CN LAB CHEAT SHEET
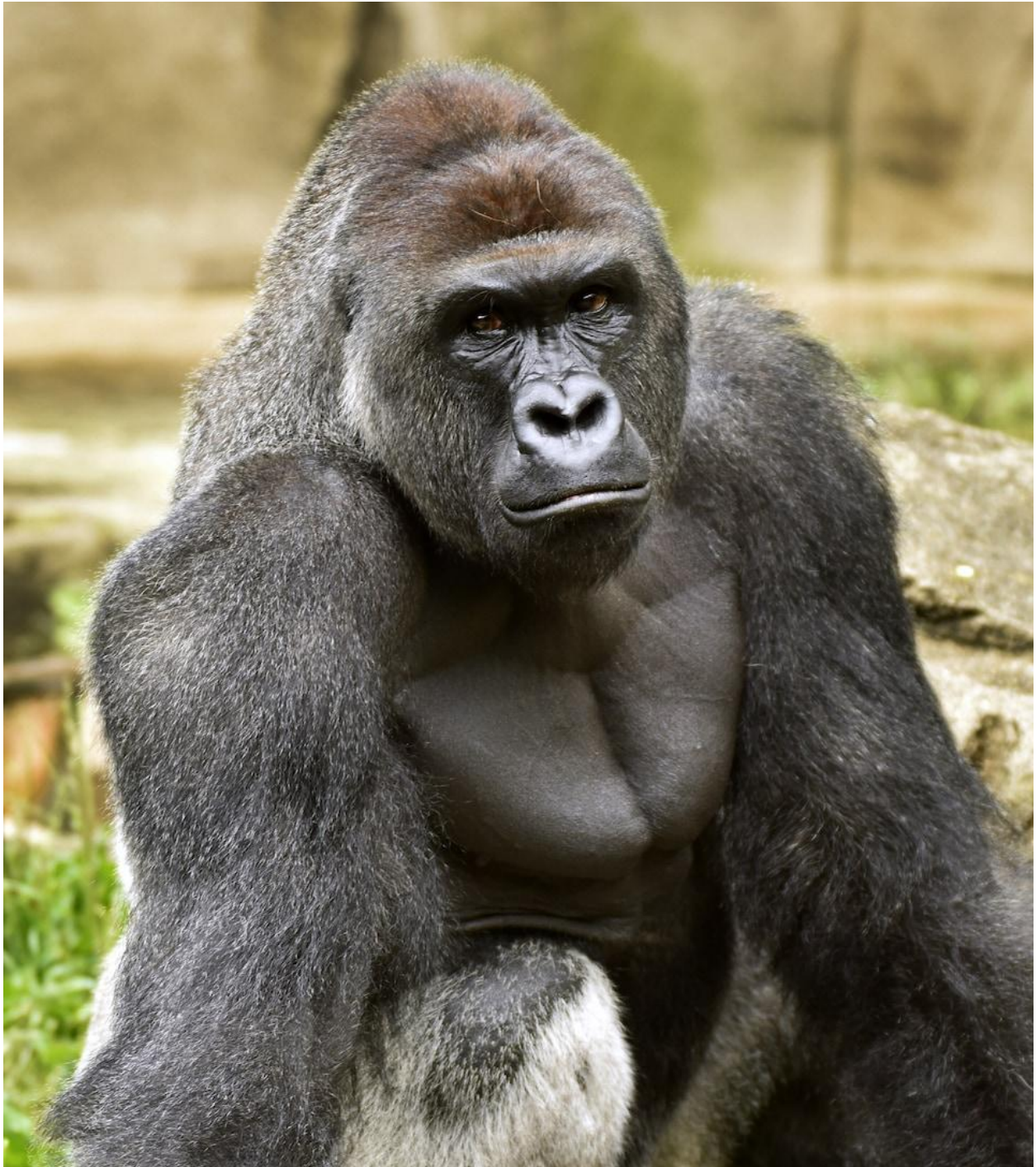
Aayush Rana Magar
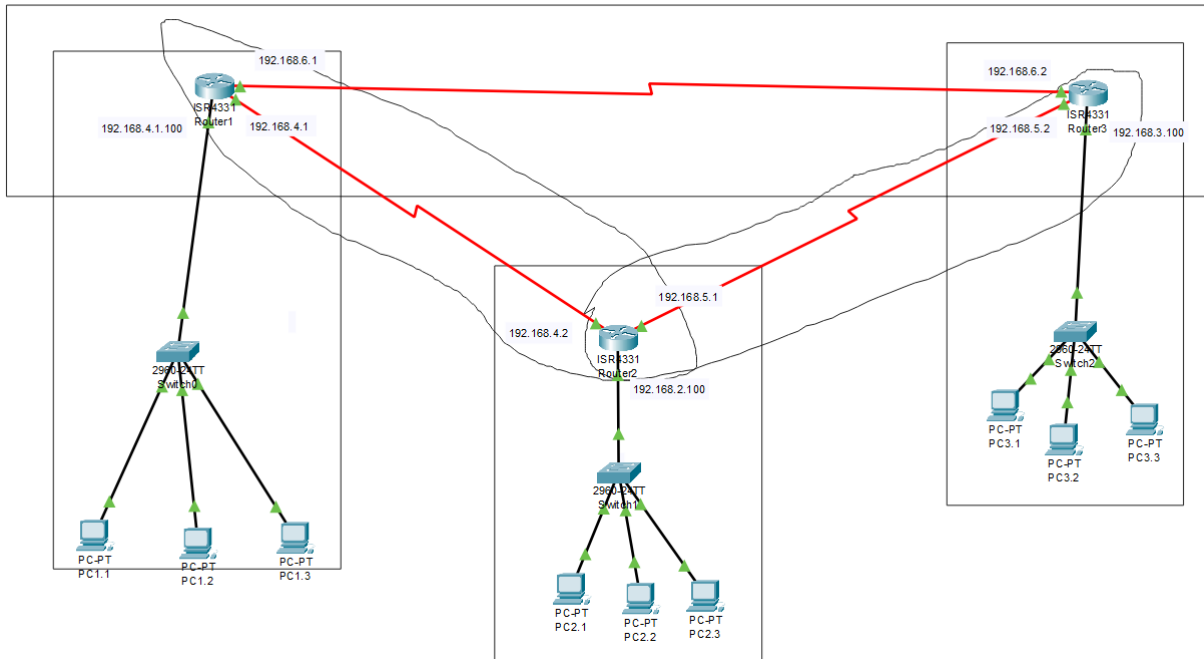
In loving memory of

Harembe

~ Gone but not forgotten
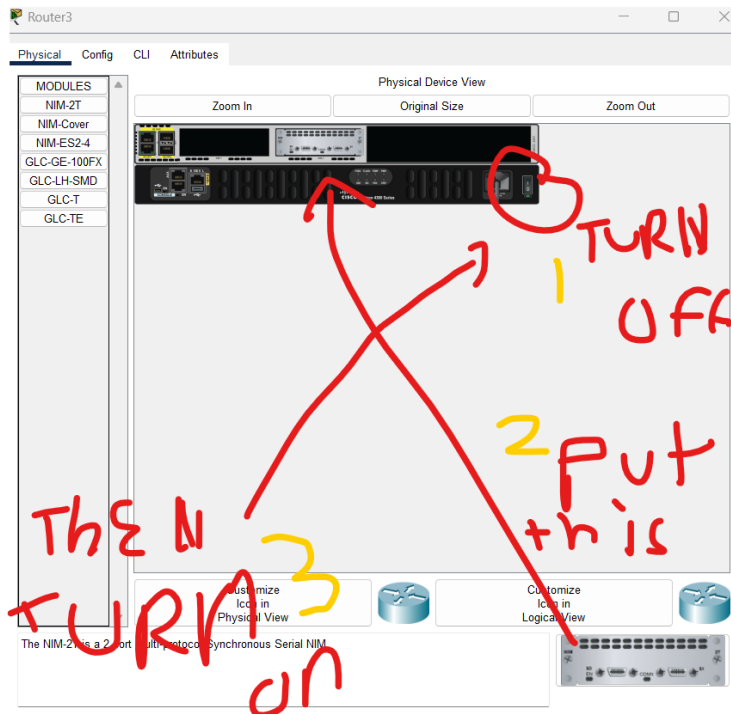
Contents

Router configuration

For you will not be able to connect more than 2 connection in router so Do this.


Then you can able to configure that new work

Now we assign ip to different pc > desktop > and ip configuration where you will assign ip address , sub mask and gate way address [1]

CLI in router

CLI command	What it does
Router > enable	Give you access to routers settings
Router# configure terminal	You are choosing to change the settings of terminal
Router (config)# interface < name of the port >	Giving you the access of that port
Router (config-if)# ip address < ip address for that port> <sub mask>	Assigning a ip address to that port
Router (config-if)# no shutdown	It activates the interface

Eg:
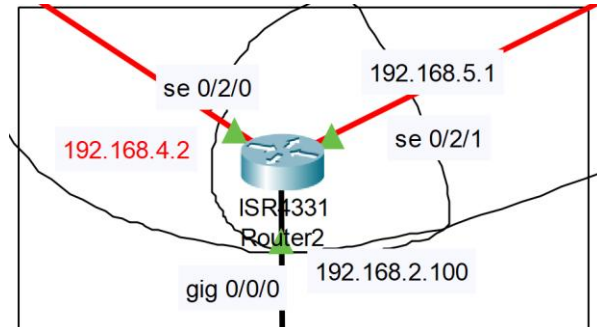
Let us try giving following Ip to the respective ports of router 2:

Router > enable

Router# configure terminal

Router (config)# interface se0/2/0

Router (config-if)# ip address 192.168.4.2 255.255.255.0

Router (config-if)# no shutdown

Router (config)# interface se0/2/1

Router (config-if)# ip address 192.168.5.1 255.255.255.0

Router (config-if)# no shutdown

Router (config)# interface gig0/0/0

Router (config-if)# ip address 192.168.4.2 255.255.255.0

Router (config-if)# no shutdown

And to check you write a CLI command

Router# show ip interface brief

And we should get it like

```
Router#show ip interface brief
Interface          IP-Address     OK? Method Status                Protocol
GigabitEthernet0/0/0  192.168.2.100  YES manual up                    up
GigabitEthernet0/0/1  unassigned     YES unset  administratively down down
GigabitEthernet0/0/2  unassigned     YES unset  administratively down down
Serial0/2/0        192.168.4.2    YES manual up                    up
Serial0/2/1        192.168.5.1    YES manual up                    up
Vlan1              unassigned     YES unset  administratively down down
Router#
```
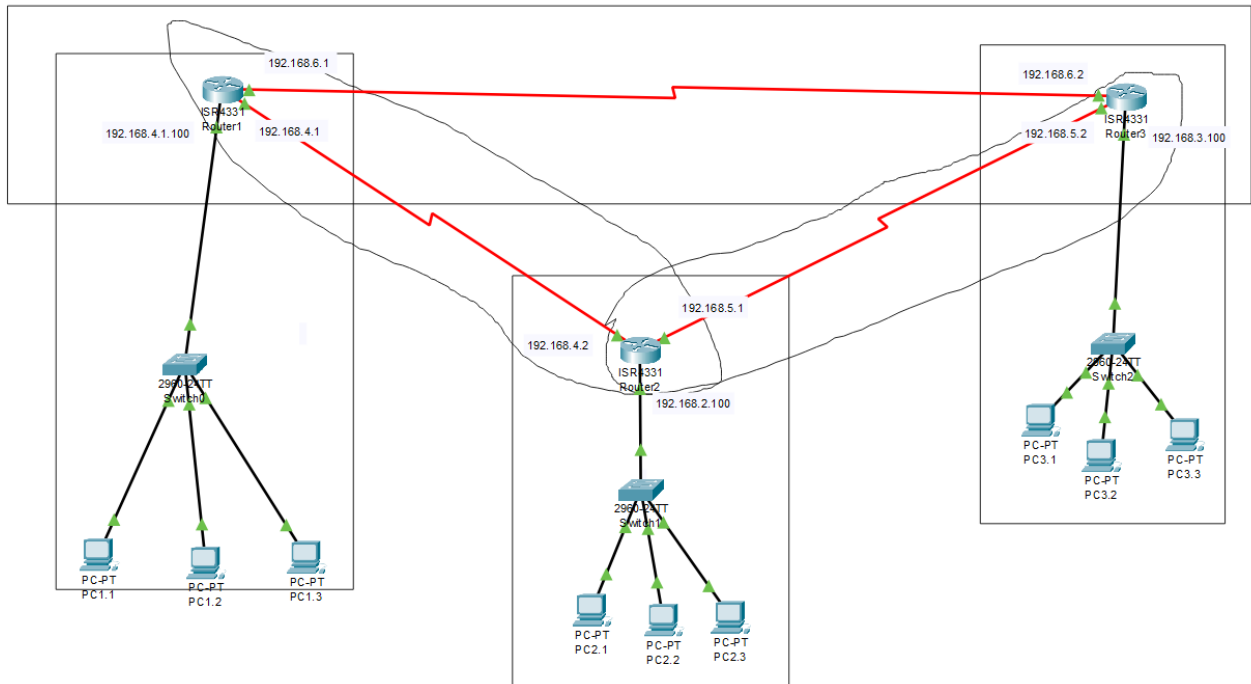
Do this for all available routers

Congrats you have configured the routers

Static routing

Configure routers as shown above

You need to figure out different networks of in the architecture that is not directly connected to the router and write the command according to it/

for 1st router

routing to be done with network 2,3,5

to go to network 2 from router0 we need to go through 192.168.4.2 (next hop ip)

to go to network 3 from router0 we need to go through 192.168.4.2 (next hop ip)

to go to network 5 from router0 we need to go through 192.168.4.2 (next hop ip)

in cli sintax

Router (config)# ip route <network address of destination > <sub mask> <ip address of next hop>

Router (config)# ip route 192.168.2.0 255.255.255.0 192.168.4.2

Router (config)# ip route 192.168.3.0 255.255.255.0 192.168.4.2

Router (config)# ip route 192.168.5.0 255.255.255.0 192.168.4.2

Similarly for others routers

for router 3

ip route 192.168.2.0 255.255.255.0 192.168.5.1

ip route 192.168.4.0 255.255.255.0 192.168.5.1

ip route 192.168.1.0 255.255.255.0 192.168.5.1

for router 2

ip route 192.168.3.0 255.255.255.0 192.168.5.2

ip route 192.168.1.0 255.255.255.0 192.168.4.1

to check if the static routing is success we ping from pc1.1 to pc 3.3

if yes the command prompts shoul look like this

isco Packet Tracer PC Command Line 1.0

C:\>ping 192.168.3.3

Pinging 192.168.3.3 with 32 bytes of data:

Request timed out.

Reply from 192.168.3.3: bytes=32 time=2ms TTL=125

Reply from 192.168.3.3: bytes=32 time=26ms TTL=125

Reply from 192.168.3.3: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.3.3:

Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),

Approximate round trip times in milli-seconds:

Minimum = 2ms, Maximum = 26ms, Average = 10ms

Dynamic Routing

Configure routers as shown above

You do it using RIP

So just route by rip and give every available network in the architecture

This should be done in every router in the architecture.
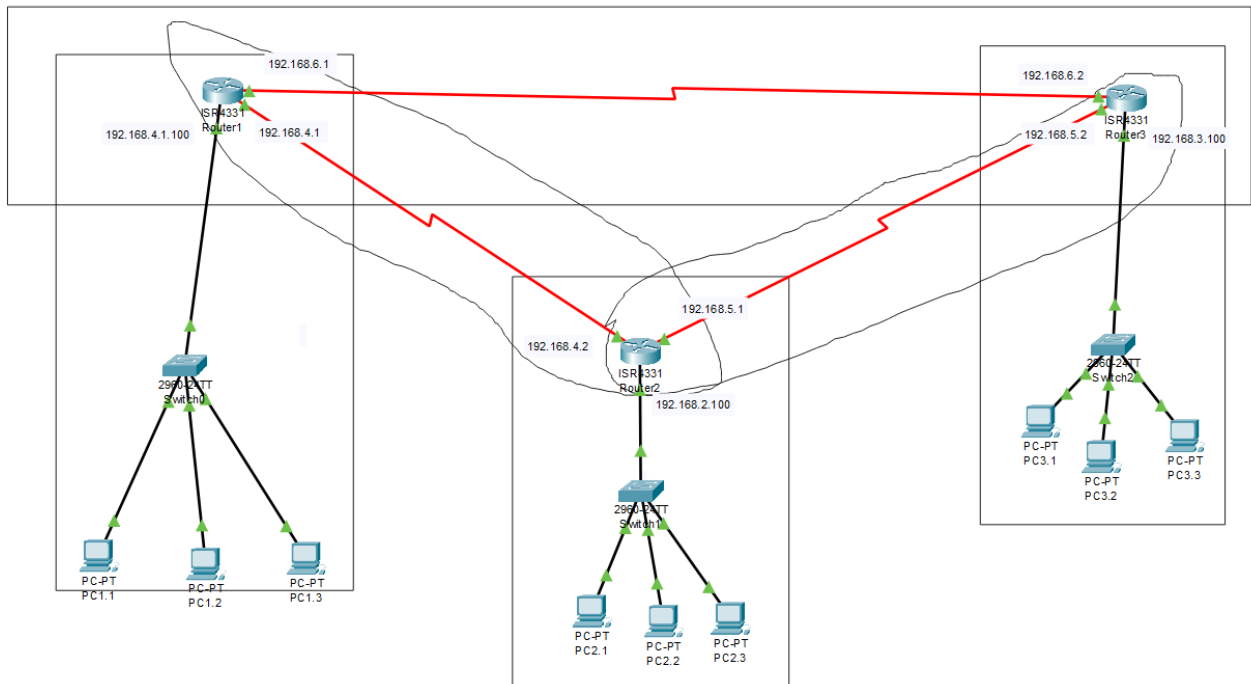
For router 1

Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#router rip

Router(config-router)#network 192.168.1.0

Router(config-router)#network 192.168.2.0

Router(config-router)#network 192.168.3.0

Router(config-router)#network 192.168.4.0

Router(config-router)#network 192.168.5.0

Router(config-router)#network 192.168.6.0

For router 2

Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#router rip

Router(config-router)#network 192.168.1.0

Router(config-router)#network 192.168.2.0

Router(config-router)#network 192.168.3.0

Router(config-router)#network 192.168.4.0

Router(config-router)#network 192.168.5.0

Router(config-router)#network 192.168.6.0

For router 3

Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#router rip

Router(config-router)#network 192.168.1.0

Router(config-router)#network 192.168.2.0

Router(config-router)#network 192.168.3.0

Router(config-router)#network 192.168.4.0

Router(config-router)#network 192.168.5.0

Router(config-router)#network 192.168.6.0

to check if the static routing is success we ping from pc1.1 to pc 3.3

if yes the command prompts should look like this

isco Packet Tracer PC Command Line 1.0

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Reply from 192.168.3.3: bytes=32 time=26ms TTL=125

Reply from 192.168.3.3: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.3.3:

Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),

Approximate round trip times in milli-seconds:
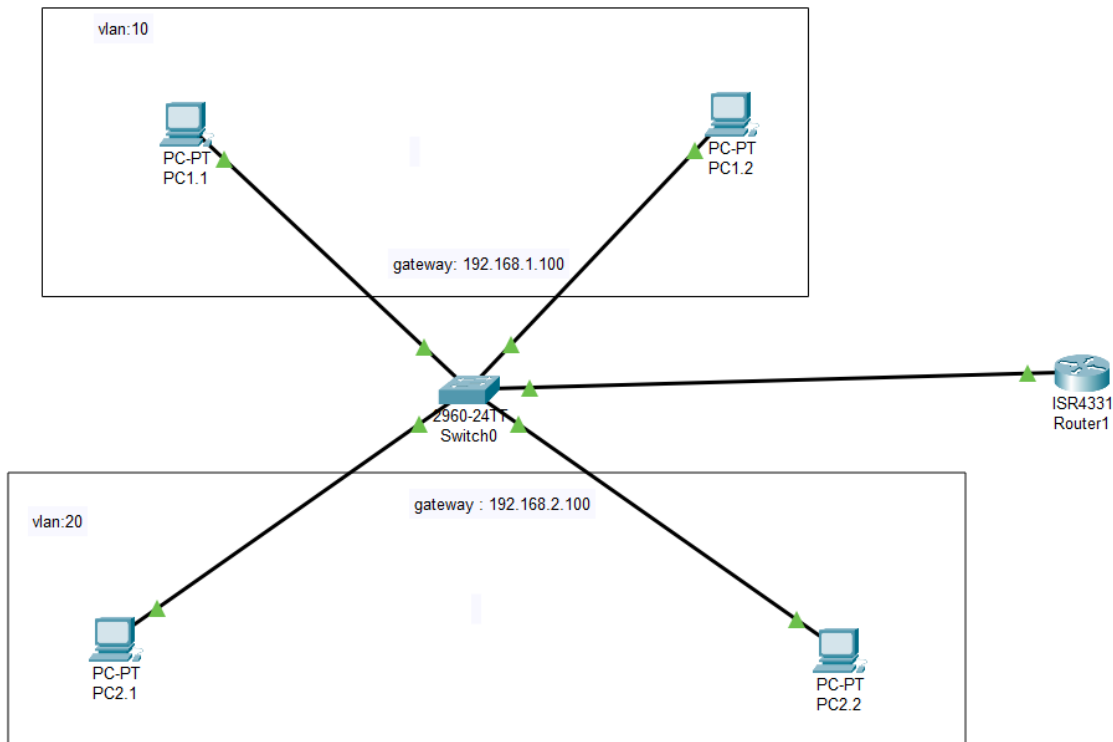
Minimum = 2ms, Maximum = 26ms, Average = 10ms

VLAN

Usually pcs are connected in same network but what if there are different networks in a single switch . then it will have to encapsulate two LAN in a single switch. Aka a virtual LAN, a VLAN

While putting ip make sure to put the correct gate way.

We are making 2 vlan,

vlan 10 for IT and vlan 20 for cmp

Switch#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Switch(config)#vlan 10

Switch(config-vlan)#name IT

Switch(config-vlan)#vlan 20

Switch(config-vlan)#name CMP

Switch(config-vlan)#do show vlan brief

```
VLAN Name                    Status   Ports

---- ------------------------------ --------- ------------------------------

1    default                 active   Fa0/1, Fa0/2, Fa0/3, Fa0/4

                                      Fa0/5, Fa0/6, Fa0/7, Fa0/8

                                      Fa0/9, Fa0/10, Fa0/11, Fa0/12

                                      Fa0/13, Fa0/14, Fa0/15, Fa0/16

                                      Fa0/17, Fa0/18, Fa0/19, Fa0/20

                                      Fa0/21, Fa0/22, Fa0/23, Fa0/24

                                      Gig0/1, Gig0/2

10   IT                      active

20   CMP                     active

1002 fddi-default            active

1003 token-ring-default      active

1004 fddinet-default         active

1005 trnet-default           active
```

Port access

Then we give vlan 10 access to port Fa0/1, Fa0/2 and vlan 20 access to port Fa0/3, Fa0/4 and make port Gig0/1 trunk (The switchport mode trunk command converts the port into a trunk, allowing it to carry traffic for multiple VLANs between switches.)

Switch(config-vlan)#exit

Switch(config)#vlan 10

Switch(config-vlan)#int fa0/1

Switch(config-if)#switchport mode access

Switch(config-if)#switchport access vlan 10

Switch(config-if)#int fa0/2

Switch(config-if)#switchport mode access

Switch(config-if)#switchport access vlan 10

Switch(config-if)#vlan 20

Switch(config-vlan)#int fa0/3

Switch(config-if)#switchport mode access

Switch(config-if)#switchport access vlan 20

Switch(config-if)#int fa0/4

Switch(config-if)#switchport mode access

Switch(config-if)#switchport access vlan 20

Switch(config)#interface GigabitEthernet0/1

Switch(config-if)#

Switch(config-if)#switchport mode trunk

Switch(config-if)#

Switch(config-if)#exit

Switch(config-vlan)#do show vlan

VLAN Name   Status   Ports

---- -------------------------------- --------- -------------------------------

1   default   active   Fa0/5, Fa0/6, Fa0/7, Fa0/8

*   Fa0/9, Fa0/10, Fa0/11, Fa0/12*

*   Fa0/13, Fa0/14, Fa0/15, Fa0/16*

*   Fa0/17, Fa0/18, Fa0/19, Fa0/20*

*   Fa0/21, Fa0/22, Fa0/23, Fa0/24*

*   Gig0/2*

10   IT   active   Fa0/1, Fa0/2

20   CMP   active   Fa0/3, Fa0/4

1002 fddi-default   active

1003 token-ring-default   active

1004 fddinet-default   active

1005 trnet-default   active

Router config

Then in router, configuration is setting up Inter-VLAN Routing using a Router-on-a-Stick setup. Here's what each part does:

Configure the Physical Interface

Activates the physical GigabitEthernet0/0/0 interface.

This interface will be used for subinterfaces (VLANs).

Create a Subinterface for VLAN 10

interface GigabitEthernet0/0/0.10 → Creates a subinterface for VLAN 10.

encapsulation dot1q 10 → Tags this subinterface with VLAN 10.

ip address 192.168.1.100 255.255.255.0 → Assigns an IP to VLAN 10 Gateway.

Create a Subinterface for VLAN 20

interface GigabitEthernet0/0/0.20 → Creates a subinterface for VLAN 20.

encapsulation dot1q 20 → Tags this subinterface with VLAN 20.

ip address 192.168.2.100 255.255.255.0 → Assigns an IP to VLAN 20 Gateway.

Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface GigabitEthernet0/0/0

Router(config-if)#no shutdown

Router(config-if)#

Router(config-if)#interface GigabitEthernet0/0/0.10

Router(config-subif)#

Router(config-subif)#encapsulation dot1q 10

Router(config-subif)#ip add 192.168.1.100 255.255.255.0

Router(config-subif)#interface GigabitEthernet0/0/0.20

Router(config-subif)#

Router(config-subif)#encapsulation dot1q 20

Router(config-subif)#ip add 192.168.2.100 255.255.255.0

Router(config-subif)#exit

Router(config)#end

Then to check if this worked

We ping pc2.2 from pc 1.1

C:\>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Request timed out.

Reply from 192.168.2.2: bytes=32 time=1ms TTL=127

Reply from 192.168.2.2: bytes=32 time=1ms TTL=127

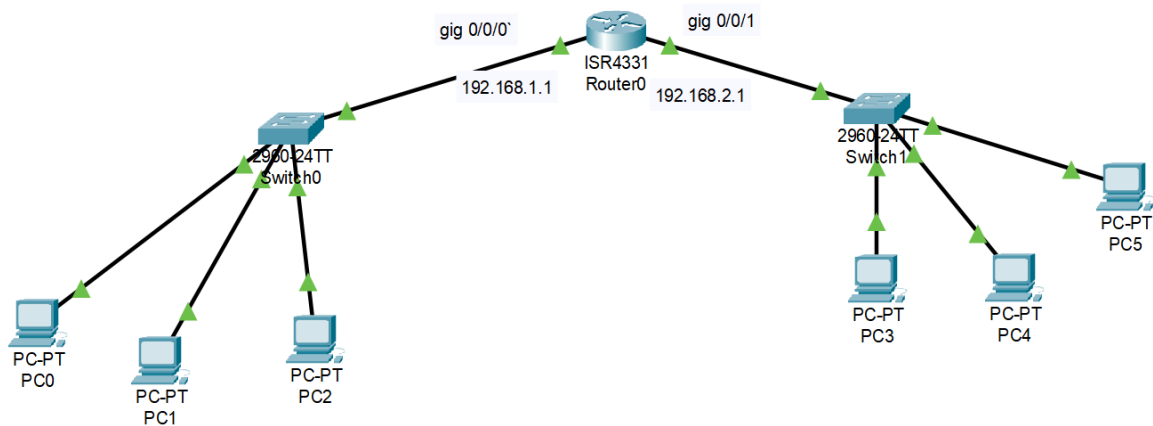*Reply from 192.168.2.2: bytes=32 time<1ms TTL=127*

Ping statistics for 192.168.2.2:

Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

DHPC

In dchp the ip is suppose to be given automatically for that. We give ip to the ports of the router which will act as a gate way to the network.

Ip of port

Router>enable

Router#configure terminal

Router(config)#hostname dhpc-server

dhpc-server(config)#interface gig0/0/0

dhpc-server(config-if)#ip address 192.168.1.1 255.255.255.0

dhpc-server(config-if)#no shutdown

dhpc-server(config-if)#interface gig0/0/1

dhpc-server(config-if)#ip address 192.168.2.1 255.255.255.0

dhpc-server(config-if)#no shutdown

dhpc-server(config-if)#exit

excluded

then we exclude the gateway address from the pool so that no other pc will receive those address

dhpc-server(config)#ip dhcp excluded-address 192.168.1.1

dhpc-server(config)#ip dhcp excluded-address 192.168.2.1

network 1

then for pool of ip in network 192.168.1.0 will be accessed through 192.168.1.1

dhpc-server(config)#ip dhcp pool 192.168.1.1

dhpc-server(dhcp-config)#network 192.168.1.0 255.255.255.0

dhpc-server(dhcp-config)#default-router 192.168.1.1

dhpc-server(dhcp-config)#dns-server 8.8.8.8

dhpc-server(dhcp-config)#exit

network 2

then for pool of ip in network 192.168.2.0 will be accessed through 192.168.2.1

dhpc-server(config)#ip dhcp pool 192.168.2.1

dhpc-server(dhcp-config)#network 192.168.2.0 255.255.255.0

dhpc-server(dhcp-config)#default-router 192.168.2.1

dhpc-server(dhcp-config)#dns-server 8.8.8.8

dhpc-server(dhcp-config)#exit

then in ip configuration of every pc we turn on the dhpc options and automatically receive ip, mask, gateway and dns address

pinging pc2 192.168.1.4 to pc 3 192.168.2.4

C:\>ping 192.168.2.4

Pinging 192.168.2.4 with 32 bytes of data:

Request timed out.

Reply from 192.168.2.4: bytes=32 time<1ms TTL=127

Reply from 192.168.2.4: bytes=32 time<1ms TTL=127

Reply from 192.168.2.4: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.2.4:

   Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),

Approximate round trip times in milli-seconds:

   Minimum = 0ms, Maximum = 0ms, Average = 0ms

Bibliography

[1] me, "I made it the fuck up".