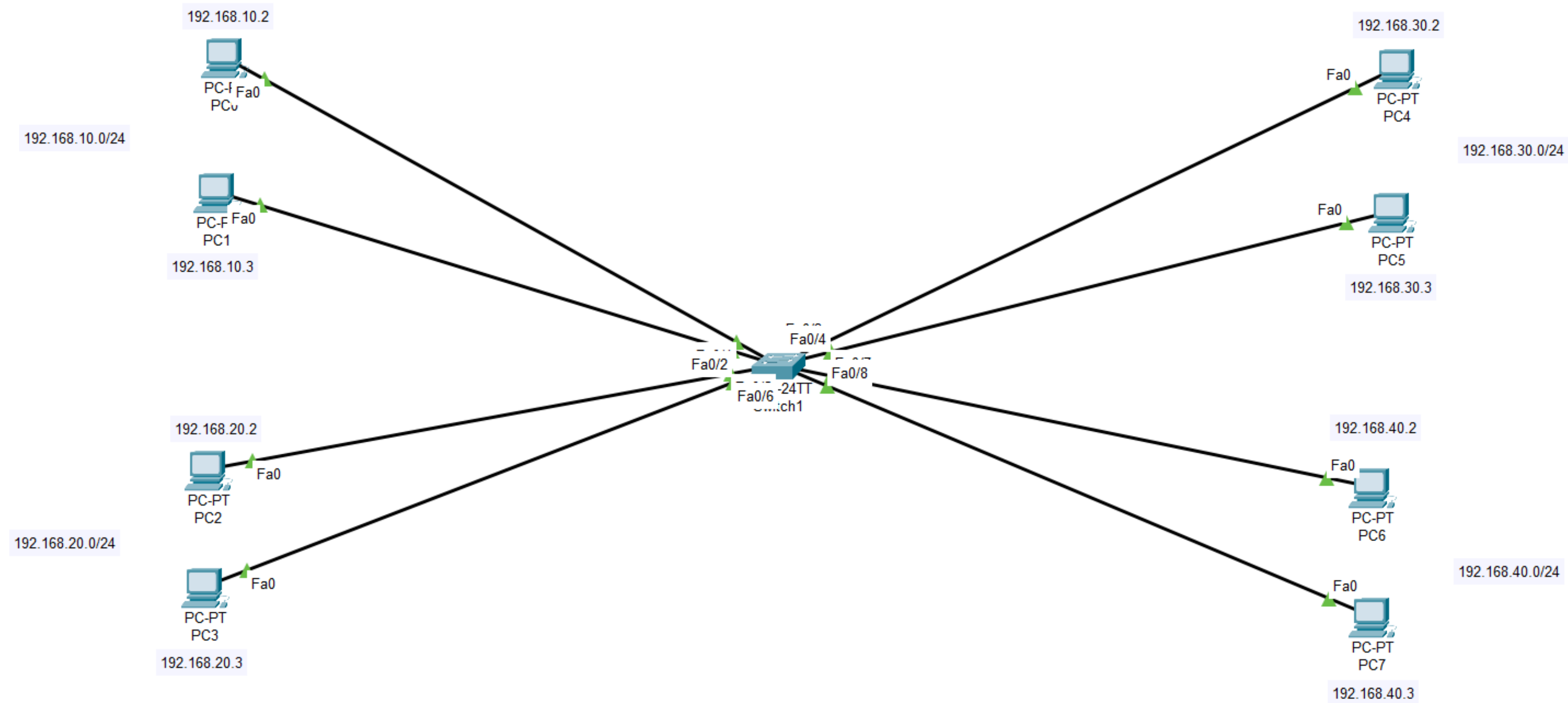
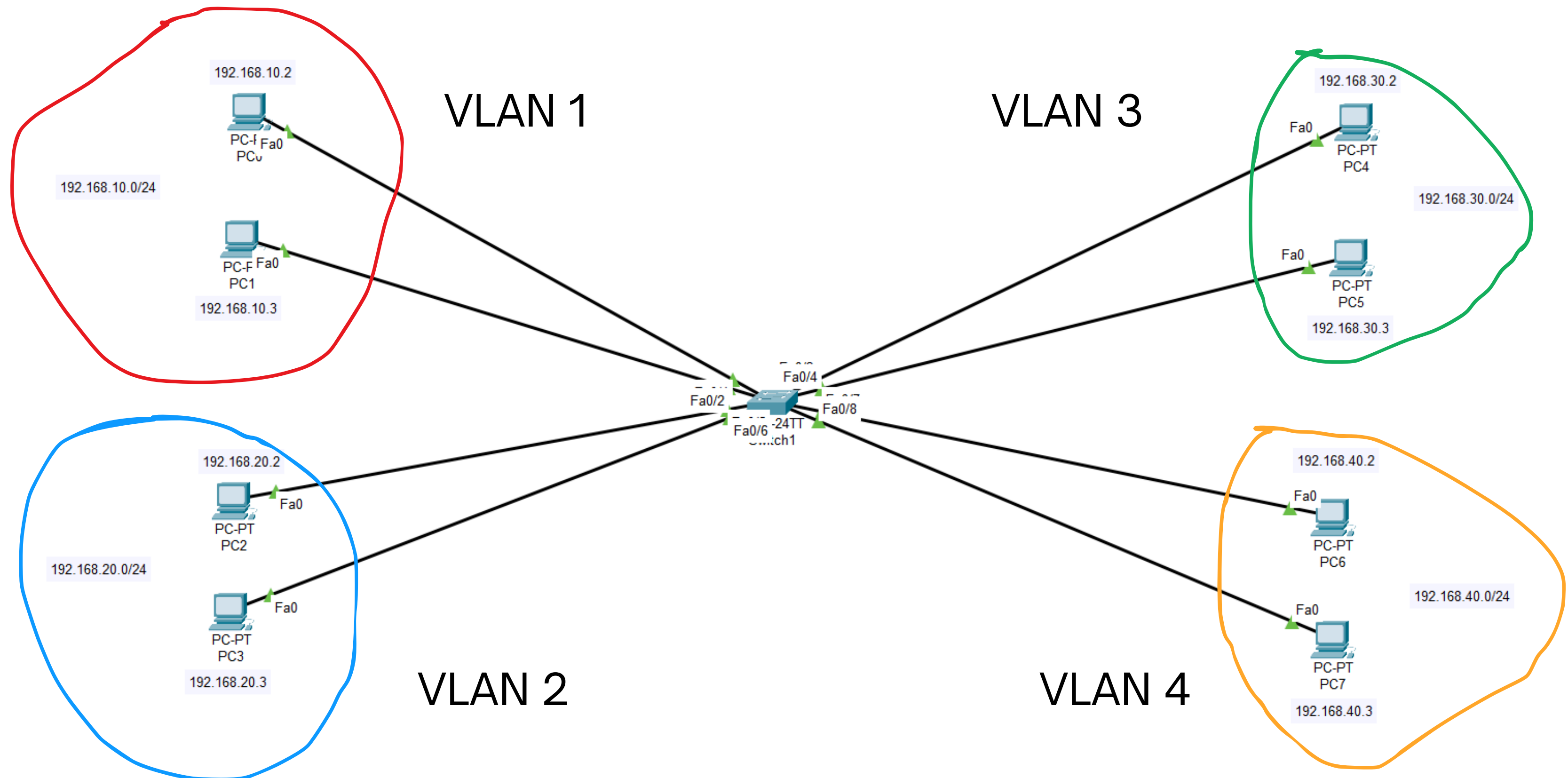


# PROGETTO S1/L5

L'obiettivo del progetto riguarda la creazione di una rete segmentata avente 4 VLAN diverse e spiegare successivamente il perchè della scelta delle VLAN. Di conseguenza la rete scelta è così composta:



Ogni VLAN è connessa allo stesso switch ed è composta da due host ciascuna, dunque ho assegnato un ID identificativo ad ogni VLAN (10,20,30,40), e l'indirizzo IP per ciascun host



Qui di seguito si può vedere l'assegnazione degli indirizzi IP prendendo come esempio 1 host per ciascuna VLAN

PC0

Physical **Config** Desktop Programming Attributes

**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

FastEthernet0

Bluetooth

Port Status ☒ On

Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0030.A30E.C46D

IP Configuration

☐ DHCP

☒ Static

IPv4 Address 192.168.10.2

Subnet Mask 255.255.255.0

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address /

Link Local Address: FE80::230:A3FF:FE0E:C46D

PC2

Physical **Config** Desktop Programming Attributes

**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

FastEthernet0

Bluetooth

Port Status ☒ On

Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0001.9642.3BC1

IP Configuration

☐ DHCP

☒ Static

IPv4 Address 192.168.20.2

Subnet Mask 255.255.255.0

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address /

Link Local Address: FE80::201:96FF:FE42:3BC1

PC4

Physical **Config** Desktop Programming Attributes

**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

FastEthernet0

Bluetooth

Port Status ☒ On

Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0060.7054.3BE6

IP Configuration

☐ DHCP

☒ Static

IPv4 Address 192.168.30.2

Subnet Mask 255.255.255.0

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address /

Link Local Address: FE80::260:70FF:FE54:3BE6

PC6

Physical **Config** Desktop Programming Attributes

**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

FastEthernet0

Bluetooth

Port Status ☒ On

Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0007.ECBB.DD31

IP Configuration

☐ DHCP

☒ Static

IPv4 Address 192.168.40.2

Subnet Mask 255.255.255.0

IPv6 Configuration

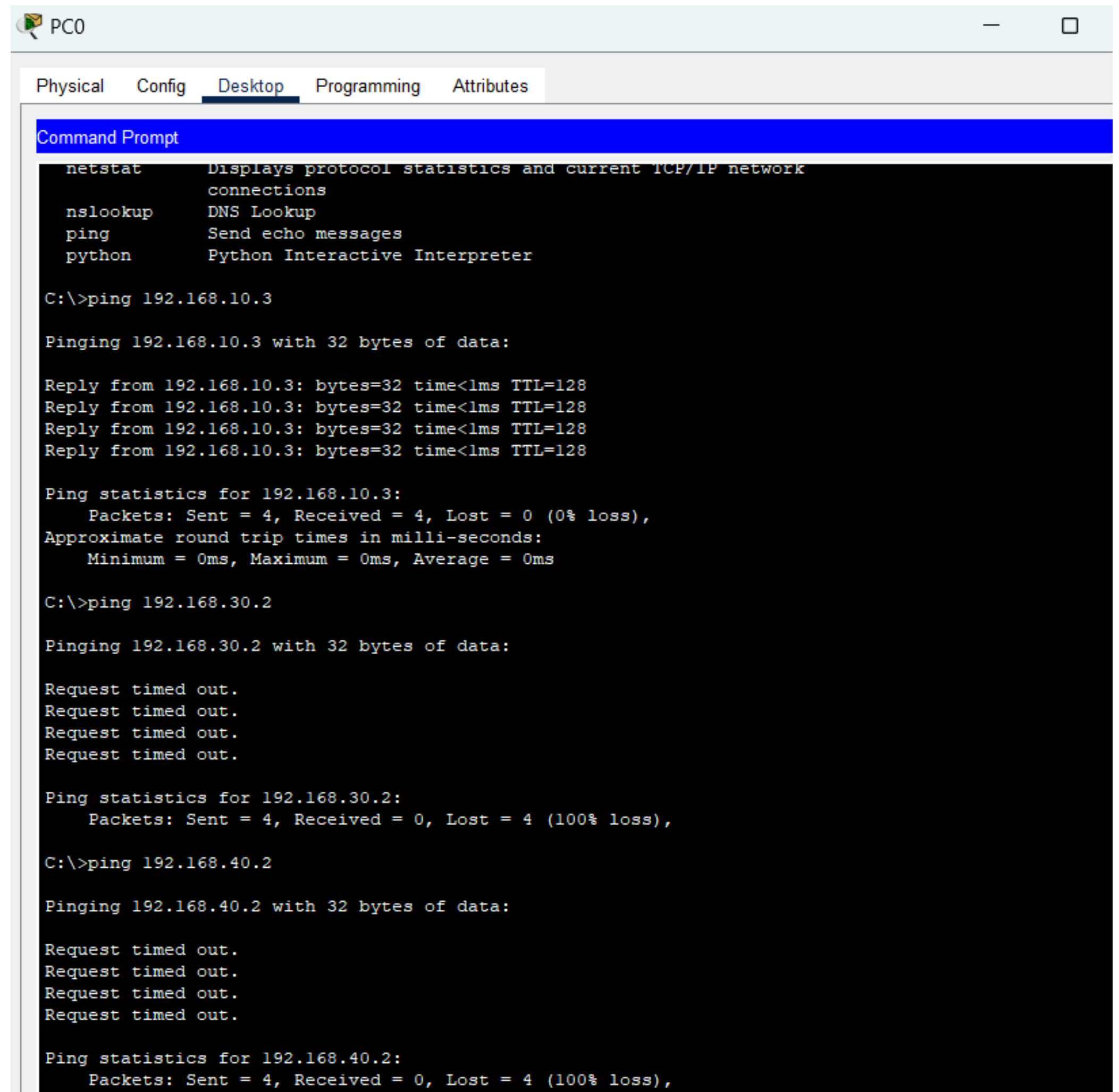
☐ Automatic

☒ Static

IPv6 Address /

Link Local Address: FE80::207:ECFF:FEBB:DD31

Prendendo adesso come esempio PC0(IP 192.168.10.2), facente parte della VLAN1 , provando a pingare PC1 (IP 192.168.10.3) vediamo che otteniamo risposta poichè fanno parte tutti e due della stessa VLAN. Se invece provassimo a pingare PC4(IP 192.168.30.2) oppure PC6 (192.168.40.2) vediamo che non otteniamo risposta e i pacchetti vanno persi perchè fanno parte di VLAN diverse



The screenshot shows the Desktop tab of a PC0 in a network simulator. A Command Prompt window is open, displaying the results of three ping commands. The first command, 'ping 192.168.10.3', shows successful results with 0% loss. The second command, 'ping 192.168.30.2', shows 'Request timed out' for all four attempts, resulting in 100% loss. The third command, 'ping 192.168.40.2', also shows 'Request timed out' for all four attempts, resulting in 100% loss.

```
PC0
Physical Config Desktop Programming Attributes
Command Prompt
netstat      Displays protocol statistics and current TCP/IP network
             connections
nslookup     DNS Lookup
ping         Send echo messages
python       Python Interactive Interpreter

C:\>ping 192.168.10.3

Pinging 192.168.10.3 with 32 bytes of data:

Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.30.2

Pinging 192.168.30.2 with 32 bytes of data:

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

Ping statistics for 192.168.30.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.40.2

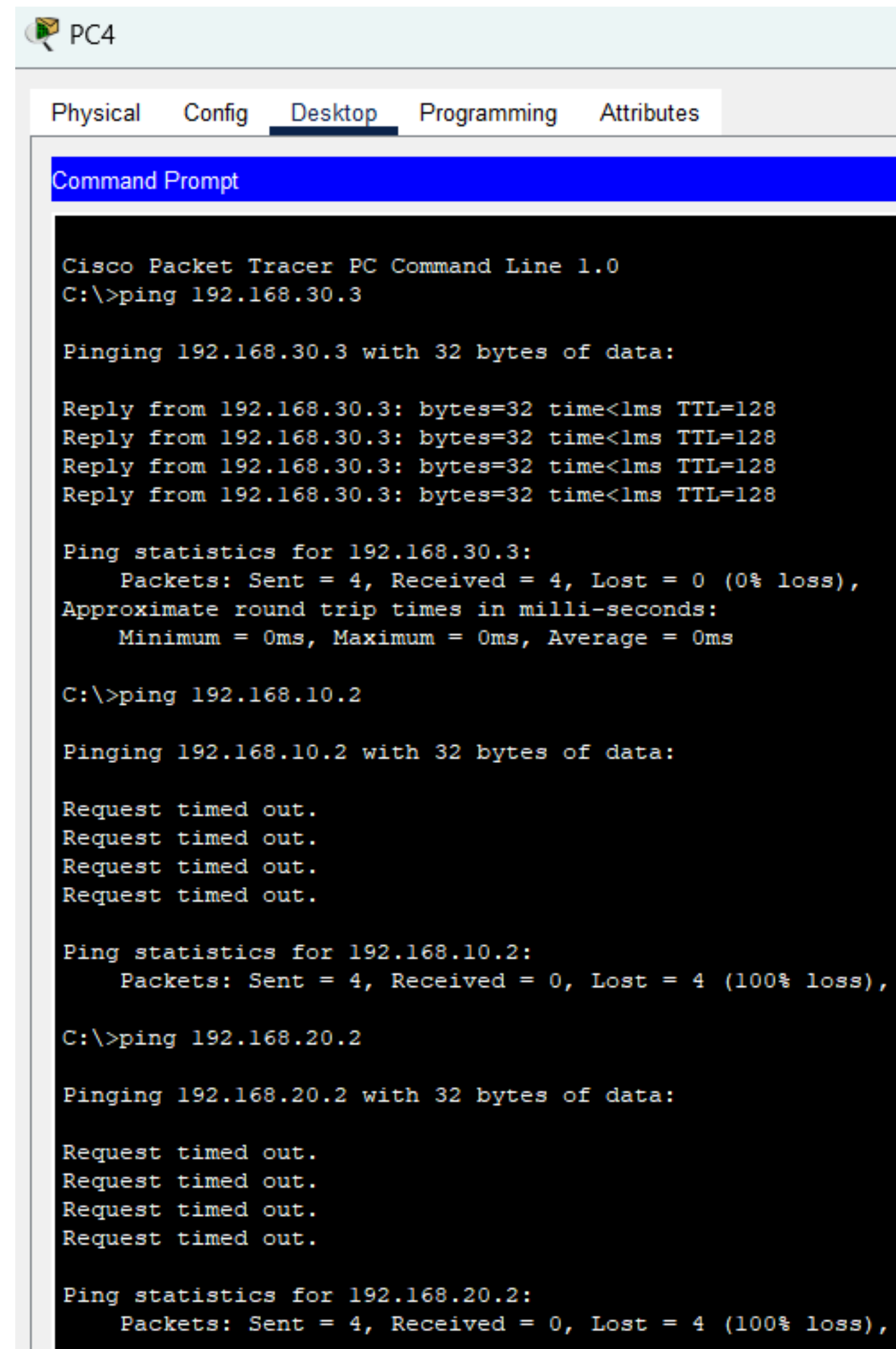
Pinging 192.168.40.2 with 32 bytes of data:

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

Ping statistics for 192.168.40.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```



Lo stesso discorso vale provando con PC4, che fa parte della VLAN 3 e con IP 192.168.30.2. Provando a pingare 192.168.30.3 otteniamo risposta mentre con gli altri no.



The screenshot shows the 'PC4' configuration window in Cisco Packet Tracer, with the 'Desktop' tab selected. The 'Command Prompt' window is open, displaying the results of three ping commands. The first command, 'ping 192.168.30.3', shows successful results with 0% loss. The second command, 'ping 192.168.10.2', and the third command, 'ping 192.168.20.2', both show 100% loss, indicating connectivity issues with those specific IP addresses.

```
PC4
Physical Config Desktop Programming Attributes
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.30.3

Pinging 192.168.30.3 with 32 bytes of data:

Reply from 192.168.30.3: bytes=32 time<1ms TTL=128
Reply from 192.168.30.3: bytes=32 time<1ms TTL=128
Reply from 192.168.30.3: bytes=32 time<1ms TTL=128
Reply from 192.168.30.3: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.30.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

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

Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

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

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Le motivazioni che spingono verso la scelta della VLAN in realtà sono molteplici.

Segmentando il dominio di broadcast, le VLAN permettono di isolare le reti fra di loro, garantendo più benefici in termini di sicurezza e traffico di rete. Ad esempio impediscono intrusioni da reti esterne e il traffico non viene indirizzato verso destinazioni non necessarie. Inoltre per le aziende è più facile assegnare lo stesso computer a un'altra VLAN senza fare un nuovo cablaggio. In sostanza, tutto questo si traduce in un risparmio di tempo e denaro.