Data Communication and Computer Networks Lab

LAB NO. 01

MAKING STRAIGHT THROUGH CROSS OVER CABLE

OBJECTIVE

Making straight through and cross over cable.

PREREQUISITES:

RJ-45 connector

Eight-conductor data cable (Cat 3 or Cat 5)

DESCRIPTION: Color Codes for RJ-45 Ethernet Plug Eight-conductor data cable (Cat 3 or Cat 5) contains 4 pairs of wires. Each pair consists of a solid color wire and a white and color striped wire. Each of the pairs is twisted together. To maintain reliability on Ethernet, you should not untwist them any more than necessary (about 1/4 inch).

The pairs designated for 10BaseT Ethernet are orange and green. The other two pairs, brown and blue, are unused. The connections shown are specifically for an RJ45 plug. The wall jack may be wired in a different sequence because the wires may be crossed inside the jack. The jack should either come with a wiring diagram or at least designate pin numbers that you can match up to the color code below.

There are two wiring standards for these cables, called T-568A and T-568B. They differ only

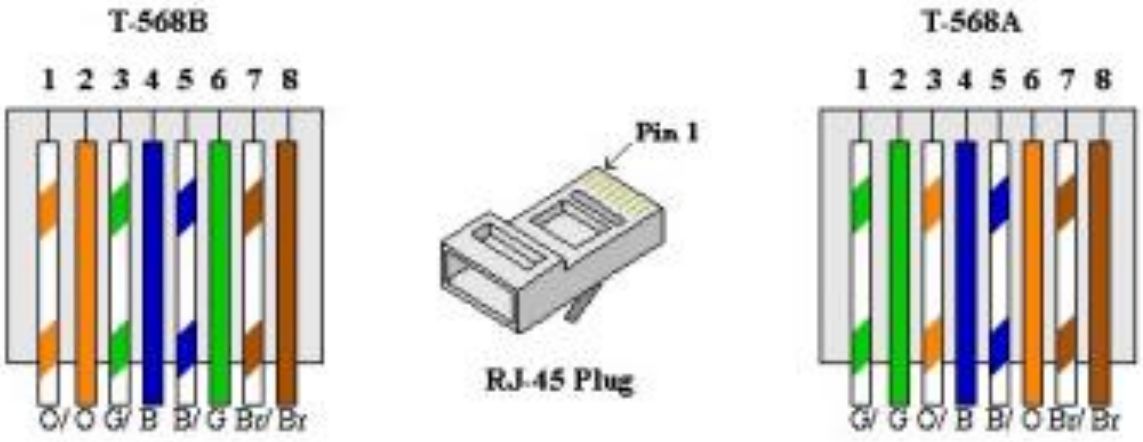


Figure 1.1: color codes

in pin assignments, not in uses of the various colors. The illustration above shows both standards. With the T-568B specification the orange and green pairs are located on pins 1, 2 and 3, 6 respectively. The T-568A specification reverses the orange and green connections, so that the blue and orange pairs are on the center 4 pins, which makes it more compatible with the telco voice connections. T-568A is supposed to be the standard for new installations, and T-568B is the alternative. However, most off-the-shelf data equipment and cables seem to be wired to T568B. Pin Number Designations Here are the pin number designations for both standards: Note: Odd pin numbers are always the striped wires.

T-568B

Pin	Color	Pair	Description
1	white/orange	2	TxData +
2	orange	2	TxData -
3	white/green	3	RecvData +
4	blue	1	Unused
5	white/blue	1	Unused
6	green	3	RecvData -
7	white/brown	4	Unused
8	brown	4	Unused

T-568A

Pin	Color	Pair	Description
1	white/green	3	RecvData +
2	green	3	RecvData -
3	white/orange	2	TxData +
4	blue	1	Unused
5	white/blue	1	Unused
6	orange	2	TxData -
7	white/brown	4	Unused
8	brown	4	Unused

Figure 1.2: Pin Numbers

Straight-Through vs. Cross-Over In general, the patch cords that you use with your Ethernet connections are "straight-through", which means that pin 1 of the plug on one end is connected to pin 1 of the plug on the other end (for either standard). The only time you cross connections in 10BaseT is when you connect two hubs together. Then you need a "cross-over" patch cable, which crosses transmit and receive pairs. An easy way remembers how to make a cross-over cable is to wire one end with the T-568A standard and the other with the T-568B standard

LAB 1
INTRODUCTION TO PACKET TRACER

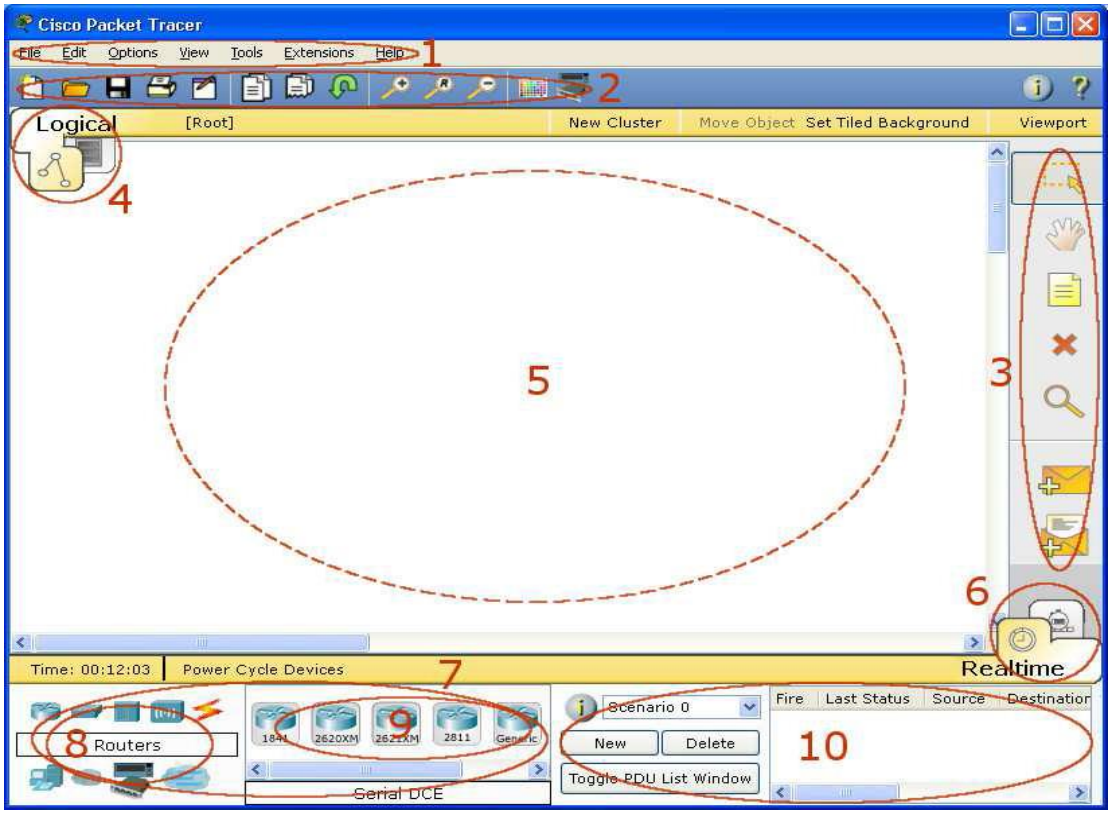
I. Lab Objectives

1. Cisco Packet Tracer Overview
2. Creating Devices
3. Adding Modules
4. Making Connections
5. Creating Networks

II. Lab Content

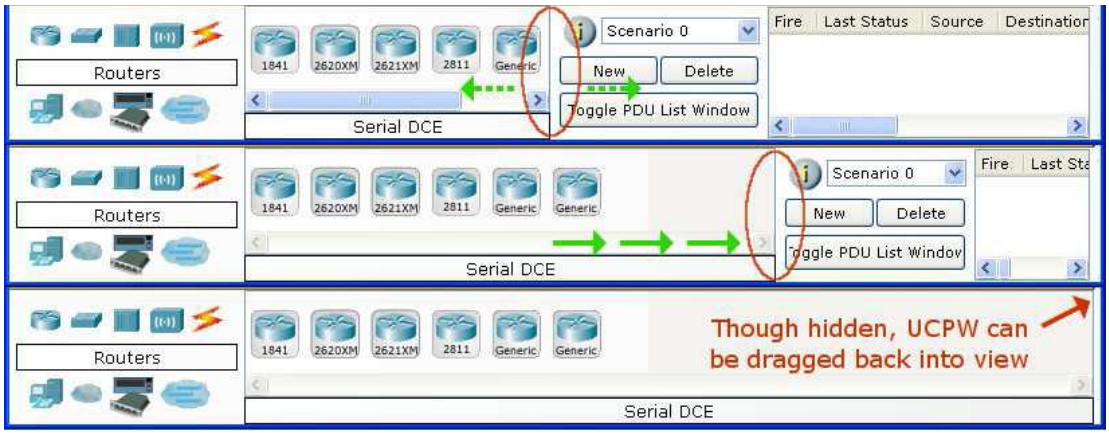
1. Cisco Packet Tracer 5.1 Overview

(*Your tutor will briefly describe functionality of Packet Tracer*)



1	**Menu Bar**	This bar provides the **File**, **Edit**, **Options**, **View**, **Tools**, **Extensions**, and **Help** menus. You will find basic commands such as **Open**, **Save**, **Print**, and **Preferences** in these menus. You will also be able to access the **Activity Wizard** from the **Extensions** menu.
2	**Main Tool Bar**	This bar provides shortcut icons to the **File** and **Edit** menu commands. This bar also provides buttons for **Zoom**, the drawing **Palette**, and the **Device Template Manager**. On the right, you will also find the **Network**

		Information button, which you can use to enter a description for the current network (or any text you wish to include).
	Common Tools Bar	This bar provides access to these commonly used workspace tools: **Select**, **Move Layout**, **Place Note**, **Delete**, **Inspect**, **Add Simple PDU**, and **Add Complex PDU**. See "Workspace Basics" for more information.
	Logical/Physical Workspace and Navigation Bar	You can toggle between the Physical Workspace and the Logical Workspace with the tabs on this bar. In Logical Workspace, this bar also allows you to navigate through levels of a cluster, create a new **New Cluster**, **Move Object**, **Set Tiled Background**, and **Viewport**. In Physical Workspace, this bar allows you to navigate through physical locations, create a **New City**, create a **New Building**, create a **New Closet**, **Move Object**, apply **Grid** to the background, **Set Background**, and go to the **Working Closet**.
	Workspace	This area is where you will create your network, watch simulations, and view many kinds of information and statistics.
	Realtime/Simulation Bar	You can toggle between Realtime Mode and Simulation Mode with the tabs on this bar. This bar also provides buttons to **Power Cycle Devices** as well as the **Play Control** buttons and the **Event List** toggle button in Simulation Mode. Also, it contains a clock that displays the relative **Time** in Realtime Mode and Simulation Mode.
	Network Component Box	This box is where you choose devices and connections to put into the workspace. It contains the **Device-Type Selection** Box and the **Device-Specific Selection** Box.
	Device-Type Selection Box	This box contains the type of devices and connections available in Packet Tracer 5.1. The **Device-Specific Selection** Box will change depending on which type of device you choose.
	Device-Specific Selection Box	This box is where you choose specifically which devices you want to put in your network and which connections to make.
	User Created Packet Window*	This window manages the packets you put in the network during simulation scenarios. See the "Simulation Mode" section for more details.



2. Creating Devices

a. Choose a device type from the **Device-Type Selection** box
b. Click on the desired device model from the **Device-Specific Selection** box
c. Click on a location in the workspace to put your device in that location
d. If you want to cancel your selection, press the **Cancel** icon for that device
e. Alternatively, you can click and drag a device from the **Device-Specific Selection** box onto the workspace
f. You can also click and drag a device directly from the **Device-Type Selection** box and a default device model will be chosen for you