Usman Institute of Technology

Department of Computer Science Fall 2022

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Date: 23-Nov-2022

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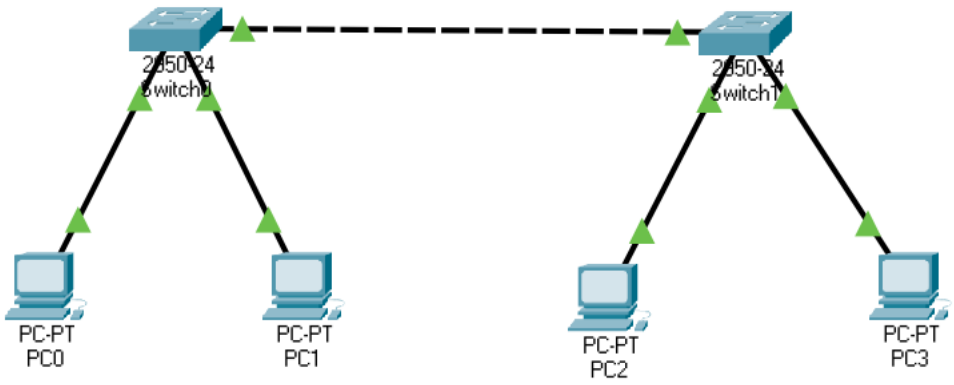
Lab Tasks:

1. What is the difference between 29xx switch series and 35xx/36xx switch. What benefit the later series will give explore using Packet Tracer

   The main difference between the 29xx and 35xx/36xx series switches is the level of performance and feature support they offer. The 35xx and 36xx series are designed for enterprise-level networks and offer a higher level of capabilities, while the 29xx series is more suitable for small and medium-sized businesses.

   In terms of using Packet Tracer, the 35xx and 36xx series switches may offer more advanced features and capabilities that can be explored and simulated in the software. For example, you may be able to simulate the use of advanced security features such as access control lists

2. Implement the scenario given below on packet tracer and show the connectivity between PC's by using PING Command.



Config of Switches:

Switch0:

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```
Device Name: Switch0
Device Model: 2950-24
Hostname: Switch

Port              Link   VLAN   IP Address         MAC Address
FastEthernet0/1   Up     1      --                 0001.9753.BC01
FastEthernet0/2   Up     2      --                 0001.9753.BC02
FastEthernet0/3   Up     --     --                 0001.9753.BC03
FastEthernet0/4   Down   1      --                 0001.9753.BC04
FastEthernet0/5   Down   1      --                 0001.9753.BC05
FastEthernet0/6   Down   1      --                 0001.9753.BC06
FastEthernet0/7   Down   1      --                 0001.9753.BC07
FastEthernet0/8   Down   1      --                 0001.9753.BC08
FastEthernet0/9   Down   1      --                 0001.9753.BC09
FastEthernet0/10  Down   1      --                 0001.9753.BC0A
FastEthernet0/11  Down   1      --                 0001.9753.BC0B
FastEthernet0/12  Down   1      --                 0001.9753.BC0C
FastEthernet0/13  Down   1      --                 0001.9753.BC0D
FastEthernet0/14  Down   1      --                 0001.9753.BC0E
FastEthernet0/15  Down   1      --                 0001.9753.BC0F
FastEthernet0/16  Down   1      --                 0001.9753.BC10
FastEthernet0/17  Down   1      --                 0001.9753.BC11
FastEthernet0/18  Down   1      --                 0001.9753.BC12
FastEthernet0/19  Down   1      --                 0001.9753.BC13
FastEthernet0/20  Down   1      --                 0001.9753.BC14
FastEthernet0/21  Down   1      --                 0001.9753.BC15
FastEthernet0/22  Down   1      --                 0001.9753.BC16
FastEthernet0/23  Down   1      --                 0001.9753.BC17
FastEthernet0/24  Down   1      --                 0001.9753.BC18
Vlan1             Up     1      1.0.0.10/8         000A.4167.7B50
Vlan2             Up     2      2.0.0.1/8          000A.4167.7B01

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Switch0
```

Switch1:

```
Device Name: Switch1
Device Model: 2950-24
Hostname: Switch

Port              Link   VLAN   IP Address         MAC Address
FastEthernet0/1   Up     --     --                 000D.BD60.B701
FastEthernet0/2   Up     2      --                 000D.BD60.B702
FastEthernet0/3   Up     1      --                 000D.BD60.B703
FastEthernet0/4   Down   1      --                 000D.BD60.B704
FastEthernet0/5   Down   1      --                 000D.BD60.B705
FastEthernet0/6   Down   1      --                 000D.BD60.B706
FastEthernet0/7   Down   1      --                 000D.BD60.B707
FastEthernet0/8   Down   1      --                 000D.BD60.B708
FastEthernet0/9   Down   1      --                 000D.BD60.B709
FastEthernet0/10  Down   1      --                 000D.BD60.B70A
FastEthernet0/11  Down   1      --                 000D.BD60.B70B
FastEthernet0/12  Down   1      --                 000D.BD60.B70C
FastEthernet0/13  Down   1      --                 000D.BD60.B70D
FastEthernet0/14  Down   1      --                 000D.BD60.B70E
FastEthernet0/15  Down   1      --                 000D.BD60.B70F
FastEthernet0/16  Down   1      --                 000D.BD60.B710
FastEthernet0/17  Down   1      --                 000D.BD60.B711
FastEthernet0/18  Down   1      --                 000D.BD60.B712
FastEthernet0/19  Down   1      --                 000D.BD60.B713
FastEthernet0/20  Down   1      --                 000D.BD60.B714
FastEthernet0/21  Down   1      --                 000D.BD60.B715
FastEthernet0/22  Down   1      --                 000D.BD60.B716
FastEthernet0/23  Down   1      --                 000D.BD60.B717
FastEthernet0/24  Down   --     --                 000D.BD60.B718
Vlan1             Up     1      1.0.0.20/8         0002.176D.80CD
Vlan2             Up     2      2.0.0.2/8          0002.176D.8001

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Switch1
```

Configuration of PC's:

PC0:

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```
Device Name: PC0
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     1.0.0.5/8          <not set>                                 000C.85DA.ADE0
Bluetooth       Down   <not set>          <not set>                                 0007.ECD6.C5C9

Gateway:  <not set>
DNS Server:  <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC0
```

PC1:

```
Device Name: PC1
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     2.0.0.5/8          <not set>                                 00D0.5800.85A7
Bluetooth       Down   <not set>          <not set>                                 0002.167C.A76B

Gateway:  <not set>
DNS Server:  <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC1
```

PC2:

```
Device Name: PC2
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     2.0.0.50/8         <not set>                                 0030.A366.491D
Bluetooth       Down   <not set>          <not set>                                 0010.1149.BB45

Gateway:  <not set>
DNS Server:  <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC2
```

PC3:

```
Device Name: PC3
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     1.0.0.6/8          <not set>                                 00D0.BA2A.E18B
Bluetooth       Down   <not set>          <not set>                                 0010.115C.1C3D

Gateway:  <not set>
DNS Server:  <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC3
```

Testing Connectivity:

From PC0 to PC3:

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```
C:\>ping 1.0.0.6

Pinging 1.0.0.6 with 32 bytes of data:

Reply from 1.0.0.6: bytes=32 time<1ms TTL=128
Reply from 1.0.0.6: bytes=32 time<1ms TTL=128
Reply from 1.0.0.6: bytes=32 time<1ms TTL=128
Reply from 1.0.0.6: bytes=32 time=1ms TTL=128

Ping statistics for 1.0.0.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

From PC1 to PC2:

```
C:\>ping 2.0.0.50

Pinging 2.0.0.50 with 32 bytes of data:

Reply from 2.0.0.50: bytes=32 time<1ms TTL=128
Reply from 2.0.0.50: bytes=32 time=1ms TTL=128
Reply from 2.0.0.50: bytes=32 time=1ms TTL=128
Reply from 2.0.0.50: bytes=32 time<1ms TTL=128

Ping statistics for 2.0.0.50:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

From PC2 to PC1:

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```
C:\>ping 2.0.0.5

Pinging 2.0.0.5 with 32 bytes of data:

Reply from 2.0.0.5: bytes=32 time<1ms TTL=128
Reply from 2.0.0.5: bytes=32 time=2ms TTL=128
Reply from 2.0.0.5: bytes=32 time=1ms TTL=128
Reply from 2.0.0.5: bytes=32 time=1ms TTL=128

Ping statistics for 2.0.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 1ms

C:\>
```

From PC3 to PC0:

```
C:\>ping 1.0.0.5

Pinging 1.0.0.5 with 32 bytes of data:

Reply from 1.0.0.5: bytes=32 time<1ms TTL=128
Reply from 1.0.0.5: bytes=32 time<1ms TTL=128
Reply from 1.0.0.5: bytes=32 time<1ms TTL=128
Reply from 1.0.0.5: bytes=32 time<1ms TTL=128

Ping statistics for 1.0.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

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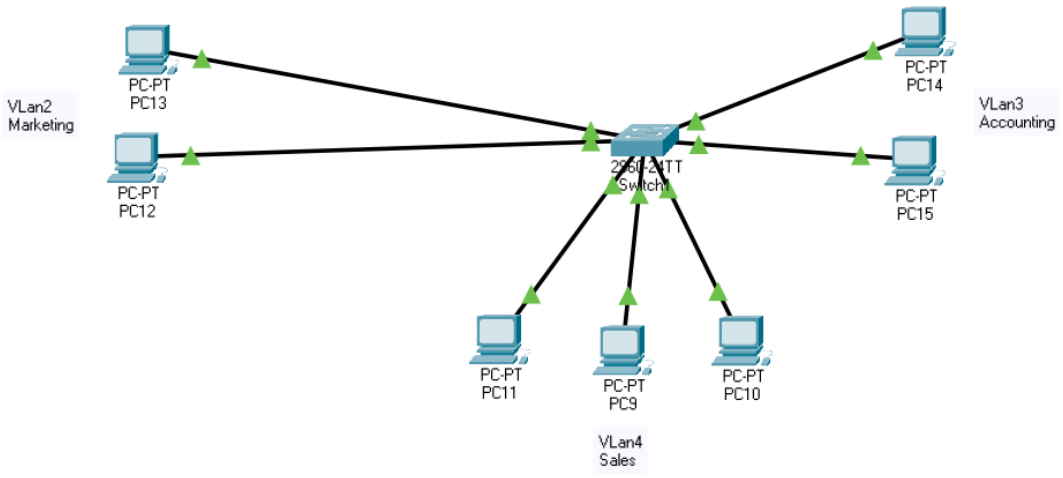
3. Use Packet Tracer to complete the following network shown below by connecting another switch SW1 and create VLANs in both switches and assign VLANs to the ports: VLAN 2 to FastEthernet Port 5-10 VLAN 3 to FastEthernet Port 11-15 VLAN 4 to FastEthernet Port 16-20 VLAN 5 to FastEthernet Port 21

Arrangement:



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Switch Config:

```
Switch>en
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int range f0/5-10
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 2
% Access VLAN does not exist. Creating vlan 2
Switch(config-if-range)#exit
Switch(config)#int range f0/10-15
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#exit
Switch(config)#int range f0/11-15
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 3
% Access VLAN does not exist. Creating vlan 3
Switch(config-if-range)#exit
Switch(config)#int range f0/16-20
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 4
% Access VLAN does not exist. Creating vlan 4
Switch(config-if-range)#exit
Switch(config)#int f0/21
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 5
% Access VLAN does not exist. Creating vlan 5
Switch(config-if)#
```

VLan IP Assign:

```
Switch(config)#int vlan 2
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan2, changed state to up

Switch(config-if)#ip address 1.0.0.1
% Incomplete command.
Switch(config-if)#ip address 1.0.0.1 255.0.0.0
Switch(config-if)#no shut

Switch(config)#int vlan 3
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan3, changed state to up

Switch(config-if)#ip address 2.0.0.1 255.0.0.0
Switch(config-if)#no shut
```

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```
Switch(config)#int vlan 4
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan4, changed state to up

Switch(config-if)#ip address 3.0.0.1 255.0.0.0
Switch(config-if)#no shut

Switch(config)#int vlan 5
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan5, changed state to up

Switch(config-if)#ip address 4.0.0.1 255.0.0.0
Switch(config-if)#no shut
```

Connection:

Device Name: Switch1
Custom Device Model: 2960 IOS15
Hostname: Switch

Port	Link	VLAN	IP Address	MAC Address
FastEthernet0/1	Down	1	--	00D0.5858.1301
FastEthernet0/2	Down	1	--	00D0.5858.1302
FastEthernet0/3	Down	1	--	00D0.5858.1303
FastEthernet0/4	Down	1	--	00D0.5858.1304
FastEthernet0/5	Up	2	--	00D0.5858.1305
FastEthernet0/6	Up	2	--	00D0.5858.1306
FastEthernet0/7	Down	2	--	00D0.5858.1307
FastEthernet0/8	Down	2	--	00D0.5858.1308
FastEthernet0/9	Down	2	--	00D0.5858.1309
FastEthernet0/10	Down	2	--	00D0.5858.130A
FastEthernet0/11	Up	3	--	00D0.5858.130B
FastEthernet0/12	Up	3	--	00D0.5858.130C
FastEthernet0/13	Down	3	--	00D0.5858.130D
FastEthernet0/14	Down	3	--	00D0.5858.130E
FastEthernet0/15	Down	3	--	00D0.5858.130F
FastEthernet0/16	Up	4	--	00D0.5858.1310
FastEthernet0/17	Up	4	--	00D0.5858.1311
FastEthernet0/18	Up	4	--	00D0.5858.1312
FastEthernet0/19	Down	4	--	00D0.5858.1313
FastEthernet0/20	Down	4	--	00D0.5858.1314
FastEthernet0/21	Down	5	--	00D0.5858.1315
FastEthernet0/22	Down	1	--	00D0.5858.1316
FastEthernet0/23	Down	1	--	00D0.5858.1317
FastEthernet0/24	Down	1	--	00D0.5858.1318
GigabitEthernet0/1	Down	1	--	00D0.5858.1319
GigabitEthernet0/2	Down	1	--	00D0.5858.131A
Vlan1	Down	1	<not set>	0004.9A32.E29B
Vlan2	Up	2	1.0.0.1/8	0004.9A32.E201
Vlan3	Up	3	2.0.0.1/8	0004.9A32.E202
Vlan4	Up	4	3.0.0.1/8	0004.9A32.E203
Vlan5	Up	5	4.0.0.1/8	0004.9A32.E204

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Switch1

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IP assign to PCs:

Market's PCs:

```
Device Name: PC13
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     1.0.0.2/8          <not set>                                 0090.219E.4CE3
Bluetooth       Down   <not set>          <not set>                                 0002.4A9D.B98A

Gateway:  <not set>
DNS Server:  <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC13
```

```
Device Name: PC12
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     1.0.0.3/8          <not set>                                 0090.2182.9061
Bluetooth       Down   <not set>          <not set>                                 00D0.D30D.4898

Gateway:  <not set>
DNS Server:  <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC12
```

Accounting's PCs:

```
Device Name: PC14
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     2.0.0.2/8          <not set>                                 0005.5E5E.A65B
Bluetooth       Down   <not set>          <not set>                                 000A.4126.C84D

Gateway:  <not set>
DNS Server:  <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC14
```

```
Device Name: PC15
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     2.0.0.3/8          <not set>                                 0010.1108.1291
Bluetooth       Down   <not set>          <not set>                                 0010.115A.7C2E

Gateway:  <not set>
DNS Server:  <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC15
```

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Sales PCs:

```
Device Name: PC10
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     3.0.0.2/8          <not set>                                 00E0.B0D3.0366
Bluetooth       Down   <not set>          <not set>                                 000C.8515.9A2B

Gateway:  <not set>
DNS Server:  <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC10
```

```
Device Name: PC9
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     3.0.0.3/8          <not set>                                 00D0.D332.8B23
Bluetooth       Down   <not set>          <not set>                                 0005.5E5E.EADB

Gateway:  <not set>
DNS Server:  <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC9
```

```
Device Name: PC11
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     3.0.0.4/8          <not set>                                 0040.0B81.CB99
Bluetooth       Down   <not set>          <not set>                                 0001.6411.D168

Gateway:  <not set>
DNS Server:  <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC11
```

Testing Connectivity:

Within VLan2:

From PC13 to PC12

```
C:\>ping 1.0.0.3

Pinging 1.0.0.3 with 32 bytes of data:

Reply from 1.0.0.3: bytes=32 time=1ms TTL=128
Reply from 1.0.0.3: bytes=32 time<1ms TTL=128
Reply from 1.0.0.3: bytes=32 time=1ms TTL=128
Reply from 1.0.0.3: bytes=32 time<1ms TTL=128

Ping statistics for 1.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

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From PC12 to PC13

```
C:\>ping 1.0.0.2

Pinging 1.0.0.2 with 32 bytes of data:

Reply from 1.0.0.2: bytes=32 time<1ms TTL=128
Reply from 1.0.0.2: bytes=32 time=1ms TTL=128
Reply from 1.0.0.2: bytes=32 time<1ms TTL=128
Reply from 1.0.0.2: bytes=32 time=1ms TTL=128

Ping statistics for 1.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

Outside VLan2:

From PC12 to PC09

```
C:\>ping 3.0.0.3

Pinging 3.0.0.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 3.0.0.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Within VLan3:

From PC14 to PC15

```
C:\>ping 2.0.0.3

Pinging 2.0.0.3 with 32 bytes of data:

Reply from 2.0.0.3: bytes=32 time<1ms TTL=128
Reply from 2.0.0.3: bytes=32 time<1ms TTL=128
Reply from 2.0.0.3: bytes=32 time<1ms TTL=128
Reply from 2.0.0.3: bytes=32 time=256ms TTL=128

Ping statistics for 2.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 256ms, Average = 64ms
```

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From PC15 to PC14

```
C:\>ping 2.0.0.2

Pinging 2.0.0.2 with 32 bytes of data:

Reply from 2.0.0.2: bytes=32 time<1ms TTL=128
Reply from 2.0.0.2: bytes=32 time<1ms TTL=128
Reply from 2.0.0.2: bytes=32 time=182ms TTL=128
Reply from 2.0.0.2: bytes=32 time=2ms TTL=128

Ping statistics for 2.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 182ms, Average = 46ms
```

Outside VLan3:

```
C:\>ping 1.0.0.2 -n 2

Pinging 1.0.0.2 with 32 bytes of data:

Request timed out.
Request timed out.

Ping statistics for 1.0.0.2:
    Packets: Sent = 2, Received = 0, Lost = 2 (100% loss),
```

Within VLan4:

From PC11 to PC10

```
C:\>ping 3.0.0.2

Pinging 3.0.0.2 with 32 bytes of data:

Reply from 3.0.0.2: bytes=32 time<1ms TTL=128
Reply from 3.0.0.2: bytes=32 time<1ms TTL=128
Reply from 3.0.0.2: bytes=32 time=3ms TTL=128
Reply from 3.0.0.2: bytes=32 time<1ms TTL=128

Ping statistics for 3.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 3ms, Average = 0ms
```

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From PC9 to PC11

```
C:\>ping 3.0.0.4

Pinging 3.0.0.4 with 32 bytes of data:

Reply from 3.0.0.4: bytes=32 time=1ms TTL=128
Reply from 3.0.0.4: bytes=32 time=1ms TTL=128
Reply from 3.0.0.4: bytes=32 time<1ms TTL=128
Reply from 3.0.0.4: bytes=32 time<1ms TTL=128

Ping statistics for 3.0.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Outside VLan3:

From PC9 to PC13

```
C:\>ping 1.0.0.2 -n 1

Pinging 1.0.0.2 with 32 bytes of data:

Request timed out.

Ping statistics for 1.0.0.2:
    Packets: Sent = 1, Received = 0, Lost = 1 (100% loss),
```