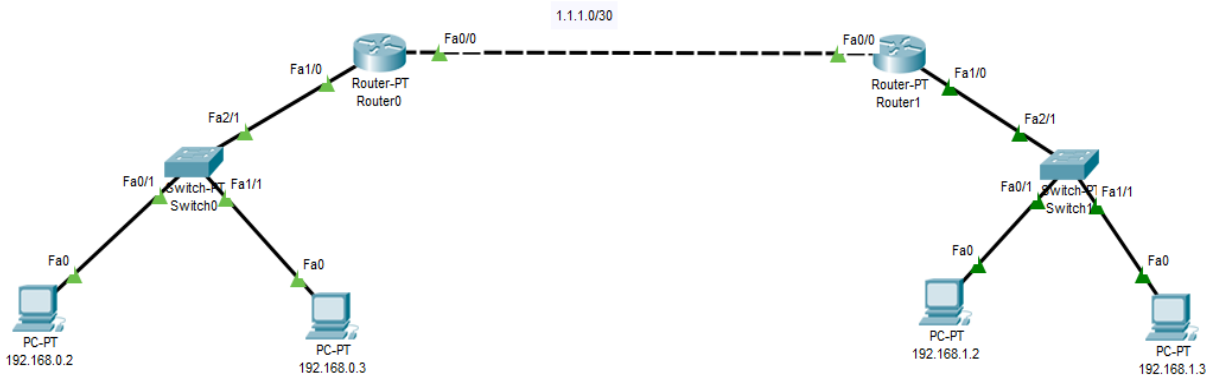
Static Routing

Router0	Router1
Router>enable	Router>en
Router#configure terminal	Router#config t
Router(config)#interface fastethernet0/0	Router(config)#int fa0/0
Router(config-if)#ip address 192.168.0.1 255.255.255.0	Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown	Router(config-if)#no sh
Router(config-if)#interface serial2/0	Router(config-if)#int se3/0
Router(config-if)#ip adddress 10.1.1.1 255.255.255.252	Router(config-if)#ip address 10.1.1.2 255.255.255.252
Router(config-if)#no shutdown	Router(config-if)#no sh
Router(config-if)#ex	Router(config-if)#ex
Router(config)#ip route 192.168.1.0 255.255.255.0 serial2/0	Router(config)#ip route 192.168.0.0 255.255.255.0 10.1.1.1
Router(config)#exit	Router(config)#exit
Router#show ip route	Router#show ip route

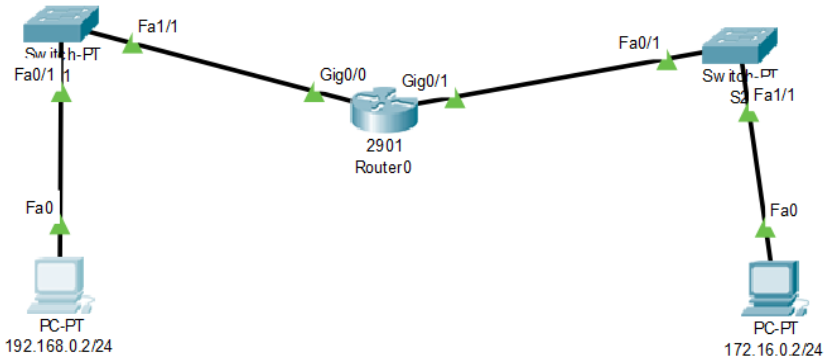
Default Routing



Router0	Router1
Router>enable Router#configure terminal Router(config)#interface fastethernet0/0 Router(config-if)#ip address 1.1.1.1 255.255.255.252 Router(config-if)#no shutdown Router(config-if)#interface fastethernet1/0 Router(config-if)#ip address 192.168.0.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit Router(config)#ip route 0.0.0.0 0.0.0.0 fastethernet0/0	Router>enable Router#config t Router(config)#interface fastethernet0/0 Router(config-if)#ip address 1.1.1.2 255.255.255.252 Router(config-if)#no shutdown Router(config-if)#int fastethernet1/0 Router(config-if)#ip address 192.168.1.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit Router(config)#ip route 0.0.0.0 0.0.0.0 1.1.1.1

Switch & Router Configuration (Telnet & SSH)

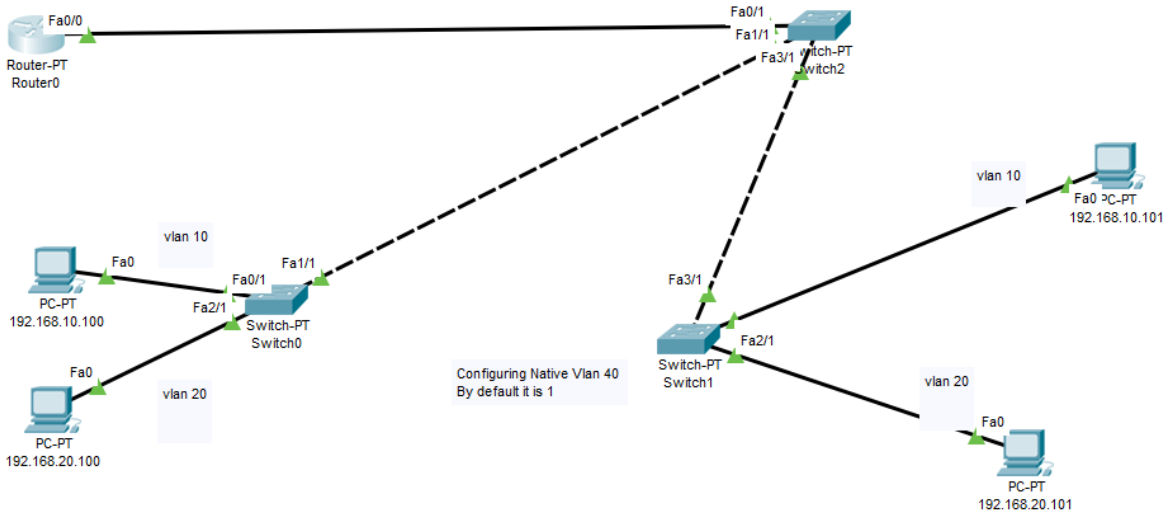
Host Name : Cisco
Banner : RESTRICTED
Console Password : cisco123
Enable Password : cisco123
Secret Password: secret
Telnet Password: telnet123
Management IP : 192.168.0.10/24
Default Gateway : 192.168.0.1/24



Host Name : LUS
Domain Namin: cisco.com
user:tawsif
pas:tawsif
SSH Version: 2
Management IP: 172.16.0.10/24
Default Gateway : 172.16.0.1/24

S1	S2	Router0
Switch>en Switch#configure terminal Switch(config)#hostname Cisco Cisco(config)#banner motd #***** RESTRICTED *****# Cisco(config)#line con 0 Cisco(config-line)#password cisco123 Cisco(config-line)#login Cisco(config-line)#exit Cisco(config)#enable password cisco123 Cisco(config)#line vty 0 15 Cisco(config-line)#password telnet123 Cisco(config-line)#int vlan 1 Cisco(config-if)#ip add 192.168.0.10 255.255.255.0 Cisco(config-if)#no shutdown Cisco(config-if)#exit Cisco(config)#enable secret cisco123 Cisco(config)#exit	Switch>en Switch#config t Switch(config)#hostname LUS LUS(config)#ip domain-name cisco.com LUS(config)#username tawsif password tawsif LUS(config)#enable pass cisco123 LUS(config)#interface vlan 1 LUS(config-if)#no sh LUS(config-if)#ip add 172.16.0.10 255.255.255.0 LUS(config-if)#ex LUS(config)#ip default-gateway 172.16.0.1 LUS(config)#crypto key generate rsa LUS(config)#ip ssh version 2 LUS(config)#line vty 0 15 LUS(config-line)#transport input ssh LUS(config-line)#login local LUS(config-line)#exit LUS(config)#do show run LUS(config)#do show ip interface brief	Router>enRouter#config t Router(config)#hostname R1 R1(config)#int gig0/0 R1(config-if)#ip add 192.168.0.1 255.255.255.0 R1(config-if)#no sh R1(config-if)#int gig0/1 R1(config-if)#ip add 172.16.0.1 255.255.255.0 R1(config-if)#no sh R1(config-if)#exit R1(config)#security passwords min-length 8 R1(config)#line console 0 R1(config-line)#password cisco123 R1(config-line)#login R1(config-line)#exit Router(config)#enable password cisco123 R1(config)#ip domain-name cisco.com R1(config)#username tawsif password tawsif R1(config)#username tawsif password tawsiflu R1(config)#crypto key generate rsa R1(config)#ip ssh version 2 R1(config)#line vty 0 15 R1(config-line)#transport input ssh R1(config-line)#login local R1(config)#do show run

Vlan Inter Routing (Router-on-a-stick)

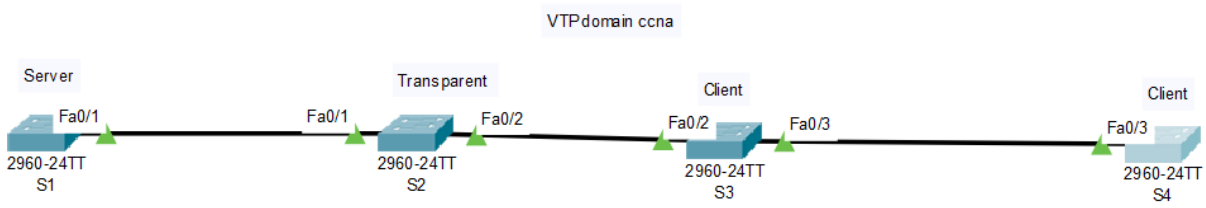


Switch0	Switch1	Switch2	Router0
Switch#configure terminal Switch(config)#vlan 10 Switch(config-vlan)#name cse Switch(config-vlan)#exit Switch(config)#vlan 20 Switch(config-vlan)#name eee Switch(config-vlan)#exit Switch(config)#vlan 40 vlan)#name native Switch(config-vlan)#exit Switch(config)#int fa0/1 Switch(config-if)#switchport mode access	Switch#configure terminal Switch(config)#vlan 10 Switch(config-vlan)#name cse Switch(config-vlan)#vlan 20 Switch(config-vlan)#name eee Switch(config-vlan)#vlan 40 Switch(config-vlan)#name native Switch#show vlan brief Switch#config t Switch(config)#int fa3/1 Switch(config-if)#switchport mode trunk	Switch#configure terminal Switch(config)#vlan 10 Switch(config-vlan)#name cse Switch(config-vlan)#ex Switch(config)#vlan 20 Switch(config-vlan)#name eee vlan)#ex Switch(config)#vlan 40 Switch(config-vlan)#name native Switch(config-vlan)#exit Switch(config)#int fa1/1 Switch(config-if)#switchport mode trunk Switch(config-if)#switchport trunk allowed vlan 10,20	Router#configure terminal Router(config)#int fa0/0 Router(config-if)#no shutown Router(config-if)#exit Router(config)#int fa0/0.10 Router(config-subif)#encapsulation dot1Q 10 Router(config-subif)#ip add 192.168.10.1 255.255.255.0 Router(config-subif)#exit Router(config)#int fa0/0.20 Router(config-subif)#encapsulation dot1Q 20 Router(config-subif)#ip address 192.168.20.1 255.255.255.0 Router(config-subif)#exit

Switch(config-if)#switchport access vlan 10 Switch(config-if)#exit Switch(config)#interface fastethernet2/1 Switch(config-if)#switchport mode access Switch(config-if)#switchport access vlan 20 Switch(config-if)#int fa1/1 Switch(config-if)#switchport mode trunk Switch(config-if)#switchport trunk allowed vlan 10,20 Switch(config-if)#switchport trunk native vlan 40 Switch(config-if)#exit	Switch(config-if)#switchport trunk allowed vlan 10,20 Switch(config-if)#switchport trunk native vlan 40 Switch(config-if)#interface fastethernet0/1 Switch(config-if)#switchport mode access Switch(config-if)#switchport access vlan 10 -if)#interface fastethernet2/1 Switch(config-if)#switchport mode access Switch(config-if)#switchport access vlan 20 Switch(config-if)#exit Switch#show int trunk	Switch(config-if)#switchport trunk native vlan 40 Switch(config-if)#int fa3/1 Switch(config-if)#switchport mode trunk Switch(config-if)#switchport trunk allowed vlan 10,20 Switch(config-if)#switchport trunk native vlan 40 Switch#show int trunk Switch(config)#int fa0/1 Switch(config-if)#switchport mode trunk Switch(config-if)#switchport trunk allowed vlan 10,20 Switch(config-if)#switchport trunk native vlan 40 Switch(config-if)#exit	

#show vlan [brief | name { name } | summary]

VTP Configuration



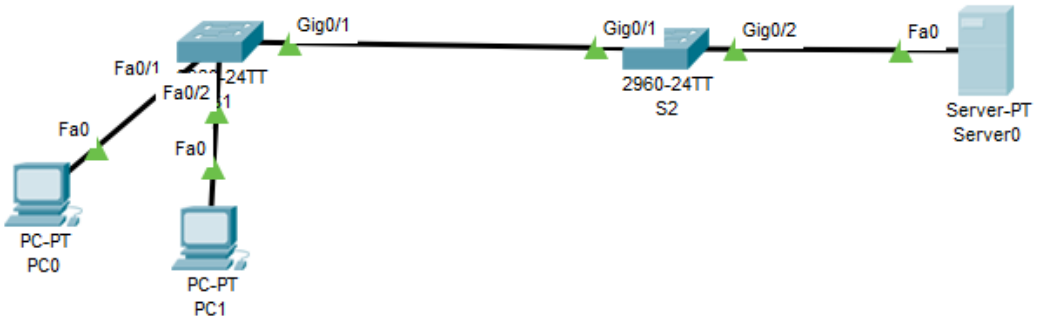
S1	S2	S3	S4
Switch>en Switch#config t Switch(config)#hostname S1 S1(config)#vtp domain ccna S1(config)#vtp mode server S1(config)#int fa 0/1 S1 (config-if)#do show int trun S1(config-if)#switchport mode trunk S1(config-if)#do show int trunk S1(config)#vlan 10 S1(config-vlan)#cse S1(config-vlan)#name cse S1(config-vlan)#vlan 20 S1(config-vlan)#name eee S1(config-vlan)#vlan 30 S1#show vtp status	Switch>en Switch#config t Switch(config)#hostname S2 S2(config)#vtp domain ccna S2(config)#vtp mode transparent S2(config)#int ra fa 0/1 - 2 S2(config-if-range)#switch mode trunk Switch(config-if-range)#exit	Switch>en Switch#config t Switch(config)#hostname S3 S3(config)#vtp domain ccna S3(config)#vtp mode client S3(config)#do show int tru S3(config)#int ra fa 0/2 - 3 S3(config-if-range)#switchport mode trunk S3#show vtp status	Switch>en Switch#config t Switch(config)#hostname S4 S4(config)#vtp domain ccna S4(config)#vtp mode client S4(config)#int fa 0/3 S4(config-if)#switchport mode trunk S4(config-if)#ex

#show vtp status

#show vtp password

#show interfaces trunk

Port Security



S1	S2
Switch>en Switch#config t Switch(config)#hostname S1 S1(config)#int fa0/1 S1(config-if)#switchport mode access S1(config-if)#switchport port-security mac sticky S1(config-if)#int fa0/2 S1(config-if)#switchport mode access S1(config-if)#switchport port-security S1(config-if)#switchport port-security mac-address sticky	Switch>en Switch#config t Switch(config)#host S2 S2(config)#int gig0/1 S2(config-if)#switchport mode access S2(config-if)#switchport port-security maximum 2 S2 S2(config)#int gig0/1 S2(config-if)#sh

S*#show port-security ?

address Show secure address

interface Show secure interface(gig0/1)

<cr>

S*(config-if)#switchport port-security ?

aging Port-security aging commands

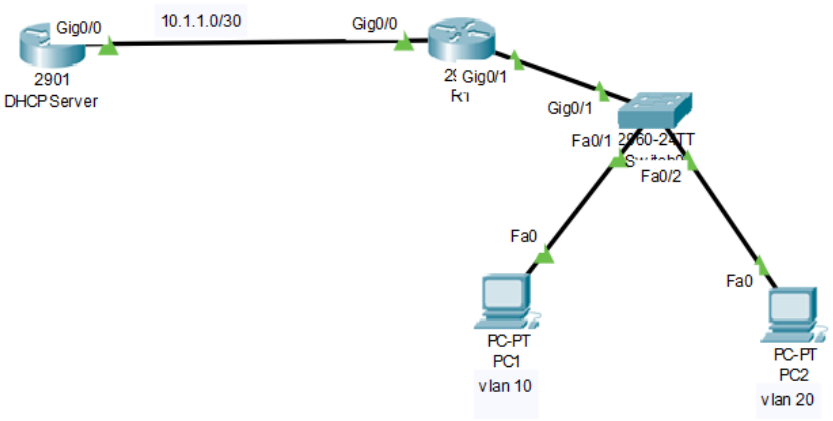
mac-address Secure mac address

maximum Max secure addresses

violation Security violation mode **<cr>**

S1(config-if)#switchport port-security violation ?
protect Security violation protect mode
restrict Security violation restrict mode
shutdown Security violation shutdown mode

DHCP Configuration



1) Exclude first 10 IP addresses in each subnet from pool
Pool names = vlan10 and vlan20
2) Networks = 10.1.10.0/24 (VLAN 10) and 10.1.20.0/24 (VLAN 20)
3) default-router 10.1.10.1
10.1.20.1
4) dns: 8.8.8.8

R1	DHCPServer	Switch
Router>en Router#configure terminal Router(config)#hostname R1 R1(config)#interface gigbitethernet 0/0 R1(config-if)#no shutdown R1(config-if)#ip address 10.1.1.1 255.255.255.252 R1(config)#interface gigabitethernet0/1.10 R1(config-subif)#encapsulation dot1Q 10 R1(config-subif)#ip address 10.1.10.1 255.255.255.0 R1(config-subif)#ip helper-address 10.1.1.2 R1(config-subif)#exit R1(config)#int gig0/1.20 R1(config-subif)#encapsulation dot1Q 20 R1(config-subif)#ip address 10.1.20.1 255.255.255.0 R1(config-subif)#ip helper-address 10.1.1.2 R1(config-subif)#exit	Router>en Router#config t Router(config)#hostname DHCP_server DHCP_server(config)#int gig0/0 DHCP_server(config-if)#no shutdown DHCP_server(config-if)#ip address 10.1.1.2 255.255.255.252 R1(config-if)#ex DHCP_server(config)#ip dhcp excluded-address 10.1.10.1 10.1.10.10 DHCP_server(config)#ip dhcp excluded-address 10.1.20.1 10.1.20.10 DHCP_server(config)#ip dhcp pool vlan10 DHCP_server(dhcp-config)#network 10.1.10.0 255.255.255.0 DHCP_server(dhcp-config)#default-router 10.1.10.1 DHCP_server(dhcp-config)#dns-server 8.8.8.8	Switch>en Switch#configure terminal Switch(config-if)#exit Switch(config)#vlan 10 Switch(config-vlan)#name cse Switch(config-vlan)#vlan 20 Switch(config-vlan)#name eee Switch(config-vlan)#vlan 30 Switch(config-vlan)#name native Switch(config-vlan)#int gig0/1 Switch(config-if)#switchport mode trunk Switch(config-if)#switchport trunk native vlan 30 Switch(config-if)#switchport trunk allowed vlan 10, 20 Switch(config-if)#switchport trunk allowed vlan 10,20 Switch#show interfaces trunk Switch(config)#int fa0/1 Switch(config-if)#switchport mode acc Switch(config-if)#switchport access vlan10

	DHCP_server(dhcp-config)#exit DHCP_server(config)#ip dhcp pool vlan20 DHCP_server(dhcp-config)#network 10.1.20.0 255.255.255.0 DHCP_server(dhcp-config)#dns-server 8.8.8.8 DHCP_server(dhcp-config)#default-router 10.1.20.1 DHCP_server(dhcp-config)#exit DHCP_server(config)#ip route 10.1.10.0 255.255.255.0 10.1.1.1 DHCP_server(config)#ip route 10.1.20.0 255.255.255.0 10.1.1.1 DHCP_server#show ip dhcp binding	Switch(config-if)#switchport access vlan 10 Switch(config-if)#int fa0/2 Switch(config-if)#switchport mode acc Switch(config-if)#switchport access vlan 20

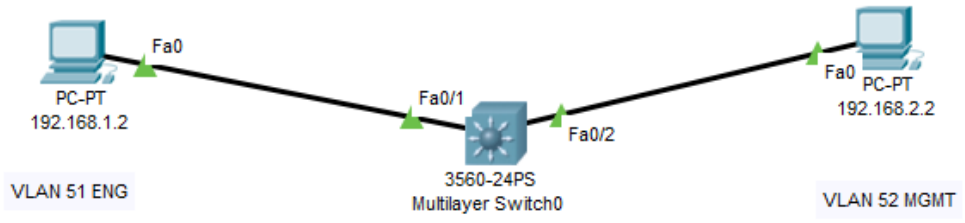
#show ip dhcp binding

#show ip dhcp pool [pool name]

#show ip dhcp server statistics

#show ip dhcp conflict

Switch Virtual Interface (SVI)



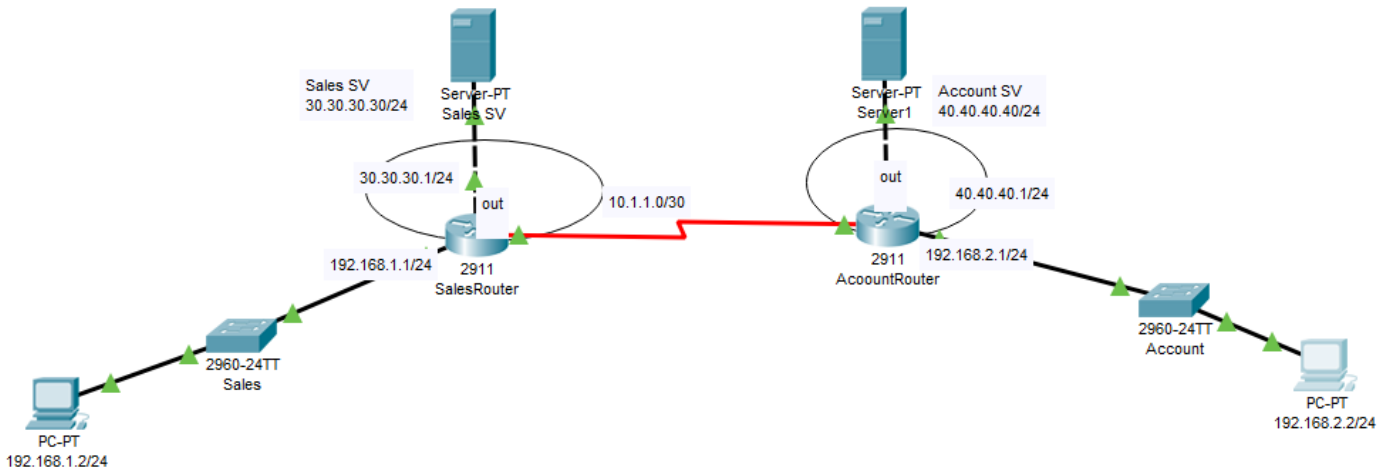
Create VLAN 51 (ENG) and VLAN 52 (MGMT) on the switch and assign ports as shown.

Configure a Layer 3 Switch design. The SVIs should have the first IP address on each subnet.

The computer in VLAN 51 should be able to ping the computer in VLAN 52 (and vice versa).

Switch>enable Switch#configure terminal Switch(config)#vlan 51 Switch(config-vlan)#name ENG Switch(config-vlan)#exit Switch(config)#vlan 52 Switch(config-vlan)#name MGMT Switch(config-vlan)#e Switch(config)#interface fastethernet0/1 Switch(config-if)#switchport MODE ACCess Switch(config-if)#switchport access vlan 51 Switch(config-if)#exit witch(config)#interface fastethernet0/2 Switch(config-if)#switchport mode access Switch(config-if)#switchport access vlan 52 Switch(config-if)#exit	Switch(config)#do show ip interface brief **Switch(config)#ip routing** Switch(config)#interface vlan 51 Switch(config-if)#ip address 192.168.1.1 255.255.255.0 Switch(config-if)#exit Switch(config)#interface vlan 52 Switch(config-if)#ip address 192.168.2.1 255.255.255.0 Switch(config-if)#do show ip interface brief Switch(config-if)#exit Switch(config)#do show ip route

Standard Access List (ACL)



SalesRouter	AccountRouter
SalesRouter(config)# access-list 1 permit 192.168.1.0 0.0.0.255	AccountRouter(config)# access-list 1 deny 192.168.1.0 0.0.0.255

SalesRouter(config)# interface gigabitethernet0/0 Sales(config-if)# ip access-group 1 out	AccountRouter(config)# access-list 1 permit any AccountRouter(config)# interface gigabitethernet0/0 AccountRouter(config-if)# ip access-group 1 out

Standard Access List (ACL)

 Host C should be able to use a web browser (HTTP) to access the Finance Web Server.

 Other types of access from host C to the Finance Web Server should be blocked.

 All access from hosts in the Core or local LAN to the Finance Web Server should be blocked.

 All hosts in the Core and on local LAN should be able to access the Public web server.

 host A 192.168.33.1

 host B 192.168.33.2

 host C 192.168.33.3

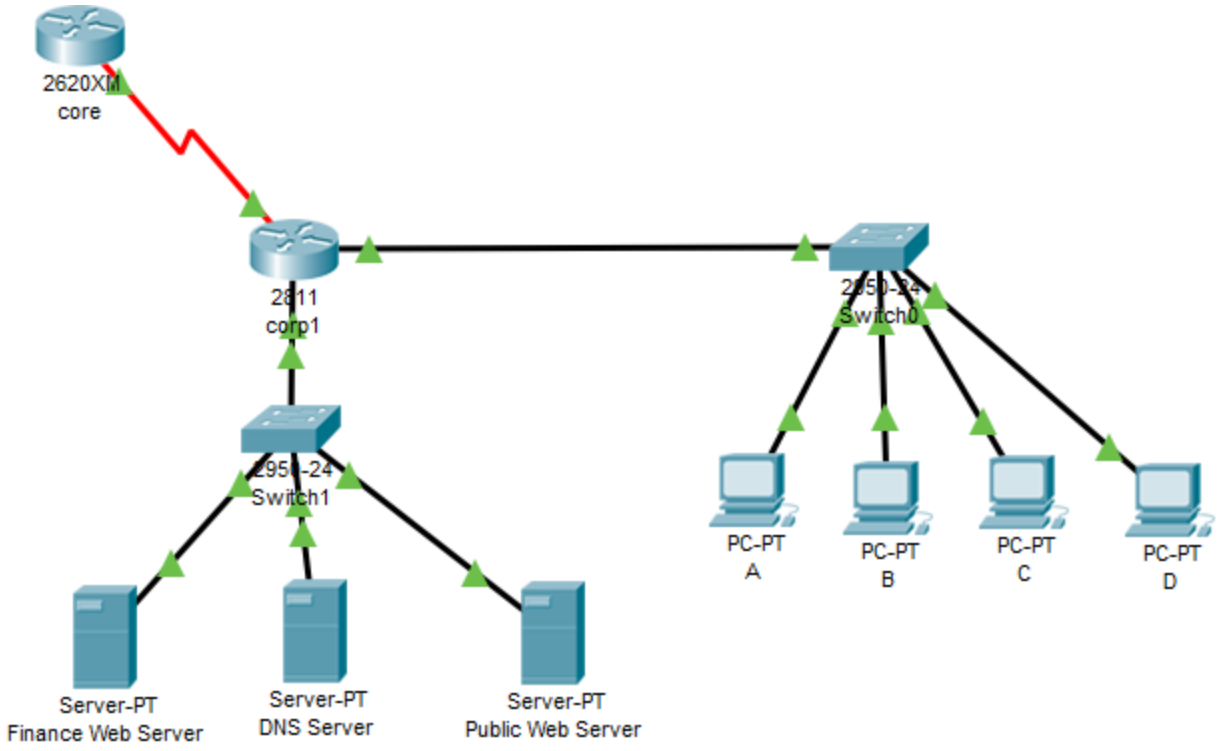
 host D 192.168.33.4

 The Finance Web Server has been assigned an address of 172.22.242.17.

 The Public Web Server in the Server LAN has been assigned an address of 172.22.242.18.

You have been tasked to create and apply a numbered access list to a single outbound interface.

This access list can contain no more than three statements that meet these requirements.



Corp1# configure terminal

Corp1(config)# access-list 100 permit tcp host 192.168.33.3 host 172.22.242.17 eq 80

Corp1(config)# access-list 100 deny ip any host 172.22.242.17

Corp1(config)# access-list 100 permit ip any any

Crop1(config)# interface fastethernet0/1

Corp1(config-if)# ip access-group 100 out

Crop1(config-if)# exit

Crop1(config)# exit

Crop1# copy running-config startup-config