

Group 7



Group Members

Group 7

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I.I Introduction

Background

A fundamental computer network denotes the successful interconnection of two or more devices, facilitated through either wired or wireless mediums. Networks play a pivotal role in facilitating various forms of communication among members and between different entities. Envision a world devoid of communicative networks, life would seem incomplete. Computer networking is enhancing efficiency and enabling seamless file-sharing. Networks typically comprise essential devices like routers, responsible for managing data packets by receiving, analyzing, and forwarding them. Another crucial component is the switch, which consolidates incoming packets and directs them through specified ports to their intended destinations. Additionally, there are end devices such as servers, PCs, laptops, printers, and IP phone devices, all collectively classified as peripherals.



I.2 Introduction

Objective

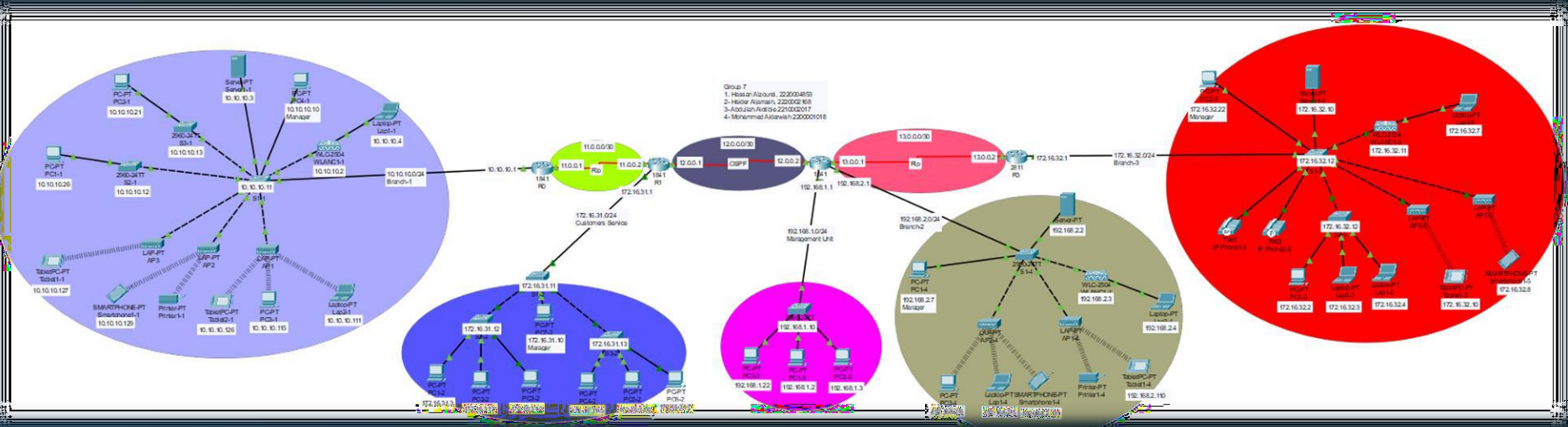
The network topology within the context of the "Packet Tracer" simulates a communicative network designed for the Coffee Shop Network. Through this network infrastructure, managers and employees can seamlessly access and share data without constraints. Furthermore, the network facilitates effective interactions between employees and customers. This report seeks to establish World Area Networks (WANs) while connecting branches with each other. The scope of data exchange within five categories: management unit, customer service, and three branches.

2.1 Topology Requirements

Our topology includes the following tools:

Assist	Quantity
Laptop	7
printer	2
Access point	7
PC	18
Switches	10
Routers	4
Serial cables	3
Straight-through cables	30
Cross-over cables	15
Telephone	2
Server	3
Wireless LAN Controller	3
Wireless	13

2.2 Set up the Topology



BRANCH-1

CUSTOMER SERVICE

MANAGEMENT UNIT

BRANCH-2

BRANCH-3

3.1 The Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
R0	Fa0/0	10.10.10.1	255.255.255.0	-
R0	Se0/0/0	11.0.0.1	255.255.255.252	-
R1	Se0/0/0	11.0.0.2	255.255.255.252	-
R1	Se0/0/1	12.0.0.1	255.255.255.252	-
R2	Se0/0/1	12.0.0.2	255.255.255.252	-
R2	Se0/0/0	13.0.0.1	255.255.255.252	-
R3	Se0/0/0	13.0.0.2	255.255.255.252	-
R3	Fa0/0	172.16.32.1	255.255.255.0	-
PC1-1	Fa0	10.10.10.26	255.255.255.0	10.10.10.1
PC2-1	Fa0	10.10.10.21	255.255.255.0	10.10.10.1
PC3-1	Wireless	10.10.10.115	255.255.255.0	10.10.10.1
PC4-1	Fa0	10.10.10.10	255.255.255.0	10.10.10.1
PC1-2	Fa0	172.16.31.3	255.255.255.0	172.16.31.1
PC2-2	Fa0	172.16.31.4	255.255.255.0	172.16.31.1
PC3-2	Fa0	172.16.31.2	255.255.255.0	172.16.31.1
PC4-2	Fa0	172.16.31.5	255.255.255.0	172.16.31.1
PC5-2	Fa0	172.16.31.6	255.255.255.0	172.16.31.1
PC6-2	Fa0	172.16.31.7	255.255.255.0	172.16.31.1
PC7-2	Fa0	172.16.31.10	255.255.255.0	172.16.31.1
PC1-3	Fa0	192.168.1.2	255.255.255.0	192.168.1.1
PC2-3	Fa0	192.168.1.3	255.255.255.0	192.168.1.1
PC3-3	Fa0	192.168.1.22	255.255.255.0	192.168.1.1
PC1-4	Fa0	192.168.2.7	255.255.255.0	192.168.2.1
PC2-4	Wireless	192.168.2.6	255.255.255.0	192.168.2.1
PC1-5	Fa0	172.16.32.2	255.255.255.0	172.16.32.1
PC2-5	Fa0	172.16.32.22	255.255.255.0	172.16.32.1

3.2 The Addressing Table

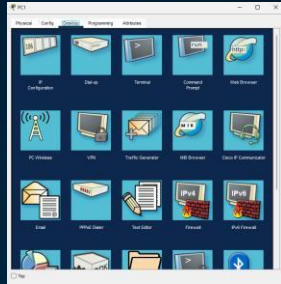
Device	Interface	IP Address	Subnet Mask	Default Gateway
Laptop1-1	Fa0	10.10.10.4	255.255.255.0	10.10.10.1
Laptop2-1	Wireless	10.10.10.111	255.255.255.0	10.10.10.1
Laptop1-4	Wireless	192.16.2.5	255.255.255.0	192.16.2.1
Laptop2-4	Fa0	192.16.2.4	255.255.255.0	192.16.2.1
Laptop1-5	Fa0	172.16.32.4	255.255.255.0	172.16.32.1
Laptop2-5	Fa0	172.16.32.3	255.255.255.0	172.16.32.1
Laptop3-5	Fa0	172.16.32.7	255.255.255.0	172.16.32.1
R2	Fa0/0	192.16.1.1	255.255.255.0	-
R2	Fa0/1	172.16.31.1	255.255.255.0	-
R1	Fa0/0	10.10.10.21	255.255.255.0	-
Printer1-1	Wireless	DHCP	255.255.255.0	10.10.10.1
Printer1-4	Wireless	DHCP	255.255.255.0	192.16.2.1
Tablet1-1	Wireless	10.10.10.127	255.255.255.0	10.10.10.1
Tablet2-1	Wireless	10.10.10.126	255.255.255.0	10.10.10.1
Tablet1-4	Wireless	192.168.2.110	255.255.255.0	192.168.2.1
Tablet1-5	Wireless	172.16.32.10	255.255.255.0	172.16.32.1
SmartPhone1-1	Wireless	10.10.10.129	255.255.255.0	10.10.10.1
SmartPhone1-4	Wireless	192.168.2.111	255.255.255.0	192.168.2.1
SmartPhone1-5	Wireless	172.16.32.8	255.255.255.0	172.16.32.1
R0	Fa0/0.100	10.10.10.1	255.255.255.0	-
R1	Fa0/0.100	172.16.31.1	255.255.255.0	-
R2	Fa0/0.100	192.168.1.1	255.255.255.0	-
R2	Fa0/1.100	192.168.2.1	255.255.255.0	-
R3	Fa0/0.100	172.16.32.1	255.255.255.0	-
WLANC1-1	G0/1	10.10.10.2	255.255.255.0	10.10.10.1
WLANC1-4	G0/1	192.168.2.3	255.255.255.0	192.168.2.1

3.3 The Addressing Table

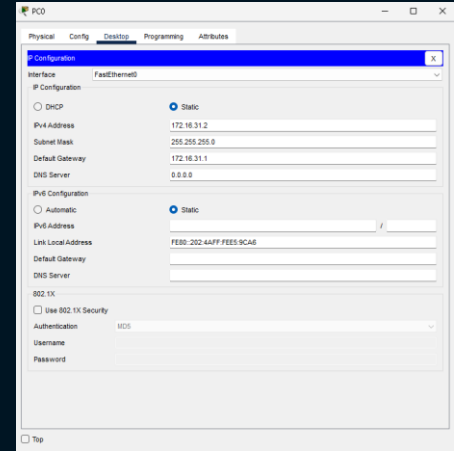
Device	Interface	IP Address	Subnet Mask	Default Gateway
WLANC1-S	G0/1	172.16.32.11	255.255.255.0	172.16.32.1
Server1-1	Fa0	10.10.10.3	255.255.255.0	10.10.10.1
Server1-1	Fa0	192.168.2.2	255.255.255.0	192.168.2.1
Server1-1	Fa0	172.16.32.10	255.255.255.0	172.16.32.1
AP1-1	G0	DHCP	255.255.255.0	10.10.10.1
AP2-1	G0	DHCP	255.255.255.0	10.10.10.1
AP3-1	G0	DHCP	255.255.255.0	10.10.10.1
AP1-4	G0	DHCP	255.255.255.0	192.16.2.1
AP2-4	G0	DHCP	255.255.255.0	192.16.2.1
AP1-5	G0	DHCP	255.255.255.0	172.16.32.1
AP2-5	G0	DHCP	255.255.255.0	172.16.32.1
S1-1	VLAN99	10.10.10.11	255.255.255.0	-
S2-1	VLAN99	10.10.10.12	255.255.255.0	-
S3-1	VLAN99	10.10.10.13	255.255.255.0	-
S1-2	VLAN99	172.16.31.11	255.255.255.0	-
S2-2	VLAN99	172.16.31.12	255.255.255.0	-
S3-2	VLAN99	172.16.31.13	255.255.255.0	-
S1-3	VLAN99	192.168.1.10	255.255.255.0	-
S1-4	VLAN99	192.16.2.10	255.255.255.0	-
S1-5	VLAN99	172.16.32.12	255.255.255.0	-
S2-5	VLAN99	172.16.32.12	255.255.255.0	-

4.1 Hosts Configuration

Click on desktop on PC's,
Laptops, SmartPhones, and
Tablets



Assign static IP address +
default gateway



5.1 The Routers Configuration

R0:

```
R0(config)#int s0/0/0
R0(config-if)#ip add 11.0.0.1 255.255.255.252
R0(config-if)#no shutdown
R0(config-if)#clock rate 128000
R0(config-if)#int fa0/0
R0(config-if)#ip add 10.10.10.1 255.255.255.0
R0(config-if)#no shutdown
R0(config-if)#
```

```
R0(config)#ip route 172.16.31.0 255.255.255.0 s0/0/0
R0(config)#ip route 192.168.1.0 255.255.255.0 s0/0/0
R0(config)#ip route 192.168.2.0 255.255.255.0 s0/0/0
R0(config)#ip route 172.16.32.0 255.255.255.0 s0/0/0
R0(config)#ip route 12.0.0.0 255.255.255.252 s0/0/0
R0(config)#ip route 13.0.0.0 255.255.255.252 s0/0/0
R0(config)#
```

5.2 The Routers Configuration

R1:

```
R1(config-if)#int s0/0/0
R1(config-if)#ip add 11.0.0.2 255.255.255.252
R1(config-if)#no shutdown
R1(config-if)#int fa0/0
R1(config-if)#ip add 172.16.31.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#int s0/0/1
R1(config-if)#ip add 12.0.0.1 255.255.255.252
R1(config-if)#no shutdown
R1(config-if)#clock rate 128000

R1(config)#ip route 10.10.10.0 255.255.255.0 s0/0/0
R1(config)#ip route 192.168.1.0 255.255.255.0 s0/0/1
R1(config)#ip route 192.168.2.0 255.255.255.0 s0/0/1
R1(config)#ip route 172.16.32.0 255.255.255.0 s0/0/1
R1(config)#ip route 13.0.0.0 255.255.255.252 s0/0/1
R1(config)#
```

6.1 Server Configuration

Make DHCP Server:

Server0

Physical Config Services Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.2.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.2.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::20A:F3FF:FEC3:B012

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

Top

Server1-4

Physical Config Services Desktop Programming Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: serverPool

Default Gateway: 192.168.2.1

DNS Server: 192.168.2.2

Start IP Address: 192 168 2 100

Subnet Mask: 255 255 255 0

Maximum Number of Users: 156

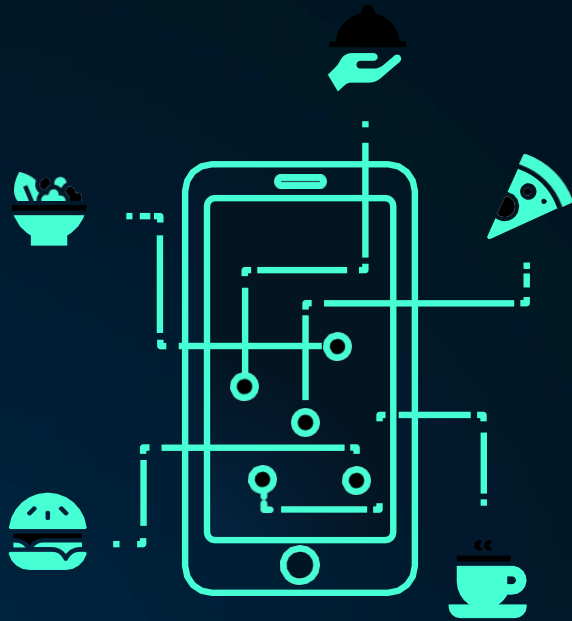
TFTP Server: 0.0.0.0

WLC Address: 192.168.2.3

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.168.2.1	192.168.2.2	192.168.2...	255.255.2...	156	0.0.0.0	192.168.2.3

Top





7.1 WLANC Configuration

WLANC1-1	
Physical	Config
Attributes	
Management	
IP Configuration	
IPv4 Address	10.10.10.2
Subnet Mask	255.255.255.0
Default Gateway	10.10.10.1
DNS Server	10.10.10.3

7.2 WLANC Configuration


Access to WLANC:

Cisco 2500 Series Wireless LAN Controller

Welcome! Please start by creating an admin account.

Start


Cisco 2500 Series Wireless LAN Controller

1 Set Up Your Controller

System Name

Coffee-Shop5

Country

Kenya (KN)

Date & Time

05/08/2024

15:41:56

Timezone

Baghdad

NTP Server

(optional)

Management IP Address

172.16.32.11

Subnet Mask

255.255.255.0

Default Gateway


172.16.32.1

Management VLAN ID

0

Back

Next


Cisco 2500 Series Wireless LAN Controller

1 Set Up Your Controller

2 Create Your Wireless Networks

Employee Network

Network Name

Coffee-Shop5

Security

WPA2 Personal

Passphrase

Confirm Passphrase

VLAN

Management VLAN

DHCP Server Address

0.0.0.0 (optional)

Guest Network

Back

Next

7.3 WLANC Configuration

Check the Configuration of WLAN and AP:

All APs

Entries 1 - 2 of 2

Current Filter

[Change Filter] [Clear Filter]

Number of APs 2

AP Name	IP Address(Ipv4/Ipv6)	AP Model
AP1-5	172.16.32.5	PT-AIR-CT5502-K
AP2-5	172.16.32.1	PT-AIR-CT5502-K

WLANS

Entries 1 - 4 of 4

Current Filter:

[Change Filter] [Clear Filter]

Create New ▼ Go

<input type="checkbox"/>	WLAN ID	Type	Profile Name	WLAN SSID
<input type="checkbox"/>	1	WLAN	Coffee-Shop5	Coffee-Shop5
<input type="checkbox"/>	2	WLAN	Employee5	Employee5
<input type="checkbox"/>	3	WLAN	Customer5	Customer5
<input type="checkbox"/>	4	WLAN	Guest5	Guest5

7.4 WLANC Configuration

Add new WLAN:

Lap3-5

Physical Config Desktop Programming Attributes

Web Browser
URL: https://172.16.32.11/frameWlanEdit.html

Save Configuration Ping Logout Refresh

CISCO MONITOR WLANS CONTROLLER WIRELESS SECURITY MANAGEMENT COMMANDS HELP EE

WLANS

WLANS > Edit 'Customer5'

General Security QoS Policy-Mapping Advanced

Profile Name: Customer5

Type: WLAN

SSID: Customer5

Status: ☒ Enabled

Security Policies: [WPA2][Auth(PSK)]
(Modifications done under security tab will appear after applying the)

Radio Policy: All

Interface/Interface Group(G): management

Multicast Vlan Feature: ☐ Enabled

Broadcast SSID: ☒ Enabled

NAS-ID:

Foot Notes

1 Web Policy cannot be used in combination with IPsec
2(a) FlexConnect Local Switching is not supported with IPsec, CRANITE authentication, Override Interface ACLs
2(b) When flexconnect local authentication is enabled, irrespective of AP on connec

Lap3-5

Physical Config Desktop Programming Attributes

Web Browser
URL: https://172.16.32.11/frameWlanEdit.html

Save Configuration Ping Logout Refresh

CISCO MONITOR WLANS CONTROLLER WIRELESS SECURITY MANAGEMENT COMMANDS HELP EE

WLANS

WLANS > Edit 'Customer5'

General Security QoS Policy-Mapping Advanced

Layer 2 Layer 3 AAA Servers

Layer 2 Security: WPA+WPA2

MAC Filtering: ☐

Fast Transition: ☐

Protected Management Frame

PMF: Disabled

WPA+WPA2 Parameters

WPA Policy: ☐

WPA2 Policy: ☒

WPA2 Encryption: ☒ AES ☐ TKIP

Authentication Key Management

802.1X: ☐ Enable

COCK: ☐ Enable

PSK: ☒ Enable

Foot Notes

1 Web Policy cannot be used in combination with IPsec
2(a) FlexConnect Local Switching is not supported with IPsec, CRANITE authentication, Override Interface ACLs
2(b) When flexconnect local authentication is enabled, irrespective of AP on connected or

PSK Format: ASCII

WPA gtk-randomize State: Disable

8.1 Configuration Wireless

Connecting PC's to the access point:

The screenshot shows the configuration window for PC3-1, specifically the 'Config' tab. The 'Wireless0' interface is selected. The 'Port Status' is 'On'. The 'Bandwidth' is set to '300 Mbps'. The 'MAC Address' is '0060.7097.91DD' and the 'SSID' is 'Employee'. The 'Authentication' section shows 'WPA2-PSK' selected. The 'WEP Key' is 'ITgroup7'. The 'Encryption Type' is 'AES'. The 'IP Configuration' section shows 'Static' selected with an 'IPv4 Address' of '10.10.10.115' and a 'Subnet Mask' of '255.255.255.0'. The 'IPv6 Configuration' section shows 'Automatic' selected with a 'Link Local Address' of 'FE80::260:70FF:FE97:91DD'.

PC3-1

Physical Config Desktop Programming Attributes

GLOBAL Settings

Algorithm Settings

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 300 Mbps

MAC Address 0060.7097.91DD

SSID Employee

Authentication

☐ Disabled ☐ WEP ☒ WPA2-PSK ☐ WPA ☐ WPA2 ☐ 802.1X

WEP Key ITgroup7

PSK Pass Phrase

User ID

Password

Method: MD5

User Name

Password

Encryption Type AES

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.10.10.115

Subnet Mask 255.255.255.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address /

Link Local Address: FE80::260:70FF:FE97:91DD

☐ Top

Connecting printers to the access point:

The screenshot shows the configuration window for Printer1-1, specifically the 'Config' tab. The 'Wireless0' interface is selected. The 'Port Status' is 'On'. The 'Bandwidth' is set to '300 Mbps'. The 'MAC Address' is '0001.C7A8.D6E1' and the 'SSID' is 'Employee'. The 'Authentication' section shows 'WPA2-PSK' selected. The 'WEP Key' is 'ITgroup7'. The 'Encryption Type' is 'AES'. The 'IP Configuration' section shows 'DHCP' selected. The 'IPv4 Address' is '10.10.10.103' and the 'Subnet Mask' is '255.255.255.0'. The 'IPv6 Configuration' section shows 'Automatic' selected with a 'Link Local Address' of 'FE80::201:C7FF:FEA8:D6E1'.

Printer1-1

Physical Config Attributes

GLOBAL Settings

INTERFACE

Wireless0

Wireless0

Port Status ☒ On

Bandwidth 300 Mbps

MAC Address 0001.C7A8.D6E1

SSID Employee

Authentication

☐ Disabled ☐ WEP ☒ WPA2-PSK ☐ WPA ☐ WPA2 ☐ 802.1X

WEP Key ITgroup7

PSK Pass Phrase

User ID

Password

Method: MD5

User Name

Password

Encryption Type AES

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 10.10.10.103

Subnet Mask 255.255.255.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address /

Link Local Address: FE80::201:C7FF:FEA8:D6E1

☐ Top

9.1 VLAN Configuration

Configuration Vlan between Switches:

```
S3(config)#vlan 99
S3(config-vlan)#name Coffee-Shop2
S3(config-vlan)#vlan 10
S3(config-vlan)#name Section1
S3(config-vlan)#vlan 20
S3(config-vlan)#name Section2
S3(config-vlan)#vlan 30
S3(config-vlan)#name Section3
S3(config-vlan)#vlan 100
S3(config-vlan)#name B2
S3(config-if)#int fa0/1
S3(config-if)#sw m t
S3(config-if)#sw t n vlan 99
S3(config-if)#int fa0/2
S3(config-if)#sw m t
S3(config-if)#sw t n vlan 99
S3(config-if)#int fa0/3
S3(config-if)#sw m t
S3(config-if)#sw t n vlan 99
S3(config-if)#
S3(config-if)#int vlan 99
S3(config-if)#ip add 172.16.31.11 255.255.255.0
S3(config-if)#no sh
S3(config-if)#|
```

9.2 VLAN Configuration

Configuration Vlan between Switch and PC's:

```
S4(config)#int fa0/6
S4(config-if)#sw m acc
S4(config-if)#sw acc vlan 30
S4(config-if)#int fa0/11
S4(config-if)#sw acc vlan 10
S4(config-if)#int fa0/18
S4(config-if)#sw acc vlan 20
S4(config-if)#
```

```
S4(config-if)#
S4(config-if)#int vlan 99
S4(config-if)#ip add 172.16.31.12 255.255.255.0
S4(config-if)#no sh
S4(config-if)#
```

10.1 OSPF and Rip Configuration

Configuration Routers using Rip:

```
R0(config-router)#router rip
R0(config-router)#v 2
R0(config-router)#pass f0/0
R0(config-router)#net 11.0.0.0
R0(config-router)#net 10.10.10.0
R0(config-router)#
```

```
R0(config-subif)#int fa0/0.100
R0(config-subif)#encapsulation dot1Q 100
R0(config-subif)#ip add 10.10.10.1 255.255.255.0
R0(config-subif)#no sh
```

I 0.2 OSPF and Rip Configuration

Configuration Routers using OSPF:

```
R1(config)#router ospf 1
R1(config-router)#net 12.0.0.0 0.0.0.3 area 0
R1(config-router)#net 172.16.31.0 0.0.0.255 area 0
```

```
R1(config-subif)#int fa0/0.100
R1(config-subif)#encapsulation dot1Q 100
R1(config-subif)#ip add 172.16.31.1 255.255.255.0
R1(config-subif)#no sh
```

I 0.3 OSPF and Rip Configuration

Configuration Routers using both OSPF and Rip:

```
R1(config-router)#router rip
R1(config-router)#redistribute ospf 1 metric 1
R1(config-router)#router ospf 1
R1(config-router)#redistribute rip subnets
```



II.1 Verification

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	PC1-5	Smartphone1-5	ICMP		0.000	N	0	(edit)
	Successful	PC1-4	PC1-3	ICMP		0.000	N	1	(edit)
	Successful	PC4-2	PC1-2	ICMP		0.000	N	2	(edit)
	Successful	Tablet1-1	PC3-1	ICMP		0.000	N	3	(edit)
	Successful	PC4-1	PC7-2	ICMP		0.000	N	4	(edit)
	Successful	PC2-4	Printer1-4	ICMP		0.000	N	5	(edit)
	Successful	PC2-5	PC7-2	ICMP		0.000	N	6	(edit)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	R0	R3	ICMP		0.000	N	0	(edit)
	Successful	PC3-2	PC6-2	ICMP		0.000	N	1	(edit)
	Successful	Lap1-1	Printer1-1	ICMP		0.000	N	2	(edit)
	Successful	PC2-3	PC3-3	ICMP		0.000	N	3	(edit)
	Successful	AP1-4	AP2-4	ICMP		0.000	N	4	(edit)
	Successful	PC7-2	PC1-4	ICMP		0.000	N	5	(edit)
	Successful	R1	R2	ICMP		0.000	N	6	(edit)



Branch-3 →

e.g.
**Ping from
PC1-5 to
Laptop1-5**

11.2 Verification

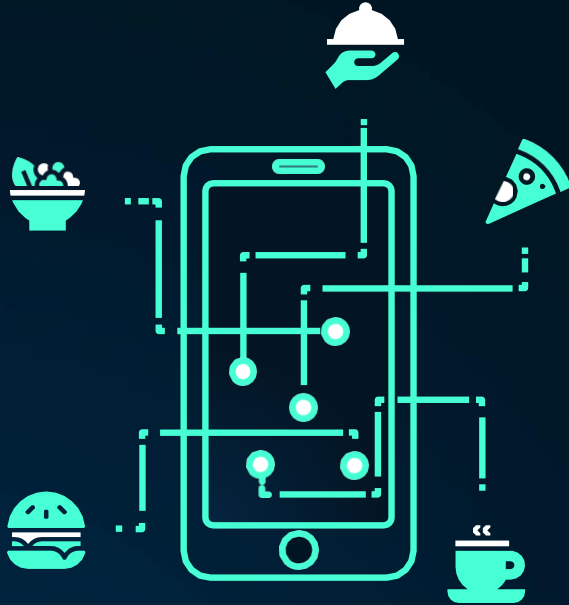
```
PC1
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 172.16.32.4

Pinging 172.16.32.4 with 32 bytes of data:

Reply from 172.16.32.4: bytes=32 time=27ms TTL=125
Reply from 172.16.32.4: bytes=32 time=10ms TTL=125
Reply from 172.16.32.4: bytes=32 time=11ms TTL=125
Reply from 172.16.32.4: bytes=32 time=10ms TTL=125

Ping statistics for 172.16.32.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 10ms, Maximum = 27ms, Average = 14ms

C:\>
```



Branch-1 →
Branch-2 →

e.g.
**Ping from
PC4-1 to
Laptop1-4**

**Ping from
Manager in
Branch1 to
Manager in
Branch2**

11.3 Verification

```
PC4-1
Physical Config Desktop Programming Attributes
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.7

Pinging 192.168.2.7 with 32 bytes of data:

Reply from 192.168.2.7: bytes=32 time=30ms TTL=125
Reply from 192.168.2.7: bytes=32 time=2ms TTL=125
Reply from 192.168.2.7: bytes=32 time=2ms TTL=125
Reply from 192.168.2.7: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.2.7:
    Packets: Sent = 4, Received = 4, Lost = 0 (0%
    loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 30ms, Average = 9ms

C:\>
```

I 2.0 CONCLUSION



The Coffee Shop Network project has successfully achieved its objectives, utilizing the Cisco Packet Tracer as the primary tool. The project aimed to establish an interconnected network among multiple coffee shop branches, enhancing communication, facilitating transactions, and optimizing overall operations. The project's outcomes align with its objectives, showcasing the effectiveness of the implemented network infrastructure. The network deployment has enabled the coffee shop to quickly handle many customers. the seamless connection between branches has fostered improved communication channels, allowing for the swift sharing of information and resources.



Case study: Amazon AWS

Concept of cloud computing:

Cloud computing provides several diverse online services that meet the client's needs without the need to purchase devices, cyber security staff, and pay high amounts. They provide services such as: databases, servers, software, and networking. Amazon provides various services in the field of cloud computing, as it is considered the most comprehensive, as it has very high security, a strong infrastructure, 17 years of experience, and serves millions of customers. It is used by many customers, which reduces its cost and increases flexibility, and it varies with more than 200 services. It is considered the most secure because its basic structure was initially designed to meet the security needs of government institutions and international banks. They also have an amazing technical support team to solve problems. Choosing cloud computing for Amazon helps large and small companies because it provides you with your service needs and ensures their safety at a reasonable price. It helps avoid contracting with multiple employees because it provides you with services without needing your own staff and saves space and purchasing devices because everything is virtual on the Internet.

Cloud computing models and usage areas:

Amazon offers many models and areas of use. We will mention three examples of what Amazon can offer.

Infrastructure as a Service (IaaS) Model:

Provides a virtual computing service over the Internet. A business model that provides infrastructure for information technology in exchange for payment that allows you to use the services you need via the Internet. The reason for its importance is that it helps in expansion and reducing costs and helps in eliminating the need to buy local devices and maintain them. One example is Amazon. They said that during the holiday season, application users increase three-fold, and this requires the purchase of additional server devices to overcome this problem. Amazon provides many secure centers with several devices and many devices. In exchange for payment, the customer can receive services via the Internet. Amazon offers several features, including speed, performance, reliability, backup and recovery, and a competitive price. They help you improve operational efficiency. They work on the principle of virtualization, allowing you to determine the type of infrastructure you need. This service can be used via Amazon Simple Storage Service.

Platform as a Service (PaaS) Model:

A platform targeting developers to create and develop websites and to create, publish and manage applications without the complexities of infrastructure management. It includes solutions and tools that help programmers. Amazon provides this service using Elastic Beanstalk. You can publish and manage applications via AWS Cloud without the need to look at the infrastructure. You only must download your applications. Elastic Beanstalk supports applications developed in Go, Java, .NET, Node.js, PHP, Python, and Ruby.

Software as a Service (SaaS) Model:

It provides software applications fully managed by Amazon through the Internet. Customers can use the applications without the need for installation or maintenance. They only must subscribe. Amazon provides this service through Amazon WorkMail, an email service that provides security and support for customers on desktop and mobile devices. To access email and contacts, you need several applications, but Amazon WorkMail provides them without the need for several applications.

How Does Cloud Computing Work?

Cloud computing operates by utilizing a network of remote servers hosted on the internet to store, handle, and process data, rather than relying on a local server or personal computer. This enables users to access resources and services whenever needed, as long as they have an internet connection. The pay-as-you-go model of cloud computing ensures that users only pay for the resources they utilize, making it a cost-effective solution for businesses of all sizes. AWS provides a comprehensive range of cloud computing services, such as computing power, storage, databases, machine learning, and more. These services can be easily accessed through a user-friendly web interface or API.

What cloud-computing services providers are available?

Cloud computing services come in various forms, catering to different needs and preferences. Some of the prominent cloud computing service providers include:

1. Amazon Web Services (AWS):

Amazon Web Services (AWS) stands as a frontrunner in the cloud services, offering an extensive suite of services spanning computing power, storage, databases, machine learning, analytics, and more. With a global presence and a robust infrastructure, AWS caters to businesses of all sizes, from startups to enterprises, enabling them to innovate and scale efficiently.

2. Microsoft Azure:

Microsoft Azure is a comprehensive cloud platform that provides a wide array of services, including computing, analytics, storage, networking, and artificial intelligence. Leveraging Microsoft's expertise and global reach, Azure empowers organizations to build, deploy, and manage applications with flexibility and scalability, while also integrating seamlessly with other Microsoft products and services.

3. Google Cloud Platform (GCP):

Google Cloud Platform (GCP) offers a suite of cloud computing services focused on computing, storage, machine learning, data analytics, and application development. With Google's expertise in data management and machine learning, GCP provides innovative solutions to help businesses drive insights, optimize operations, and accelerate digital transformation initiatives.

4. IBM Cloud:

IBM Cloud provides a comprehensive range of cloud services, including infrastructure as a service (IaaS), platform as a service (PaaS), software as a service (SaaS), and hybrid cloud solutions. With a focus on enterprise-grade security, AI-driven capabilities, and industry-specific solutions, IBM Cloud caters to the unique needs of businesses across various sectors, from healthcare to finance to manufacturing.

5. Oracle Cloud:

Oracle Cloud offers a robust suite of cloud services, encompassing computing, storage, databases, applications, and industry-specific solutions. With a focus on performance, reliability, and security, Oracle Cloud enables organizations to modernize their IT infrastructure, innovate with emerging technologies, and drive business agility in a highly competitive market landscape.

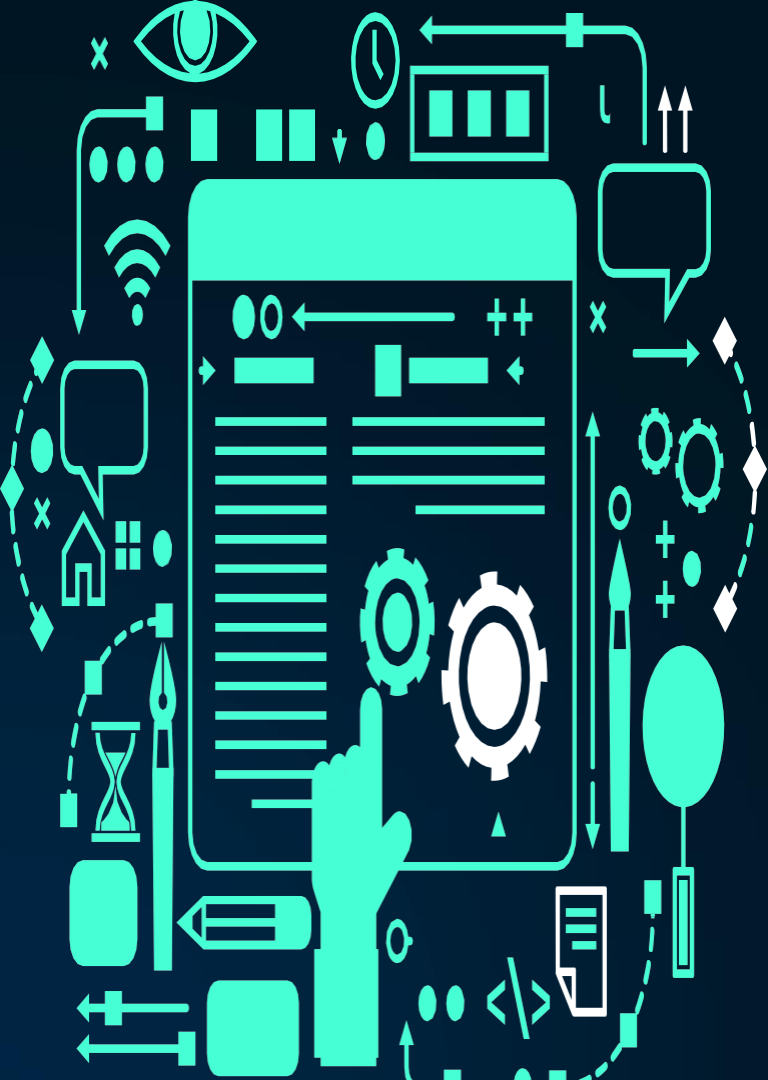
These are just a few examples of leading cloud computing service providers, each offering unique capabilities and solutions to address the evolving needs of businesses in today's digital age. By partnering with the right cloud provider, organizations can leverage the power of cloud computing to drive innovation, accelerate growth, and stay ahead of the competition.

How chosen cloud is different from other cloud service providers?

AWS stands out from other cloud service providers due to its extensive global infrastructure. With data centers located in various regions worldwide, AWS offers unparalleled reliability and minimal latency, ensuring that users can swiftly and securely access their applications and data from anywhere. Moreover, AWS boasts a vast ecosystem of services and tools, empowering users to develop, deploy, and manage virtually any kind of application or workload. The commitment of AWS to innovation and customer satisfaction further distinguishes it from its competitors, as it consistently introduces new features and services to cater to the ever-changing needs of its customers.

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THANKS!

Does anyone have any question?