

CCNA ROUTING AND SWITCHING

SUBMITTED

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

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DAFFODIL INTERNATIONAL UNIVERSITY

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APPROVAL

This Internship titled “ **CCNA Routing & Switching**”, submitted by **Ektekhar Alam Ruman**, ID No:**162-15-8013** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial and 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 July 2019.

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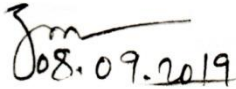
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Heartiest thanks to **Dr. Syed Akhter Hossain, Professor and Head, Department of CSE**, for his kind help to finish my internship. I want also like to thank my parents and friends who helped me a lot in finishing this training within the limited time. I would like to extend my sincere appreciation to my friends Juwel and Fahad who offered many suggestions for the training and training time.

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

ABSTRACT

This task quickly examines the design of an undertaking system. It inspects the boundaries to arranging, structuring and executing a venture organize. This undertaking likewise covers the techniques to actualize endeavor level systems. In this undertaking we will begin from working essential switch arrangement at that point covering the Routing advances required to course information between branches. After that we have actualize WAN and Frame-transfer is viewed as a decent decision since it associates various area utilizing single interface of switch and decrease the equipment costs.. So we should pay attention to it and accomplish it for our future life. That is the reason I pick this subject of my report is "Temporary position on CCNA Routing and Switching" on Computer Networking. The report discussed the purpose behind the specific Routing, exchanging, Addressing, RIP use for cisco center convention, EIGRP is utilizing for each systems administration framework, OSPF likewise this utilizing each convention and VLAN this are one of a kind convention. This is the because of the need creating countries of a sufficient IT foundation, which is underestimated in created countries. Arranging an endeavor organize in a creating country is practically similar to arranging it in a desert.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This is the season of IT we can't do anything without Internet. Without web we can't contemplate our future. By and by multi day's the world used in web advancement and Networking is a significant part. CCNA is most commonplace and secure systems administration framework on the planet. Today every business, each office, bank and exchange is particularly based correspondence and Networking. CCNA directing and exchanging is significant for an office, an organization and all ISP organization for keeping up the Internet. At present and future we can't think any longer without web. So we should pay attention to it and accomplish it for our future life. In this report there are numerous subject I have included which is significant for systems administration. CCNA steering and exchanging is for the most part normal and commonplace to the correspondence designing for convey.

1.2 Motivation

At present I am an understudy of Daffodil International University and examining Bachelor of Computer Science and Engineering. In Bangladesh there is a gigantic activity part for PC organizing, And that motivated to find out about PC systems administration course. Data are empower to perusing and understudy to get a progressively broad perspective of the subjects. CCNA is a framework that expansion my solidarity to better for my future. So I pick and spur to do temporary job about area of PC organizing on CCNA Routing and Switching.

As a Network manager what is at the forefront of my thoughts incredibly well, and great to deal with for critical thinking, talking with people, understanding their needs and think about how to keep up issue and giving them better organization.

1.3 Internship Objectives

Temporary job is commit for our future life for fruitful in employment. So I have total my temporary position dependent on CCNA directing and exchanging. Outrageous objective of my Internship is to help and think myself up as a certified one in the engaged movement publicizes. So this is uncommonly convincing of ability headway. In this temporary position I have taken in a loads of new things which is significant for my vocation.

1.4 Introduction to the Company

The entire preparing system is done under JBS Security Solution Ltd. Systems administration Academy Routing and Switching is an IT abilities and profession building operator for learning organizations and people overall innovation. JBS specialized group comprises of qualified and well experience experts. JBS Security Solution Ltd is in all respects carefully controlled their client and adjusted their administration. Our innovation workers are more fit than your creative mind. They as of now have demonstrated their abilities in the fields of Design, Computer Networking, Marketing& Sales, Installation, Commissioning and Maintenance of Fire Detection and Alarm System, Intrusion Detection and Alarm System, CCTV Surveillance System, Public Address System, Networking and PABX System and so on [1]

This Company gives the most recent seminars on the Networking space to its understudies inside the organization to keep them refreshed about the most recent progressions.

1.5 Report Layout

This Internship report consists of five Chapters. In report layout all chapter is condensed. We tried to summarize all the chapters. The summarization is given below:

In the section (1) I have portrayed objective of temporary position, Motivation of entry level position and Prologue to the association and depict it.

In the section (2) I have portrayed the way of thinking of my impermanent activity. In addition, this part gives the information about where the section level position has been associated with grasp this preparation. Furthermore, how we take a situation in our future life. In like manner included about how played out the transitory activity capacities, about the association, what are the IT advantage offered in JBL and what are the pieces of in livelihoods market of CCNA steering and Switching.

In the section (3) I have portray about step by step attempted and activities, Events and Exercises and Challenges. Every day assignments and exercises are portray there.

In the section (4) In the part four I have portray about the Competencies Earned, Smart Plan, and Reflections.

In the section (5) I have depicted is Conclusion and Future Scope. Future interest on or employment place. I look at Future Scopes of CCNA Routing and Switching and form end.

CHAPTER 2

INTERNSHIP ORGANIZATION

2.1 Company Introduction:

The entire preparing system is done under JBS Security Solution Ltd. Systems administration Academy is an IT aptitudes and vocation building operator for learning organizations and information accomplishing people overall innovation. JBS technical team consists of qualified and well experience professionals. Our technology employees are more capable than your imagination. They already have proven their skills in the fields of Design, Computer Networking, Marketing & Sales, Installation, Commissioning and Maintenance of Fire Detection and Alarm System, Intrusion Detection and Alarm System, CCTV Surveillance System, Public Address System, Networking and PABX System etc. This Company provides the latest courses on the Networking domain to its students inside the company to keep them updated about the latest advancements.

2.2 Services and Market Situation

JBS Security arrangement Ltd. It is PC and correspondence innovation administrations organization. It gives the IT and various administrations to their client. JBS Security Solution is an ISP specialist organization. It is a business type organization and they offer support of their client. Where they are searching for long haul business arrangement to serve their best services. JBS Security arrangement Ltd. additionally gives various kinds of IT Services and Professional Training administrations. These are given underneath.

IT Services

- Security arrangement.
- Open source application arrangement.
- Internet Service Provider
- Hi speed Wi-Fi Zone.
- Data Connectivity, Data center & Co-Location.
- And All PC frill.
- CCTV Surveillance
- X-beam and things scanner
- Car park the executives framework

Professional Training Services

- Training Course on CCNA
- PHP and MYSQL for Website Development.
- Networking & PABX System

2.3 SWOT Analysis

SWOT Analysis is a commit procedure to think about our shortcoming and solid site. So we ought to apply it in each work for comprehend your Strength and Weaknesses, and for recognize both the Opportunity open to you and the Threats you face to decide.

Strength:

High hindrance to section

Exceptionally experience administrator

Exceptionally sell item on the web

Weakness:

Restricted adaptable in cost

Contenders can offers rapidly

2.4 Organizational Structure: Organizational Structure of JBS Security Solution Ltd.

Shown below in figure:



Figure 2.1: Organizational Structure

CHAPTER 3

TASKS, EVENTS AND ACTIVITIES

3.1 Daily Tasks and Activities

Month - 1: In the primary month of entry level position on JBS Security Solution Ltd I have learned and Exercise the accompanying points appropriately:

- Internetworking Technology
- OSI and TCP/IP Model
- IPv4 Addressing and Sub-netting
- Routing convention Information

Month - 2: In the second month of entry level position on JBS Security Solution Ltd I have prepared and played out the accompanying points appropriately: Static & Default Routing

- RIP
- EIGRP
- OSPF

Month – 3: in the third month of temporary job on JBS Security Solution Ltd I have prepared and played out the accompanying themes appropriately: NAT ant PAT

- Switching Introduction
- VLAN
- Wireless Technology

3.2 Internetworking Technology

Computer Network:

A PC system is fundamentally the majority of the segments help to associated to each other PC that engaged with interfacing PCs crosswise over little and furthermore huge Distances. System are utilized to give simple access to data, in this way expanding efficiency for clients. Utilizing a few conventions the system are built up the association. [3]

Component That make up a Computer Network:

- End Devices
- Medium
- Network Device
- Messages

Rules Why needs Networking?

There are heaps of chance from Build up a Network, however the three major actualities are-

1. File sharing
2. Resource Sharing
- 3 Program Sharing

Types of Networks:

1. Local Area Networks(LAN): are utilized to interface organizing gadgets that are little territory, for example, a story of a structure, a structure, a grounds.
2. Metropolitan Area Networks (MAN): is a cross breed between a LAN and a MAN. A MAN (Metropolitan Area Network) is another class of system, however the term is not always used. A MAN is defined as a network that connects LAN's across a area, city-wide, networking geographic area.
3. Wide Area Networks (WAN): are utilized to interface LANs together. Normally, WANs are used when the LANs that must be connected are separated by a large distance. A WAN can be defined one of two ways. The book define of a WAN is a network that space large geographical locations, usually to connect multiple LANs and connect each others. This is a general definition, and not always accurate to connect the devices.

3.3 OSI Model & TCP/IP Protocol

OSI: The open framework Interconnection (OSI) model was created and made by the International Organization for Standard (ISO). It gives the First structure administering how data Should be over a system.

OSI model: There are 7 layers-

1. Physical Layer
2. Data Link layer
3. Network Layer
4. Transport Layer
5. Session Layer
6. Presentation Layer
7. Application Layer

OSI Model-The Upper Layers:

The a large portion of the OSI model top three layers are frequently alluded to as the upper layers:

- Application Layer (Layer 7)
- Presentation Layer (Layer 6)
- Session Layer (Layer 5)

OSI reference model the upper layer and the lower layer are arrangement is unique. The conventions of the OSI model. By and large it gives the first govt. system.

Application Layer

- Provides system administrations and application forms
- like email
- File Transfer and Terminal Emulation.

Presentation Layer

- Ensures information is entirely coherent and by getting framework
- Format of information present
- Data portrayal
- Data structure
- Negotiates was have application layer in layer 6
- Compression information, decompression information, encryption and unscrambling information

Session Layer

- Inter-have correspondence mode
- Establishment, oversees information
- And ends sessions between applications

Transport Layer

- Data transport unwavering quality framework
- Establishes, keeps up, and ends virtual creation
- End to end association unwavering quality for vehicle
- Fault discovery
- Information and stream control.

Network Layer

- Addresses the best way for impart
- Provides the best availability and way choice between two start to finish frameworks
- Domain of steering convention framework

Information Link Layer

- Access to media Provides dependable exchange of information crosswise over media
- Use for sent messages
- Physical tending to, On topology
- error notice and control the stream.

Physical Layer

- Binary transmission data
- Encoding & signaling
- Through wires
- Connectors
- Voltages
- Data rates

TCP/IP Suite: (TCP/IP) is the Transmission Control Protocol and Internet Protocol (IP) There, for example, two distinctive sort of layers and vindicated into layers, This points portrays how the layers of TCP/IP are composed into a stack.

- Application
- Transport
- Internet
- Network Access

Protocols: are rules that govern how devices co mmunicate and share information across a network. Examples of protocols include:

- IP – Internet Protocol
- HTTP - Hyper Text Transfer Protocol
- SMTP – Simple Mail Transfer Protocol

Multiple protocols often work together to facilitate end to end network communication technology, forming protocol suites or stacks. Protocols are covered in great detail in other guides.

3.4 IP Addressing and Sub Netting

There are various aspects to IP addressing, including calculation for constructing an IP address, classes of IP address designed for specific routing purpose and public versus private IP addresses. There are have also two types of IP addressing type.

They are-

IP version 4 (IPv4) and

IP version 6 (IPv6)

The 32bit IPv4 address type is currently most common. But the 128 bit IPv6 is also in use.

Different Between Class Full And Classless IP Address:

At the point when the idea of IP tending to was originally concocted, it was chosen that IP locations would be put into classes, characterizing residential area default veil as indicated by system size. boorish" steering convention doesn't have any class they are haphazardly use by the administrator and the are utilizing there possess subnetting veil. Raunchy IP address. Today, these default subnet veils aren't quite utilized with the exception of as a point of reference or on some affirmation tests.

The expression "class full" implies that IP locations have a class that can be class A,B,C,D any sort of class fall into these classes are likewise utilizing the default subnet veil that the IP address or programming is accepting. Then again, a "raunchy" directing convention doesn't expect that IP locations have their default subnet veils.

IPv4 Addressing: An IP address gives a various leveled structures to separate systems. IPv4 is normal and simple to utilize. Consider the following address as an example-

192.168.1.1

An IP address vindicated into four octets:

First Octets	Second Octets	Third Octets	Fourth Octets
192	168	1	1

A PC value an IP address in its paired structure, Each Octets is 8-bits in length, Resulting in a 32 bit IP addresses. The above location in double would looks as pursue

First Octets	Second Octets	Third Octets	Fourth Octets
11000000	10101000	00000001	00000001

IPv6 Addressing: The new IP Protocol, IPv6 protocol comes with some new features beside it. The features that comes with IPv6 are-

- Longer address space
- New security properties
- Basic Header structure
- Improve QoS
- Automatic address assignation
- ICMPv6
- Mobility
- Extensibility
- Backward compatibility with IPv4.

It is different than IPv4, IPv6 address written with hexadecimal digits.

The address is consisting of Eights colons, and each colons there are four digits.

So the address becomes $8 \times 4 \times 4 \text{bit} = 128 \text{ bit}$.

An example of an IPv6 address is below-

2345:0425:2CA1:0000:0000:0567:5673:23b5

There are Three main address types inIPv6. These are -

- Unicast Addresses
- Multicast Addresses
- Anycast Addresses

Subnet Mask: An IP address has two kinds of segments, the system address and the host address. A subnet mask divides the IP address into the system and host addresses. A subnet mask is a 32-bit number where every one of the bits of the system part and which part is the host part. Subnet Mask is framed by requested system bits to all "1"s and requested host bits to all "0"s. Inside a given system, two host locations are safeguarded for exceptional use and can't be doled out to hosts. The "0" address is reserved for a system address and "255" is reserved for a broadcast address, and they can't be used for hosts.

3.5 Routing Protocol Introduction

Introduction: Directing is a technique by which a bundle gets from the one area to another area. To highway a parcel, a switch has to realize the goal address and to on what interfaces to send the traffic out. At the point when a bundle comes into an interface on a switch, the switch looks into the goal IP address in the packet header and contrast it with its directing table. The directing table which is put away in RAM on the PC, tells the switch which outbound interface the packet ought to go out to arrive at the goal destination.

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

- Static Router
- Default Router
- Dynamic Router

Static Routing:

- Route paths are manually set by administrator
- Any changes should be made by the administrator
- Good for small networks.
- Scalability becomes complex in terms of configuration and maintenance.
- Highly secured because only administrator knows the routing paths.
- Consumes Less Resources (CPU, RAM)

Dynamic Routing:

- Router exchange routing information Dynamically.
- Router dynamically learns the changes.
- Can perform Small to Large (Any network).
- Scalable and configuration is easy. Router dynamically performs.
- Less Secured compared to static routing. But works fine for large network
- in restructure.
- Consumes more resources (CPU, RAM) because router has to work dynamically.

Routing Concepts:

Steering is a technique by which a bundle gets from the one area to another area. To highway a bundle, a switch has to realize the goal address and to on what interfaces to send the traffic out. At the point when a bundle comes into an interfaces on a switch goal tends to it looks into the goal IP address in the parcel header and contrast it and its directing table. The steering table which is put away in RAM to the PC, tells the switch which outbound interface the parcel ought to go out to arrive at the goal network. Networks enable individuals to convey and participate, and cooperate from multiple points of view for systems administration. Directing is a system by which a parcel gets from the area to another Networks are utilized to access website pages, talk utilizing IP phones, went to in video meetings, contend in web based gaming, shop utilizing the Internet, satisfied online coursework, and a greater amount of system get to. Ethernet switches activity at the information connection layer, Layer 2 information connection layer, and are utilized to advance Ethernet outlines between gadgets inside a similar system. at the point when the source IP and goal IP locations are on a few systems, on the various sources the Ethernet casing must be sent to a switch.

Characteristic of dynamic IP routing protocols:

- RIPv1
- RIPv2
- EIGRP
- OSPFv2
- IS-IS
- BGPv4

3.6 Static and Default Routing

Introduction: The reason for arranging of static switch, just as RIP and IGRP, is to add courses to a switches directing table. Tear and IGRP do as such naturally. A switch can advance parcels to subnets that are not appended to it.

Advantages:

- Static Routers can be easy to configured and quick to configure.
- static routing is supported for all routing devices
- Static routers is know easy to predict and using at small networks.

Static Routing Configuration:

- Default Route
- Static Null Route
- Preferred Routes
- Backup Routes
- Static Load Balancing.

Configuring Static Router:

The basic syntax for a static route is as follows-

```
Router(config)#IP route [destination network] [subnet mask] [next-hop]
```

Default routing:

```
Router(config)#IP route 0.0.0.0 0.0.0.0 {<next hop IP address> or <Exit interface type><No.>}
```

3.7 Routing Information Protocol (RIP)

Routing Information Protocol (RIP): The Routing Information Protocol (RIP). This convention uses separation vector calculation is one of the most seasoned directing conventions for separation vector framework which utilize the jump check and send the bundle for the following bounce for the repose as a steering metric. The most extreme bounce are 15 trusts. Which restricts the size of systems that RIP can support of 15.

When you utilize this protocol:

- When you want to make a small scale network
- When your network is not supported to have scalability
- when you route in one autonomous

RIP is still utilized now. These protocols is the oldest among others.

The types of RIP are-

RIP version 1

RIP version 2 and

RIP next generation for IPv6 (RIP).

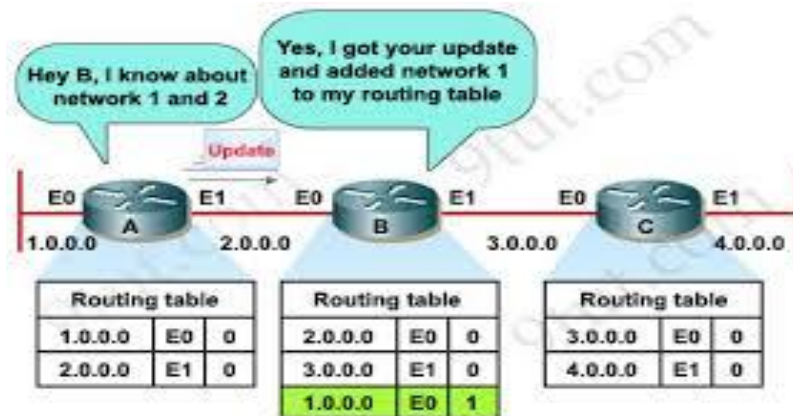


Figure 3.1: RIP Routing Table 1

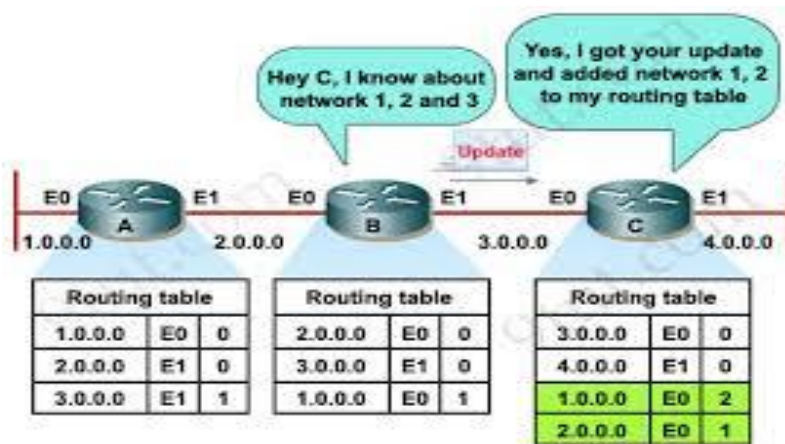


Figure 3.2: RIP Routing Table 2

Routing Information Protocol (RIP) Configuration:

Router>enable

Router#configure terminal

Router(config)#router rip

Router(config-router)#version 2

3.8 Enhanced Interior Gateway Routing Protocol (EIGRP)

Introduction: Upgraded IGRP (EIGRP) is a convention of raunchy, improved separation vector convention that gives us a genuine edge experience for another cisco owner convention, inside entryway steering convention IGRP. That likewise called as Enhanced IGRP.

Configuring EIGRP Metrics:

```
Router(config)# router EIGRP 10
```

```
Router(config-router)# metric weights 0 1 1 1 0 0
```

EIGRP packets: EIGRP use five types of packets to communicates-

1. Hello
2. Update
3. Acknowledge
4. Query
5. Reply



Figure 3.3: EIGRP Neighbor Establishment IP Cisco Packet

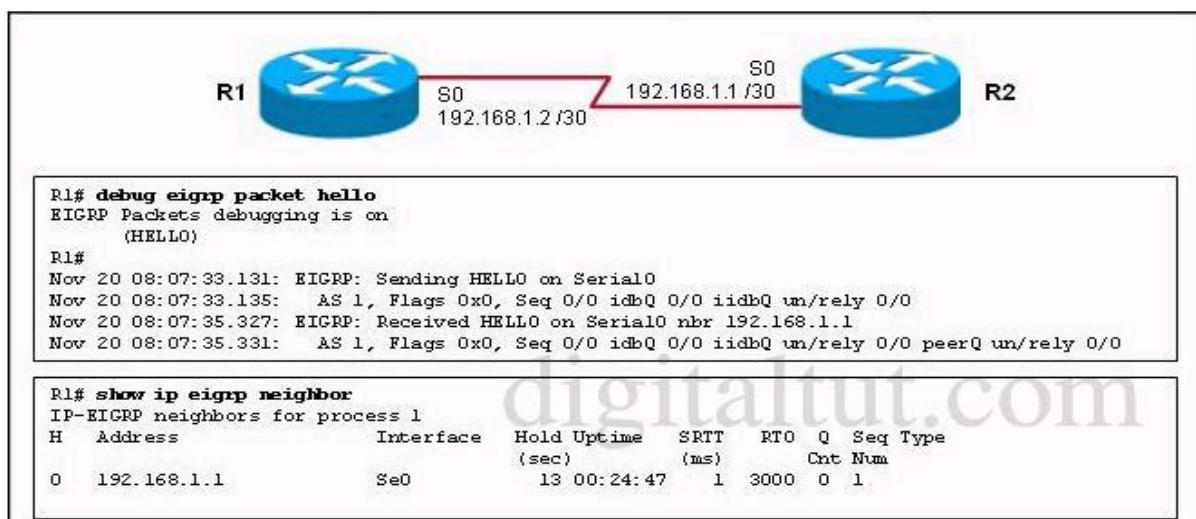


Figure 3.4: Neighbor relationship distribute list

EIGRP Configuration:

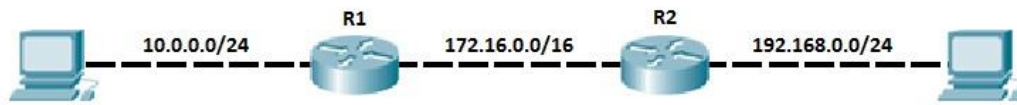


Figure 3.5: EIGRP Topology

```
R1 (config)#router eigrp 1
R1 (config-router)#network 10.0.0.0
R1 (config-router)#network 172.16.0.0
R1 (config-router)#
```

Figure 3.6: Router 1 Configuration

```
R2 (config)#router eigrp 1
R2 (config-router)#network 192.168.0.0
R2 (config-router)#network 172.16.0.0
R2 (config-router)#
```

Figure 3.7: Router 2 Configuration

3.9 Open Shortest Path First (OSPF)

Introduction: Open Shortest Path First (OSPF) is the most widely used interior routing protocol in the world since it is an open standard protocol while its closest competitor, EIGRP, is a Cisco-proprietary protocol. OSPF is a link-state routing protocol.

OSPF Features:

- OSPF stands for Open Shortest Path First
- Is the only Link-state routing protocol you learn in CCNA
- It's a link state protocol
- It uses SPF or Dijkstra algorithm
- Unlimited Hop count
- Administrative distance is 110
- It supports VLSM and CIDR
- Faster convergence

There are five types of OSPF Link-state packets (LSPs)-

- Hello
- Database Description
- Link-State Request (LSR)
- Link-State Update (LSU)
- Link-State Acknowledgement (LSA)

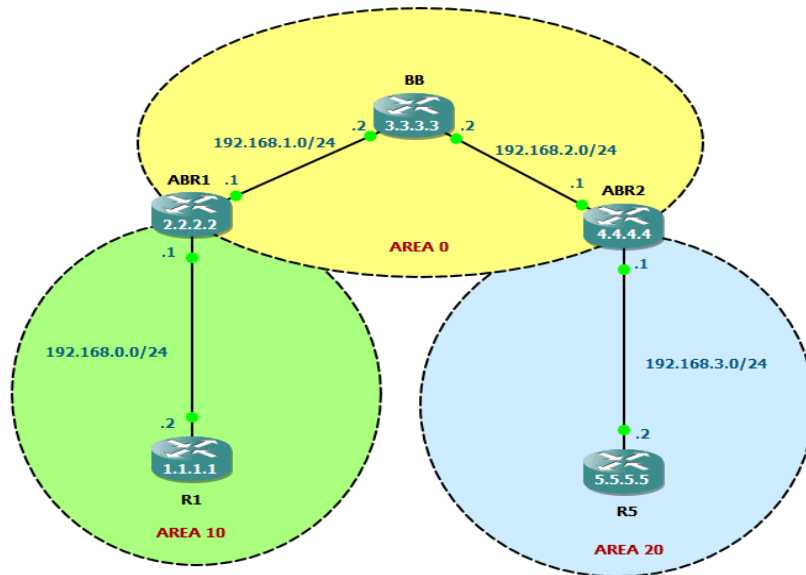


Figure 3.8: OSPF Area Defined

OSPF Configuration:

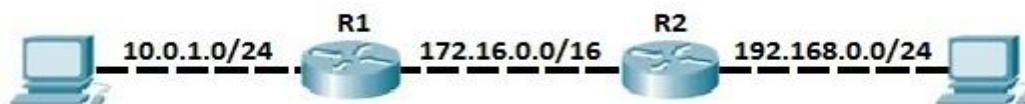


Figure 3.9: OSPF Topology

Router 1

```
R1(config-router)#router ospf 1
R1(config-router)#network 10.0.1.0 0.0.0.255 area 0
R1(config-router)#network 172.16.0.0 0.0.255.255 area 0
```

Figure 3.10: Router 1 Configuration

Router 2

```
R2(config)#router ospf 1
R2(config-router)#network 192.168.0.0 0.0.0.255 area 0
R2(config-router)#network 172.16.0.0 0.0.255.255 area 0
```

Figure 3.11: Router 2 Configuration

```
R1#show ip ospf neighbor

Neighbor ID    Pri   State           Dead Time   Address        Interface
192.168.0.2    1     FULL/BDR        00:00:32   172.16.0.2    FastEthernet0/1
```

Figure 3.12: Showing OSPF Neighbor

```
R1#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

10.0.0.0/24 is subnetted, 1 subnets
C       10.0.1.0 is directly connected, FastEthernet0/0
C       172.16.0.0/16 is directly connected, FastEthernet0/1
O       192.168.0.0/24 [110/2] via 172.16.0.2, 00:03:44, FastEthernet0/1
```

Figure 3.13: Showing IP Routes

3.10 NAT and PAT

Network Address Translation (NAT) was introduced to overcome these addressing problems that occurred with the rapid expansion of the internet. Basically NAT allows a single network device to act as an agent between a private local area network and a public network such as the internet. The purpose of this NAT device is translating to the source IP of the internal Network hosts into public routable IP addresses to communicate by in order with the internet protocol.

What is NAT?

"NAT permits a host that does not have a substantial enlisted IP address to speak with different has through the web"

For Example your PCs have a private IP of 192.168.11.10, 192.168.11.11 And 192.168.11.15 and of bend this IP can not be directed on the web but rather you can't in any case get to the web. Just the rezone your switch making an interpretation of to this location into an open IP 200.20.20.2 for instance, before directing your information into the web check the convention and IP.

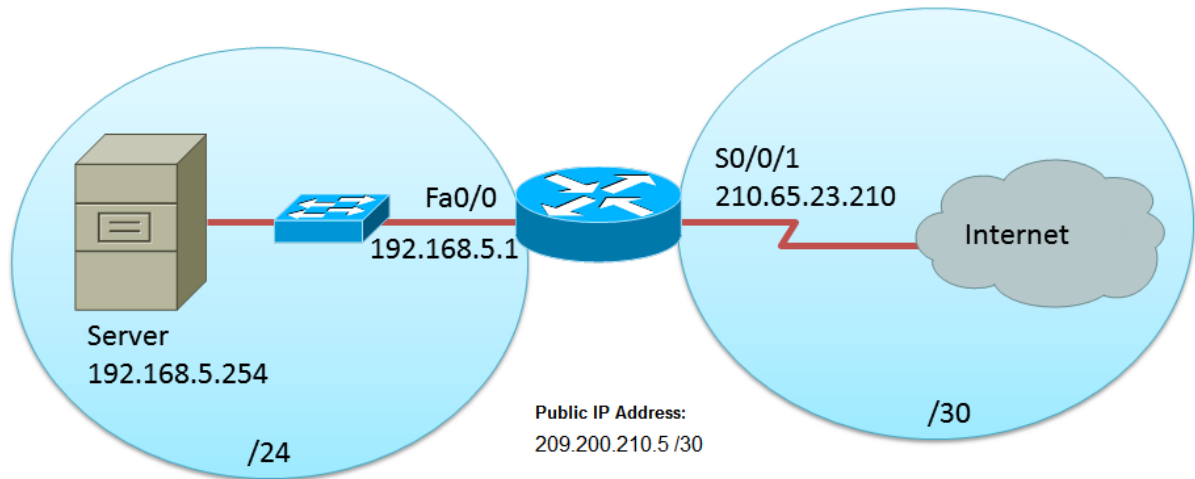


Figure 3.14: Simple NAT Topology

NAT Terminology:

- Inside Local address
- Inside global address
- Outside Local address
- Outside global address

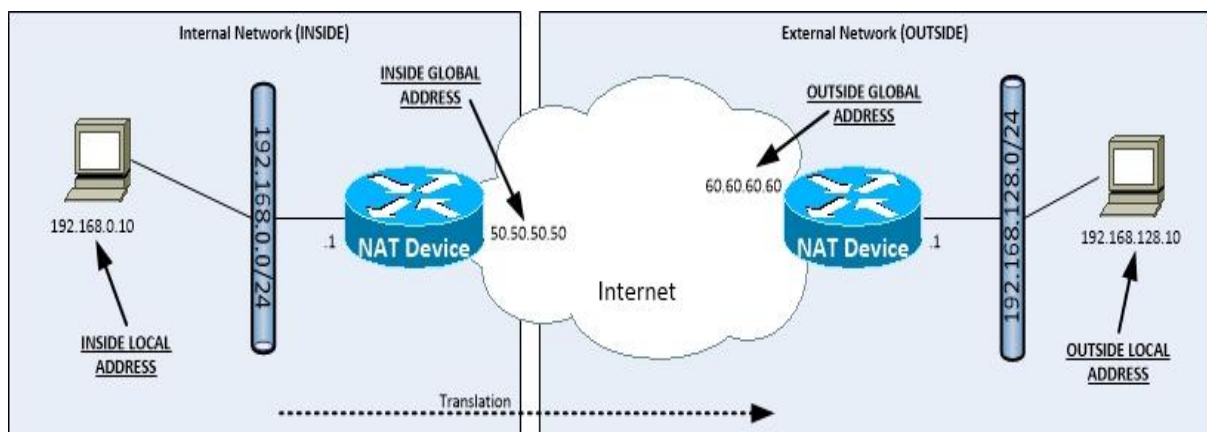


Figure 3.15: NAT Terminology

Types of Network Address Translation:

There are three types of NAT that we use in today networks. They are-

- Static NAT
- Dynamic NAT
- Overloaded NAT

Overloaded NAT is also sometimes called a PAT or Port Address Translation.

3.11 Switching Introduction

Repeater:

A repeater is an electronic gadget who get the sign and retransmits the sign and recuperation the information it to beneficiary. In media transmission repeater are retransmit the information and recuperation the information to recipient.

There are a few sorts of repeater transmit and communicate sign to transmit the information and recuperation to the recipient. Recurrence and baud rate are information transmit rate.

There are some vindicate kinds of repeaters and ISP line , a phone repeater is an enhancing in a phone line. A repeater rehash the line transmission an optical repeater is an optoelectronic circuit that enhancing the light bar signal in an optical fiber link to enhance the optical pillar a dish receiving wire link repeater, and a radio repeater is gotten the radio sign and transmitter the sign for that retransmits signal the radio sign persistently.



Figure 3.16: Wireless Repeater

Hubs:

Create one large collision domain. Only allow one driver per network segment to communicate at a time. A hub is multiple port for this kind of repeater. Any digital signal received from a segment on a hub port recognize or re amplified and transmitted out for all ports on the hub for transmitting the signal.



Figure 3.17: Network Hub

Bridge:

Dividing at layer 2 of the interconnection OSI model open framework can decrease blockage of the availability, and extensions were an early way to do this. This themes portrays how scaffold lighten Network blockage.



Figure 3.18: Network Bridge

Switch:

Dividing at layer 2 of the interconnection OSI model open framework can decrease blockage of the availability, and extensions were an early way to do this. This themes portrays how scaffold lighten Network blockage. as follow-[7]

- High density port
- Buffers Large frame
- Port speeds
- Switching Fast internal
- Switching Cut-through
- Switching Store and forward
- Switching Fragment-free



Figure 3.19: Network Switch

3.12 Virtual Local Area Network (VLAN)

VLAN Overview:

(Virtual Local Area Networks) VLAN separate broadcast domain as well as segments the networks so that security can be ensured.

In every switch there are have a by default VLAN. VLAN ensure the data security and communicate to its own VLAN

VLAN Features:

- A layer 2 security
- Multiple broadcast domains Divides by a single broadcast domain
- By default all ports of the switch are in VLAN 1.
- VLAN can be created from 2 – 1001
- Can be configured on a manageable switch only

Types of VLAN configuration

- -Static VLAN
- -Dynamic VLAN

VLAN Benefits:

- Security
- Reduction Cost
- Performance High
- Mitigation the Broadcast storm
- Improved the efficiency of IT staff
- Application management or Simple project

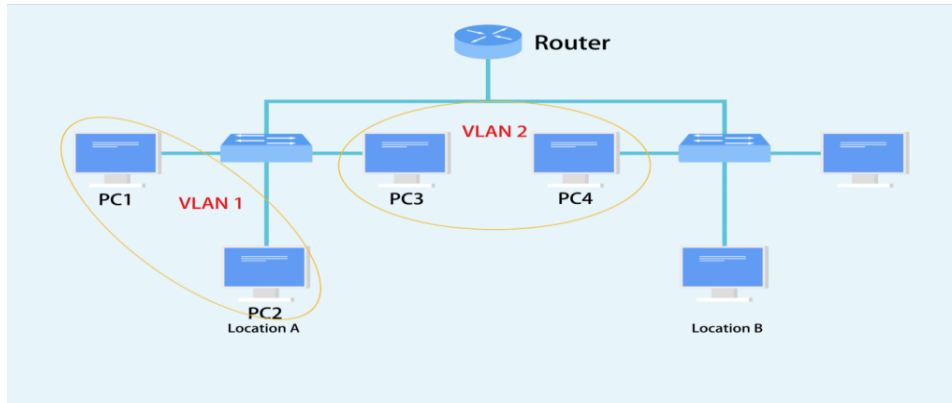


Figure 3.20: VLAN Configure

Inter VLAN Routing:

If you only configure VLAN on the 2950 or other layer 2 switches, the client can only communicate with other clients with the Same VLAN.

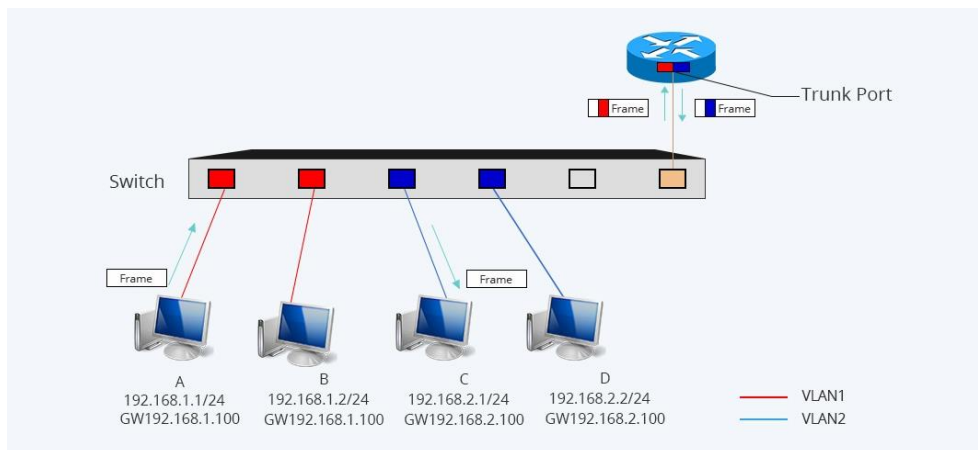


Figure 3.21: Inter VLAN

3.13 Wireless Technology

Wireless networking is the which method of homes, telecommunications connectivity and business improvement avoid the costly system of introducing cables r using into the building or university or a Shopping mall, or as a connection between various equipment locations. Wireless networks have been around for many years.

A wireless network is make peoples life easier and enables people to communicate and access application and information without wires. This provides freedom people can go anywhere but they did not using the cable internet they can use wireless internet of movement and ability to extend applications to different part of building, city, or nearly anywhere of the world.[6]



Figure 3.22: Tower

Types of wireless Networks:

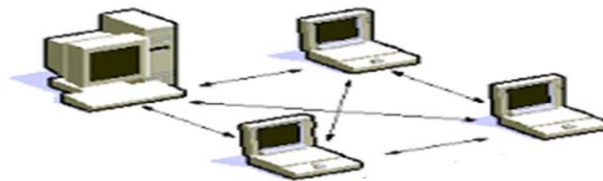
Wireless networks have vindicated types of categories. They are depending on the capable of covered area and also the size of the physical area that providing the internet services also network. The types of following wireless networks satisfy diverse user requirement is:

- Wireless Personal Area Network (WPAN)
- Wireless Local Area Network (WLAN)
- Wireless Metropolitan Area Network (WMAN)
- Wireless Wide Area Network (WWAN)

WLAN Modes: WLAN has two basic modes of operation-

- ✓ Ad-hoc Mode WLAN
- ✓ Infrastructure Mode WLAN
- ✓ Basic Service Set (BSS)
- ✓ Extended Service Set (ESS)

Wireless LAN Operating Modes: Ad-hoc mode



Independent Basic Service Set (IBSS)

Figure 3.23: Wireless LAN Operating Modes Ad-hoc mode

Wireless Channels:

IEEE 802.11g /b wireless nodes communicates with each other using radio frequency signal in the ISM band between 2.4 GHz and 2.5 GHz. Neighboring channels are 5 MHz apart.

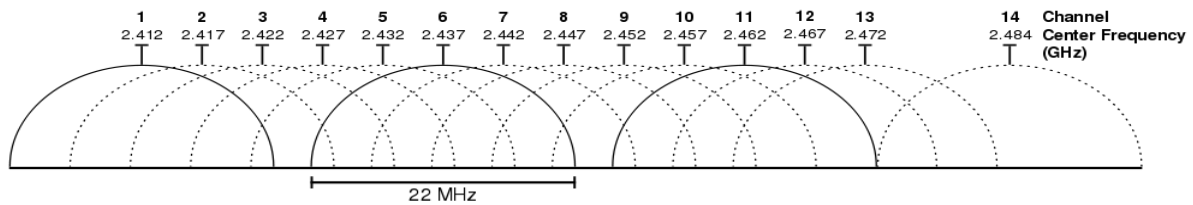


Figure 3.24 : Wireless Channel

3.14 Challenges

In every work place is very challenge full. There is no work without challenges. So we should take our work properly and make it to seriously. In four months internship is very positive to get knowledge and share companions in finding out our weakness about our training time. It is very important to pick up and understanding unknown things and many more problems to solve the solutions.

In my training periods to the company there have insufficient works to solve. Some of work I complete to my own skill and it send to my company supervisor to his mail. Some of works done by me, some of my supervisors and some of works are done by labors. So as a youthful labors I done some of works in training periods.

I know how to complete my work without injuries. So in every work at first I am careful to about injuries and avoid of it. I don't know every things but I try to my best to know about all topics how catch as possible to know. And I feel free to asking any questions and feel free to independent laborer.

In the internship contend luckily I have complete the internship periods without any problems. In this periods I know how to co-operate work with other, and make relationship to customer. As a future employee I have get many tricks about corporate life and how to maintain office courtesy and keep me cool.

After complete my graduation from this university I am changing lifestyle and I will starting my new career. As a former student also as a person I will try to my best to achieve reputation of our varsity in my knowledge and by hard work. When i will start my new life with job for a huge hours is 9 am to 5 pm, so I abiding this habit by this internship periods.

CHAPTER 4

COMPETENCIES AND SMART PLAN

4.1 Competencies Earned:

At present each employment commercial center or wherever if brimming with skills. that is the reason we ought to ensure our down to earth expertise. Abilities help to earned or learning for the outcome is a declaration of that what is an understudy is required to know, involved or have the ability to due to the learning methodology of it. PC systems administration is the piece of my future earned spot. Present and decommission of the majority of the site of framework and server machines at two datacenters. Lead part in Configuring Router. Temporary job periods time I have total more than issue arrangements, so it will push me to future for keeping up enormous issue in calm mind. So it's my enormous accomplishment from this temporary job. In this entry level position Introduce and Configure Routers and Switches; Configure, and Employer Services to additional, VLAN design, OSPF arrange,EIGRP arranges and RIP arranges. Besides, unfaltering with myself of the taking in results from this, the Internship On the other Site Supervisor was give me a presentation concerning legitimate systems and philosophy on that mechanical expertise.

4.2 Smart Plan

For getting more and a better achievement gain and an organization set their top label management to make their plan unique and more effectively and innovative from the other Organization. To make my bright career and successful life. This internship is very helpful for smart plan.

4.3 Reflections

JBS Security Solution Ltd. is served their service very carefully to customer. They are very concern from their launch date to provide their service. And they are very careful to take their customer and keep them to their service more. They are corporate Network solution and telecommunication company they provides their network to highly and most effective art of network to their technical group.

They worked with many organizations and many projects and achieved the reputation which is very helpful of them. They are using the latest inventory and upgrading the services wherever it is required.

CHAPTER 5

CONCLUSION AND FUTURE CAREER

5.1 Discussion and Conclusion

I have successfully complete my internship. This internship is very important to achieve practical knowledge. In this internship is teaches me to how survive 8 to 9 hours in an office. And self-inspiration to do work properly and solve the problems. Daily 8-9 hours and 5 or 6 days in a week to work hard, so i have this habits and practiced by this internship. I have revealed the main issues of time is maintain by self-inspiration and motivated by internship. Time sense is very common and important in every corporate and business life which is maintained by this training periods.

In this internship periods teaches me many important features of my course related topics and many others important things which will be needed in make future career. It helps me to when the work pressure are too much then how to keep cool my mind in working place. I got the knowledge to and keep on working hard from my position and plans for next work. I know how to get my bosses mind and how to get promotion by my work and personality. This internship makes me sincere and impress to work hard. In the end I just want to say in every educational institution or a work place the importance of internship is very important to get real life practice and skill knowledge.

5.2 Scope for Further Career

At present Computer networking is a sector which is very demandable for job place. There is various zone of IT sector. There are huge work place for in this IT, like CCNA Routing and Switching, mikro-tik router, Linux etc. And it has several various types of networking wireless networking, router and switching, Computer to computer networking, Network system engineer or administrator . In every office, bank, or any business company need one or more IT specialist. So this is the another positive news for an Network engineer. A skillful worker is very demandable person in every place , so at first to make skillful career, and then it will be gone to me a higher place of my life.

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APPENDIX

Appendix A: Internship Reflection

Internship is how important in our corporate level or our knowledge achievement is to unsalable. So the internship time is very useful for our skill developed in our real life. When I was training in the company I work every step very carefully. The internship learn to me how to maintain the customer, how to deal a project, and how maintain to solve the problem. In the internship time I work and connect with other expert worker who teaches me very carefully. I know how to handled a hard project to easily solve. I am an association central goal or vision is actualized, how control is shared, how to contact with partners, how to organize, how to choice the best way and maintain input ant output association. The internship encourages me to plan for life and worldwide society, Career plan. The internship teaches me how to manages bosses and and expert manner and different representatives gain from this training. The internship reflection influence in my whole life to know how maintain practical life and how to behave to corporate life, how to cool my head in a critical place. Also it improves our real life situation and how to handled it to make a bright future . Internship is a way to meet the professional level expert and it's a chance to work of them. Which is very important to know how to they solve many critical work.

Appendix B:
Company Details:

	Head Office
Name	JBS Security Solution Ltd.
Address	West raja Bazar Sher-e Bangla nagar, Dhaka - 1215, Bangladesh.
Phone	01918544116
E-mail	sabuj.bu60@gmail.com
Website	www.jbssslbd.com
Type of Organization	Information & Communication Technology company

ccna

ORIGINALITY REPORT

20%	%	%	20%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Daffodil International University Student Paper	9%
2	Submitted to PEC University of Technology Student Paper	1%
3	Submitted to University of Greenwich Student Paper	1%
4	Submitted to The University of the South Pacific Student Paper	1%
5	Submitted to CSU, San Jose State University Student Paper	1%
6	Submitted to American Intercontinental University Online Student Paper	1%
7	Submitted to NCC Education Student Paper	1%
8	Submitted to Griffith College Dublin Student Paper	<1%
9	Submitted to INTI University College	