

## **Report Workshop 1**

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020-82 Computer Networking

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## Introduction

The purpose of this report is to present the process, technical decisions and test results of the design of a network that would allow the creation and configuration of a server to host the web page of the Universidad Distrital Francisco José de Caldas, assigning a static IP address and configuring services such as DNS, DHCP and HTTP, through the use of the Packet Tracer simulation tool.

## Cisco Packet Tracer

Cisco Packet Tracer is a network simulation tool developed by Cisco. It allows users to design, configure and simulate computer networks in a virtual environment. With Packet Tracer, it is possible to create virtual networks, add devices such as routers, switches and computers, and configure various network parameters such as IP addresses and routing protocols.

## Development

### Server Configuration

Initially, the server called ServerUD is configured.

IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	193.168.100.200
Subnet Mask	255.255.255.0
Default Gateway	193.168.100.1
DNS Server	193.168.100.200

In the HTTP services, the default web pages are removed and the index.html is edited with the code of the Universidad Distrital welcome page.

## File Manager

	File Name	Edit	Delete
1	index.html	(edit)	(delete)

File Name: index.html

```

<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Universidad Distrital</title>
  <link href="https://fonts.googleapis.com/css2?family=Montserrat:wght@400;700&display=swap"
rel="stylesheet">
</head>

<body>

  <header>
    <div class="titulo"> Universidad Distrital Francisco José de Caldas</div>
    <nav>
      <a href="#">INICIO</a>
      <a href="#">NUESTRA UNIVERSIDAD</a>
      <a href="#">PROGRAMAS</a>
      <a href="#">ADMISIONES</a>
      <a href="#">INVESTIGACIÓN</a>
      <a href="#">VIDA UNIVERSITARIA</a>

    </nav>
  </header>
  <div class="mensaje">¡Bienvenido al sitio oficial de la Universidad Distrital!</div>
  <div class="presentacion">
    <div class="titulo2">
      <b>
        ¿QUIÉNES SOMOS?
      </b>
    </div>
    <p>
      La Universidad Distrital Francisco José de Caldas se reconoce a sí misma como la institución de
educación
      superior del Distrito Capital de Bogotá y de la Región Central de la República de Colombia, por
consiguiente
      su visión de futuro está estrechamente ligada a los procesos de su entorno social. El proyecto educativo
institucional encuentra sentido en el fortalecimiento estratégico de sus potencialidades académicas y en
las
      posibilidades que ellas ofrecen al desarrollo de la región.
    </p>
  </div>

```

The DHCP service is activated and the UDPool group is added with the set configuration.

Groups allow you to efficiently organize and manage IP address allocation and other network settings.

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
UDPool	193.168.100.200	193.168.100.200	193.168.100.1	255.255.255.0	50	0.0.0.0	0.0.0.0

In the DNS service, the URL of the university's page is added, which can be accessed by other devices.

No.	Name	Type	Detail
0	www.udistrital.edu.co	A Record	193.168.100.200

## Cloud configuration

First, the connection mode is changed to cable, in order to be able to connect to the server via cable and thus handle large amounts of data and faster speeds compared to DSL.

Ethernet6	
Provider Network	<input checked="" type="radio"/> Cable <input type="radio"/> DSL

Establish a connection between the Coaxial7 port and the Ethernet6 port within the Internet cloud.

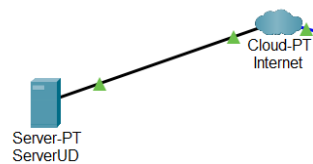
This simulates how Internet Service Providers (ISP) deliver service over technologies such as coaxial cable. Coaxial is used to receive the data signal from the ISP, and then the signal is converted to Ethernet, which is more common in local area networks (LAN). Without this connection within the cloud, there would be no functional path from the server to the global network (Internet).

Cable	
Coaxial7	Ethernet6
Port	Port
From Port	To Port
Coaxial7	Ethernet6

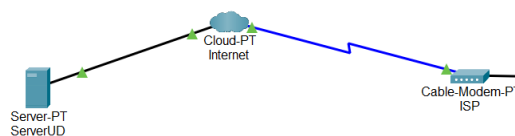
## Connecting the Server to the Cloud

Connect the FastEthernet0/0 interface of the server to the Ethernet6 port on the cloud. For this connection we used the Cooper Straight-Through cable type which is useful in this case as it is designed to connect network devices of different types.

This connection represents the server's access to the Internet using a physical connection (Ethernet).

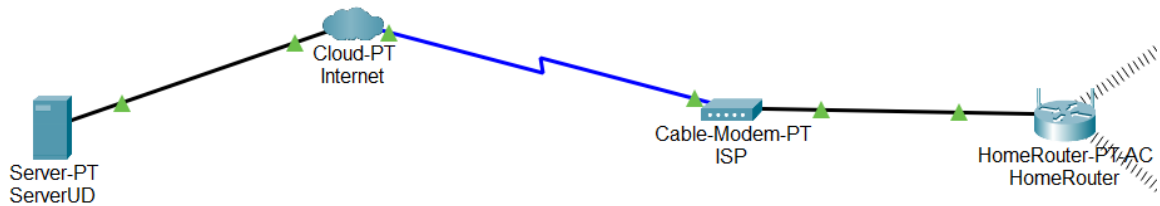


Coaxial cable was used to connect a cable modem to the Internet. This cable is suitable because it simulates the data transmission from the Internet service provider to the modem, as it occurs in real-life cable Internet networks.



In testing that any student can access the university web site it was necessary to test. For testing, use is made of the ISP to simulate a home internet service that provides wireless routing.

The connection from the ISP to the Home Router was made using Cooper Straight-Through since they are also different devices, therefore, a straight-through cable must be used so that the transmit and receive pins match correctly.

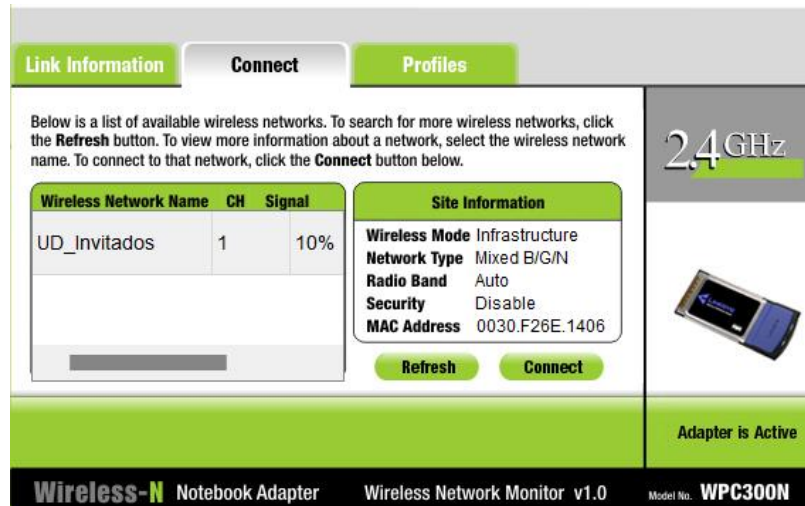


## HomeRouter Configuration

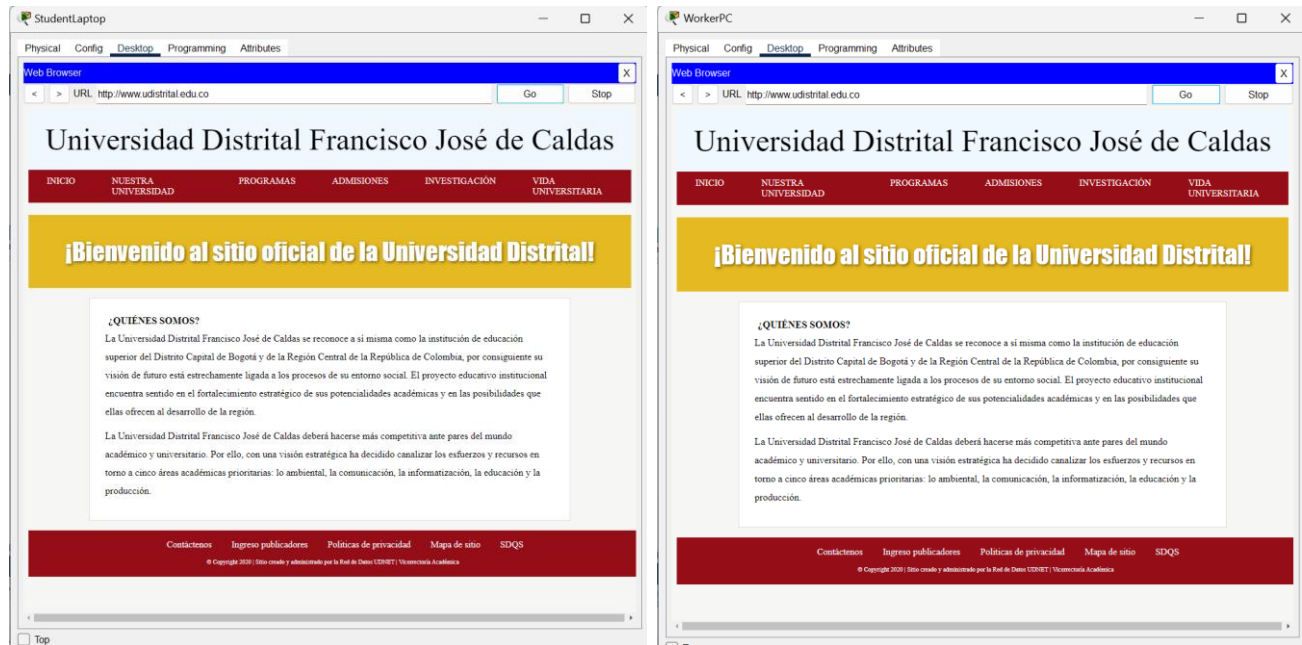
Setup	Wireless	Security	Access Restrictions	Applications & Gaming	Administration
Basic Setup	DHCP		MAC Address Clone		Advanced
<b>Internet Setup</b>					
Internet Connection type	Automatic Configuration - DHCP				
Optional Settings (required by some internet service providers)	Host Name: <input type="text"/> Domain Name: <input type="text"/> MTU: <input type="text"/> Size: 1500				
<b>Network Setup</b>					
Router IP	IP Address: 192 . 168 . 0 . 1 Subnet Mask: 255.255.255.252				
DHCP Server Settings	DHCP Server: <input checked="" type="radio"/> Enabled <input type="radio"/> Disabled <span style="float: right;">DHCP Reservation</span> Start IP Address: 192.168.0. 100 Maximum number of Users: 50 IP Address Range: 192.168.0. 100 - 149				
<b>2.4 GHz</b>					
Network Mode:	Auto				
Network Name (SSID):	UD_Invitados				
SSID Broadcast:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled				
Standard Channel:	1 - 2.412GHz				
Channel Bandwidth:	Auto				

## Laptop and PC Configuration

In order to wirelessly connect the devices, the Linksys-WPC300N module is added to provide a 2.4 GHz wireless interface suitable for connection to wireless networks and the connection to the UD\_Guest network is made through the interface.

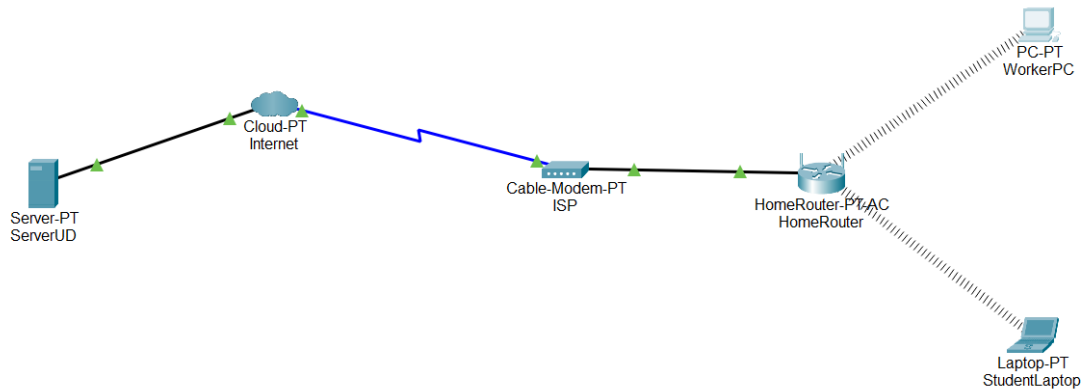


Finally, the web browser is opened from the interface to access the university's webpage through the URL [www.udistrital.edu.co](http://www.udistrital.edu.co).



In this way, it is verified that the network is working properly and that students have access to the university's website.

### Final network design



### Conclusions

The simulation facilitates the visualization of data flow and interaction between devices, which contributes to a clearer understanding of how networks work in the real world.

It was possible to create a functional network to host and access the web page of the Universidad Distrital, demonstrating how the infrastructure of a local network is integrated with the Internet connection through a service provider.

It was possible to identify the best type of cable to connect different devices.