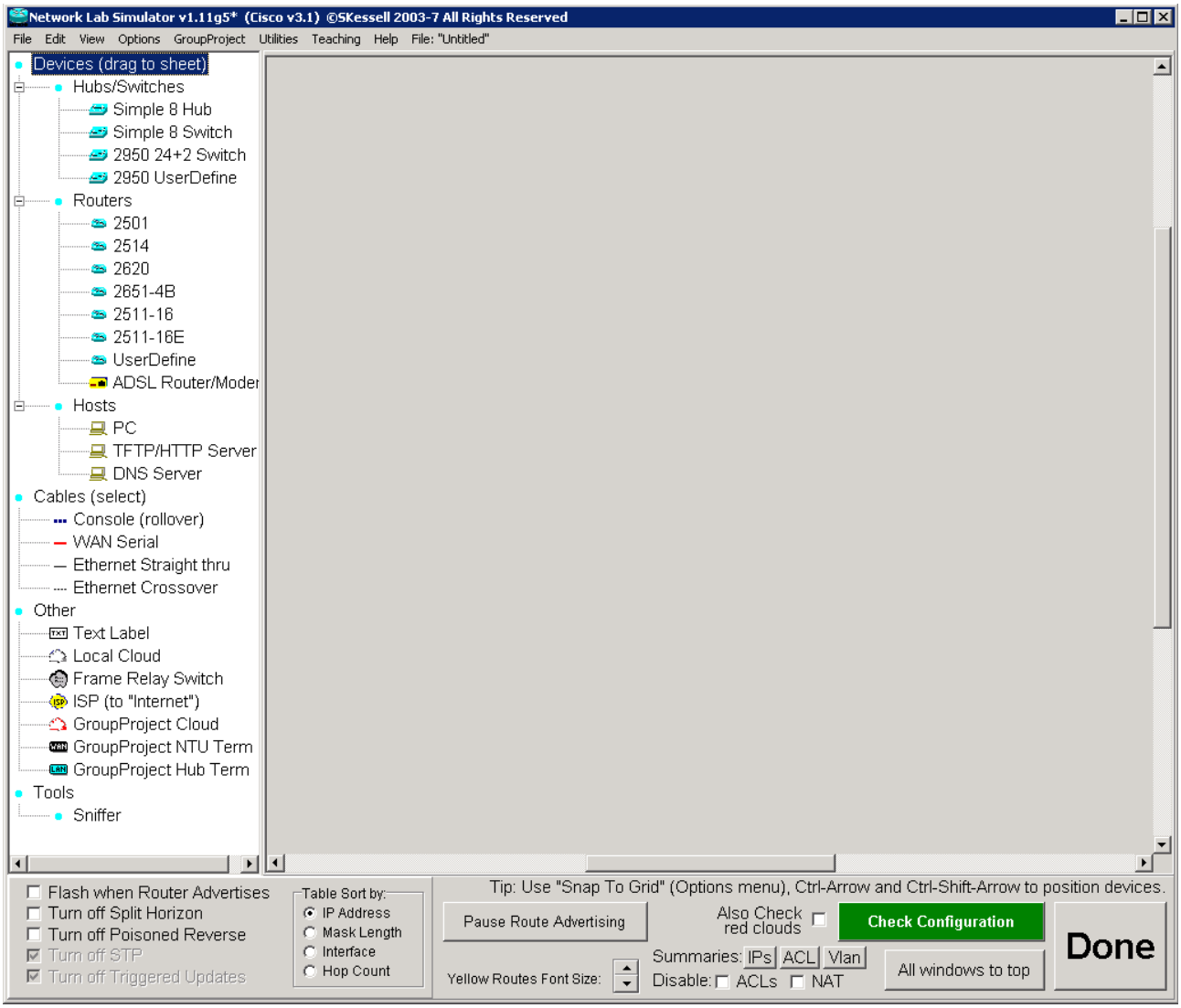
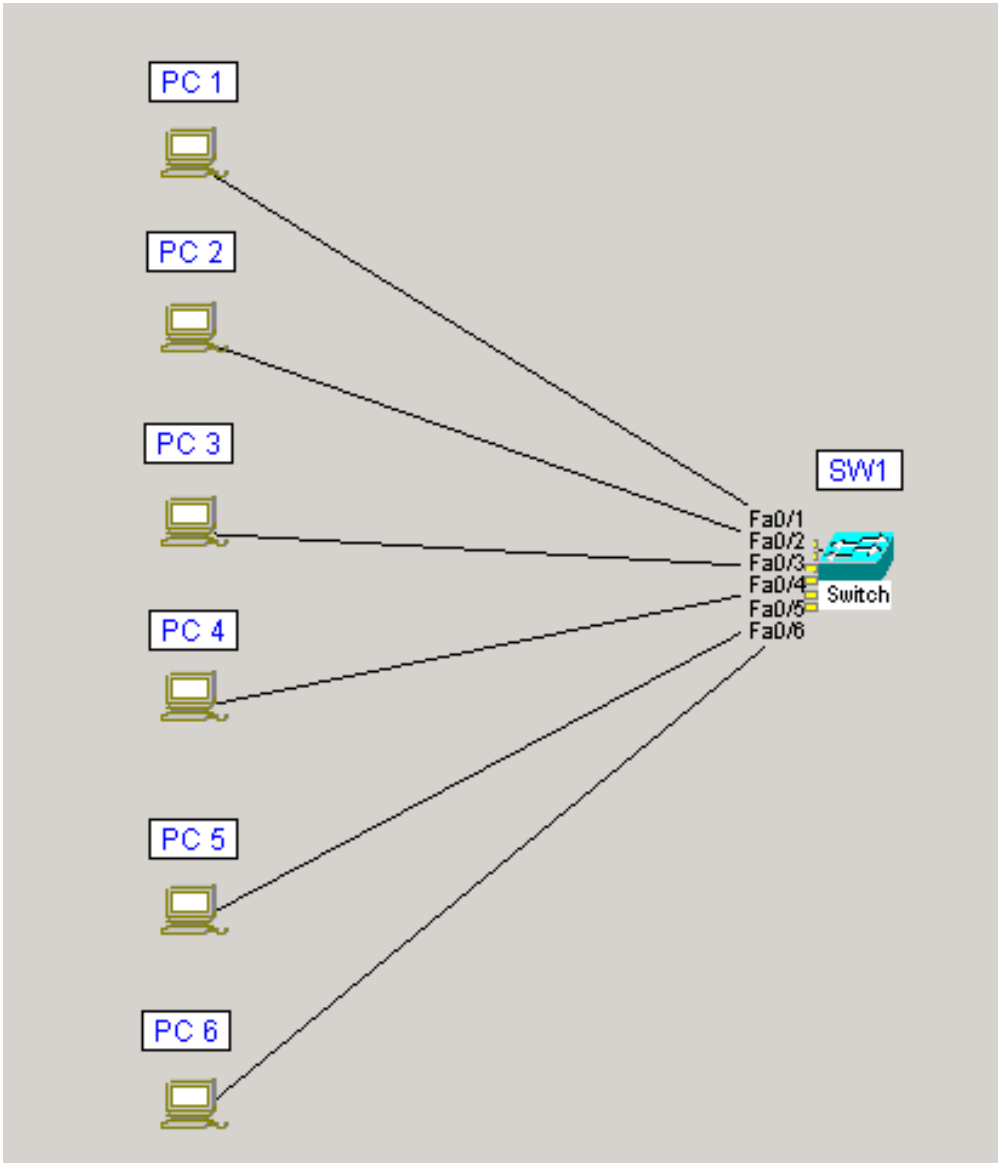
INTRODUZIONE A NETSIMK
INTRA-VLAN ROUTING

Per le esercitazioni di questo corso utilizzeremo un simulatore chiamato NetSimk
Che potete scaricare liberamente all'indirizzo **http://www.netsimk.com/**

Aprite il simulatore



iniziamo a impratichirci con il simulatore creando una semplice rete con uno switch e dei pc collegati



Dalla lista delle Device trascinate lo switch modello 2950 24+2 nella finestra di lavoro

Mettete come nome SW1, per far ciò trascinate sulla mappa un oggetto denominato TextLabel, fate doppio click sulla label e scrivete SW1

Ora dal gruppo Host, trascinate un oggetto PC nella finestra di lavoro

Mettete come nome PC1

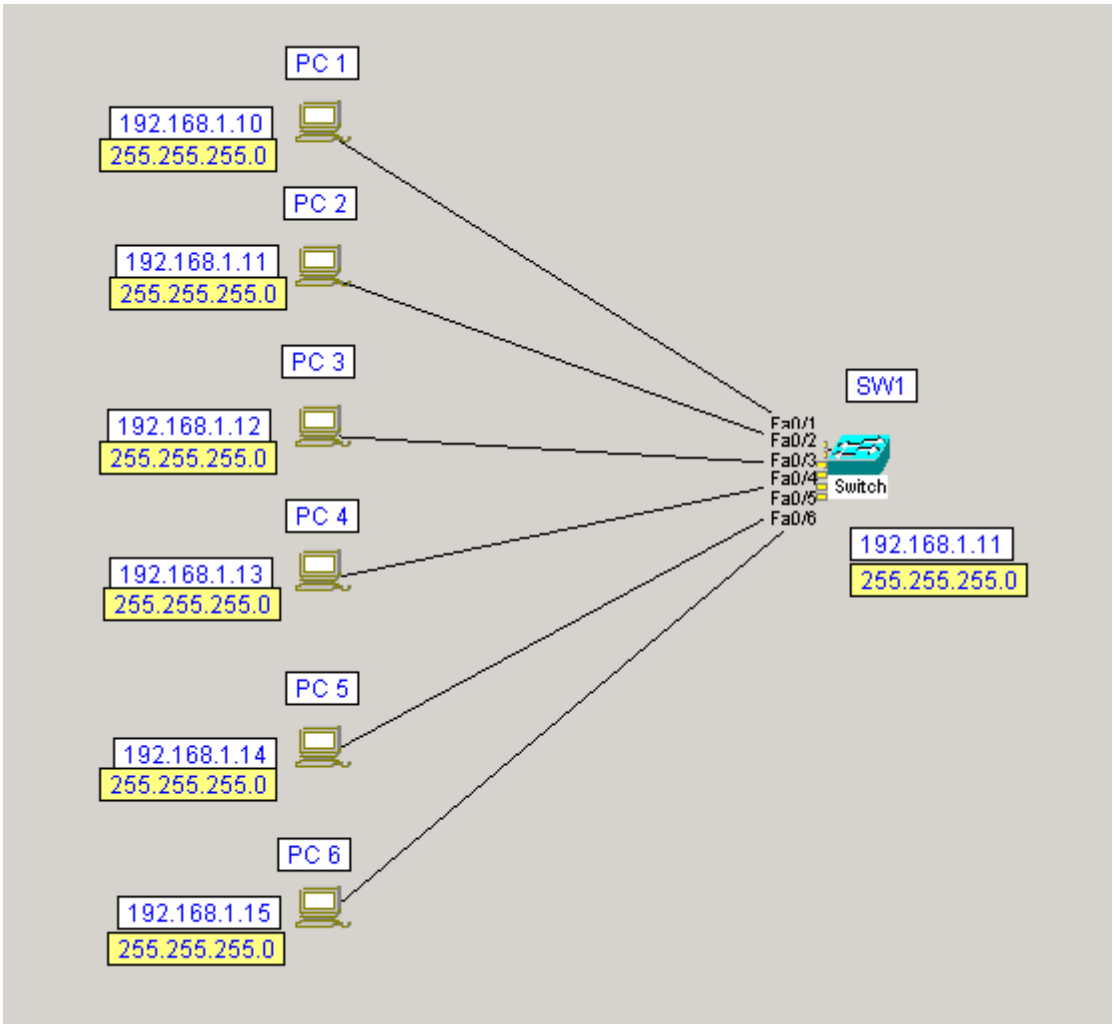
Ripetete il punto sopra inserendo altri 5 PC, chiamati PC2, PC3, PC4, PC5, PC6

Colleghiamo ora il PC1 allo Switch SW1 con un cavo Ethernet Straight thru (Il classico cavo di rete UTP)

Per fare ciò, selezionate dal menu Cables il cavo Ethernet Straight thru, cliccate sul PC1 e poi sullo SW1

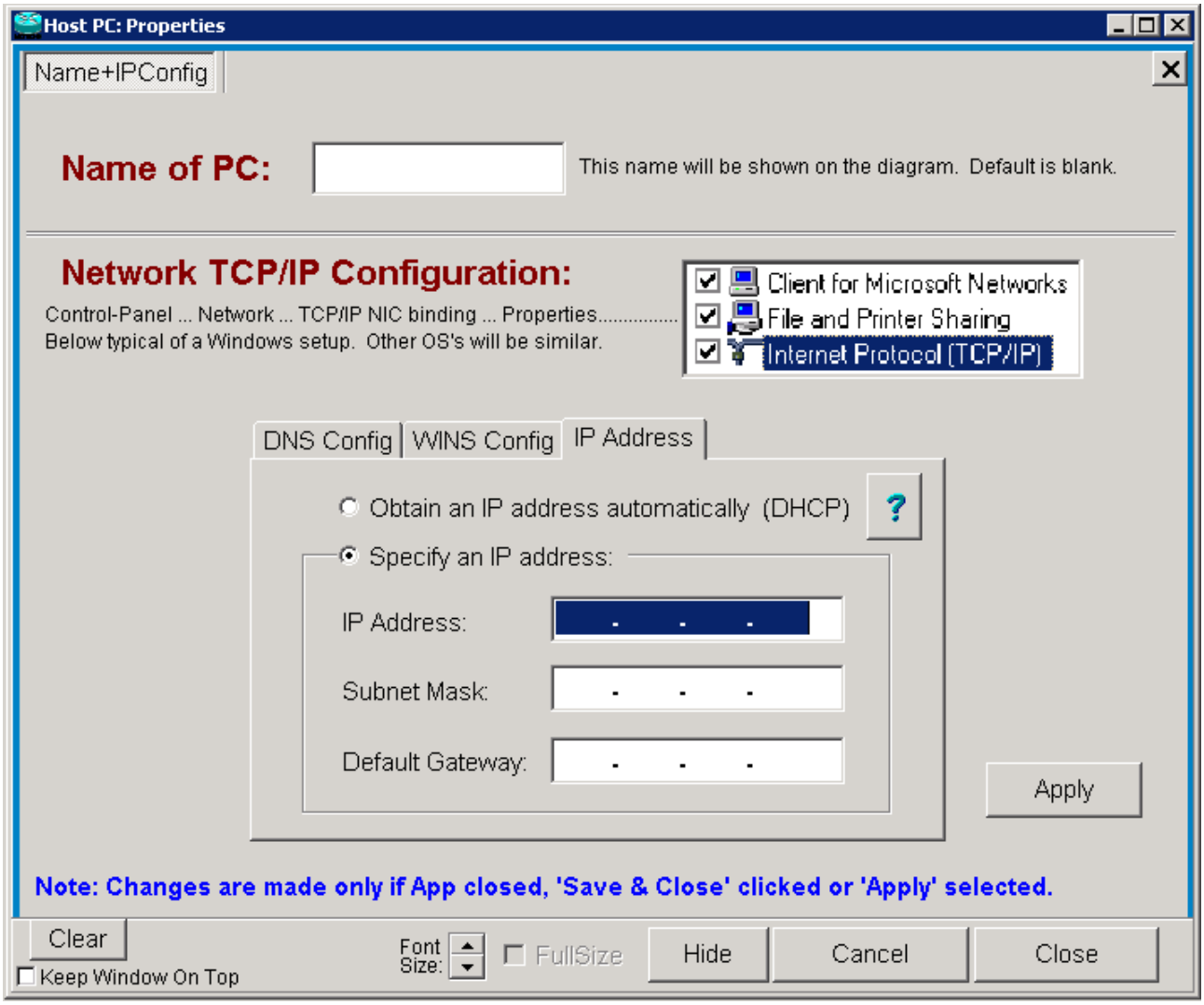
Ripetere lo stesso procedimento per gli altri pc

Iniziamo ora con dare gli ip ai 6 PC e allo switch in modo da ottenere la rete qui sotto

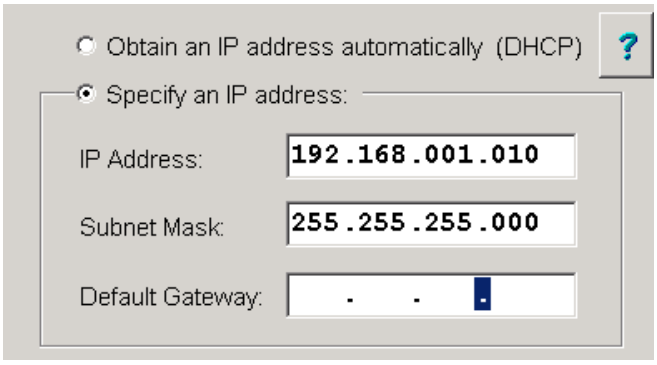


Sulla mappa fate click col tasto destro sul PC1 e scegliete la voce PC Network Properties

Si aprirà la seguente finestra



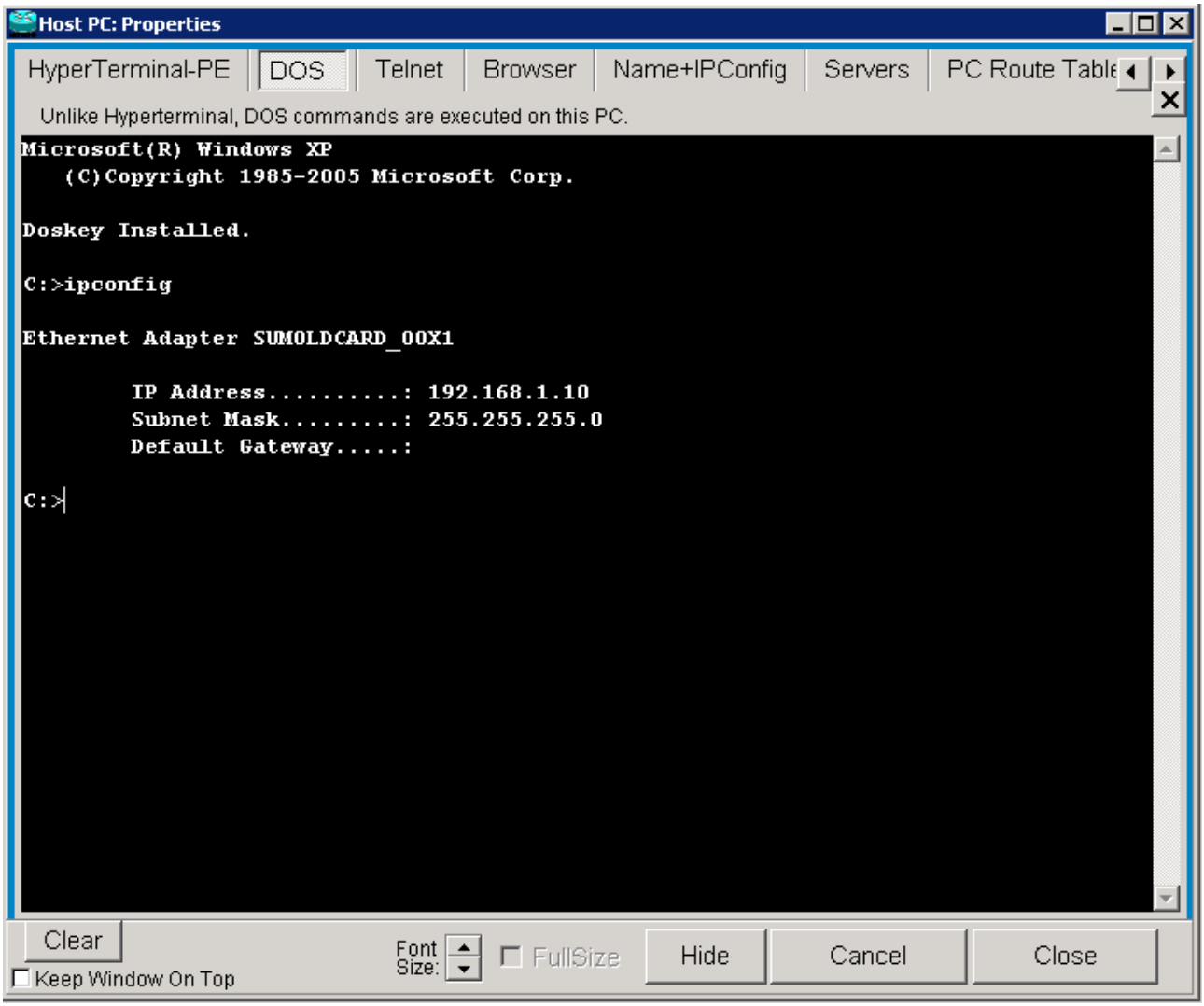
Inserite l'indirizzo IP: 192.168.1.10
e la Subnet Mask: 255.255.255.0



e cliccate sul bottone Apply poi su Close

per verificare che tutto sia andato a buon fine fate doppio click sul PC1 e nella finestra dos che si aprirà digitate ipconfig per vedere la configurazione

ipconfig

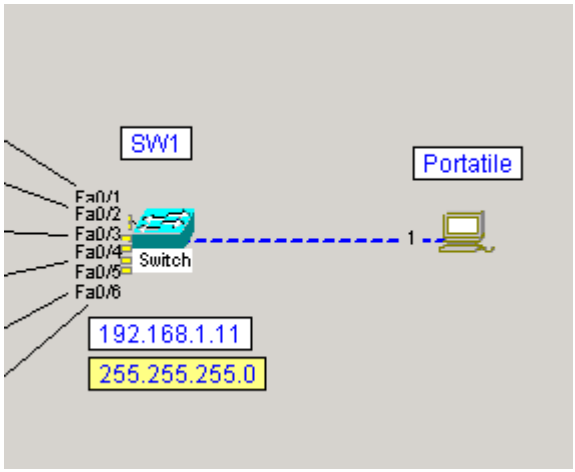


Ripetiamo ora lo stesso procedimento su gli altri 5 PC

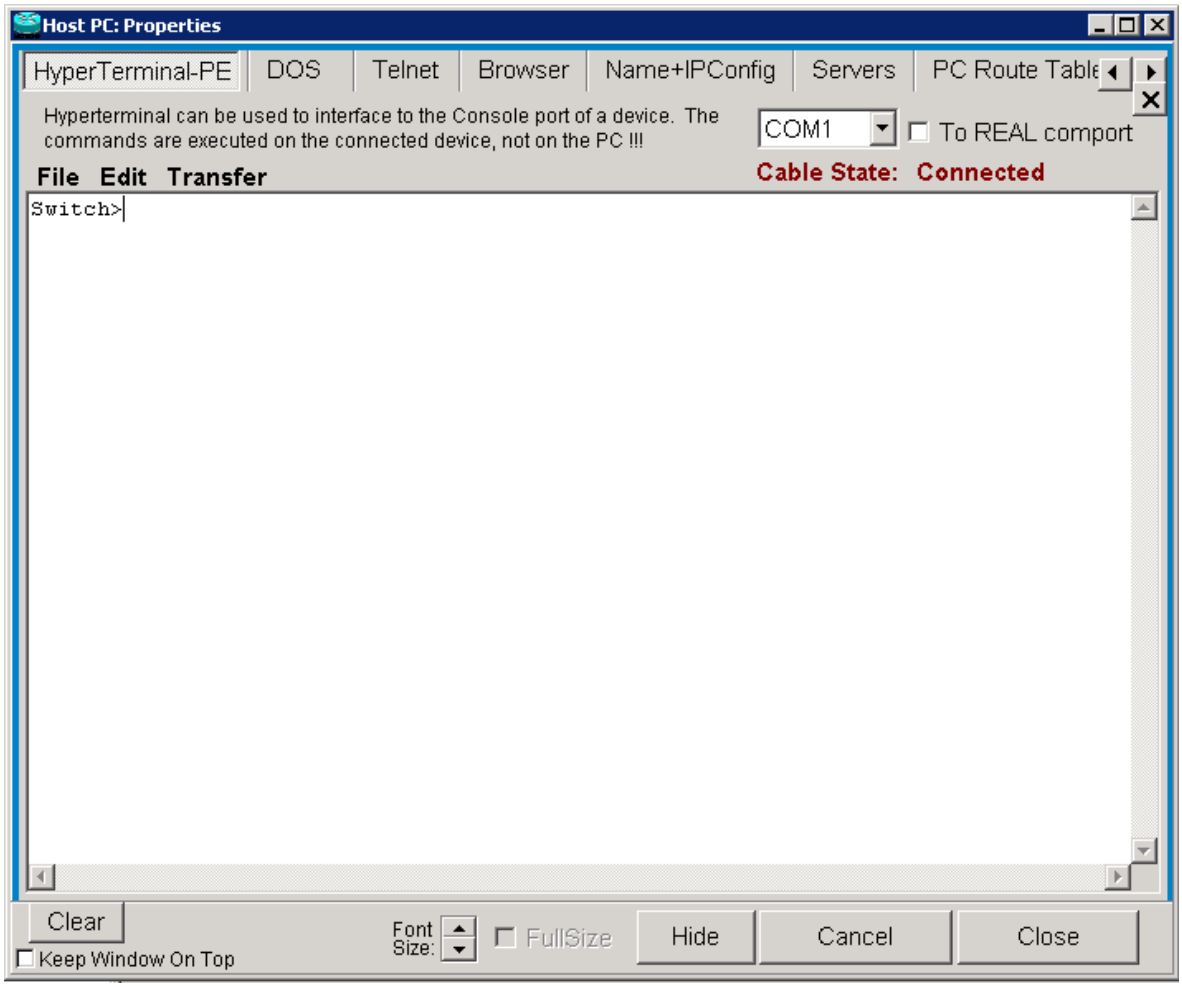
Configuriamo infine lo switch

Per far ciò dobbiamo collegarci allo switch sulla porta seriale con un cavo console tramite un pc (normalmente si usa un portatile)

Trasciniamo quindi sulla mappa un PC e lo colleghiamo allo switch con un cavo console.



Ora fate doppio click sul PC Portatile e battete invio nella finestra che si aprirà



In tal modo avete fatto una connessione via terminale allo switch.

COMANDI IMPORTANTI:

- **show interface**
  (per vedere lo stato delle interfacce dello switch)

```
Switch>show interface
  FastEthernet0/1 is up, line protocol is up (connected)
    Hardware is Fast Ethernet, address is 2FA8.C000.1002 (bia 2FA8.C000.1002)
    MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
    Encapsulation ARPA, loopback not set, keepalive set (10 sec)
    Full-duplex, 100Mb/s, media type is 100BaseTX
    ARP type: ARPA, ARP timeout 00.05.00
    ..blah blah blah - look at a real device...
    -- all sorts of stats such as packet rate, bad packets,
      broadcast packet count, late collision count,
      runts (pkt too small), giants (pkt too big) etc...

  FastEthernet0/2 is up, line protocol is up (connected)
    Hardware is Fast Ethernet, address is 2FA8.C000.1003 (bia 2FA8.C000.1003)
    MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
    Encapsulation ARPA, loopback not set, keepalive set (10 sec)
    Full-duplex, 100Mb/s, media type is 100BaseTX
    ARP type: ARPA, ARP timeout 00.05.00
    ..blah blah blah - look at a real device...
    -- all sorts of stats such as packet rate, bad packets,
      broadcast packet count, late collision count,
      runts (pkt too small), giants (pkt too big) etc...

  FastEthernet0/3 is up, line protocol is up (connected)
    Hardware is Fast Ethernet, address is 2FA8.C000.1004 (bia 2FA8.C000.1004)
    MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
    Encapsulation ARPA, loopback not set, keepalive set (10 sec)
    Full-duplex, 100Mb/s, media type is 100BaseTX
    ARP type: ARPA, ARP timeout 00.05.00
    ..blah blah blah - look at a real device...
    -- all sorts of stats such as packet rate, bad packets,
      broadcast packet count, late collision count,
      runts (pkt too small), giants (pkt too big) etc...

  FastEthernet0/4 is up, line protocol is up (connected)
    Hardware is Fast Ethernet, address is 2FA8.C000.1005 (bia 2FA8.C000.1005)
    MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
    Encapsulation ARPA, loopback not set, keepalive set (10 sec)
    Full-duplex, 100Mb/s, media type is 100BaseTX
    ARP type: ARPA, ARP timeout 00.05.00
    ..blah blah blah - look at a real device...
    -- all sorts of stats such as packet rate, bad packets,
      broadcast packet count, late collision count,
```

```
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/5 is up, line protocol is up (connected)
  Hardware is Fast Ethernet, address is 2FA8.C000.1006 (bia 2FA8.C000.1006)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/6 is up, line protocol is up (connected)
  Hardware is Fast Ethernet, address is 2FA8.C000.1007 (bia 2FA8.C000.1007)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/7 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.1008 (bia 2FA8.C000.1008)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/8 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.1009 (bia 2FA8.C000.1009)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/9 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.100A (bia 2FA8.C000.100A)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/10 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.100B (bia 2FA8.C000.100B)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
```

```
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/11 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.100C (bia 2FA8.C000.100C)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/12 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.100D (bia 2FA8.C000.100D)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/13 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.100E (bia 2FA8.C000.100E)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/14 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.100F (bia 2FA8.C000.100F)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/15 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.1010 (bia 2FA8.C000.1010)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/16 is down, line protocol is down (notconnect)
```

```
  Hardware is Fast Ethernet, address is 2FA8.C000.1011 (bia 2FA8.C000.1011)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/17 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.1012 (bia 2FA8.C000.1012)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/18 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.1013 (bia 2FA8.C000.1013)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/19 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.1014 (bia 2FA8.C000.1014)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/20 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.1015 (bia 2FA8.C000.1015)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/21 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.1016 (bia 2FA8.C000.1016)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
```

```
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/22 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.1017 (bia 2FA8.C000.1017)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/23 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.1018 (bia 2FA8.C000.1018)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

FastEthernet0/24 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.1019 (bia 2FA8.C000.1019)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 100BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

GigabitEthernet0/1 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.101A (bia 2FA8.C000.101A)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 1000Mb/s, media type is 1000BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...

GigabitEthernet0/2 is down, line protocol is down (notconnect)
  Hardware is Fast Ethernet, address is 2FA8.C000.101B (bia 2FA8.C000.101B)
  MTU 1500 bytes, BW 0 Kbit, DLY 2000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Full-duplex, 1000Mb/s, media type is 1000BaseTX
  ARP type: ARPA, ARP timeout 00.05.00
  ..blah blah blah - look at a real device...
  -- all sorts of stats such as packet rate, bad packets,
    broadcast packet count, late collision count,
    runts (pkt too small), giants (pkt too big) etc...
```

- **?** (Per far uscire la lista dei comandi disponibili)

```
Switch>?
   connect                     Telnet to another host
   disable                     Turn off privileged commands
   enable                      Turn on privileged commands
   exit                        Exit from the EXEC
   help                        Description of the interactive help system
   ping                        Send echo messages
   show                        show... commands
   telnet                      Open a telnet connection
   terminal                    Lines before MORE.  0=never.
   traceroute                  Trace route to destination

Switch>show ?
   show clock                     Display the system clock
   show flash:                    display information about flash: file system
   show history                   Display the session command history
   show hosts                     IP domain-name, nameservers, and host table
   show interface [intf]          Interface status and configuration
   show ip dhcp bindings <ip>     DHCP address bindings
   show sessions*                 Information about Telnet connections
   show spanning-tree             show spanning-tree commands
   show users                     Display information about terminal lines
   show version                   System hardware and software status
   show vlan                      show vlan commands
```

- **<TAB>** (Per completare i vari comandi digitati)

Scrivete per esempio sh

```
SW1>sh
```

e premete il tasto <TAB>, automaticamente il comando verrà cosi completato:

```
SW1>show
```

- **enable**

(Entra in modalità privilegiata, il prompt si trasforma da > a #)

COMANDI IMPORTANTI IN MODALITA' PRIVILEGIATA:

- **exit**
  (Per tornare alla modalità precedente)

- **show running-config**

(Per vedere la configurazione che sta girando sullo switch)

```
Switch#    show running-config
Building Configuration...

Current Configuration : 1108 bytes
!
version 12.1
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Switch
!
spanning-tree mode pvst
no spanning-tree optimize bpdu transmission
spanning-tree extend system-id
!
!
!
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
```

```
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 no ip route-cache
 shutdown
!
ip http server
!
line con 0
line vty 0 4
!
end
```

- **copy running-config startup-config**

(Per salvare la configurazione corrente nella flashrom delelo switch)

- **configure terminal**

(Entra in modalità configurazione terminale, il prompt si trasforma da # a (config)#)

COMANDI IMPORTANTI IN MODALITA' CONFIGURAZIONE TERMINALE:

- **exit**
  (Per tornare alla modalità precedente)

- **enable secret**

(Per impostare una password per entrare in modalità privilegiata)

Digitate per esempio: **enable secret corso**

(Nota: in NetSimk non vi chiede la password comunque, ma negli apparati reali si.)

- **hostname**

(Per cambiare il nome dell'apparecchio)

Per esempio diamo il nome SW1 al nostro switch

Switch(config)# **hostname SW1**

Dato invio vedremo cambiare il prompt comandi in

SW1(config)#

- **interface** nomeinterfaccia

(Entra in modalità configurazione interfaccia, il prompt si trasforma (config)# a (config-if)#)

Vogliamo ora dare un ip al nostro switch, **l'indirizzo che assegneremo allo switch serve solo per management,** per fare ciò occorre configurare la vlan di default (vlan 1)

Diamo il comando: **interface vlan1**

COMANDI IMPORTANTI IN MODALITA'
CONFIGURAZIONE INTERFACCIA:

- **ip address** <indirizzo IP> <netmask>
  (assegna l'indirizzo IP (e netmask) all'interfaccia)

  diamo per esempio l'indirizzo 192.168.1.1 255.255.255.0

```
ip address 192.168.1.1 255.255.255.0
```

- **no shutdown**
  (Per abilitare l'interfaccia)

```
SW1(config-if)#no shutdown
SW1(config-if)#
%LDXX - Interface vlan 1, changed state to up
```

- **exit**
  (Per tornare alla modalità precedente)

Usciamo dalla modalità configurazione interfaccia, dando **exit,** dalla modalità configurazione dando di nuovo **exit,** e dalla modalità privilegiata digitando di nuovo **exit**

Andiamo ora sul PC1
Apriamo una finestra DOS e proviamo a pingare lo switch

Digitiamo:

ping 192.168.1.1

```
C:>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1 on Eth, time<10ms TTL=128
Reply from 192.168.1.1 on Eth, time<10ms TTL=128
Reply from 192.168.1.1 on Eth, time<10ms TTL=128
Reply from 192.168.1.1 on Eth, time<10ms TTL=128
```

Digitiamo poi:

```
C:>ipconfig /all

Windows IP configuration

        Host Name . . . . . . . . . . :
        Primary DNS Suffix. . . . . :
```

```
        Node Type . . . . . . . . . . . : Broadcast
        NetBIOS Scope ID. . . . . . . . :
        IP Routing enabled. . . . . . . : No
        WINS Proxy enabled. . . . . . . : No
        NetBIOS Resolution uses DNS . . : No

Ethernet Adapter SUMOLDCARD_00X1:

        Description . . . . . . . . . . : SumJunk Fast Ethernet Adapter
        Physical Address. . . . . . . . : 53-1E-A2-00-10-03
        DHCP enabled. . . . . . . . . . : No
        IP Address. . . . . . . . . . . : 192.168.1.10
        Subnet Mask . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . : 0.0.0.0
        DNS Servers . . . . . . . . . . :
```

Torniamo sullo switch

Digitiamo in modalità privilegiata:

SW1#show mac-address-table

```
SW1#show mac-address-table

          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
 All    2FA8.C000.1001    STATIC      CPU
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0100.0cdd.dddd    STATIC      CPU
   1    531E.A200.1003    DYNAMIC     Fa0/1

Total Mac Addresses for this criterion: 5
```

Notiamo che lo switch ha imparato il mac-address del primo pc che ha effettuato un collegamento

Andiamo ora sul PC6

Proviamo a pingare lo switch

Digitiamo:

ping 192.168.1.1

```
C:>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:
```

```
Reply from 192.168.1.1 on Eth, time<10ms TTL=128
Reply from 192.168.1.1 on Eth, time<10ms TTL=128
Reply from 192.168.1.1 on Eth, time<10ms TTL=128
Reply from 192.168.1.1 on Eth, time<10ms TTL=128
```

Torniamo sullo switch

Digitiamo in modalità privilegiata:

SW1#show mac-address-table

```
SW1#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
 All    2FA8.C000.1001    STATIC      CPU
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0100.0cdd.dddd    STATIC      CPU
   1    531E.A200.1003    DYNAMIC     Fa0/1
   1    E85D.F700.1003    DYNAMIC     Fa0/6
Total Mac Addresses for this criterion: 6
```

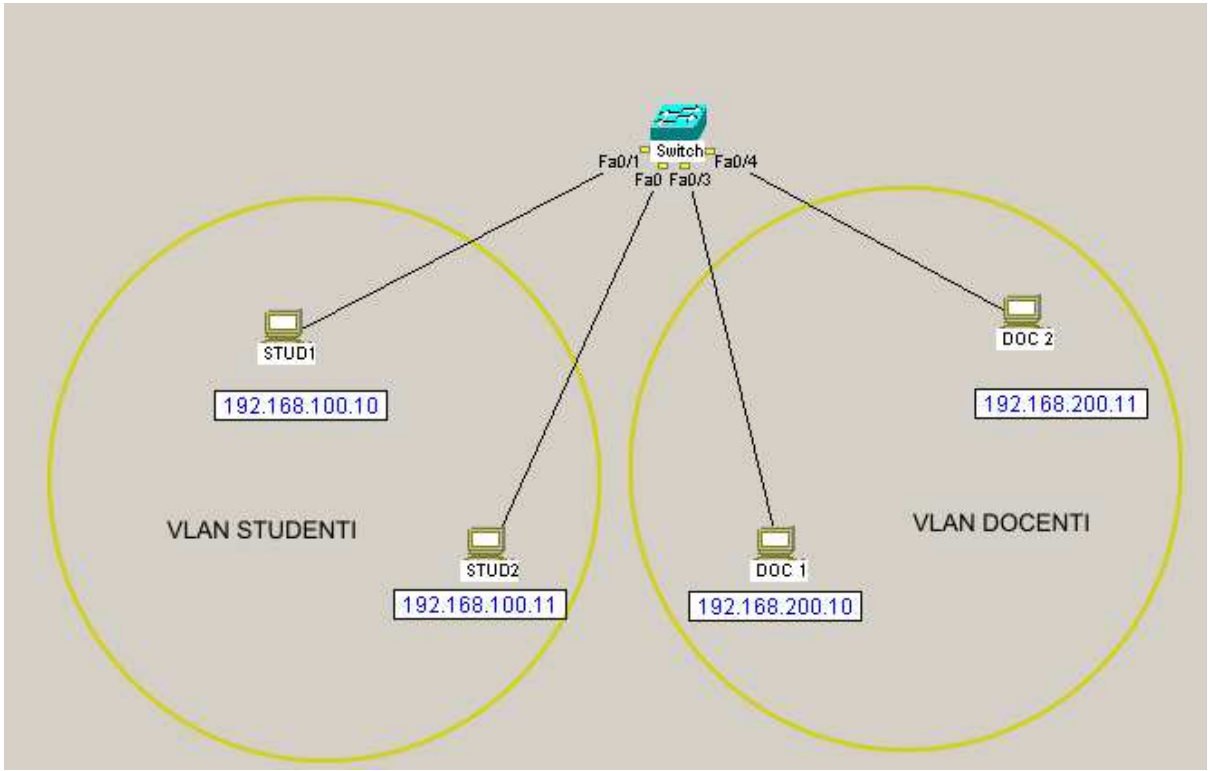
Come potete vedere si è aggiunta una nuova riga nella MAC ADDRESS TABLE riferita al PC6

Questo perché lo switch al primo accesso da parte del PC6 ha aggiornato la MAC ADDRESS TABLE

Ora proviamo a pingare lo switch dagli altri PC e rivisualizziamo la MAC ADDRESS TABLE

```
SW1#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
 All    2FA8.C000.1001    STATIC      CPU
 All    0100.0ccc.cccc    STATIC      CPU
 All    0100.0ccc.cccd    STATIC      CPU
 All    0100.0cdd.dddd    STATIC      CPU
   1    531E.A200.1003    DYNAMIC     Fa0/1
   1    C02B.8400.1003    DYNAMIC     Fa0/2
   1    6CFF.5100.1003    DYNAMIC     Fa0/3
   1    578B.3300.1003    DYNAMIC     Fa0/4
   1    37BA.1500.1003    DYNAMIC     Fa0/5
   1    E85D.F700.1003    DYNAMIC     Fa0/6
Total Mac Addresses for this criterion: 10
```

ESERCIZIO N. 2
INTRA-VLAN ROUTING "Router On a Stick"



DESCRIZIONE:

Si vuole costruire una rete, dove vi siano due VLAN (Studenti e Docenti), e si vuole far in modo che comunque sia possibile effettuare traffico da una VLAN all'altra.

SOLUZIONE:

Configuriamo le VLAN sullo Switch:

collegate un terminale allo switch e nella console scrivete:

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.

Switch(config)#vlan 10
Switch(config-vlan)#name studenti
Switch(config-vlan)#exit

Switch(config)#vlan 20
Switch(config-vlan)#name docenti
Switch(config-vlan)#exit

Switch(config)#interface F0/1
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit

Switch(config)#interface F0/2
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit


Switch(config)#interface F0/3
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit

Switch(config-if)#interface F0/4
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit

Switch(config)#exit
```

Vediamo se abbiamo fatto tutto correttamente

```
Switch#show vlan

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
10   studenti                          active     Fa0/1, Fa0/2
20   docenti                           active     Fa0/3, Fa0/4
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
10   enet  100010     1500  -      -      -        -    -        0      0
20   enet  100020     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
------- --------- ----------------- ------------------------------------------
```

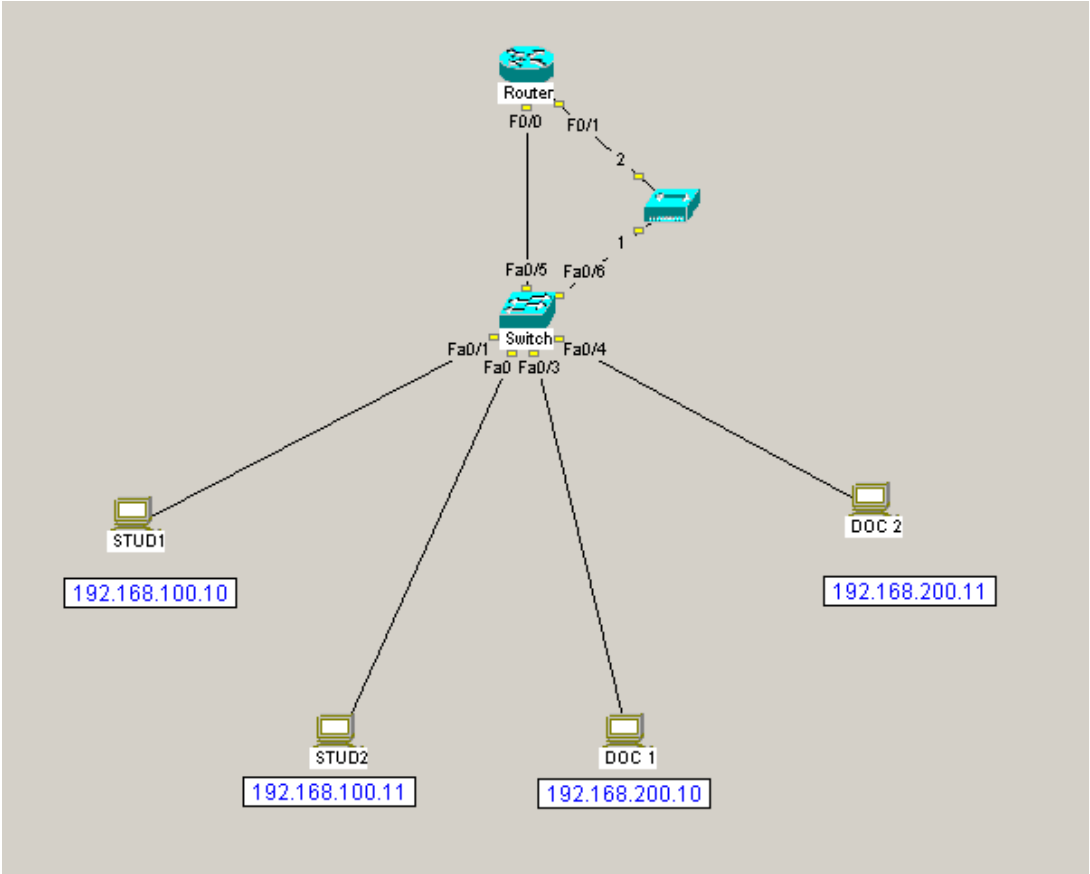
Ora pinghiamo dal PC 1

```
C:>ping 192.168.100.11

Pinging 192.168.100.11 with 32 bytes of data:

Reply from 192.168.100.11 on Eth, time<10ms TTL=128
Reply from 192.168.100.11 on Eth, time<10ms TTL=128
Reply from 192.168.100.11 on Eth, time<10ms TTL=128
Reply from 192.168.100.11 on Eth, time<10ms TTL=128



C:>ping 192.168.200.10

Pinging 192.168.200.10 with 32 bytes of data:

Destination unreachable at 192.168.200.10

C:>ping 192.168.200.11

Pinging 192.168.200.11 with 32 bytes of data:

Destination unreachable at 192.168.200.11
```

Ora vogliamo che sia possibile pingare dal PC 1 anche i PC della VLAN Docenti.

Per far questo abbiamo bisogno di un rooter che faccia Intra-VLAN Routing, cioè che instradi i pacchetti della VLAN studenti su quella dei docenti e Viceversa.

Inseriamo un Router personalizzato che abbia 2 interfacce di rete Ethernet. (User Define Router)



NOTA: E' stato inserito un HUB, per due motivi, il primo motivo è per esigenze grafiche, altrimenti i due cavi che andavano dallo switch al router si sovrapponevano, l'altro per un baco di Netsimk, che non lascia mettere due cavi straight da uno switch ad un router.

Ora assegniamo la porta Fa0/5 dello switch alla VLAN studenti e la Porta Fa0/6 alla VLAN docenti.

```
Switch(config)#interface F0/5
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit

Switch(config)#interface F0/6
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
```

Ora impostiamo i default gateway sui PC: per i PC nella VLAN studenti mettiamo come default gateway l'indirizzo 192.168.100.1 e per i PC nella VLAN docenti l'indirizzo di default gateway 192.168.200.1

Infine impostiamo le due porte del router in modo tale che facciano da default gateway per le due VLAN.

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface F0/0
Router(config-if)#ip address 192.168.100.1 255.255.255.0
Router(config-if)#no shutdown
%LDXX - Interface FastEthernet0/0, changed state to up
Router(config-if)#exit

Router(config)#interface F0/1
Router(config-if)#ip address 192.168.200.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#
%LDXX - Interface FastEthernet0/1, changed state to up
Router(config-if)#exit
```

NOTA:

Si può vedere come nel router di questo esercizio non si utilizzano le VLAN. Siamo infatti in presenza di un classico dispositivo di livello 3 e non di uno switch layer 3.

Non ha quindi senso parlare di VLAN per un router. Ognuna delle porte del router di questo esercizio è indipendente dalle altre e rappresenta una classica

scheda di rete Ethernet. Lo switch layer 2 manda quindi alle due porte del router dei classici frame Ethernet. Non vi è alcun tagging (la connessione non è di tipo trunk).

Sarebbe interessante vedere la differenza di configurazione se si sostituisse il router di questo esercizio con uno switch layer 3. Netsimk però non dispone purtroppo per ora di esempi di switch di questo tipo.

Nel caso di uno switch layer 3 si avrebbero comunque più porte Ethernet raggruppate in una VLAN e l'indirizzo IP verrebbe dato a quest'ultima. Nel nostro esempio avremmo tre VLAN (quella di default e quelle riguardanti studenti e docenti). Si dovrebbe attivare sullo switch layer 3 l'intervlan routing e la connessione fra lo switch layer 2 e quello di livello 3 potrebbe essere di tipo trunk.

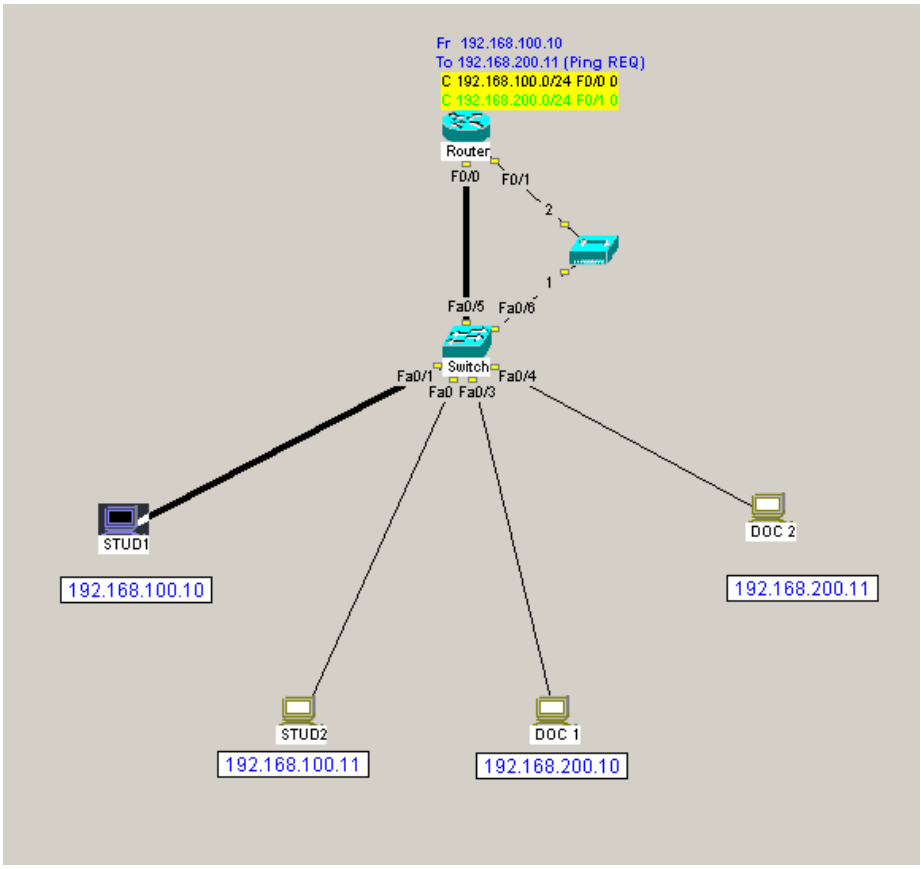
Lo switch layer 3 riceverebbe sul trunk i vari frame taggati e li smisterebbe ad una delle porte appartenenti alla stessa VLAN del mittente, in funzione dell'host destinatario. Se il destinatario fosse su una sottorete con net-id differente scatterebbe il routing (gli host vedono la VLAN dello switch layer 3 come il proprio dg) e quindi lo switch layer 3 si comporterebbe in un modo analogo al router di questo esercizio.

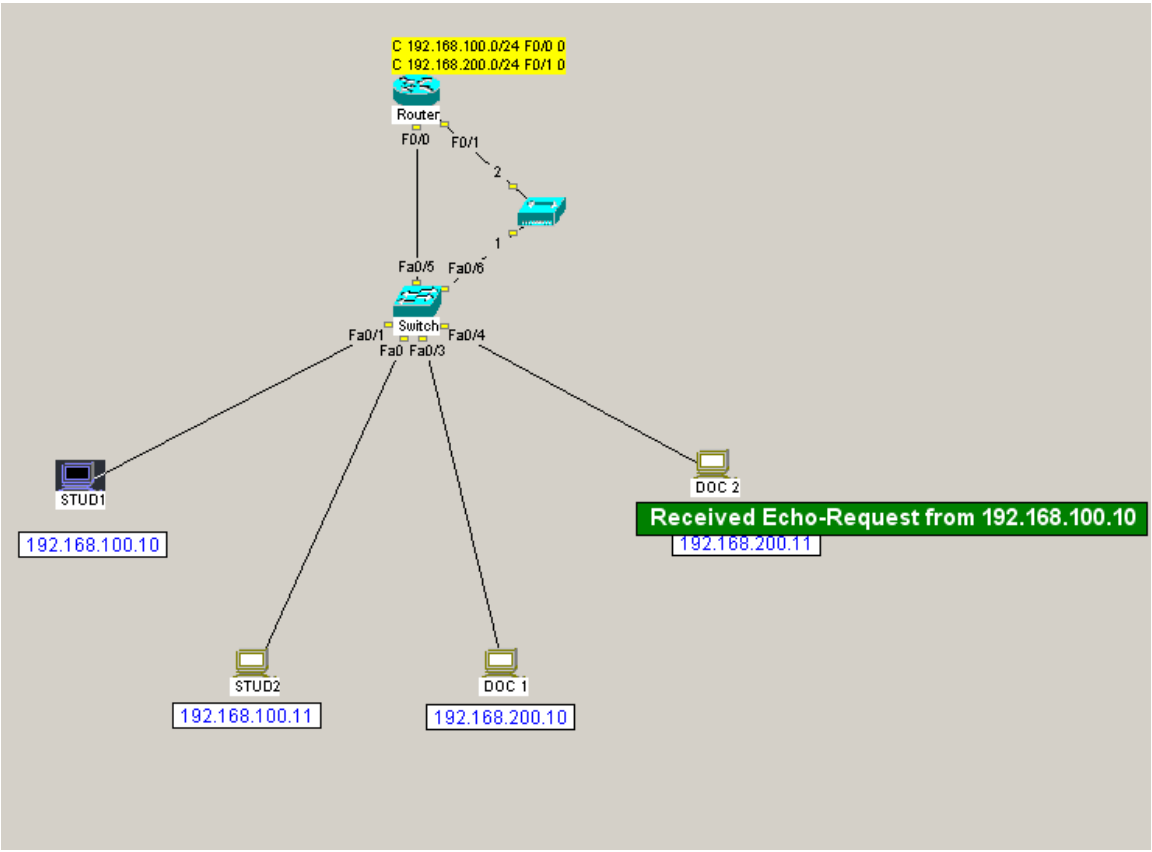
Il frame Ethernet, taggato, verrebbe preso, passato alla VLAN di competenza, e poi trasmesso, dopo l'eliminazione dell'header di livello 2, ad IP per il relativo instradamento.

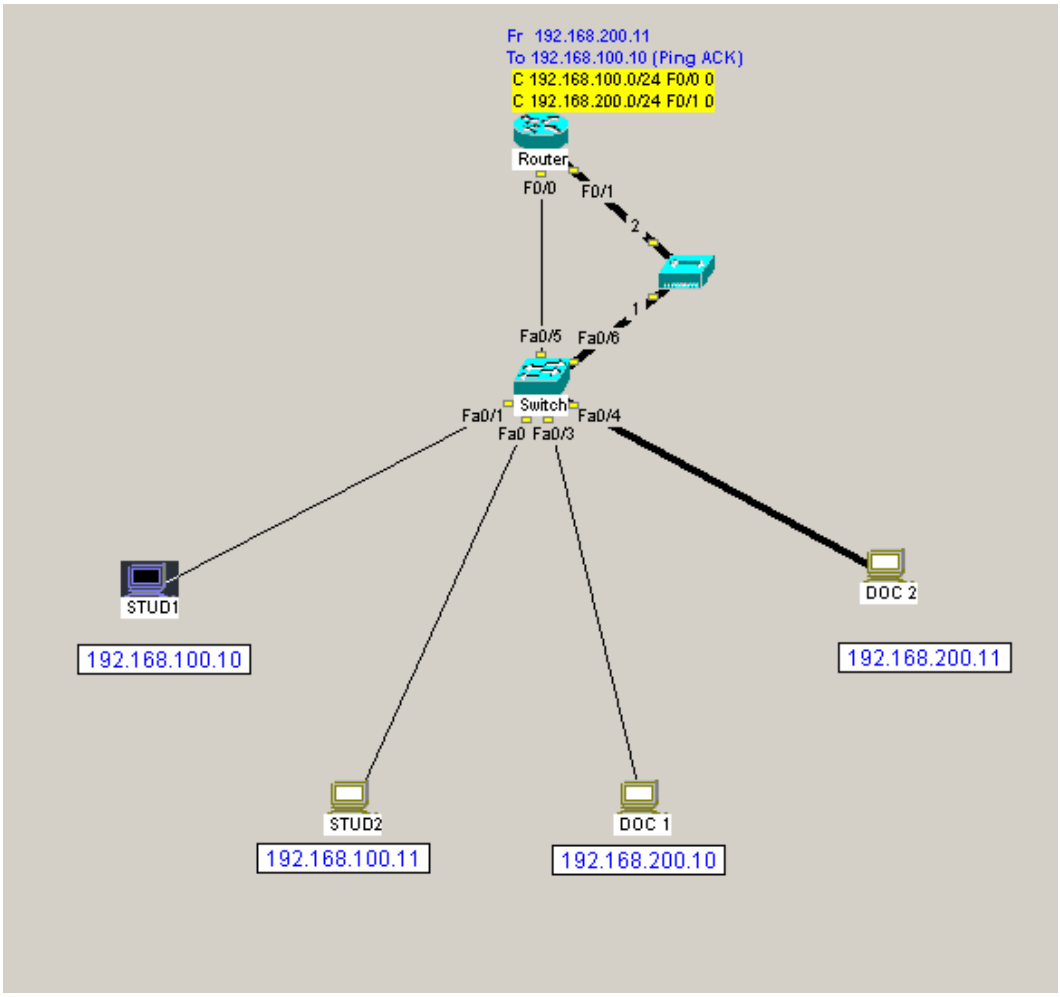
Proviamo ora a pingare dal PC STUD1 il PC DOC1

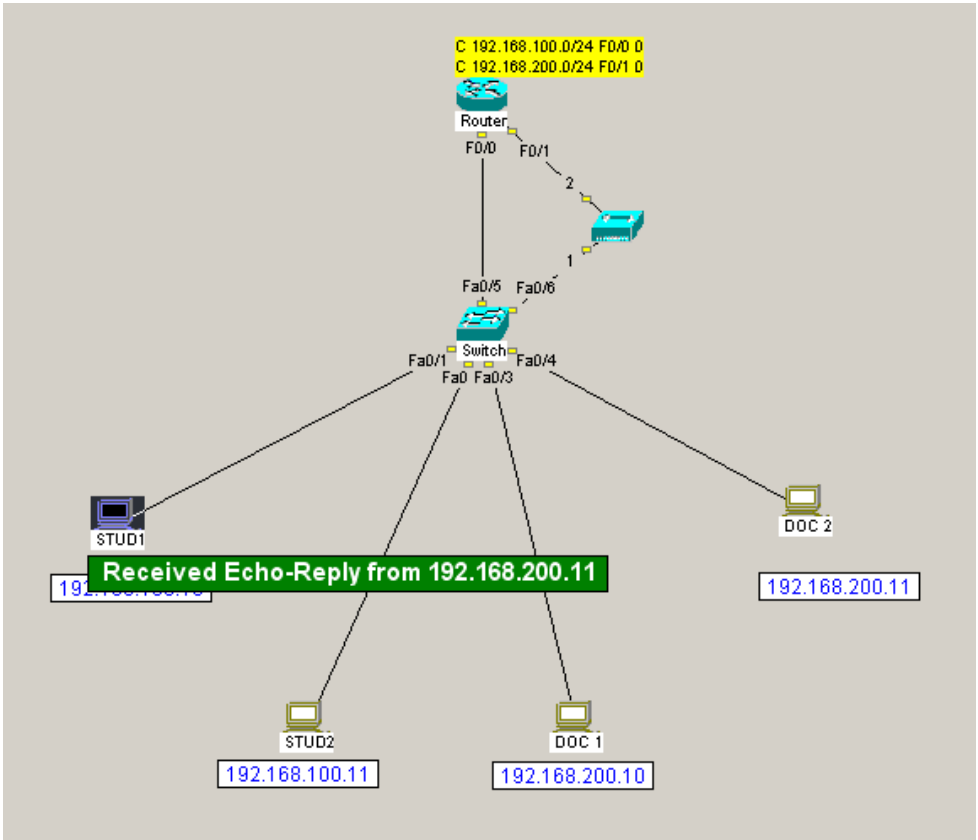
```
C:>ping 192.168.200.11

Pinging 192.168.200.11 with 32 bytes of data:

Ping request timed out.
Reply from 192.168.200.11 on Eth, time<10ms TTL=127
Reply from 192.168.200.11 on Eth, time<10ms TTL=127
Reply from 192.168.200.11 on Eth, time<10ms TTL=127
```

Premendo ora il Tasto F10, e riprovando a pingare dal PC STUD1 il PC DOC1, possiamo vedere graficamente il percorso dei pacchetti.

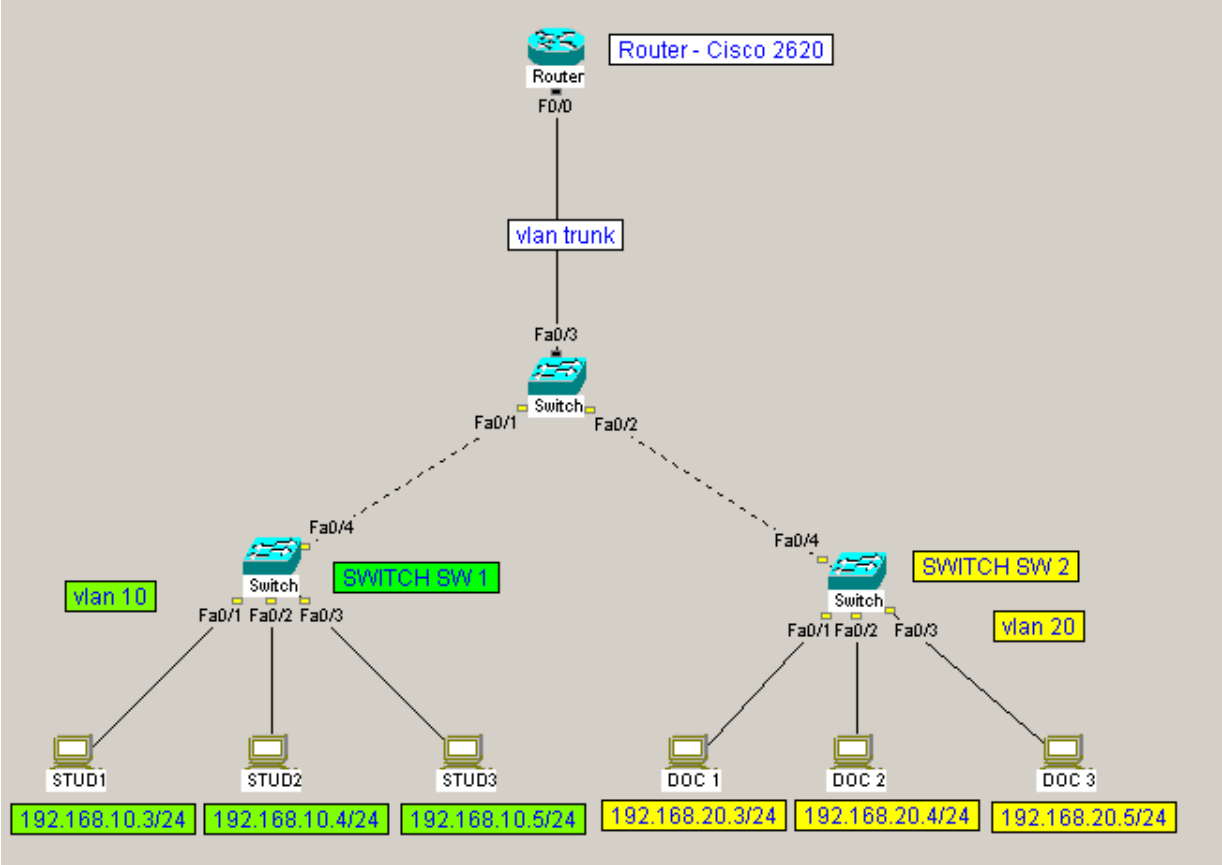

Fr 192.168.100.10
To 192.168.200.11 (Ping REQ)
C 192.168.100.0/24 F0/0 0
C 192.168.200.0/24 F0/1 0
Router
F0/0
F0/1
2
1
Fa0/5
Fa0/6
Switch
Fa0/1
Fa0
Fa0/3
Fa0/4
STUD1
192.168.100.10
DOC 2
192.168.200.11
STUD2
192.168.100.11
DOC 1
192.168.200.10


C 192.168.100.0/24 F0/0 0
C 192.168.200.0/24 F0/1 0
Router
F0/0
F0/1
2
1
Fa0/5
Fa0/6
Switch
Fa0/1
Fa0
Fa0/3
Fa0/4
STUD1
192.168.100.10
DOC 2
Received Echo-Request from 192.168.100.10
192.168.200.11
STUD2
192.168.100.11
DOC 1
192.168.200.10


Fr 192.168.200.11
To 192.168.100.10 (Ping ACK)
C 192.168.100.0/24 F0/0 0
C 192.168.200.0/24 F0/1 0
Router
F0/0
F0/1
2
1
Fa0/5
Fa0/6
Switch
Fa0/1
Fa0
Fa0/3
Fa0/4
STUD1
192.168.100.10
DOC 2
192.168.200.11
STUD2
192.168.100.11
DOC 1
192.168.200.10


C 192.168.100.0/24 F0/0 0
C 192.168.200.0/24 F0/1 0
Router
F0/0
F0/1
2
1
Fa0/5
Fa0/6
Switch
Fa0/1
Fa0
Fa0/3
Fa0/4
STUD1
Received Echo-Reply from 192.168.200.11
DOC 2
192.168.200.11
STUD2
192.168.100.11
DOC 1
192.168.200.10

ESERCIZIO N. 3
INTRA-VLAN ROUTING "On a Stick with trunk"



DESCRIZIONE:

Si vuole costruire una rete, dove vi siano due VLAN (Studenti e Docenti), e si vuole far in modo che comunque sia possibile effettuare traffico da una VLAN all'altra.

Diamo gli IP a tutti i PC, poi

configuriamo la VLAN studenti sullo Switch, SW1:

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name studenti
Switch(config-vlan)#interface F0/1
Switch(config-if)#switchport access vlan 10
Switch(config-if)#interface F0/2
Switch(config-if)#switchport access vlan 10
Switch(config-if)#interface F0/3
Switch(config-if)#switchport access vlan 10
Switch(config-if)#interface F0/4
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#exit
Switch#show vlan

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
10   studenti                          active    Fa0/1, Fa0/2, Fa0/3, Fa0/4

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
10   enet  100010     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
------- --------- ----------------- ------------------------------------------
```

Configuriamo poi la VLAN docenti sullo Switch, SW2:

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 20
Switch(config-vlan)#name docenti
Switch(config-vlan)#interface F0/1
Switch(config-if)#switchport access vlan 20
Switch(config-if)#interface F0/2
Switch(config-if)#switchport access vlan 20
Switch(config-if)#interface F0/3
Switch(config-if)#switchport access vlan 20
Switch(config-if)#interface F0/4
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#exit
Switch#show vlan

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
20   docenti                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4

1002 fddi-default                      act/unsup
1003 token-ring-default                act/unsup
1004 fddinet-default                   ac
1005 trnet-default                     act/unsup

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
--More--20   enet  100020     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
------- --------- ----------------- ------------------------------------------
```

Configuriamo ora lo switch centrale:

Creiamo le due VLAN:

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name studenti
Switch(config-vlan)#exit
Switch(config)vlan 20
Switch(config-vlan)#name docenti
Switch(config-vlan)#exit
Switch(config)#
```

Associamo le due porte che collegano gli switch di secondo livello rispettivamente alla vlan studenti e alla vlan docenti:

```
Switch(config)#interface F0/1
Switch(config-if)#switchport access vlan 10

Switch(config-if)#interface F0/2
Switch(config-if)#switchport access vlan 20

Switch(config-if)#exit
```

Impostiamo la porta che si collega al Router in “trunk mode”:

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface F0/3
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#exit
```

Verifichiamo di aver impostato tutto correttamente:

```
Switch#show vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/4, 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
10   studenti                          active    Fa0/1
20   docenti                           active    Fa0/2
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
10   enet  100010     1500  -      -      -        -    -        0      0
20   enet  100020     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
------- --------- ----------------- ------------------------------------------
```

Infine programmiamo il Router in modo che faccia routing tra le due VLAN:

Per fare questo si devono creare due sottointerfacce dell'interfaccia a cui è collegato il trunk proveniente dallo switch, e si devono impostare gli ip delle sottointerfacce in modo tale che facciano da default gateway per le due VLAN.

```
Router>enable
Router#configure terminal
Router(config)#interface FastEthernet0/0.1
```

Specifichiamo tramite quale protocollo di incapsulazione utilizzeremo e l'ID della VLAN associata tramite il comando:

encapsulation dot1q <vlanID [native]>

```
Router(config-subif)#encapsulation dot1q 10
```

Impostiamo l'indirizzo IP

```
Router(config-subif)#ip address 192.168.10.1 255.255.255.0
```

Configuriamo anche la seconda sottointerfaccia:

```
Router(config)#interface FastEthernet0/0.2
Router(config-subif)#encapsulation dot1q 20
Router(config-subif)#ip address 192.168.20.1 255.255.255.0
Router(config-subif)#exit
Router(config)#exit
```

Infine bisogno attivare l'interfaccia F0/0

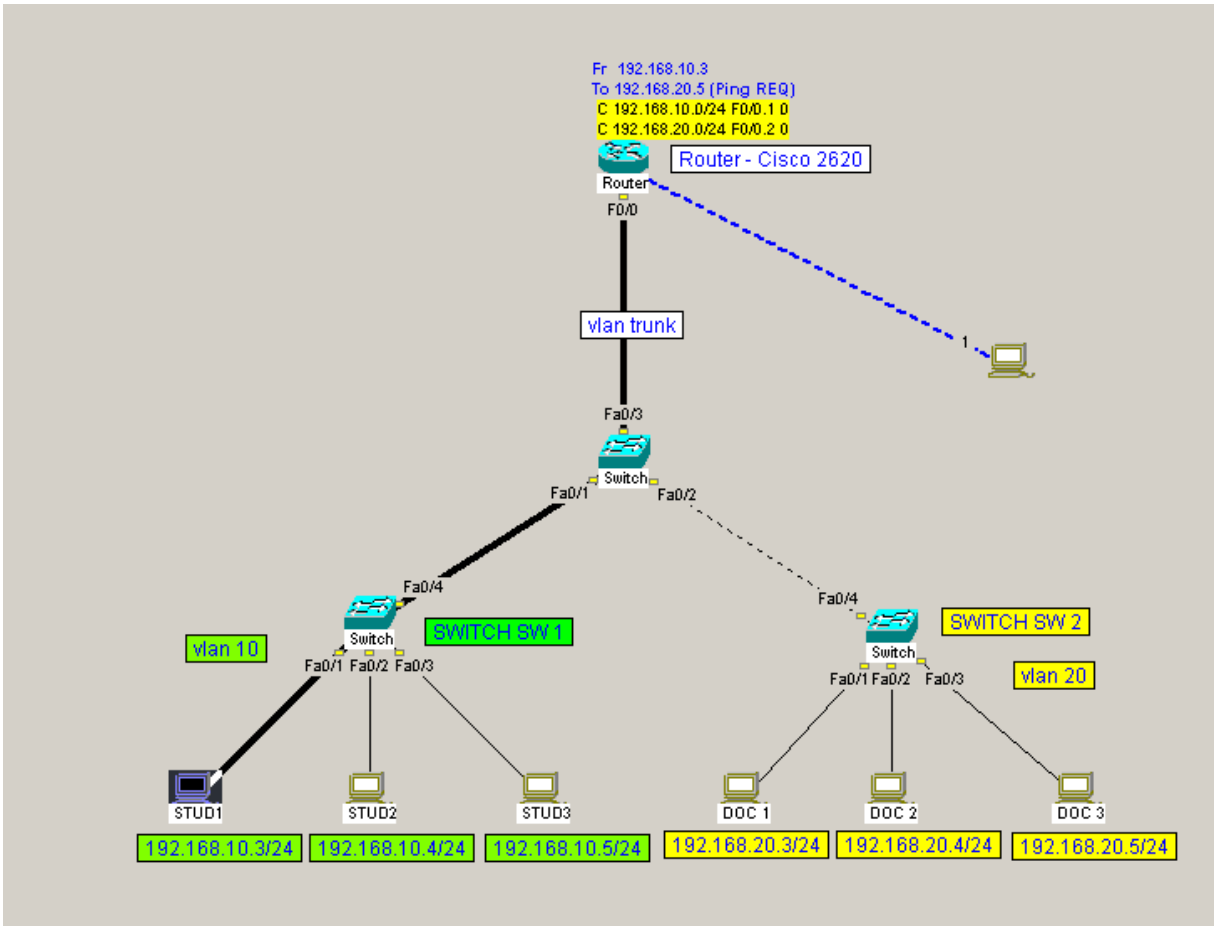
```
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LDXX - Line protocol on Interface FastEthernet0/0.1, changed state to up
%LDXX - Line protocol on Interface FastEthernet0/0.2, changed state to up
%LDXX - Line protocol on Interface FastEthernet0/0, changed state to up
```

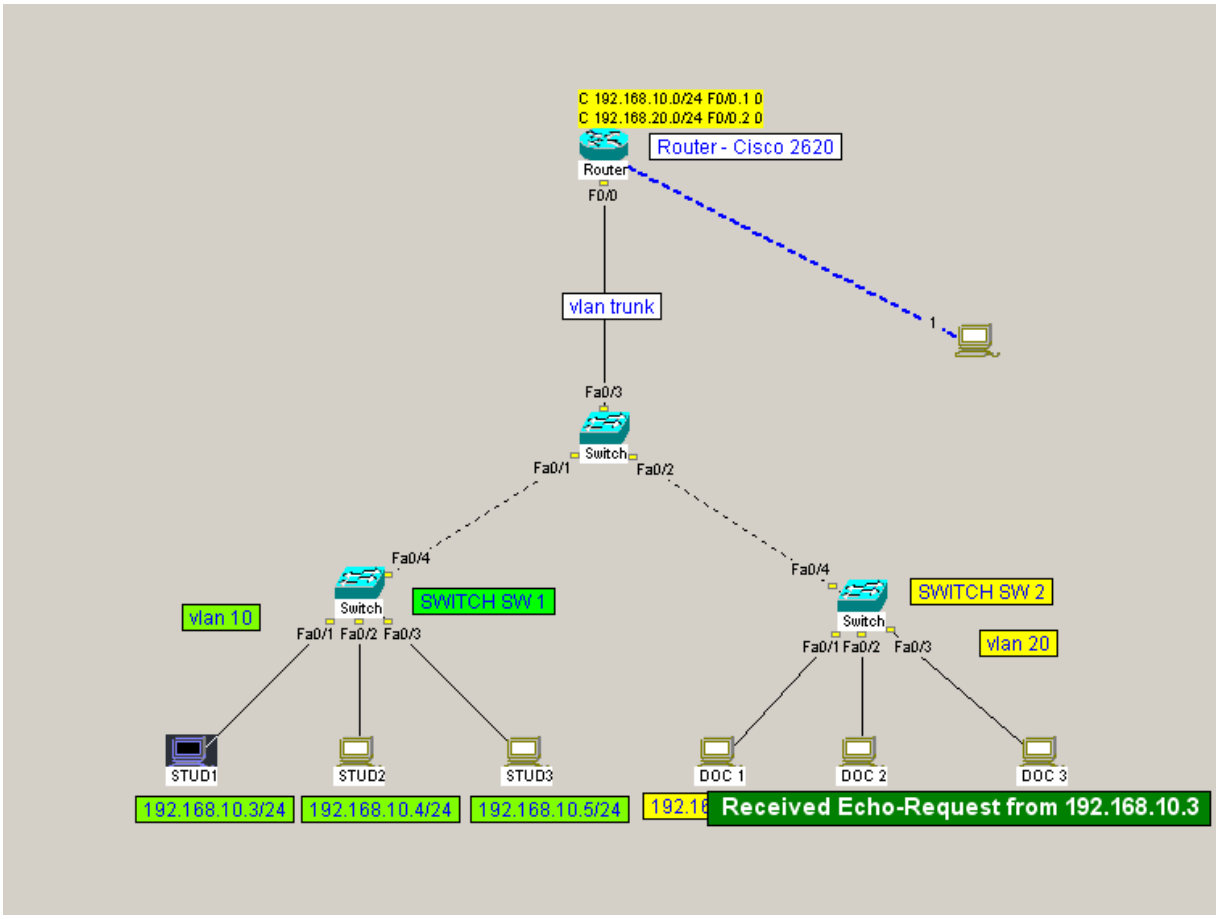
Ora impostiamo i default gateway sui PC: per i PC nella VLAN studenti mettiamo come default gateway l'indirizzo 192.168.10.1 e per i PC nella VLAN docenti l'indirizzo di default gateway 192.168.20.1

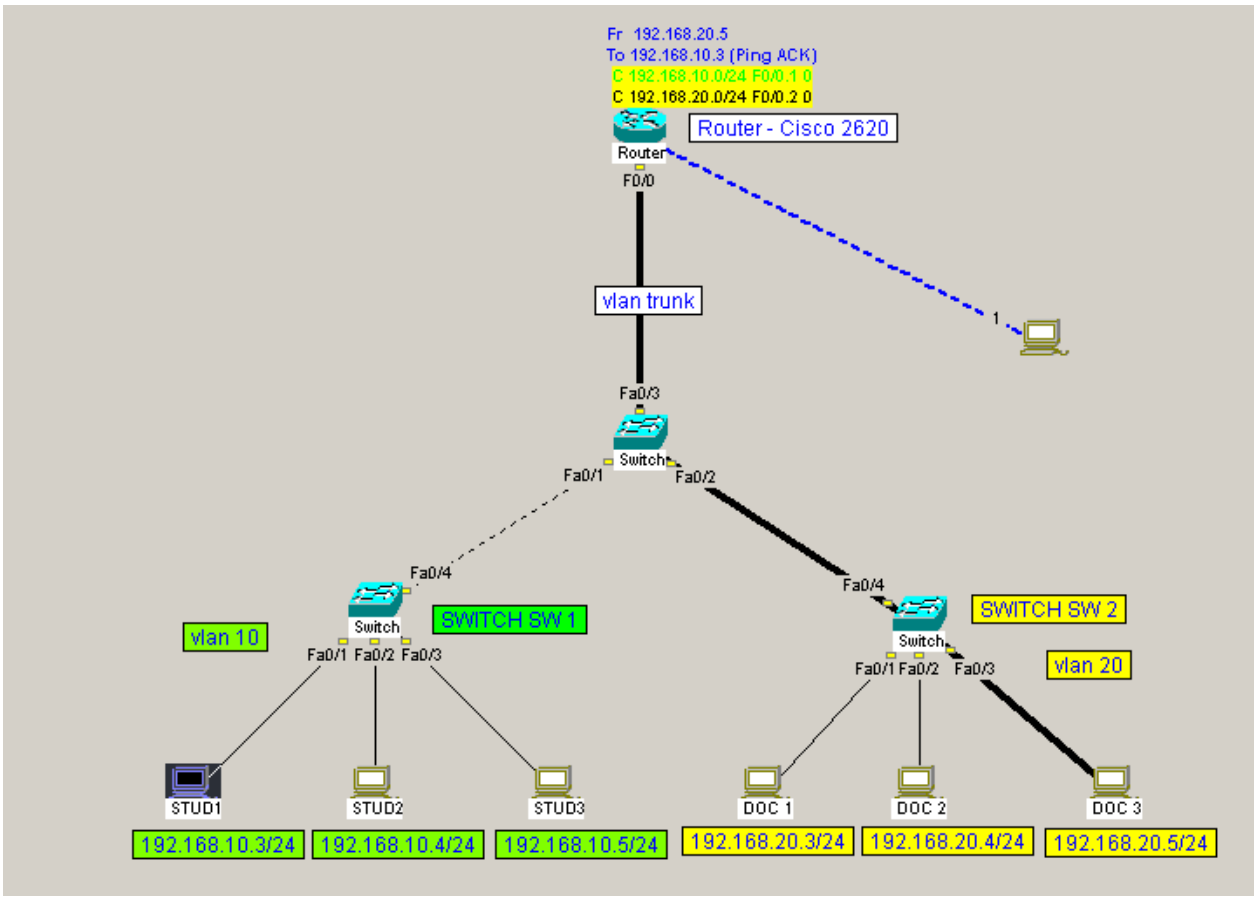
Proviamo ora a pingare dal PC STUD1 il PC DOC3

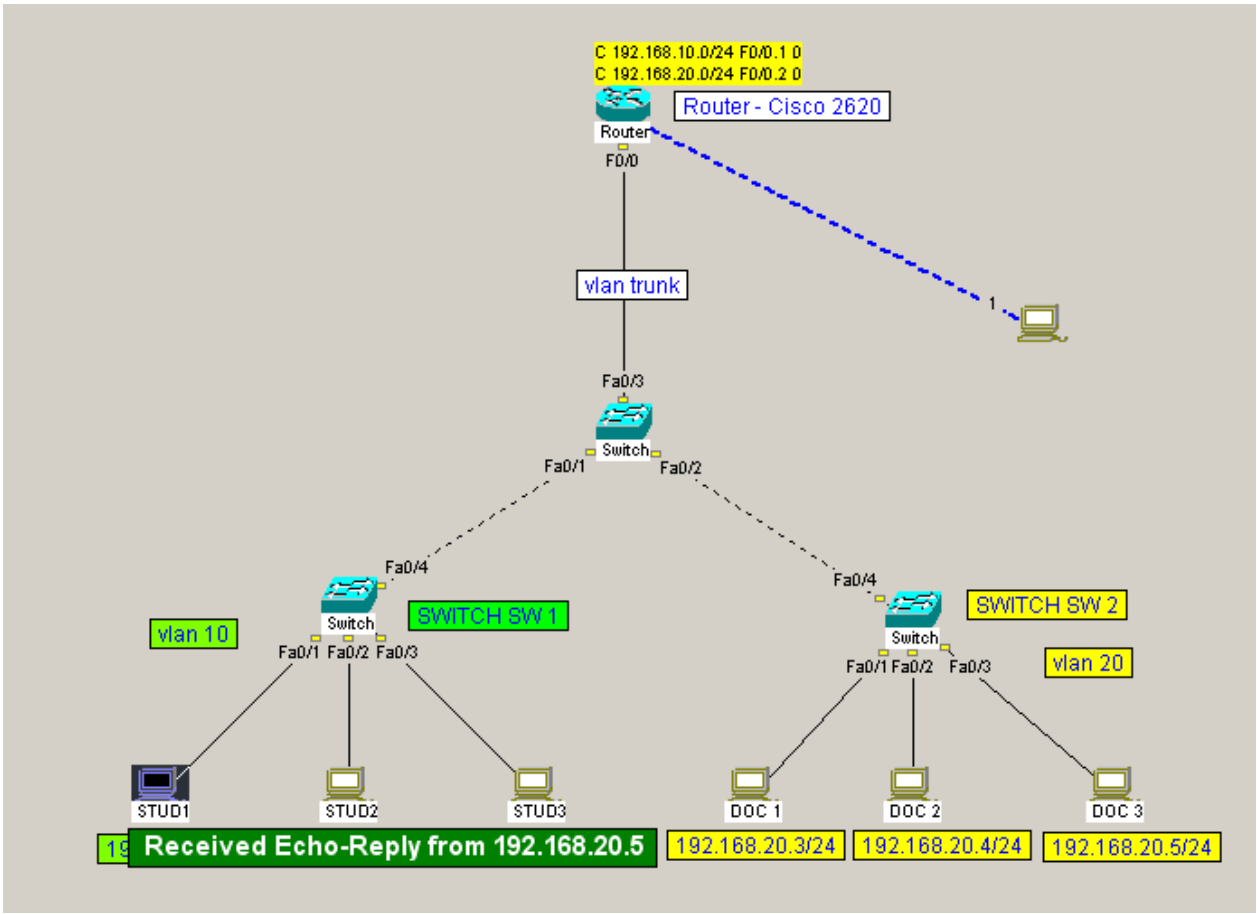
```
C:>ping 192.168.20.5

Pinging 192.168.20.5 with 32 bytes of data:

Reply from 192.168.20.5 on Eth, time<10ms TTL=127
Reply from 192.168.20.5 on Eth, time<10ms TTL=127
Reply from 192.168.20.5 on Eth, time<10ms TTL=127
Reply from 192.168.20.5 on Eth, time<10ms TTL=127
```

Premendo ora il Tasto F10, e riprovando a pingare dal PC STUD1 il PC DOC3, possiamo vedere graficamente il percorso dei pacchetti.


Fr 192.168.10.3
To 192.168.20.5 (Ping REQ)
C 192.168.10.0/24 F0/0.1 0
C 192.168.20.0/24 F0/0.2 0
Router - Cisco 2620
Router
F0/0
vlan trunk
1
Fa0/3
Switch
Fa0/1
Fa0/2
Fa0/4
Switch
SWITCH SW 1
vlan 10
Fa0/1 Fa0/2 Fa0/3
Fa0/4
Switch
SWITCH SW 2
Fa0/1 Fa0/2 Fa0/3
vlan 20
STUD1
STUD2
STUD3
DOC 1
DOC 2
DOC 3
192.168.10.3/24
192.168.10.4/24
192.168.10.5/24
192.168.20.3/24
192.168.20.4/24
192.168.20.5/24


C 192.168.10.0/24 F0/0.1 0
C 192.168.20.0/24 F0/0.2 0
Router - Cisco 2620
Router
F0/0
vlan trunk
1
Fa0/3
Switch
Fa0/1
Fa0/2
Fa0/4
Switch
SWITCH SW 1
vlan 10
Fa0/1 Fa0/2 Fa0/3
Fa0/4
Switch
SWITCH SW 2
Fa0/1 Fa0/2 Fa0/3
vlan 20
STUD1
STUD2
STUD3
DOC 1
DOC 2
DOC 3
192.168.10.3/24
192.168.10.4/24
192.168.10.5/24
Received Echo-Request from 192.168.10.3


Fr 192.168.20.5
To 192.168.10.3 (Ping ACK)
C 192.168.10.0/24 F0/0.1 0
C 192.168.20.0/24 F0/0.2 0
Router - Cisco 2620
Router
F0/0
vlan trunk
1
Fa0/3
Switch
Fa0/1
Fa0/2
Fa0/4
Switch
SWITCH SW 1
vlan 10
Fa0/1 Fa0/2 Fa0/3
Fa0/4
Switch
SWITCH SW 2
Fa0/1 Fa0/2 Fa0/3
vlan 20
STUD1
STUD2
STUD3
DOC 1
DOC 2
DOC 3
192.168.10.3/24
192.168.10.4/24
192.168.10.5/24
192.168.20.3/24
192.168.20.4/24
192.168.20.5/24


C 192.168.10.0/24 F0/0.1 0
C 192.168.20.0/24 F0/0.2 0
Router - Cisco 2620
Router
F0/0
vlan trunk
1
Fa0/3
Switch
Fa0/1
Fa0/2
Fa0/4
Switch
SWITCH SW 1
vlan 10
Fa0/1 Fa0/2 Fa0/3
Fa0/4
Switch
SWITCH SW 2
Fa0/1 Fa0/2 Fa0/3
vlan 20
STUD1
STUD2
STUD3
DOC 1
DOC 2
DOC 3
Received Echo-Reply from 192.168.20.5
192.168.20.3/24
192.168.20.4/24
192.168.20.5/24