

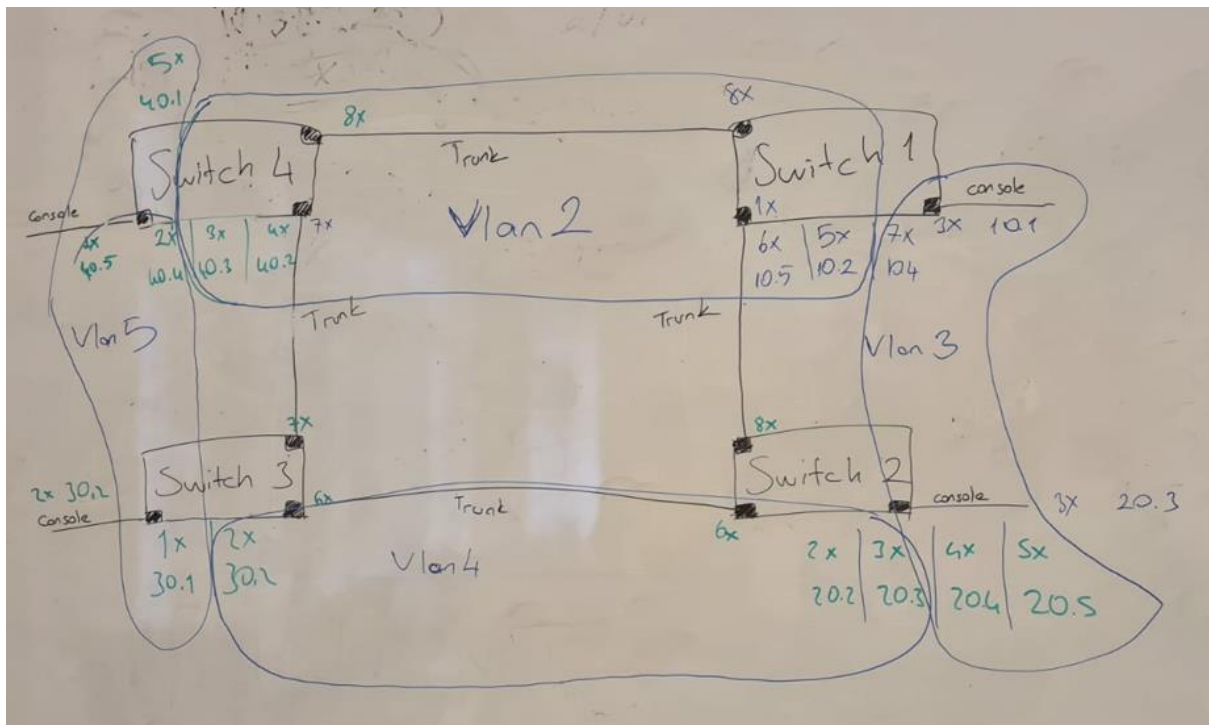
Group Number: 10, 41

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## VLAN

1. In this experiment you're going to create a network similar to one in previous lab. You should virtually group computers as shown in Figure-1 using VLAN configuration on Cisco Switches



As depicted figure above, our objective is to establish computer networks within distinct VLANs, linked to the switches.

**2. Assign IP addresses to your computers' eth0 adapter as described in the Table-1 simila to previous Lab. Make sure that all computers are connected to the network and all can be pinged.**

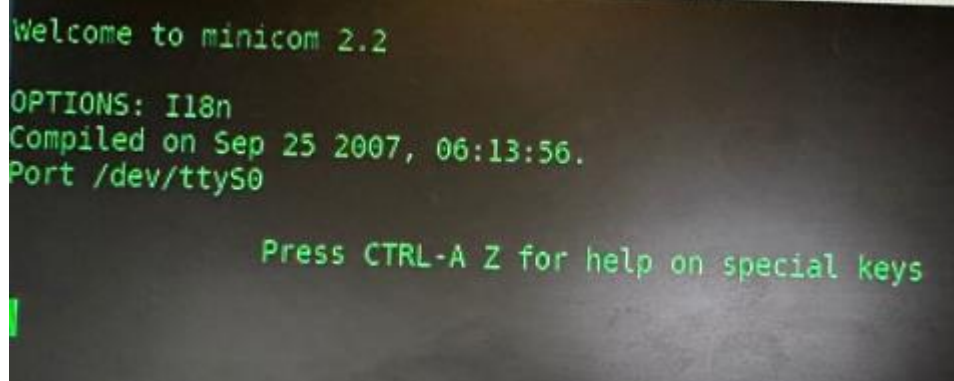
Group name	IP address	Subnet mask
Group1	10.100.10.1 - 10.100.10.6	255.255.255.0
Group2	10.100.20.1 - 10.100.20.6	255.255.255.0
Group3	10.200.30.1 - 10.200.30.6	255.255.255.0
Group4	10.200.40.1 - 10.200.40.6	255.255.255.0

**3. Switches can be configured via telnet or console connection. We are going to use console connection using console (blue) cable. You should select one computer from your group which has a console cable attached to its onboard serial port. Then just plug the RJ-45 end of the cable to Switch's console port on the back side.**



We plugged the RJ-45 end of the console cable from the PC which has IP address of 10.200.10.1 to the port 3 of switch.

4. In Unix systems, there is a tool called minicom which can use serial port of the system and send keystrokes to the terminal attached. So enter minicom from console of the computer (which is connected to the switch) and enter into the Cisco device command line interface.

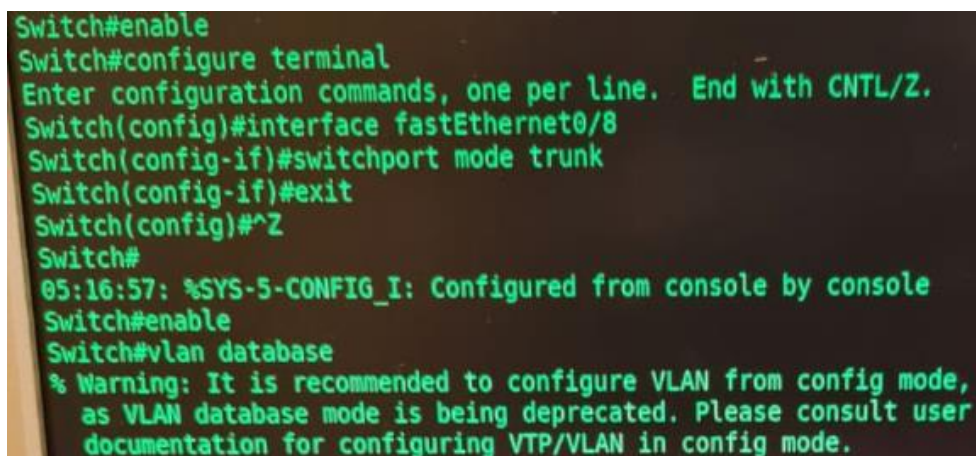
A screenshot of a terminal window showing the minicom 2.2 interface. The text is green on a black background. It displays the version, options (I18n), compilation date (Sep 25 2007, 06:13:56), and port (/dev/ttyS0). It also prompts the user to press CTRL-A Z for help on special keys.

```
Welcome to minicom 2.2

OPTIONS: I18n
Compiled on Sep 25 2007, 06:13:56.
Port /dev/ttyS0

Press CTRL-A Z for help on special keys
```

5. You should see something like: Switch> after pressing Enter for a couple of times.

A screenshot of a Cisco switch's command line interface. The text is green on a black background. It shows the user entering 'enable' to get into privileged EXEC mode, then 'configure terminal' to enter global configuration mode. The user then configures interface fastEthernet0/8 as a trunk port and exits. After pressing Ctrl-Z, a message appears indicating the configuration was saved to the startup configuration. Finally, the user enters 'vlan database' to enter VLAN configuration mode, where a warning message is displayed.

```
Switch#enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastEthernet0/8
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#^Z
Switch#
05:16:57: %SYS-5-CONFIG_I: Configured from console by console
Switch#enable
Switch#vlan database
% Warning: It is recommended to configure VLAN from config mode,
as VLAN database mode is being deprecated. Please consult user
documentation for configuring VTP/VLAN in config mode.
```

6. Now you are in the Cisco IOS operating system, and you can only use Cisco commands for configuration or troubleshooting. You can enter ? command and see which commands you can use in that level.

```
Dosya  Düzenle  Görünüm  Uçbirim  Sekmeler  Yardım
Switch#?
Exec commands:
  access-enable  Create a temporary Access-List entry
  access-template  Create a temporary Access-List entry
  archive        manage archive files
  cd             Change current directory
  clear          Reset functions
  clock          Manage the system clock
  cns            CNS agents
  configure      Enter configuration mode
  connect        Open a terminal connection
  copy           Copy from one file to another
  debug          Debugging functions (see also 'undebug')
  delete         Delete a file
  dir            List files on a filesystem
  disable        Turn off privileged commands
  disconnect     Disconnect an existing network connection
  dot1x          Dot1x Exec Commands
  enable         Turn on privileged commands
  erase          Erase a filesystem
  exit           Exit from the EXEC
  format         Format a filesystem
  fsck           Fsock a filesystem
  help           Description of the interactive help system
  lock           Lock the terminal
  login          Log in as a particular user
  logout         Exit from the EXEC
  mkdir          Create new directory
  more           Display the contents of a file
  name-connection  Name an existing network connection
  no             Disable debugging functions
  ping           Send echo messages
  pwd            Display current working directory
  rcommand       Run command on remote switch
  reload         Halt and perform a cold restart
  rename         Rename a file
  resume         Resume an active network connection
  rmdir          Remove existing directory
  rsh            Execute a remote command
  rtr            RTR Exec Configuration
  send           Send a message to other tty lines
  set            Set system parameter (not config)
  setup          Run the SETUP command facility
  show           Show running system information
  systat         Display information about terminal lines
  telnet         Open a telnet connection
  terminal       Set terminal line parameters
  test           Test subsystems, memory, and interfaces
  traceroute     Trace route to destination
  tunnel         Open a tunnel connection
  udld           UDLD protocol commands
  undebug        Disable debugging functions (see also 'debug')
--More--
```



7. Now you are ready to configure VLAN settings according to Figure-1. You have to associate related ports with described VLANs and define Trunk links between Switch connections.

```
Switch(vlan)#vlan 2 name Vlan2
VLAN 2 modified:
  Name: Vlan2
Switch(vlan)#enable
^
% Invalid input detected at '^' marker.

Switch(vlan)#exit
APPLY completed.
Exiting....
Switch#enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastEthernet0/6
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 2
Switch(config-if)#exit
Switch(config)#^Z
Switch#
05:11:57: %SYS-5-CONFIG_I: Configured from console by console
Switch#enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastEthernet0/5
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 2
Switch(config-if)#exit
Switch(config)#^Z
Switch#
05:13:52: %SYS-5-CONFIG_I: Configured from console by console
Switch#enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastEthernet0/1
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#^Z
Switch#
05:16:02: %SYS-5-CONFIG_I: Configured from console by console
Switch#enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastEthernet0/8
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#^Z
Switch#
05:16:57: %SYS-5-CONFIG_I: Configured from console by console
Switch#enable
Switch#vlan database
% Warning: It is recommended to configure VLAN from config mode,
as VLAN database mode is being deprecated. Please consult user
documentation for configuring VTP/VLAN in config mode.
```

root@localhost:~# root@localhost:~#

```
Switch#
05:16:57: %SYS-5-CONFIG_I: Configured from console by console
Switch#enable
Switch#vlan database
% Warning: It is recommended to configure VLAN from config mode,
as VLAN database mode is being deprecated. Please consult user
documentation for configuring VTP/VLAN in config mode.

Switch(vlan)#vlan 3 name Vlan3
VLAN 3 modified:
  Name: Vlan3
Switch(vlan)#exit
APPLY completed.
Exiting....
Switch#
05:18:53: %LINK-3-UPDOWN: Interface FastEthernet0/8, changed state to up
05:18:55: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to up
Switch#enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastEthernet0/7
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 3
Switch(config-if)#exit
Switch(config)#^Z
Switch#
05:21:32: %SYS-5-CONFIG_I: Configured from console by console
Switch#enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastEthernet0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 3
Switch(config-if)#exit
Switch(config)#^Z
Switch#
```

8. Here is the commands that you are going to use:is a physical connection established between the hub and the end device.

#### **Creating a new VLAN**

```
Switch> enable
Switch# vlan database
Switch(vlan)# vlan <VLAN ID> [name <vlan name>]
Switch(vlan)# exit
Switch#
```

#### **Assignment of a switch port to a VLAN**

```
Switch> enable
Switch# configure terminal
Switch(config)# interface fastEthernet0/<port no>
Switch(config-if)# switchport mode access
Switch(config-if)# switchport access vlan <vlan numarası>
Switch(config-if)# exit
Switch(config)# Ctrl-Z
Switch#
```

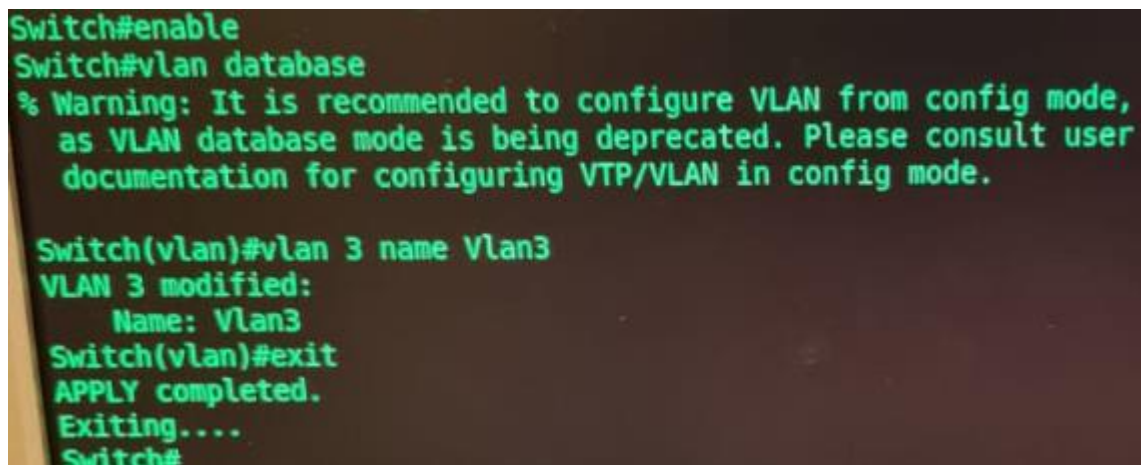
#### **Assignment of a switch port to trunk mode**

```
Switch> enable
Switch# configure terminal
Switch(config)# interface fastEthernet0/<port no>
Switch(config-if)# switchport mode trunk
Switch(config-if)# exit
Switch(config)# Ctrl-Z
Switch#
```

#### **Displaying vlan-interface table**

```
Switch> enable
Switch# show vlan
```

Creating a new VLAN:



```
Switch#enable
Switch#vlan database
% Warning: It is recommended to configure VLAN from config mode,
as VLAN database mode is being deprecated. Please consult user
documentation for configuring VTP/VLAN in config mode.

Switch(vlan)#vlan 3 name Vlan3
VLAN 3 modified:
  Name: Vlan3
Switch(vlan)#exit
APPLY completed.
Exiting....
Switch#
```



Assignment of a switch port to a VLAN:

```
Switch#enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastEthernet0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 3
Switch(config-if)#exit
Switch(config)#^Z
Switch#
```

Assignment of a switch port to trunk mode:

```
Switch#
05:13:52: %SYS-5-CONFIG_I: Configured from console by console
Switch#enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastEthernet0/1
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#^Z
Switch#
05:16:02: %SYS-5-CONFIG_I: Configured from console by console
Switch#enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastEthernet0/8
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#^Z
Switch#
```

Displaying vlan-interface table:

```
Switch#
05:28:08: %SYS-5-CONFIG_I: Configured from console by console
Switch#show vlan
```

VLAN	Name	Status	Ports
1	default	active	Fa0/2, Fa0/4, Gi0/1
2	Vlan2	active	Fa0/5, Fa0/6
3	Vlan3	active	Fa0/3, Fa0/7
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
2	enet	100002	1500	-	-	-	-	-	0	0
3	enet	100003	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

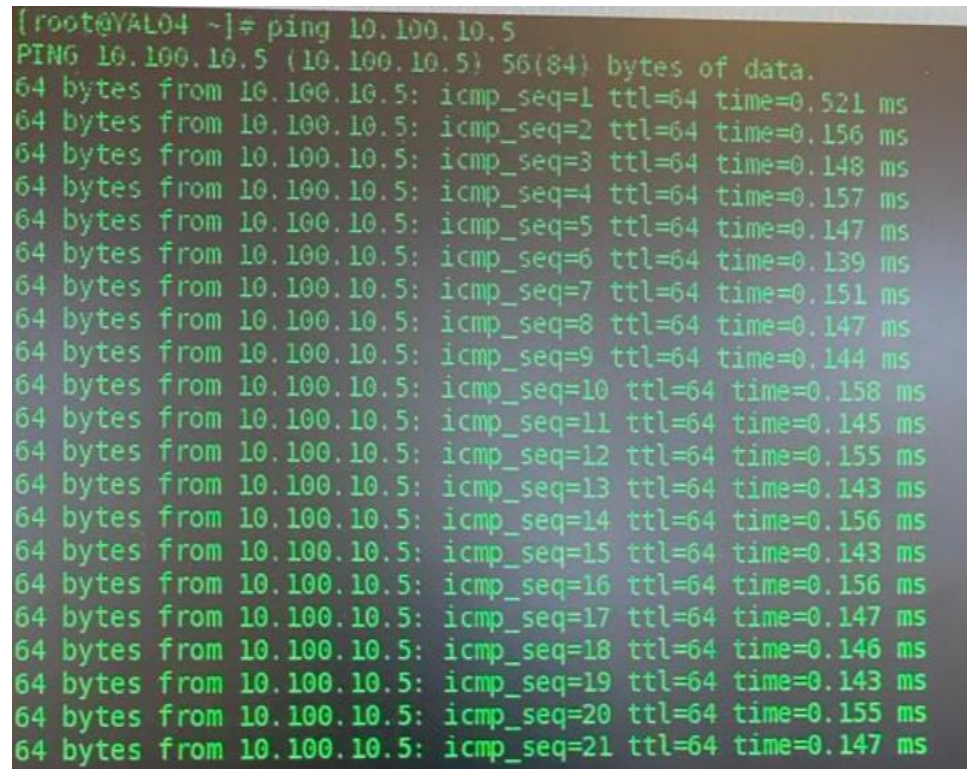
Remote SPAN VLANs

Primary	Secondary	Type	Ports
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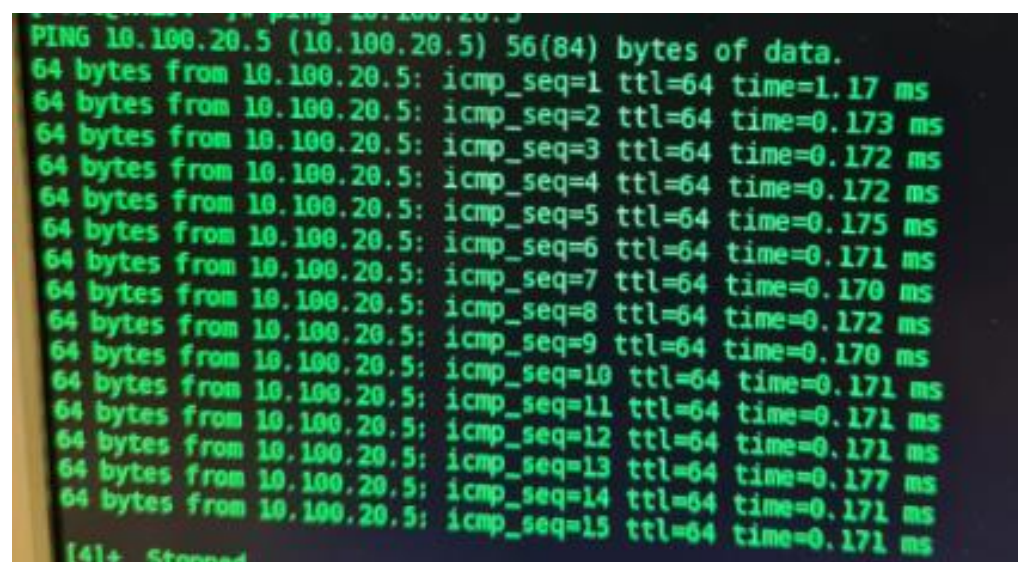
9. If all four switch configurations were completed, now ping from a computer to one that is in your group but in a different VLAN. And try ping to another group but in the same VLAN.

Pinging a computer that is in our group but is on a different VLAN:



```
[root@YAL04 ~]# ping 10.100.10.5
PING 10.100.10.5 (10.100.10.5) 56(84) bytes of data.
64 bytes from 10.100.10.5: icmp_seq=1 ttl=64 time=0.521 ms
64 bytes from 10.100.10.5: icmp_seq=2 ttl=64 time=0.156 ms
64 bytes from 10.100.10.5: icmp_seq=3 ttl=64 time=0.148 ms
64 bytes from 10.100.10.5: icmp_seq=4 ttl=64 time=0.157 ms
64 bytes from 10.100.10.5: icmp_seq=5 ttl=64 time=0.147 ms
64 bytes from 10.100.10.5: icmp_seq=6 ttl=64 time=0.139 ms
64 bytes from 10.100.10.5: icmp_seq=7 ttl=64 time=0.151 ms
64 bytes from 10.100.10.5: icmp_seq=8 ttl=64 time=0.147 ms
64 bytes from 10.100.10.5: icmp_seq=9 ttl=64 time=0.144 ms
64 bytes from 10.100.10.5: icmp_seq=10 ttl=64 time=0.158 ms
64 bytes from 10.100.10.5: icmp_seq=11 ttl=64 time=0.145 ms
64 bytes from 10.100.10.5: icmp_seq=12 ttl=64 time=0.155 ms
64 bytes from 10.100.10.5: icmp_seq=13 ttl=64 time=0.143 ms
64 bytes from 10.100.10.5: icmp_seq=14 ttl=64 time=0.156 ms
64 bytes from 10.100.10.5: icmp_seq=15 ttl=64 time=0.143 ms
64 bytes from 10.100.10.5: icmp_seq=16 ttl=64 time=0.156 ms
64 bytes from 10.100.10.5: icmp_seq=17 ttl=64 time=0.147 ms
64 bytes from 10.100.10.5: icmp_seq=18 ttl=64 time=0.146 ms
64 bytes from 10.100.10.5: icmp_seq=19 ttl=64 time=0.143 ms
64 bytes from 10.100.10.5: icmp_seq=20 ttl=64 time=0.155 ms
64 bytes from 10.100.10.5: icmp_seq=21 ttl=64 time=0.147 ms
```

Pinging a computer that is not in our group but is on the same VLAN:



```

PING 10.100.20.5 (10.100.20.5) 56(84) bytes of data.
64 bytes from 10.100.20.5: icmp_seq=1 ttl=64 time=1.17 ms
64 bytes from 10.100.20.5: icmp_seq=2 ttl=64 time=0.173 ms
64 bytes from 10.100.20.5: icmp_seq=3 ttl=64 time=0.172 ms
64 bytes from 10.100.20.5: icmp_seq=4 ttl=64 time=0.172 ms
64 bytes from 10.100.20.5: icmp_seq=5 ttl=64 time=0.175 ms
64 bytes from 10.100.20.5: icmp_seq=6 ttl=64 time=0.171 ms
64 bytes from 10.100.20.5: icmp_seq=7 ttl=64 time=0.170 ms
64 bytes from 10.100.20.5: icmp_seq=8 ttl=64 time=0.172 ms
64 bytes from 10.100.20.5: icmp_seq=9 ttl=64 time=0.170 ms
64 bytes from 10.100.20.5: icmp_seq=10 ttl=64 time=0.171 ms
64 bytes from 10.100.20.5: icmp_seq=11 ttl=64 time=0.171 ms
64 bytes from 10.100.20.5: icmp_seq=12 ttl=64 time=0.171 ms
64 bytes from 10.100.20.5: icmp_seq=13 ttl=64 time=0.177 ms
64 bytes from 10.100.20.5: icmp_seq=14 ttl=64 time=0.171 ms
64 bytes from 10.100.20.5: icmp_seq=15 ttl=64 time=0.171 ms
[4]+ Stopped
```