

## **Workshop\_1: Packet Tracer**



**UNIVERSIDAD DISTRITAL  
FRANCISCO JOSÉ DE CALDAS**

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## 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.

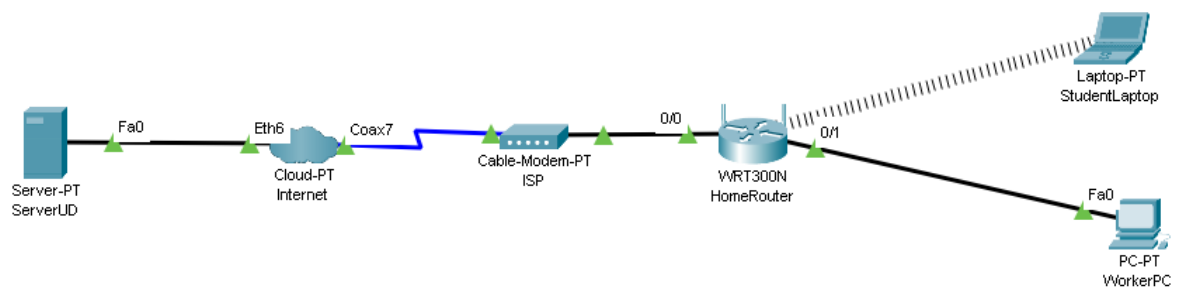
## 2. Network Design:

### 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:

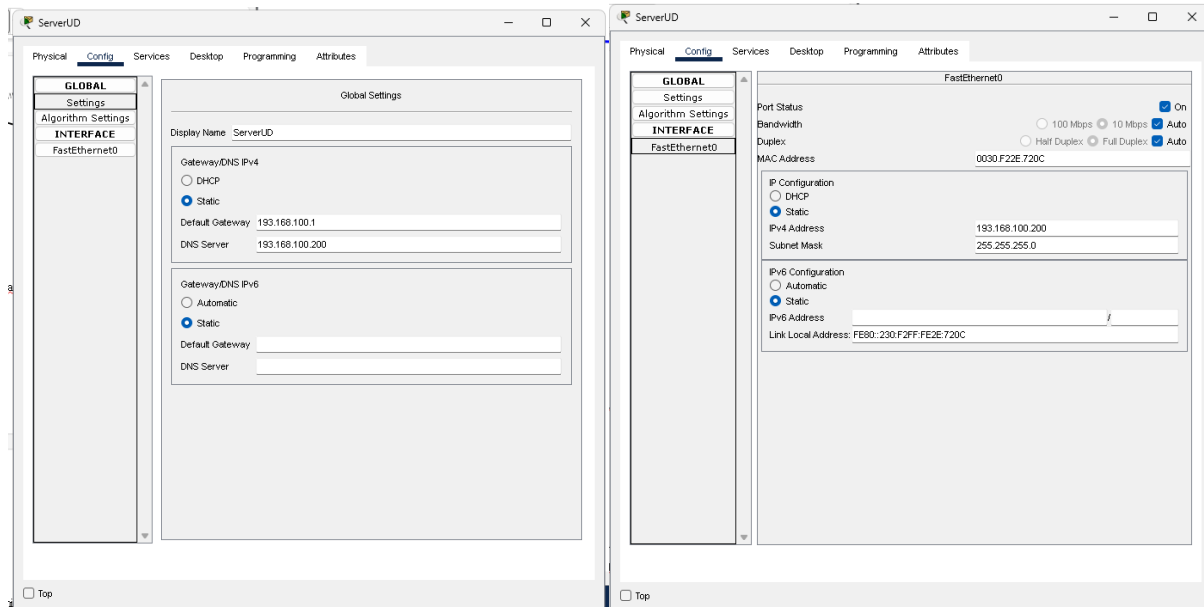
- Local server to host the university website.
- Client devices, such as a PC and a laptop, connected via DHCP.
- Wireless router that allows Wi-Fi access.
- Simulated Internet connection through a Cloud-PT.

### 2.2. Network Diagram:

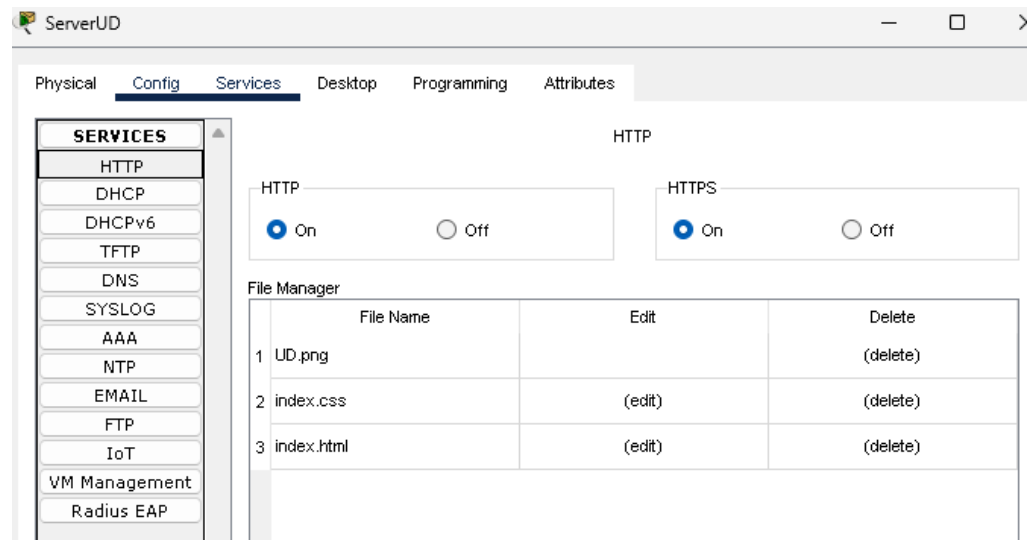


### 3. Technical decisions:

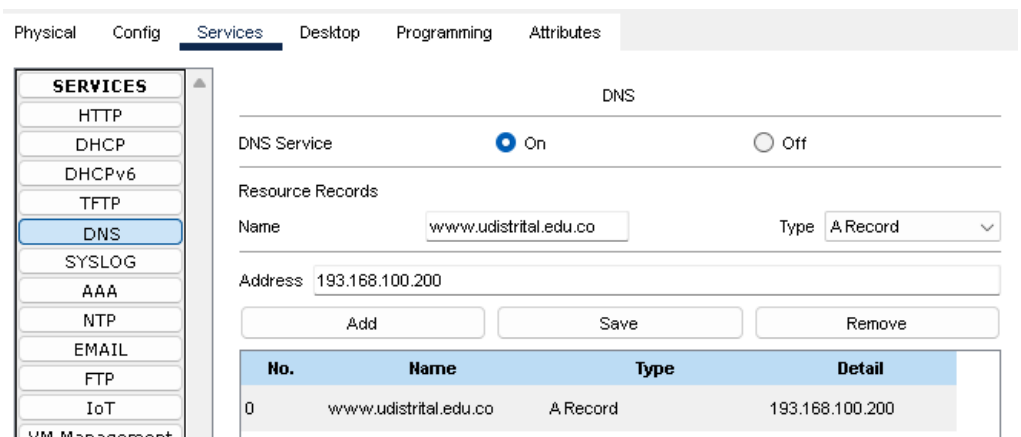
#### 3.1. Server:



- **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](http://www.udistrital.edu.co) points to the server's IP.



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

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
UDPool	193.168....	193.168....	193.168....	255.255....	50	0.0.0.0	0.0.0.0
serverPool	0.0.0.0	0.0.0.0	193.168....	255.255....	512	0.0.0.0	0.0.0.0

### 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:**

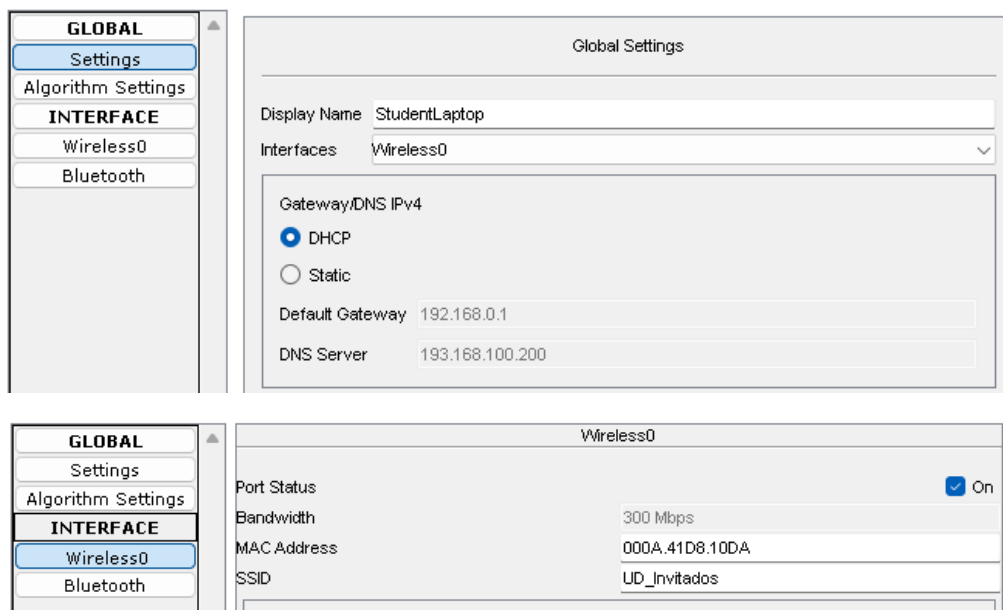
This type of cable was used to connect different devices, such as the server and the cloud. In this case, the server (FastEthernet0/0) is connected to the cloud port (Ethernet6), on the other hand it was used to connect the Cable-Modem-PT (port 1) to the HomeRouter (Ethernet0) and finally it was used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

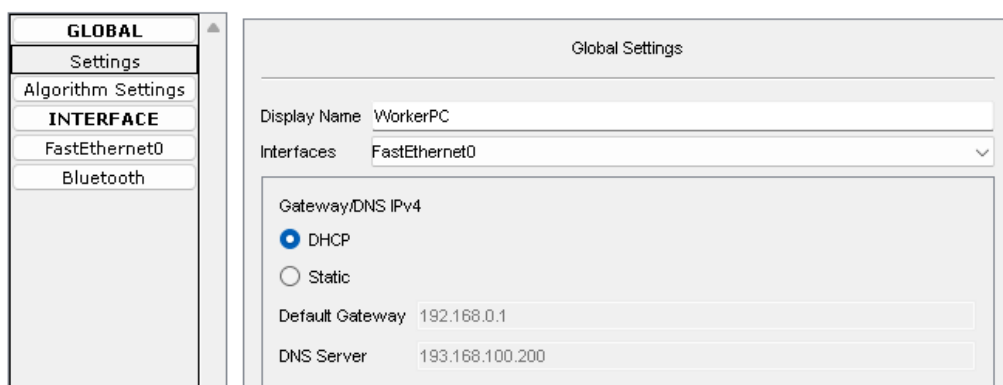


The image displays two screenshots of a network configuration interface. The top screenshot shows the 'Global Settings' for a device named 'StudentLaptop'. Under the 'INTERFACES' section, 'Wireless0' is selected. The 'Gateway/DNS IPv4' configuration is set to 'DHCP'. The 'Default Gateway' is '192.168.0.1' and the 'DNS Server' is '193.168.100.200'. The bottom screenshot shows the 'Wireless0' interface settings. The 'Port Status' is 'On', 'Bandwidth' is '300 Mbps', 'MAC Address' is '000A.41D8.10DA', and 'SSID' is 'UD\_Invitados'.

- **Device:** Laptop-PT
- **Connection:** Wi-Fi (SSID: UD\_Invitados)
- **IP Configuration:** Assigned by DHCP
- **Result:** Access to the URL [www.udistrital.edu.co](http://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](http://www.udistrital.edu.co) was successful from the web browser.



### 4.3. General Connectivity Test:

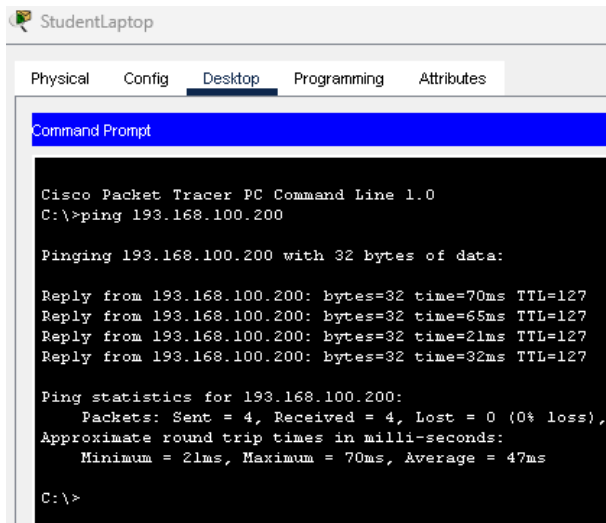
Pings were performed from both devices to the server (193.168.100.200), and the response was successful, confirming connectivity.

- **WorkerPC:**

A screenshot of a Command Prompt window within a WorkerPC environment. The window title is 'Command Prompt'. The text inside shows the output of a Cisco Packet Tracer PC Command Line 1.0 session. The user has entered the command 'ping 193.168.100.200'. The output shows four successful replies from 193.168.100.200 with 32 bytes of data, response times of 11ms, 1ms, 1ms, and 10ms, and a TTL of 127. Ping statistics for 193.168.100.200 are also displayed: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), and approximate round trip times in milliseconds: Minimum = 1ms, Maximum = 11ms, Average = 5ms. The prompt 'C:\>' is visible at the bottom.



- **StudentLaptop:**



The screenshot shows the 'StudentLaptop' application window. It has a tabbed interface with 'Physical', 'Config', 'Desktop', 'Programming', and 'Attributes'. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The command prompt shows the output of a ping command to 193.168.100.200. The output indicates that all four packets were received successfully with 0% loss. The ping statistics show a minimum round trip time of 21ms, a maximum of 70ms, and an average of 47ms.

```
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](http://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.