

# Data Communication and Networking: Lab 1

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## Create a Simple Network

At a bare minimum, networking requires two devices that have:

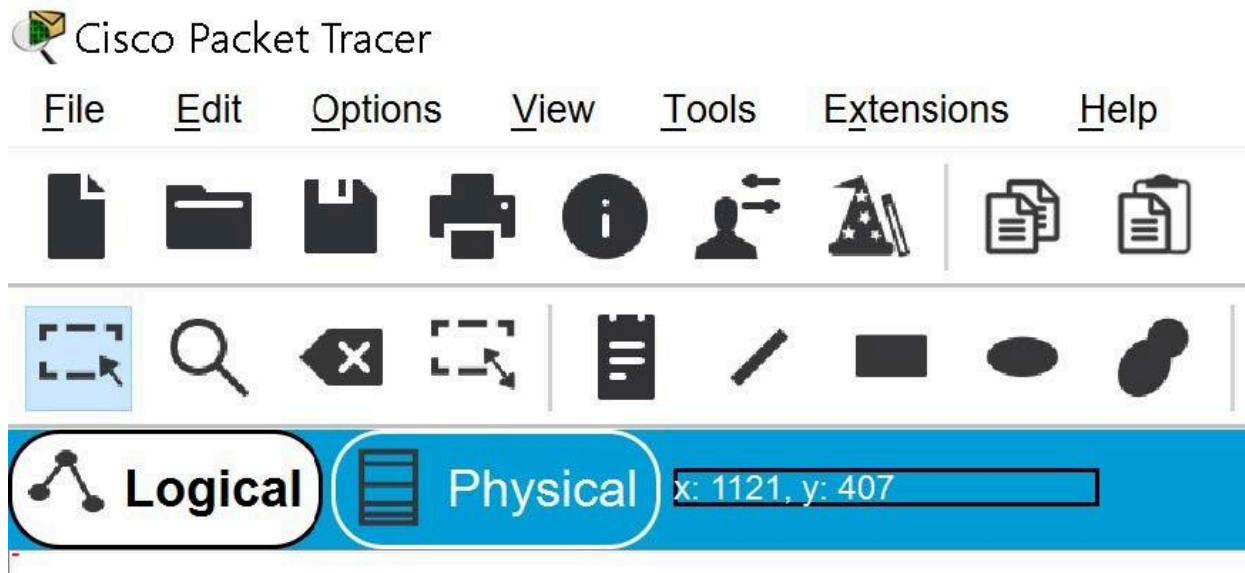
1. Hardware that can put data onto and take data off the medium.
2. A medium to carry data between the devices.
3. Protocols (rules) for how the two devices will communicate.

In this exercise, you will use Packet Tracer to create a simple network.

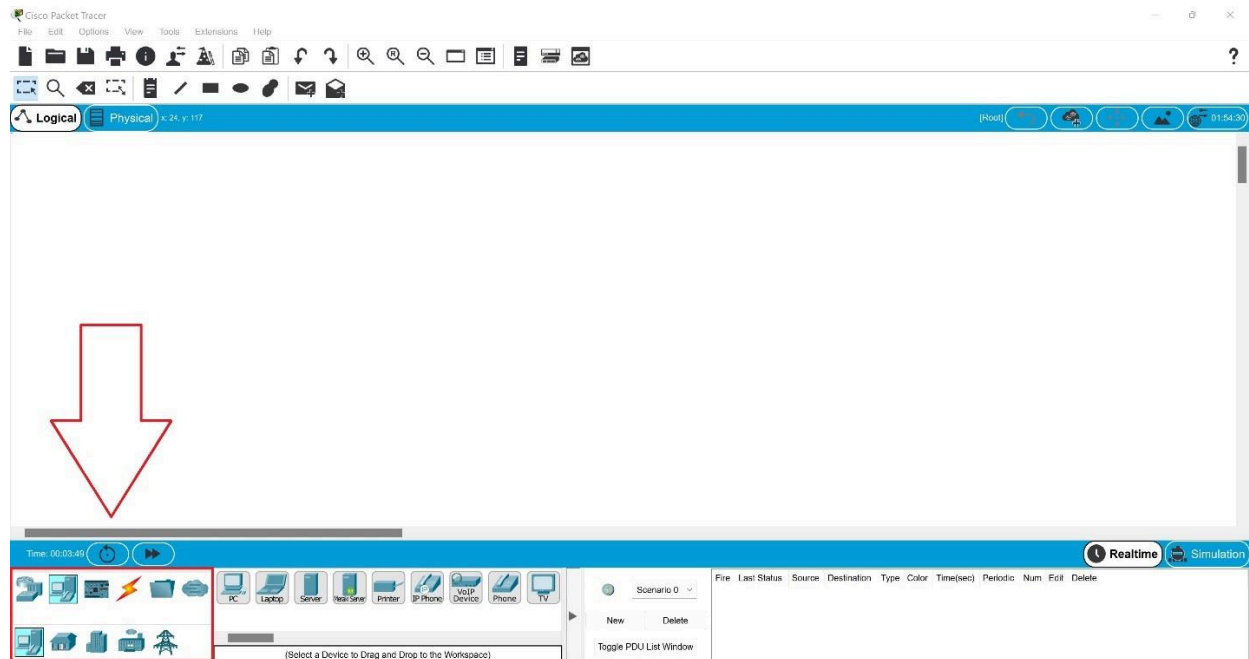
## TASK A

Let's start by adding two devices to our network:

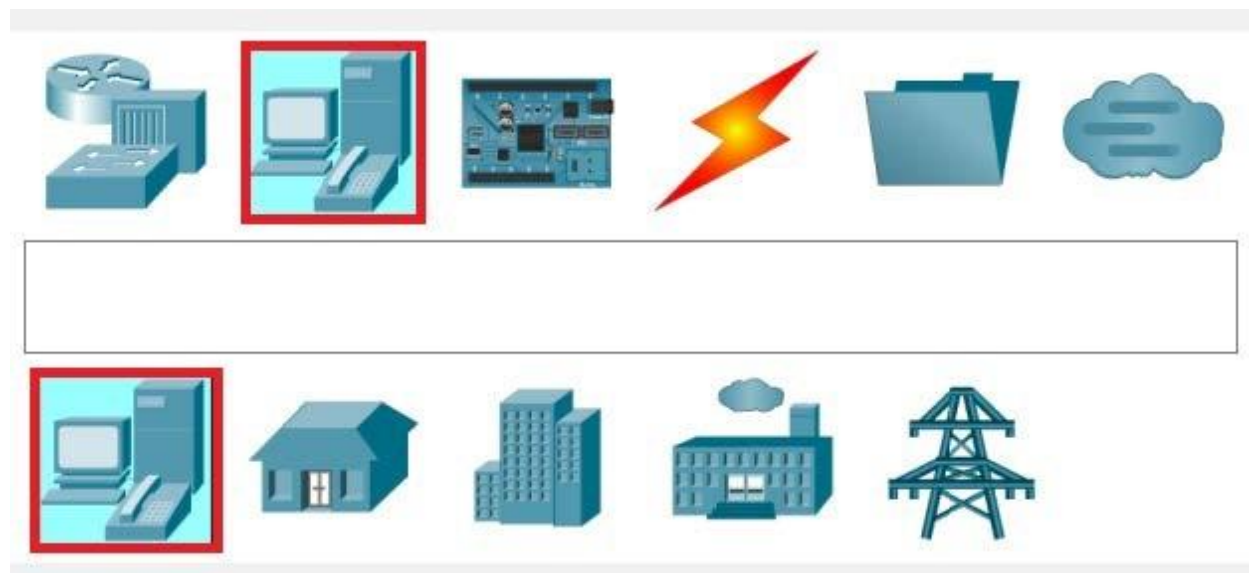
1. If the **Packet Tracer** application is not open, launch **Packet Tracer** and log in if necessary.
2. In the upper left corner, make sure to select the **Logical** button.



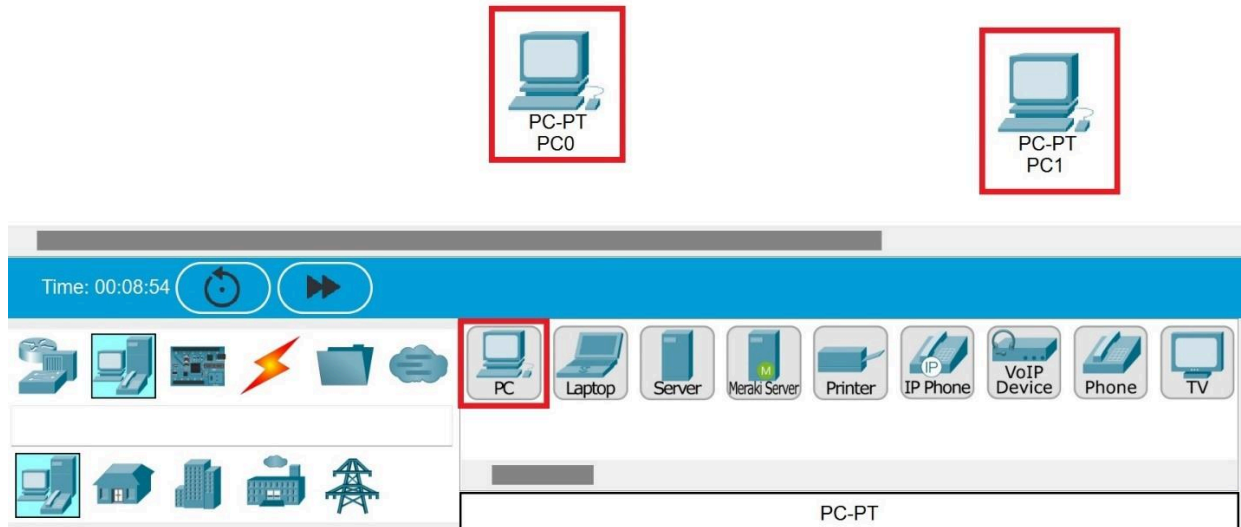
3. In the bottom left corner of the screen, locate the **toolbox area**.



4. In the **toolbox area**, select **End Devices** and then select **End Devices**.



5. Drag two **PC** objects onto the logical diagram.

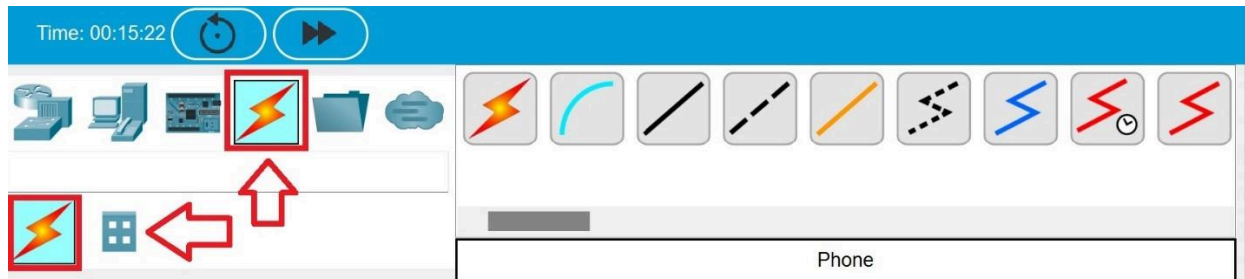


## TASK B

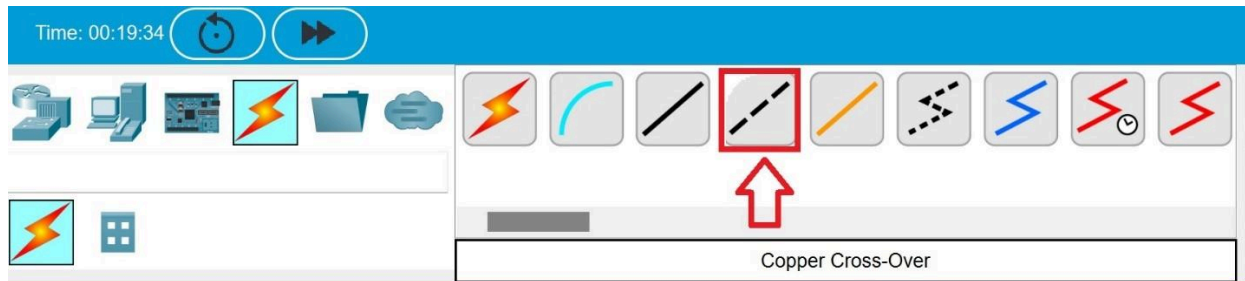
Our two PCs each have a network card that we will configure in the next task when we set up the protocol. Before configuring the protocol, we need a medium to carry the signal between the devices. For this exercise, we're going to be using a wire. When one wire connects two devices directly, we need to use a special wire called a cross-over cable. In this task, we will connect the two devices using a copper cross-over.



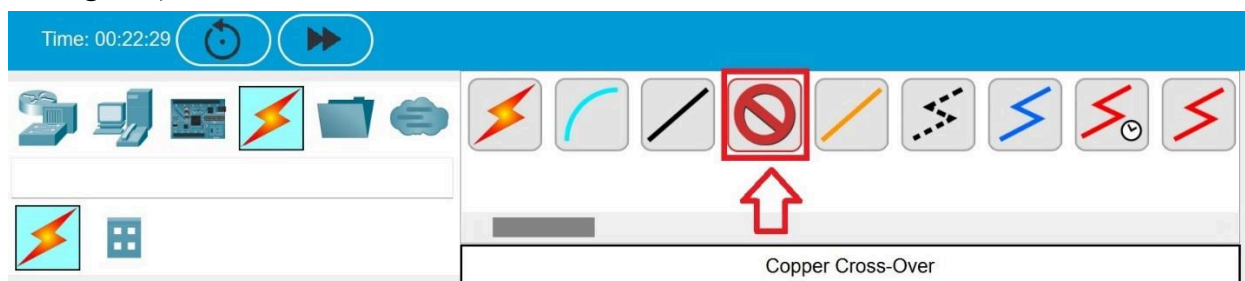
1. In the **toolbox area**, select **Connections** and then select **Connections**.



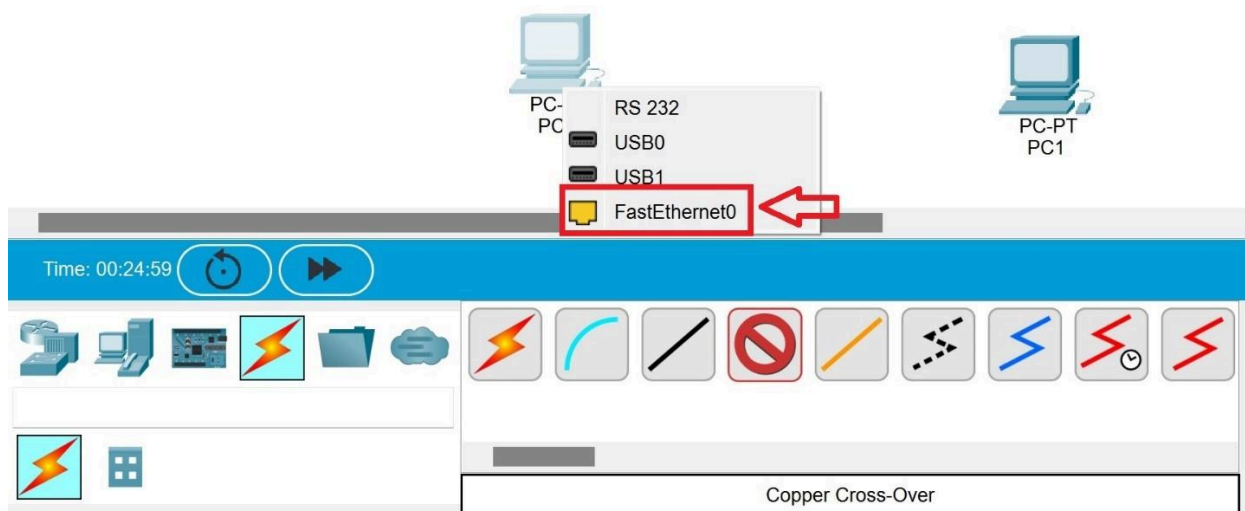
2. Locate the **Copper Cross-Over** cable button.



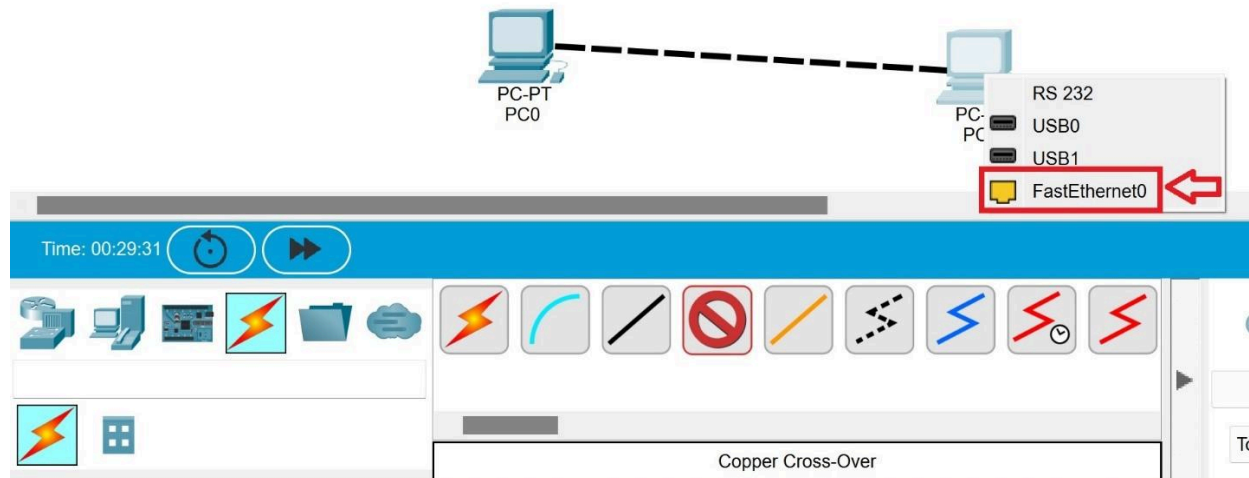
3. Click the **Copper Cross-Over** button (it will change to a red circle with a slash through it.)



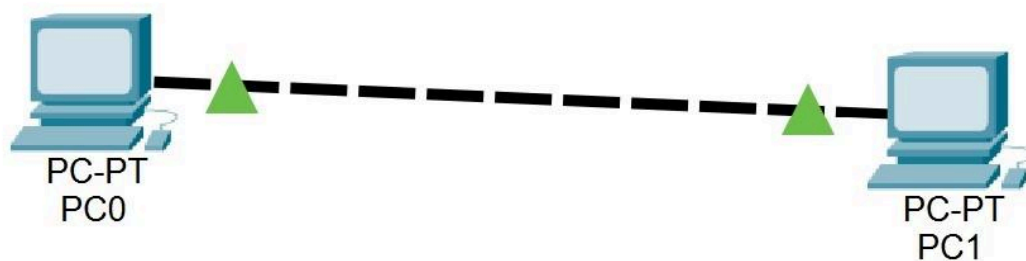
4. Click the **PC-PT PC0** device. A shortcut menu will appear. On the shortcut menu, click **FastEthernet0** to connect one end of the wire to the **PC0** network card.



5. Click the **PC-PT PC1** device. A shortcut menu will appear. On the shortcut menu, click **FastEthernet0** to connect the other end of the wire to the **PC1** network card.



6. Notice the link indicators on each side of the wire are green, indicating that the network card has detected a connection. (NOTE: If these were NOT green, it would indicate a problem.)



## TASK C

Now that the medium has been connected, we can verify that the computers support the same protocol and then test connectivity between the two nodes. The PC object in Packet Tracer automatically supports the TCP/IP protocol. The two devices each need to be provided with an IP address and subnet mask in order for TCP/IP to work. (NOTE: We will discuss IP addresses and subnet masks in a later module.).

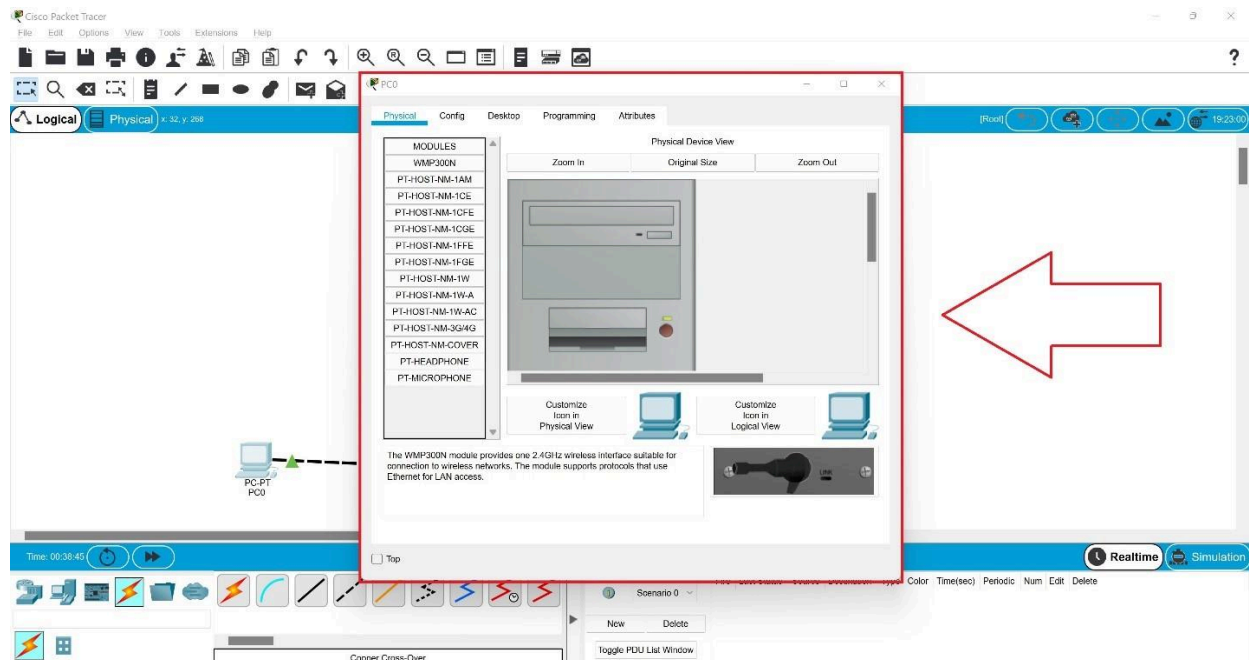
**IP address:** (Internet Protocol address) is a unique identifier assigned to every

device connected to a computer network. Think of it like a **phone number** or **home address** for your device

**Subnet mask:** Determines if another device is on the same local network: If the network portion of two devices' IP addresses matches (after applying the subnet mask), they can communicate directly.

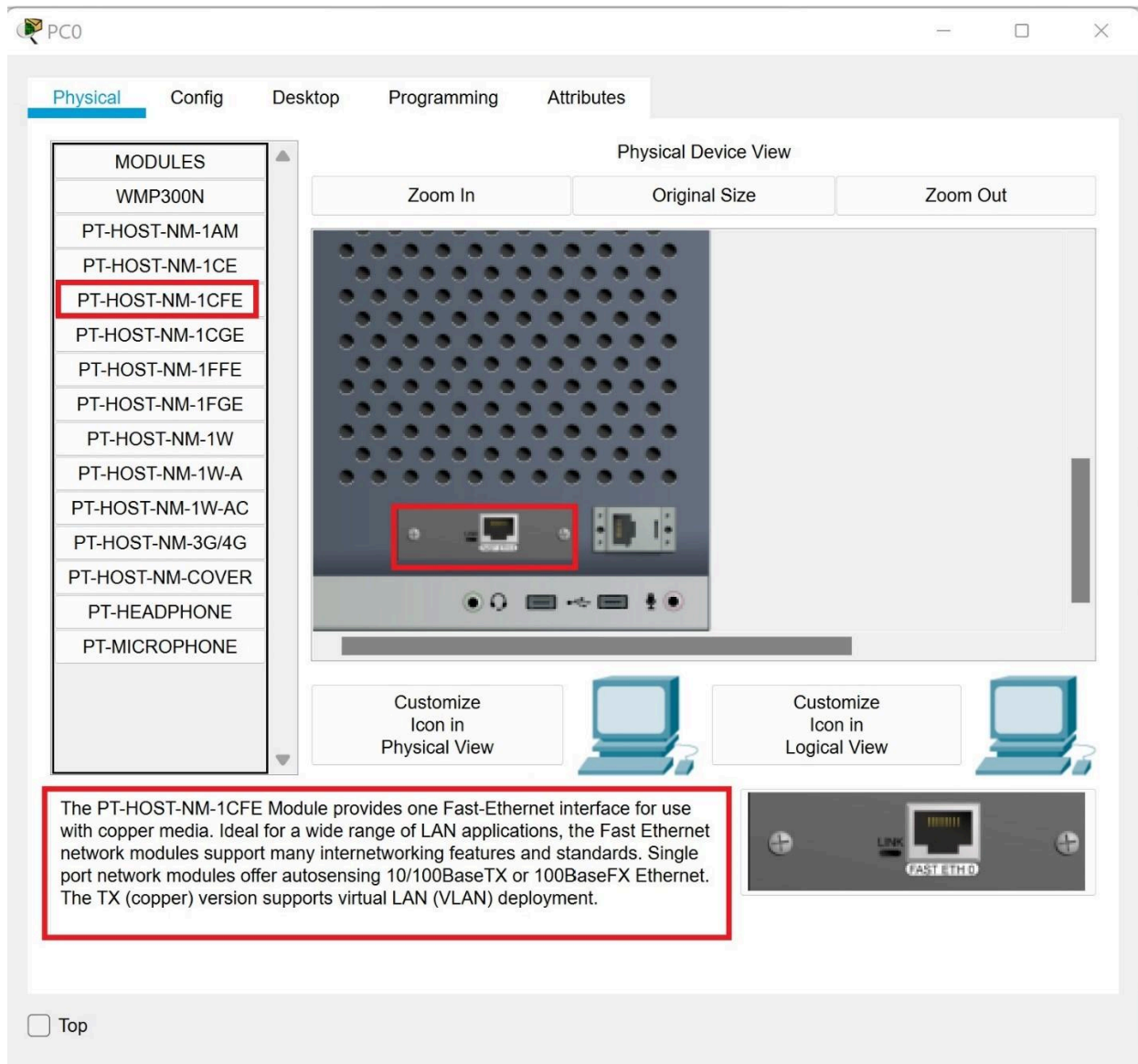
In this task we will configure the protocol settings, and then we will test connectivity.

1. Click the **PC-PT PC0** device. The **PC0** dialog box will open.

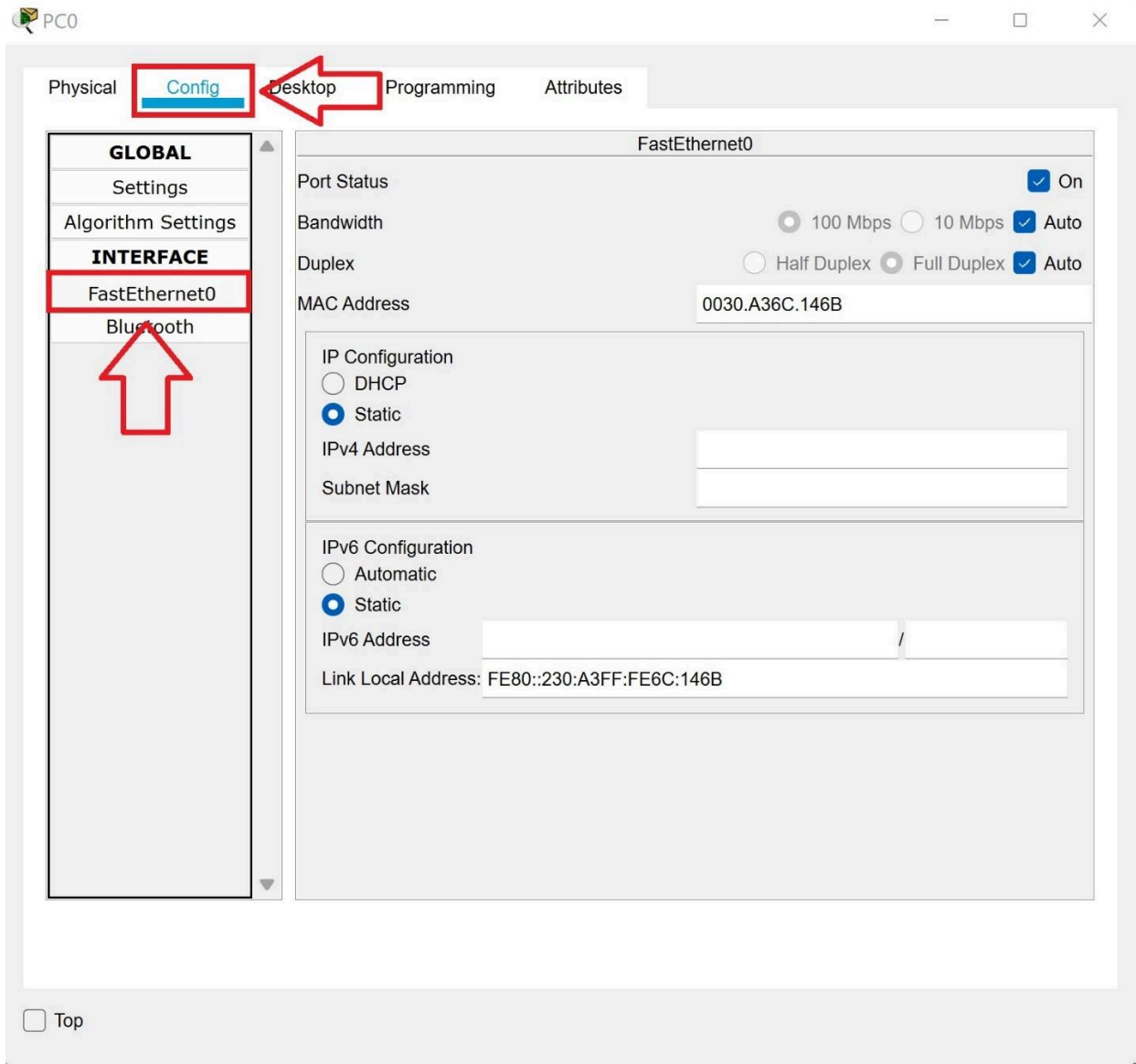


2. In the **Physical Device View** pane, scroll down to view the back of the **PC**. Notice the network card installed in the back of the computer. This is where the copper cross-over cable is connected. The equipment in Packet Tracer work exactly like the equipment would in real life.



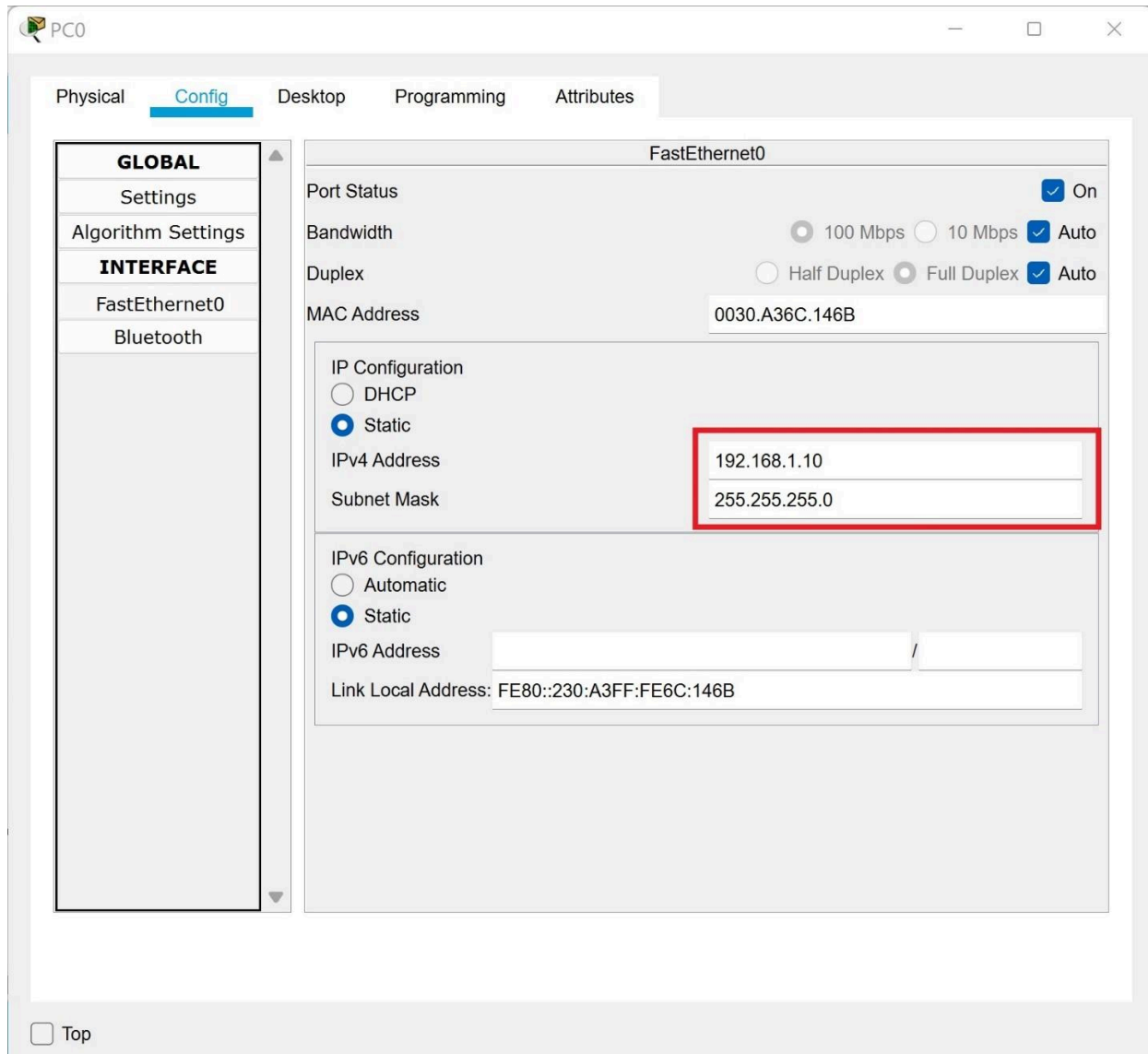


3. In the **PC0** dialog box, click the **Config** tab. Then in the **Interface** menu, click **FastEthernet0** to view the properties of the network interface card (NIC).

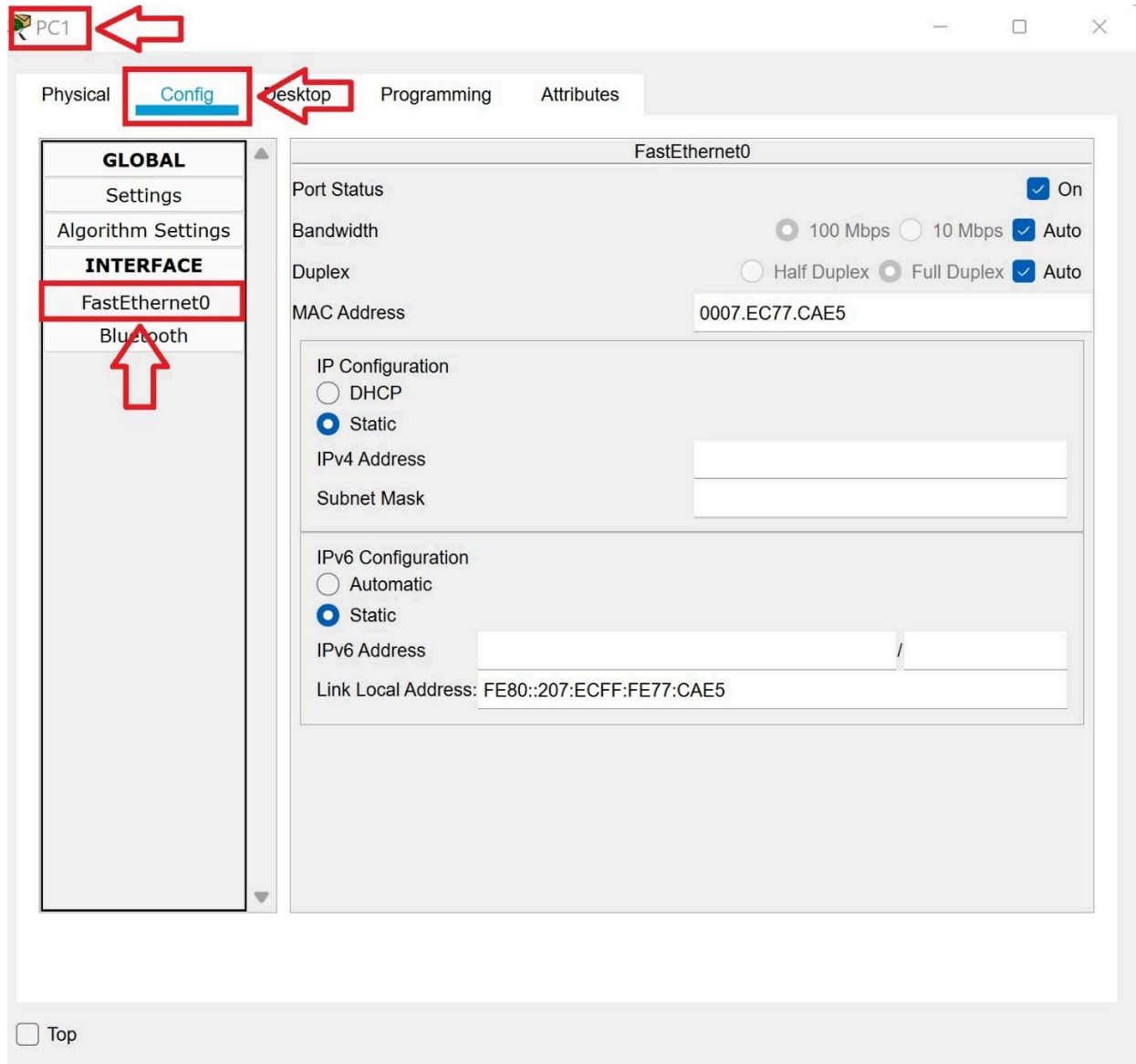


4. In the **IP Configuration** section, click in the **IPv4 Address** text box and enter a static address of **192.168.1.10**. Click in the **Subnet Mask** text box. The software will automatically enter a subnet mask of **255.255.255.0**.

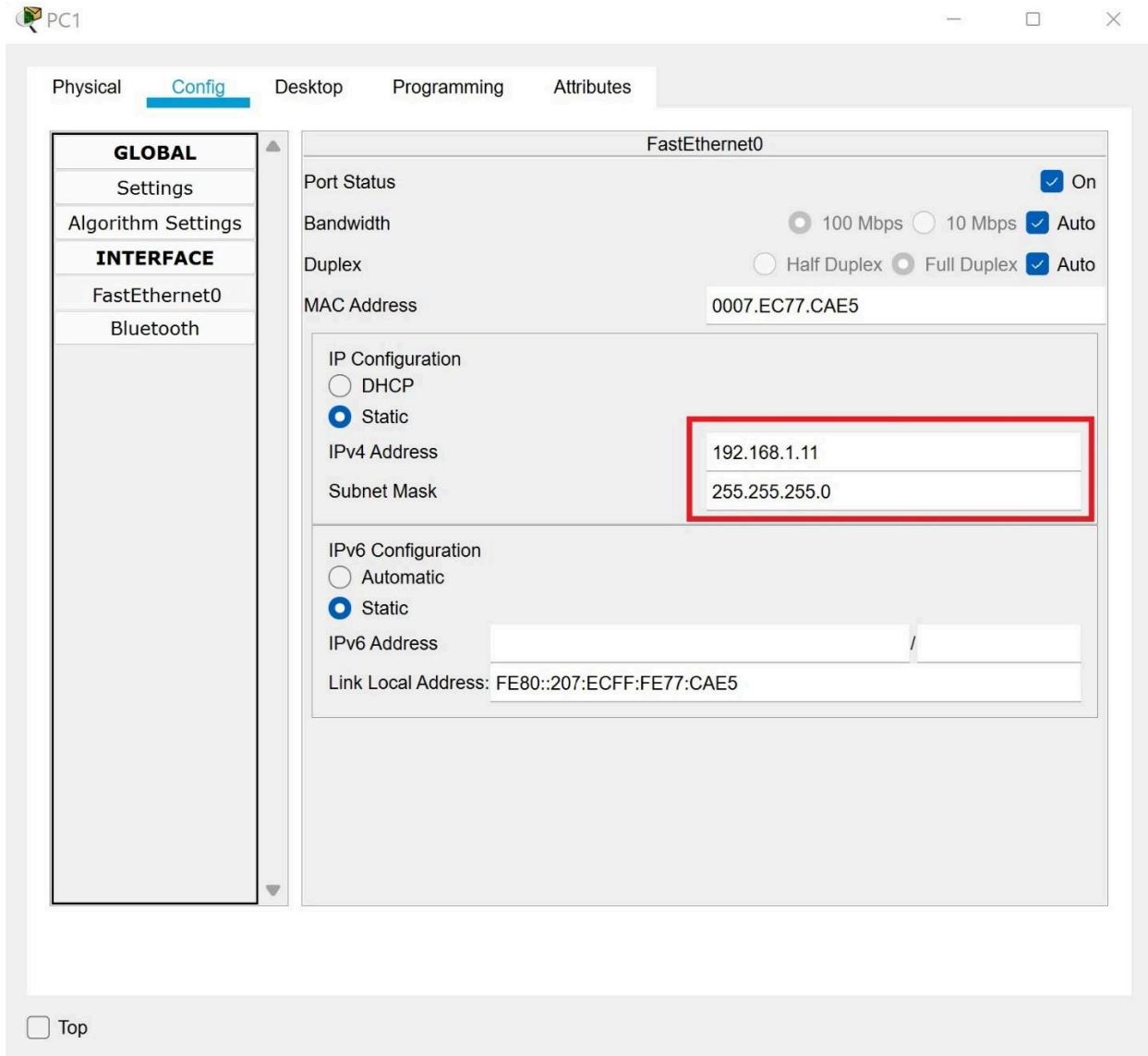




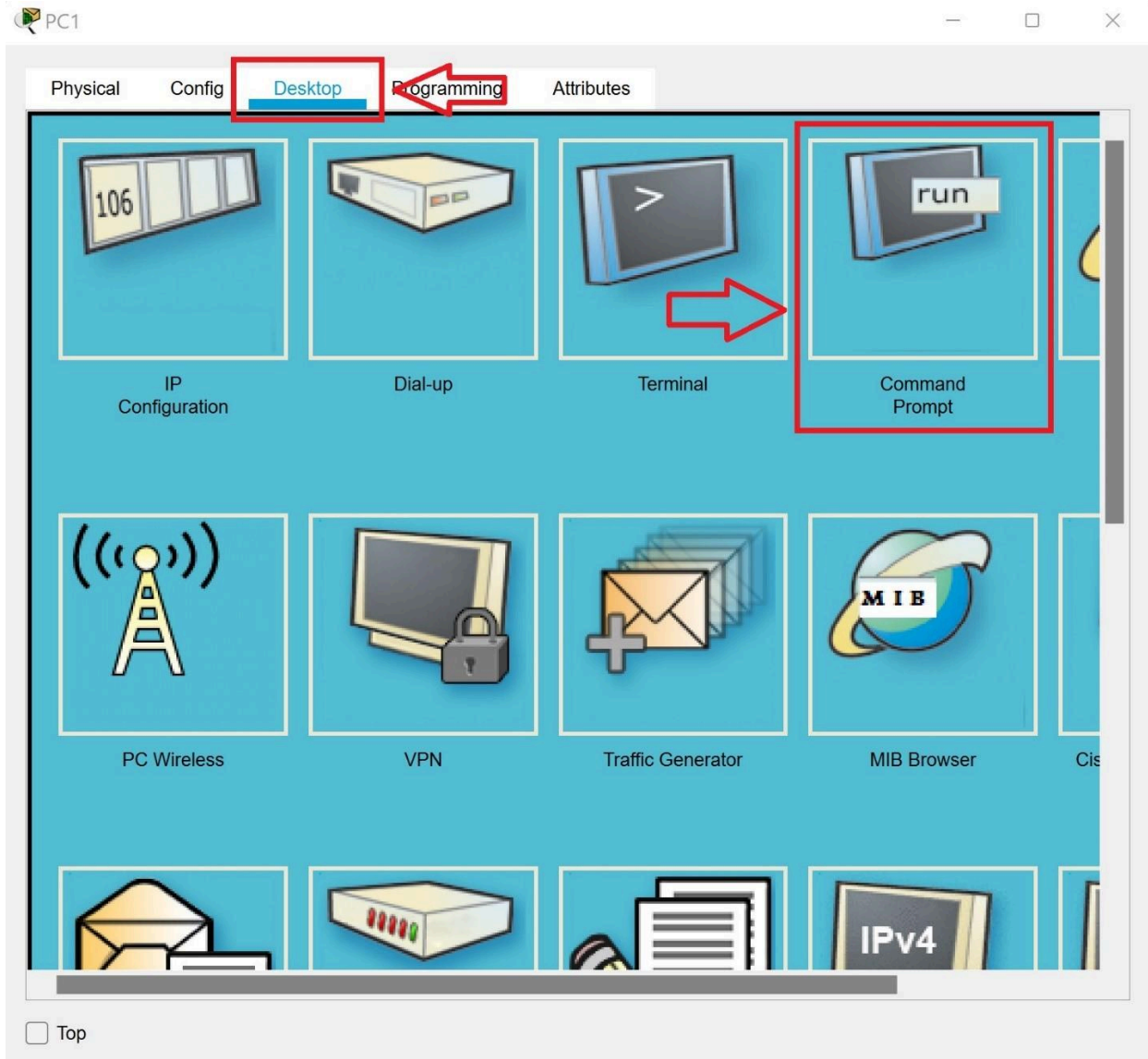
5. Close the **PC0** dialog box.
6. Click the **PC-PT PC1** device. The **PC1** dialog box will open. Click the **Config** tab. Then in the **Interface** menu, click **FastEthernet0** to view the properties of the network interface card (NIC).



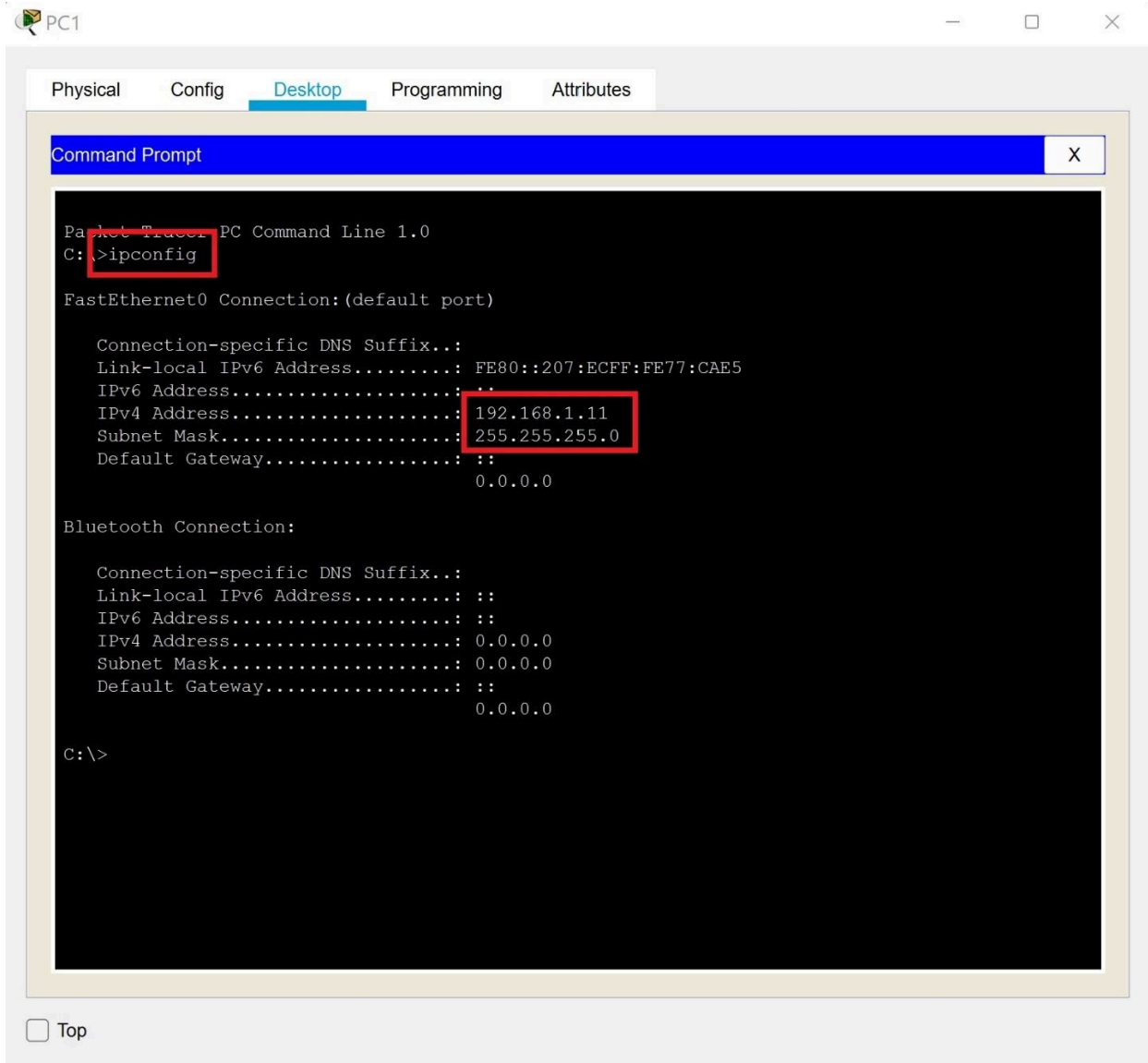
7. In the **IP Configuration** section, click in the **IPv4 Address** text box and enter a static address of **192.168.1.11**. Click in the **Subnet Mask** text box. The software will automatically enter a subnet mask of **255.255.255.0**.



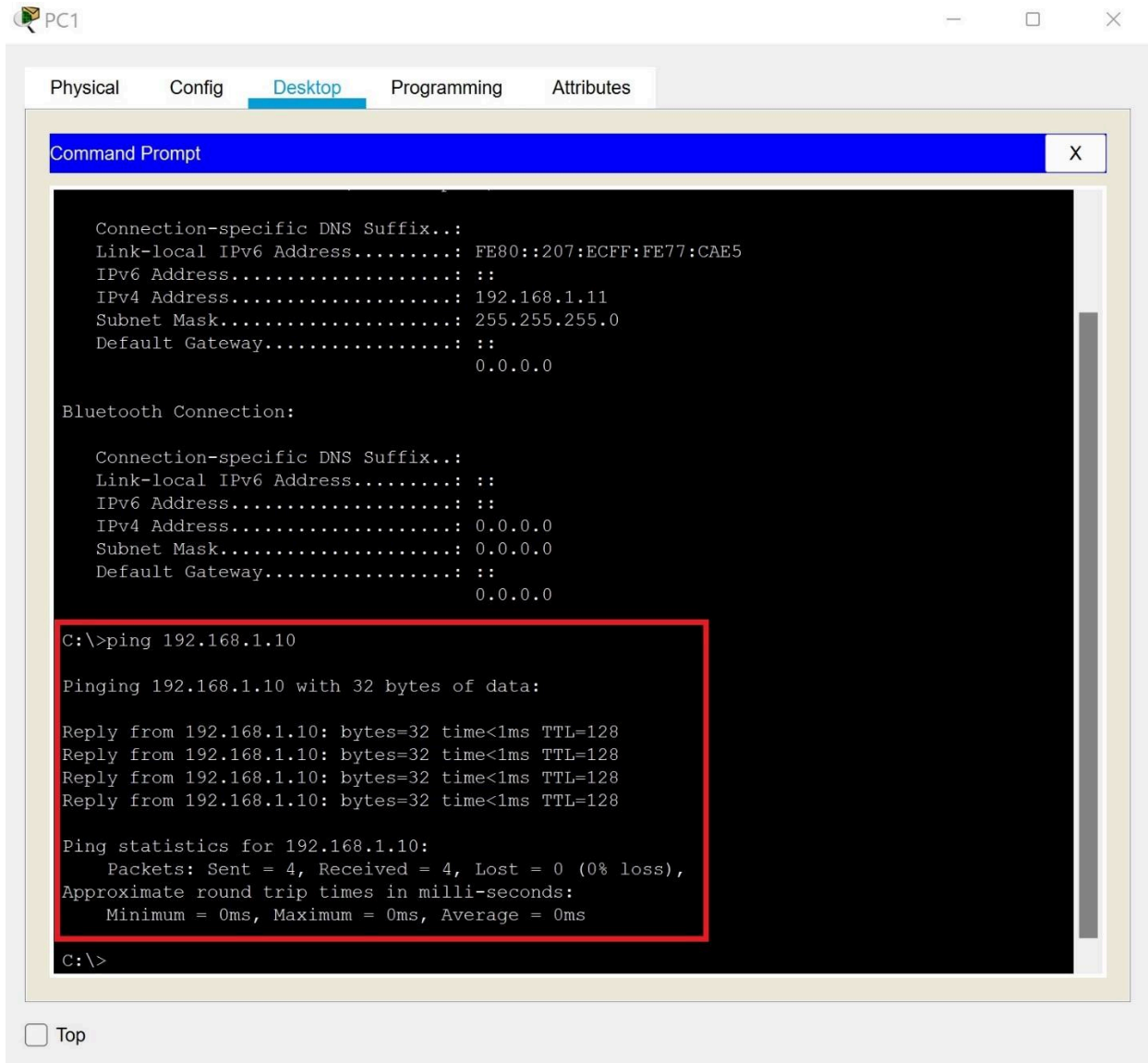
8. In the **PC1** dialog box, click the **Desktop** tab. Then, click the **Command Prompt** option.



9. In the **command prompt**, type **ipconfig** and then press the **enter** key on your keyboard to display the IP configuration of the computer. You should see the 192.168.1.11 address you entered in the Config tab.



10. In the **command prompt**, type **ping 192.168.1.10** and then press the **enter** key on your keyboard. You should see four replies come back from **PC0** verifying that connectivity is successful.



11. You may close the **PC1** dialogue box.
12. Congratulations! You created a simple network! The lab is over. You can close **Packet Tracer**. You do not need to save the file.