**Data Communication and Computer Networks**

**EEE314**

Lab Manual



|  |  |
| --- | --- |
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| Class | BCE-6B |
| Instructor’s Name | Sir Asad Ali Malik. |

# Lab # 01: Introduction to Networks and Networking Commands in Windows and Introduction to Packet Tracer

**In-Lab Task**

Text

Description automatically generated

Text

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A picture containing text, electronics, screenshot, computer

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Text

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Text

Description automatically generated

Shape

Description automatically generated with low confidence

A screenshot of a computer

Description automatically generated with low confidence

Text

Description automatically generated

Text

Description automatically generated

Text

Description automatically generated

Graphical user interface, text

Description automatically generated

# Lab #02: IP Addressing Scheme & VLSM

**Graphical user interface, table

Description automatically generated with medium confidenceINLAB TASK**

**Diagram

Description automatically generated**

# Lab 3: Network Cabling, Basic CISCO Devices

# Configuration & Introduction to Wireshark

**INLAB**

**Diagram

Description automatically generated with medium confidence**

**Graphical user interface, application

Description automatically generated**

**Ping through PCs**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated with medium confidence**

**Text

Description automatically generated**

**Ping through Router**

**Graphical user interface, text, application, email

Description automatically generated**

**SHOW RUN**

Router>en

Router#copy run start

Destination filename [startup-config]?

Building configuration...

[OK]

Router#show run

Building configuration...

Current configuration : 588 bytes

!

version 12.4

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface FastEthernet0/0

ip address 192.133.219.2 255.255.255.240

duplex auto

speed auto

!

interface FastEthernet0/1

ip address 192.133.219.19 255.255.255.240

duplex auto

speed auto

!

interface Vlan1

no ip address

shutdown

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

end

# Lab 4:Static Route Configuration

**In-Lab Task**

**A picture containing chart

Description automatically generatedChart

Description automatically generated**

**Home Task**

**Router 1:**

**Show interface brief:**

**Graphical user interface, text, application

Description automatically generated**

**Show ip route:**

**Graphical user interface, text

Description automatically generated**

**Router 2:**

**Show IP interface brief**

**Graphical user interface, text

Description automatically generated**

**Show ip route:**

**Graphical user interface, text, application

Description automatically generated**

**Router 3:**

**Show ip interface briefGraphical user interface, text, application

Description automatically generated**

**Show ip route:**

**Graphical user interface, text, application, email

Description automatically generated**

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## Critical Analysis / Conclusion

|  |
| --- |
| In this lab we learnt how to configure routers using CLI, moreover we connected different routers together by adding IPs to their routing tables statically.  We tested our implementation by sending a packet between pcs connected on a separate routers connected through serial interface. |

|  |  |  |
| --- | --- | --- |
| **Lab Assessment** | | |
| **Pre Lab** | **/5** | **/25** |
| **Performance** | **/5** |
| **Results** | **/5** |
| **Viva** | **/5** |
| **Critical Analysis** | **/5** |
| **Instructor Signature and Comments** | | |

# LAB #05 RIP Configuration

**In-Lab Task**

**Task 1**

**Chart

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Graphical user interface, application, table

Description automatically generated

**Task 2**

Chart

Description automatically generated

Graphical user interface

Description automatically generated with low confidence

**Task 3**

Chart

Description automatically generated

Graphical user interface

Description automatically generated with medium confidence

**Home Task**

**TASK 1:**

**Router 1:**

**Show ip interface brief:**

Router>show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.1.1 YES NVRAM up up

FastEthernet1/0 unassigned YES NVRAM administratively down down

Serial2/0 192.168.2.1 YES NVRAM up up

Serial3/0 unassigned YES NVRAM administratively down down

FastEthernet4/0 unassigned YES NVRAM administratively down down

FastEthernet5/0 unassigned YES NVRAM administratively down down

**Show ip protocols:**

Router>show ip protocols

Routing Protocol is "rip"

Sending updates every 30 seconds, next due in 9 seconds

Invalid after 180 seconds, hold down 180, flushed after 240

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Redistributing: rip

Default version control: send version 1, receive any version

Interface Send Recv Triggered RIP Key-chain

FastEthernet0/0 1 2 1

Serial2/0 1 2 1

Automatic network summarization is in effect

Maximum path: 4

Routing for Networks:

192.168.1.0

192.168.2.0

Passive Interface(s):

Routing Information Sources:

Gateway Distance Last Update

192.168.2.2 120 00:00:21

Distance: (default is 120)

**Show ip route:**

Router>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

172.16.0.0/24 is subnetted, 1 subnets

S 172.16.1.0 is directly connected, FastEthernet0/0

is directly connected, Serial2/0

C 192.168.1.0/24 is directly connected, FastEthernet0/0

C 192.168.2.0/24 is directly connected, Serial2/0

R 192.168.3.0/24 [120/1] via 192.168.2.2, 00:00:08, Serial2/0

R 192.168.4.0/24 [120/1] via 192.168.2.2, 00:00:08, Serial2/0

R 192.168.5.0/24 [120/2] via 192.168.2.2, 00:00:08, Serial2/0

**Router 2:**

**Show ip interface brief:**

Router>show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.3.1 YES NVRAM up up

FastEthernet1/0 unassigned YES NVRAM administratively down down

Serial2/0 192.168.2.2 YES NVRAM up up

Serial3/0 192.168.4.2 YES NVRAM up up

FastEthernet4/0 unassigned YES NVRAM administratively down down

FastEthernet5/0 unassigned YES NVRAM administratively down down

**Show ip protocols:**

Router>show ip protocols

Routing Protocol is "rip"

Sending updates every 30 seconds, next due in 24 seconds

Invalid after 180 seconds, hold down 180, flushed after 240

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Redistributing: rip

Default version control: send version 1, receive any version

Interface Send Recv Triggered RIP Key-chain

FastEthernet0/0 1 2 1

Serial3/0 1 2 1

Serial2/0 1 2 1

Automatic network summarization is in effect

Maximum path: 4

Routing for Networks:

192.168.2.0

192.168.3.0

192.168.4.0

Passive Interface(s):

Routing Information Sources:

Gateway Distance Last Update

192.168.2.1 120 00:00:01

192.168.4.1 120 00:00:22

Distance: (default is 120)

**Show ip route:**

Router>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

172.16.0.0/24 is subnetted, 1 subnets

S 172.16.3.0 is directly connected, Serial2/0

R 192.168.1.0/24 [120/1] via 192.168.2.1, 00:00:05, Serial2/0

C 192.168.2.0/24 is directly connected, Serial2/0

C 192.168.3.0/24 is directly connected, FastEthernet0/0

C 192.168.4.0/24 is directly connected, Serial3/0

S 192.168.5.0/24 is directly connected, Serial3/0

**Router 3:**

**Show ip interface brief:**

Router>show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.5.1 YES NVRAM up up

FastEthernet1/0 unassigned YES NVRAM administratively down down

Serial2/0 192.168.4.1 YES NVRAM up up

Serial3/0 unassigned YES NVRAM administratively down down

FastEthernet4/0 unassigned YES NVRAM administratively down down

FastEthernet5/0 unassigned YES NVRAM administratively down down

**Show ip protocols:**

Router>show ip protocol

Routing Protocol is "rip"

Sending updates every 30 seconds, next due in 11 seconds

Invalid after 180 seconds, hold down 180, flushed after 240

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Redistributing: rip

Default version control: send version 1, receive any version

Interface Send Recv Triggered RIP Key-chain

FastEthernet0/0 1 2 1

Serial2/0 1 2 1

Automatic network summarization is in effect

Maximum path: 4

Routing for Networks:

192.168.1.0

192.168.2.0

192.168.3.0

192.168.4.0

192.168.5.0

Passive Interface(s):

Routing Information Sources:

Gateway Distance Last Update

192.168.4.2 120 00:00:22

Distance: (default is 120)

**Show ip route:**

Router>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

172.16.0.0/24 is subnetted, 2 subnets

S 172.16.1.0 is directly connected, Serial2/0

S 172.16.3.0 is directly connected, Serial2/0

R 192.168.1.0/24 [120/2] via 192.168.4.2, 00:00:26, Serial2/0

R 192.168.2.0/24 [120/1] via 192.168.4.2, 00:00:26, Serial2/0

S 192.168.3.0/24 is directly connected, Serial2/0

C 192.168.4.0/24 is directly connected, Serial2/0

C 192.168.5.0/24 is directly connected, FastEthernet0/0

**TASK 2:**

**Router 1:**

**Show ip interface brief:**

Router>show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 172.30.1.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 172.30.2.1 YES manual up up

Serial3/0 unassigned YES unset administratively down down

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

**Show ip protocols:**

Router>show ip protocol

Routing Protocol is "rip"

Sending updates every 30 seconds, next due in 13 seconds

Invalid after 180 seconds, hold down 180, flushed after 240

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Redistributing: rip

Default version control: send version 1, receive any version

Interface Send Recv Triggered RIP Key-chain

FastEthernet0/0 1 2 1

Serial2/0 1 2 1

Automatic network summarization is in effect

Maximum path: 4

Routing for Networks:

172.30.0.0

Passive Interface(s):

Routing Information Sources:

Gateway Distance Last Update

172.30.2.2 120 00:00:13

Distance: (default is 120)

**Show ip route:**

Router>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

172.30.0.0/24 is subnetted, 3 subnets

C 172.30.1.0 is directly connected, FastEthernet0/0

C 172.30.2.0 is directly connected, Serial2/0

R 172.30.3.0 [120/1] via 172.30.2.2, 00:00:04, Serial2/0

R 192.168.4.0/24 [120/1] via 172.30.2.2, 00:00:04, Serial2/0

R 192.168.5.0/24 [120/2] via 172.30.2.2, 00:00:04, Serial2/0

**Router 2:**

**Show ip interface brief:**

Router>show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 172.30.3.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 172.30.2.2 YES manual up up

Serial3/0 192.168.4.9 YES manual up up

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

**Show ip protocols:**

Router>show ip protocols

Routing Protocol is "rip"

Sending updates every 30 seconds, next due in 10 seconds

Invalid after 180 seconds, hold down 180, flushed after 240

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Redistributing: rip

Default version control: send version 1, receive any version

Interface Send Recv Triggered RIP Key-chain

Serial3/0 1 2 1

Serial2/0 1 2 1

Automatic network summarization is in effect

Maximum path: 4

Routing for Networks:

172.30.0.0

192.168.4.0

Passive Interface(s):

FastEthernet0/0

Routing Information Sources:

Gateway Distance Last Update

172.30.2.1 120 00:00:23

192.168.4.10 120 00:00:20

Distance: (default is 120)

**Show ip route:**

Router>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

172.30.0.0/24 is subnetted, 3 subnets

R 172.30.1.0 [120/1] via 172.30.2.1, 00:00:14, Serial2/0

C 172.30.2.0 is directly connected, Serial2/0

C 172.30.3.0 is directly connected, FastEthernet0/0

192.168.4.0/30 is subnetted, 1 subnets

C 192.168.4.8 is directly connected, Serial3/0

R 192.168.5.0/24 [120/1] via 192.168.4.10, 00:00:10, Serial3/0

**Router 3:**

**Show ip interface brief:**

Router>show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.5.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 192.168.4.10 YES manual up up

Serial3/0 unassigned YES unset administratively down down

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

**Show ip protocols:**

Router>show ip protocol

Routing Protocol is "rip"

Sending updates every 30 seconds, next due in 20 seconds

Invalid after 180 seconds, hold down 180, flushed after 240

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Redistributing: rip

Default version control: send version 1, receive any version

Interface Send Recv Triggered RIP Key-chain

Serial2/0 1 2 1

Automatic network summarization is in effect

Maximum path: 4

Routing for Networks:

192.168.4.0

192.168.5.0

Passive Interface(s):

FastEthernet0/0

Routing Information Sources:

Gateway Distance Last Update

192.168.4.9 120 00:00:28

Distance: (default is 120)

**Show ip route:**

Router>show ip protocol

Routing Protocol is "rip"

Sending updates every 30 seconds, next due in 20 seconds

Invalid after 180 seconds, hold down 180, flushed after 240

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Redistributing: rip

Default version control: send version 1, receive any version

Interface Send Recv Triggered RIP Key-chain

Serial2/0 1 2 1

Automatic network summarization is in effect

Maximum path: 4

Routing for Networks:

192.168.4.0

192.168.5.0

Passive Interface(s):

FastEthernet0/0

Routing Information Sources:

Gateway Distance Last Update

192.168.4.9 120 00:00:28

Distance: (default is 120)

**TASK 3:**

**Router 1:**

**Show ip interface brief:**

Router>show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 172.30.1.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 172.30.2.1 YES manual up up

Serial3/0 unassigned YES unset administratively down down

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

**Show ip protocols:**

Router>show ip protocol

Routing Protocol is "rip"

Sending updates every 30 seconds, next due in 28 seconds

Invalid after 180 seconds, hold down 180, flushed after 240

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Redistributing: rip

Default version control: send version 1, receive any version

Interface Send Recv Triggered RIP Key-chain

FastEthernet0/0 1 2 1

Serial2/0 1 2 1

Automatic network summarization is in effect

Maximum path: 4

Routing for Networks:

172.30.0.0

Passive Interface(s):

Routing Information Sources:

Gateway Distance Last Update

Distance: (default is 120)

**Show ip route:**

Router>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

172.30.0.0/24 is subnetted, 2 subnets

C 172.30.1.0 is directly connected, FastEthernet0/0

C 172.30.2.0 is directly connected, Serial2/0

**Router 2:**

**Show ip interface brief:**

Router>show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 172.30.3.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 172.30.2.2 YES manual up up

Serial3/0 192.168.4.9 YES manual up up

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

**Show ip protocols:**

Router>show ip protocol

**Show ip route:**

Router>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 0.0.0.0 to network 0.0.0.0

172.30.0.0/24 is subnetted, 2 subnets

C 172.30.2.0 is directly connected, Serial2/0

C 172.30.3.0 is directly connected, FastEthernet0/0

192.168.4.0/30 is subnetted, 1 subnets

C 192.168.4.8 is directly connected, Serial3/0

S\* 0.0.0.0/0 is directly connected, Serial3/0

**Router 3:**

**Show ip interface brief:**

Router>show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.5.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 192.168.4.10 YES manual up up

Serial3/0 unassigned YES unset administratively down down

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

**Show ip protocols:**

Router>show ip protocol

Routing Protocol is "rip"

Sending updates every 30 seconds, next due in 21 seconds

Invalid after 180 seconds, hold down 180, flushed after 240

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Redistributing: rip

Default version control: send version 1, receive any version

Interface Send Recv Triggered RIP Key-chain

Serial2/0 1 2 1

Automatic network summarization is in effect

Maximum path: 4

Routing for Networks:

192.168.4.0

192.168.5.0

Passive Interface(s):

FastEthernet0/0

Routing Information Sources:

Gateway Distance Last Update

Distance: (default is 120)

**Show ip route:**

Router>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

172.30.0.0/22 is subnetted, 1 subnets

S 172.30.0.0 is directly connected, Serial2/0

192.168.4.0/30 is subnetted, 1 subnets

C 192.168.4.8 is directly connected, Serial2/0

C 192.168.5.0/24 is directly connected, FastEthernet0/0

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## Critical Analysis / Conclusion

|  |
| --- |
| In this lab we learn tabout the Routing Information Protocol and its different versions like the one designed for classful networks. It is dynamic routing protocol and easier to route as compared to static routing. In this scenario we only use Network address to route. |

|  |  |  |
| --- | --- | --- |
| **Lab Assessment** | | |
| **Pre Lab** | **/5** | **/25** |
| **Performance** | **/5** |
| **Results** | **/5** |
| **Viva** | **/5** |
| **Critical Analysis** | **/5** |
| **Instructor Signature and Comments** | | |

# LAB #06 EIGRP configuration

**In-Lab Task**

**Task 1**

Chart

Description automatically generated

Table

Description automatically generated

**Home Task**

**TASK 1:**

**Router 0:**

**show running-config:**

Router#show running-config

Building configuration...

Current configuration : 957 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

!

!

no ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

interface FastEthernet0/0

ip address 172.16.1.1 255.255.255.0

duplex auto

speed auto

!

interface FastEthernet1/0

no ip address

duplex auto

speed auto

shutdown

!

interface Serial2/0

bandwidth 64

ip address 172.16.3.1 255.255.255.252

clock rate 64000

!

interface Serial3/0

ip address 192.168.10.5 255.255.255.252

!

interface FastEthernet4/0

no ip address

shutdown

!

interface FastEthernet5/0

no ip address

shutdown

!

interface Serial6/0

no ip address

clock rate 2000000

shutdown

!

router eigrp 1

network 172.16.0.0

network 192.168.10.4 0.0.0.3

network 192.168.10.8 0.0.0.3

no auto-summary

!

router rip

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

end

**show ip route:**

Router#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

172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks

C 172.16.1.0/24 is directly connected, FastEthernet0/0

D 172.16.2.0/24 [90/40514560] via 172.16.3.2, 00:14:49, Serial2/0

C 172.16.3.0/30 is directly connected, Serial2/0

D 192.168.1.0/24 [90/41026560] via 172.16.3.2, 00:14:47, Serial2/0

192.168.10.0/30 is subnetted, 2 subnets

C 192.168.10.4 is directly connected, Serial3/0

D 192.168.10.8 [90/41024000] via 172.16.3.2, 00:14:49, Serial2/0

**show ip interface brief:**

Router#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 172.16.1.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 172.16.3.1 YES manual up up

Serial3/0 192.168.10.5 YES manual up up

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

Serial6/0 unassigned YES unset administratively down down

**show ip protocol:**

Router#show ip protocol

Routing Protocol is "eigrp 1 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 1

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

172.16.0.0

192.168.10.4/30

192.168.10.8/30

Routing Information Sources:

Gateway Distance Last Update

172.16.3.2 90 5409

Distance: internal 90 external 170

**Router 1:**

**show running-config:**

Router#show running-config

Building configuration...

Current configuration : 873 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

interface FastEthernet0/0

ip address 172.16.2.1 255.255.255.0

duplex auto

speed auto

!

interface FastEthernet1/0

no ip address

duplex auto

speed auto

shutdown

!

interface Serial2/0

bandwidth 64

ip address 172.16.3.2 255.255.255.252

!

interface Serial3/0

bandwidth 1024

ip address 192.168.10.9 255.255.255.252

clock rate 64000

!

interface FastEthernet4/0

no ip address

shutdown

!

interface FastEthernet5/0

no ip address

shutdown

!

router eigrp 1

network 172.16.0.0

network 192.168.10.8 0.0.0.3

no auto-summary

!

router rip

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

end

**show ip route:**

Router#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

172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks

D 172.16.1.0/24 [90/40514560] via 172.16.3.1, 00:18:27, Serial2/0

C 172.16.2.0/24 is directly connected, FastEthernet0/0

C 172.16.3.0/30 is directly connected, Serial2/0

D 192.168.1.0/24 [90/3014400] via 192.168.10.10, 00:18:25, Serial3/0

192.168.10.0/30 is subnetted, 2 subnets

D 192.168.10.4 [90/41024000] via 172.16.3.1, 00:18:27, Serial2/0

C 192.168.10.8 is directly connected, Serial3/0

**Show ip interface brief:**

Router#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 172.16.2.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 172.16.3.2 YES manual up up

Serial3/0 192.168.10.9 YES manual up up

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

**show ip protocol:**

Router#show ip protocol

Routing Protocol is "eigrp 1 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 1

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

172.16.0.0

192.168.10.8/30

Routing Information Sources:

Gateway Distance Last Update

172.16.3.1 90 5409

192.168.10.10 90 7387

Distance: internal 90 external 170

**Router 2:**

**Show running-config:**

Router#show running-config

Building configuration...

Current configuration : 880 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

!

interface FastEthernet0/0

ip address 192.168.1.1 255.255.255.0

duplex auto

speed auto

!

interface FastEthernet1/0

no ip address

duplex auto

speed auto

shutdown

!

interface Serial2/0

ip address 192.168.10.6 255.255.255.252

clock rate 64000

!

interface Serial3/0

bandwidth 1024

ip address 192.168.10.10 255.255.255.252

!

interface FastEthernet4/0

no ip address

shutdown

!

interface FastEthernet5/0

no ip address

shutdown

!

router eigrp 1

network 192.168.1.0

network 192.168.4.0 0.0.0.3

network 192.168.10.8 0.0.0.3

no auto-summary

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

End

**show ip route:**

Router#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

172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks

D 172.16.1.0/24 [90/41026560] via 192.168.10.9, 00:21:04, Serial3/0

D 172.16.2.0/24 [90/3014400] via 192.168.10.9, 00:21:04, Serial3/0

D 172.16.3.0/30 [90/41024000] via 192.168.10.9, 00:21:04, Serial3/0

C 192.168.1.0/24 is directly connected, FastEthernet0/0

192.168.10.0/30 is subnetted, 2 subnets

C 192.168.10.4 is directly connected, Serial2/0

C 192.168.10.8 is directly connected, Serial3/0

**Show ip interface brief:**

Router#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.1.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 192.168.10.6 YES manual up up

Serial3/0 192.168.10.10 YES manual up up

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

**show ip protocol:**

Router# show ip protocol

Routing Protocol is "eigrp 1 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 1

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

192.168.1.0

192.168.4.0/30

192.168.10.8/30

Routing Information Sources:

Gateway Distance Last Update

192.168.10.9 90 7387

Distance: internal 90 external 170

## Critical Analysis / Conclusion

|  |
| --- |
| In this lab we learnt about Enhanced Interior Gateway Routing Protocol (EIGRP). This protocol automatically takes routing decisions and makes configuration. Unlike RIP it only sends incremental updates.  Moreover, we implemented this on a topology given to us and successfully sent packets between PC’s connected to different routers. |

|  |  |  |
| --- | --- | --- |
| **Lab Assessment** | | |
| **Pre Lab** | **/5** | **/25** |
| **Performance** | **/5** |
| **Results** | **/5** |
| **Viva** | **/5** |
| **Critical Analysis** | **/5** |
| **Instructor Signature and Comments** | | |

**Lab #07 OSPF Configuration**

**In-Lab Task**

**Task 1**

**Chart

Description automatically generated**

**Graphical user interface, table

Description automatically generated**

**Home Task**

**TASK 1:**

* **Router 0:**

**show running-config:**

Router#show running-config

Building configuration...

Current configuration : 923 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

!

!

interface Loopback0

ip address 10.1.1.1 255.255.255.255

!

interface FastEthernet0/0

ip address 172.16.1.17 255.255.255.240

duplex auto

speed auto

!

interface FastEthernet1/0

no ip address

duplex auto

speed auto

shutdown

!

interface Serial2/0

ip address 192.168.10.1 255.255.255.252

clock rate 64000

!

interface Serial3/0

ip address 192.168.10.5 255.255.255.252

!

interface FastEthernet4/0

no ip address

shutdown

!

interface FastEthernet5/0

no ip address

shutdown

!

router ospf 1

log-adjacency-changes

network 172.16.1.16 0.0.0.15 area 0

network 192.168.10.0 0.0.0.3 area 0

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

end

**show ip route:**

Router#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

10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

C 10.1.1.1/32 is directly connected, Loopback0

O 10.10.10.0/24 [110/65] via 192.168.10.2, 00:05:14, Serial2/0

172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks

C 172.16.1.16/28 is directly connected, FastEthernet0/0

O 172.16.1.32/29 [110/129] via 192.168.10.2, 00:05:04, Serial2/0

192.168.10.0/30 is subnetted, 3 subnets

C 192.168.10.0 is directly connected, Serial2/0

C 192.168.10.4 is directly connected, Serial3/0

O 192.168.10.8 [110/128] via 192.168.10.2, 00:05:14, Serial2/0

**show ip interface brief:**

Router#show ip interface brieg

^

% Invalid input detected at '^' marker.

Router#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 172.16.1.17 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 192.168.10.1 YES manual up up

Serial3/0 192.168.10.5 YES manual up up

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

Loopback0 10.1.1.1 YES manual up up

**show ip protocol:**

Router#show ip protocol

Routing Protocol is "ospf 1"

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Router ID 10.1.1.1

Number of areas in this router is 1. 1 normal 0 stub 0 nssa

Maximum path: 4

Routing for Networks:

172.16.1.16 0.0.0.15 area 0

192.168.10.0 0.0.0.3 area 0

Routing Information Sources:

Gateway Distance Last Update

10.1.1.1 110 00:06:16

10.2.2.2 110 00:06:16

10.3.3.3 110 00:06:17

Distance: (default is 110)

* **Router 1:**

**show running-config:**

Router#show running-config

Building configuration...

Current configuration : 957 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

interface Loopback0

ip address 10.2.2.2 255.255.255.255

!

interface FastEthernet0/0

ip address 10.10.10.1 255.255.255.0

duplex auto

speed auto

!

interface FastEthernet1/0

no ip address

duplex auto

speed auto

shutdown

!

interface Serial2/0

ip address 192.168.10.2 255.255.255.252

!

interface Serial3/0

ip address 192.168.10.9 255.255.255.252

clock rate 64000

!

interface FastEthernet4/0

no ip address

shutdown

!

interface FastEthernet5/0

no ip address

shutdown

!

router ospf 1

log-adjacency-changes

network 10.10.10.0 0.0.0.255 area 0

network 192.168.10.0 0.0.0.3 area 0

network 192.168.10.8 0.0.0.3 area 0

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

end

**show ip route:**

Router#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

10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

C 10.2.2.2/32 is directly connected, Loopback0

C 10.10.10.0/24 is directly connected, FastEthernet0/0

172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks

O 172.16.1.16/28 [110/65] via 192.168.10.1, 00:07:12, Serial2/0

O 172.16.1.32/29 [110/65] via 192.168.10.10, 00:07:12, Serial3/0

192.168.10.0/30 is subnetted, 3 subnets

C 192.168.10.0 is directly connected, Serial2/0

O 192.168.10.4 [110/128] via 192.168.10.10, 00:07:12, Serial3/0

C 192.168.10.8 is directly connected, Serial3/0

**Show ip interface brief:**

Router#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 10.10.10.1 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 192.168.10.2 YES manual up up

Serial3/0 192.168.10.9 YES manual up up

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

Loopback0 10.2.2.2 YES manual up up

**show ip protocol:**

Router#show ip protocol

Routing Protocol is "ospf 1"

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Router ID 10.2.2.2

Number of areas in this router is 1. 1 normal 0 stub 0 nssa

Maximum path: 4

Routing for Networks:

10.10.10.0 0.0.0.255 area 0

192.168.10.0 0.0.0.3 area 0

192.168.10.8 0.0.0.3 area 0

Routing Information Sources:

Gateway Distance Last Update

10.1.1.1 110 00:08:06

10.2.2.2 110 00:08:06

10.3.3.3 110 00:08:07

Distance: (default is 110)

* **Router 2:**

**Show running-config:**

Router#show running-config

Building configuration...

Current configuration : 960 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

!

!

interface Loopback0

ip address 10.3.3.3 255.255.255.255

!

interface FastEthernet0/0

ip address 172.16.1.33 255.255.255.248

duplex auto

speed auto

!

interface FastEthernet1/0

no ip address

duplex auto

speed auto

shutdown

!

interface Serial2/0

ip address 192.168.10.6 255.255.255.252

clock rate 64000

!

interface Serial3/0

ip address 192.168.10.10 255.255.255.252

!

interface FastEthernet4/0

no ip address

shutdown

!

interface FastEthernet5/0

no ip address

shutdown

!

router ospf 1

log-adjacency-changes

network 172.16.1.32 0.0.0.7 area 0

network 192.168.10.4 0.0.0.3 area 0

network 192.168.10.8 0.0.0.3 area 0

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

end

**show ip route:**

Router#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

10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

C 10.3.3.3/32 is directly connected, Loopback0

O 10.10.10.0/24 [110/65] via 192.168.10.9, 00:08:46, Serial3/0

172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks

O 172.16.1.16/28 [110/129] via 192.168.10.9, 00:08:36, Serial3/0

C 172.16.1.32/29 is directly connected, FastEthernet0/0

192.168.10.0/30 is subnetted, 3 subnets

O 192.168.10.0 [110/128] via 192.168.10.9, 00:08:46, Serial3/0

C 192.168.10.4 is directly connected, Serial2/0

C 192.168.10.8 is directly connected, Serial3/0

**Show ip interface brief:**

Router#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 172.16.1.33 YES manual up up

FastEthernet1/0 unassigned YES unset administratively down down

Serial2/0 192.168.10.6 YES manual up up

Serial3/0 192.168.10.10 YES manual up up

FastEthernet4/0 unassigned YES unset administratively down down

FastEthernet5/0 unassigned YES unset administratively down down

Loopback0 10.3.3.3 YES manual up up

**show ip protocol:**

Router#show ip protocol

Routing Protocol is "ospf 1"

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Router ID 10.3.3.3

Number of areas in this router is 1. 1 normal 0 stub 0 nssa

Maximum path: 4

Routing for Networks:

172.16.1.32 0.0.0.7 area 0

192.168.10.4 0.0.0.3 area 0

192.168.10.8 0.0.0.3 area 0

Routing Information Sources:

Gateway Distance Last Update

10.1.1.1 110 00:09:24

10.2.2.2 110 00:09:24

10.3.3.3 110 00:09:25

Distance: (default is 110)

## Critical Analysis / Conclusion

|  |
| --- |
| In this lab we learnt about Open shortest path first (OSPF) configuration. It is a classless routing protocol that can be used to provide subnet mask information in the routing updates, this feature of OSPF helps the VLSM subnet information to be available throughout the network.  Moreover, we implemented this on a topology given to us and successfully sent packets between PC’s connected to different routers. |

|  |  |  |
| --- | --- | --- |
| **Lab Assessment** | | |
| **Pre Lab** | **/5** | **/25** |
| **Performance** | **/5** |
| **Results** | **/5** |
| **Viva** | **/5** |
| **Critical Analysis** | **/5** |
| **Instructor Signature and Comments** | | |

**Lab #08 VLAN Configuration**

**In-Lab Task**

**Chart, line chart

Description automatically generated**

**Packet from VLAN10 to VLAN10**

**Graphical user interface

Description automatically generated with medium confidence**

**Packet from VLAN10 to VLAN20**

**Graphical user interface

Description automatically generated**

**Packet from VLAN10 to VLAN30**

Graphical user interface, text, application

Description automatically generated

**Packet from VLAN20 to VLAN10**

**Graphical user interface, application

Description automatically generated**

**Packet from VLAN20 to VLAN20**

**Graphical user interface

Description automatically generated**

**Packet from VLAN20 to VLAN30**

Graphical user interface

Description automatically generated

**Packet from VLAN30 to VLAN10**

**Graphical user interface, application

Description automatically generated**

**Packet from VLAN30 to VLAN20**

**Graphical user interface, text, application

Description automatically generated**

**Packet from VLAN30 to VLAN30**

**Graphical user interface, application

Description automatically generated**

**Home Task**

* **Switch 1:**

**show running-config:**

Switch#show running-config

Building configuration...

Current configuration : 1444 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Switch

!

!

!

!

!

spanning-tree mode pvst

spanning-tree extend system-id

!

interface FastEthernet0/1

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/2

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/3

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/4

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/5

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/6

!

interface FastEthernet0/7

!

interface FastEthernet0/8

!

interface FastEthernet0/9

!

interface FastEthernet0/10

!

interface FastEthernet0/11

!

interface FastEthernet0/12

!

interface FastEthernet0/13

!

interface FastEthernet0/14

!

interface FastEthernet0/15

!

interface FastEthernet0/16

!

interface FastEthernet0/17

!

interface FastEthernet0/18

!

interface FastEthernet0/19

!

interface FastEthernet0/20

!

interface FastEthernet0/21

!

interface FastEthernet0/22

!

interface FastEthernet0/23

!

interface FastEthernet0/24

!

interface GigabitEthernet0/1

!

interface GigabitEthernet0/2

!

interface Vlan1

no ip address

shutdown

!

interface Vlan99

mac-address 000c.8559.4201

ip address 172.17.99.11 255.255.255.0

!

!

!

!

line con 0

!

line vty 0 4

login

line vty 5 15

login

!

!

!

!

End

* **Switch 2:**

**show running-config:**

Switch#show running-config

Building configuration...

Current configuration : 1957 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Switch

!

!

!

!

!

spanning-tree mode pvst

spanning-tree extend system-id

!

interface FastEthernet0/1

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/2

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/3

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/4

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/5

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/6

switchport access vlan 30

!

interface FastEthernet0/7

switchport access vlan 30

!

interface FastEthernet0/8

switchport access vlan 30

!

interface FastEthernet0/9

switchport access vlan 30

!

interface FastEthernet0/10

switchport access vlan 30

!

interface FastEthernet0/11

switchport access vlan 10

!

interface FastEthernet0/12

switchport access vlan 10

!

interface FastEthernet0/13

switchport access vlan 10

!

interface FastEthernet0/14

switchport access vlan 10

!

interface FastEthernet0/15

switchport access vlan 10

!

interface FastEthernet0/16

switchport access vlan 10

!

interface FastEthernet0/17

switchport access vlan 10

!

interface FastEthernet0/18

switchport access vlan 20

!

interface FastEthernet0/19

switchport access vlan 20

!

interface FastEthernet0/20

switchport access vlan 20

!

interface FastEthernet0/21

switchport access vlan 20

!

interface FastEthernet0/22

switchport access vlan 20

!

interface FastEthernet0/23

switchport access vlan 20

!

interface FastEthernet0/24

switchport access vlan 20

!

interface GigabitEthernet0/1

!

interface GigabitEthernet0/2

!

interface Vlan1

no ip address

shutdown

!

interface Vlan99

mac-address 0007.ece1.0b01

ip address 172.17.99.12 255.255.255.0

!

!

!

!

line con 0

!

line vty 0 4

login

line vty 5 15

login

!

!

!

!

End

* **Switch 3:**

**Show running-config:**

Switch#show running-config

Building configuration...

Current configuration : 1957 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Switch

!

!

!

!

!

spanning-tree mode pvst

spanning-tree extend system-id

!

interface FastEthernet0/1

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/2

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/3

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/4

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/5

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/6

switchport access vlan 30

!

interface FastEthernet0/7

switchport access vlan 30

!

interface FastEthernet0/8

switchport access vlan 30

!

interface FastEthernet0/9

switchport access vlan 30

!

interface FastEthernet0/10

switchport access vlan 30

!

interface FastEthernet0/11

switchport access vlan 10

!

interface FastEthernet0/12

switchport access vlan 10

!

interface FastEthernet0/13

switchport access vlan 10

!

interface FastEthernet0/14

switchport access vlan 10

!

interface FastEthernet0/15

switchport access vlan 10

!

interface FastEthernet0/16

switchport access vlan 10

!

interface FastEthernet0/17

switchport access vlan 10

!

interface FastEthernet0/18

switchport access vlan 20

!

interface FastEthernet0/19

switchport access vlan 20

!

interface FastEthernet0/20

switchport access vlan 20

!

interface FastEthernet0/21

switchport access vlan 20

!

interface FastEthernet0/22

switchport access vlan 20

!

interface FastEthernet0/23

switchport access vlan 20

!

interface FastEthernet0/24

switchport access vlan 20

!

interface GigabitEthernet0/1

!

interface GigabitEthernet0/2

!

interface Vlan1

no ip address

shutdown

!

interface Vlan99

mac-address 000b.bea6.d701

ip address 172.17.99.13 255.255.255.0

!

!

!

!

line con 0

!

line vty 0 4

login

line vty 5 15

login

!

!

!

!

end

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

## Critical Analysis / Conclusion

|  |
| --- |
| In this lab we learnt about Virtual Local Area Network (VLAN) configuration. It is a group of logically connected devices that function exactly like a Local Area Network (LAN), each VLAN acts as a subgroup of switchports.  Moreover, we implemented this on a topology given to us and successfully sent Packet between PC’s connected to same VLAN’s and we were unable to send packets between PC’s connected to different VLAN’s |

|  |  |  |
| --- | --- | --- |
| **Lab Assessment** | | |
| **Pre Lab** | **/5** | **/25** |
| **Performance** | **/5** |
| **Results** | **/5** |
| **Viva** | **/5** |
| **Critical Analysis** | **/5** |
| **Instructor Signature and Comments** | | |

**Lab #09 VTP Configuration**

**In-Lab Task**

**Chart, line chart

Description automatically generated**

**Packet Switches**

**Table

Description automatically generated**

**Packet from VLAN10 to others**

**Chart, funnel chart

Description automatically generated**

**Packet from VLAN20 to others**

Chart, waterfall chart

Description automatically generated

**Packet from VLAN20 to VLAN10**

**Chart, waterfall chart

Description automatically generated**

**Home Task**

* **Switch 1:**

**show running-config:**

S1# show running-config

Building configuration...

Current configuration : 1738 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname S1

!

enable secret 5 $1$mERr$lnG42Uzc.xuw88Y9qr3Qv0

!

!

!

!

!

spanning-tree mode pvst

spanning-tree extend system-id

!

interface FastEthernet0/1

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/2

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/3

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/4

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/5

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/6

shutdown

!

interface FastEthernet0/7

shutdown

!

interface FastEthernet0/8

shutdown

!

interface FastEthernet0/9

shutdown

!

interface FastEthernet0/10

shutdown

!

interface FastEthernet0/11

shutdown

!

interface FastEthernet0/12

shutdown

!

interface FastEthernet0/13

shutdown

!

interface FastEthernet0/14

shutdown

!

interface FastEthernet0/15

shutdown

!

interface FastEthernet0/16

shutdown

!

interface FastEthernet0/17

shutdown

!

interface FastEthernet0/18

shutdown

!

interface FastEthernet0/19

shutdown

!

interface FastEthernet0/20

shutdown

!

interface FastEthernet0/21

shutdown

!

interface FastEthernet0/22

shutdown

!

interface FastEthernet0/23

shutdown

!

interface FastEthernet0/24

shutdown

!

interface GigabitEthernet0/1

shutdown

!

interface GigabitEthernet0/2

shutdown

!

interface Vlan1

no ip address

shutdown

!

interface Vlan99

mac-address 000c.8559.4201

ip address 172.17.99.11 255.255.255.0

!

!

!

!

line con 0

login

!

line vty 0 4

password cisco

login

line vty 5 15

password cisco

login

!

!

!

!

End

**Show vtp status:**

S3#show vtp status

VTP Version : 2

Configuration Revision : 0

Maximum VLANs supported locally : 255

Number of existing VLANs : 9

VTP Operating Mode : Transparent

VTP Domain Name : Lab4

VTP Pruning Mode : Disabled

VTP V2 Mode : Disabled

VTP Traps Generation : Disabled

MD5 digest : 0x57 0xF8 0xD2 0x5C 0x01 0x86 0xE7 0x6A

Configuration last modified by 0.0.0.0 at 3-1-93 00:13:12

* **Switch 2:**

**show running-config:**

S2#show running-config

Building configuration...

Current configuration : 2705 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname S2

!

enable secret 5 $1$mERr$y7z3zUygcvSzhHhTqWR3K1

!

!

!

!

!

spanning-tree mode pvst

spanning-tree extend system-id

!

interface FastEthernet0/1

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/2

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/3

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/4

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/5

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/6

switchport access vlan 30

switchport mode access

switchport port-security

switchport port-security mac-address sticky

switchport port-security mac-address sticky 0060.47C1.AD9E

!

interface FastEthernet0/7

switchport access vlan 30

shutdown

!

interface FastEthernet0/8

switchport access vlan 30

shutdown

!

interface FastEthernet0/9

switchport access vlan 30

shutdown

!

interface FastEthernet0/10

switchport access vlan 30

shutdown

!

interface FastEthernet0/11

switchport access vlan 10

switchport mode access

switchport port-security

switchport port-security mac-address sticky

switchport port-security mac-address sticky 0009.7C30.BEC8

!

interface FastEthernet0/12

switchport access vlan 10

shutdown

!

interface FastEthernet0/13

switchport access vlan 10

shutdown

!

interface FastEthernet0/14

switchport access vlan 10

shutdown

!

interface FastEthernet0/15

switchport access vlan 10

shutdown

!

interface FastEthernet0/16

switchport access vlan 10

shutdown

!

interface FastEthernet0/17

switchport access vlan 10

shutdown

!

interface FastEthernet0/18

switchport access vlan 20

switchport mode access

switchport port-security

switchport port-security mac-address sticky

switchport port-security mac-address sticky 0090.0C6C.14D3

!

interface FastEthernet0/19

switchport access vlan 20

shutdown

!

interface FastEthernet0/20

switchport access vlan 20

shutdown

!

interface FastEthernet0/21

switchport access vlan 20

shutdown

!

interface FastEthernet0/22

switchport access vlan 20

shutdown

!

interface FastEthernet0/23

switchport access vlan 20

shutdown

!

interface FastEthernet0/24

switchport access vlan 20

shutdown

!

interface GigabitEthernet0/1

shutdown

!

interface GigabitEthernet0/2

shutdown

!

interface Vlan1

no ip address

shutdown

!

interface Vlan99

mac-address 0007.ece1.0b01

ip address 172.17.99.12 255.255.255.0

!

!

!

!

line con 0

password cisco

login

!

line vty 0 4

password cisco

login

line vty 5 15

password cisco

login

!

!

!

!

end

**Show vtp status:**

S3#show vtp status

VTP Version : 2

Configuration Revision : 0

Maximum VLANs supported locally : 255

Number of existing VLANs : 9

VTP Operating Mode : Transparent

VTP Domain Name : Lab4

VTP Pruning Mode : Disabled

VTP V2 Mode : Disabled

VTP Traps Generation : Disabled

MD5 digest : 0x57 0xF8 0xD2 0x5C 0x01 0x86 0xE7 0x6A

Configuration last modified by 0.0.0.0 at 3-1-93 00:13:12

* **Switch 3:**

**Show running-config:**

S3#show running-config

Building configuration...

Current configuration : 2842 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname S3

!

enable secret 5 cisco

!

!

!

!

vtp domain Lab4

vtp mode transparent

vtp password cisco

!

!

spanning-tree mode pvst

spanning-tree extend system-id

!

vlan 10

name faculty/staff

!

vlan 20

name students

!

vlan 30

name guest

!

vlan 99

name management

!

interface FastEthernet0/1

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/2

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/3

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/4

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/5

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/6

switchport access vlan 30

switchport mode access

switchport port-security

switchport port-security mac-address sticky

switchport port-security mac-address sticky 00E0.F94E.DD5D

!

interface FastEthernet0/7

switchport access vlan 30

shutdown

!

interface FastEthernet0/8

switchport access vlan 30

shutdown

!

interface FastEthernet0/9

switchport access vlan 30

shutdown

!

interface FastEthernet0/10

switchport access vlan 30

shutdown

!

interface FastEthernet0/11

switchport access vlan 10

switchport mode access

switchport port-security

switchport port-security mac-address sticky

switchport port-security mac-address sticky 0002.4A56.5D93

!

interface FastEthernet0/12

switchport access vlan 10

shutdown

!

interface FastEthernet0/13

switchport access vlan 10

shutdown

!

interface FastEthernet0/14

switchport access vlan 10

shutdown

!

interface FastEthernet0/15

switchport access vlan 10

shutdown

!

interface FastEthernet0/16

switchport access vlan 10

shutdown

!

interface FastEthernet0/17

switchport access vlan 10

shutdown

!

interface FastEthernet0/18

switchport access vlan 20

switchport mode access

switchport port-security

switchport port-security mac-address sticky

switchport port-security mac-address sticky 00D0.BA65.64D5

!

interface FastEthernet0/19

switchport access vlan 20

shutdown

!

interface FastEthernet0/20

switchport access vlan 20

shutdown

!

interface FastEthernet0/21

switchport access vlan 20

shutdown

!

interface FastEthernet0/22

switchport access vlan 20

shutdown

!

interface FastEthernet0/23

switchport access vlan 20

shutdown

!

interface FastEthernet0/24

switchport access vlan 20

shutdown

!

interface GigabitEthernet0/1

shutdown

!

interface GigabitEthernet0/2

shutdown

!

interface Vlan1

no ip address

shutdown

!

interface Vlan99

mac-address 000b.bea6.d701

ip address 172.17.99.13 255.255.255.0

!

!

!

!

line con 0

password cisco

login

!

line vty 0 4

password cisco

login

line vty 5 15

password cisco

login

!

!

!

!

end

**Show vtp status:**

S3#show vtp status

VTP Version : 2

Configuration Revision : 0

Maximum VLANs supported locally : 255

Number of existing VLANs : 9

VTP Operating Mode : Transparent

VTP Domain Name : Lab4

VTP Pruning Mode : Disabled

VTP V2 Mode : Disabled

VTP Traps Generation : Disabled

MD5 digest : 0x57 0xF8 0xD2 0x5C 0x01 0x86 0xE7 0x6A

Configuration last modified by 0.0.0.0 at 3-1-93 00:13:12

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

## Critical Analysis / Conclusion

|  |
| --- |
| In this lab we learnt about VLAN Trunking Protocol (VTP) configuration. It is a protocol used to share VLAN configuration across the network, the main goal of this configuration is to managae all configured VLANs across the network.  Moreover, we implemented this on a topology given to us and successfully sent Packet between PC’s connected to same VLAN’s and we were unable to send packets between PC’s connected to different VLAN’s |

|  |  |  |
| --- | --- | --- |
| **Lab Assessment** | | |
| **Pre Lab** | **/5** | **/25** |
| **Performance** | **/5** |
| **Results** | **/5** |
| **Viva** | **/5** |
| **Critical Analysis** | **/5** |
| **Instructor Signature and Comments** | | |

**Lab #10 Inter VLAN Routing**

**In-Lab Task**

**Diagram

Description automatically generated**

**Packet Switches**

**Graphical user interface

Description automatically generated**

**A picture containing graphical user interface

Description automatically generated**

**Waterfall chart

Description automatically generated with low confidence**

**Home Task**

* **Switch 1:**

**show running-config:**

Switch#show running-config

Building configuration...

Current configuration : 1497 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Switch

!

!

!

no ip domain-lookup

!

!

spanning-tree mode pvst

spanning-tree extend system-id

!

interface FastEthernet0/1

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/2

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/3

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/4

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/5

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/6

!

interface FastEthernet0/7

!

interface FastEthernet0/8

!

interface FastEthernet0/9

!

interface FastEthernet0/10

!

interface FastEthernet0/11

!

interface FastEthernet0/12

!

interface FastEthernet0/13

!

interface FastEthernet0/14

!

interface FastEthernet0/15

!

interface FastEthernet0/16

!

interface FastEthernet0/17

!

interface FastEthernet0/18

!

interface FastEthernet0/19

!

interface FastEthernet0/20

!

interface FastEthernet0/21

!

interface FastEthernet0/22

!

interface FastEthernet0/23

!

interface FastEthernet0/24

!

interface GigabitEthernet0/1

!

interface GigabitEthernet0/2

!

interface Vlan1

no ip address

shutdown

!

interface Vlan99

mac-address 0004.9aec.4d01

ip address 172.17.99.11 255.255.255.0

!

ip default-gateway 172.17.99.1

!

!

!

!

line con 0

!

line vty 0 4

login

line vty 5 15

login

!

!

!

!

End

* **Switch 2:**

**show running-config:**

Switch#show running-config

Building configuration...

Current configuration : 2029 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Switch

!

!

!

!

!

spanning-tree mode pvst

spanning-tree extend system-id

!

interface FastEthernet0/1

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/2

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/3

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/4

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/5

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/6

switchport access vlan 30

switchport mode access

!

interface FastEthernet0/7

switchport access vlan 30

!

interface FastEthernet0/8

switchport access vlan 30

!

interface FastEthernet0/9

switchport access vlan 30

!

interface FastEthernet0/10

switchport access vlan 30

!

interface FastEthernet0/11

switchport access vlan 10

switchport mode access

!

interface FastEthernet0/12

switchport access vlan 10

!

interface FastEthernet0/13

switchport access vlan 10

!

interface FastEthernet0/14

switchport access vlan 10

!

interface FastEthernet0/15

switchport access vlan 10

!

interface FastEthernet0/16

switchport access vlan 10

!

interface FastEthernet0/17

switchport access vlan 10

!

interface FastEthernet0/18

switchport access vlan 20

switchport mode access

!

interface FastEthernet0/19

switchport access vlan 20

!

interface FastEthernet0/20

switchport access vlan 20

!

interface FastEthernet0/21

switchport access vlan 20

!

interface FastEthernet0/22

switchport access vlan 20

!

interface FastEthernet0/23

switchport access vlan 20

!

interface FastEthernet0/24

switchport access vlan 20

!

interface GigabitEthernet0/1

!

interface GigabitEthernet0/2

!

interface Vlan1

no ip address

shutdown

!

interface Vlan99

mac-address 0005.5e62.6701

ip address 172.17.99.12 255.255.255.0

!

!

!

!

line con 0

!

line vty 0 4

login

line vty 5 15

login

!

!

!

!

* **Switch 3:**

**Show running-config:**

Switch#show running-config

Building configuration...

Current configuration : 1444 bytes

!

version 12.2

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Switch

!

!

!

!

!

spanning-tree mode pvst

spanning-tree extend system-id

!

interface FastEthernet0/1

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/2

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/3

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/4

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/5

switchport trunk native vlan 99

switchport mode trunk

!

interface FastEthernet0/6

!

interface FastEthernet0/7

!

interface FastEthernet0/8

!

interface FastEthernet0/9

!

interface FastEthernet0/10

!

interface FastEthernet0/11

!

interface FastEthernet0/12

!

interface FastEthernet0/13

!

interface FastEthernet0/14

!

interface FastEthernet0/15

!

interface FastEthernet0/16

!

interface FastEthernet0/17

!

interface FastEthernet0/18

!

interface FastEthernet0/19

!

interface FastEthernet0/20

!

interface FastEthernet0/21

!

interface FastEthernet0/22

!

interface FastEthernet0/23

!

interface FastEthernet0/24

!

interface GigabitEthernet0/1

!

interface GigabitEthernet0/2

!

interface Vlan1

no ip address

shutdown

!

interface Vlan99

mac-address 000d.bd9a.6301

ip address 172.17.99.13 255.255.255.0

!

!

!

!

line con 0

!

line vty 0 4

login

line vty 5 15

login

!

!

!

!

end

* **Router 1:**

**Show ip route:**

Router#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

172.17.0.0/24 is subnetted, 6 subnets

C 172.17.1.0 is directly connected, FastEthernet0/1.1

C 172.17.10.0 is directly connected, FastEthernet0/1.10

C 172.17.20.0 is directly connected, FastEthernet0/1.20

C 172.17.30.0 is directly connected, FastEthernet0/1.30

C 172.17.50.0 is directly connected, FastEthernet0/0

C 172.17.99.0 is directly connected, FastEthernet0/1.99

**Show running-config:**

Router#show running-config

Building configuration...

Current configuration : 1055 bytes

!

version 12.4

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface FastEthernet0/0

description server interface

ip address 172.17.50.1 255.255.255.0

duplex auto

speed auto

!

interface FastEthernet0/1

no ip address

duplex auto

speed auto

!

interface FastEthernet0/1.1

encapsulation dot1Q 1

ip address 172.17.1.1 255.255.255.0

!

interface FastEthernet0/1.10

encapsulation dot1Q 10

ip address 172.17.10.1 255.255.255.0

!

interface FastEthernet0/1.20

encapsulation dot1Q 20

ip address 172.17.20.1 255.255.255.0

!

interface FastEthernet0/1.30

encapsulation dot1Q 30

ip address 172.17.30.1 255.255.255.0

!

interface FastEthernet0/1.99

encapsulation dot1Q 99 native

ip address 172.17.99.1 255.255.255.0

!

interface Vlan1

no ip address

shutdown

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

end

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

## Critical Analysis / Conclusion

|  |
| --- |
| In this lab we learnt about Inter-VLAN Routing. It is a way to forward traffic between different VLAN by implementing a router in the network.  Moreover, we implemented this on a topology given to us and successfully sent Packet between and we were unable to send packets between PC’s connect and the server as well. |

|  |  |  |
| --- | --- | --- |
| **Lab Assessment** | | |
| **Pre Lab** | **/5** | **/25** |
| **Performance** | **/5** |
| **Results** | **/5** |
| **Viva** | **/5** |
| **Critical Analysis** | **/5** |
| **Instructor Signature and Comments** | | |

**Lab #11 DHCP Configuration**

**In-Lab Task**

**Topology:**

**Diagram

Description automatically generated**

**HOME TASK**

**Show ip dhcp pool:**

R2#show ip dhcp pool

Pool R1Fa0 :

Utilization mark (high/low) : 100 / 0

Subnet size (first/next) : 0 / 0

Total addresses : 254

Leased addresses : 1

Excluded addresses : 2

Pending event : none

1 subnet is currently in the pool

Current index IP address range Leased/Excluded/Total

192.168.10.1 192.168.10.1 - 192.168.10.254 1 / 2 / 254

Pool R1Fa1 :

Utilization mark (high/low) : 100 / 0

Subnet size (first/next) : 0 / 0

Total addresses : 254

Leased addresses : 1

Excluded addresses : 2

Pending event : none

1 subnet is currently in the pool

Current index IP address range Leased/Excluded/Total

192.168.11.1 192.168.11.1 - 192.168.11.254 1 / 2 / 254

**Show IP route:**

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 209.165.200.226

10.0.0.0/30 is subnetted, 1 subnets

C 10.1.1.0 is directly connected, Serial0/0/0

O 192.168.10.0/24 [110/65] via 10.1.1.1, 00:16:26, Serial0/0/0

O 192.168.11.0/24 [110/65] via 10.1.1.1, 00:16:26, Serial0/0/0

C 192.168.20.0/24 is directly connected, FastEthernet0/0

209.165.200.0/30 is subnetted, 1 subnets

C 209.165.200.224 is directly connected, Serial0/0/1

S\* 0.0.0.0/0 [1/0] via 209.165.200.226

**ISP Router:**

**Show ip route**

Router#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

209.165.200.0/30 is subnetted, 1 subnets

C 209.165.200.224 is directly connected, Serial0/0/1

## Critical Analysis / Conclusion

|  |
| --- |
| In this lab we learnt about DHCP (Dynamic Host Configuration Protocol) it is a network management protocol used to dynamically assign an IP address to any device so they can communicate.  Moreover, we implemented this on a topology given to us and successfully assigned IP’s using release and renew subcommands of ipconfig. |

|  |  |  |
| --- | --- | --- |
| **Lab Assessment** | | |
| **Pre Lab** | **/5** | **/25** |
| **Performance** | **/5** |
| **Results** | **/5** |
| **Viva** | **/5** |
| **Critical Analysis** | **/5** |
| **Instructor Signature and Comments** | | |