1 Configure 2 VLANs 1 Switch

WIRING

Connect PC1 (FastEthernet0) with Switch Copper Straight-through Cable (FastEthernet0/1)

Connect PC2 (FastEthernet0) with Switch (FastEthernet0/2)

Connect Laptop1 (FastEthernet0) with Switch (FastEthernet0/3)

Connect Laptop2 (FastEthernet0) with Switch (FastEthernet0/4)

Connect Switch (FastEthernet0/5) with Router (FastEthernet0/0)

IP CONFIGURATION

PC1
VLAN: 10
IP: 192.168.1.10
SM: 255.255.255.0
DG: 192.168.1.1

PC2
VLAN: 10
IP: 192.168.1.20
SM: 255.255.255.0
DG: 192.168.1.1

Laptop1
IP: 192.168.2.10
SM: 255.255.255.0
DG: 192.168.2.2

Laptop2
IP: 192.168.2.20
SM: 255.255.255.0
DG: 192.168.2.2

Configure Switch
1. In CLI press ENTER
2. enable
3. conf t
4. vlan 10
5. name HR
6. vlan 20
7. name IT
8. int fa0/1
9. switchport mode access
10. switchport access vlan 10
11. int fa0/2
12. switchport mode access
13. switchport access vlan 10
14. int fa0/3
15. switchport mode access
16. switchport access vlan 20
17. int fa0/4
18. switchport mode access
19. int fa0/5
20. switchport mode trunk

Configure Router
1. Initial Setup: no
2. en
3. conf t
4. int gi0/0/0
5. no shutdown
6. int gi0/0/0.10
7. encapsulation dot1q 10
8. ip add 192.168.1.1 255.255.255.0
9. int gi0/0/0.20
10. encapsulation dotq1 20
11. ip add 192.168.2.2 255.255.255.0

Test Config
Login to PC1, in command prompt enter:
ping 192.168.2.10

If you get a response it works.

2 Configure 2 Subnets 2 Switches

WIRING

Connect PC1 (FastEthernet0) with Switch0 per Copper Straight-Through Cable (FastEthernet0/1)

Connect PC2 (FastEthernet0) with Switch0 per Copper Straight-Through Cable (FastEthernet0/2)

Connect PC3 (FastEthernet0) with Switch1 per Copper Straight-Through Cable (FastEthernet0/3)

Connect PC4 (FastEthernet0) with Switch1 per Copper Straight-Through Cable (FastEthernet0/4)

Connect Switch0 (FastEthernet0/3)with Router per Copper Straight-Through Cable (FastEthernet0/0)

Connect Switch1 (FastEthernet0/3) with Router per Copper Straight-Through Cable (FastEthernet0/1)

IP CONFIGURATION

PC1
IP: 192.168.0.2
SM: 255.255.255.0
DG: 192.168.0.1

PC2
IP: 192.168.0.3
SM: 255.255.255.0
DG: 192.168.0.1

PC3
IP: 10.130.5.2
SM: 255.255.255.0
DG: 10.130.5.1

PC4
IP: 10.130.5.3
SM: 255.255.255.0
DG: 10.130.5.1

Configure Router
1. enable
2. conf t
3. interface FastEthernet0/0
4. no shutdown
5. ip address 192.168.0.1 255.255.255.0
6. interface FastEthernet0/1
7. ip address 10.130.5.1 255.255.255.0

3 Configure 2 VLANs 2 Switches

WIRING

Connect PC1 (FastEthernet0) with Switch0 per Copper Straight-Through Cable (FastEthernet0/1)

Connect PC2 (FastEthernet0) with Switch0 per Copper Straight-Through Cable (FastEthernet0/2)

Connect PC3 (FastEthernet0) with Switch1 per Copper Straight-Through Cable (FastEthernet0/3)

Connect PC4 (FastEthernet0) with Switch1 per Copper Straight-Through Cable (FastEthernet0/4)

Connect Switch0 (FastEthernet0/24) with Switch1 per Copper Cross-Over Cable (FastEthernet0/24)

Connect Switch1 (FastEthernet0/3) with Router per Copper Straight-Through Cable (FastEthernet0/0)

IP CONFIGURATION

PC1
VLAN: 10
IP: 192.168.0.2
SM: 255.255.255.0
DG: 192.168.0.1

PC2
VLAN: 20
IP: 192.168.1.2
SM: 255.255.255.0
DG: 192.168.1.1

PC3
VLAN: 10
IP: 192.168.0.3
SM: 255.255.255.0
DG: 192.168.0.1

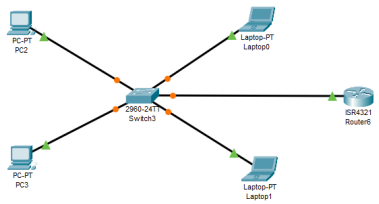
PC4
VLAN: 20
IP: 192.168.1.3
SM: 255.255.255.0
DG: 192.168.1.1

Configure Switch
Switch0
1. enable
2. conf t
3. interface fastEthernet0/1
4. switchport access vlan 10
5. interface fastEthernet0/2
6. switchport access vlan 20
8. interface fastEthernet0/24
9. switchport mode trunk

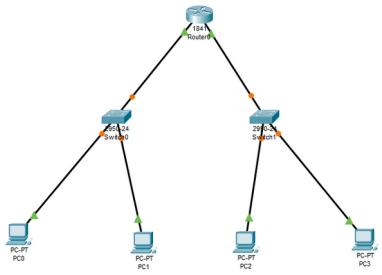
Switch1
1. enable
2. conf t
3. interface fastEthernet0/1
4. switchport access vlan 10
5. interface fastEthernet0/2
6. switchport access vlan 20
7. interface fastEthernet0/3
8. switchport mode trunk

Configure Router
1. no
2. enable
3. conf t
4. interface fastEthernet0/0
5. interface fastEthernet0/0.1
6. encapsulation dot1Q 10
7. ip address 192.168.0.1 255.255.255.0
8. no shutdown
9. interface fastEthernet0/0.2
10. encapsulation dot1Q 20
11. ip address 192.168.1.1 255.255.255.0
12. no shutdown

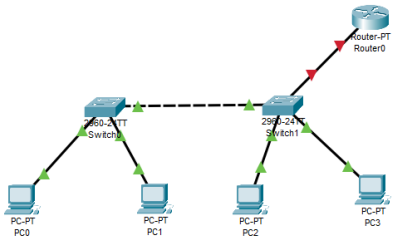
Scenario 1



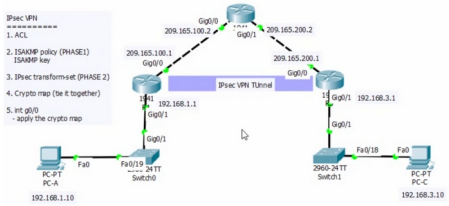
Scenario 2



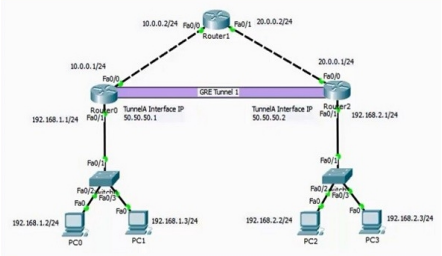
Scenario 3



Ipsec VPN



GRE Tunnel VPN



VPN IPsec

Starting configurations for R1, ISP, and R3. Paste to global config mode :

1. hostname R1
2. interface g0/1
3. ip address 192.168.1.1 255.255.255.0
4. no shut
5. interface g0/0
6. ip address 209.165.100.1 255.255.255.0
7. no shut
8. exit
9. ip route 0.0.0.0 0.0.0.0 209.165.100.2
10. hostname ISP
11. interface g0/1
12. ip address 209.165.200.2 255.255.255.0
13. no shut
14. interface g0/0
15. ip address 209.165.100.2 255.255.255.0
16. no shut
17. exit
18. hostname R3
19. interface g0/1
20. ip address 192.168.3.1 255.255.255.0
21. no shut
22. interface g0/0
23. ip address 209.165.200.1 255.255.255.0
24. no shut
25. exit
26. ip route 0.0.0.0 0.0.0.0 209.165.200.2

Make sure routers have the security license enabled:

1. license boot module c1900 technology-package securityk9

Configure IPsec on the routers at each end of the tunnel (R1 and R3)

R1

1. crypto isakmp policy 10
2. encryption aes 256
3. authentication pre-share
4. group 5
5. crypto isakmp key secretkey address 209.165.200.1
6. crypto ipsec transform-set R1-R3 esp-aes 256 esp-sha-hmac
7. crypto map IPSEC-MAP 10 ipsec-isakmp 8. set peer 209.165.200.1
9. set pfs group5
10. set security-association lifetime seconds 86400
11. set transform-set R1-R3
12. match address 100
13. interface GigabitEthernet0/0
14. crypto map IPSEC-MAP
15. access-list 100 permit ip 192.168.1.0 0.0.0.255 192.168.3.0 0.0.0.255

R3

1. crypto isakmp policy 10
2. encryption aes 256
3. authentication pre-share
4. group 5
5. crypto isakmp key secretkey address 209.165.100.1
6. crypto ipsec transform-set R3-R1 esp-aes 256 esp-sha-hmac
7. crypto map IPSEC-MAP 10 ipsec-isakmp 8. set peer 209.165.100.1
9. set pfs group5
10. set security-association lifetime seconds 86400
11. set transform-set R3-R1
12. match address 100
13. interface GigabitEthernet0/0
14. crypto map IPSEC-MAP
15. access-list 100 permit ip 192.168.3.0 0.0.0.255 192.168.1.0 0.0.0.255

VPN GRE Tunnel

3 Router configuration, same as with Ipsec R0 and R2 are connected per the vpn tunnel. R1 is the ISP router.

R0

1. Initial Setup: no
2. enable
3. conf t
4. interface tunnel 1
5. ip address 50.50.50.1 255.255.255.0
6. tunnel source FastEthernet0/0
7. tunnel destination 20.0.0.1
8. end
9. copy running-config startup-config

R2

1. Initial Setup: no
2. enable
3. conf t
4. interface tunnel 1
5. ip address 50.50.50.2 255.255.255.0
6. tunnel source FastEthernet0/0
7. tunnel destination 10.0.0.1
8. end
9. copy running-config startup-config