

Internetworking Essentials CSE307

Lab 0

Course details

Text Book

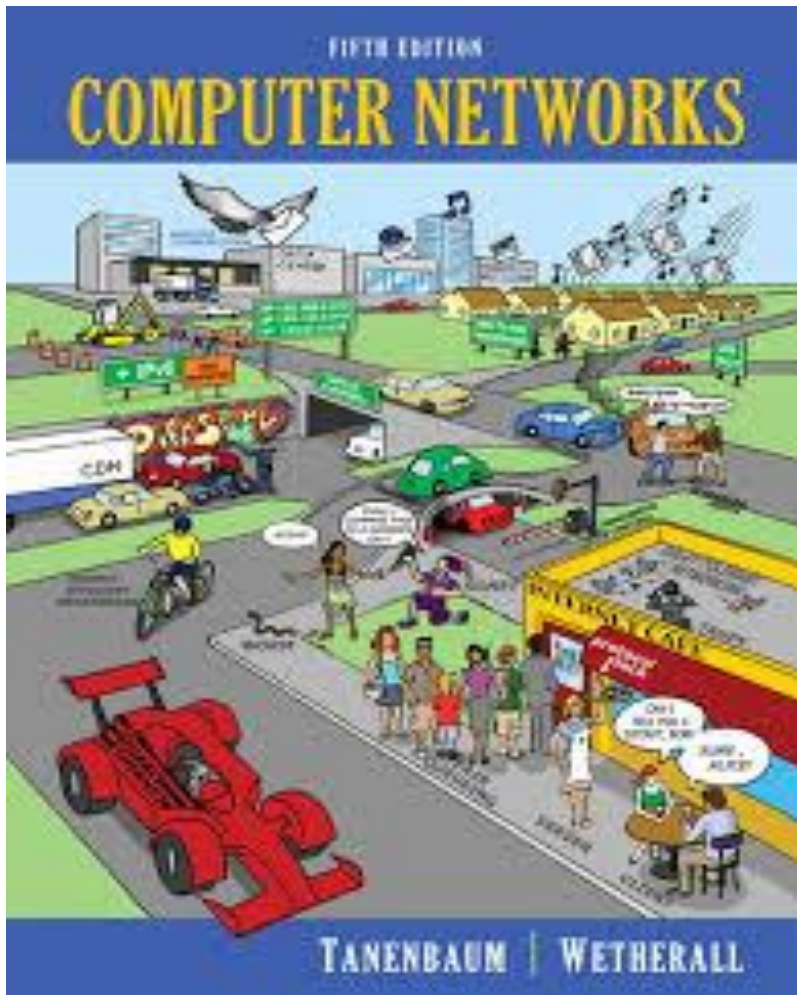
COMPUTER NETWORKS by ANDREW S. TANENBAUM, PEARSON

Course Assessment Model

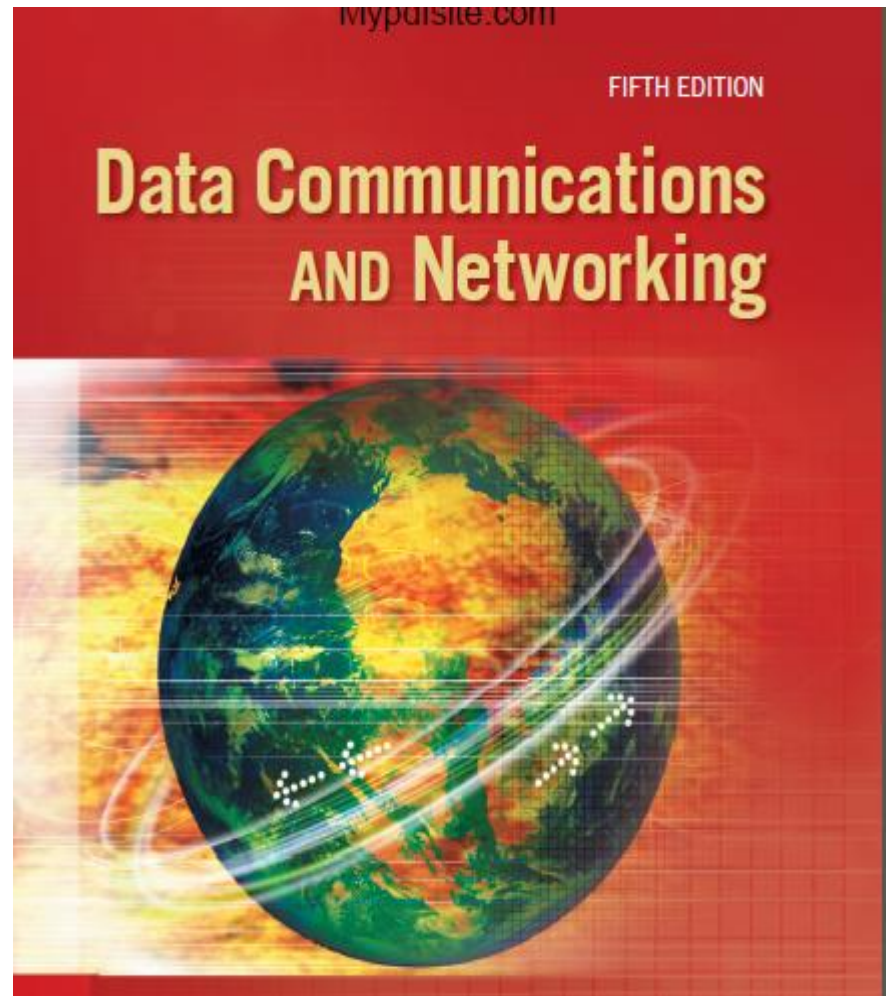
- **4 CA Components**

POLL 1

- How many CA components are in LAB CSE 307
 - a) 2
 - b) 3
 - c) 4
 - d) 5

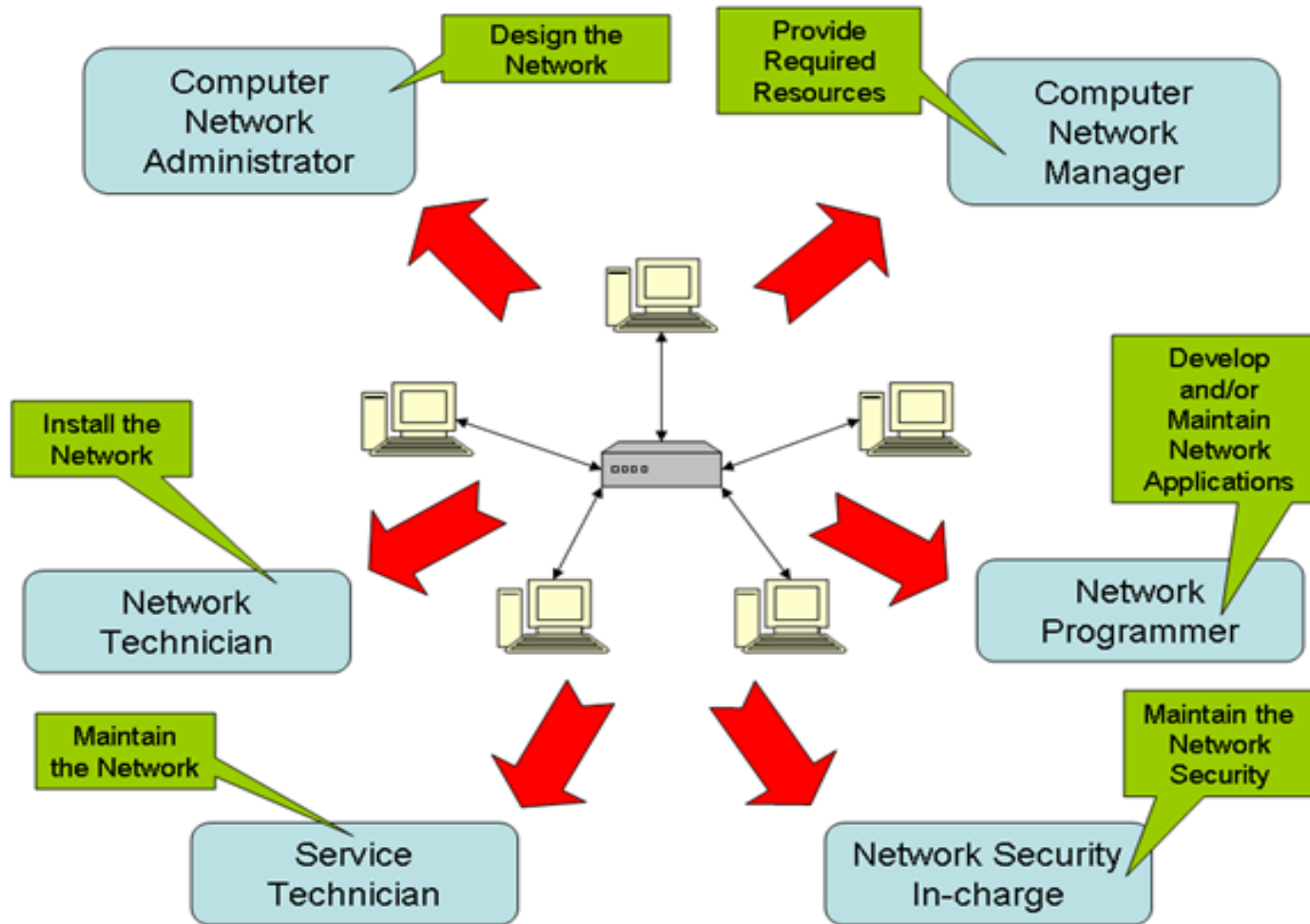


Text Book



Reference Book 1
Ed 5

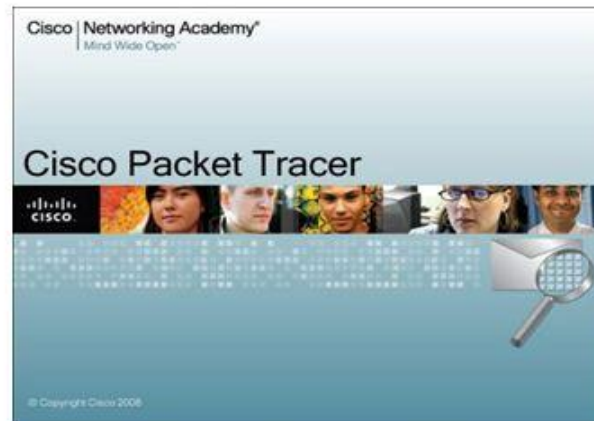
Why Study ?



(Career Avenues in Computer Networking)

What is Cisco Packet Tracer?

- Comprehensive networking technology teaching and learning software developed by Cisco Networking Academy



- Offers a unique combination of realistic simulation and visualization experiences, complex assessment and activity authoring capabilities, and opportunities for multiuser collaboration and competition

POLL 2

Packet tracer is simulation software offered by

- a) Cisco
- b) Dell
- c) IBM
- d) Hewlett Packard

syllabus

Network hardware and IP addressing concept

- Working of hub, switch and Router, Adding of interfaces in devices
- Cabling - Creation of straight and Cross cable using crimping tool
- IP addressing basics, configuration using CLI, VLSM and FLSM on single router
- Implementation of Star, Mesh, Bus and Hybrid Topology

Network Commands

- Ping, tracert, arp, netstat, ipconfig, ftp, nslookup, snmpget, snmpgetbulk and snmpset (use DOS and scenario based configuration)

Network layer routing protocols

- Implementation of Static Routing using Classfull and classless (FLSM)
- Implementation of Static Routing using VLSM
- Routing information Protocol(RIP) using classfull and classless (FLSM)
- Routing information rotocol(RIP) using VLSM

Server Configuration and LAN Setup

- Implementation of FTP, Implementation of HTTP and Email setup on server
- Implementation of DNS, Implementation of DHCP
- Implementation of LAN with configuration of inter-networking devices and any application layer protocol

IPv6 addressing and routing

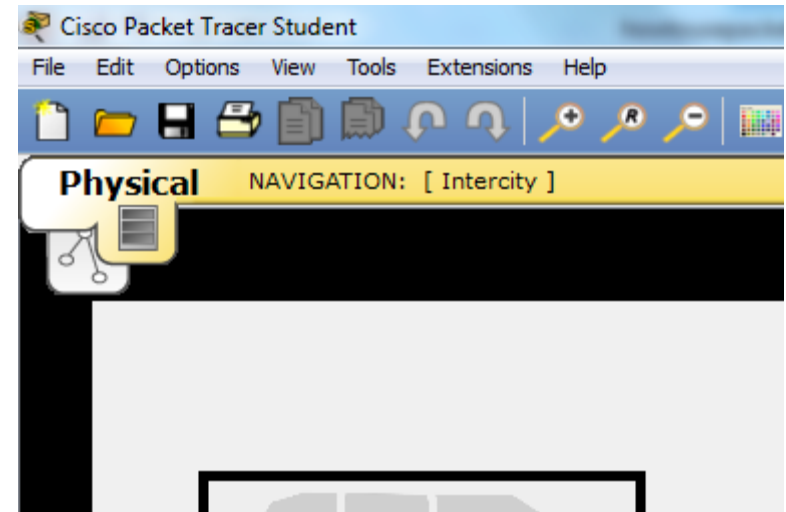
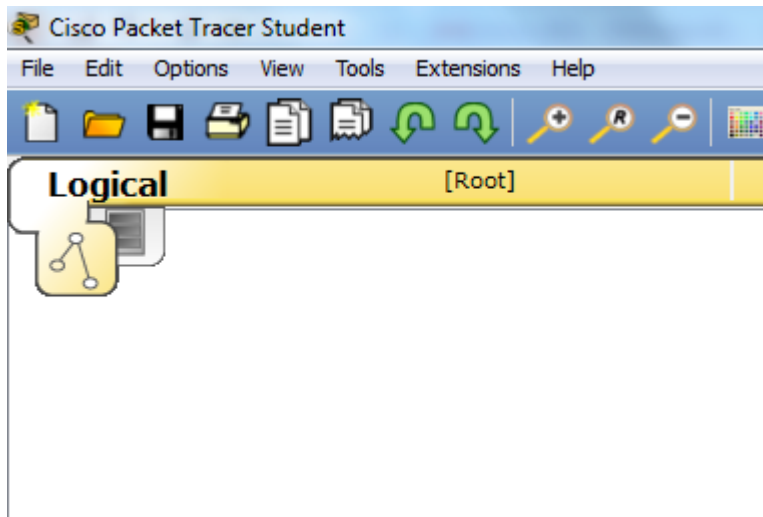
- IPv6 Addressing & Stateless Address Auto Configuration (SLAAC)
- IPv6 Neighbor Discovery
- IPv6 Static Routing
- IPv6 Dynamic Routing

Link to download

- <https://www.computernetworkingnotes.com/ccna-study-guide/download-packet-tracer-for-windows-and-linux.html>

Packet Tracer has two different views

- Logical Workspace
- Physical Workspace



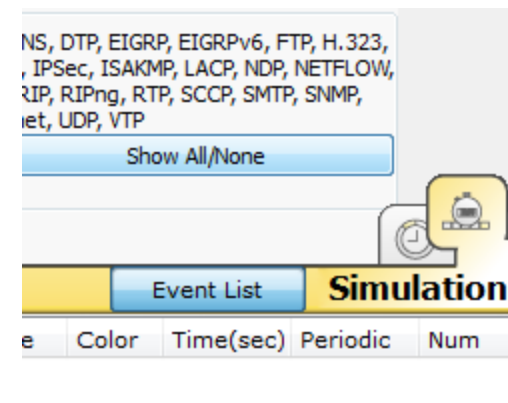
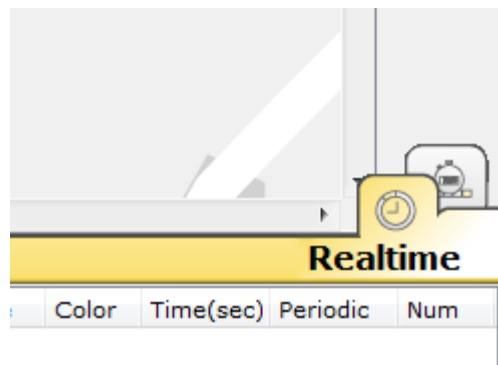
POLL 3

Which of the workspace we will use more in lab

- a) logical
- b) physical
- c) Both
- d) None of the above

Packet Tracer also has two modes of operation

- Realtime Mode
- Simulation Mode



Basics to Create the Devices

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

To create a device:

1. Click the Select tool, if necessary.
2. Choose a device type.
3. Choose a device.
4. Click on the workspace.

2620XM Router0

Power Cycle Devices

Routers

1841 2620XM 2621XM 2811 Generic Generic

2620XM

Scenario 0

New Delete

Toggle PDU List Window

Realtime

Fire Last Status Source Destination

Common Tools

Logical

[Root]

New Cluster

Move Object

Set Tiled Background

Viewport

2620XM Router0

2950-24 Switch0

PC-PT PC0

The Common Tools bar includes:

Select tool for selecting

Move tool for moving the entire topology

Note tool for adding notes anywhere on the topology

Delete tool for removing devices and links

Power Cycle Devices

Realtime

End Devices

PC-PT

Scenario 0

New

Delete

Toggle PDU List Window

Fire

Last Status

Source

Destination

Some Tips

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

A Few Tips:

- You can create multiple instances of the same device by holding down the **CTRL** key.
- Cancel creating a device by clicking on it again or another tool. Also, the **ESC** key will cancel any action.
- Multiple devices can be selected at one time using the select tool and dragging a box around the desired devices.

2620XM Router0

2950-24 Switch0

PC-PT PC0

Power Cycle Devices

End Devices

Generic Generic Generic IPPhone

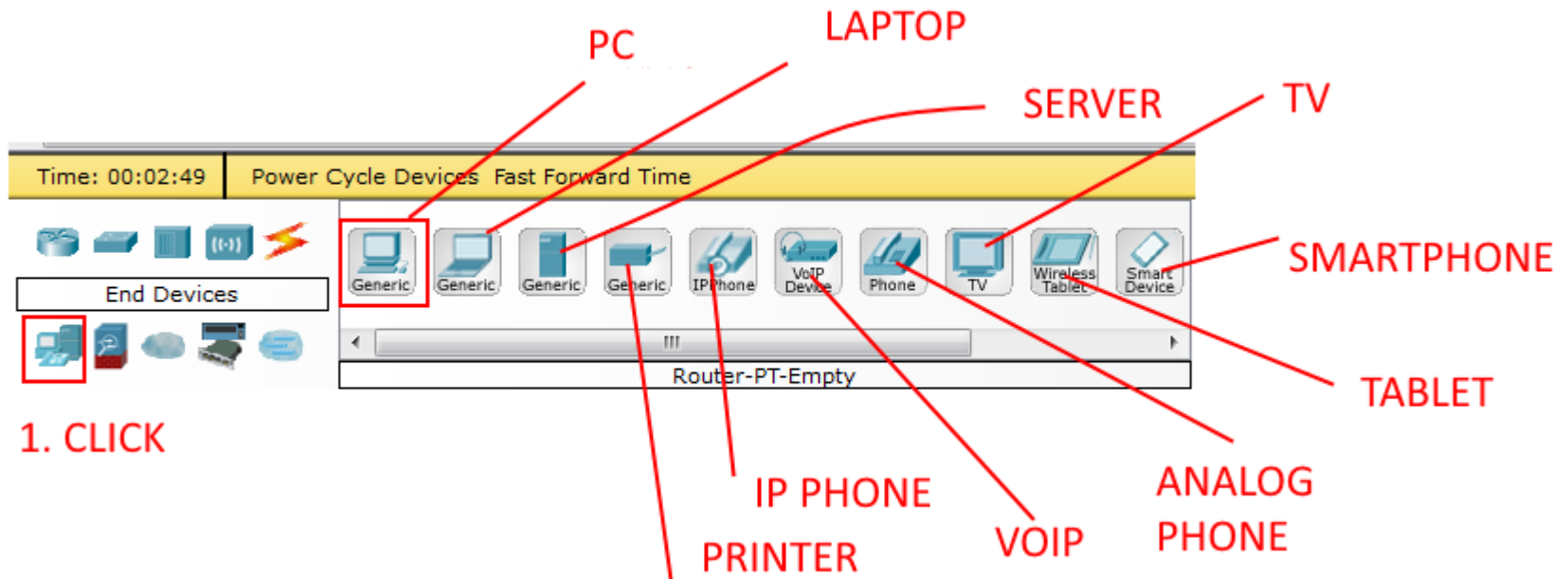
PC-PT

Realtime

Scenario 0	Fire	Last Status	Source	Destination
New	Delete			
Toggle PDU List Window				

Some End devices

Under End Devices, these are the following devices available:



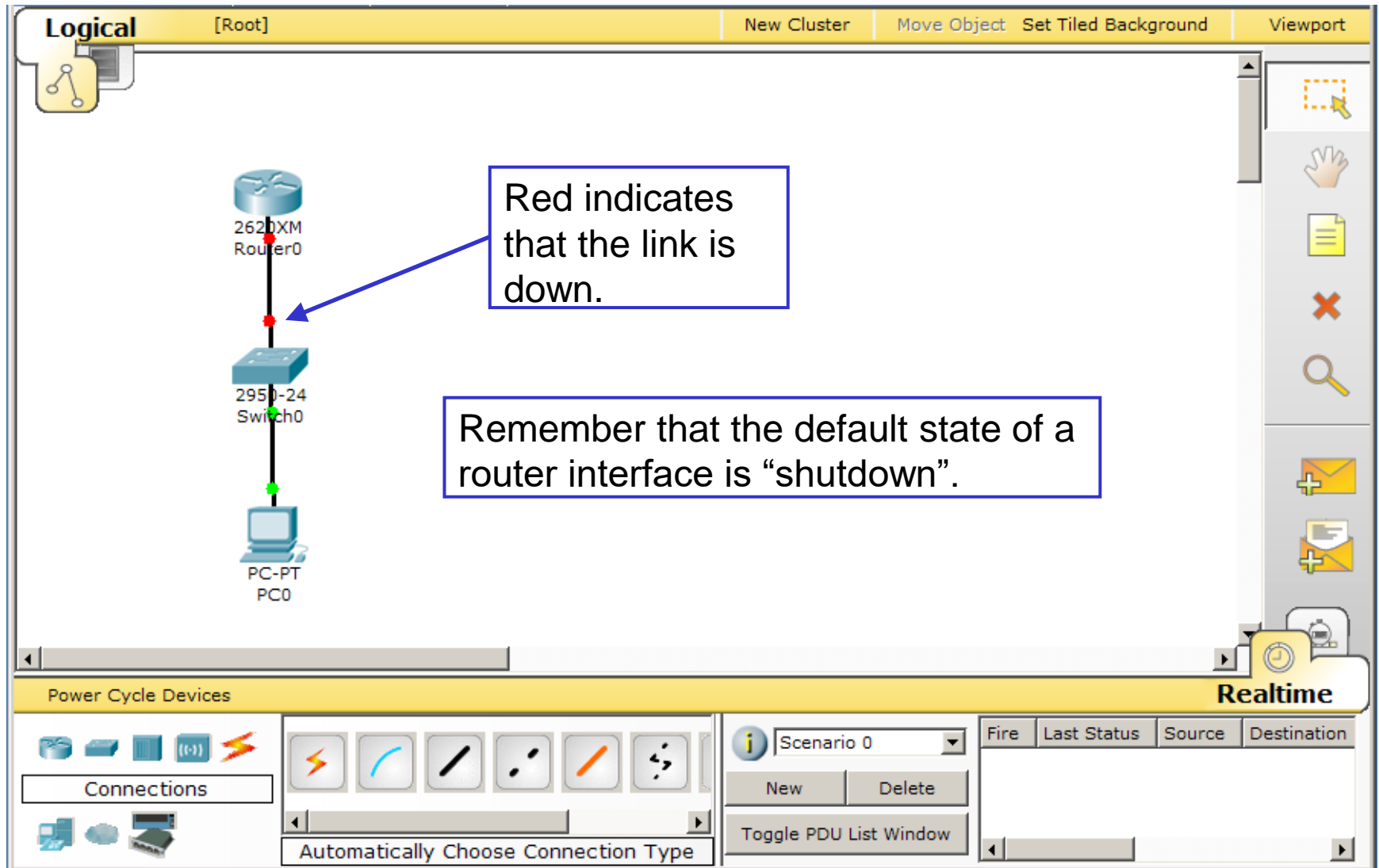
Smart Connection

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

To connect devices:

1. Click the Select tool, if necessary.
2. Choose the Connection icon.
3. Choose the Smart Connection icon.
4. Click on the first device.
5. Click on the second device.

The screenshot shows a network design software interface. At the top, there's a yellow header bar with tabs: "Logical", "[Root]", "New Cluster", "Move Object", "Set Tiled Background", and "Viewport". Below the header, the main workspace displays a network diagram with a "2620XM Router0" connected to a "2950-24" switch, which is then connected to a "PC-PT PC0". Five numbered callouts with blue arrows point to specific elements: 1. Points to the Select tool (hand icon) in the right-hand toolbar. 2. Points to the Connection icon (lightning bolt) in the bottom left "Connections" panel. 3. Points to the Smart Connection icon (lightning bolt with a blue arc) in the bottom left "Connections" panel. 4. Points to the "2620XM Router0" device. 5. Points to the "2950-24" switch device. The bottom of the interface features a "Power Cycle Devices" bar, a "Realtime" status window with tabs for "Fire", "Last Status", "Source", and "Destination", and a "Scenario 0" dropdown menu. The bottom left panel is titled "Connections" and contains various icons for different connection types. The bottom right panel has buttons for "New", "Delete", and "Toggle PDU List Window".



Viewing Port Labels

The screenshot shows the Cisco Packet Tracer interface in the 'Logical' view. The network topology consists of three devices connected in a line: a 2621 Router0 at the top, a 2950-24 Switch0 in the middle, and a PC-PT PC0 at the bottom. The connection between the router and the switch is highlighted with a red line. A text box with a blue border contains the text: "Mouse over the connection to see which ports Packet Tracer selected when making the Smart Connection." Two blue arrows point from this text box to the connection line. The interface includes a top menu bar with options like 'New Cluster', 'Move Object', 'Set Tiled Background', and 'Viewport'. The bottom panel shows 'Power Cycle Devices', 'Connections', and a 'Realtime' section with a table for 'Scenario 0'.

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

2621 Router0 Fa0/0
Fa0/1
2950-24 Switch0
PC-PT PC0

Mouse over the connection to see which ports Packet Tracer selected when making the Smart Connection.

Power Cycle Devices

Connections

Automatically Choose Connection Type

Realtime

Scenario 0

New Delete

Toggle PDU List Window

Fire	Last Status	Source	Destination

Network Description

The screenshot shows a network simulation software interface. At the top, there is a toolbar with various icons for file operations and a menu bar with options like 'New Cluster', 'Move Object', 'Set Tiled Background', and 'Viewport'. Below the menu bar, the main workspace is titled 'Logical [Root]'. It displays a network topology diagram with a router (2620XM GAD) connected to a switch (2950-24 Switch0), which is then connected to a PC (PC-PT GAD_Student). The network is labeled 'Network 192.168.1.0/24'. The router's Fa0/0 interface is configured with IP 192.168.1.1/24. The PC is configured with IP 192.168.1.2/24 and Gateway 192.168.1.1.

A 'Network Description' window is open, providing details about the topology:

Network Description:

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.

A blue arrow points from a text box to the 'i' icon in the top right corner of the interface.

Click on "i" icon to add a Network Description.

At the bottom of the interface, there is a 'Power Cycle Devices' section and a 'Realtime' section. The 'Realtime' section includes a dropdown menu for 'Scenario 0' and buttons for 'New', 'Delete', and 'Toggle PDU List Window'. A table with columns 'Fire', 'Last Status', 'Source', and 'Destination' is also visible.

Save Your Configurations and File

The screenshot shows the Packet Tracer 4.1 interface. The 'File' menu is open, with the 'Save' option highlighted. A callout box points to this option with the text: "Save your file by selecting File...Save".

In the background, a network diagram shows a router labeled 'GAD' connected to a switch labeled '2950-24 Switch0'. The router's configuration window is open, showing the 'NVRAM' section with a 'Save' button. A second callout box points to this button with the text: "Save your router configs by clicking the NVRAM **Save** button."

The router's configuration window also shows the 'Config' tab with the following settings:

- Display Name: GAD
- Hostname: GAD
- Static
- RIP
- INTERFACE: FastEthernet0/0

The 'Commands' window at the bottom shows the following commands:

```
GAD(config-if)#exit
GAD(config)#interface FastEthernet0/0
GAD(config-if)#
```

POLL 4

Which of the following are end devices

- a) PC
- b) Laptop
- c) Printer
- d) All of the above

FUTURE SCOPE



They receive live information from the road authority about the state of the roads including traffic jams, accidents and weather. The car transmits information to the road authority regarding speed, distance travelled, use of windscreen wipers, etc.

