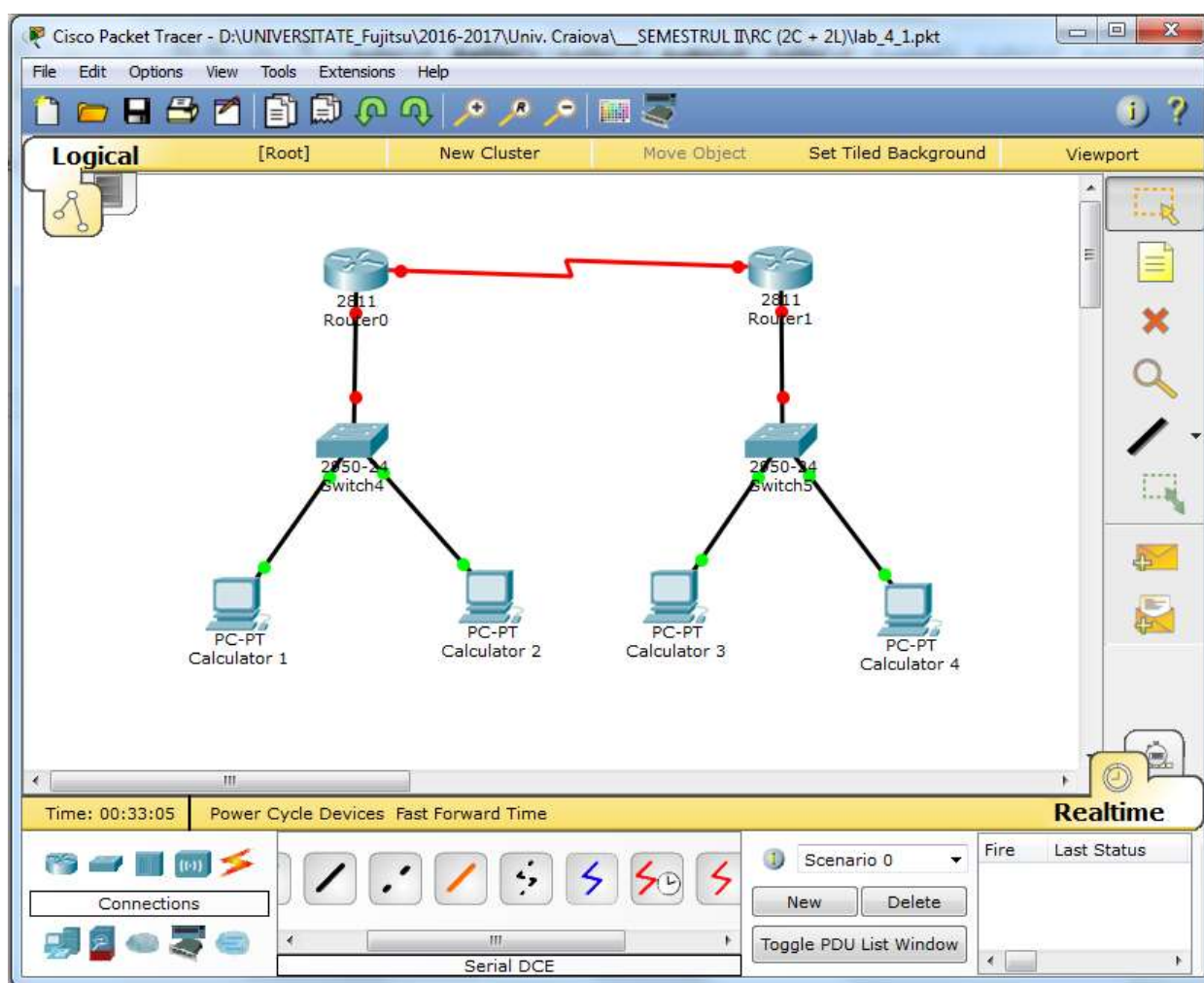




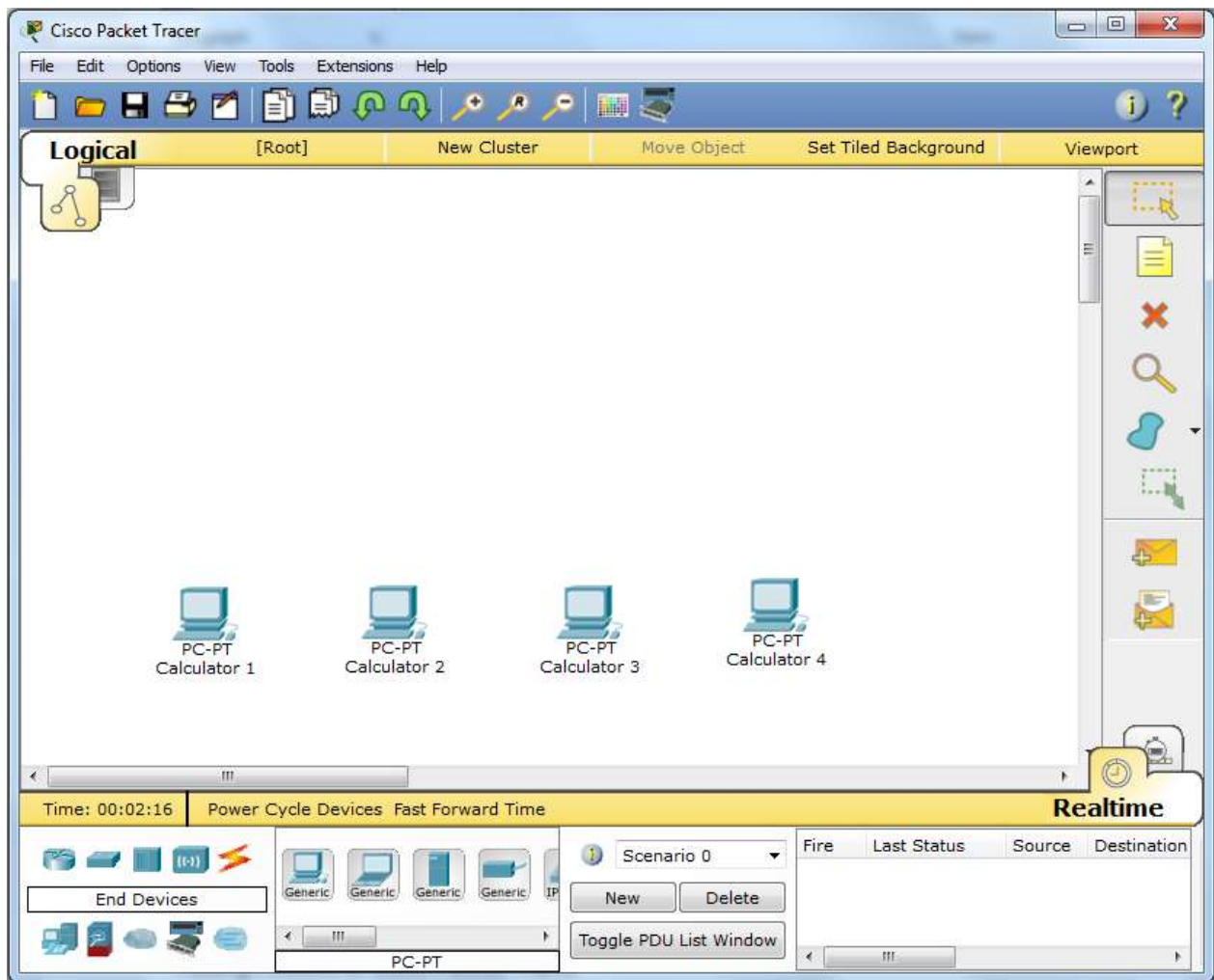
## Laborator 5 – disciplina Rețele de calculatoare

### Configuratii de LAN-uri in Packet Tracer

Exemplul 1: Sa se obtina urmatoarea configuratie de retea:



Se adauga 4(patru) calculatoare de tip Generic in zona de editare a Packet Tracer si se redenumesc fiecare PC la fel ca in figura urmatoare:

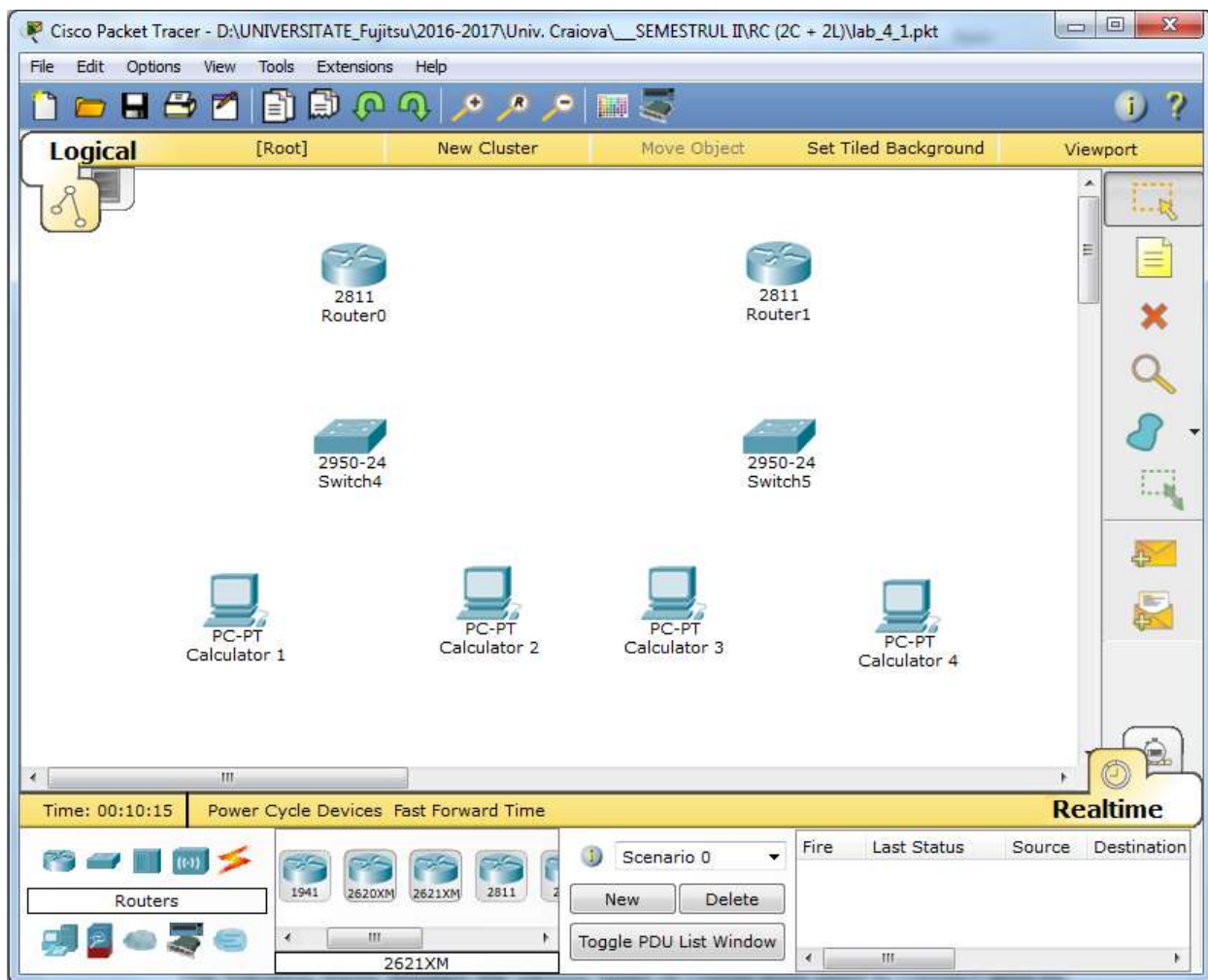


### Adaugarea unor switch-uri

Pentru a adauga un switch in Packet Tracer, apasati icon-ul **Switch**, selectati un tip de switch, si apoi adaugati-l in zona logica. Repetati acelasi pas pentru a adauga un nou switch.

### Adaugarea unor router-e

Pentru a adauga un router in Packet Tracer, apasati icon-ul **Router**, selectati un tip de router, cum ar 2811, si apoi adaugati-l in zona logica. Repetati acelasi pas pentru a adauga un nou router.



Cateva elemente de identificare vizuala a [tipurilor de cabluri](#) ce pot fi folosite in Packet Tracer:

Pentru a conecta echipamente in simulatorul Packet Tracer, trebuie sa intelegem tipurile de cabluri (conectori) ce se utilizeaza frecvent:

**Straight-through:** Se utilizeaza pentru a conecta tipuri diferite de echipamente de retea (adica echipamente care folosesc standarde de conectare diferite), cum ar Router-la-Switch si Switch-la-PC.

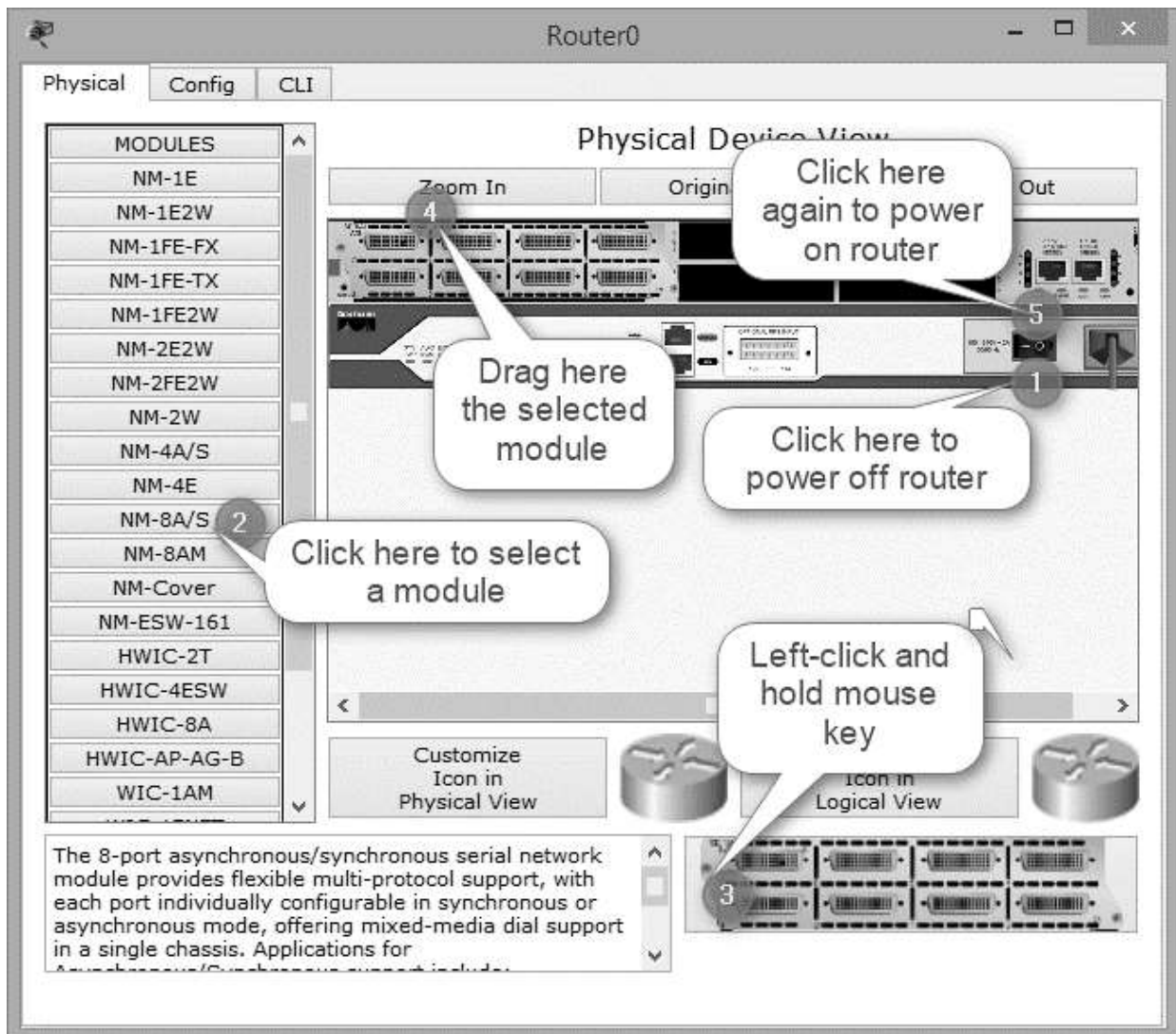
**Cross-over:** Se utilizeaza pentru conectarea echipamentelor de acelasi tip, cum ar fi Router-la-Router, PC-la-PC, si Switch-la-Switch.

**Serial DCE:** Se utilizeaza pentru a conecta Router-la-Router intr-o retea WAN.

**Console:** Se utilizeaza pentru a accesa consola (folosind terminale hiper) unui router pe un PC

Pentru a vizualiza tipurile de conectori, apasati pe icon-ul [Connections](#).

Am selectat, pentru acest exemplu, un router modular (care permite modificarea numarului de interfețe). Astfel putem sa-l configuram inainte de a-l conecta la alte dispozitive. Pentru aceasta, dublu-click pe Router0, iar pe tab-ul **Physical** efectueam cei 5 pasi care sunt precizati in imaginea urmatoare:

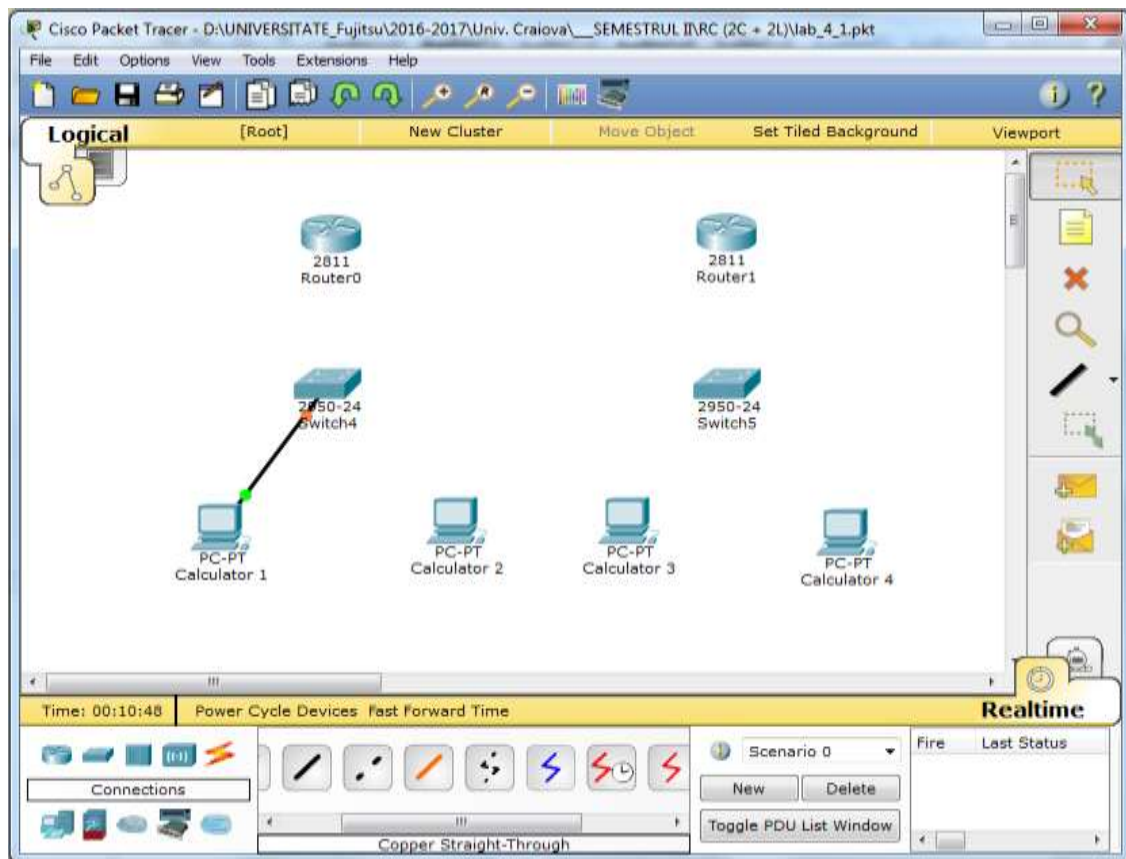


Pentru router-ul Router1 efectueam aceiasi pasi.

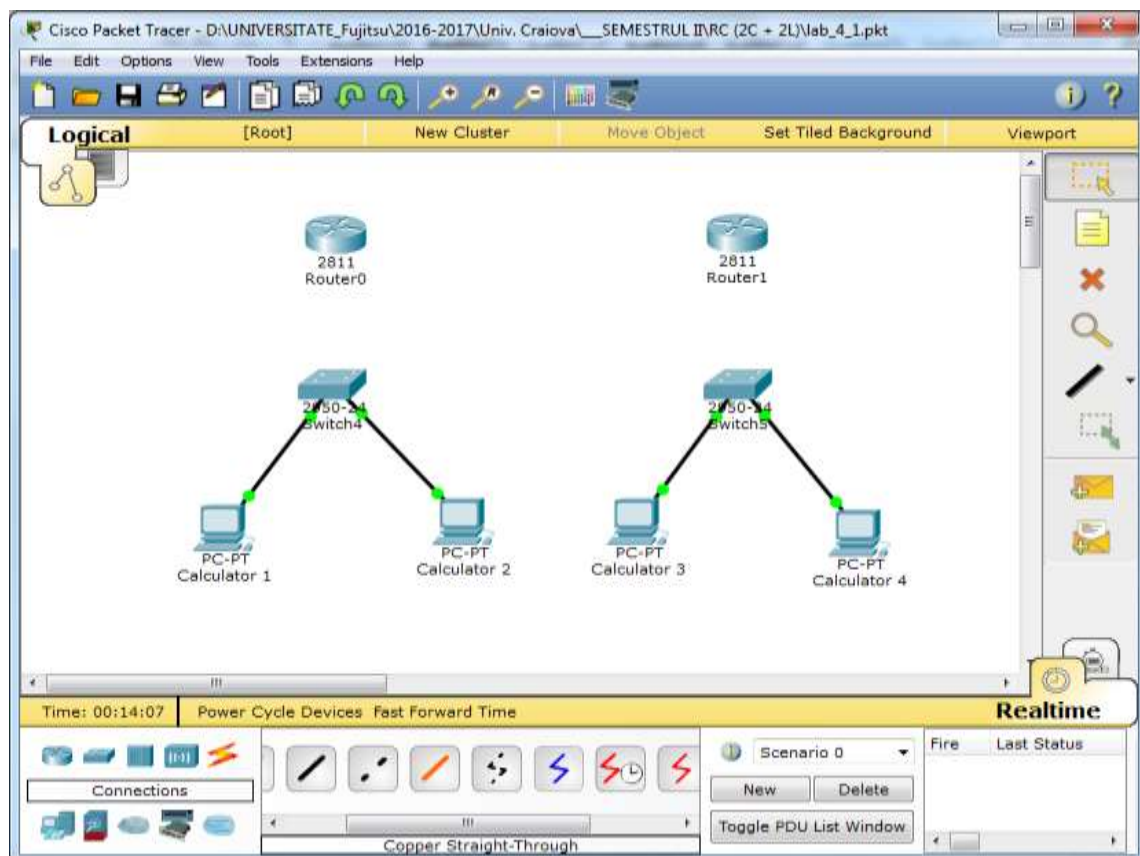
### Conectarea echipamentelor

Pentru a conecta echipamentele, selectam icon-ul **Connections** si alegem tipul de conector dorit. De exemplu, pentru a conecta Calculator1 la Switch0, selectam cablul straight-through, click pe Calculator1, selectam interfața FastEthernet0. Apoi, click pe Switch0 si selectam interfața FastEthernet0/1.





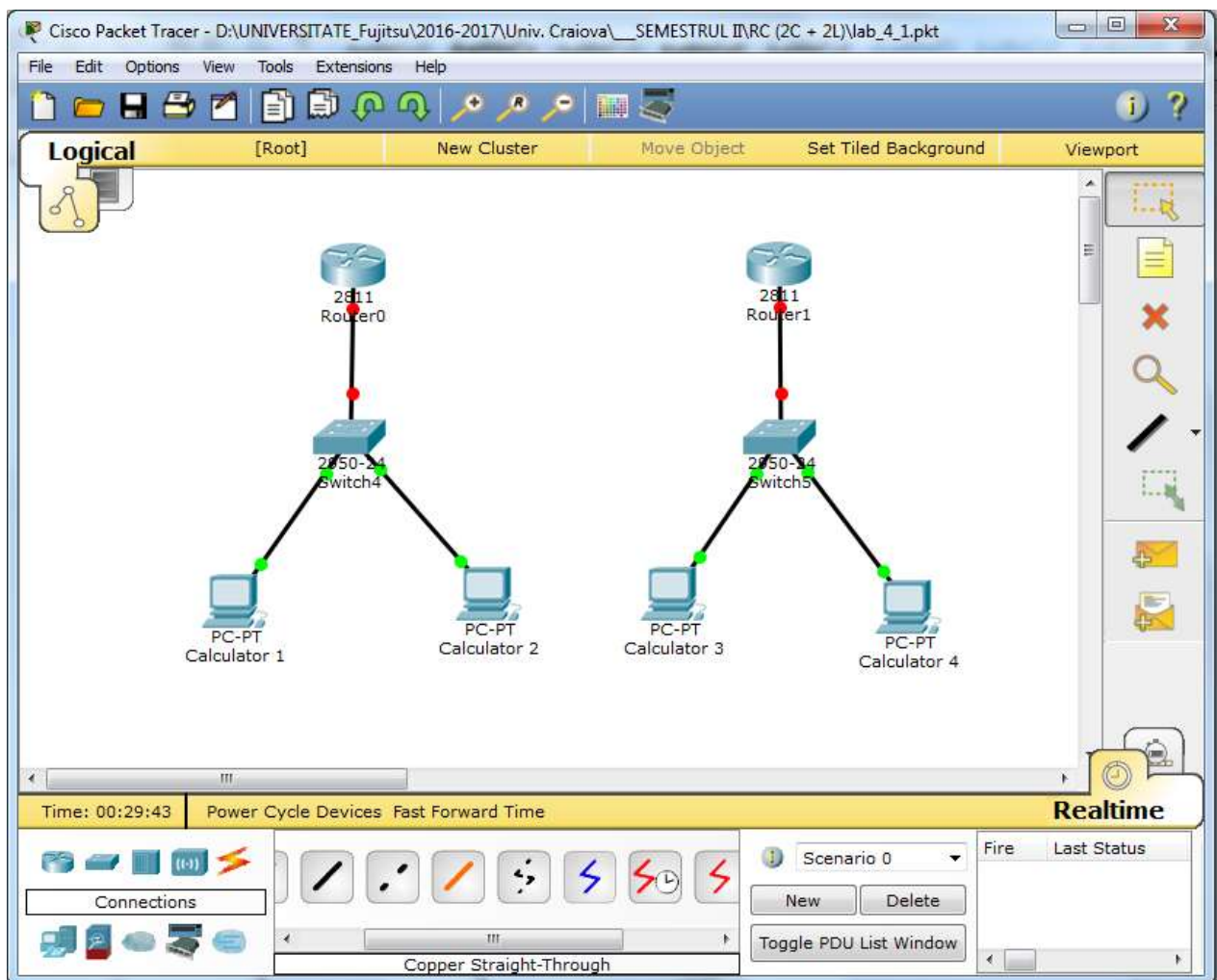
La fel, adaugam Calculator2 la Switch0 folosind interfata FastEthernet0/2. Mai departe, adaugam Calculator3 si Calculator4 la interfetele FastEthernet0/1 si FastEthernet0/2 ale Switch1:



Dupa conectarea tuturor calculatoarelor la cele 2 switch-uri, putem conecta Switch0 la Router0 si Switch1 la Router1 folosind cabluri straight-through. Pentru aceasta operatie se parcurg urmasorii pasi:

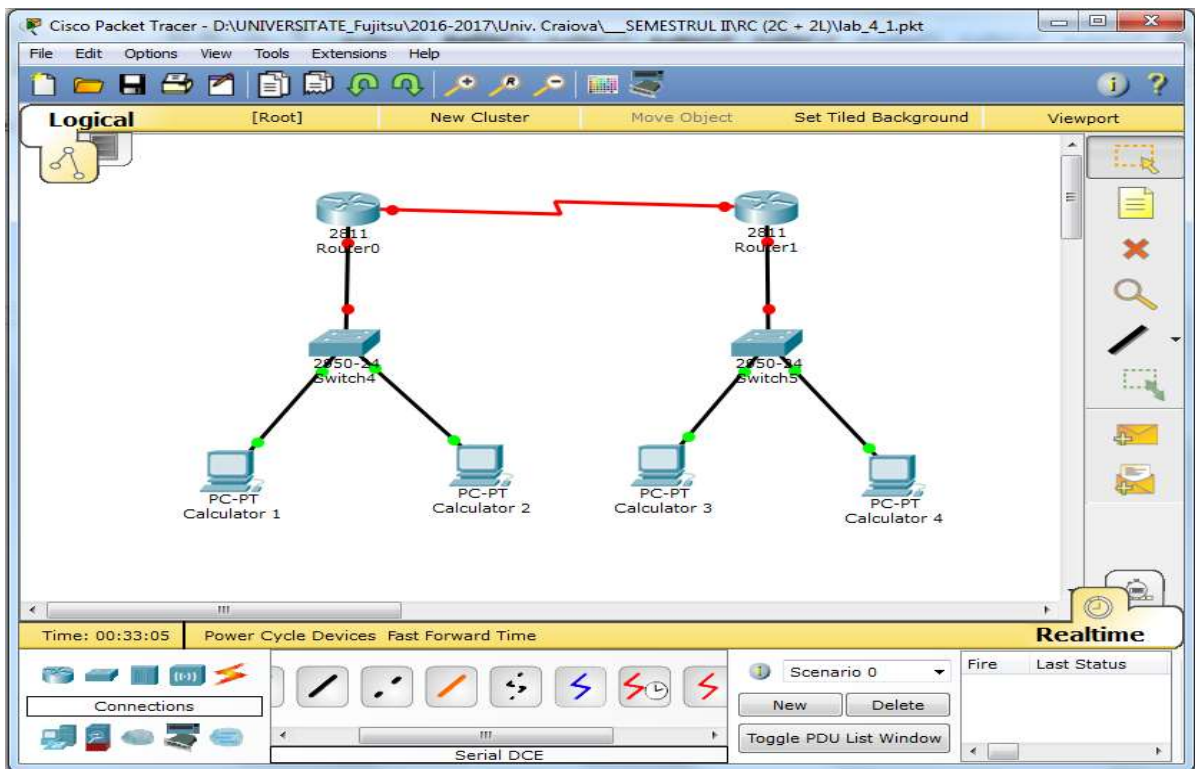
1. Se selecteaza cablul straight-through, click pe Switch0 si apoi se selecteaza interfata FastEthernet0/3. Click pe Router0 si se selecteaza interfata FastEtehrnet0/0.
2. Se selecteaza cablul straight-through, click pe Switch1 si apoi se selecteaza interfata FastEthernet0/3. Click pe Router0 si se selecteaza interfata FastEtehrnet0/0.

Urmatoarea imagine arata ca cele doua switch-uri sunt conectate, fiecare la cate un router:



Acum, se pot conecta cele 2(doua) router-e cu ajutorul unui conector serial:

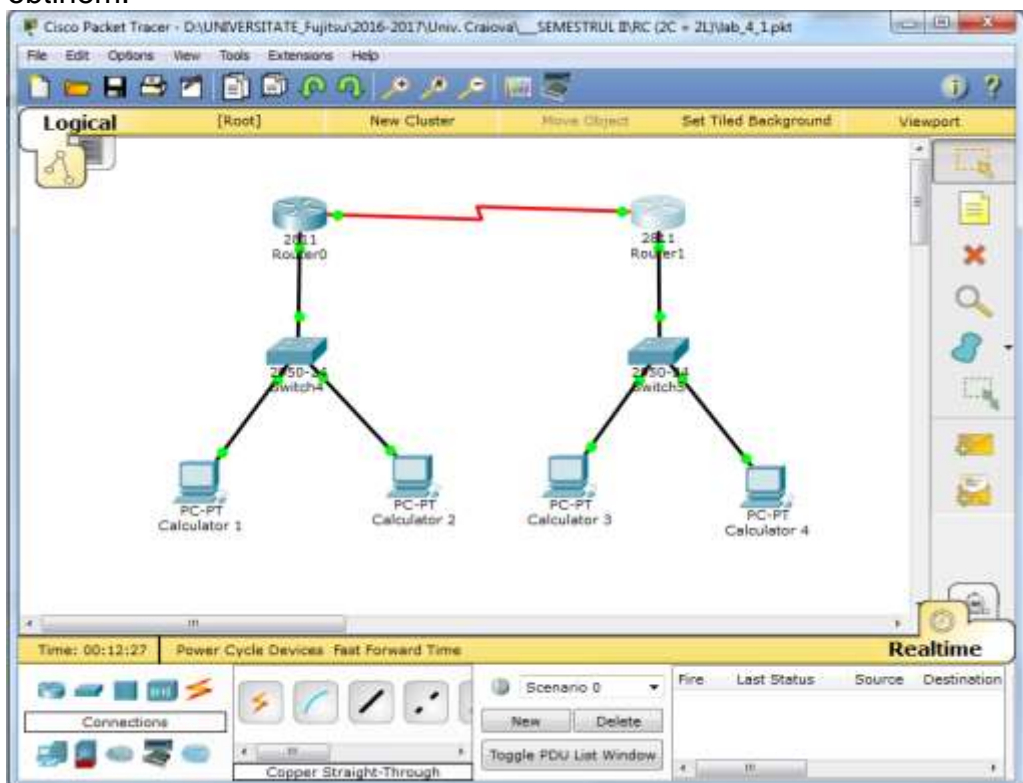
1. Selectati cablul **Serial DCE**, click pe Router0 si selectati interfata Serial1/0
2. La fel pentru Router1, selectati interfata Serial1/0



Pentru Router0, setam legatura spre Router1 prin cablul Serial 1/0 cu adresa IP 10.10.10.1 si subnet mask 255.0.0.0, iar pentru legatura cu Switch0 punem o adresa spre 192.168.5.1. cu subnet mask 255.255.255.0. Nu uitam sa setam Port Status pe On.

Asemnator pentru Router1, stabilim legatura spre Router0 prin cablul Serial 1/0 cu adresa IP 20.20.20.1 si subnet mask 255.0.0.0, iar pentru legatura cu Switch0 punem o adresa spre 192.168.2.1. cu subnet mask 255.255.255.0. Nu uitam sa setam Port Status pe On.

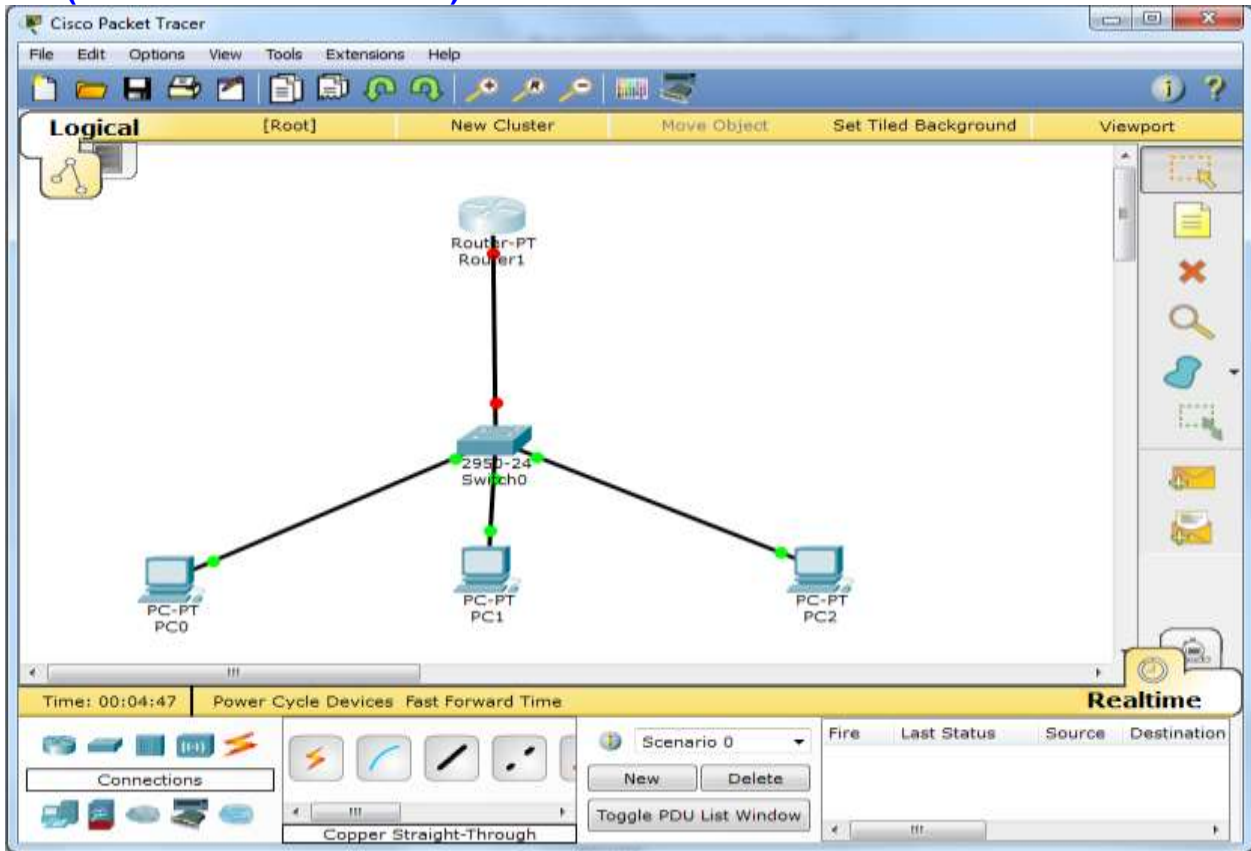
La final obtinem:





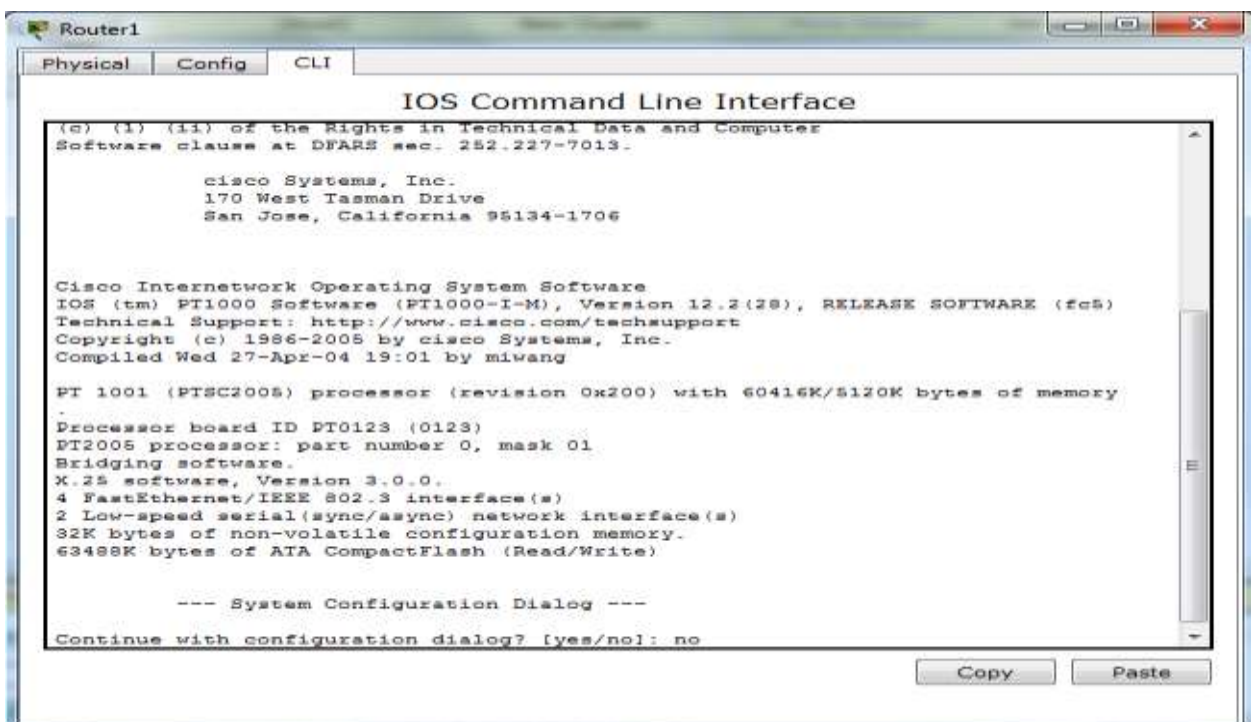
Exemplul 2:

Cum configuram o interfata de retea pe un router/switch din Packet Tracer, folosind **IOS CLI (Command Line Interface)**



Solutie:

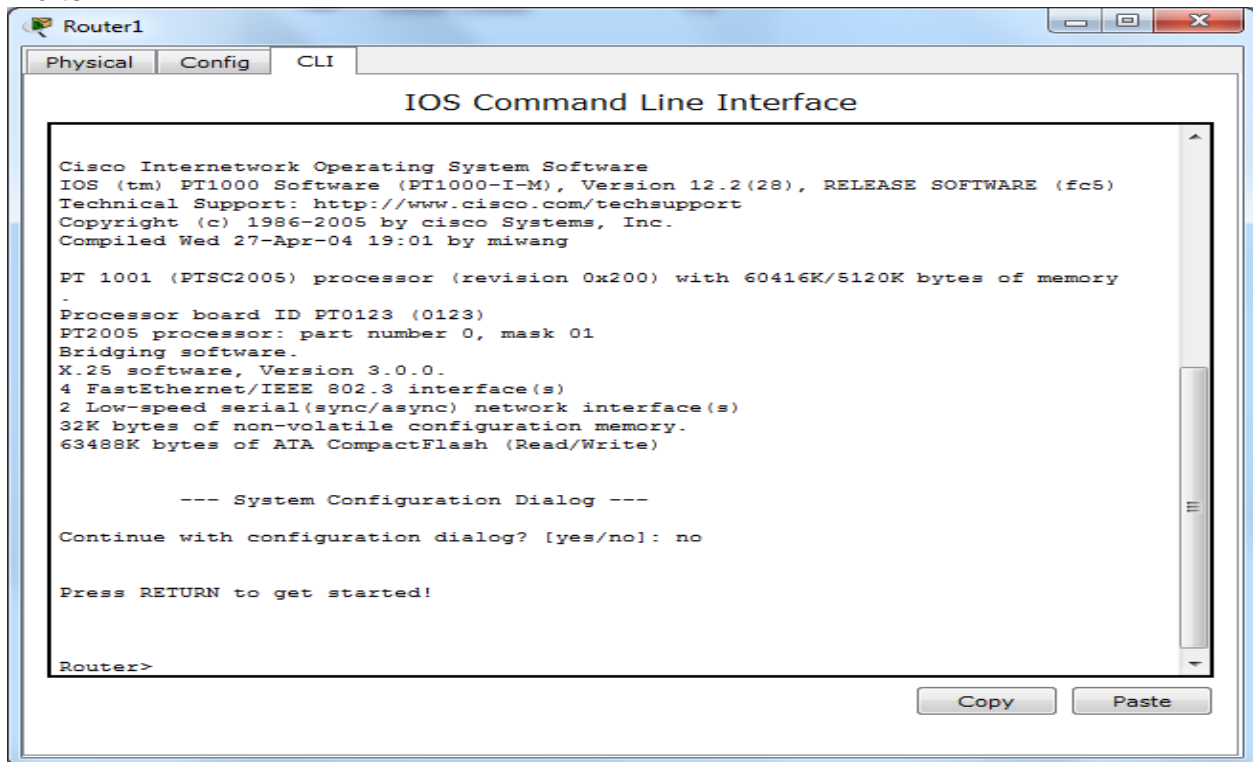
1. Se incepe cu router-ul, se da click stanga pe el, dupa care se scrie **no** si apoi mai apasam o data **enter** ca sa dispara dialogul de configurare al sistemului.





Acum ar trebui sa fim in modul "user exec" in care nu sunt multe actiuni ce pot fi efectuate.

In afara de un ping, traceroute si sa vedeti setarile dispozitivului, nu puteti face prea multe.



```
Router1
Physical Config CLI
IOS Command Line Interface

Cisco Internetwork Operating System Software
IOS (tm) PT1000 Software (PT1000-I-M), Version 12.2(28), RELEASE SOFTWARE (fc5)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Wed 27-Apr-04 19:01 by miwang

PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
-
Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: no

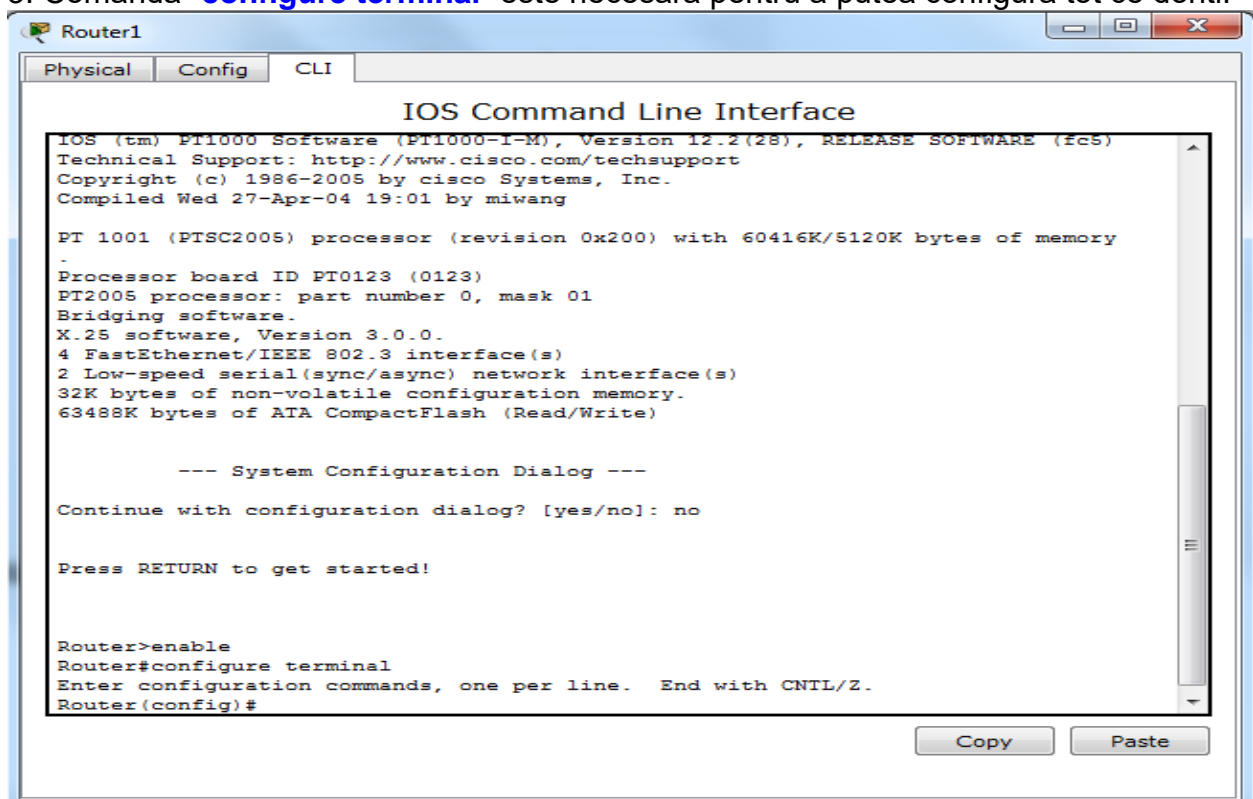
Press RETURN to get started!

Router>
```

2. Se scrie comanda "enable" si se apasa enter.

Sunteti in modul "privileged exec mode", deja aveti acces destul de mare dar nu suficient pentru a configura interfețele router-ului.

3. Comanda "configure terminal" este necesara pentru a putea configura tot ce doriti.



```
Router1
Physical Config CLI
IOS Command Line Interface

IOS (tm) PT1000 Software (PT1000-I-M), Version 12.2(28), RELEASE SOFTWARE (fc5)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Wed 27-Apr-04 19:01 by miwang

PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
-
Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: no

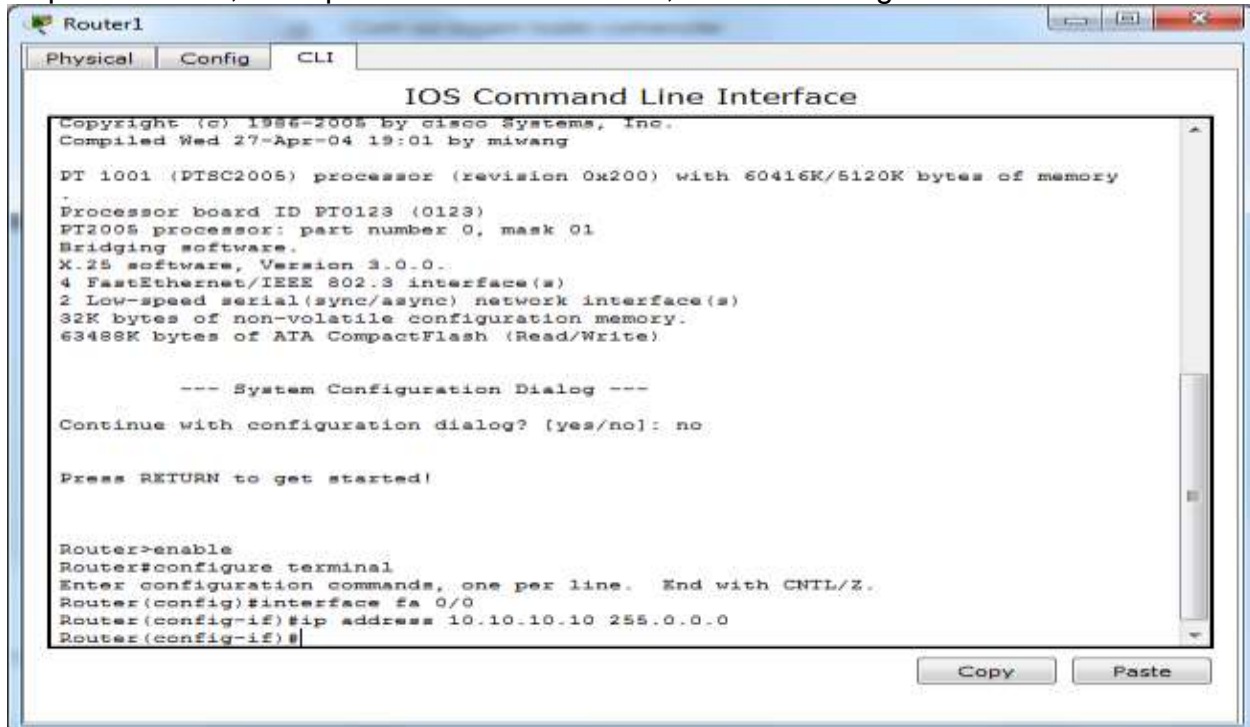
Press RETURN to get started!

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
```

4. Acum ca am ajuns unde trebuie, selectam interfata router-ului care este conectata la switch, cu comanda **"interface fastEthernet 0/0"**

Urmatoarea comanda seteaza adresa IP a router-ului si este **"ip address x.x.x.x"**, unde x este o cifra sau un numar.

Dupa adresa IP, exemplul mai sus **10.10.10.10**, trebuie sa alegem o masca de subretea.



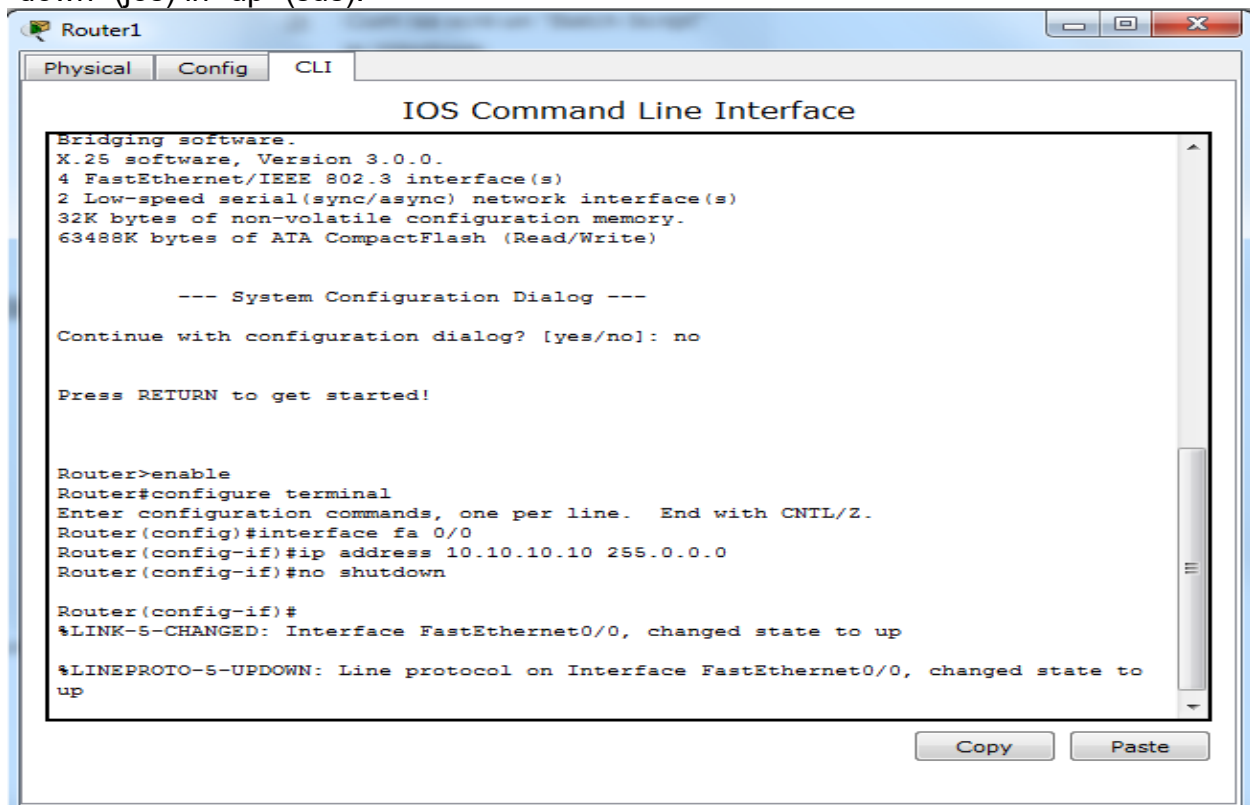
```
Router1
Physical Config CLI
IOS Command Line Interface
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 27-Apr-04 19:01 by miwang
PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
.
Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fa 0/0
Router(config-if)#ip address 10.10.10.10 255.0.0.0
Router(config-if)#
```

5. Ultimul pas este comanda **"no shutdown"** care va schimba statusul interfetei din "down" (jos) in "up" (sus).



```
Router1
Physical Config CLI
IOS Command Line Interface
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: no

Press RETURN to get started!

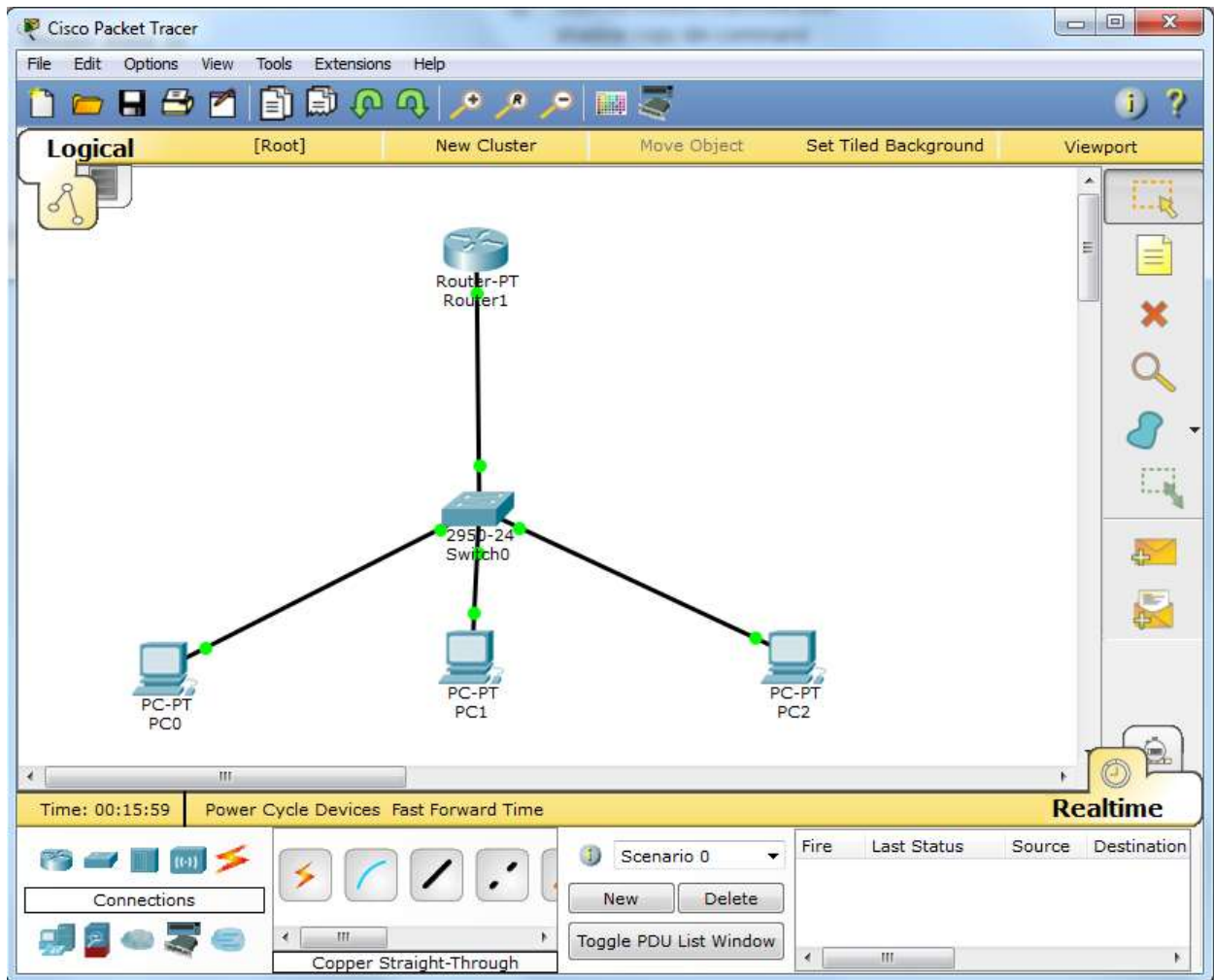
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fa 0/0
Router(config-if)#ip address 10.10.10.10 255.0.0.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

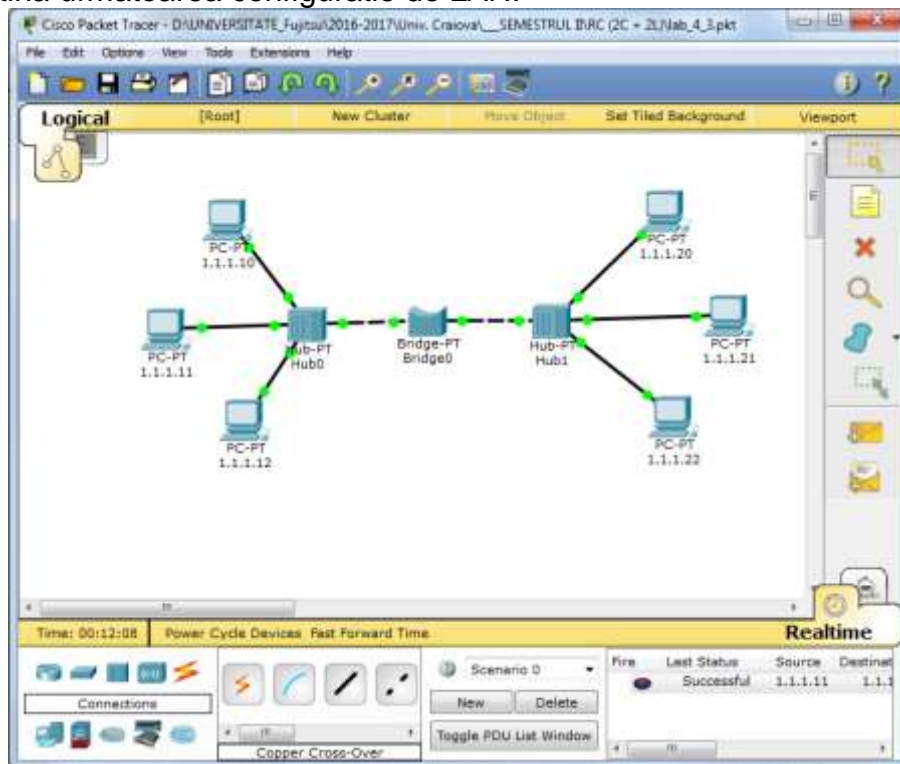
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

Se observa diferenta, totul este verde acum.

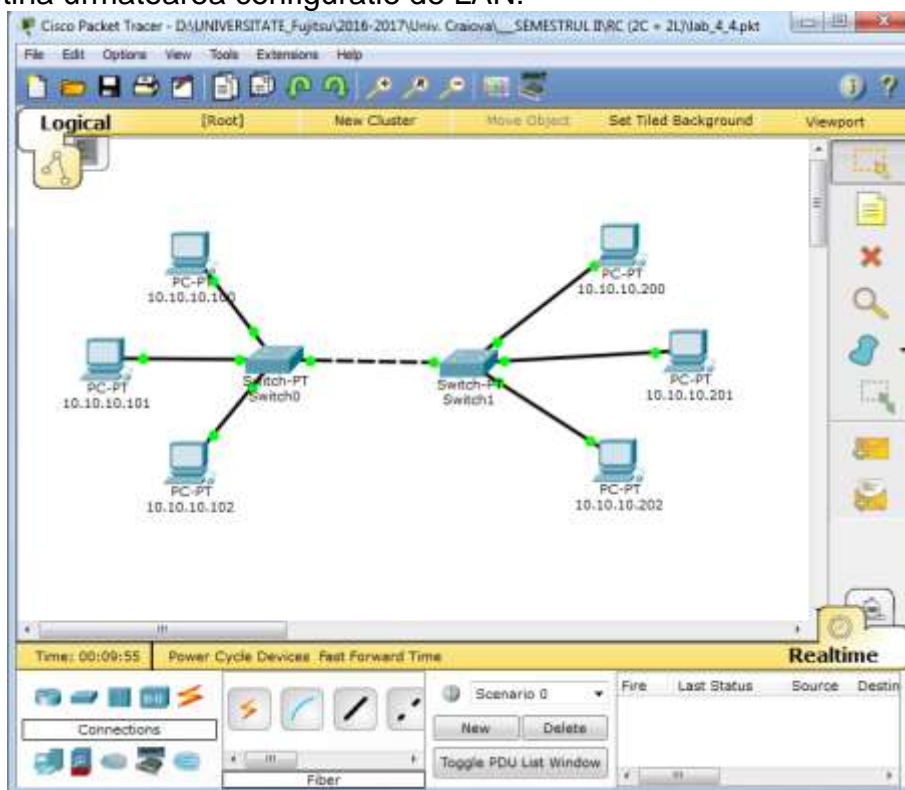
Interfata switch-ului nu se configureaza cu adresa IP si atunci, nu trebuie sa faceti la fel. Ea se ridica singura atunci cand la celalalt capat este o interfata de router configurata sau un alt switch/PC.



1. Sa se executeze cele 2(doua) exemple anterioare
2. Sa se obtina urmatoarea configuratie de LAN:



3. Sa se obtina urmatoarea configuratie de LAN:



#### Bibliografie:

1. <http://calin.comm.pub.ro/Didactice/ARI/ARI.htm> - Disciplina: Arhitecturi de rețele și Internet
2. <http://cs-study.blogspot.ro/2013/03/lab-manual-of-computer-communication.html>
3. <http://protechgurus.com/create-a-network-topology-cisco-packet-tracer/>
4. <http://www.packettracernetwork.com/tutorials/video-tutorials.html>
5. <https://askit.ro/solutii/cum-configuram-o-interfata-de-retea-pe-un-routerswitch-din-packet-tracer/>