Workshop_1: Packet Tracer

Members:

Andrés Felipe Salazar Malagón – 20202020043

Teacher:

Carlos Andrés Sierra Virguez

Universidad Distrital Francisco José de Caldas

Faculty of Engineering

Computer-Networking

Bogotá, 2024

1. Introduction:

This report presents the design of a network for the Universidad Distrital Francisco José de Caldas, which includes a server with the university's official website. The main objective is to configure a local server that can be accessed from devices inside and outside the local network, using static IP addresses, DNS, DHCP, and HTTP services.

2. Network Design:

2.1. Network Topology:

The network is designed to connect various devices and provide access to the university website. The main components of the network are:
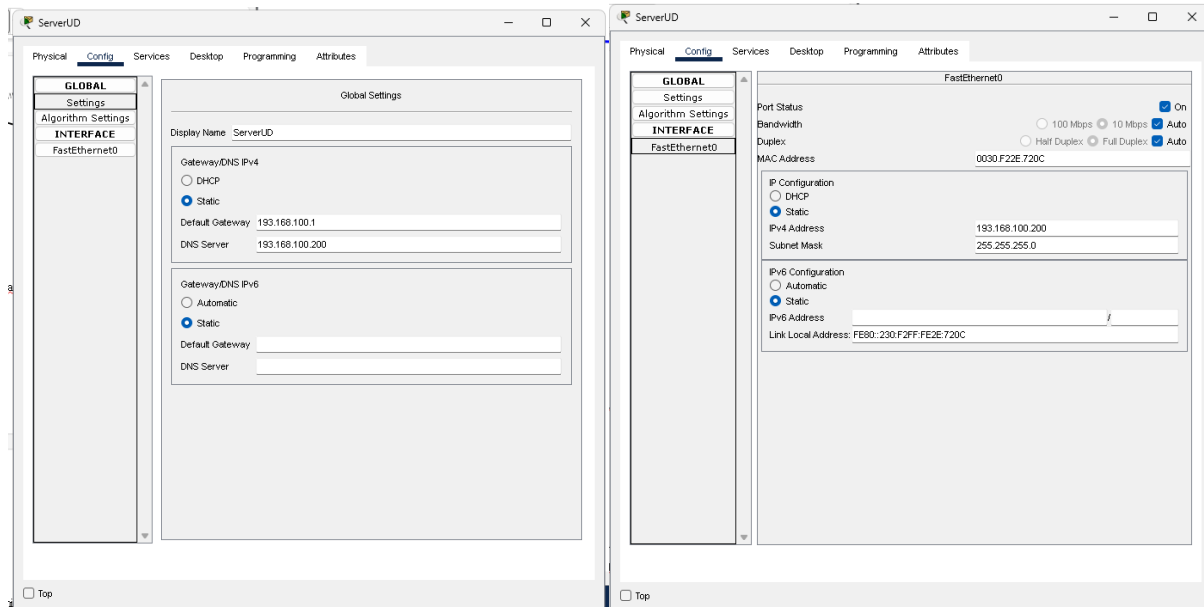
- Local server to host the university website.
- Client devices, such as a PC and a laptop, connected via DHCP.
- Wireless router that allows Wi-Fi access.
- Simulated Internet connection through a Cloud-PT.

2.2. Network Diagram:
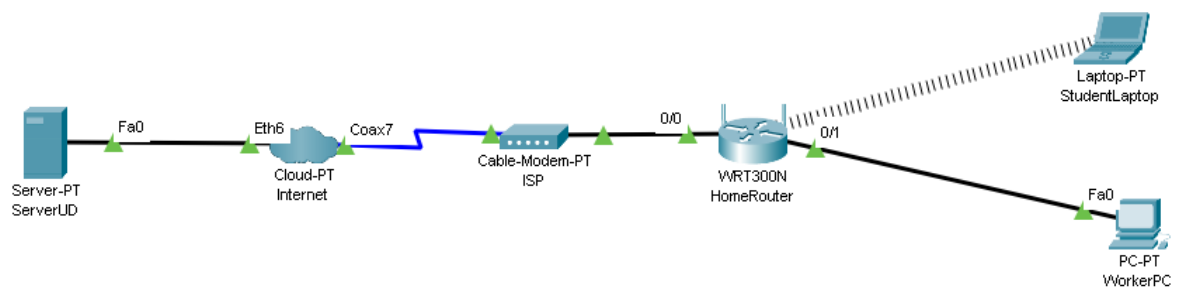
3. Technical decisions:
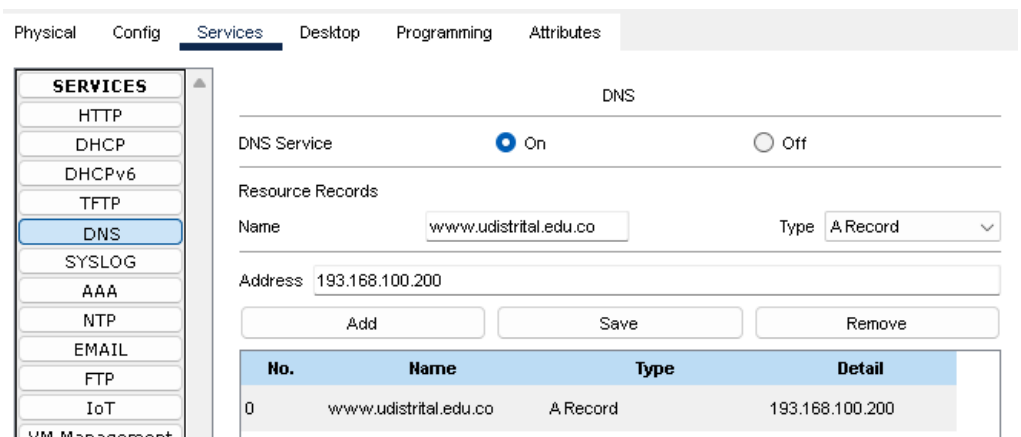
3.1. Server:

- **Static IP:** A static IP is used for the server to ensure that the address is always the same and accessible from the internal network..
    - **IPv4 Address:** 193.168.100.200
    - **Default Gateway:** 193.168.100.1
    - **Subnet Mask:** 255.255.255.0
    - **DNS Server:** 193.168.100.200
- **Enabled Services:**
    - **HTTP**: The http service was enabled for the index.html page, which was customized to include a welcome message to the Universidad Distrital Francisco Jose de Caldas.
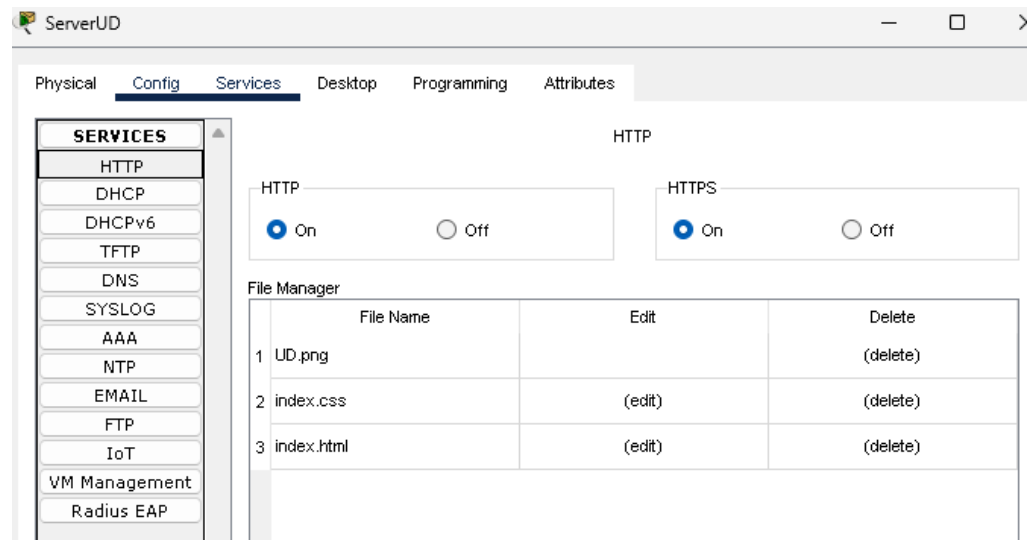
- **DNS**: The DNS was configured so that the domain www.udistrital.edu.co points to the server's IP.

- **DHCP**: A range of IP addresses was configured to dynamically assign to client devices.

3.2. Wireless Router:

- A wireless router was set up to simulate a Wi-Fi connection in the student environment.
- **SSID**: UD_Invitados
- **Coverage range:** 20 meters, sufficient to simulate access in a home environment.

3.3. Internet connection:

- An Internet connection is simulated using a Cloud-PT connected through a Cable-Modem-PT.

3.4 Cable Selection:
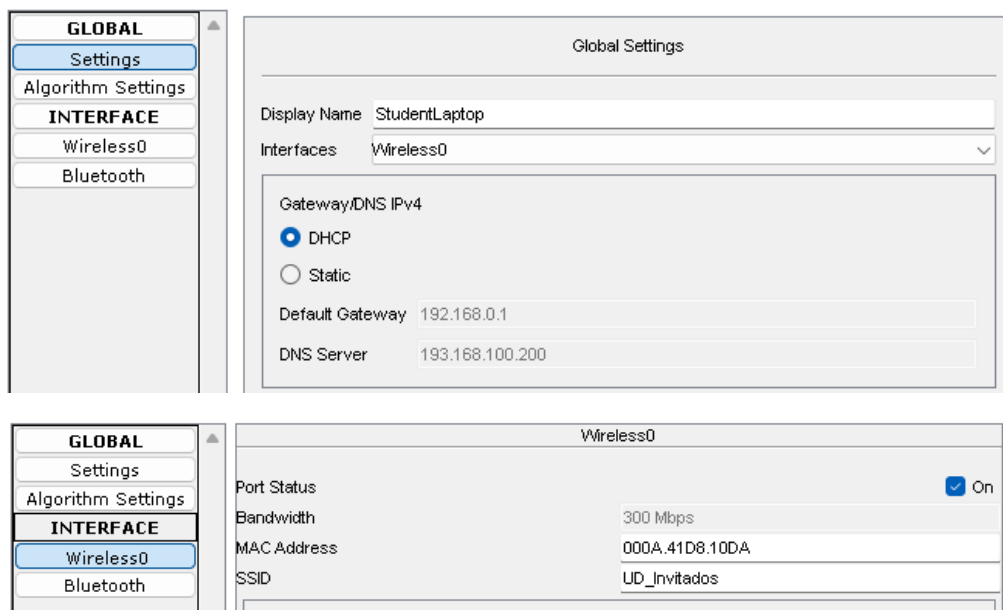
- **Copper Straight-Through Cable:**

  This type of cable was used to connect different devices, such as the server and the cloud. In this case, the server (FastEthernet0/0) is connected to the cloud port (Ethernet6), on the other hand it was used to connect the Cable-Modem-PT (port 1) to the HomeRouter (Ethernet0) and finally it was used to connect the HomeRouter (Ethernet1) to the WorkerPC (Ethernetport)

- **Coaxial Cable (Coaxial7):**

  This was used to connect the Cloud-PT (simulating the Internet) to the Cable Modem (Cable-Modem-PT). Coaxial cable is suitable for broadband connections, such as those found in cable Internet services.

4. Test Results:

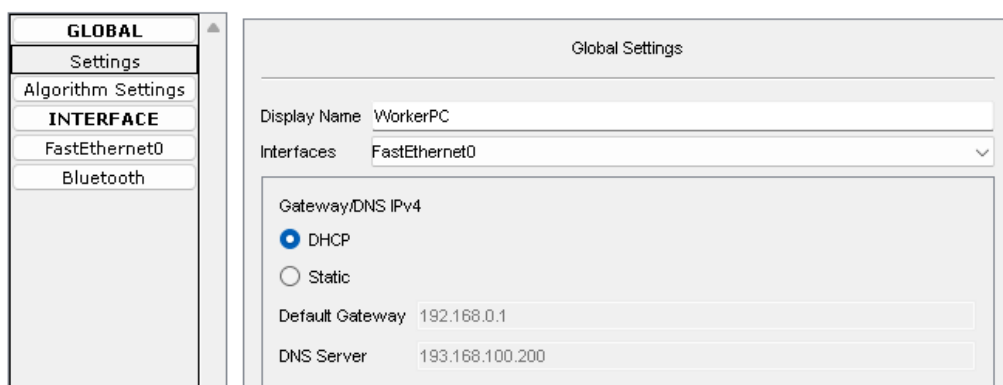### 4.1. Connection Test from Student Laptop:

- **Device**: Laptop-PT
- **Connection**: Wi-Fi (SSID: UD_Invitados)
- **IP Configuration**: Assigned by DHCP
- **Result**: Access to the URL www.udistrital.edu.co from the browser was successful, displaying the welcome page.

4.2. Test Connection from Work PC:

- **Device**: PC-PT
- **Connection**: Ethernet
- **IP Configuration**: Assigned by DHCP
- **Result**: Access to the URL www.udistrital.edu.co was successful from the web browser.
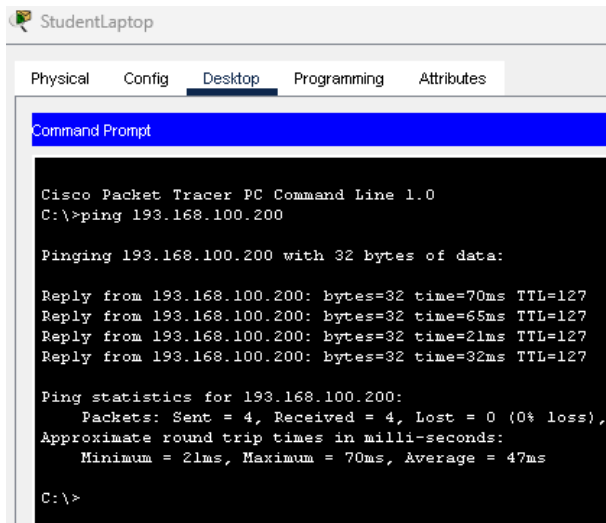
4.3. General Connectivity Test:

Pings were performed from both devices to the server (193.168.100.200), and the response was successful, confirming connectivity.

- **WorkerPC:**

- **StudentLaptop**:


```
StudentLaptop

Physical    Config    Desktop    Programming    Attributes

Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 193.168.100.200

Pinging 193.168.100.200 with 32 bytes of data:

Reply from 193.168.100.200: bytes=32 time=70ms TTL=127
Reply from 193.168.100.200: bytes=32 time=65ms TTL=127
Reply from 193.168.100.200: bytes=32 time=21ms TTL=127
Reply from 193.168.100.200: bytes=32 time=32ms TTL=127

Ping statistics for 193.168.100.200:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 21ms, Maximum = 70ms, Average = 47ms

C:\>
```

5. Conclusions:

- The decision to assign a static IP to the server ensures that its address is always the same, which is critical for a web server. This allows the server to be reliably accessible through the domain www.udistrital.edu.co, ensuring that devices inside and outside the network can access the university website without interruption. This setup also makes it easier to manage DNS and DHCP services on the network.

- The network design allows for easy scalability, as a DHCP service has been implemented that can dynamically assign IP addresses to new devices without the need to manually configure them. This is useful in a university environment, where multiple students or employees can connect to the network efficiently, and the infrastructure supports more users or devices in the future.