UNIVERSIDAD DISTRITAL FRANCISCO JOSE DE CALDAS
ENGINEERING SCHOOL
COMPUTER ENGINEERING

Computer Networking 1 (020-82)

Carlos Andrés Sierra Virguez

Student: Code:
Janeth Oliveros Ramírez   20182020100

Email:
joliverosr@udistrtital.edu.co

Workshop 1

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1. Introduction.

Design a network that includes an **on-premises web server** that hosts the university's homepage.
Steps to Set Up the Web Server in Packet Tracer:
   1. **Create the Network Topology**:
Devices Needed:
   2. A **router** to manage the network traffic.
   3. A **switch** to connect the server and other devices.
   4. A **server** to host the university's website.
   5. At least one **client PC** to access the web server.
Connections:
   1. Connect the **router** to the **switch**.
   2. Connect the **server** to the switch.
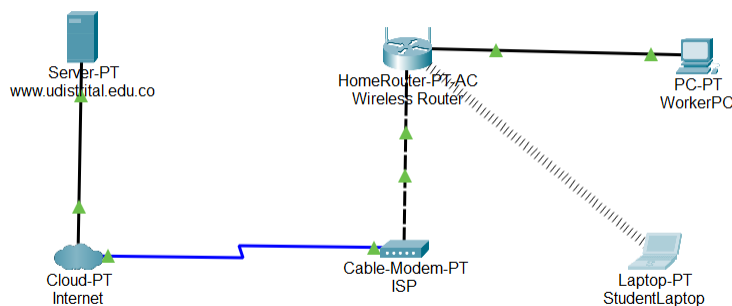   3. Connect the **client PC** to the switch.
   4. **Configure IP Addresses**:
      a. **Web Server**:
      Assign a static IP address to the server.
      b. **Router**:
      Configure the IP address on the router's interface that is connected to the switch, which will act as the **default gateway** for the network.

2. Network design

Devices
1. Server
2. Cloud
3. Home Router
4. Cable Modem
5. Worker PC
6. Student Laptop

3. Technological decisions.

To connect the server and the cloud, the Copper Straight-Through cable connects devices with different transmission roles by properly matching the transmit (Tx) and receive (Rx) pairs. This ensures that data transmitted by the server (Tx) reaches the switch's receiving end (Rx) and vice versa.

To connect the cloud and the cable-Modem ISP, we use coaxial because in broadband internet services provided by cable companies, coaxial cables are commonly used to deliver the internet signal from the service provider (cloud in this case) to the customer's cable modem.

To connect wireless router and cable modem, we use crossover cables are used when connecting two devices of the same type that would normally transmit and receive data on the same pins (like two switches, two computers, or in this case, a cable modem and a wireless router).

The crossover cable flips the transmit (Tx) and receive (Rx) pairs of wires, ensuring that the data transmitted from one device is properly received by the other, and vice versa. This is necessary because both devices send and receive signals similarly.

The copper straight-through cable is used because it properly connects devices that operate on different layers or roles in the network (like a PC and a wireless router), ensuring reliable data transmission.

4. Test results
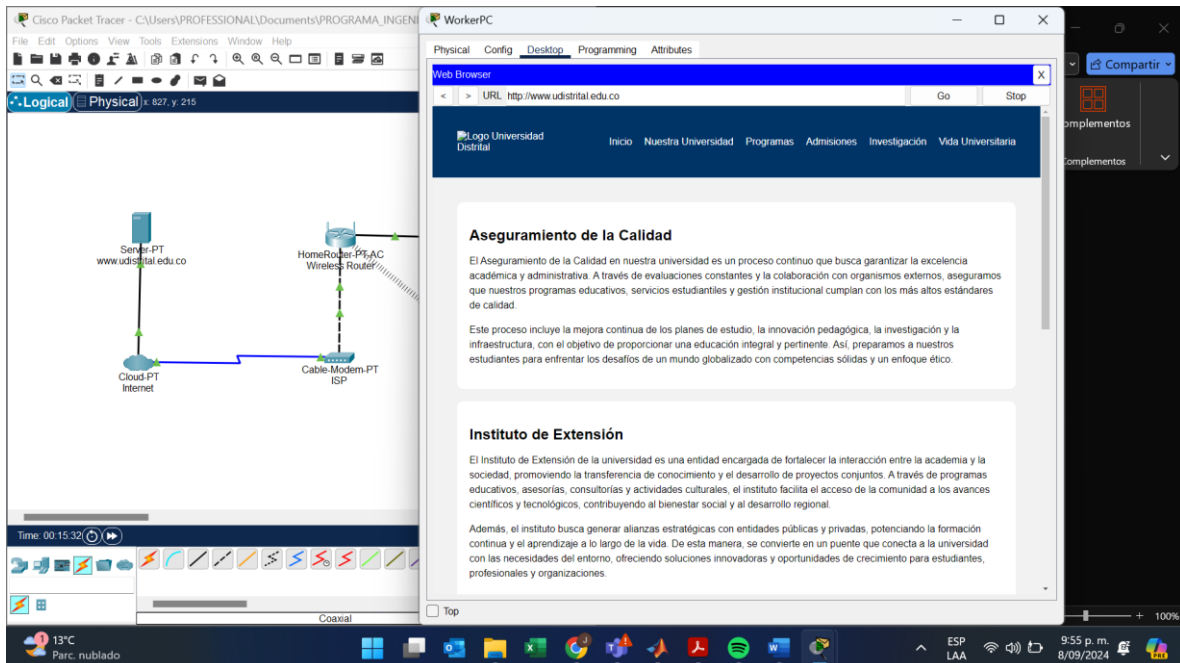
The tests were conducted in three stages. First, the web browser access from the server did not work initially because the DNS service was not enabled, preventing the site from being visible anywhere on the network. Once the DNS service was turned on, the connection to the Home Router still failed because the straight-through cable didn't allow proper transmission. Lastly, the laptop couldn't

connect to the network because it lacked a WPC300N adapter, which was necessary to connect to the router.

It can be observed that without proper configuration and recognizing the correct type of cabling, the network can lose its efficiency in sending and receiving data, or in the worst case, become completely unusable.