

**INSTITUTO FEDERAL DE
EDUCAÇÃO, CIÊNCIA E TECNOLOGIA**
RIO GRANDE DO NORTE

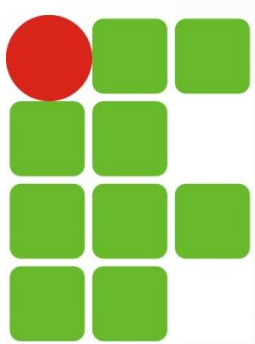


**REDE FEDERAL
DE EDUCAÇÃO
PROFISSIONAL
E TECNOLÓGICA**

1909-2009

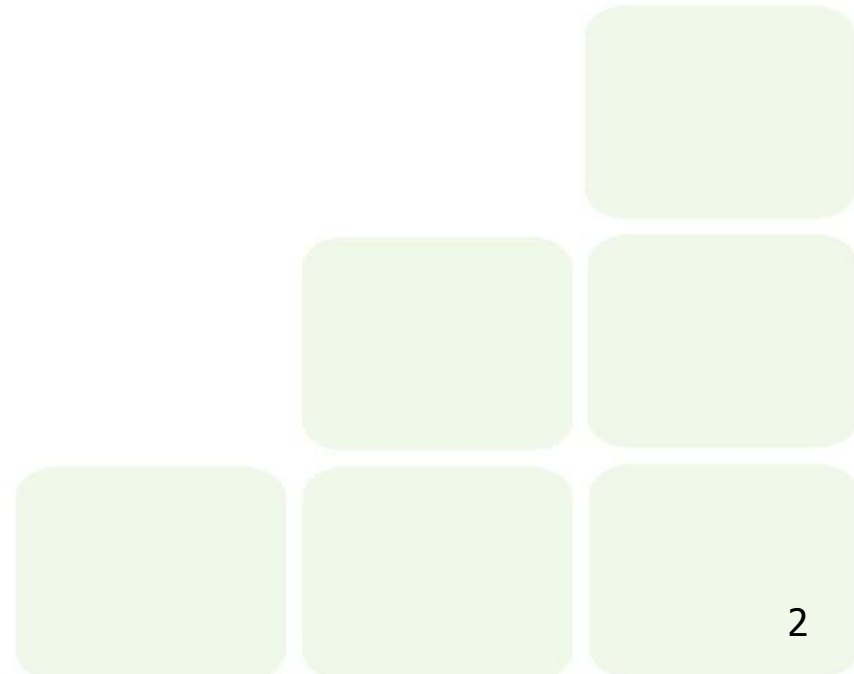
Curso Superior em Redes de Computadores

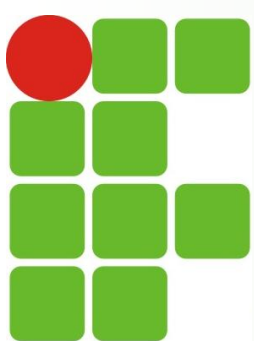
Roteamento IP UNICAST



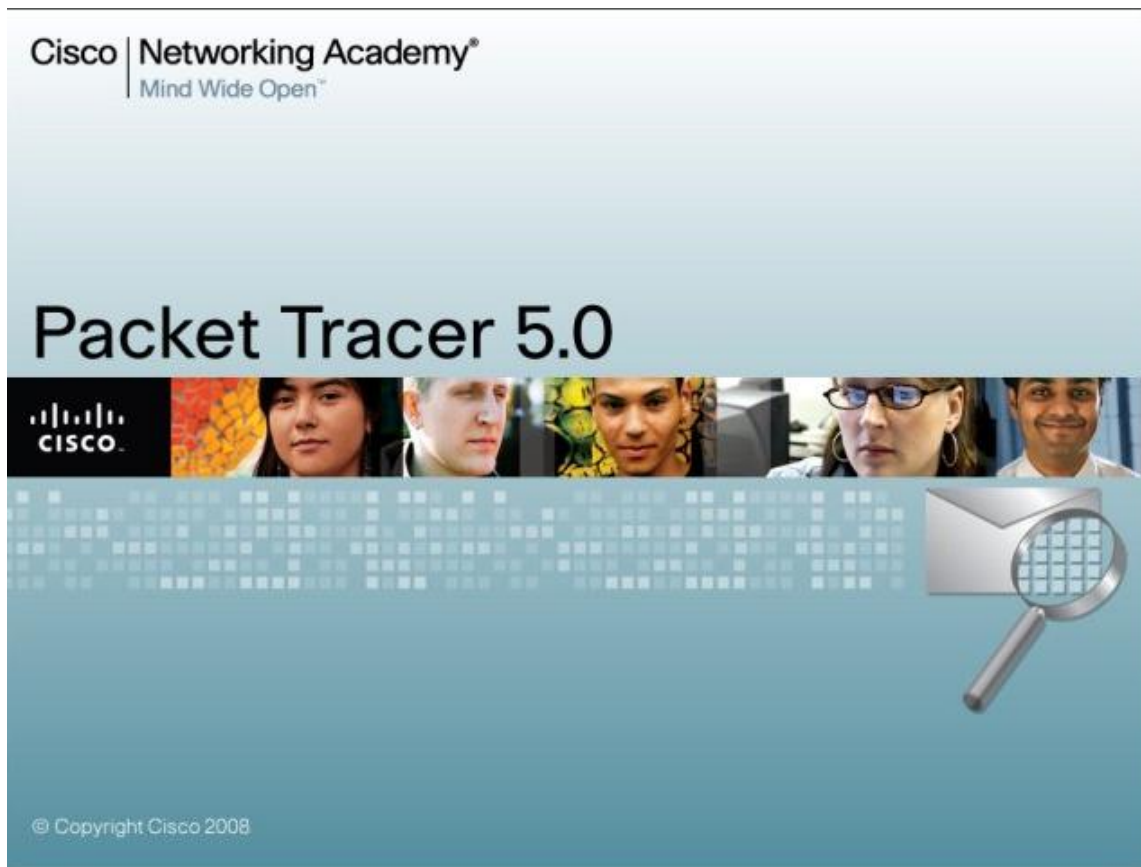
Objetivo

- Apresentar o simulador *Packet Tracer 5*
- Implementar uma topologia utilizando o protocolo de roteamento RIPv2

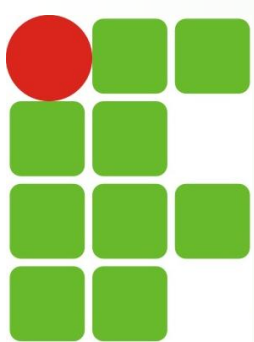




Simulador Packet Tracer



Cisco Networking Academy is a comprehensive e-learning initiative that enables students to develop valuable information and communication technology skills for increased access to opportunities in the global economy. To learn more about the program, how to get involved, career resources for students, how we are addressing the digital divide, and more, visit www.cisco.com/go/netacad.



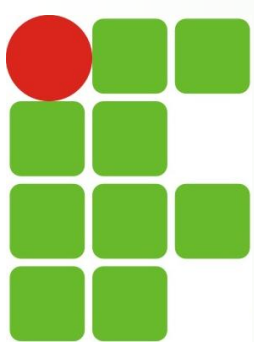
Simulador Packet Tracer

The screenshot displays the Packet Tracer 5.0 interface. The main workspace is in the 'Logical' view, showing a network diagram. The bottom panel is divided into several sections:

- Time:** 00:10:28
- Power Cycle Devices:** A button to refresh the device list.
- Realtime:** A button to switch to the Realtime view.
- Scenario 0:** A dropdown menu for selecting a scenario.
- Table:** A table with columns: Fire, Last Status, Source, Destination, Type, Color.
- Buttons:** 'New' and 'Delete' buttons.
- Toggle PDU List Window:** A button to toggle the PDU list window.

Two red boxes with arrows point to specific parts of the interface:

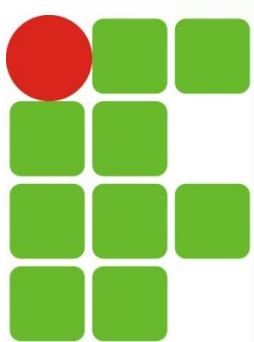
- Seleção de categoria de dispositivos:** Points to the 'Routers' category in the device selection panel.
- Seleção do dispositivo:** Points to the specific router models (1841, 2620XM, 2621XM, 2811, Generic) in the device selection panel.



Simulador Packet Tracer

The screenshot shows the Packet Tracer 5.0 interface. At the top, the title bar reads "Packet Tracer 5.0 by Cisco Systems, Inc." and the menu bar includes "File", "Edit", "Options", "View", "Tools", "Extensions", and "Help". Below the menu bar is a toolbar with various icons. The main workspace is titled "Logical [Root]" and contains three "2620XM Router" icons. A red box highlights the "2620XM" device in the "Routers" section of the bottom-left palette, with a red arrow pointing to a text box that says "Clicar e arrastar o dispositivo Para a área de desenho". The bottom-right corner shows a "Realtime" panel with a table for packet capture data.

Fire	Last Status	Source	Destination	Type	Color



Simulador Packet Tracer

The screenshot displays the Packet Tracer 5.0 interface. The title bar reads "Packet Tracer 5.0 by Cisco Systems, Inc. - E:/CEFET-RN/2008.2/Arquitetura_TCP_IP/Atividades/Cenario_rede_rotacionamento_rip.pkt". The menu bar includes "File", "Edit", "Options", "View", "Tools", "Extensions", and "Help". The toolbar contains various icons for file operations and navigation. The main workspace is in "Logical" mode, showing a network diagram with the following components:

- Three 2620XM Routers: Router0, Router1, and Router2.
- Three 2950-24 Switches: Switch0, Switch1, and Switch2.
- Three PC-PT PCs: PC0, PC1, and PC2.

The interface includes a "Connections" panel at the bottom left with a "Connections" button and a "Automatically Choose Connection Type" checkbox. The bottom status bar shows "Time: 00:08:49" and "Power Cycle Devices". A "Realtime" panel is open at the bottom right, displaying a table with columns: "Fire", "Last Status", "Source", "Destination", "Type", and "Color". The table is currently empty. A "Scenario 0" dropdown menu is visible above the table, with "New" and "Delete" buttons. A "Toggle PDU List Window" button is also present.

Simulador Packet Tracer

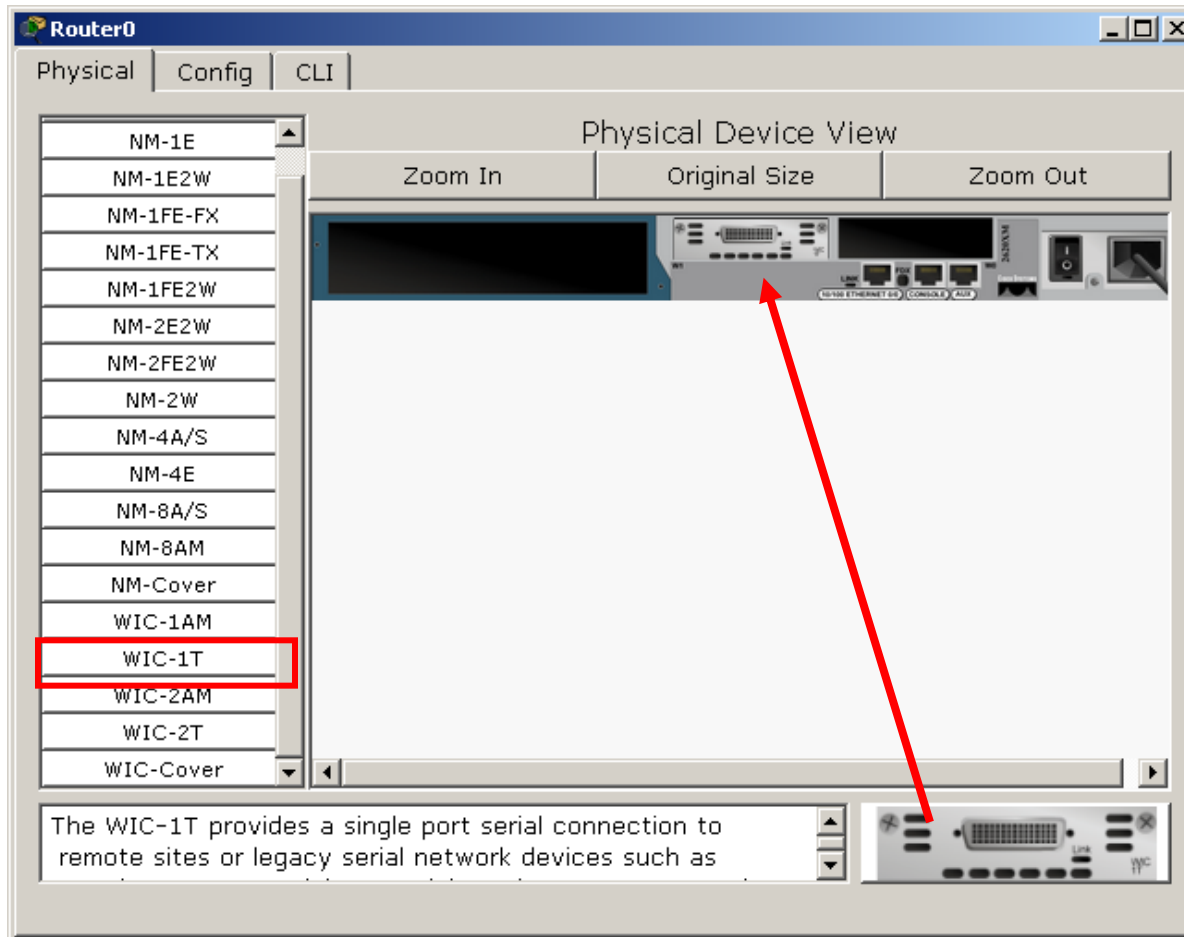
The screenshot displays the Packet Tracer 5.0 interface. The main workspace shows a network topology with three identical vertical chains of devices: a 2621XM Router (Router0, Router1, Router2) connected to a 2950-24 Switch (Switch0, Switch1, Switch2), which is in turn connected to a PC-PT (PC0, PC1, PC2). The interface includes a menu bar (File, Edit, Options, View, Tools, Extensions, Help), a toolbar with various icons, and a status bar at the bottom. A red box highlights the connection toolbar at the bottom, which contains icons for different connection types. A red arrow points from a text box to this toolbar.

Esta barra de ferramenta apresenta os vários tipos de ligações possíveis

Time: 00:10:28 | Power Cycle Devices | Realtime

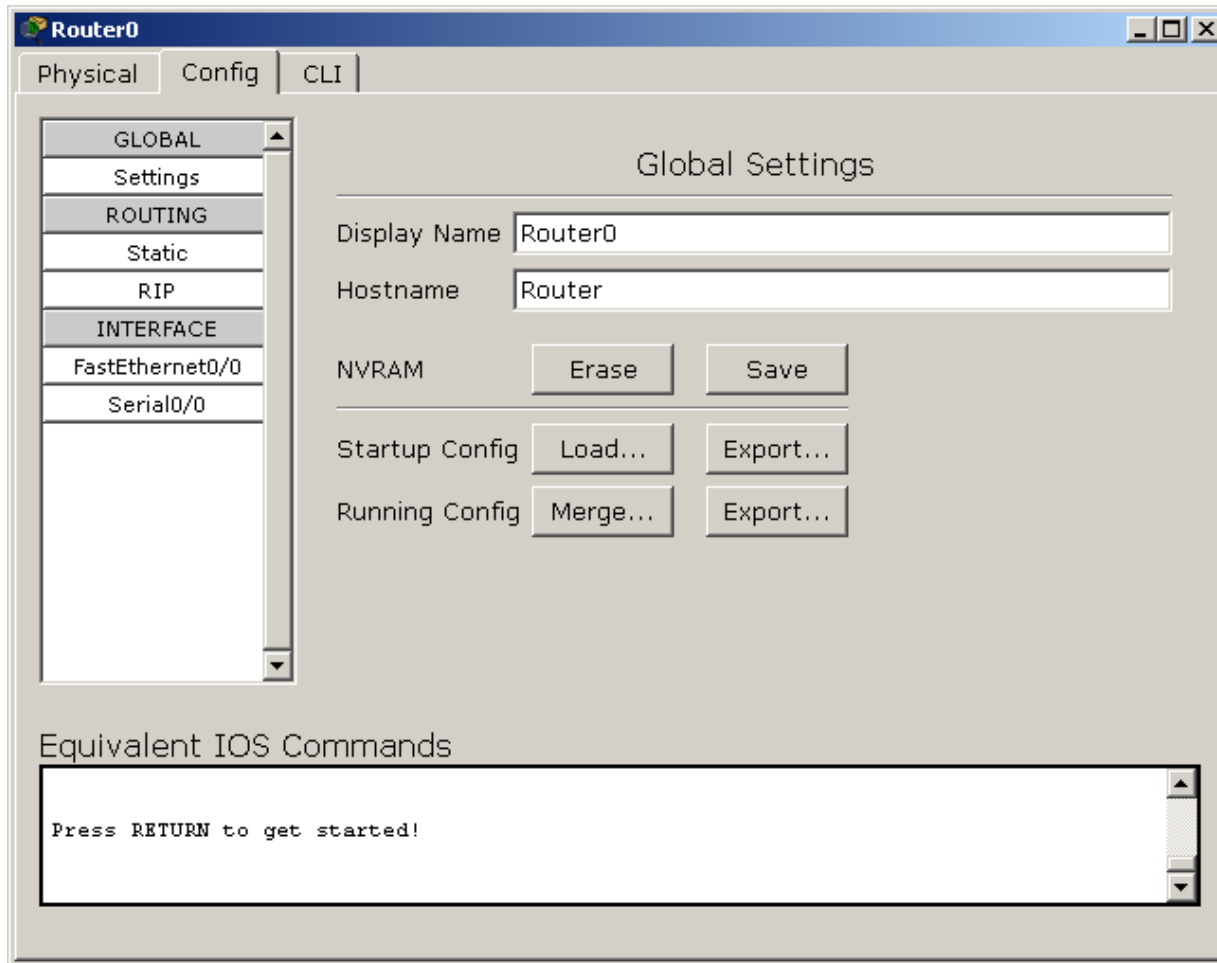
Fire	Last Status	Source	Destination	Type	Color

Simulador Packet Tracer



- Clicando duas vezes no dispositivo abre-se a tela de configuração
- No caso dos roteadores, é possível fazer as configurações físicas das interfaces
- É preciso desligar o roteador para configurá-lo fisicamente
- Seleciona-se o tipo de interface no painel, arrasta-se e coloca no encaixe do roteador
- Depois liga-se novamente o dispositivo

Simulador Packet Tracer



- Pode-se fazer as configurações básicas através da aba Config
- Configurações avançadas devem ser feitas no CLI – Command Line Interface

Simulador Packet Tracer

The screenshot shows the configuration window for Router0, specifically for the FastEthernet0/0 interface. The window is divided into several sections:

- Physical** tab: Shows the interface name "FastEthernet0/0".
- Config** tab: Shows the configuration options for the interface.
- CLI** tab: Shows the equivalent IOS commands for the configuration.

The configuration options are as follows:

- Port Status: On
- Bandwidth: Auto
- Speed: 10 Mbps, 100 Mbps
- Duplex: Auto
- Duplex Mode: Full Duplex, Half Duplex
- MAC Address: 0060.3E97.0EB7
- IP Address: 172.16.10.1
- Subnet Mask: 255.255.255.0

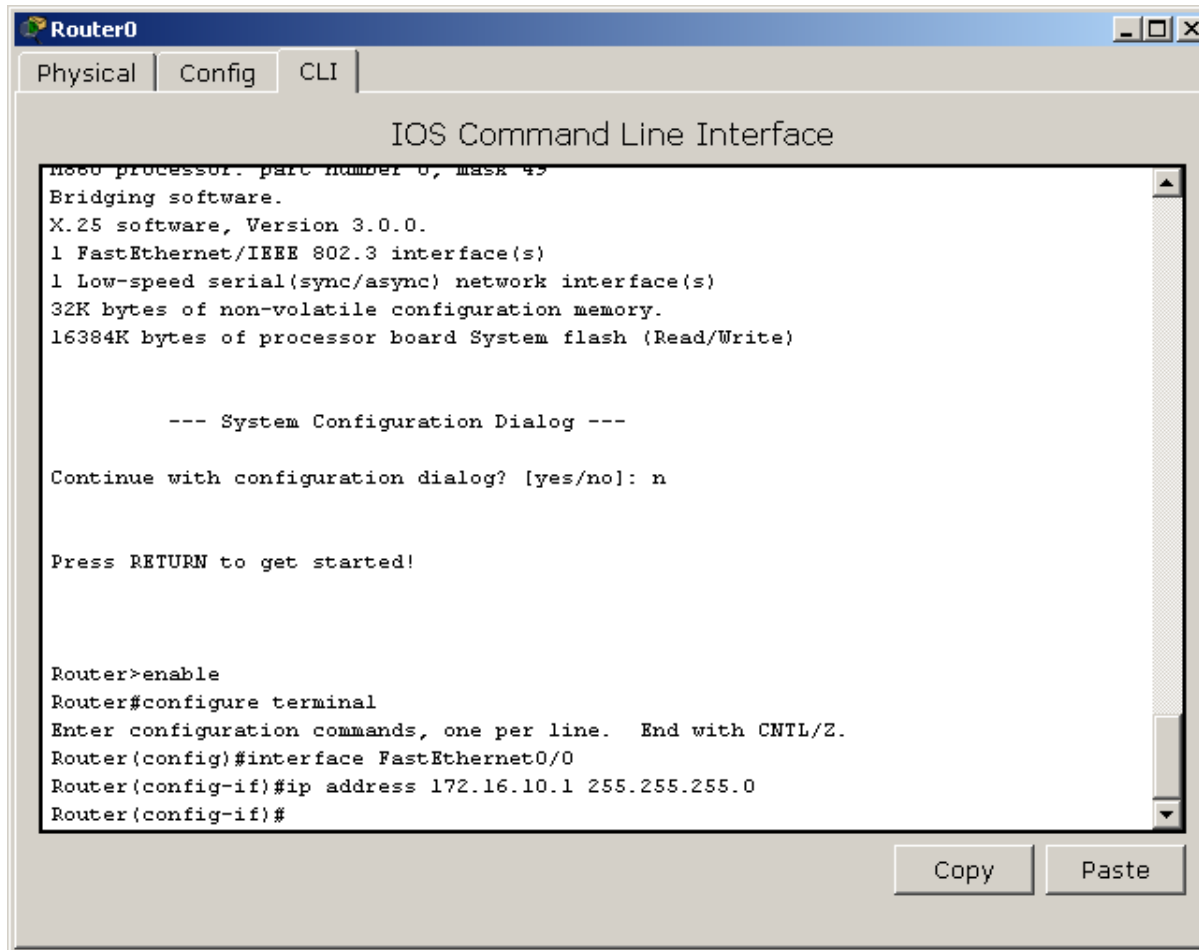
The equivalent IOS commands are:

```
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.16.10.1 255.255.255.0
Router(config-if)#
```

- Configuração da Interface Fast Ethernet

- Perceba o painel inferior apresenta os comandos que são executados no S.O. do roteador

Simulador Packet Tracer



```
Router0
Physical Config CLI
IOS Command Line Interface
m800 processor, part number 0, mask 43
Bridging software.
X.25 software, Version 3.0.0.
1 FastEthernet/IEEE 802.3 interface(s)
1 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)

--- System Configuration Dialog ---

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

Press RETURN to get started!

Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.16.10.1 255.255.255.0
Router(config-if)#
```

- A console de comandos pode ser acessada para configuração dos parâmetros do roteador

Simulador Packet Tracer

The screenshot shows the configuration window for Router0, specifically for the Serial0/0 interface. The window is titled "Router0" and has tabs for "Physical", "Config", and "CLI". The "Config" tab is active, and the "Serial0/0" interface is selected in the left-hand menu. The configuration details for Serial0/0 are as follows:

- Port Status: On
- Clock Rate: 2000000
- Duplex: Full Duplex
- IP Address: 200.200.100.1
- Subnet Mask: 255.255.255.252

At the bottom of the window, the "Equivalent IOS Commands" are listed:

```
Router(config-if)#no shutdown
Router(config-if)#clock rate 2000000
Router(config-if)#ip address 200.200.100.1 255.255.255.0
Router(config-if)#ip address 200.200.100.1 255.255.255.252
Router(config-if)#
```

- Configuração da interface serial0/0 do Roteador0

Simulador Packet Tracer

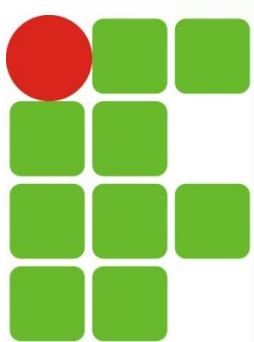
The screenshot shows the configuration window for the FastEthernet0/0 interface on Router1. The interface is selected in the left-hand menu. The configuration parameters are as follows:

Parameter	Value
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input checked="" type="checkbox"/> Auto
Speed	<input checked="" type="radio"/> 100 Mbps
Duplex	<input checked="" type="checkbox"/> Auto
Duplex Mode	<input checked="" type="radio"/> Full Duplex
MAC Address	00D0.5820.4867
IP Address	172.16.30.1
Subnet Mask	255.255.0.0

Equivalent IOS Commands:

```
Router(config)#interface Serial0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
```

- Configuração da interface Fast Ethernet do Roteador1



Simulador Packet Tracer

The screenshot shows the configuration window for Router1, specifically for the Serial0/0 interface. The interface is currently configured with the following settings:

- Port Status: On
- Clock Rate: Not Set
- Duplex: Full Duplex
- IP Address: 200.200.100.2
- Subnet Mask: 255.255.255.252

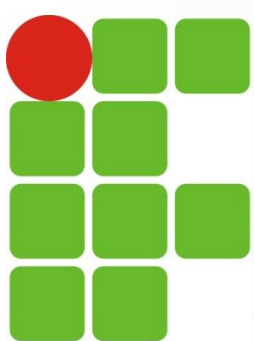
The left sidebar shows the configuration tree with the following categories:

- GLOBAL
 - Settings
- ROUTING
 - Static
 - RIP
- INTERFACE
 - FastEthernet0/0
 - Serial0/0**
 - Serial0/1

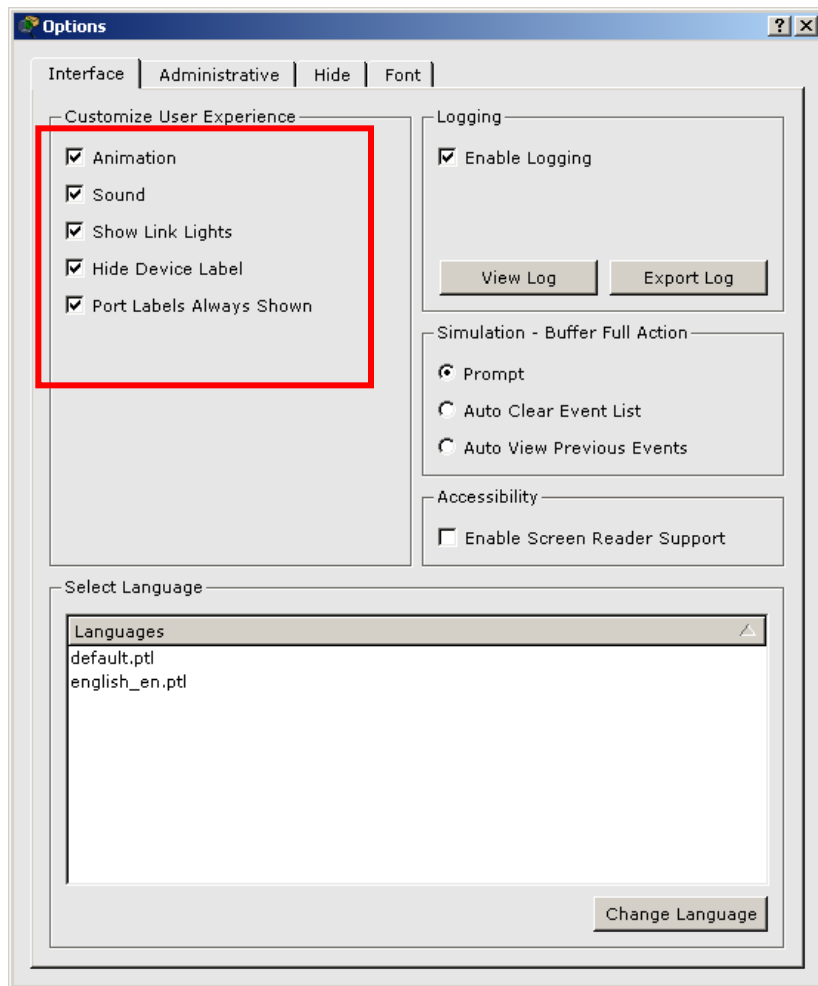
The bottom section displays the equivalent IOS commands:

```
Router(config)#interface Serial0/0
Router(config-if)#no shutdown
Router(config-if)#ip address 200.200.100.2 255.255.255.0
Router(config-if)#ip address 200.200.100.2 255.255.255.252
Router(config-if)#
```

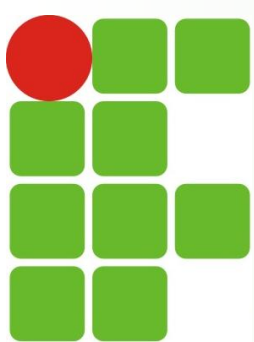
- Configuração da interface serial0/0 do Roteador1



Simulador Packet Tracer



- Pode-se realizar algumas configurações no programa acessando o menu Options->Preferences



Simulador Packet Tracer

Packet Tracer 5.0 by Cisco Systems, Inc. - E:/CEFET-RN/2008.2/Arquitetura_TCP_IP/Atividades/Cenario_rede_rotacionamento_rip.pkt

File Edit Options View Tools Extensions Help

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

Time: 00:28:01 Power Cycle Devices Realtime

Scenario 0

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

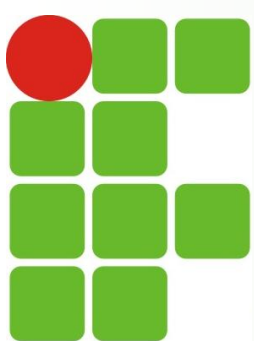
Connections

Automatically Choose Connection Type

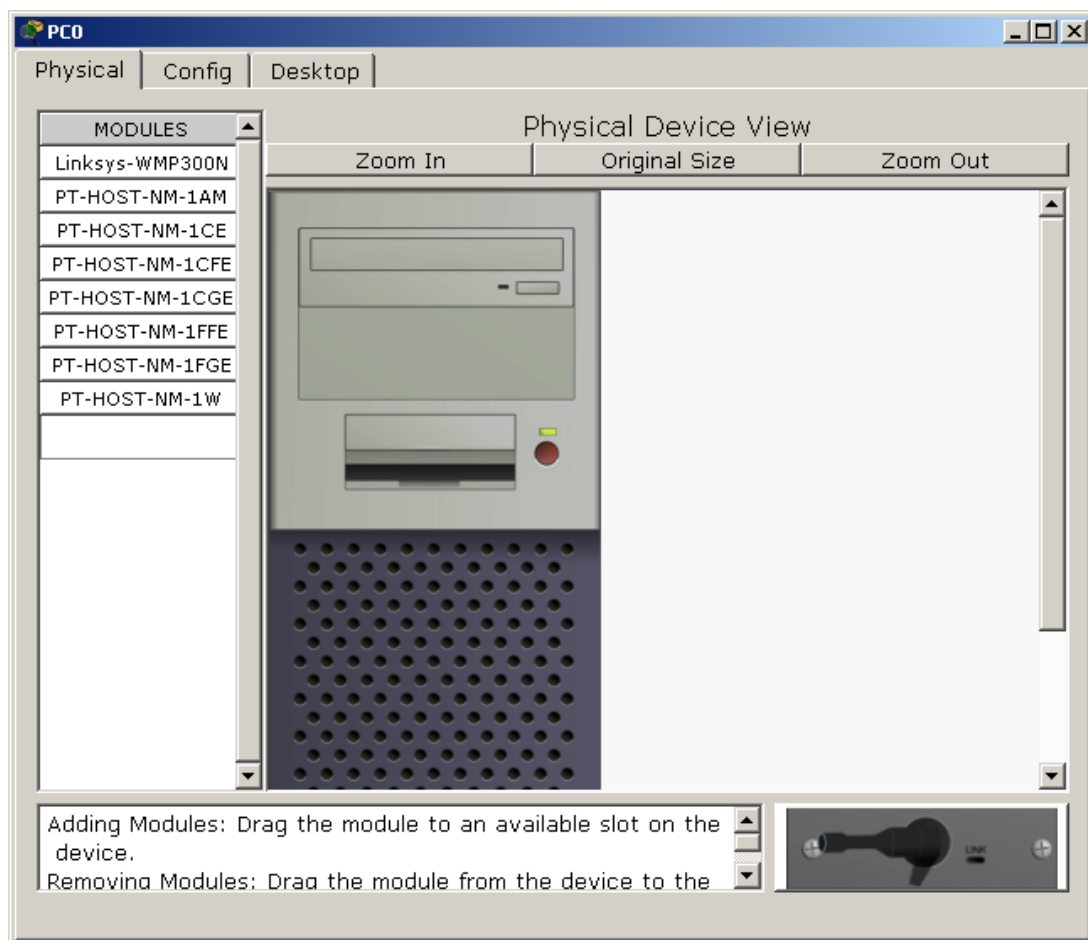
New Delete

Toggle PDU List Window

Interligação dos dispositivos

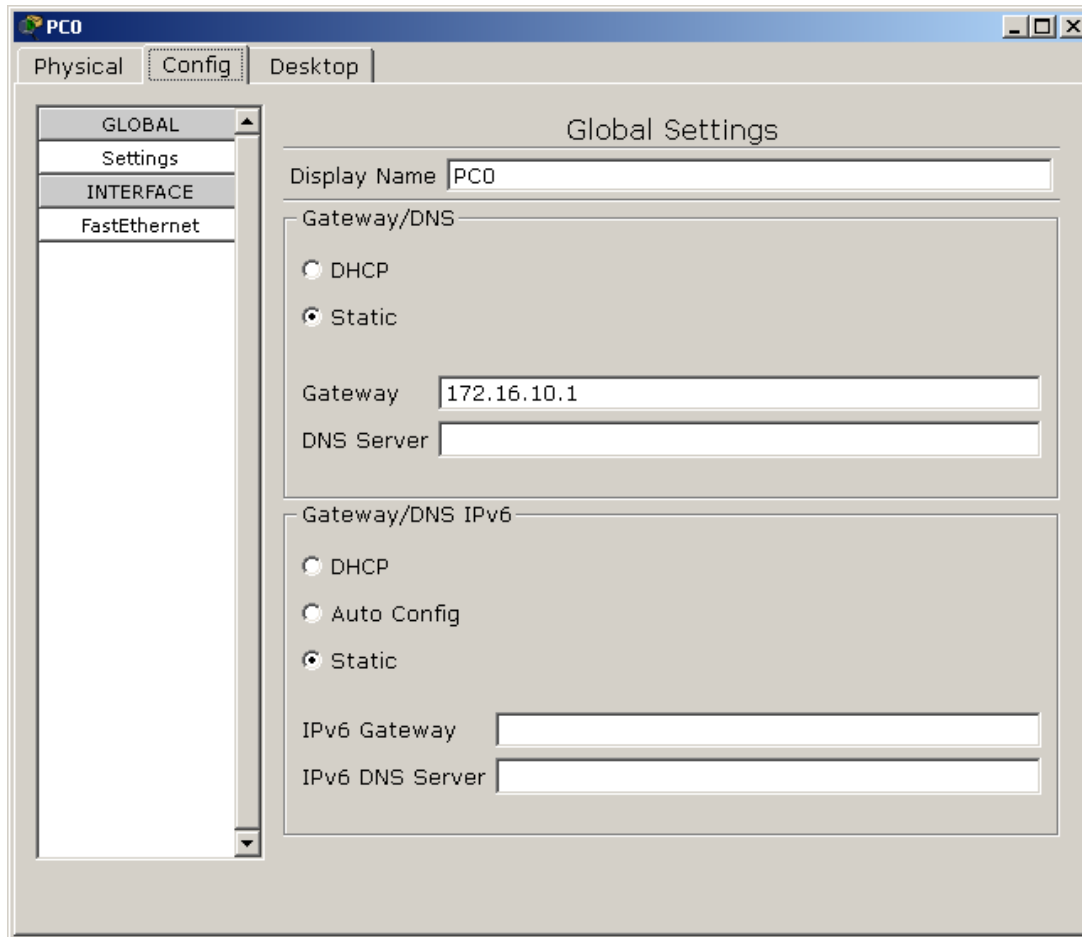


Simulador Packet Tracer

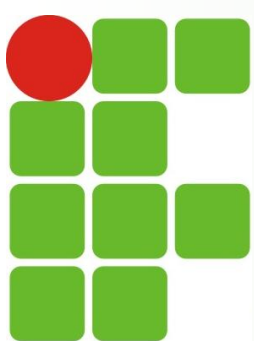


- Pode-se realizar configurações nos hosts (computadores) através das abas Physical, Config e Desktop

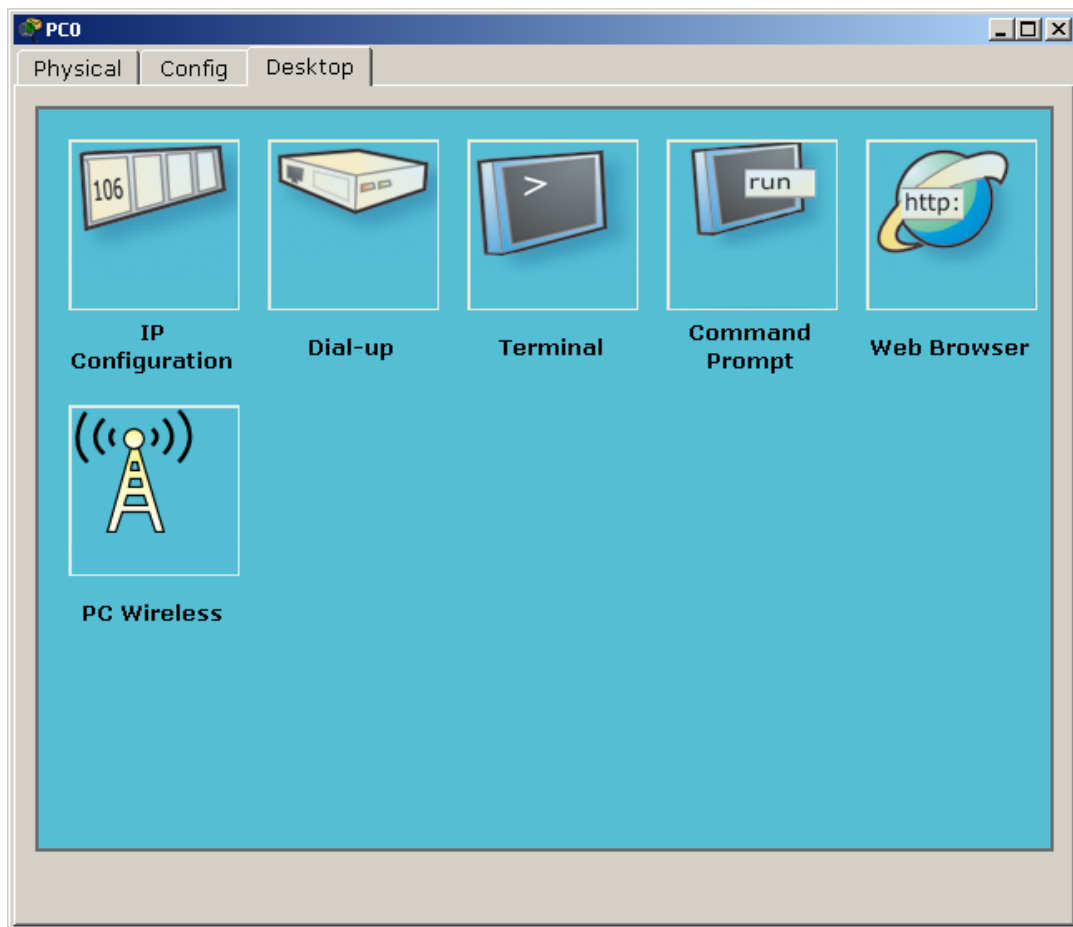
Simulador Packet Tracer



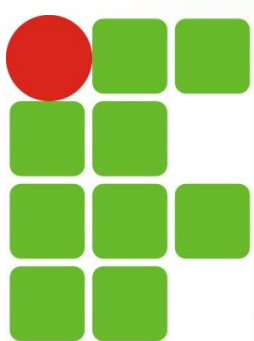
- Pode-se realizar configurações de endereçamento



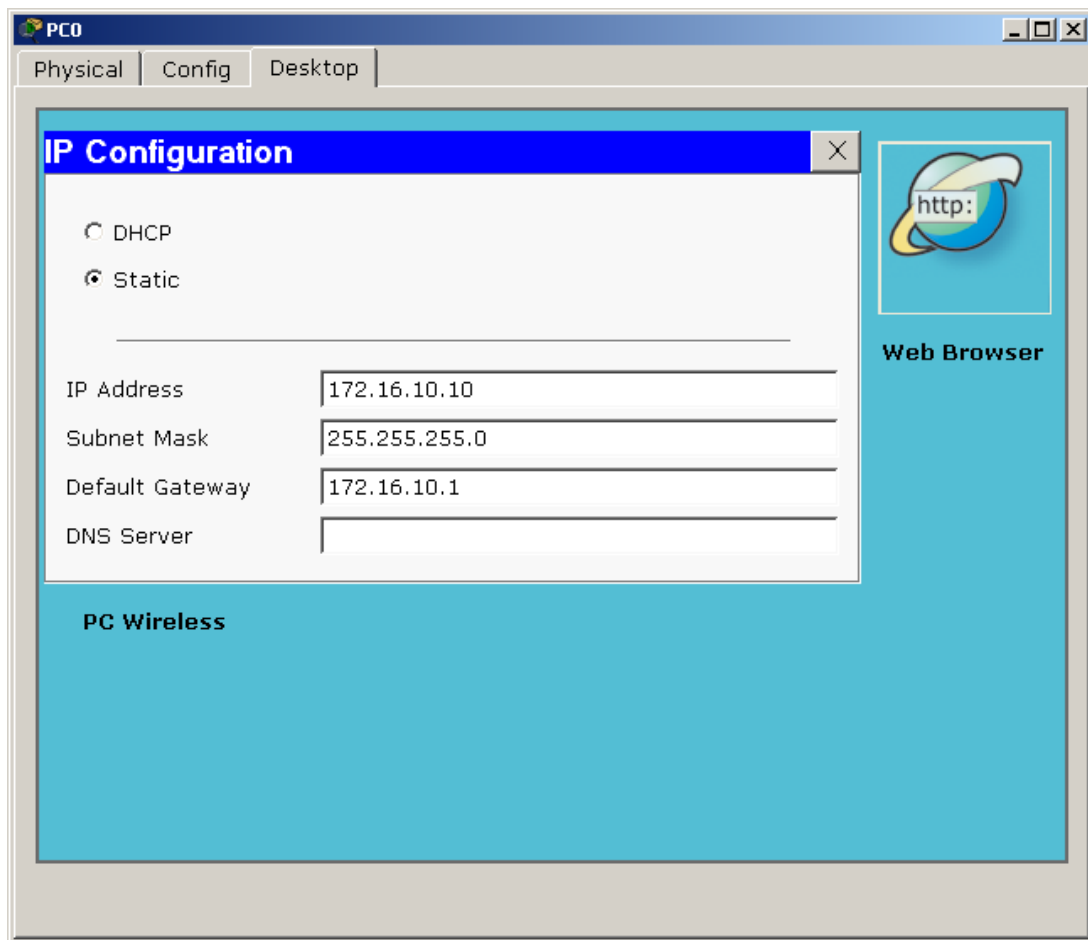
Simulador Packet Tracer



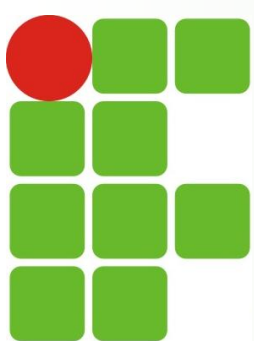
- Opções de configuração da aba Desktop



Simulador Packet Tracer



- Acesso a opção IP CONFIGURATION



Simulador Packet Tracer

```
PCO
Physical Config Desktop
Command Prompt
PC>
PC>ping 172.16.10.1

Pinging 172.16.10.1 with 32 bytes of data:

Reply from 172.16.10.1: bytes=32 time=157ms TTL=255
Reply from 172.16.10.1: bytes=32 time=62ms TTL=255
Reply from 172.16.10.1: bytes=32 time=62ms TTL=255
Reply from 172.16.10.1: bytes=32 time=62ms TTL=255

Ping statistics for 172.16.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 62ms, Maximum = 157ms, Average = 85ms

PC>ping 172.16.30.1

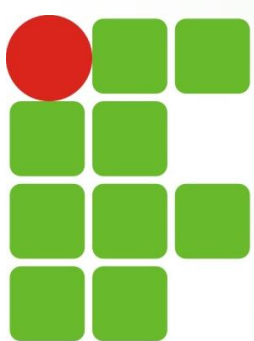
Pinging 172.16.30.1 with 32 bytes of data:

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

Ping statistics for 172.16.30.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>
```

- Acesso a opção COMMAND PROMPT



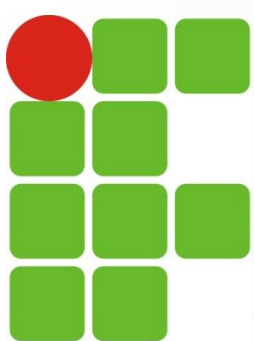
Simulador Packet Tracer

```
Router0
Physical Config CLI
IOS Command Line Interface
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#rou
Router(config)#router rip
Router(config-router)#ver
Router(config-router)#version 2
Router(config-router)#ne
Router(config-router)#network 200.200.100.0
Router(config-router)#network 172.16.10.0
Router(config-router)#exit
Router(config)#exit
%SYS-5-CONFIG_I: Configured from console by console
Router#show ip rou
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

    172.16.0.0/24 is subnetted, 1 subnets
C       172.16.10.0 is directly connected, FastEthernet0/0
    200.200.100.0/30 is subnetted, 1 subnets
C       200.200.100.0 is directly connected, Serial0/0
Router#
```

- Realizando a configuração do protocolo de roteamento dinâmico RIP no **Roteador0** através da COMMAND LINE INTERFACE



Simulador Packet Tracer

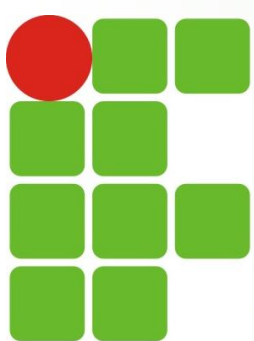
```
Router1
Physical Config CLI
IOS Command Line Interface
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#ver
Router(config-router)#version 2
Router(config-router)#netw
Router(config-router)#network 200.200.100.0 255.255.255.252
^
% Invalid input detected at '^' marker.

Router(config-router)#network 200.200.100.0
Router(config-router)#network 172.16.30.0
Router(config-router)#exit
Router(config)#exit
%SYS-5-CONFIG_I: Configured from console by console
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

      172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
R       172.16.0.0/16 [120/1] via 200.200.100.1, 00:00:23, Serial0/0
C       172.16.30.0/24 is directly connected, FastEthernet0/0
      200.200.100.0/30 is subnetted, 1 subnets
C       200.200.100.0 is directly connected, Serial0/0
Router#
```

- Realizando a configuração do protocolo de roteamento dinâmico RIP no **Roteador1** através da COMMAND LINE INTERFACE



Simulador Packet Tracer

```
PCO
Physical Config Desktop
Command Prompt
PC>ping 172.16.30.1

Pinging 172.16.30.1 with 32 bytes of data:

Reply from 172.16.30.1: bytes=32 time=93ms TTL=254
Reply from 172.16.30.1: bytes=32 time=109ms TTL=254
Reply from 172.16.30.1: bytes=32 time=78ms TTL=254
Reply from 172.16.30.1: bytes=32 time=94ms TTL=254

Ping statistics for 172.16.30.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 78ms, Maximum = 109ms, Average = 93ms

PC>ping 172.16.30.30

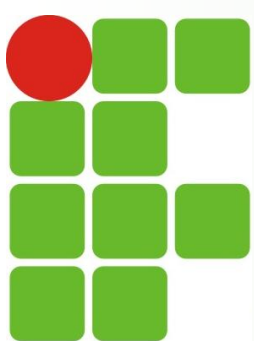
Pinging 172.16.30.30 with 32 bytes of data:

Reply from 172.16.30.30: bytes=32 time=158ms TTL=126
Reply from 172.16.30.30: bytes=32 time=125ms TTL=126
Reply from 172.16.30.30: bytes=32 time=141ms TTL=126
Reply from 172.16.30.30: bytes=32 time=157ms TTL=126

Ping statistics for 172.16.30.30:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 125ms, Maximum = 158ms, Average = 145ms

PC>
```

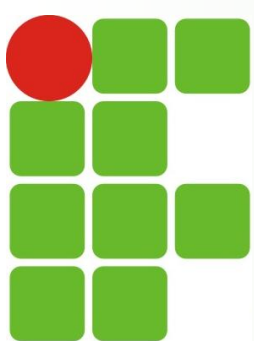
- Testando a configuração das rotas



Simulador Packet Tracer

```
Router0
Physical Config CLI
IOS Command Line Interface
Router#copy running-config sta
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
```

- Salvando as configurações do roteador no arquivo de inicialização (Gravar na flash)



Simulador Packet Tracer

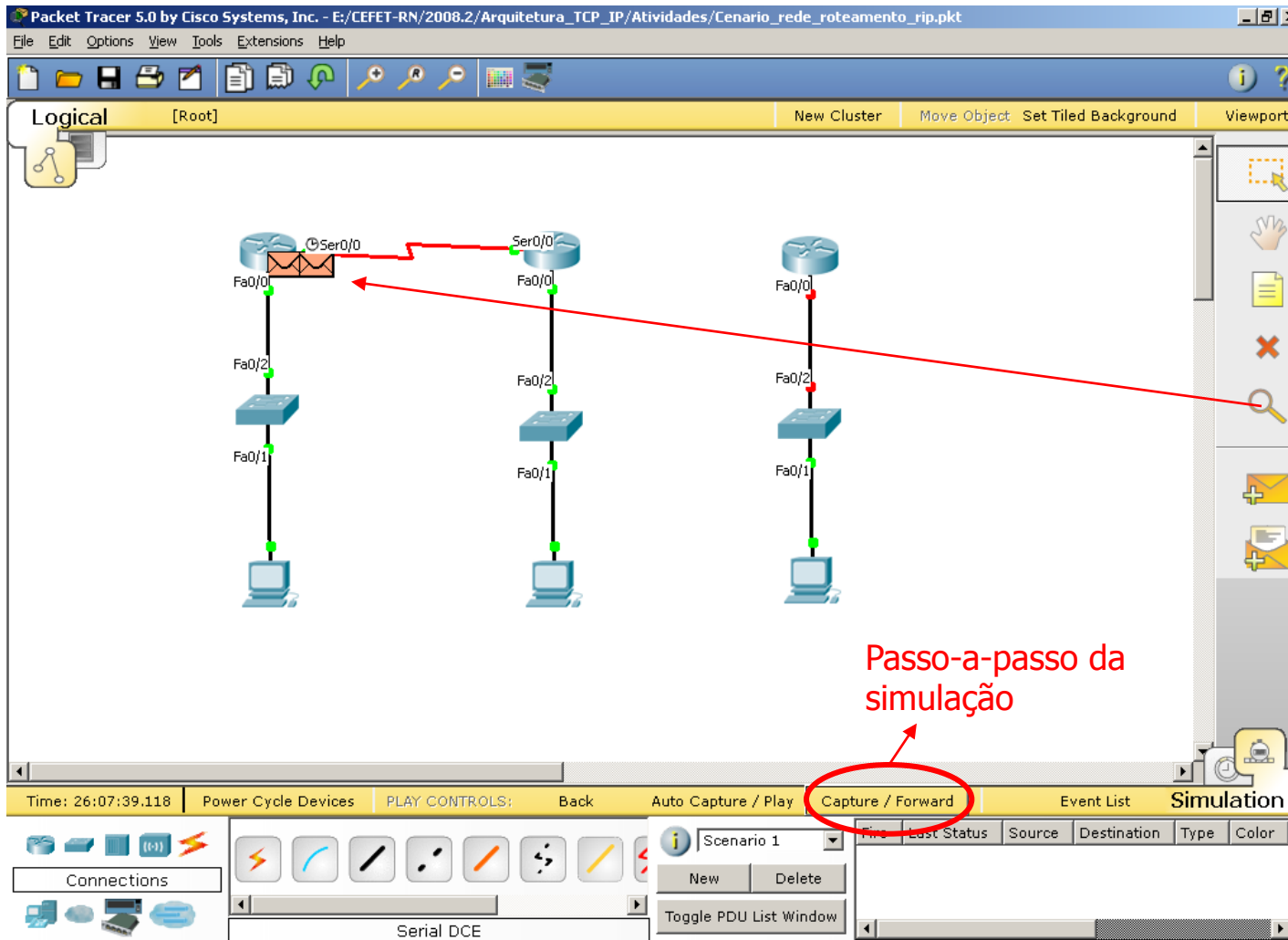
The screenshot shows the Packet Tracer 5.0 interface. At the top, the title bar reads "Packet Tracer 5.0 by Cisco Systems, Inc. - E:/CEFET-RN/2008.2/Arquitura_TCP_IP/Atividades/Cenario_rede_rotacao_rip.pkt". Below the title bar is a menu bar with "File", "Edit", "Options", "View", "Tools", "Extensions", and "Help". A toolbar contains various icons for file operations and navigation. The main workspace is titled "Logical [Root]" and contains a network diagram with three routers and three PCs. A red line connects the Ser0/0 ports of the first two routers. The bottom status bar shows "Time: 26:07:19.905", "Power Cycle Devices", "PLAY CONTROLS: Back", "Auto Capture / Play", "Capture / Forward", and "Event List". A "Simulation" button is circled in red. Below the status bar are panels for "Connections", "Serial DCE", and a table for "Scenario 1".

Fire	Last Status	Source	Destination	Type	Color

• Utilizando o modo de simulação

Altera entre o modo de simulação E o de tempo real

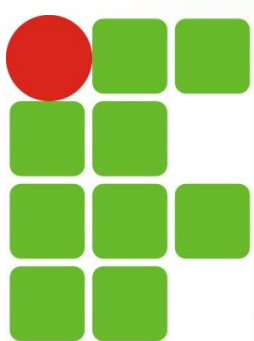
Simulador Packet Tracer



• Utilizando o modo de simulação

• Clicando na lupa E depois no pacote é possível verificar o conteúdo da PDU

Passo-a-passo da simulação



Simulador Packet Tracer

PDU Information at Device: Router0

OSI Model | Outbound PDU Details

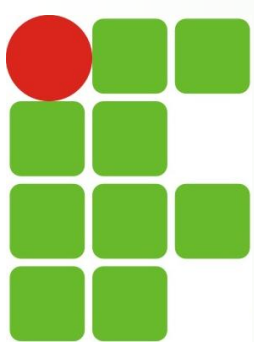
At Device: Router0
Source: Router0
Destination: 224.0.0.9

In Layers	Out Layers
Layer7	Layer 7: RIP Version: 2, Command: 2
Layer6	Layer6
Layer5	Layer5
Layer4	Layer 4: UDP Src Port: 520, Dst Port: 520
Layer3	Layer 3: IP Header Src. IP: 200.200.100.1, Dest. IP: 224.0.0.9
Layer2	Layer 2: HDLC Frame HDLC
Layer1	Layer 1: Port(s): Serial0/0

1. Serial0/0 sends out the frame.

Challenge Me << Previous Layer Next Layer >>

- Nesta tela é possível verificar cada camada do modelo OSI



Simulador Packet Tracer

PDU Information at Device: Router0

OSI Model | Inbound PDU Details

PDU Formats

HDLC

0	8	16	32	32+x	48+x	56+x	Bits
FLG:	ADR:	CONTROL:	DATA: (VARIABLE LENGTH)	FCS:	FLG:		
0111 1110	0x8f	0x0		0x0	0111 1110		

IP

0	4	8	16	19	31	Bits
4	IHL	DSCP: 0x0	TL			
ID: 0x0		0x0	FRAG OFFSET: 0x0			
TTL: 255	PRO: 0x11	CHKSUM				
SRC IP: 200.200.100.2						
DST IP: 224.0.0.9						
OPT: 0x0			0x0			
DATA (VARIABLE LENGTH)						

UDP

0	16	31	Bits
SRC PORT: 520		DEST PORT: 520	
LENGTH: 0x26		CHECKSUM: 0x0	
DATA (VARIABLE)			

RIP v.2

0	4	8	16	19	31	Bits
CMD: 0x2	VER: 0x2	0000 0000 0000 0000				
ADDR FAMILY: 0x2		ROUTE TAG: 0x0				
NETWORK: 172.16.0.0						
SUBNET: 255.255.0.0						
NEXT HOP: 200.200.100.2						
METRIC: 0x1						

- Nesta tela é possível verificar todas as PDU's transmitidas

Simulador Packet Tracer

Packet Tracer 5.0 by Cisco Systems, Inc. - E:/CEFET-RN/2008.2/Arquitetura_TCP_IP/Atividades/Cenario_rede_rotamento_rip.pkt

File Edit Options View Tools Extensions Help

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

From: Router0
Type: RIPv2
Status: Accepted

Time: 26:07:39.119 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward Event List Simulation

Fire	Last Status	Source	Destination	Type	Color

Connections

Serial DCE

Scenario 1 New Delete Toggle PDU List Window

Iniciar sonet - Pesquisa G... Programa da Cisco ... Packet Tracer 5... Imagens imagem - Paint Router0 00:48

- Continuando a simulação, o pacote é entregue ao destino

Simulador Packet Tracer

Packet Tracer 5.0 by Cisco Systems, Inc. - E:/CEFET-RN/2008.2/Arquitetura_TCP_IP/Atividades/Cenario_rede_rotacao_rip.pkt

File Edit Options View Tools Extensions Help

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

Time: 26:07:42.635 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward Event List Simulation

Fire	Last Status	Source	Destination	Type	Color

- Continuando a simulação, o pacote é entregue ao destino

Simulador Packet Tracer

Packet Tracer 5.0 by Cisco Systems, Inc. - E:/CEFET-RN/2008.2/Arquitetura_TCP_IP/Atividades/Cenario_rede_rotacao_rip.pkt

File Edit Options View Tools Extensions Help

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

From: Router1
Type: RIPv2
Status: Accepted

Time: 26:07:42.636 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward Event List Simulation

Fire	Last Status	Source	Destination	Type	Color

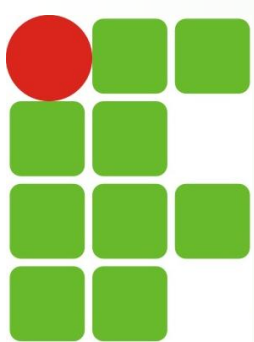
Connections

Serial DCE

Scenario 1 New Delete Toggle PDU List Window

Iniciar sonet - Pesquisa G... Programa da Cisco ... Packet Tracer 5... Imagens Imagem - Paint Router0 00:50

- Continuando a simulação, o pacote é entregue ao destino



Simulador Packet Tracer

PDU Information at Device: Router0

OSI Model | Inbound PDU Details

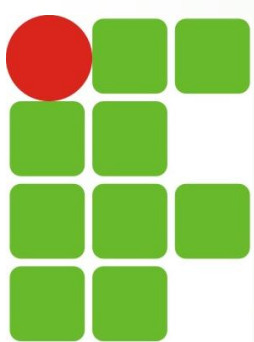
At Device: Router0
Source: Router1
Destination: 224.0.0.9

In Layers	Out Layers
Layer 7: RIP Version: 2, Command: 2	Layer7
Layer6	Layer6
Layer5	Layer5
Layer 4: UDP Src Port: 520, Dst Port: 520	Layer4
Layer 3: IP Header Src. IP: 200.200.100.2, Dest. IP: 224.0.0.9	Layer3
Layer 2: HDLC Frame HDLC	Layer2
Layer 1: Port Serial0/0	Layer1

1. Serial0/0 receives the frame.

Challenge Me | << Previous Layer | Next Layer >>

- Examinando o pacote em **Router0**



Simulador Packet Tracer

PDU Information at Device: Router0

OSI Model Inbound PDU Details

PDU Formats

HDLC

0	8	16	32	32+x	48+x	56+x	Bits
FLG:	ADR:	CONTROL:	DATA: (VARIABLE LENGTH)		FCS:	FLG:	
0111	0x8f	0x0			0x0	0111	
1110						1110	

IP

0	4	8	16	19	31	Bits	
4	IHL	DSCP: 0x0		TL			
ID: 0x0		0x0		FRAG OFFSET: 0x0			
TTL: 255		PRO: 0x11		CHKSUM			
SRC IP: 200.200.100.2							
DST IP: 224.0.0.9							
OPT: 0x0				0x0			
DATA (VARIABLE LENGTH)							

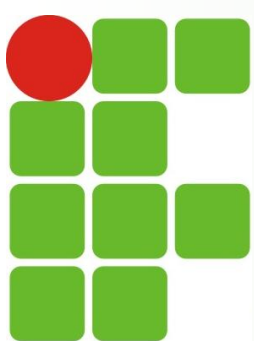
UDP

0	16	31	Bits
SRC PORT: 520		DEST PORT: 520	
LENGTH: 0x26		CHECKSUM: 0x0	
DATA (VARIABLE)			

RIP v.2

0	4	8	16	19	31	Bits
CMD: 0x2		VER: 0x2		0000 0000 0000 0000		
ADDR FAMILY: 0x2		ROUTE TAG: 0x0				
NETWORK: 172.16.0.0						
SUBNET: 255.255.0.0						
NEXT HOP: 200.200.100.2						
METRIC: 0x1						

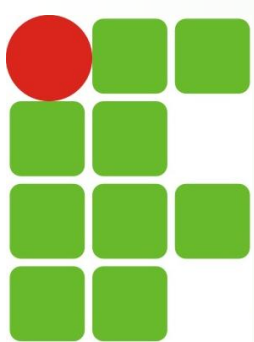
- PDU's em **Router0**



Simulador Packet Tracer

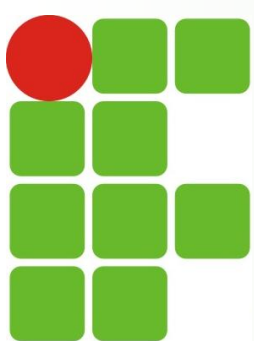
```
Router1
Physical | Config | CLI
IOS Command Line Interface
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#deb
Router#debug ip
Router#debug ip rou
Router#debug ip ?
  icmp    ICMP transactions
  nat     NAT events
  ospf    OSPF information
  packet  Packet information
  rip     RIP protocol transactions
  routing Routing table events
Router#debug ip rou
Router#debug ip routing
IP routing debugging is on
Router#debug ip rip
RIP protocol debugging is on
Router#
```

Copy Paste



Simulador Packet Tracer

```
Router1
Physical Config CLI
IOS Command Line Interface
Router#debug ip rou
Router#debug ip routing
IP routing debugging is on
Router#debug ip rip
RIP protocol debugging is on
Router#RIP: received v2 update from 200.200.100.1 on Serial0/0
    172.16.0.0/16 via 0.0.0.0 in 1 hops
RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (172.16.30.1)
RIP: build update entries
    172.16.0.0/16 via 0.0.0.0, metric 2, tag 0
    200.200.100.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial0/0 (200.200.100.2)
RIP: build update entries
    172.16.0.0/16 via 0.0.0.0, metric 1, tag 0
RIP: received v2 update from 200.200.100.1 on Serial0/0
    172.16.0.0/16 via 0.0.0.0 in 1 hops
RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (172.16.30.1)
RIP: build update entries
    172.16.0.0/16 via 0.0.0.0, metric 2, tag 0
    200.200.100.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial0/0 (200.200.100.2)
RIP: build update entries
    172.16.0.0/16 via 0.0.0.0, metric 1, tag 0
```



Referências

- Comer, Douglas E., Interligação de Redes Com Tcp/ip
- James F. Kurose, Redes de Computadores e a Internet
- Escola Superior de Redes, Arquitetura e Protocolos de Redes TCP/IP
- Escola Superior de Redes, Roteamento avançado