

Exercise 1 - VLAN:**1. Show run**

```
interface Vlan50
 ip address 10.0.50.1 255.255.255.0
!
```

show vlan

```
VLAN Name                Status    Ports
-----
1    default                active    Gi1/0/1, Gi1/0/3, Gi1/0/4, Gi1/0/5, Gi1/0/6, Gi1/0/7, Gi1/0/8, Gi1/0/9,
Gi1/0/11, Gi1/0/12, Gi1/0/13, Gi1/0/14, Gi1/0/15, Gi1/0/16, Gi1/0/17, Gi1/0/18,
Gi1/0/19, Gi1/0/20, Gi1/0/21, Gi1/0/22, Gi1/0/23, Gi1/0/24, Ap1/0/1
50   lab6                    active
1002 fddi-default          act/unsup
1003 token-ring-default    act/unsup
1004 fddinet-default       act/unsup
1005 trnet-default         act/unsup

VLAN Type  SAID      MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
-----
1    enet    100001    1500  -     -     -     -   -         0      0
50   enet    100050    1500  -     -     -     -   -         0      0
1002 fddi    101002    1500  -     -     -     -   -         0      0
1003 tr     101003    1500  -     -     -     -   -         0      0
1004 fdnet  101004    1500  -     -     -     ieee -         0      0
1005 trnet  101005    1500  -     -     -     ibm  -         0      0

Remote SPAN VLANs
-----

Primary Secondary Type      Ports
-----
```

2. Show run

```
interface GigabitEthernet1/0/1
 switchport access vlan 50
 switchport mode access
!
```

Show vlan

```
co2061-9300-10#show vlan

VLAN Name                Status    Ports
-----
1    default                active    Gi1/0/3, Gi1/0/4, Gi1/0/5, Gi1/0/6, Gi1/0/7, Gi1/0/8, Gi1/0/9,
Gi1/0/12, Gi1/0/13, Gi1/0/14, Gi1/0/15, Gi1/0/16, Gi1/0/17, Gi1/0/18, Gi1/0/19,
Gi1/0/20, Gi1/0/21, Gi1/0/22, Gi1/0/23, Gi1/0/24, Ap1/0/1
50   lab6                    active    Gi1/0/1
1002 fddi-default          act/unsup
1003 token-ring-default    act/unsup
1004 fddinet-default       act/unsup
1005 trnet-default         act/unsup

VLAN Type  SAID      MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
-----
1    enet    100001    1500  -     -     -     -   -         0      0
50   enet    100050    1500  -     -     -     -   -         0      0
1002 fddi    101002    1500  -     -     -     -   -         0      0
1003 tr     101003    1500  -     -     -     -   -         0      0
1004 fdnet  101004    1500  -     -     -     ieee -         0      0
1005 trnet  101005    1500  -     -     -     ibm  -         0      0

Remote SPAN VLANs
-----

Primary Secondary Type      Ports
-----
```

3. Ping 10.0.50.1

```
[489labuser@co2061-20 ~]$ ping 10.0.50.1
PING 10.0.50.1 (10.0.50.1) 56(84) bytes of data.
64 bytes from 10.0.50.1: icmp_seq=2 ttl=254 time=0.723 ms
64 bytes from 10.0.50.1: icmp_seq=3 ttl=254 time=0.950 ms
64 bytes from 10.0.50.1: icmp_seq=4 ttl=254 time=0.762 ms
64 bytes from 10.0.50.1: icmp_seq=5 ttl=254 time=0.769 ms
64 bytes from 10.0.50.1: icmp_seq=6 ttl=254 time=0.711 ms
64 bytes from 10.0.50.1: icmp_seq=7 ttl=254 time=0.931 ms
64 bytes from 10.0.50.1: icmp_seq=8 ttl=254 time=0.828 ms
^C
--- 10.0.50.1 ping statistics ---
8 packets transmitted, 7 received, 12% packet loss, time 7005ms
```

Ping Even computer

```
co2061-9300-10#ping 10.0.50.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.50.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
```

Both ping tests seem to succeed after connecting the computer to the switch and setting up the route to the 10.0.50.0/24 network. However, the even numbered computer fails its first ping to VLAN50. My thoughts are that the computer hadn't set up the route or interface address yet, so it ended up dropping the packet. (Then set it up immediately.) My other thought is that the computer may also have not set up/requested an address with the switch. I'm not really sure why this packet was dropped, but something seems to not have been set up immediately.

4. Wireshark Pings

9	11.495411988	10.0.50.2	10.0.50.1	ICMP	98 Echo (ping) request	id=0x28ac, seq=1/256, ttl=64 (reply in 16
10	11.496058113	10.0.50.1	10.0.50.2	ICMP	98 Echo (ping) reply	id=0x28ac, seq=1/256, ttl=254 (request ir
11	12.495932454	10.0.50.2	10.0.50.1	ICMP	98 Echo (ping) request	id=0x28ac, seq=2/512, ttl=64 (reply in 12
12	12.496640751	10.0.50.1	10.0.50.2	ICMP	98 Echo (ping) reply	id=0x28ac, seq=2/512, ttl=254 (request ir
13	12.763524169	10:b3:c6:12:71:01	Spanning-tree-(for-br:STP	60 RST. Root = 32768/50/10:b3:c6:12:71:00 Cost = 0 Port = 0x800		
14	13.439804711	10:b3:c6:12:71:01	10:b3:c6:12:71:01	LOOP	60 Reply	
15	13.496746131	10.0.50.2	10.0.50.1	ICMP	98 Echo (ping) request	id=0x28ac, seq=3/768, ttl=64 (reply in 16
16	13.497413705	10.0.50.1	10.0.50.2	ICMP	98 Echo (ping) reply	id=0x28ac, seq=3/768, ttl=254 (request ir
17	14.496763412	10.0.50.2	10.0.50.1	ICMP	98 Echo (ping) request	id=0x28ac, seq=4/1024, ttl=64 (reply in 1
18	14.497486946	10.0.50.1	10.0.50.2	ICMP	98 Echo (ping) reply	id=0x28ac, seq=4/1024, ttl=254 (request i
19	14.763953368	10:b3:c6:12:71:01	Spanning-tree-(for-br:STP	60 RST. Root = 32768/50/10:b3:c6:12:71:00 Cost = 0 Port = 0x800		
20	15.496948975	10.0.50.2	10.0.50.1	ICMP	98 Echo (ping) request	id=0x28ac, seq=5/1280, ttl=64 (reply in 2
21	15.497788864	10.0.50.1	10.0.50.2	ICMP	98 Echo (ping) reply	id=0x28ac, seq=5/1280, ttl=254 (request i
22	16.498692674	IntelCor_94:7b:4f	10:b3:c6:12:71:68	ARP	42 Who has 10.0.50.1? Tell 10.0.50.2	
23	16.499382949	10:b3:c6:12:71:68	IntelCor_94:7b:4f	ARP	60 10.0.50.1 is at 10:b3:c6:12:71:68	
24	16.765035471	10:b3:c6:12:71:01	Spanning-tree-(for-br:STP	60 RST. Root = 32768/50/10:b3:c6:12:71:00 Cost = 0 Port = 0x800		
25	18.764511684	10:b3:c6:12:71:01	Spanning-tree-(for-br:STP	60 RST. Root = 32768/50/10:b3:c6:12:71:00 Cost = 0 Port = 0x800		
26	20.764583852	10:b3:c6:12:71:01	Spanning-tree-(for-br:STP	60 RST. Root = 32768/50/10:b3:c6:12:71:00 Cost = 0 Port = 0x800		
27	22.765924289	10:b3:c6:12:71:01	Spanning-tree-(for-br:STP	60 RST. Root = 32768/50/10:b3:c6:12:71:00 Cost = 0 Port = 0x800		
28	23.439824212	10:b3:c6:12:71:01	10:b3:c6:12:71:01	LOOP	60 Reply	
29	24.765465397	10:b3:c6:12:71:01	Spanning-tree-(for-br:STP	60 RST. Root = 32768/50/10:b3:c6:12:71:00 Cost = 0 Port = 0x800		
30	24.994709101	10.0.50.1	10.0.50.2	ICMP	114 Echo (ping) request	id=0x0026, seq=0/0, ttl=254
31	24.994773146	10.0.50.2	10.0.50.1	ICMP	114 Echo (ping) reply	id=0x0026, seq=0/0, ttl=64 (request in 36
32	24.995360962	10.0.50.1	10.0.50.2	ICMP	114 Echo (ping) request	id=0x0026, seq=1/256, ttl=254 (reply in 3
33	24.995390368	10.0.50.2	10.0.50.1	ICMP	114 Echo (ping) reply	id=0x0026, seq=1/256, ttl=64 (request in 3
34	24.995866741	10.0.50.1	10.0.50.2	ICMP	114 Echo (ping) request	id=0x0026, seq=2/512, ttl=254 (reply in 3
35	24.995896307	10.0.50.2	10.0.50.1	ICMP	114 Echo (ping) reply	id=0x0026, seq=2/512, ttl=64 (request in 3
36	24.996319593	10.0.50.1	10.0.50.2	ICMP	114 Echo (ping) request	id=0x0026, seq=3/768, ttl=254 (reply in 3
37	24.996349144	10.0.50.2	10.0.50.1	ICMP	114 Echo (ping) reply	id=0x0026, seq=3/768, ttl=64 (request in 3
38	24.996867221	10.0.50.1	10.0.50.2	ICMP	114 Echo (ping) request	id=0x0026, seq=4/1024, ttl=254 (reply in 3
39	24.996896841	10.0.50.2	10.0.50.1	ICMP	114 Echo (ping) reply	id=0x0026, seq=4/1024, ttl=64 (request ir

The question here alludes to the idea of something being different with the packets. However, I didn't see anything different when using Wireshark. Regardless of who initializes the pings, it sends ICMP/echo requests to the other device, and it replies. The only difference I saw was that when the VLAN sent them, they are larger. 98 bytes when the computer requests, versus 114 bytes when the VLAN does.

Exercise 2 - DHCP:**5. Show run**

```
ip domain name ece.iastate.edu
ip dhcp excluded-address 10.0.50.1 10.0.50.3
ip dhcp excluded-address 10.0.50.254
!
ip dhcp pool VLAN50
 network 10.0.50.0 255.255.255.0
 default-router 10.0.50.1
 dns-server 4.8.9.50
 lease 0 2
```

6. P1p1 ip address set by dhcp

```
p1p1: flags=-28605<UP,BROADCAST,RUNNING,MULTICAST,DYNAMIC> mtu 1500
    inet 10.0.50.4 netmask 255.255.255.0 broadcast 10.0.50.255
    ether 68:05:ca:94:7b:4f txqueuelen 1000 (Ethernet)
    RX packets 502 bytes 38812 (37.9 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 100 bytes 14228 (13.8 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    device interrupt 16 memory 0xef1c0000-ef1e0000
```

In our DHCP config, it blocks addresses 10.0.50.1 - .3 and .254. The even numbered computer was given the first address not blocked, 10.0.50.4 via DHCP.

7. Wireshark DHCP

No.	Time	Source	Destination	Protocol	Length	Info
483	739.533842097	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0xc6ec4d1f
486	741.535669354	10.0.50.1	10.0.50.4	DHCP	342	DHCP Offer - Transaction ID 0xc6ec4d1f
487	741.535908779	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0xc6ec4d1f
488	741.537219921	10.0.50.1	10.0.50.4	DHCP	342	DHCP ACK - Transaction ID 0xc6ec4d1f

From the packets being sent, we see the even number computer who has no address broadcast to the entire network. This is a DHCP discover where the computer is trying to find if a DHCP server exists on the network and inform it that it needs an address. The DHCP server replies, giving it an available address. The computer then requests that address (still broadcasting) and the server acknowledges, letting the computer know it can assign that address to its self.

8. Reset DHCP

```
co2061-9300-10(config)#no ip dhcp pool VLAN50
co2061-9300-10(config)#no ip dhcp excluded-address
^
% Invalid input detected at '^' marker.

co2061-9300-10(config)#no ip dhcp excluded-address
% Incomplete command.

co2061-9300-10(config)#no ip dhcp excluded-address 10.0.50.1 10.0.50.3
co2061-9300-10(config)#no ip dhcp excluded-address 10.0.50.254
co2061-9300-10(config)#
```

Switch reset

```
co2061-9300-10(config)#interface GigabitEthernet1/0/1
co2061-9300-10(config-if)#no switchport access vlan50
^
% Invalid input detected at '^' marker.

co2061-9300-10(config-if)#no switchport access vlan 50
co2061-9300-10(config-if)#no switchport mode access
co2061-9300-10(config-if)#no switchport
co2061-9300-10(config-if)#exit
co2061-9300-10(config)#interface vlan 50
co2061-9300-10(config-if)#shutdown
co2061-9300-10(config-if)#no ip address 10.0.50.1 255.255.255.0
co2061-9300-10(config-if)#exit
co2061-9300-10(config)#no vlan 50
co2061-9300-10(config)#
```

What We Learned:

In this lab we learned how to configure static Ethernet interfaces on cisco switches. We learned how to access the switch provided to us through ssh and then use the internal commands to switch between different command modes on the switch in order to configure the switch and the interfaces. We also learned how to set an IP address for a port using the ip address command and the switchport command while in interface configuration mode. We also learned how to set up a Virtual Local Area Network and use show run and show vlan commands to confirm the configuration of the VLAN. Lastly we learned how to use DHCP to automatically assign IP addresses according to the static addresses that we assigned while setting up VLAN.