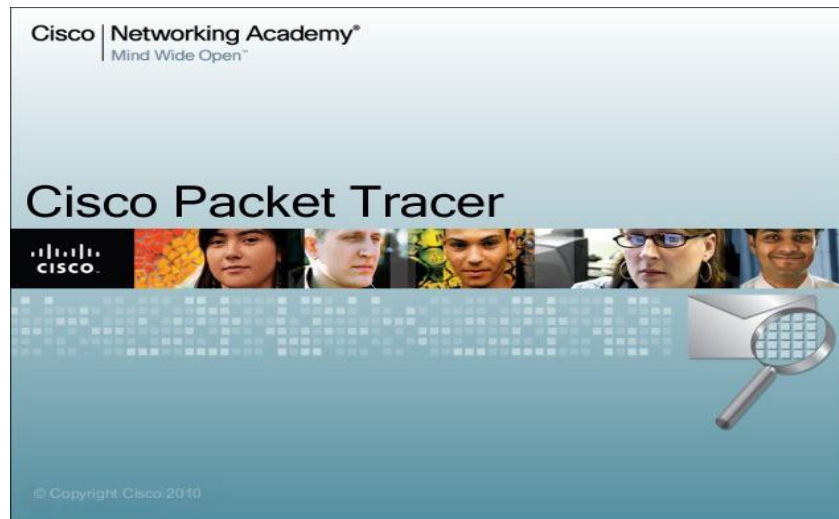


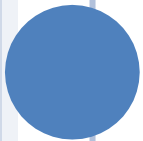
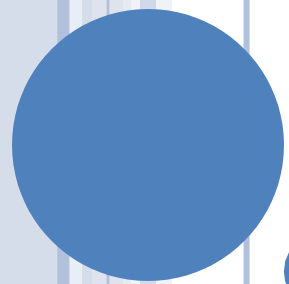


CISCO PACKET TRACER

INTRODUÇÃO

- Packet Tracer v5.3 é um simulador de redes desenvolvido pela Cisco Systems®;
- Capaz de simular o funcionamento de uma rede ethernet de par trançado, wireless (802.11) ou de fibra óptica;





INTERFACE

INSERINDO DISPOSITIVOS

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

Packet Tracer 5.0 Beta

2620XM Router0

Para inserir um dispositivo:

1. Escolha o tipo de dispositivo
2. Escolha o dispositivo
3. Clique na área de trabalho

Time: 00:02:59 Power Cycle Devices **Realtime**

Routers

1841 2620XM 2621XM 2811 Generic Generic

2620XM

Scenario 0

New Delete

Toggle PDU List Window

Fire	Last Status	Source	Destination	Type
------	-------------	--------	-------------	------

PRINCIPAIS FERRAMENTAS

The screenshot shows a network simulation software interface. The main workspace displays a logical topology with three components: a 2620XM Router0, a 2950-24 Switch0, and a PC-PT PC0. The interface includes a top menu bar with options like 'Logical', '[Root]', 'New Cluster', 'Move Object', and 'Set Tiled Background'. On the right side, a vertical toolbar contains various icons for editing the topology. Five red boxes with labels point to specific tools in this toolbar: 'Ferramenta de Seleção' (Selection Tool), 'Mover toda a topologia' (Move all topology), 'Notas' (Notes), 'Excluir dispositivo ou conexão' (Exclude device or connection), and 'Redimensionar' (Resize). The bottom of the interface features a 'Realtime' status bar with a clock showing 'Time: 00:06:38' and a 'Power Cycle Devices' section. Below this, there are panels for 'End Devices' (showing icons for Generic, IPPhone, and others) and a 'PC-PT' section. A 'Scenario 0' dropdown menu is also visible, along with 'New' and 'Delete' buttons, and a 'Toggle PDU List Window' button. A table with columns 'Fire', 'Last Status', 'Source', 'Destination', and 'Type' is partially visible on the right.

Ferramenta de Seleção

Mover toda a topologia

Notas

Excluir dispositivo ou conexão

Redimensionar

Logical [Root] New Cluster Move Object Set Tiled Background

2620XM Router0

2950-24 Switch0

PC-PT PC0

Time: 00:06:38 Power Cycle Devices

End Devices

Generic Generic Generic Generic IPPhone

PC-PT

Scenario 0

New Delete

Toggle PDU List Window

Realtime

Fire	Last Status	Source	Destination	Type
------	-------------	--------	-------------	------

DICAS

- Você pode criar várias instâncias do mesmo dispositivo, mantendo pressionada a tecla CTRL ao selecionar o dispositivo para adicionar ao espaço de trabalho.
- Você pode cancelar a criação de vários dispositivos, clicando nele novamente ou outra ferramenta. Além disso, a tecla ESC irá cancelar qualquer ação.
- Vários dispositivos podem ser selecionados ao mesmo tempo usando a ferramenta de selecionar e arrastar em torno dos dispositivos desejados.



CONEXÕES

The screenshot shows the Cisco Packet Tracer 5.0 Beta interface. The main workspace displays a logical network diagram with a 2620XM Router0 connected to a 2950-24 Switch0. A PC-PT PC0 is also visible. The interface includes a top menu bar with options like 'Logical', '[Root]', 'New Cluster', 'Move Object', 'Set Tiled Background', and 'Viewport'. A right-hand toolbar contains various icons for selection, deletion, and search. The bottom status bar shows 'Time: 01:59:02' and 'Power Cycle Devices'. The bottom-left pane shows 'Connections' and 'Automatically Choose Connection Type' options. The bottom-right pane shows 'Realtime' status and a table with columns: Fire, Last Status, Source, Destination, Type.

1. Seleção (se necessário)

2. Escolha a conexão

3. Escolha o ícone smart

4. Clique no dispositivo

5. Clique no segundo dispositivo

STATUS DA CONEXÃO

The screenshot shows the Packet Tracer 5.0 Beta Logical view. The network topology consists of three devices connected in a vertical chain: a 2620XM Router0 at the top, a 2950-24 Switch0 in the middle, and a PC-PT PC0 at the bottom. The links between the router and switch, and between the switch and PC, are marked with red dots, indicating they are inactive. A red box highlights the text: "Vermelho indica que o link está inativo". Another red box highlights the text: "O estado padrão de um roteador é 'shutdown'". The interface includes a top menu bar with options like "New Cluster", "Move Object", "Set Tiled Background", and "Viewport". The bottom status bar shows the time as 02:14:26 and the power cycle status. The bottom right corner displays the "Realtime" tab with a table for packet capture data.

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

2620XM Router0

2950-24 Switch0

PC-PT PC0

Vermelho indica que o link está inativo

O estado padrão de um roteador é "shutdown".

Time: 02:14:26 Power Cycle Devices Realtime

Connections

Automatically Choose Connection Type

Scenario 0

New Delete

Toggle PDU List Window

Fire	Last Status	Source	Destination	Type
------	-------------	--------	-------------	------

VISUALIZANDO PORTAS

The screenshot shows the Packet Tracer 5.0 Beta Logical view. The network topology consists of a 2620XM Router0 connected to a 2950-24 Switch0, which is connected to a PC-PT PC0. The connection between the router and switch is highlighted with a red box. A text box with a red border contains the instruction: "Passe o mouse sobre a conexão para ver quais portas foram selecionadas". The interface includes a top menu bar with options like "Logical", "[Root]", "New Cluster", "Move Object", "Set Tiled Background", and "Viewport". The bottom status bar shows "Time: 02:16:57", "Power Cycle Devices", and "Realtime". The bottom toolbar includes icons for connections, a "Connections" button, and a "Toggle PDU List Window" button.

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

2620XM Router0
Fa0/1
2950-24 Switch0
PC-PT PC0

Passe o mouse sobre a conexão para ver quais portas foram selecionadas

Time: 02:16:57 Power Cycle Devices Realtime

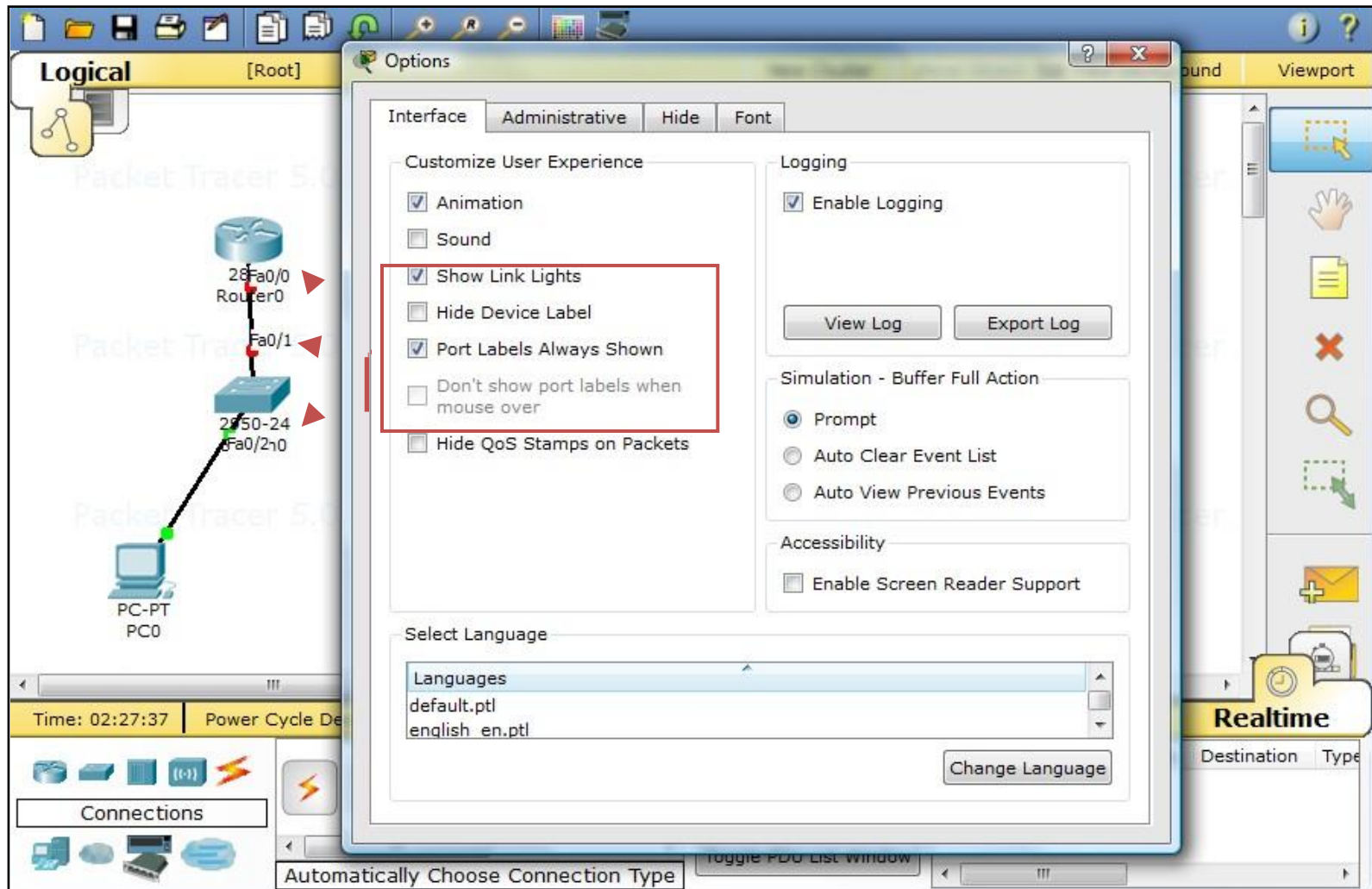
Connections

Automatically Choose Connection Type

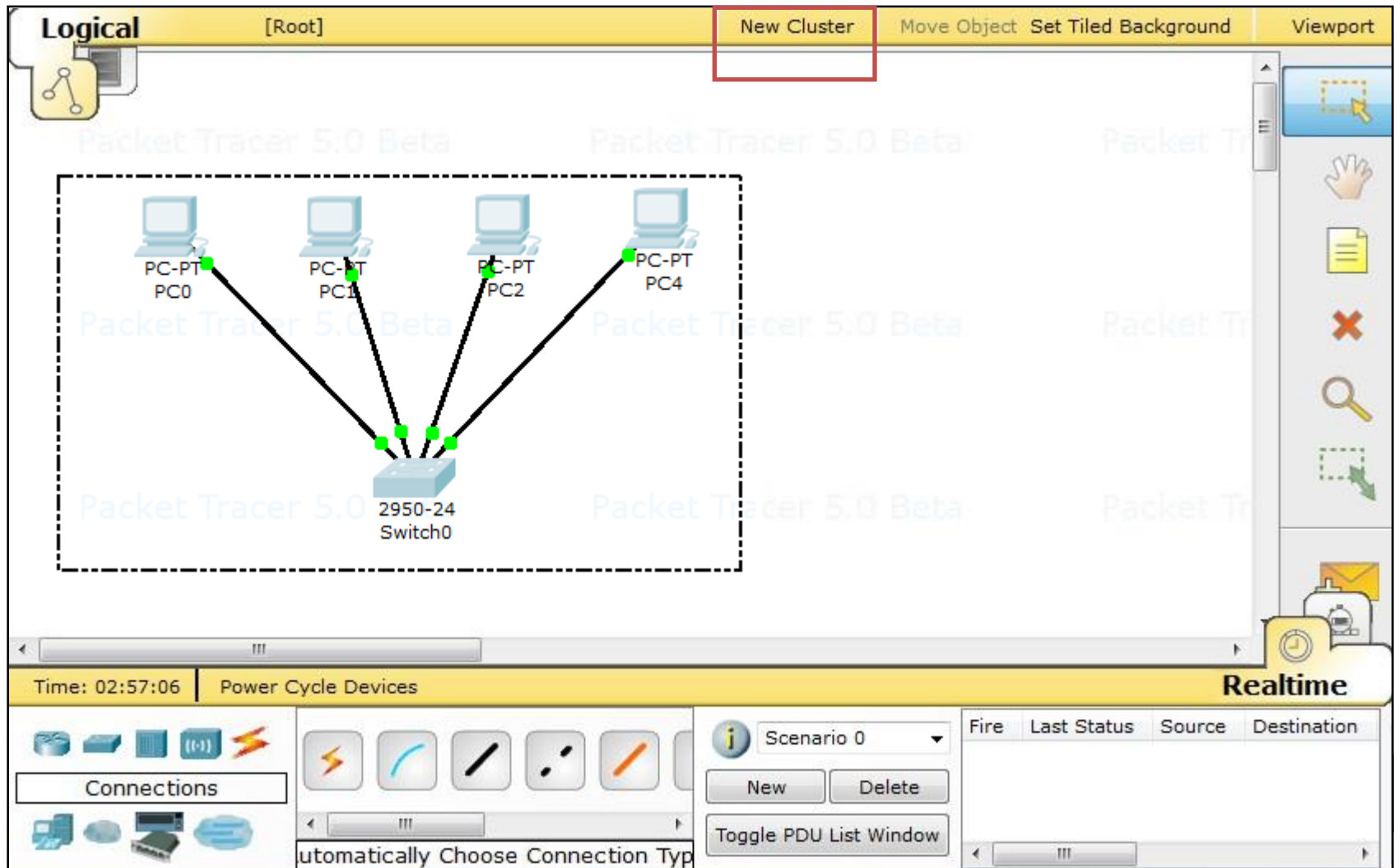
Scenario 0
New Delete
Toggle PDU List Window

Fire Last Status Source Destination Type

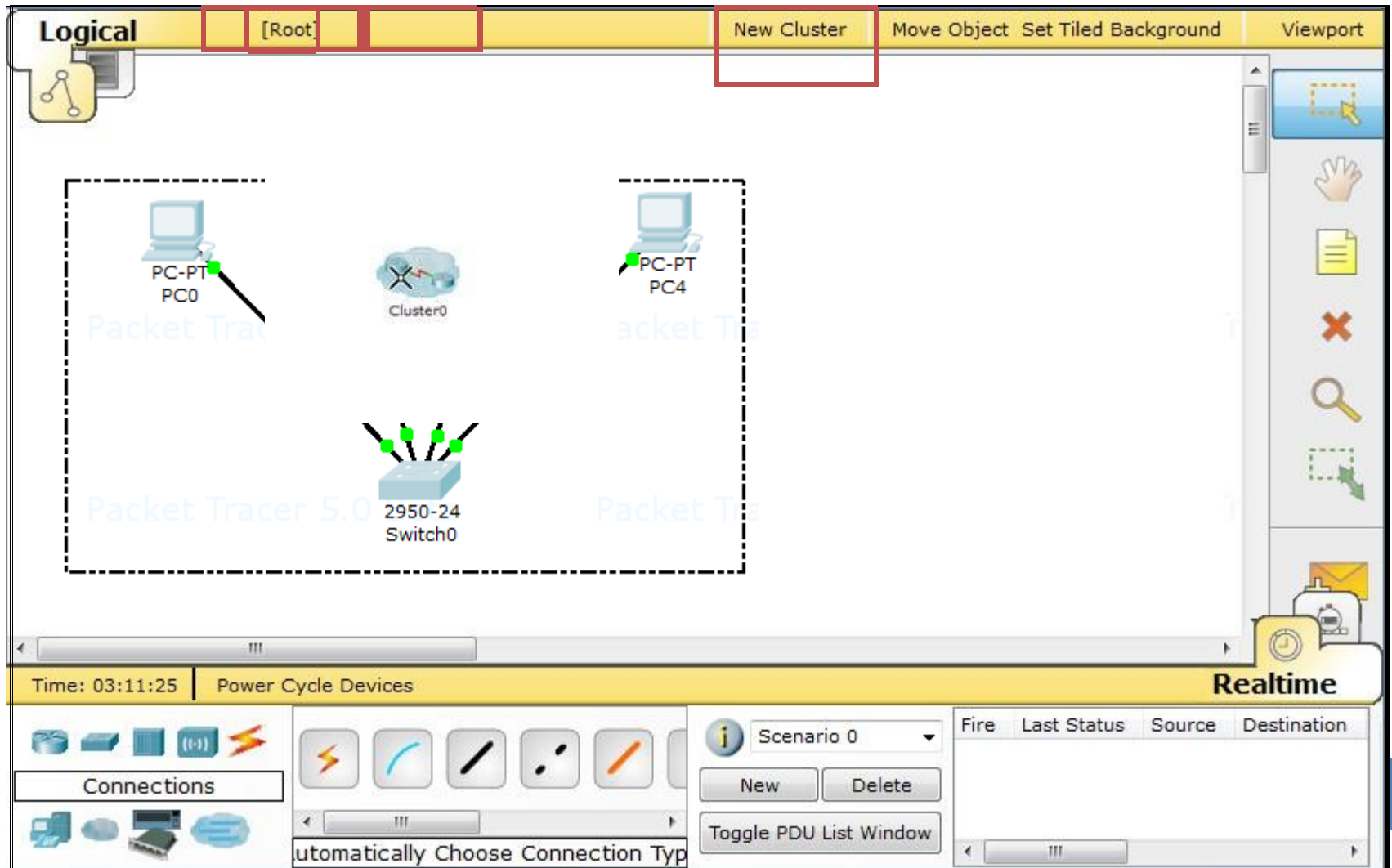
OPÇÕES DOS DISPOSITIVOS



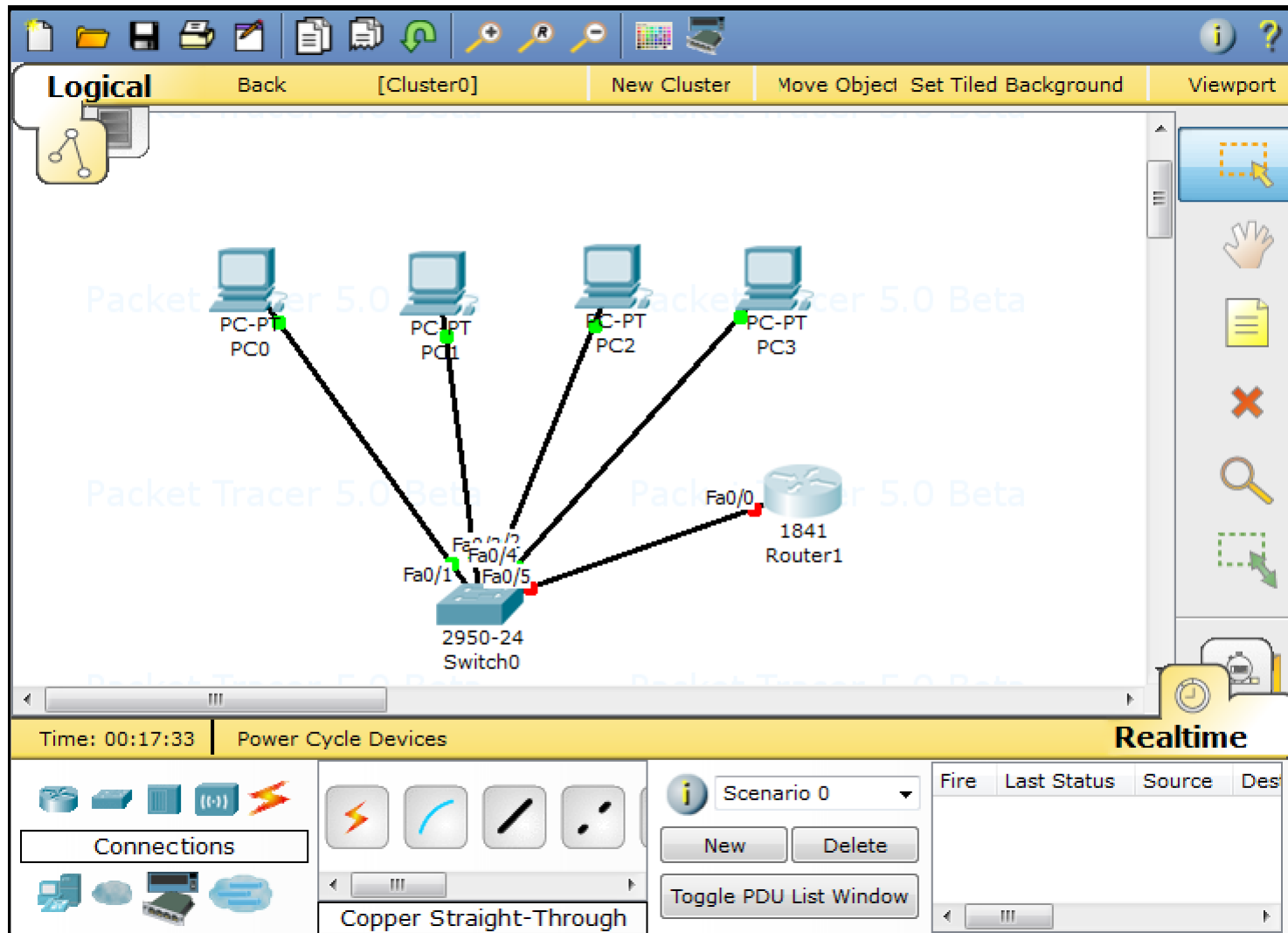
CRIANDO CLUSTERS (SUBREDES)



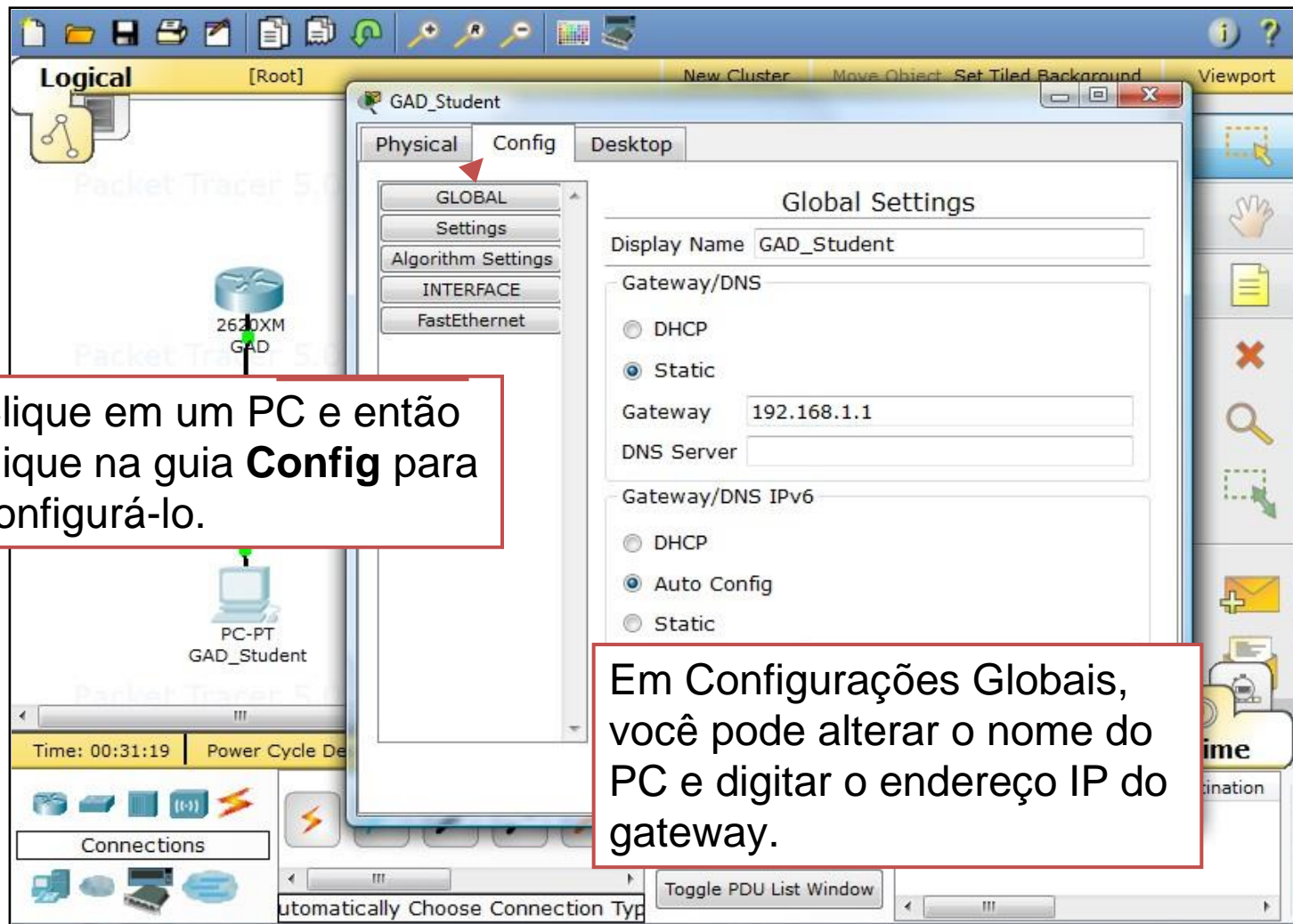
CRIANDO CLUSTERS (SUBREDES) (2)



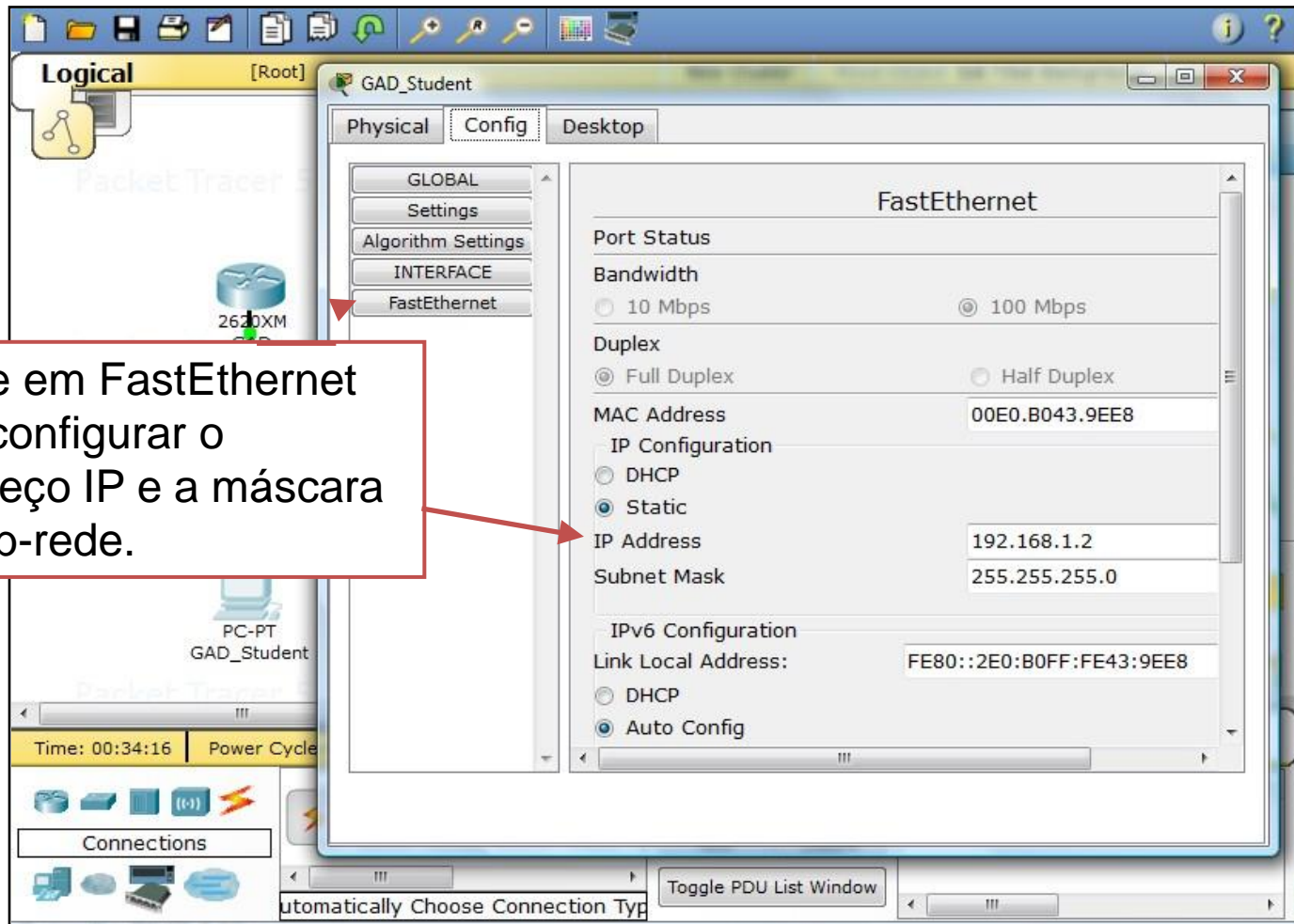
ADICIONANDO UM DISPOSITIVO AO CLUSTER



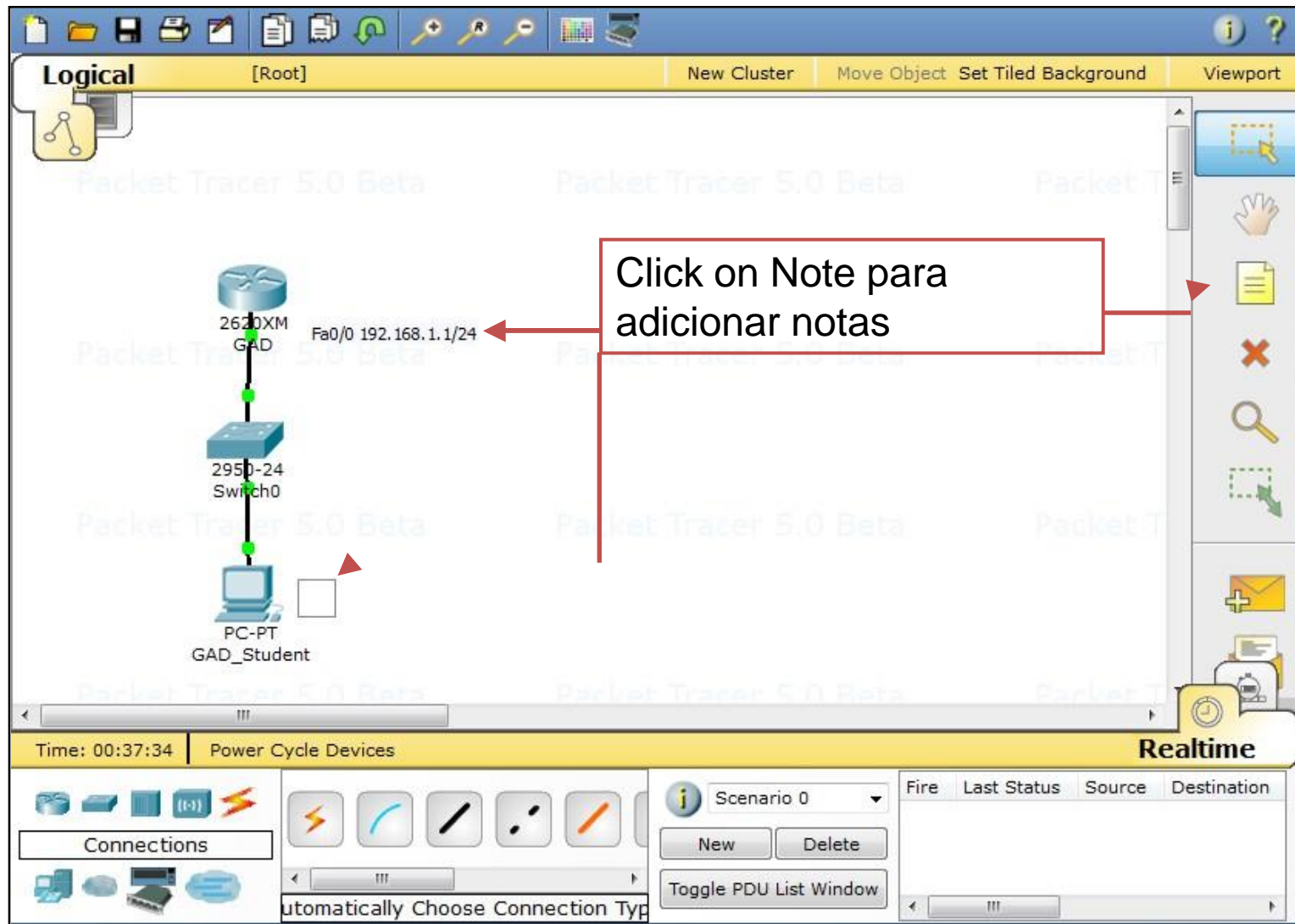
CONFIGURANDO O ENDEREÇO DO GATEWAY



CONFIGURE O ENDEREÇO IP DO PC



ADICIONANDO NOTAS

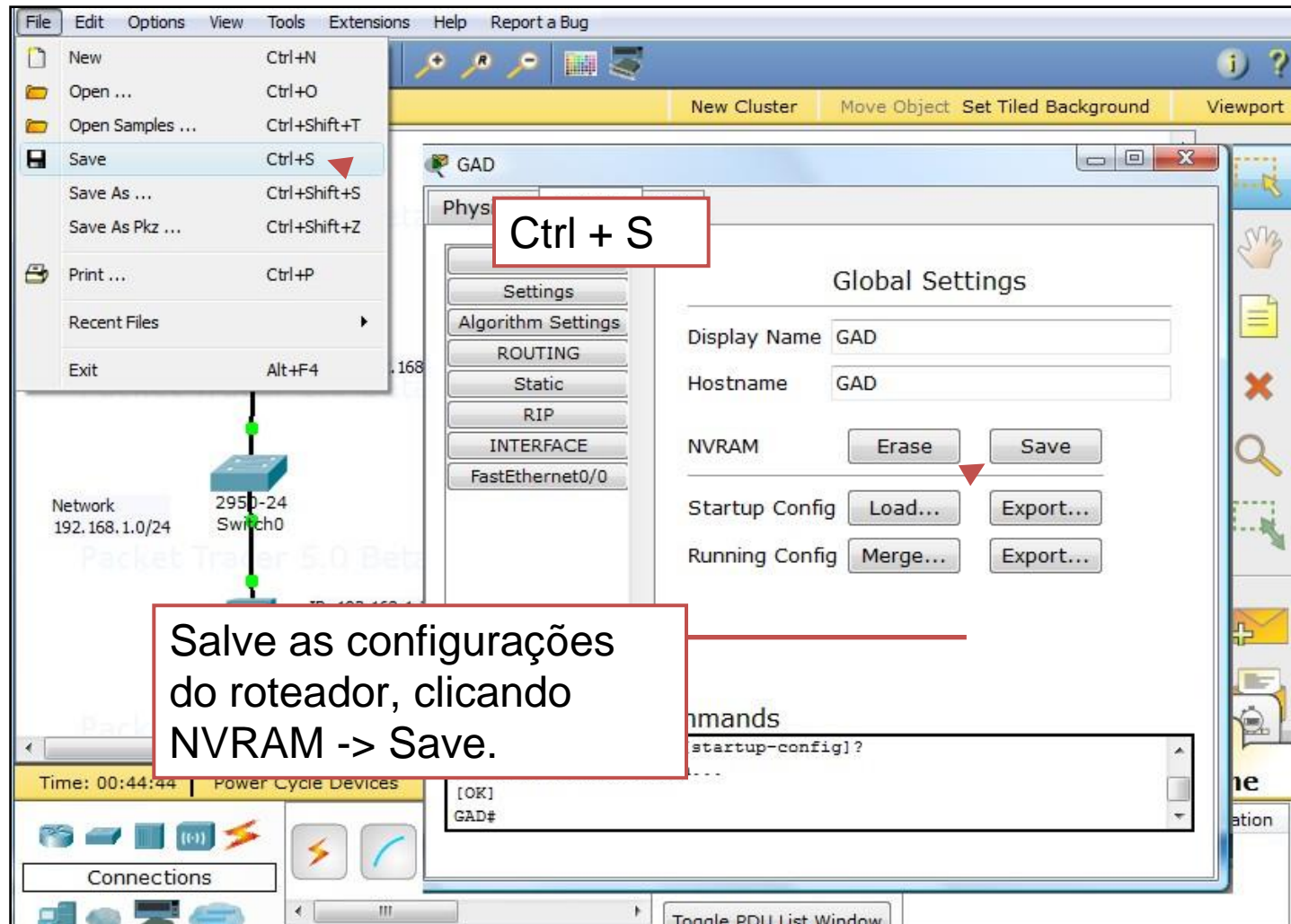


DESCRIÇÃO DA REDE

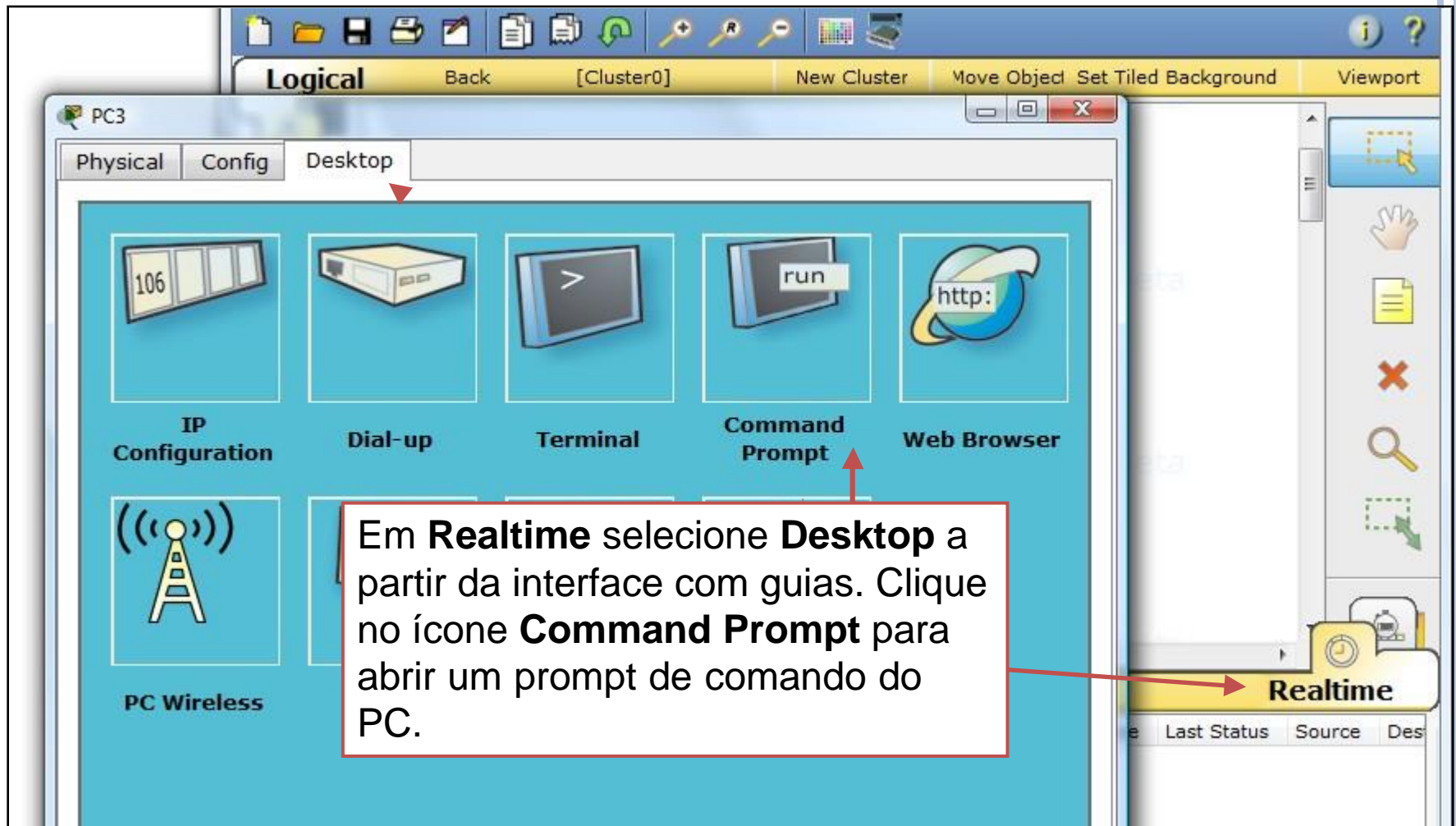
The screenshot displays the Packet Tracer 5.0 Beta interface. The main workspace shows a network topology in the 'Logical' view. The topology consists of a 2620XM router (GAD) connected to a 2950-24 switch (Switch0), which is then connected to a PC-PT (GAD_Student). The router's Fa0/0 interface is configured with IP 192.168.1.1/24. The switch is connected to a network 192.168.1.0/24. The PC-PT is configured with IP 192.168.1.2/24 and a gateway of 192.168.1.1. A 'Network Description' window is open, providing a summary of the topology and the configuration details for the router and PC. The window text reads: 'This topology is the beginning of the larger topology we will build. The router has a FastEthernet port that is addressed with the first available IP address in the 192.168.1.0/24 network. The PC is connected to the network via a switch and has the next available IP address in the 192.168.1.0/24 network. It is configured to use the router's FastEthernet port as the Gateway.'

Clique no ícone "I" para adicionar uma descrição da rede.

SALVANDO A TOPOLOGIA



VERIFICAÇÃO EM TEMPO REAL



PING PARA O GATEWAY

The screenshot displays the Packet Tracer interface. On the left, the 'Logical' view shows a network topology with a 2620XM GAD router connected to a 2950-24 Switch0, which is connected to a PC-PT GAD_Student. The PC-PT GAD_Student is highlighted with a red box. On the right, the 'GAD_Student' window is open, showing the 'Command Prompt' tab. The command prompt displays the output of the command 'ping 192.168.1.1'. The output shows four successful replies from 192.168.1.1 with varying round trip times (153ms, 78ms, 69ms, 80ms) and a TTL of 120. The ping statistics show 4 packets sent, 4 received, and 0% loss, with an average round trip time of 95ms. The command prompt also shows the command 'PC>'.

Logical [Root]

2620XM GAD

2950-24 Switch0

PC-PT GAD_Student

Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time=153ms TTL=120
Reply from 192.168.1.1: bytes=32 time=78ms TTL=120
Reply from 192.168.1.1: bytes=32 time=69ms TTL=120
Reply from 192.168.1.1: bytes=32 time=80ms TTL=120

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 69ms, Maximum = 153ms, Average = 95ms

PC>
```

Time: 00:03:19 | Power Cycle De

Connections

Scenario 0

New Delete

Toggle PDU List Window

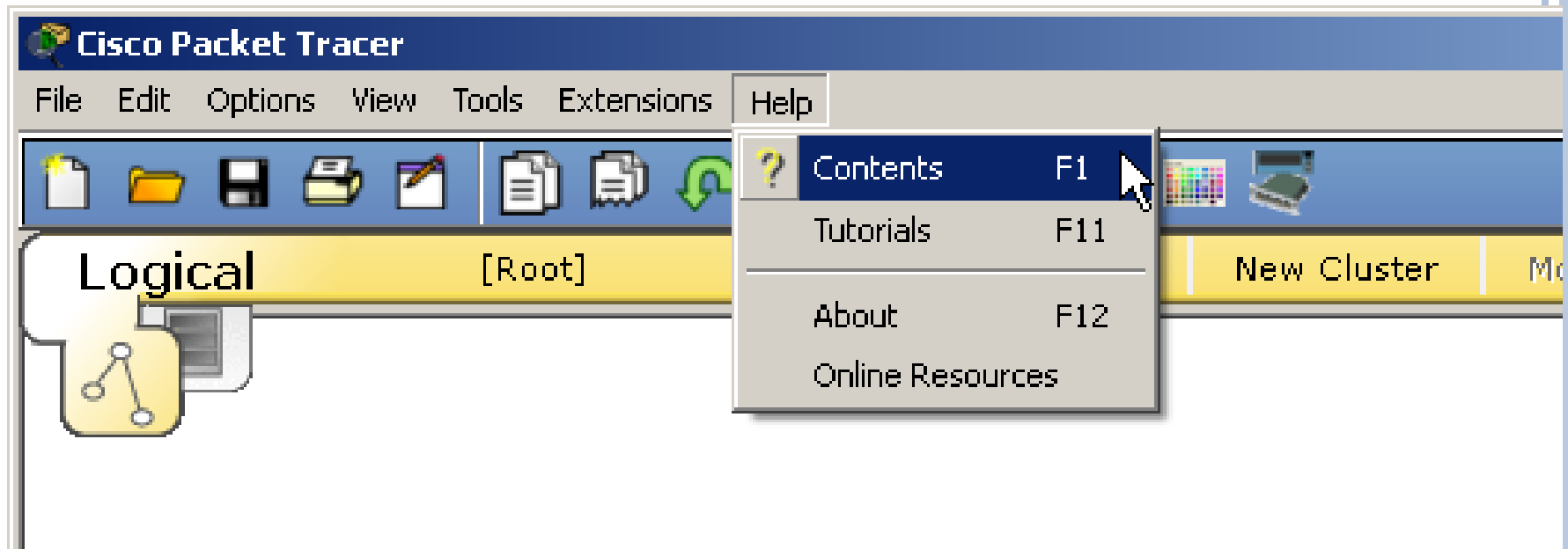
Fire Last Status Source Destination

tomatically Choose Connection Ty

Ping para o gateway.

EM CASO DE DÚVIDA ...

- Ajuda (F1)
- Tutoriais (F11)
- Recursos Online (Online Resources)

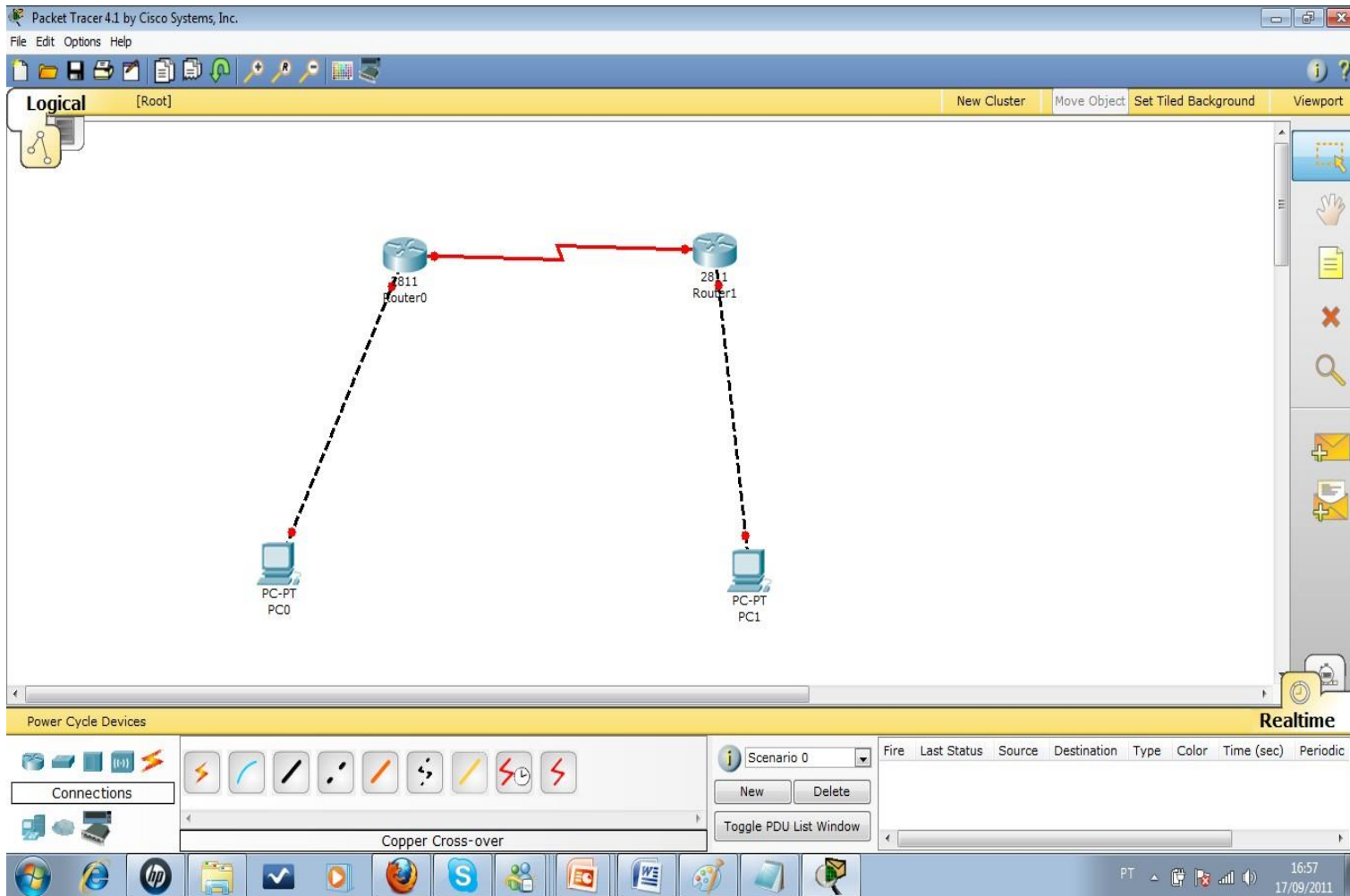




TUTORIAL RIP

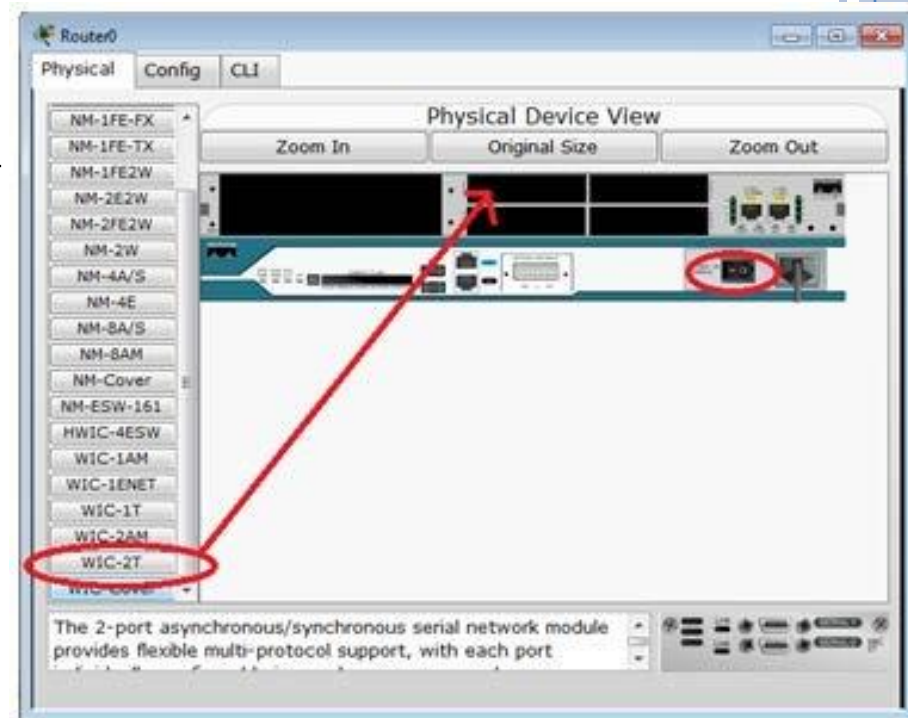
O protocolo RIP facilita a troca de informações de roteamento numa rede Netware. Os roteadores Netware utilizam o protocolo RIP para criar e manter uma base de dados com informações de roteamento (comumente denominado Tabela de Roteamento). **Routing Information Protocol** (RIP) é um protocolo de roteamento, baseado no algoritmo Vetor-Distância, projetado para ser usado como um Interior Gate Protocol em redes de tamanho moderado com diâmetro máximo de 15 saltos.

TOPOLOGIA



ROTEADORES

- Dois cliques em cima do Router0
- Desligar o roteador da tomada
- Escolher a placa WIC-2T (clica e arrasta) para o slot vazio
- Ligar roteador na tomada.
- Repetir processo no router 1



CONFIGURAÇÕES

○ PC0:

- IP: 192.168.100.2
- netmask: 255.255.255.0
- gateway: 192.168.100.1

○ PC1:

- IP : 172.16.0.2,
- netmask: 255.255.0.0
- gateway: 172.16.0.1



CONFIGURANDO OS ROTEADORES

- No Router0:

Continue with configuration dialog? [yes/no]: no

Router>enable

Router#configure terminal

Router(config)#interface FastEthernet0/0

Router(config-if)#ip address 192.168.100.1
255.255.255.0

Router(config-if)#no shutdown

Router(config-if)#exit



CONFIGURANDO OS ROTEADORES (2)

- No Router0:

```
Router(config)#interface Serial0/3/0
```

```
Router(config-if)#ip address 200.100.100.1  
255.255.255.0
```

```
Router(config-if)#clock rate 500000
```

```
Router(config-if)#no shutdown
```



CONFIGURANDO OS ROTEADORES (3)

- Idem no Router1:

Continue with configuration dialog? [yes/no]: no

Router>enable

Router#configure terminal

Router(config)#interface FastEthernet0/0

Router(config-if)#ip address 172.16.0.1 255.255.0.0

Router(config-if)#no shutdown

Router(config-if)#exit

Router(config)#interface Serial0/3/0

Router(config-if)#ip address 200.100.100.2
255.255.255.0

Router(config-if)#no shutdown



TESTANDO A REDE

- Clicar no PC0 e escolher aba “Desktop”
- No prompt digitar: ping 172.16.0.2 (PC1)
- O comando irá falhar!



CONFIGURANDO RIP

- No Router0:

```
Router(config-if)#exit
```

```
Router(config)#router rip
```

```
Router(config-router)#network 200.100.100.0
```

```
Router(config-router)#network 192.168.100.0
```

- No Router1:

- Router(config-if)#exit

- Router(config)#router rip

- Router(config-router)#network 200.100.100.0

- Router(config-router)#network 172.16.0.0



CONFIGURANDO RIP

- Verificando:

```
Router(config-if)#exit
```

```
Router(config)#exit
```

```
Router>show ip route
```

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

```
R 172.16.0.0/16 [120/1] via 200.100.100.2, 00:00:02, Serial0/3/0
```

```
C 192.168.100.0/24 is directly connected, FastEthernet0/0
```

```
C 200.100.100.0/24 is directly connected, Serial0/3/0
```



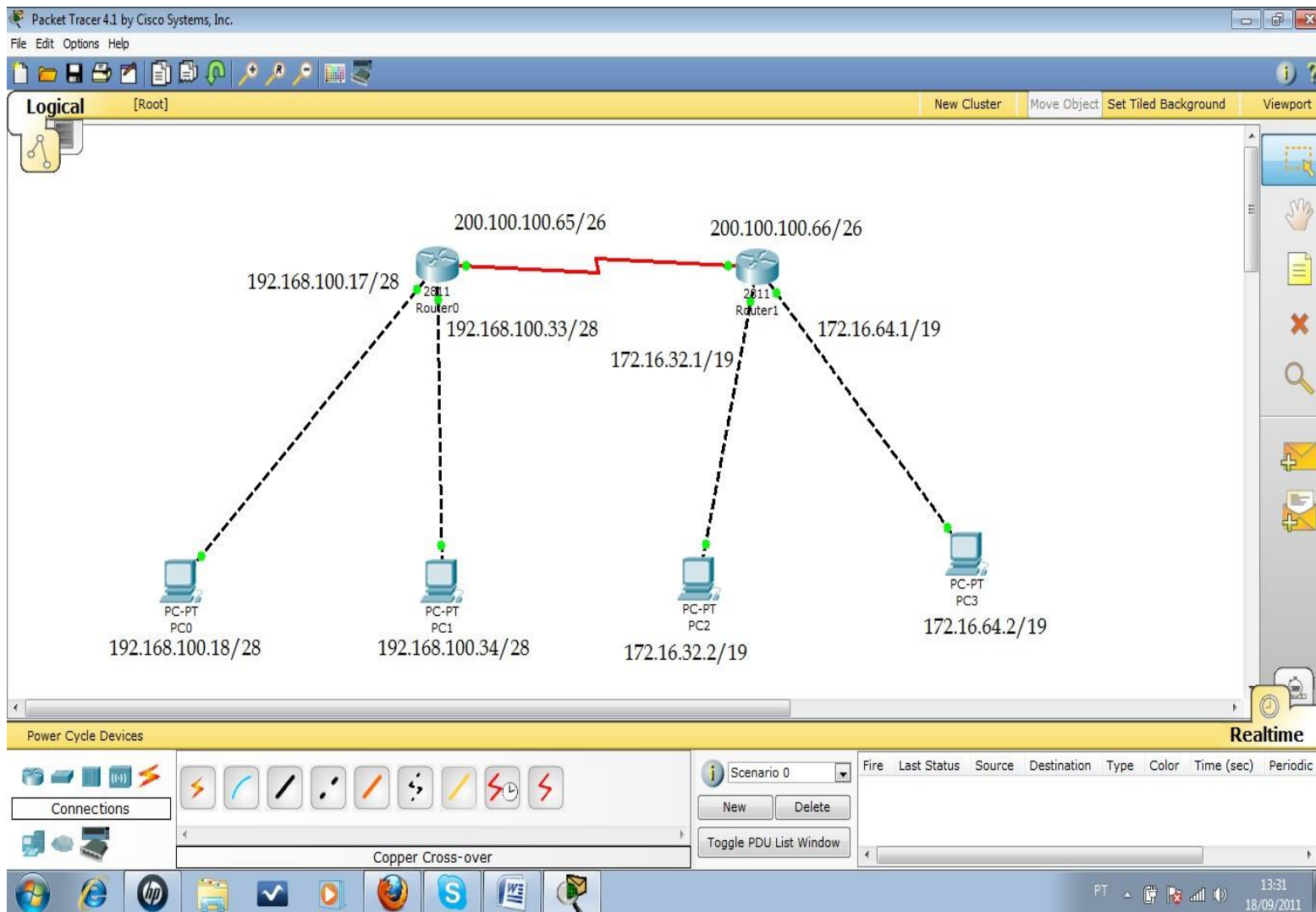


TUTORIAL OSPF

É um protocolo de roteamento do tipo link-state¹, que envia avisos sobre o estado da conexão (link-state advertisements, LSA) a todos os outros roteadores em uma mesma área hierárquica. Informações sobre interfaces ligadas, métrica usada e outras variáveis são incluídas nas LSAs. O protocolo Open Shortest Path First (OSPF), definido no RFC 2328 , é um protocolo IGP (Interior Gateway Protocol, IGP: protocolo de roteamento utilizado por roteadores pertencentes a um AS(Autonomous System,)) utilizado para distribuir a informação de roteamento em um único Sistema Autônomo.

¹ Estado de enlace (Link state):
Este algoritmo trabalha baseado na idéia de que cada roteador possui informações sobre as redes que estão conectadas a ele e, periodicamente, testa para determinar se cada enlace está ativo.

TOPOLOGIA



TOPOLOGIA (2)

- PC0:

- IP: 192.168.100.18
- netmask: 255.255.255.240 (/28)
- gateway: 192.168.100.17

- PC1:

- IP: 192.168.100.34
- netmask: 255.255.224.0
- gateway: 192.168.100.33

- Interfaces series:

- Router0: 200.100.100.65, 255.255.255.192 (/26)
- Router1: 200.100.100.66, 255.255.255.192



TOPOLOGIA (3)

- PC3:

- IP: 172.16.32.2
- netmask: 255.255.255.240 (/19)
- gateway: 172.16.32.2

- PC4:

- IP: 172.16.64.2
- netmask: 255.255.255.240
- gateway: 172.16.64.1



CONFIGURANDO OS ROTEADORES

Router0

Router>enable

Router#configure terminal

Router(config)#interface FastEthernet0/0

Router(config-if)#ip address 192.168.100.17
255.255.255.240

Router(config-if)#no shutdown

Router(config-if)#

Router(config-if)#exit

Router(config)#interface FastEthernet0/1

Router(config-if)#ip address 192.168.100.33
255.255.255.240

Router(config-if)#no shutdown



CONFIGURANDO OS ROTEADORES (2)

Router0

Router(config-if)#exit

Router(config)#interface Serial0/3/0

Router(config-if)#ip address 200.100.100.65
255.255.255.192

Router(config-if)#clock rate 500000

Router(config-if)#no shutdown

Router(config-if)#exit



CONFIGURANDO OS ROTEADORES (3)

Continue with configuration dialog? [yes/no]: no

Router1

Router>enable

Router#configure terminal

Router(config)#interface FastEthernet0/0

Router(config-if)#ip address 172.16.32.1 255.255.224.0

Router(config-if)#no shutdown

Router(config-if)#exit

Router(config)#interface FastEthernet0/1

Router(config-if)#ip address 172.16.64.1 255.255.224.0

Router(config-if)#no shutdown

Router(config-if)#exit



CONFIGURANDO OS ROTEADORES (4)

Router1

Router(config)#interface Serial0/3/0

Router(config-if)#ip address 200.100.100.66
255.255.255.192

Router(config-if)#clock rate 500000

Router(config-if)#no shutdown



CONFIGURANDO O OSPF

Configurando OSPF no router0

```
Router(config-if)#exit
```

```
Router(config)#router ospf 1
```

```
Router(config-router)#network 200.100.100.64  
0.0.0.63 area 0
```

```
Router(config-router)#network 192.168.100.16  
0.0.0.15 area 0
```

```
Router(config-router)#network 192.168.100.32  
0.0.0.15 area 0
```



COMANDOS (6)

Configurando OSPF no router1

Router(config-if)#exit

Router(config)#router ospf 1

Router(config-router)#network 200.100.100.64
0.0.0.63 area 0

Router(config-router)#network 172.16.32.0
0.0.31.255 area 0

Router(config-router)#network 172.16.64.0
0.0.31.255 area 0



COMANDOS (7)

#Teste de conectividade.

#No PC0 digite:

```
ping 172.16.32.2
```

#Configurando conexãoTelnet

#Faremos o PC0 ter acesso as configurações no router1

#Digitar no router1:

```
Router(config-router)# exit
```

```
Router(config)#enable password ufpe
```

```
Router(config)#line vty 0 4
```

```
Router(config-line)#password ufpe
```



COMANDOS (8)

#Abrir prompt no PC0 e digitar:

```
telnet 200.100.100.66
```

```
password: ufpe
```

```
Router>enable
```

```
password: ufpe
```

#Usar ACL para barrar o acesso ao telnet

#Digitar no router1

```
Router(config-line)#exit
```

```
Router(config)#access-list 111 deny tcp 192.168.100.16  
0.0.0.31 200.100.100.64 0.0.0.63 eq 23
```

```
Router(config)#interface Serial0/3/0
```

```
Router(config-if)#ip access-group 111 in
```





OBRIGADO! PERGUNTAS?