

- **Lab 1**

- Port Configuration

- 

- Use straight-through cable to connect PCs to switch. Similar devices are connected via crossover cable and different devices through straight-through cable.
- Then I assigned ip address to both PCs by changing the configurations in networks and settings.
- use the 'ipconfig' command to check if the ip addresses were properly assigned.
- ping between PCs to confirm the connectivity of the network.
- We used the commserver to access different devices at the same time.
- connect serial cable from comserver to console port on switch
- open putty and connect to comserver with serial connection
- assigning local loopback ip address
  - enable
  - config t
  - interface loopback1
  - ip address 172.21.1.1 255.255.255.0
- adding a new host
  - ip host S1 2033 172.21.1.1
- line 33 40

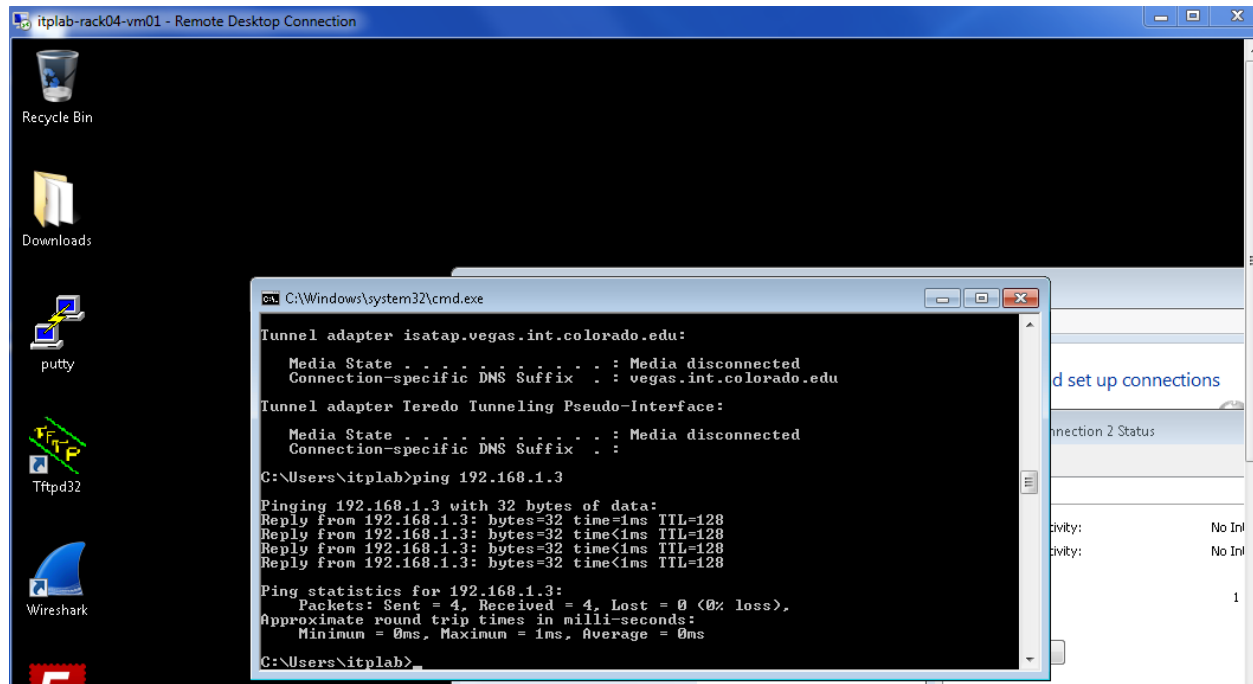
- transport input all
- show ip interface brief - this shows all the interfaces.
  
- use `en` and `conf t` to get into configuration mode.
- interface fastethernet 0/1
- speed 10 (10-mbps operation)
- duplex half (half-duplex operation)
- check configuration with 'show interface status'

○

```

interface FastEthernet0/1
--More--
*Mar 20 23:04:16.106: %PM-4-ERR_DISABLE: psecure-violation error detected on Fa0/1, putting Fa0/1 in err-dis
switchport mode access
--More--
*Mar 20 23:04:16.106: %PORT_SECURITY-2-PSECURE_VIOLATION: Security violation occurred, caused by MAC address
0050.56a0.250b on port FastEthernet0/1.
*Mar 20 23:04:17.113: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed sta switchport
port-security
--More--
*Mar 20 23:04:18.111: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed sta switchport port-security mac-add
ress sticky
switchport port-security mac-address sticky 0014.6af4.c581 vlan access
speed 10
duplex half

```



- Port Security

- 

- enable
- configure terminal
- interface fastethernet 0/1
- switchport mode access
- switchport port-security

- switchport port-security mac-address sticky

```

interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
no ip address
!
ip classless
ip http server
ip http secure-server
!
ip sla enable reaction-alerts
!
line con 0
line vty 5 15
!
end

Switch#
*Mar 14 00:59:42.440: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/1 (1), with ITPLAB_SWITCH2 GigabitEthernet0/10 (104).
Switch# show port-security
Secure Port  MaxSecureAddr  CurrentAddr  SecurityViolation  Security Action
-----
Fa0/1       1             1             0                  Shutdown

Total Addresses in System (excluding one mac per port)  : 0
Max Addresses limit in System (excluding one mac per port) : 6144
Switch#

```

○

```

*Mar 14 01:02:12.772: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/2 (1), with ITPLAB_SWITCH2 GigabitEthernet0/10 (104).
*Mar 14 01:02:13.611: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/1 (1), with ITPLAB_SWITCH2 GigabitEthernet0/11 (104).
*Mar 14 01:02:13.779: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/2 (1), with ITPLAB_SWITCH2 GigabitEthernet0/10 (104).
*Mar 14 01:02:14.618: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/1 (1), with ITPLAB_SWITCH2 GigabitEthernet0/11 (104).
*Mar 14 01:02:14.786: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/2 (1), with ITPLAB_SWITCH2 GigabitEthernet0/10 (104).
*Mar 14 01:02:15.792: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/2 (1), with ITPLAB_SWITCH2 GigabitEthernet0/10 (104).
*Mar 14 01:02:16.799: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/2 (1), with ITPLAB_SWITCH2 GigabitEthernet0/10 (104).
*Mar 14 01:02:17.805: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/2 (1), with ITPLAB_SWITCH2 GigabitEthernet0/10 (104).
*Mar 14 01:02:20.657: %PM-4-ERR_DISABLE: psecure-violation error detected on Fa0/1, putting Fa0/1 in err-disable state
*Mar 14 01:02:20.657: %PORT_SECURITY-2-PSECURE_VIOLATION: Security violation occurred, caused by MAC address 0014.6af4.c58b on port FastEthernet0/1.
*Mar 14 01:02:21.664: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
*Mar 14 01:02:22.662: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to down

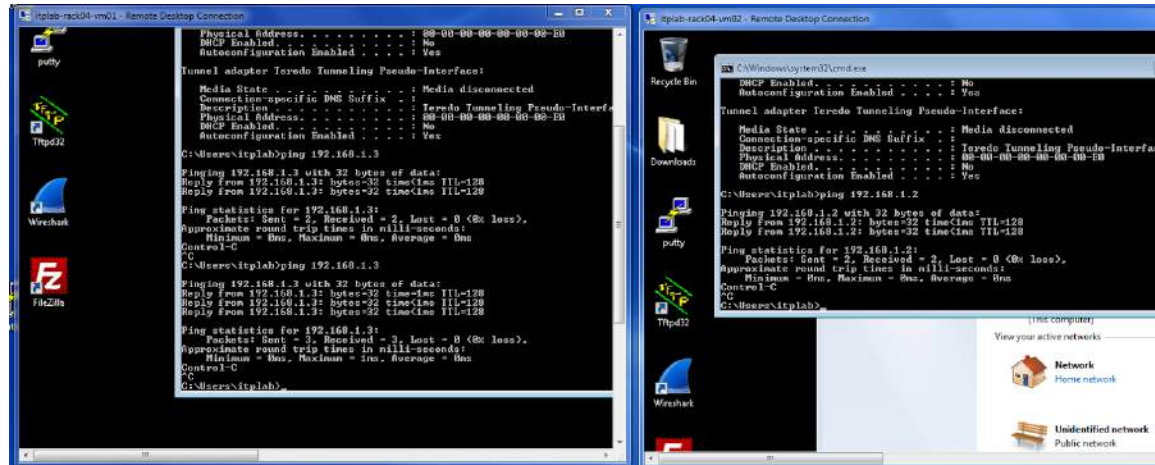
```

```

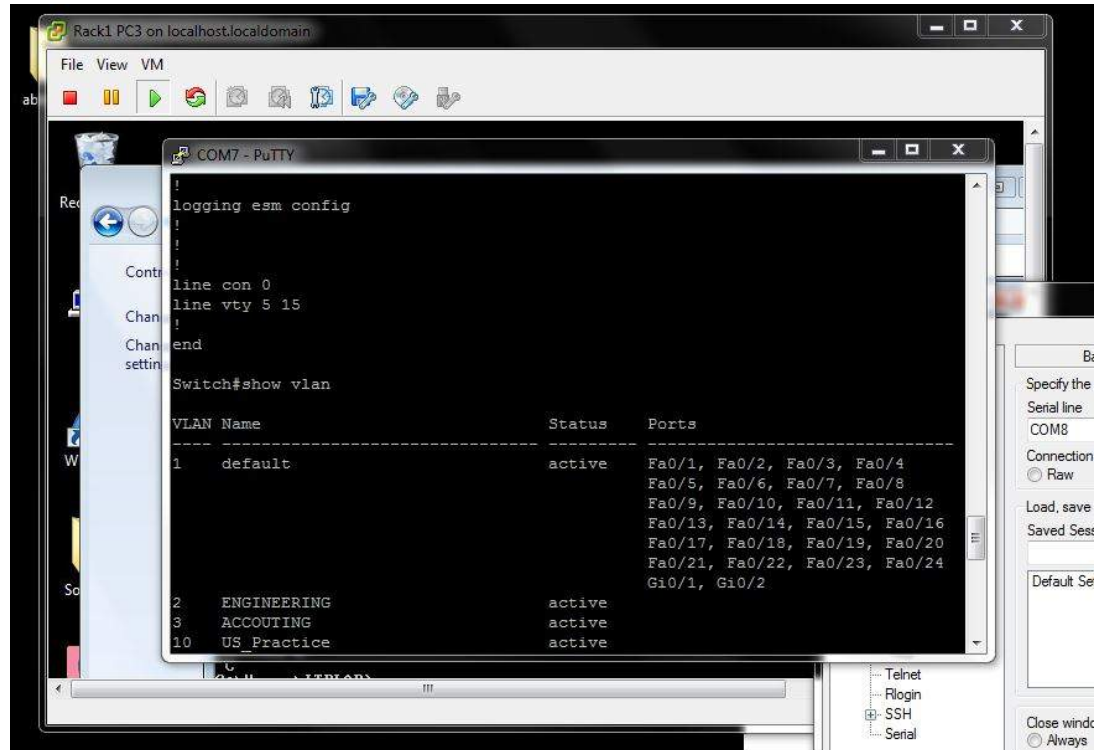
*Mar 14 01:02:37.762: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
Interface      IP-Address      OK? Method Status        Protocol
Vlan1          unassigned      YES unset  up            up
FastEthernet0/1  unassigned      YES unset  down          down
FastEthernet0/2  unassigned      YES unset  up            up
FastEthernet0/3  unassigned      YES unset  down          down
FastEthernet0/4  unassigned      YES unset  down          down
FastEthernet0/5  unassigned      YES unset  down          down
FastEthernet0/6  unassigned      YES unset  down          down
FastEthernet0/7  unassigned      YES unset  down          down
FastEthernet0/8  unassigned      YES unset  down          down
FastEthernet0/9  unassigned      YES unset  down          down
FastEthernet0/10 unassigned      YES unset  down          down

```

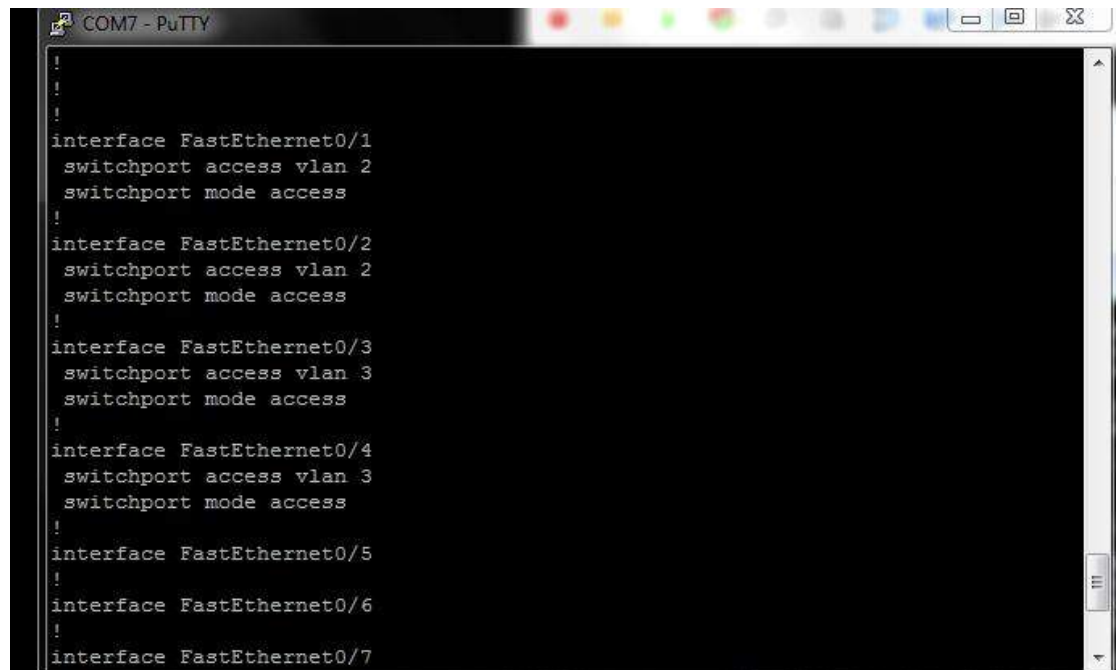
- PCs are still able to ping because they are connected to another switch



- 
- no switchport port-security mac-address sticky (return port to dynamic addresses)
- errdisable recovery cause all
- Single Switch VLAN configuration
  - Add straight-through cables to personal pc and vm03
  - Yes, the pings work across machines.
  - 
  - enable
  - config t
  - vlan 2
  - name ENGINEERING
  - vlan 3
  - name ACCOUNTING
  - show vlan



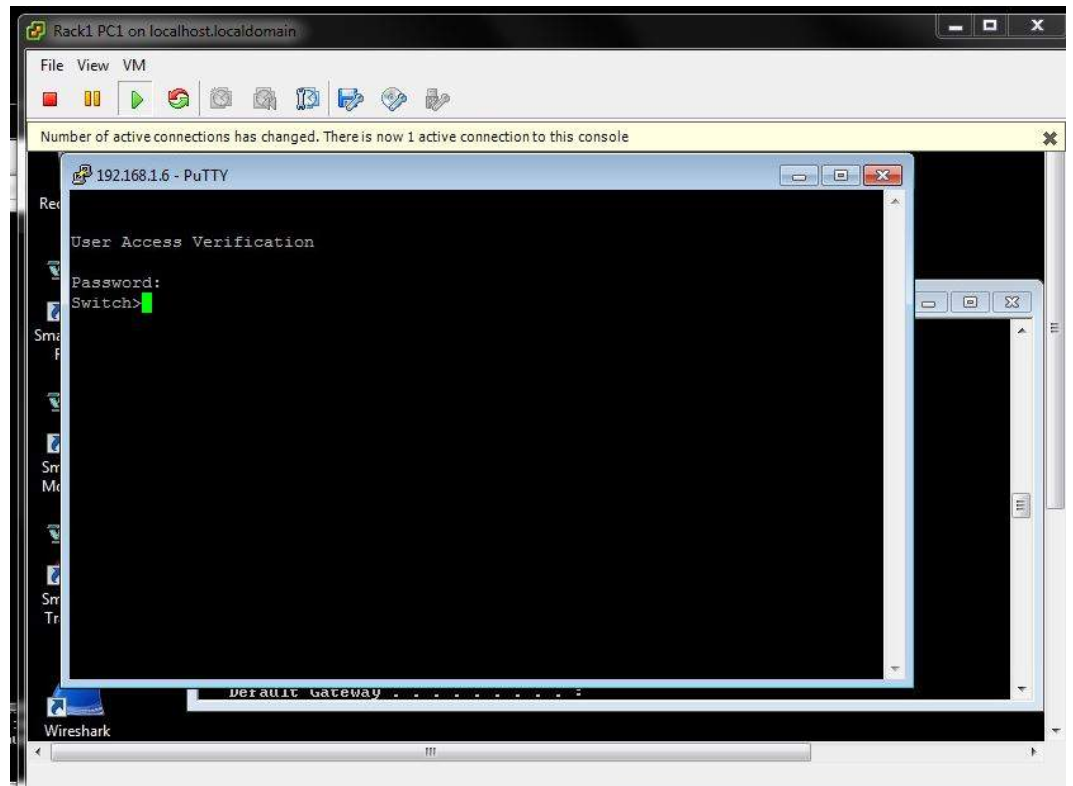
- PCs on different vlans cannot ping each other when they are part of the same subnet.



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 Gi0/1, Gi0/2
2	ENGINEERING	active	Fa0/1, Fa0/2
3	ACCOUNTING	active	Fa0/3, Fa0/4
10	US_Practice	active	
11	US_Coach	active	
12	US_Dempsey	active	
13	US_Support	active	
20	Bl_Practice	active	
21	Bl_Coach	active	
22	Bl_Hazard	active	
23	Bl_Support	active	
50	FIFA	active	
52	VLAN0052	active	
56	VLAN0056	active	
99	something	active	
1002	fddi-default	act/unsup	

--More--

- Yes, you need to worry about it. You cannot use the same subnet for different vlans.
- Yes, switch still works after setting up the vlans.
- Telnet
  - enable
  - config t
  - line vty 0 4
  - password cisco
  - login
  - interface vlan2
  - ip address 192.168.1.6 255.255.255.0 ( Give ip address for vlan on pc1 on switch)



- Multiple Switch VLAN configuration
  - Use crossover cable between two switches
    - add another host to comserver
  - remove pc3 and pc4 from vlans in switch 1
    - create vlans in switch 2
    - add trunking to crossover cable ports on each switch
      - int fa0/5
      - switchport mode dynamic desirable
      - sw1



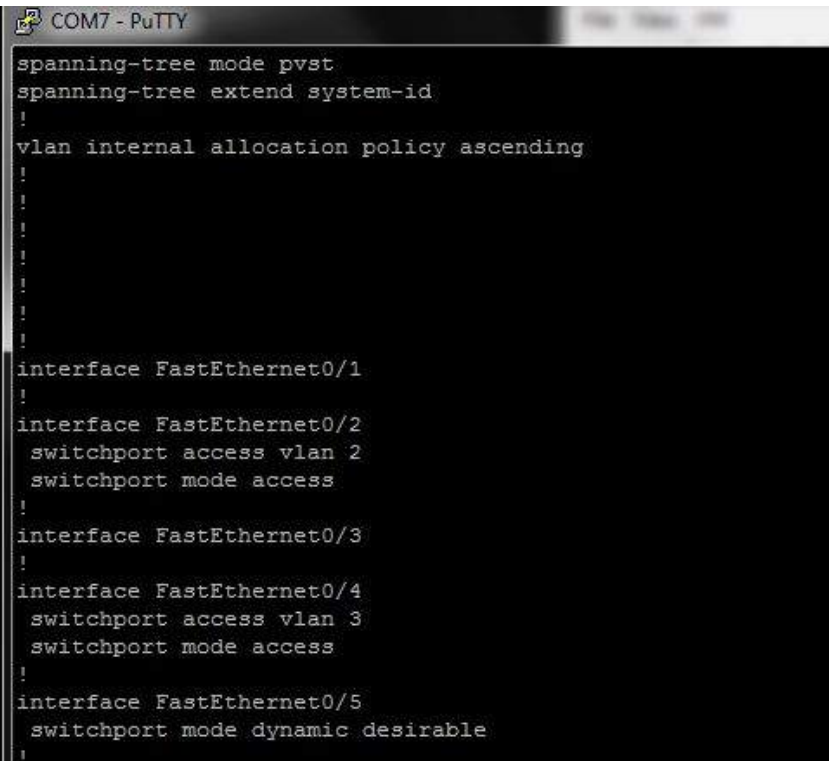
```

!
interface FastEthernet0/1
  switchport access vlan 2
  switchport mode access
!
interface FastEthernet0/2
!
interface FastEthernet0/3
  switchport access vlan 3
  switchport mode access
!
interface FastEthernet0/4
!
interface FastEthernet0/5
  switchport mode dynamic desirable
!

```

○

○ sw2



```

COM7 - PuTTY
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
!
!
!
interface FastEthernet0/1
!
interface FastEthernet0/2
  switchport access vlan 2
  switchport mode access
!
interface FastEthernet0/3
!
interface FastEthernet0/4
  switchport access vlan 3
  switchport mode access
!
interface FastEthernet0/5
  switchport mode dynamic desirable
!

```

○ Both 3560 switches support dot1q and isl encapsulation.

- Inter-VLAN Communication

○ Connect Octopus cable to router

- connect SW2 to router with straight-through cable
- in router
  - enable
  - config t
  - interface fastethernet 1/0
  - duplex full
  - no shutdown
  - assign subinterfaces
    - interface fastethernet 1/0.1
    - encapsulation dot1q 2
    - ip address 192.168.1.1 255.255.255.0
    - interface fastethernet 0/0.10
    - encapsulation dot1q 3
    - ip address 192.168.2.1 255.255.255.0
    - change ip address on PCs and set default gateways
    - trunk port between router and sw2

```
Command Prompt
Ping statistics for 192.168.2.4:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 1ms
Control-C
^C
C:\Users\ITPLAB>ping 192.168.2.4

Pinging 192.168.2.4 with 32 bytes of data:
Reply from 192.168.2.4: bytes=32 time=3ms TTL=127
Reply from 192.168.2.4: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.2.4:
    Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 2ms
Control-C
^C
C:\Users\ITPLAB>ping 192.168.2.5

Pinging 192.168.2.5 with 32 bytes of data:
Reply from 192.168.2.5: bytes=32 time=2ms TTL=63
Reply from 192.168.2.5: bytes=32 time<1ms TTL=63

Ping statistics for 192.168.2.5:
    Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 1ms
Control-C
^C
C:\Users\ITPLAB>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:
Reply from 192.168.1.3: bytes=32 time=3ms TTL=128
Reply from 192.168.1.3: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.1.3:
    Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 2ms
Control-C
^C
C:\Users\ITPLAB>
```

○

○ router

```
!
speed auto
!
interface FastEthernet1/0.1
 encapsulation dot1Q 2
 ip address 192.168.1.1 255.255.255.0
 no ip redirects
!
interface FastEthernet1/0.10
 encapsulation dot1Q 3
 ip address 192.168.2.1 255.255.255.0
 no ip redirects
!
```

```

!
interface FastEthernet0/1
  switchport access vlan 2
  switchport mode access
!
interface FastEthernet0/2
!
interface FastEthernet0/3
  switchport access vlan 3
  switchport mode access
!

```

○

```

!
interface FastEthernet0/2
  switchport access vlan 2
  switchport mode access
!
interface FastEthernet0/3
!
interface FastEthernet0/4
  switchport access vlan 3
  switchport mode access
!
interface FastEthernet0/5
  switchport mode dynamic desirable
!
interface FastEthernet0/6
  switchport trunk encapsulation dot1q
  switchport mode trunk
!

```

○

- Configuring VLAN Trunking Protocol
  - add new host switch to comserver
  - - set SW3
      - vtp mode client
      - vtp domain lab
    - set SW2
      - vtp mode transparent
      - vtp domain lab

- set SW1
  - vtp mode server
  - vtp domain lab

```

/dev/tty.usbserial - PuTTY
Port      Vlans in spanning tree forwarding state and not pruned
Fa1/0/1   1-3
SW3#show vtp status
VTP Version                : 2
Configuration Revision      : 4
Maximum VLANs supported locally : 1005
Number of existing VLANs    : 7
VTP Operating Mode          : Client
VTP Domain Name             : lab
VTP Pruning Mode            : Disabled
VTP V2 Mode                 : Disabled
VTP Traps Generation        : Disabled
MD5 digest                  : 0x8F 0x31 0x52 0x09 0xA9 0x23 0xDE 0x9E
Configuration last modified by 0.0.0.0 at 3-1-93 20:40:41
SW3#show vlan
VLAN Name                Status Ports
-----
1    default                active Fa1/0/2, Fa1/0/3, Fa1/0/4
                                   Fa1/0/5, Fa1/0/6, Fa1/0/7
                                   Fa1/0/8, Fa1/0/9, Fa1/0/10
                                   Fa1/0/11, Fa1/0/12, Fa1/0/13
                                   Fa1/0/14, Fa1/0/15, Fa1/0/16
                                   Fa1/0/17, Fa1/0/18, Fa1/0/19
                                   Fa1/0/20, Fa1/0/21, Fa1/0/22
                                   Fa1/0/23, Fa1/0/24, Fa1/0/25
                                   Fa1/0/26, Fa1/0/27, Fa1/0/28
                                   Fa1/0/29, Fa1/0/30, Fa1/0/31
                                   Fa1/0/32, Fa1/0/33, Fa1/0/34
                                   Fa1/0/35, Fa1/0/36, Fa1/0/37
                                   Fa1/0/38, Fa1/0/39, Fa1/0/40
                                   Fa1/0/41, Fa1/0/42, Fa1/0/43
                                   Fa1/0/44, Fa1/0/45, Fa1/0/46
                                   Fa1/0/47, Fa1/0/48, Gi1/0/1
                                   Gi1/0/2, Gi1/0/3, Gi1/0/4
2    engineering            active
3    accounting              active
1002 fddi-default           act/unsup
1003 token-ring-default     act/unsup
1004 fddinet-default        act/unsup
--More--

```

```
Bob — bash — 80x24
64 bytes from 192.168.1.3: icmp_seq=2 ttl=128 time=0.912 ms
64 bytes from 192.168.1.3: icmp_seq=3 ttl=128 time=0.901 ms
64 bytes from 192.168.1.3: icmp_seq=4 ttl=128 time=0.888 ms
64 bytes from 192.168.1.3: icmp_seq=5 ttl=128 time=0.866 ms
^C
--- 192.168.1.3 ping statistics ---
6 packets transmitted, 6 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 0.866/0.953/1.247/0.132 ms
engr2-19-124-dhcp:~ Bob$ ping 192.168.1.3
PING 192.168.1.3 (192.168.1.3): 56 data bytes
64 bytes from 192.168.1.3: icmp_seq=0 ttl=128 time=0.740 ms
^C
--- 192.168.1.3 ping statistics ---
1 packets transmitted, 1 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 0.740/0.740/0.740/0.000 ms
engr2-19-124-dhcp:~ Bob$ ping 192.168.1.2
PING 192.168.1.2 (192.168.1.2): 56 data bytes
64 bytes from 192.168.1.2: icmp_seq=0 ttl=128 time=1.467 ms
64 bytes from 192.168.1.2: icmp_seq=1 ttl=128 time=0.994 ms
^C
--- 192.168.1.2 ping statistics ---
2 packets transmitted, 2 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 0.994/1.231/1.467/0.236 ms
engr2-19-124-dhcp:~ Bob$
```

○

○

- on SW1
- en
- config t
- vlan 2
- name humanres

```

SM1#
commser#3
[Resuming connection 3 to SM3 ... ]

SM3#
SM3#
SM3#show vlan

VLAN Name                Status    Ports
-----
1    default                active    Fa1/0/3, Fa1/0/4, Fa1/0/5
                                           Fa1/0/6, Fa1/0/7, Fa1/0/8
                                           Fa1/0/9, Fa1/0/10, Fa1/0/11
                                           Fa1/0/12, Fa1/0/13, Fa1/0/14
                                           Fa1/0/15, Fa1/0/16, Fa1/0/17
                                           Fa1/0/18, Fa1/0/19, Fa1/0/20
                                           Fa1/0/21, Fa1/0/22, Fa1/0/23
                                           Fa1/0/24, Fa1/0/25, Fa1/0/26
                                           Fa1/0/27, Fa1/0/28, Fa1/0/29
                                           Fa1/0/30, Fa1/0/31, Fa1/0/32
                                           Fa1/0/33, Fa1/0/34, Fa1/0/35
                                           Fa1/0/36, Fa1/0/37, Fa1/0/38
                                           Fa1/0/39, Fa1/0/40, Fa1/0/41
                                           Fa1/0/42, Fa1/0/43, Fa1/0/44
                                           Fa1/0/45, Fa1/0/46, Fa1/0/47
                                           Fa1/0/48, Gi1/0/1, Gi1/0/2
                                           Gi1/0/3, Gi1/0/4
2    humanres              active
3    accounting             active
1002 fddi-default         act/unsup
--More--

```

- Spanning Tree Protocol

- show mac-address table

```

1    001e.79fe.8d8d    DYNAMIC    Fa1/0/32
1    0021.a067.d488    DYNAMIC    Fa1/0/5
2    0014.6af4.c581    DYNAMIC    Fa1/0/1
2    0050.56a0.250b    DYNAMIC    Fa1/0/1
2    0050.56a0.36c2    DYNAMIC    Fa1/0/32
3    001e.79fe.8d8d    DYNAMIC    Fa1/0/32
3    0050.56a0.7fc6    DYNAMIC    Fa1/0/32
3    7486.7a2a.f99b    DYNAMIC    Fa1/0/32

```

- show spanning-tree vlan 2

- sh cdp neighbors to see neighboring switches

- sw2

```

VLAN0002
  Spanning tree enabled protocol ieee
  Root ID    Priority    32770
             Address     001d.45c2.ec80
             Cost        19
             Port        13 (FastEthernet0/11)
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32770 (priority 32768 sys-id-ext 2)
             Address     001e.79fe.8d80
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time   300 sec

Interface                Role Sts Cost          Prio.Nbr Type
-----
Fa0/9                    Desg FWD 19          128.11 P2p
Fa0/11                   Root FWD 19          128.13 P2p

```

### ■ sw3

```

S3#sh spanning-tree vlan 2

VLAN0002
  Spanning tree enabled protocol ieee
  Root ID    Priority    32770
             Address     001d.45c2.ec80
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32770 (priority 32768 sys-id-ext 2)
             Address     001d.45c2.ec80
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time   300 sec

Interface                Role Sts Cost          Prio.Nbr Type
-----
Fa1/0/5                 Desg FWD 19          128.7  P2p
Fa1/0/32                Desg FWD 19          128.36 P2p

S3#sh spanning-tree vlan 3

VLAN0003
  Spanning tree enabled protocol ieee
  Root ID    Priority    32771
             Address     001d.45c2.ec80
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32771 (priority 32768 sys-id-ext 3)
             Address     001d.45c2.ec80
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time   300 sec

Interface                Role Sts Cost          Prio.Nbr Type
-----
Fa1/0/5                 Desg FWD 19          128.7  P2p
Fa1/0/32                Desg FWD 19          128.36 P2p

```

### ■ sw1



```

S1#sh spanning-tree vlan 2

VLAN0002
  Spanning tree enabled protocol ieee
  Root ID    Priority    32770
             Address     001d.45c2.ec80
             Cost        19
             Port        8 (FastEthernet0/6)
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15

  Bridge ID   Priority    32770 (priority 32768 sys-id-ext 2)
             Address     0021.a067.d480
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15
             Aging Time   300 sec

Interface                Role Sts Cost        Prio.Nbr Type
-----
Fa0/6                    Root FWD 19          128.8   P2p
Fa0/10                   Altn BLK 19          128.12  P2p

```

- spanning -tree vlan 2 root

```

Root ID    Priority    24578
Address     0021.a067.d480
Cost        19
Port        7 (FastEthernet1/0/5)
Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID   Priority    32770 (priority 32768 sys-id-ext 2)
Address     001d.45c2.ec80
Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
Aging Time   300 sec

Interface                Role Sts Cost        Prio.Nbr Type
-----
Fa1/0/5                Root FWD 19          128.7   P2p
Fa1/0/32                Desg FWD 19          128.36  P2p

S3#
Mar 22 04:33:30.666: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0/5, changed state to down
Mar 22 04:33:31.681: %LINK-3-UPDOWN: Interface FastEthernet1/0/5, changed state to down
Mar 22 04:33:37.360: %LINK-3-UPDOWN: Interface FastEthernet1/0/5, changed state to up
Mar 22 04:33:42.720: %LINK-3-UPDOWN: Interface FastEthernet1/0/5, changed state to down
S3#
S3#sh spanning-tree vlan 2

VLAN0002
  Spanning tree enabled protocol ieee
  Root ID    Priority    24578
             Address     0021.a067.d480
             Cost        38
             Port        36 (FastEthernet1/0/32)
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32770 (priority 32768 sys-id-ext 2)
             Address     001d.45c2.ec80
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time   300 sec

Interface                Role Sts Cost        Prio.Nbr Type
-----
Fa1/0/32                Root FWD 19          128.36  P2p

```

- Per VLAN STP

- Go to switch 1 and run
  - spanning-tree vlan 3 root primary
- Go to switch 3 and ru
  - spanning-tree vlan 2 root primary

- Portfast

- Advantages of portfast is that an interface is brought up faster than without it. It speeds up the recovery of interfaces.
- on switch 1 run
  - spanning-tree portfast
  - time w/ portfast

```
S1#debug spanning-tree switch state
Spanning Tree Port state changes debugging is on
S1#
*Mar 22 05:17:12.567: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
*Mar 22 05:17:13.565: %LINK-3-UPDOWN: Interface FastEthernet0/2, changed state to down
*Mar 22 05:17:14.455: STP SW: Fa0/2 new blocking req for 1 vlans
*Mar 22 05:17:14.455: STP SW: Fa0/2 new forwarding req for 1 vlans
*Mar 22 05:17:16.451: %LINK-3-UPDOWN: Interface FastEthernet0/2, changed state to up
*Mar 22 05:17:17.458: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
```

- time w/o portfast

```
S1#debug spanning-tree switch state
Spanning Tree Port state changes debugging is on
S1#
*Mar 22 05:18:57.039: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
*Mar 22 05:18:58.037: %LINK-3-UPDOWN: Interface FastEthernet0/2, changed state to down
*Mar 22 05:18:58.549: STP SW: Fa0/2 new blocking req for 1 vlans
*Mar 22 05:19:00.545: %LINK-3-UPDOWN: Interface FastEthernet0/2, changed state to up
*Mar 22 05:19:01.552: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
*Mar 22 05:19:13.556: STP SW: Fa0/2 new learning req for 1 vlans
*Mar 22 05:19:28.563: STP SW: Fa0/2 new forwarding req for 1 vlans
```

- debug spanning-tree switch state
  - It immediately brings the port back to green while when not using portfast it takes longer time to change from amber to green.

- etherchannel
  - interface range fastethernet \_\_\_\_\_
  - channel-group mode 1 desirable
  - show interfaces port-channel #
  - speed #
  - picture of ports after etherchannel is setup

```

S1(config)#do sh etherchannel summary
Flags:  D - down          P - bundled in port-channel
        I - stand-alone  s - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator

        M - not in use, minimum links not met
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

Number of channel-groups in use: 2
Number of aggregators:          2

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Po1 (SD)      PAgP        Fa0/10 (I)  Fa0/11 (I)
2      Po2 (SD)      PAgP        Fa0/6 (I)   Fa0/7 (I)

```

- When I unplugged the cable after setting up etherchannel the stp did not change.
- Configuring SPAN
  - SPAN is a way to configure a port to send a copy of a packet to a specific host. It is provided so that you can monitor what kind of traffic is occurring on your network.
  - commands to set up SPAN port
    - en
    - config t

- monitor session 1 source interface \_\_\_\_ (interface you want to receive the packets from)
- monitor session 1 destination interface \_\_\_\_ (interface you want to send the source packets to)

- Report Questions

- You can secure a switch by setting a password on it, disabling telnet and enabling ssh, and use port security.
- Mac address are 48 bits, 6 bytes. The first 3 bytes identify the organization that created the device. The last 3 bytes is the serial number of the device.
- You can try to secure sticky ports with port security.
- Router makes forwarding decisions through it's software while a switch makes the decision through it's hardware.
- It has as many as there are network interface controllers.
- Portfast is supposed to solve the problem of the time STP takes to transition ports over to the forwarding state.
- You don't want to use portfast because an inter switch link sends vlan information through ethernet frames.
- Yes, you can change your mac address.
- You can use SPAN to monitor network traffic and make sure employees are doing what they are supposed to be doing.

- ARP sends out a broadcast asking who has the ip address to be pinged. A frame is sent out to the default gateway. The gateway checks its routing table for where to send the icmp packet.
- Vlans help limit broadcast traffic and compartmentalizes sensitive traffic.
- A disadvantage of VLAN is higher latency than a LAN.
- Yes, connections from a PC can be trunked but it is not possible because the PC interface will not recognize the vlan tag.
- Yes, you can telnet into a switch. You can only telnet into a switch if an ip address has been given to the vlan on that switch and your pc is part of the vlan.
- A native vlan exists so that traffic for devices that do not support trunking can receive the packets without the tagging.
- A native vlan carries untagged traffic along the trunk.
- A multilayer switch combines layer 2 and layer 3 routing.
- RSTP has fewer states and reconfigures the network topology faster than STP.
- QoS is the performance of the network in terms of bandwidth, throughput, and other things.
- PVST allows traffic from different vlans to use different links.
- VTP Vlan pruning eliminates unnecessary vlan broadcasts to devices not part of the vlan.