router bgp 600
no synchronization
bgp log-neighbor-changes
neighbor 8.8.8.1 remote-as 15169
neighbor 10.10.10.2 remote-as 500
neighbor 21.21.21.2 remote-as 200
R2#show ip route
 21.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    21.21.21.0/30 is directly connected, FastEthernet1/0
B    21.21.21.0/24 [20/0] via 10.10.10.2, 00:08:06
 20.0.0.0/24 is subnetted, 1 subnets
B    20.20.20.0 [20/0] via 10.10.10.2, 00:08:06
 8.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    8.8.8.0/30 is directly connected, FastEthernet0/0
B    8.8.8.0/24 [20/0] via 8.8.8.1, 00:11:26

```

Fig-33: Router-2 BGP Configuration



```

R3#show running-config | section bgp
router bgp 500
  no synchronization
  bgp log-neighbor-changes
  network 10.10.10.0 mask 255.255.255.0
  network 20.20.20.0 mask 255.255.255.0
  network 30.30.30.0 mask 255.255.255.0
  neighbor 10.10.10.1 remote-as 600
  neighbor 20.20.20.2 remote-as 200
  neighbor 30.30.30.2 remote-as 300
  no auto-summary
R3#show ip route
      21.0.0.0/24 is subnetted, 1 subnets
B       21.21.21.0 [20/0] via 20.20.20.2, 00:10:45
      20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       20.20.20.0/30 is directly connected, FastEthernet0/1
B       20.20.20.0/24 [20/0] via 20.20.20.2, 00:10:45
      8.0.0.0/24 is subnetted, 1 subnets
B       8.8.8.0 [20/0] via 10.10.10.1, 00:10:45
      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.10.10.0/30 is directly connected, FastEthernet0/0
S       10.10.10.0/24 is directly connected, Null0
      30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       30.30.30.0/30 is directly connected, FastEthernet1/0
B       30.30.30.0/24 [20/0] via 30.30.30.2, 00:10:46
R3#show ip bgp
      Network                Next Hop                Metric LocPrf Weight Pat
*> 8.8.8.0/24                10.10.10.1              0                 0          600
*> 10.10.10.0/24             0.0.0.0                 0                 32768      i
*> 20.20.20.0/24             20.20.20.2              0                 0          200
*> 21.21.21.0/24             20.20.20.2              0                 0          200
*> 30.30.30.0/24             30.30.30.2              0                 0          300
R3#traceroute 8.8.8.1
Tracing the route to 8.8.8.1
 1 10.10.10.1 28 msec 24 msec 16 msec
 2 8.8.8.1 [AS 15169] 44 msec 40 msec 40 msec
R3#traceroute 30.30.30.6
Tracing the route to 30.30.30.6
 1 30.30.30.2 [AS 300] 24 msec 8 msec 8 msec
 2 30.30.30.6 [AS 300] 28 msec 24 msec 20 msec

```

Fig-34: Router-3 BGP Configuration

```

R4#show running-config | section bgp
router bgp 200
  bgp log-neighbor-changes
  neighbor 20.20.20.1 remote-as 500
  neighbor 21.21.21.1 remote-as 600
  !
  address-family ipv4
  neighbor 20.20.20.1 activate
  neighbor 20.20.20.1 route-map R3-OUT out
  neighbor 21.21.21.1 activate
  no auto-summary
  no synchronization
  network 20.20.20.0 mask 255.255.255.0
  network 21.21.21.0 mask 255.255.255.0
  exit-address-family
R4#show ip route
      21.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       21.21.21.0/30 is directly connected, FastEthernet0/1
S       21.21.21.0/24 is directly connected, Null0
      20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       20.20.20.0/30 is directly connected, FastEthernet0/0
S       20.20.20.0/24 is directly connected, Null0
      8.0.0.0/24 is subnetted, 1 subnets
B       8.8.8.0 [20/0] via 20.20.20.1, 00:12:49
      10.0.0.0/24 is subnetted, 1 subnets
B       10.10.10.0 [20/0] via 20.20.20.1, 00:12:50
      30.0.0.0/24 is subnetted, 1 subnets
B       30.30.30.0 [20/0] via 20.20.20.1, 00:12:50
R4#show ip bgp
BGP table version is 12, local router ID is 21.21.21.2
      Network                Next Hop                Metric LocPrf Weight Path
*> 8.8.8.0/24                20.20.20.1              0                 0          500 600 15169 i
*> 10.10.10.0/24             20.20.20.1              0                 0          500 i
*> 20.20.20.0/24             0.0.0.0                 0                 32768      i
*> 21.21.21.0/24             0.0.0.0                 0                 32768      i
*> 30.30.30.0/24             20.20.20.1              0                 0          500 300 i
R4#show ip bgp summary
BGP router identifier 21.21.21.2, local AS number 200
Neighbor    V    AS MsgRcvd MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
20.20.20.1  4    500    30      25      12    0    0 00:13:30    3
21.21.21.1  4    600     0       0       0     0    0    0 never      Active
R4#traceroute 8.8.8.1
Tracing the route to 8.8.8.1
 1 20.20.20.1 20 msec 28 msec 24 msec
 2 10.10.10.1 [AS 500] 28 msec 36 msec 40 msec
 3 8.8.8.1 [AS 15169] 72 msec 56 msec 72 msec

```

Fig-35: Router-4 BGP Configuration



```

R5#show running-config | sec
R5#show running-config | section bgp
router bgp 300
no synchronization
bgp log-neighbor-changes
network 30.30.30.0 mask 255.255.255.0
neighbor 30.30.30.1 remote-as 500
R5#show ip route
 21.0.0.0/24 is subnetted, 1 subnets
B   21.21.21.0 [20/0] via 30.30.30.1, 00:15:16
 20.0.0.0/24 is subnetted, 1 subnets
B   20.20.20.0 [20/0] via 30.30.30.1, 00:15:16
  8.0.0.0/24 is subnetted, 1 subnets
B   8.8.8.0 [20/0] via 30.30.30.1, 00:15:16
 10.0.0.0/24 is subnetted, 1 subnets
B   10.10.10.0 [20/0] via 30.30.30.1, 00:15:16
 30.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
C   30.30.30.4/30 is directly connected, FastEthernet0/1
C   30.30.30.0/30 is directly connected, FastEthernet0/0
S   30.30.30.0/24 is directly connected, Null0
R5#show ip bgp
BGP table version is 10, local router ID is 30.30.30.5
  Network          Next Hop        Metric LocPrf Weight Path
*> 8.8.8.0/24      30.30.30.1          0  500 600 15169 i
*> 10.10.10.0/24   30.30.30.1          0  500 i
*> 20.20.20.0/24   30.30.30.1          0  500 200 i
*> 21.21.21.0/24   30.30.30.1          0  500 200 i
*> 30.30.30.0/24   0.0.0.0             0  32768 i
R5#traceroute 8.8.8.1
Tracing the route to 8.8.8.1
 1 30.30.30.1 12 msec 20 msec 12 msec
 2 10.10.10.1 [AS 500] 20 msec 24 msec 20 msec
 3 8.8.8.1 [AS 15169] 20 msec 36 msec 20 msec
R5#traceroute 20.20.20.2
Tracing the route to 20.20.20.2
 1 30.30.30.1 8 msec 8 msec 24 msec
 2 20.20.20.2 [AS 200] 20 msec 32 msec 28 msec

```

Fig-36: Router-5 BGP Configuration

## BGP Route Leaking Work-6

**Route Leaking:** A BGP Route is a compromised "notification routing that has spread outside its intended audience. When an autonomous system (AS) violates the intended policies of the destination, sender, or one of the preceding AS by publishing a learnt BGP route to another AS, this happens.

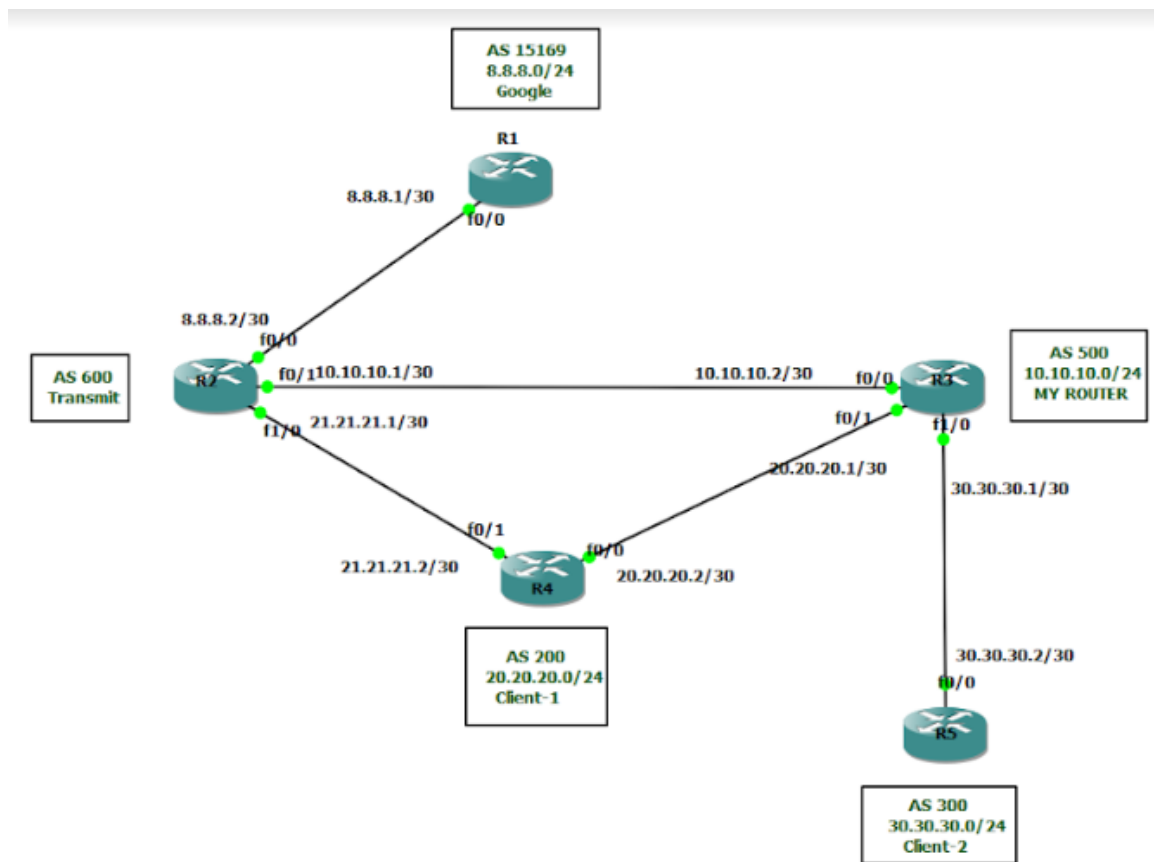


Fig-37: Route Leaking

```

running-config | section bgp
bgp 500
  synchronization
  bgp-neighbor-changes
  network 10.10.10.0 mask 255.255.255.0
  network 20.20.20.0 mask 255.255.255.0
  network 30.30.30.0 mask 255.255.255.0
  neighbor 10.10.10.1 remote-as 600
  neighbor 20.20.20.2 remote-as 200
  neighbor 30.30.30.2 remote-as 300
  no auto-summary
!
ip bgp
!
ip version 6, local router ID is 30.30.30.1
Network      Next Hop      Metric LocPrf Weight Path
*> 8.8.8.0/24      20.20.20.2      300          0 200 600 15169 i
+
+> 10.10.10.0/24  10.10.10.1      0            32768 i
+> 20.20.20.0/24  10.10.10.1      0            600 200 i
+> 21.21.21.0/24  20.20.20.2      0            300          0 200 i
+> 30.30.30.0/24  20.20.20.2      0            300          0 200 i
+> 30.30.30.0/24  30.30.30.2      0            300          0 300 i
R3#show ip route
B      21.0.0.0/24 is subnetted, 1 subnets
B      21.21.21.0 [20/0] via 20.20.20.2, 00:04:21
C      20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C      20.20.20.0/30 is directly connected, FastEthernet0/1
B      20.20.20.0/24 [20/0] via 20.20.20.2, 00:04:21
B      8.0.0.0/24 is subnetted, 1 subnets
B      8.8.8.0 [20/0] via 20.20.20.2, 00:04:21
C      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C      10.10.10.0/30 is directly connected, FastEthernet0/0
S      10.10.10.0/24 is directly connected, Null0
C      30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C      30.30.30.0/30 is directly connected, FastEthernet1/0
B      30.30.30.0/24 [20/0] via 30.30.30.2, 00:04:22
R3#traceroute 8.8.8.1
Tracing the route to 8.8.8.1
 1 20.20.20.2 [AS 200] 28 msec 20 msec 4 msec
 2 21.21.21.1 [AS 200] 28 msec 32 msec 28 msec
 3 8.8.8.1 [AS 15169] 24 msec 36 msec 60 msec
R5#traceroute 8.8.8.1
Tracing the route to 8.8.8.1
 1 30.30.30.1 12 msec 12 msec 12 msec
 2 20.20.20.2 [AS 200] 24 msec 40 msec 40 msec
 3 21.21.21.1 [AS 200] 44 msec 56 msec 36 msec
 4 8.8.8.1 [AS 15169] 80 msec 52 msec 80 msec

```

Fig-38: Route Leaking Problem

```

router bgp 500
  no synchronization
  bgp log-neighbor-changes
  network 10.10.10.0 mask 255.255.255.0
  network 20.20.20.0 mask 255.255.255.0
  network 30.30.30.0 mask 255.255.255.0
  neighbor 10.10.10.1 remote-as 600
  neighbor 10.10.10.1 route-map R2-IN in
  neighbor 20.20.20.2 remote-as 200
  neighbor 30.30.30.2 remote-as 300
  no auto-summary
!
ip forward-protocol nd
ip route 10.10.10.0 255.255.255.0 Null0
ip prefix-list R2-IN seq 5 permit 8.8.8.0/24
no cdp log mismatch duplex
route-map R2-IN permit 10
  match ip address prefix-list R2-IN in
  set local-preference 1000
!
R3#show ip bgp
BGP table version is 6, local router ID is 30.30.30.1
Network      Next Hop      Metric LocPrf Weight Path
*> 8.8.8.0/24      20.20.20.2      300          0 200 600 15169 i
+> 10.10.10.0/24  10.10.10.1      0            1000        32768 i
+> 20.20.20.0/24  10.10.10.1      0            1000          600 200 i
+> 21.21.21.0/24  20.20.20.2      0            1000          600 200 i
+> 30.30.30.0/24  20.20.20.2      0            200          0 200 i
+> 30.30.30.0/24  30.30.30.2      0            300          0 300 i
R3#show ip route
B      21.0.0.0/24 is subnetted, 1 subnets
B      21.21.21.0 [20/0] via 10.10.10.1, 00:00:55
C      20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C      20.20.20.0/30 is directly connected, FastEthernet0/1
B      20.20.20.0/24 [20/0] via 10.10.10.1, 00:00:55
B      8.0.0.0/24 is subnetted, 1 subnets
B      8.8.8.0 [20/0] via 10.10.10.1, 00:00:55
C      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C      10.10.10.0/30 is directly connected, FastEthernet0/0
S      10.10.10.0/24 is directly connected, Null0
C      30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C      30.30.30.0/30 is directly connected, FastEthernet1/0
B      30.30.30.0/24 [20/0] via 30.30.30.2, 00:00:56
R5#traceroute 8.8.8.1
Tracing the route to 8.8.8.1
 1 30.30.30.1 12 msec 16 msec 12 msec
 2 10.10.10.1 [AS 500] 20 msec 40 msec 24 msec
 3 8.8.8.1 [AS 15169] 64 msec 32 msec 36 msec
R3#traceroute 8.8.8.1
Tracing the route to 8.8.8.1
 1 10.10.10.1 12 msec 20 msec 12 msec
 2 8.8.8.1 [AS 15169] 24 msec 32 msec 16 msec

```

Fig-39: Route Leaking Problem Solve

---

## CHAPTER 4

### Competencies and Smart Plan

#### 4.1 Competencies Earned

To encourage participants to enhance their skills in a range of IT system support activities so that they are prepared entry-level professionals upon the conclusion of the internship. This framework provides opportunities to improve your abilities regardless of the kind, size, or complexity of the system you manage during your training. Improve our capacity for growth and direction as we hone the three crucial management skills we need to manage internships technical proficiency, performance, and personal conduct and attitude. The Manager Competency Development Internship also provides information on how to construct a framework for corporate skill development that organizations can utilize for continuing employee assessment and development.

#### 4.2 Smart Plan

Specific, Measurable, Available, Compliant, and Time-Bound are all abbreviations for SMART. It alludes to a list of aims and purposes. The idea is that all internship regulations must adhere to the SMART standard in order to be effective. Consequently, when preparing for an internship:

**Specific:** The goal is intended to create a system or meet a specific demand and has a target in a particular area.

**Measurable:** In order for the system to be able to track its progress, the goal must at the very least be countable.

**Attainable:** The objective must be reachable and practical within the framework of the system.

**Retain ability:** The objective must be reasonable and attainable within the system, consistent with other company objectives that would be regarded relevant, and feasible.

**Time-bound:** The goal's end date is specified in the system configuration.

---

### **4.3 Reflections**

Criticize the fact that although the material of the light portfolio will be more customized than other assignments, you need nevertheless apply the same amount of critical thought to all essays and tests. Make careful to document every phase of your project, from planning to completion. The examination of technological issues requires the inclusion of a wealth of knowledge. The results of the investigation also point to potential future enhancements. To achieve the highest grade thorough examination of the results of the lessons should be part of your thinking report. A few well-considered recommendations for creating related activities in the future should be a part of this.

---

## **CHAPTER 5**

### **Conclusion and Future Career**

#### **5.1 Discussion and Conclusion**

I've now finished my six-month internship. Creating a system that will enable network security to be automated is the aim of the internship I was assigned to complete. The process of educating various clients and users would be significantly simplified.

In the IT sector of Bangladesh across the border, there is a sizable workforce of networking security engineers. It will soon have a bright future in Bangladesh, but it will need a lot of opportunity if the specialized software can be completed accurately and completely.

#### **5.2 Scope for Further Career**

Even if the internship is done in accordance with the actual requirements, if time permits, there are a few things we may add or improve it. There should be a review of the IT Support system's implementation. We can learn more about how to use a system that is more successful and economical by looking at different networking. I'm anticipating a couple of opportunities that will advance my career. A network engineer in the IT industry has the perfect job market. As a result, I wish to advance my career in the IT industry with this curriculum and a well-known new program.

---

## Appendix

BGP- Boarder Gateway Protocol

VLAN- Virtual Local Area Network

LAN- Local Area Network

SSH-- Secure Shell

OSPF-- Open Shortest Path First

LSR-- Label Switching Router

IGP-- Interior Gateway Protocol

CIDR-- Classless Inter-Domain Routing

IPv4-- Internet Protocol Version 4

IPv6-- Internet Protocol Version 6

EBGP-- External Boarder Gateway Protocol

IBGP-- Internal Boarder Gateway Protocol

IP-- Internet Protocol

PRTG-- Paessler Router Traffic Grapher

SNMP-- Simple Network Management Protocol

MRTG-- Multi Router Traffic Grapher

NOC-- Network Operation Center

ISP-- Internet Service Provider

TV-- Television

BTRC-- Bangladesh Telecommunication Regulatory Commission

IIG-- International Internet Gateway

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WCL-- Windstream Communication Limited

BSCCL-- Bangladesh Submarine Cable Company Limited

VoIP-- Voice over Internet Protocol

IPLC-- International Private Leased Circuit

MPLC-- Motion Picture Licensing Corporation

IT—Information Technology

CDN-- Content Delivery Network

IX-- Internet Exchange

CSE-- Computer Science Engineering

LTD-- Limited

AS-- Autonomous System

IP-- Internet Protocol

RIR-- Regional Internet Registry

APNIC-- Asia-Pacific Network Information Centre

AFRINIC-- African Network Information Center

ARIN-- American Registry for Internet Numbers

LACNIC-- Latin America and Caribbean Network Information Centre

RIPENCC-- Réseaux IP Européens Network Coordination Centre



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## INTERNSHIP ON NETWORK SECURITY: AN APPROACH FOR ROUTING SECURITY

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