

LABORATORY 02 - OS SETUP, SHELL, AND NETWORK SUPPORT SOFTWARE - KNOWING CLOUD (AWS)

Laboratory 2 corresponding to the first term

Santiago Amaya Zapata

Julian Camilo Tinjacá Corredor



Escuela Colombiana de Ingeniería Julio Garavito

NETWORK ARCHITECTURE AND SERVICES

GROUP 3

Bogotá DC, Colombia

2025 - 2

Lab No.02 - OS SETUP, SHELL, AND NETWORK SUPPORT SOFTWARE

Objective

- Continue the installation of base operating systems.
- Understand the operation of networking tools.
- Learn about operating system administration using Shell programs.

Tools to be used

- Laboratory Computers
- Internet Access
- Virtualization Software
- Operating System Images
- Packet Tracer
- Wireshark

Introduction

Operating systems and network administration are fundamental pillars in the training of professionals in systems engineering and information technology. In today's business environment, IT infrastructure services range from physical and virtual workstations to specialized servers, all interconnected through networking devices that enable both local and global communication. For this reason, understanding the installation, configuration, and management of operating systems, as well as the use of networking and administrative tools, is essential to ensure the proper functioning and security of technological services.

This laboratory aims to familiarize students with the deployment of base operating systems and the use of support tools such as command interpreters (Shell), network simulators (Packet Tracer), and traffic analyzers (Wireshark). Additionally, it seeks to strengthen competencies in task automation through scripting, user and permission management, and the configuration of basic networking and file-sharing services. In this way, the laboratory integrates knowledge of software, networks, and virtualization into a practical context that simulates real corporate infrastructure scenarios.

Theoretical Framework

Operating Systems and Virtualization

An operating system (OS) is the software responsible for managing hardware resources and providing services to applications and users. Its installation and configuration are the first steps in building a technological infrastructure. In both academic and professional environments, systems such as Linux (Slackware, CentOS), Solaris, and Windows Server are commonly used, each with its own characteristics in terms of administration, security, and service support.

Virtualization, through tools such as VirtualBox or VMware, enables the deployment of multiple operating systems on a single physical machine, optimizing resources and facilitating experimentation without compromising the integrity of the host system.

Administration through Shell

The **Shell** is a command interpreter that allows direct interaction with the operating system, offering flexibility and control for administration tasks. Through scripting, it is possible to automate processes such as user creation, permission management, log file analysis, and directory organization. This automation capability is fundamental for system administrators, as it improves efficiency and reduces human error.

Networking and Simulation Tools

In networking, it is essential to understand connectivity fundamentals, protocols, and the devices involved in data transmission. Tools such as **Cisco Packet Tracer** allow the simulation of network topologies, configuration testing of routers and switches, and the analysis of information flow between devices. These simulators are especially useful for understanding data encapsulation in the different OSI model layers and the operation of protocols such as ICMP, DHCP, and DNS.

Traffic Analysis with Wireshark

Wireshark is a packet analyzer that allows real-time traffic inspection. It provides visibility into how data is encapsulated at each layer of the OSI/TCP-IP model and allows filtering to analyze specific protocols. Its use is essential for network troubleshooting, configuration validation, and understanding the structure of packets circulating through the network.

Network Services and File Sharing

A key service in corporate infrastructures is file sharing, which facilitates collaboration between users and departments. Protocols such as **SMB/SAMBA** provide this functionality in heterogeneous environments, integrating Windows, Linux, and Solaris systems. Correct

configuration of these services ensures availability, security, and efficiency in accessing shared resources.

Experiments

Experiments To build a technological infrastructure like the one presented in the previous diagram, it is necessary to have computers and servers with an installed operating system. It is also important to understand their operation from the system administrator's perspective and support automation processes. Below, different activities are proposed to explore this structure.

1. Getting to Know Packet Tracer

1. Getting to Know Packet Tracer

- Answer the following questions:

1. What version of Packet Tracer is available on the Cisco platform?

The Cisco platform offers Packet Tracer version 8.2.2

2. Through the Cisco platform, enroll in the course Getting Started with Cisco Packet Tracer.

Create a video summarizing the first four chapters of the course. Maximum duration: 5 minutes.

This is the link on YouTube: <https://youtu.be/mfP99NT-1ls>

3. Complete the quiz "Introduction to Packet Tracer - PT Basics Quiz" from the course and take a screenshot of your quiz results.

Julian's results of tests

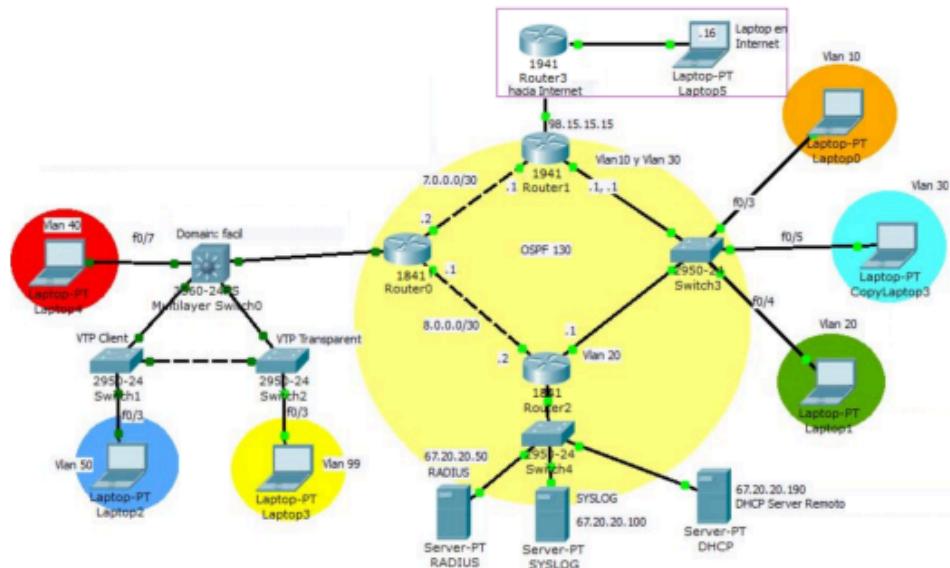
The screenshot shows a web browser window with the Cisco Networking Academy URL: <https://netacad.com/launch?id=ec0847b7-e6fc-4597-bc31-38dddb07a2f8tab=curriculum&view=d8d85845-fac6-584c-ae59-7c1ef4f26eb3>. The page title is "Getting Started with Cisco Packet Tracer". On the left, there is a sidebar with a "Course Outline" section showing completed modules: "Module 1: Download and Use Cisco Packet Tracer" and "Module 2: Create a Cisco Packet Tracer Network", both at 100% completion. Below this is the "Getting Started with Cisco Packet Tracer Course Final Exam" section, which is also at 100% completion. The main content area shows a large green arc with the text "100%" in the center. Below the arc, it says "You have scored 100%." and "Congratulations, you have passed the exam." There is a "Reset" button and a "Review Assessment" link. At the bottom of the browser window, the taskbar shows various icons for Microsoft Office applications, a search bar, and the date/time: "11:23 p.m. 25/08/2025".

Santiago's results of test

The screenshot shows the Cisco Networking Academy course interface. On the left, there is a sidebar with a 'Course Outline' section containing various modules and their progress: 'Packet Tracer' (58%), 'Module 2: Create a Cisco Packet Tracer Network' (100%), 'Getting Started with Cisco Packet Tracer Course Final Exam' (50%), 'Course Final Exam' (1/1), 'Packet Tracer activity' (green checkmark), and 'End of Course Survey'. The main area is titled 'Packet Tracer activity' and shows a large green arc indicating a score of 100%. Below the arc, it says 'You have scored 100%' and 'Congratulations, you have passed the exam.' There are buttons for 'Reset' and 'Review Assessment'.

Note: Each student must complete the quiz individually.

- Using Packet Tracer, each student must create the network diagram shown below:

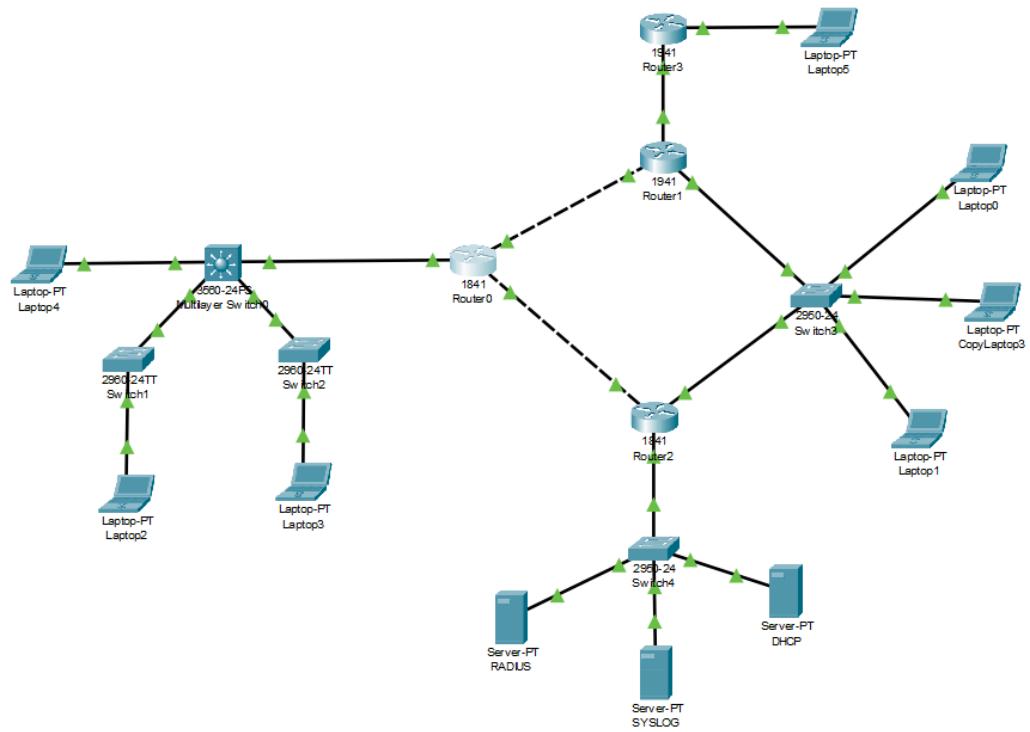


- Each student must build and submit the Packet Tracer file containing the network.

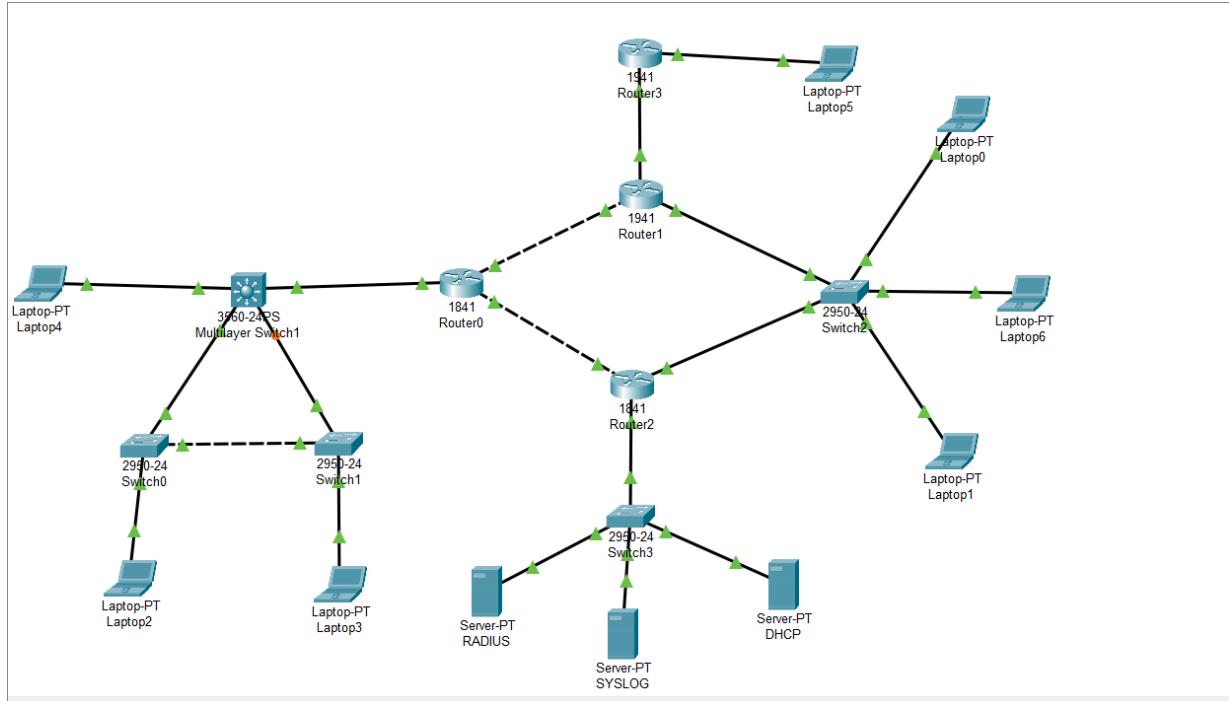
Diagrama Julián	31/08/2025 5:00 p.m.	Cisco Packet Tracer	98 KB
diagrama_de_red_santiago	31/08/2025 4:56 p.m.	Cisco Packet Tracer	456 KB

- Ignore the colors of the dots/rectangles that appear on the links (links refer to the connection lines between devices). The colors of these links will become important later, and we will review them at that time.

Julian's screenshot:



Santiago's screenshot



– The connections or links presented in the diagram are:

- * Black-colored links correspond to Ethernet cables (Ethernet, FastEthernet, or GigaEthernet).

What do the solid black connections represent?:

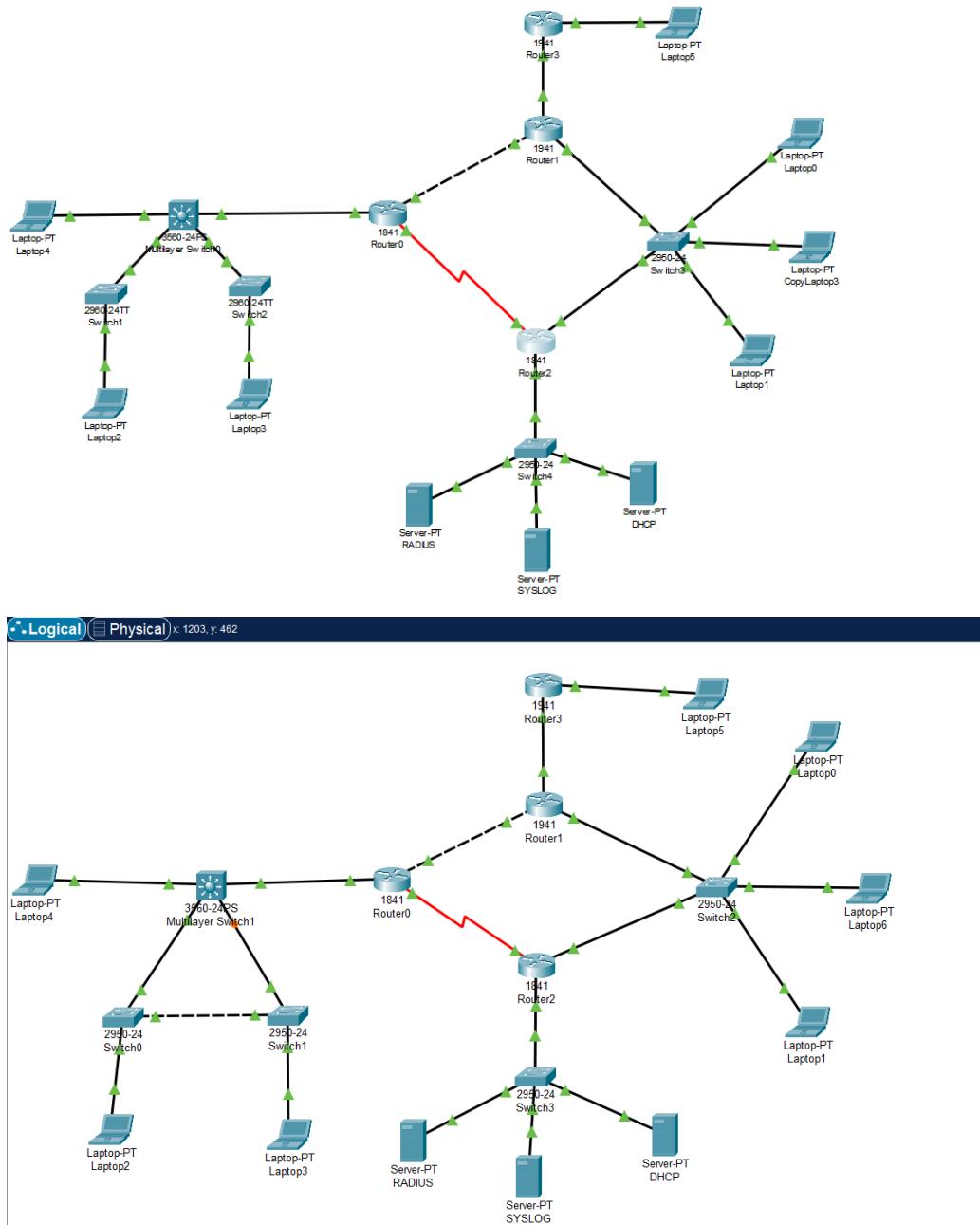
The solid black connections are called "Copper Straight-Through" and are used in local area networks to connect a computer to a network hub, such as a router or switch.

What do the dashed black connections represent?:

The dashed black connections are called "Copper Cross-Over" cables They are generally used to connect two devices of the same type, for example, PC to PC, or Switch to Switch.

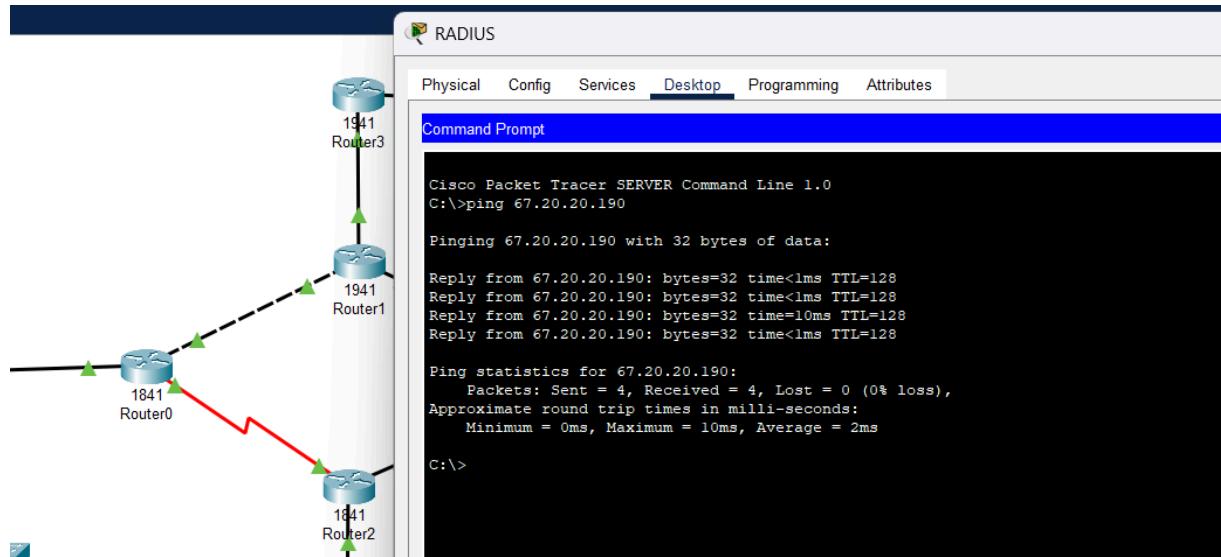
* Modify the connection between Router0 and Router2 so that they use a serial cable for this connection (red-colored cables represent serial cables – typically used for WAN connections).

Here is the Images:



2. Tracking Messages with Packet Tracer

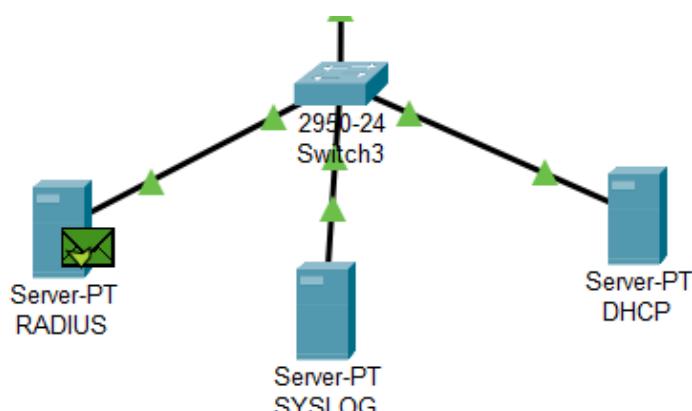
- Perform a ping from the RADIUS server to the DHCP server using Packet Tracer's simulation mode.



- Now, analyze the PDUs layer by layer (We have not yet covered the meaning of each one, but observe that they exist and that each layer adds information to the user data). Use the following guide as a reference:

Run the simulation and capture the traffic

- In the lower right corner of the PT interface, locate the toggle switch between Real-time and Simulation mode. Click on **Simulation mode**.
- Click the **Edit Filters** button and select only **ICMP**.
- Click on **Server-PT_RADIUS**. Go to the **Desktop** tab and open the **Command Prompt**. Enter the command `ping IP_SERVER-PT_DHCP`. Pressing the **Enter** key will initiate four ICMP echo requests. Minimize the PC configuration window. Two packets will appear in the **Event List**: the first **ICMP echo request** and an **ARP request**, which is needed to resolve the server's IP address to its hardware MAC address.
- Click the **Auto Capture / Play** button to run the simulation and capture events. Click **OK** when the "No More Events" message appears.





RADIUS

```
C:\>ping 67.20.20.190

Pinging 67.20.20.190 with 32 bytes of data:

Reply from 67.20.20.190: bytes=32 time=4ms TTL=128

Ping statistics for 67.20.20.190:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 4ms, Maximum = 4ms, Average = 4ms
```

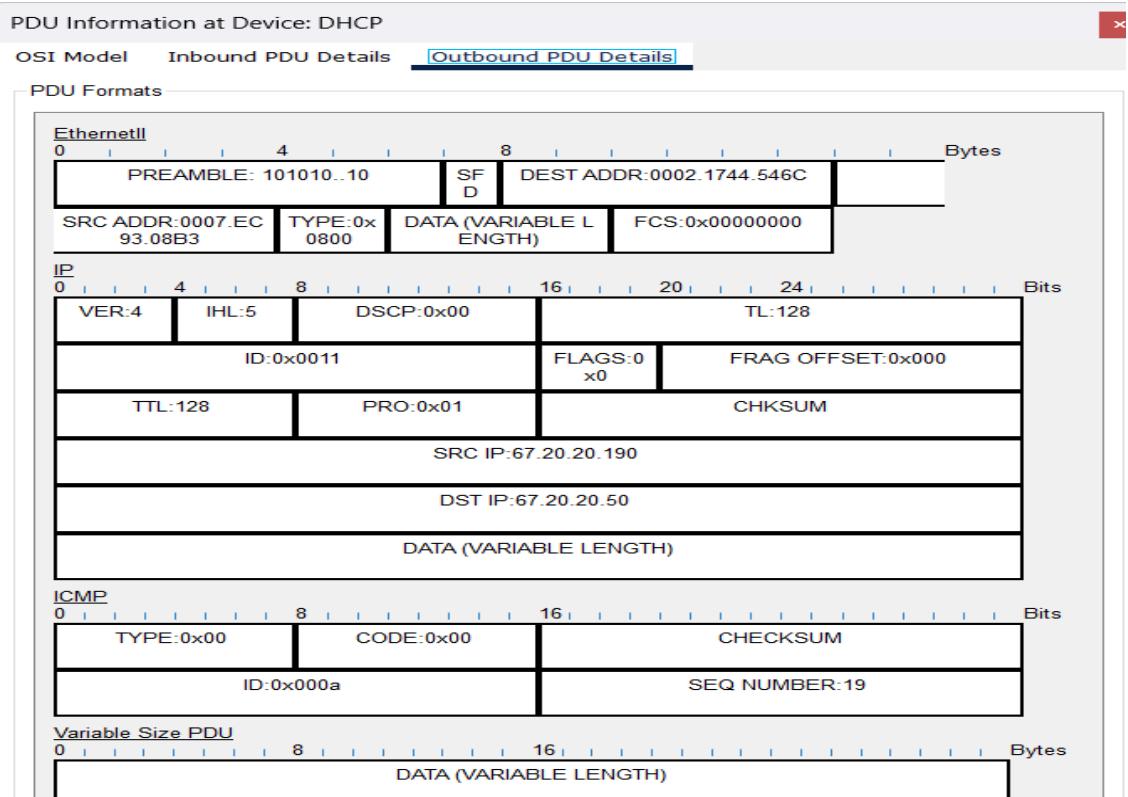
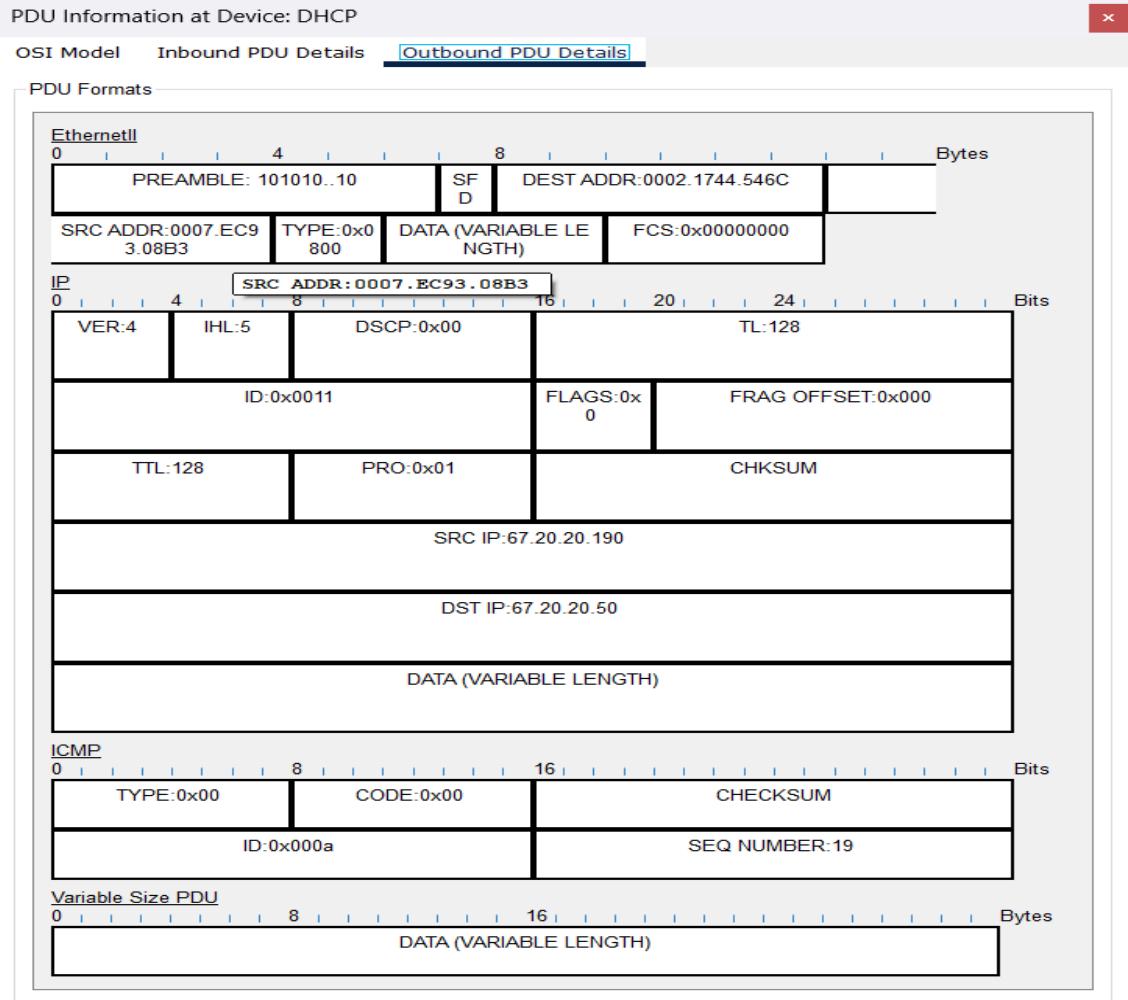
Simulation Panel

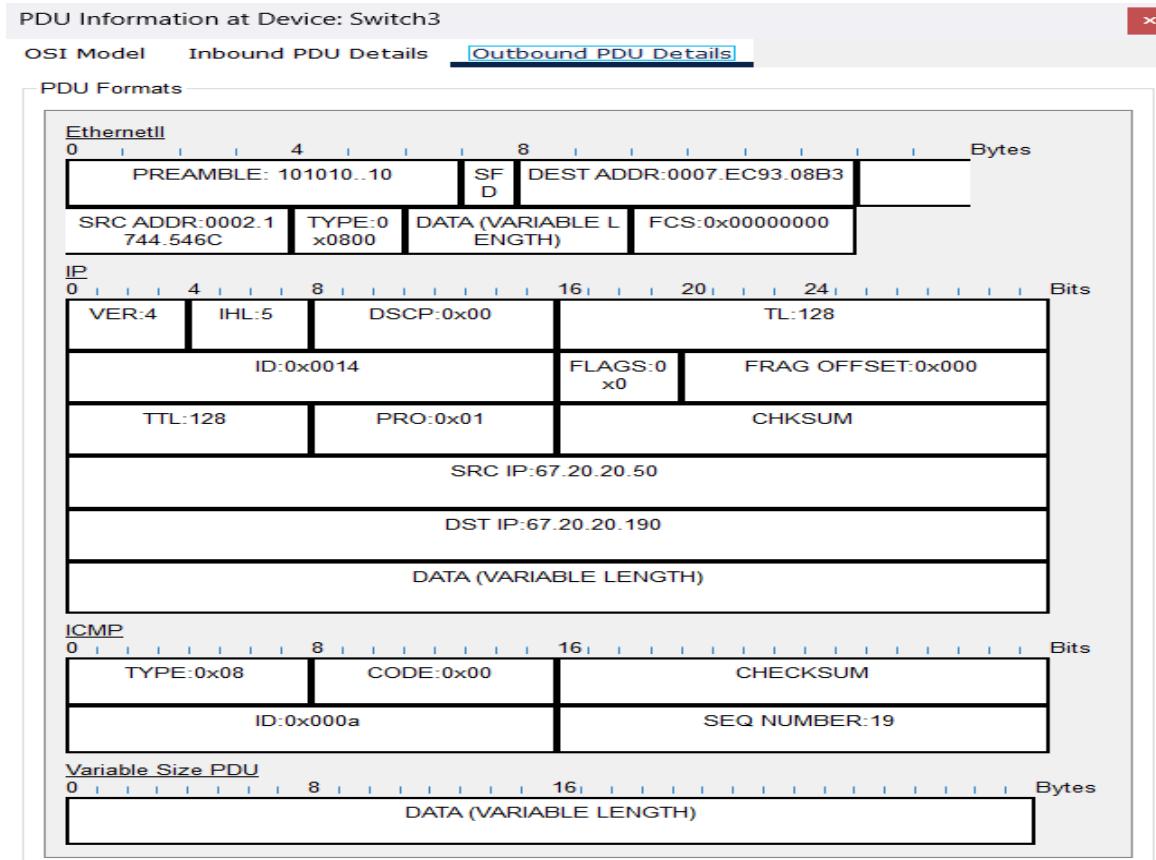
Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	RADIUS	ICMP
	0.001	RADIUS	Switch3	ICMP
	0.002	Switch3	DHCP	ICMP
	0.003	DHCP	Switch3	ICMP
	0.004	Switch3	RADIUS	ICMP
	1.004	--	RADIUS	ICMP
	1.005	RADIUS	Switch3	ICMP
	1.006	Switch3	DHCP	ICMP
	1.007	DHCP	Switch3	ICMP
	1.008	Switch3	RADIUS	ICMP
	2.010	--	RADIUS	ICMP
	2.011	RADIUS	Switch3	ICMP
	2.012	Switch3	DHCP	ICMP
	2.013	DHCP	Switch3	ICMP
	2.014	Switch3	RADIUS	ICMP
	3.014	--	RADIUS	ICMP
	3.015	RADIUS	Switch3	ICMP
	3.016	Switch3	DHCP	ICMP
	3.017	DHCP	Switch3	ICMP
Visible	3.018	Switch3	RADIUS	ICMP

 Constant DelayCaptured to:
97.519 s

- Examine the content of the captured packets. Observe how the PDUs are built layer by layer.





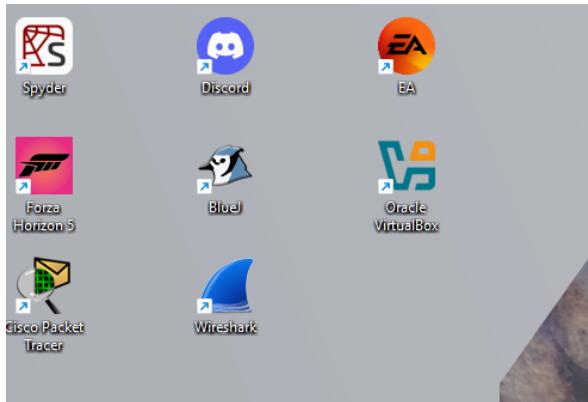
On The Real Network

Perform the following tests using the Wireshark tool.

1. Using Wireshark

Wireshark is a cross-platform tool used for analyzing network packets. Throughout this course, we will use it to observe real-time network traffic and examine how different protocols operate. For this reason:

- Install (if working from home) and run Wireshark on your computer.

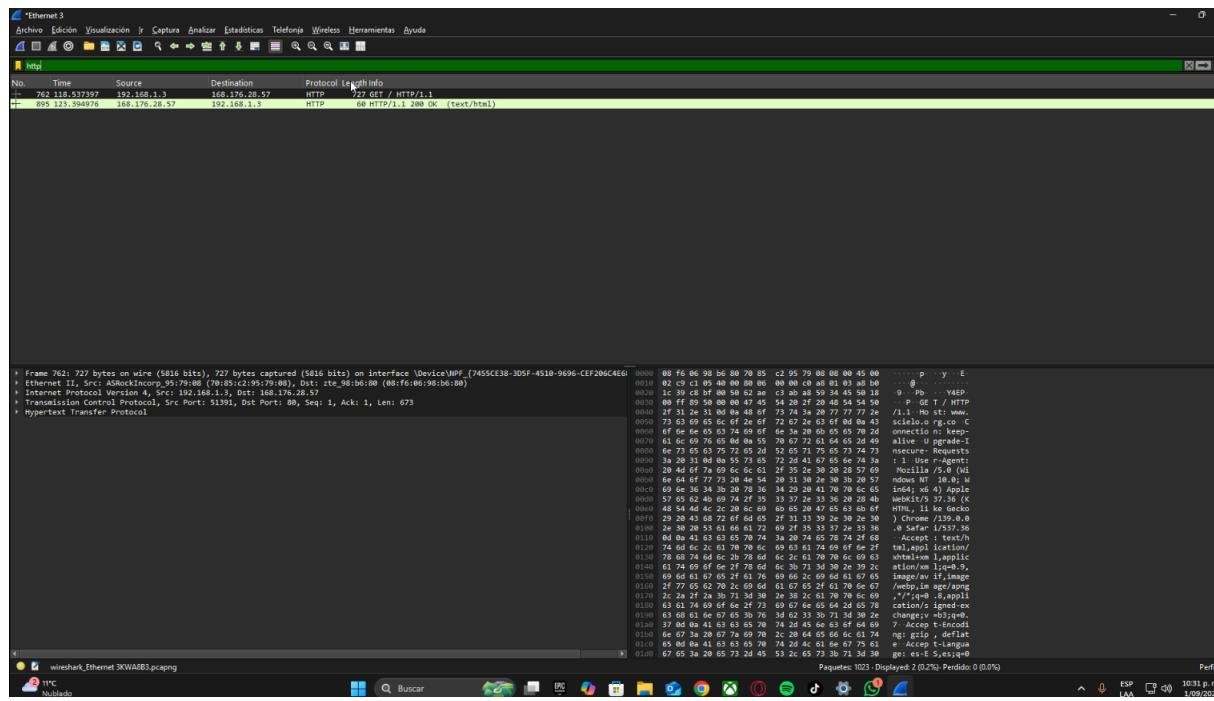


- Watch videos and read documentation about Wireshark's operation. What is Wireshark? : Wireshark is a free and open source network protocol analyzer it allows users to capture and inspect data packets in real time providing detailed insights into how devices and protocols communicate across a network
 - What does it mean for a network card to be in promiscuous mode? : Promiscuous mode allows a network card to capture all network traffic, not just the packets addressed to it

- Create a video explaining the different components of the interface, how to create filters, and their purpose. Provide examples. The video should be approximately 5 minutes long.

Here's the link to the video on YouTube: <https://youtu.be/1DQG3OfQYWQ>

- Perform a web query to <http://www.scielo.org.co> and capture the generated traffic. To do this, open your browser, start a Wireshark capture, visit the specified page, and then stop the capture.



- Analyze the data from one of the captured packets. Examine how each layer encapsulates the data, review the information displayed in different areas of the Wireshark interface, and take screenshots of the findings. (To facilitate the analysis, filter and locate a captured packet containing the word "GET").

I applied the filter `http.request.method == "GET"` and selected one packet. The analysis shows:

- **Ethernet**: source and destination MAC addresses.
- **IP**: source and destination IPs, responsible for addressing.
- **TCP**: source/destination ports, ensures reliable delivery.
- **HTTP**: the actual GET request with URL and headers.

2. Network Cards

Explore the network cards of various devices. To do this, gather information on the network cards of the school's computers and at least three different devices (desktops, laptops, smartphones, tablets, gaming consoles, etc.) from each team member. Include details such as the manufacturer, model, speed, MAC address, IPv4 address, IPv6 address, and the number of transmitted and received bytes. For wireless network cards, also include connection speed and SSID. Next, retrieve the same information for two of your virtual machines and compare the results with the data from the host machines.

PC ECI:

Supplier: Intel (R) Ethernet Conection

Model: (17) I219-LM

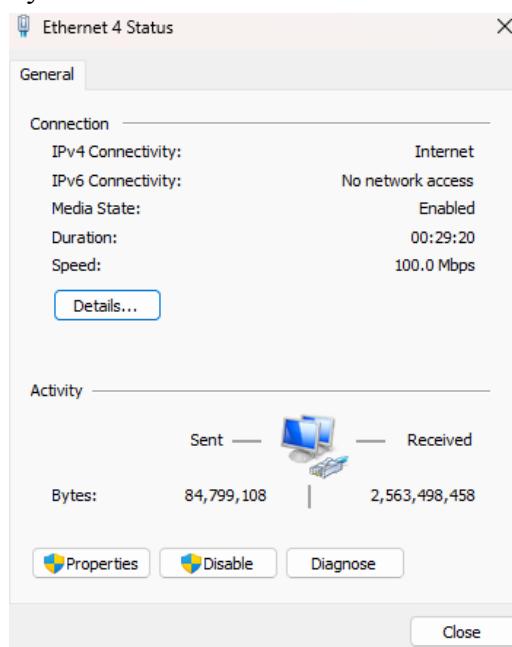
Speed: 100. Mbps

MAC Address: 30-13-8B-6A-18-CE

IPv4 Address: 10.2.67.107

IPv6 Address: fe80::ee58.fc76:9314:d705%13

Bytes transferred and received: 84.799.108 / 2.563.498.458



Network Connection Details	
Network Connection Details:	
Property	Value
Connection-specific DN...	is.escuelaing.edu.co
Description	Intel(R) Ethernet Connection (17) I219
Physical Address	30-13-8B-6A-18-CE
DHCP Enabled	Yes
IPv4 Address	10.2.67.107
IPv4 Subnet Mask	255.255.0.0
Lease Obtained	Monday, September 1, 2025 11:51:01
Lease Expires	Monday, September 1, 2025 11:51:01
IPv4 Default Gateways	10.2.65.1 10.2.65.3
IPv4 DHCP Server	10.2.65.1
IPv4 DNS Servers	10.2.65.2 10.2.65.61 10.2.65.62
IPv4 WINS Server	
NetBIOS over Tcpip En...	Yes

[Close](#)

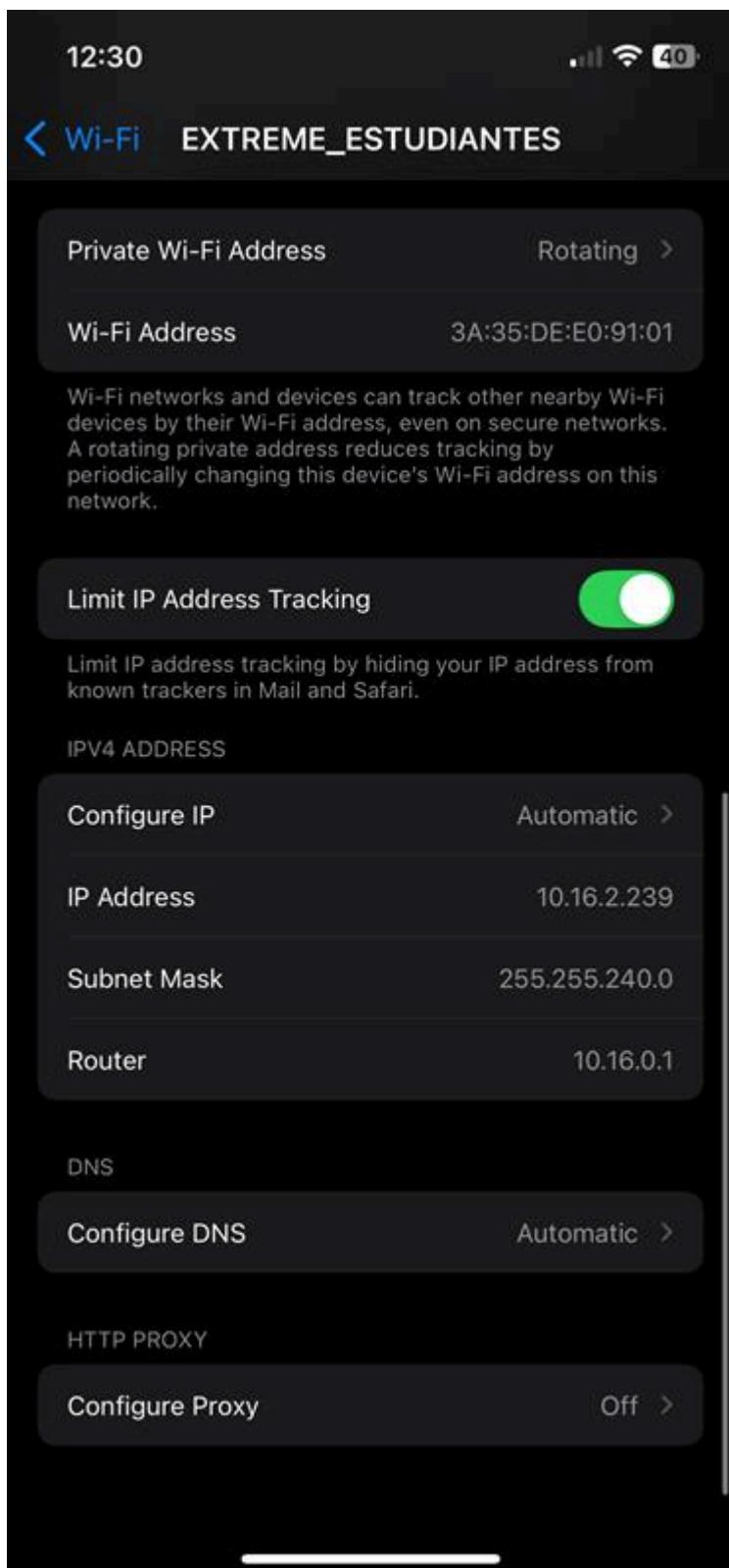
Julian's Cellphone:

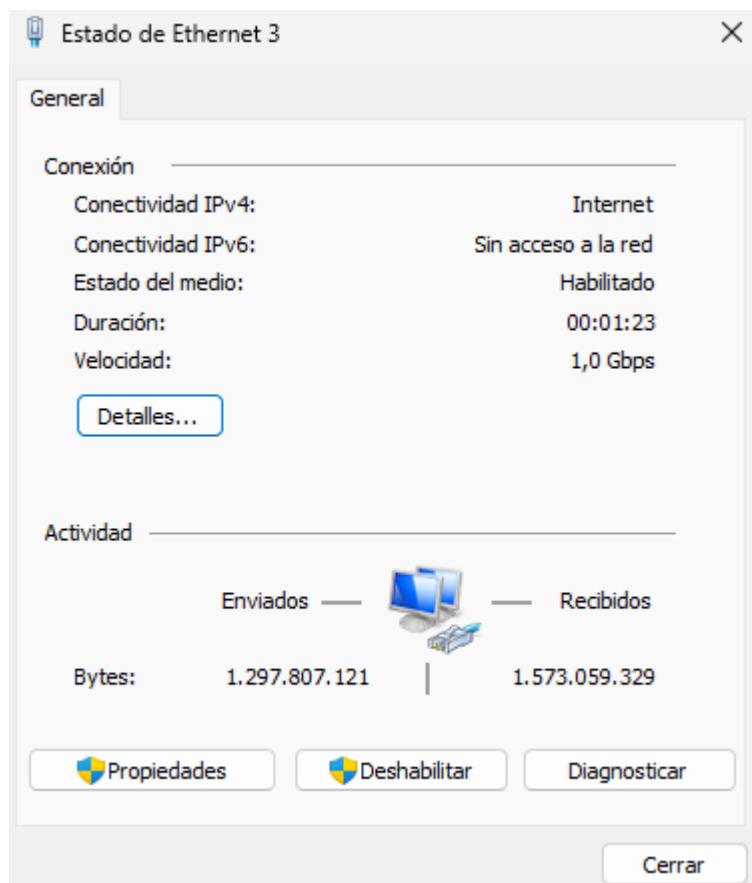
Supplier: Apple

Speed Connection: 91,3

Mac Address: 8A:67:18:62:B6:80

IPv4 Address: 10.16.2.239



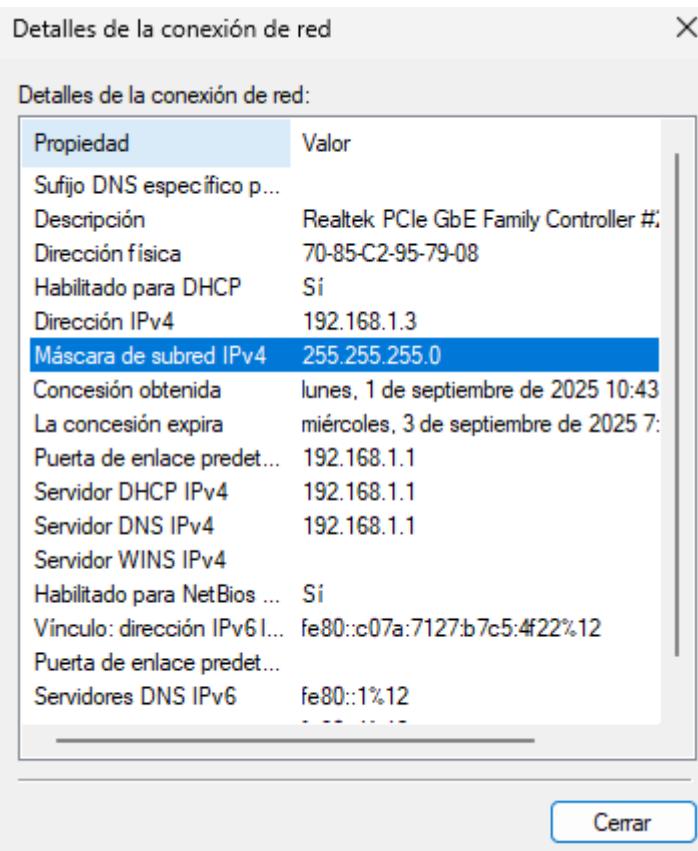


Detalles de la conexión de red

Detalles de la conexión de red:

Propiedad	Valor
Sufijo DNS específico p...	
Descripción	Realtek PCIe GbE Family Controller #1
Dirección física	70-85-C2-95-79-08
Habilitado para DHCP	Si
Dirección IPv4	192.168.1.3
Máscara de subred IPv4	255.255.255.0
Concesión obtenida	lunes, 1 de septiembre de 2025 10:43
La concesión expira	miércoles, 3 de septiembre de 2025 7:43
Puerta de enlace predet...	192.168.1.1
Servidor DHCP IPv4	192.168.1.1
Servidor DNS IPv4	192.168.1.1
Servidor WINS IPv4	
Habilitado para NetBios ...	Si
Vínculo: dirección IPv6 l...	fe80::c07a:7127:b7c5:4f22%12
Puerta de enlace predet...	
Servidores DNS IPv6	fe80::1%12

Cerrar



Base Software

In an infrastructure, it is also essential to have programs that support the management of various operating system tasks. We will carry out activities designed to help you better understand the operating system and its administration.

1. Shell Programming - Unix

Using a virtual machine running Linux Slackware, Solaris, or CentOS (depending on the number of group members), develop the following applications. (Remember to document your code).

1.1. "ls" Command

Create a shell script that lists the files in a given directory, including hidden ones, and allows:

- Sorting based on different criteria and displaying the count for each group:
 - Most recent (should indicate how many files share the same date).
 - Oldest (should indicate how many files share the same date).
 - Size from largest to smallest (should indicate how many files share the same size).
 - Size from smallest to largest (should indicate how many files share the same size).
 - File type (File/Directory) (should indicate how many files belong to each type).
- Filtering options (allow selection of either the specified directory only or the directory along with its subdirectories):
 - Starts with a given string.
 - Ends with a given string.
 - Contains a given string.

After requesting the directory to analyze, create a menu with the options listed above. The script should remain in the menu until the user chooses to exit. It should also clear the screen before displaying results, and if the output is too extensive, it should be paginated.

In /scripts/[listar.sh](#)

1.2. File Search and Viewing Commands

Create a shell script that, through a menu (which will remain active until the user chooses to exit), allows the following actions:

- Search for a file or part of a filename within a specified directory. The output should display the locations and names of the found files, as well as the total number of occurrences.
- Search for a word or partial word within a given file. The output should show the found word, the lines where it appears, and the total number of occurrences.
- Search for a file or part of a filename within a given directory, and once found, search for a word or partial word within that file. The output should list, for each found file, the line number where the word appears and the total number of occurrences.
- Count the number of lines in a file.
- Display the first n lines of a given file.
- Display the last n lines of a given file.

In /scripts/file_search.sh

1.3. Log File Review

Write a shell script that:

- Clears the screen.
- Displays a menu allowing the user to perform one of the following actions:
- Show the last 15 lines of 3 log files that contain general system activity data.
- Filter those 15 lines from the same log files to display only those containing a specific word.

Now, answer the following questions:

- What are log files?
- What types of logs are present in the operating systems you installed?
- What is syslog? What does this standard define? Do the logs you found in the operating systems follow this standard?

In /scripts/log_file.sh

1.4. User Creation

Write a shell script that automates the user, group, and permission creation process from the previous lab. The script should prompt for all required information via the command line and follow this format:

```
$ newuser alice developers "Alice Developer" /home/alice /bin/bash 700 770 755
$ newgroup developers 1001
```

In /scripts/new_user.sh and /scripts/new_group.sh

2. VI Editor in Linux/Unix

- Use the VI editor to create a file. Document the commands used.

```
root@local:~# vi himno.txt_
```

- Enter the following text and document the commands used.

Note: Each line of text should be on a separate line in the editor, meaning you must press the ENTER key at the end of each line.

HIMNO DE LA ESCUELA

Estudiante, maestro la conquista
Será hacer con amor nuestra labor
Cultores de espíritu humanista
Unidad de intelecto y corazón.

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aquí perdura mientras todo pasa
Cimiento de la fe y la integridad.

Ofrecemos la mano al que tropieza
La hidalguía del diálogo al rival
Ofrecemos la duda y la certeza
Mediamos entre hierro y el cristal.

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aquí perdura mientras todo pasa
Cimiento de la fe y la integridad.

- Save the work without exiting the editor.

- Replace all occurrences of the letter ‘a’ in the first paragraph with the symbol -.

:1,6s/a/-/g_

HIMNO DE LA ESCUELA

Estudi-nte, m-estro l- conquist-
Ser- h-cer con -mor nuestr- l-bor
Cultores de espiritu hum-nist-
Unid-d de intelecto y cor-zon.

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aqui perdura mientras todo pasa
Cimiento de la fe y la integridad.

Ofrecemos la mano al que tropieza
La hidalgua del dialogo al rival
Ofrecemos la duda y la certeza
Mediamos entre hierro y el cristal

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aqui perdura mientras todo pasa
Cimiento de la fe y la integridad

- Replace every instance of the word “al” throughout the text with the symbols ##.

```
:%s/al/##/g_
```

The screenshot shows a terminal window titled "Other Linux 2.6.x kernel 6...". It displays a poem in Spanish. The command `:%s/al/##/g_` has been run, replacing all occurrences of the word "al" with double hash symbols ("##"). The replaced words are shown in red. The poem is as follows:

HIMNO DE LA ESCUELA
Estudi-nte, m-estro l- conquist-
Ser- h-cer con -mor nuestr- l-bor
Cultores de espiritu hum-nist-
Unid-d de intelecto y cor-zon.

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aqui perdura mientras todo pasa
Cimiento de la fe y la integridad.

Ofrecemos la mano ## que tropieza
La hid##guia del di##ogo ## riv##
Ofrecemos la duda y la certeza
Mediamos entre hierro y el crist##

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aqui perdura mientras todo pasa
Cimiento de la fe y la integridad

- What command can be used to delete a word in VI?

The command dw can be used to delete a word in VI.

- Delete the last four lines of the document using a single command.

```
:$-3,$d
```

The screenshot shows a terminal window titled "Other Linux 2.6.x kernel 6...". It displays the same poem as the previous screenshot. The command `:$-3,$d` has been run, deleting the last four lines of the poem. The deleted lines are shown in red. The poem is as follows:

HIMNO DE LA ESCUELA
Estudi-nte, m-estro l- conquist-
Ser- h-cer con -mor nuestr- l-bor
Cultores de espiritu hum-nist-
Unid-d de intelecto y cor-zon.

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aqui perdura mientras todo pasa
Cimiento de la fe y la integridad.

Ofrecemos la mano ## que tropieza
La hid##guia del di##ogo ## riv##
Ofrecemos la duda y la certeza
Mediamos entre hierro y el crist##
~

- Undo the previous command.

```
:u
```

The terminal window shows a poem titled "HIMNO DE LA ESCUELA". The poem consists of three stanzas. The first stanza is a single paragraph. The second stanza starts with "Escuela de ingenio es nuestra casa" and ends with "Cimiento de la fe y la integridad". The third stanza starts with "Ofrecemos la mano ## que tropieza" and ends with "Mediamos entre hierro y el crist##". There are two blank lines at the end of the third stanza.

```
Home Other Linux 2.6.x kernel 6... X
```

HIMNO DE LA ESCUELA
Estudi-nte, m-estro l- conquist-
Ser- h-cer con -mor nuestr- l-bor
Cultores de espíritu hum-nist-
Unid-d de intelecto y cor-zon.

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aqui perdura mientras todo pasa
Cimiento de la fe y la integridad
~
~

- Convert the last line of the document to uppercase.

```
:$s/.*/^U&/ -
```

The terminal window shows the same poem as before, but the last line of the third stanza is now in uppercase: "CIMENTO DE LA FE Y LA INTEGRIDAD".

```
Home Other Linux 2.6.x kernel 6... X
```

HIMNO DE LA ESCUELA
Estudi-nte, m-estro l- conquist-
Ser- h-cer con -mor nuestr- l-bor
Cultores de espíritu hum-nist-
Unid-d de intelecto y cor-zon.

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aqui perdura mientras todo pasa
CIMIENTO DE LA FE Y LA INTEGRIDAD
~
~

- Copy the last two lines of the second paragraph to the end of the file.

Use '{' and '}' to navigate

HIMNO DE LA ESCUELA
Estudi-nte, m-estro l- conquist-
Ser- h-cer con -mor nuestr- l-bor
Cultores de espíritu hum-nist-
Unid-d de intelecto y cor-zon.

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aqui perdura mientras todo pasa
Cimiento de la fe y la integridad.

Ofrecemos la mano ## que tropieza
La hid##guia del di##ogo ## riu##
Ofrecemos la duda y la certeza
Mediamos entre hierro y el crist##

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aqui perdura mientras todo pasa
CIMIENTO DE LA FE Y LA INTEGRIDAD
Ofrecemos la duda y la certeza
Mediamos entre hierro y el crist##
~
~
~
~

- Search for the word "Escuela" within the text.

~
/Escuela_

HIMNO DE LA ESCUELA
Estudi-nte, m-estro l- conquist-
Ser- h-cer con -mor nuestr- l-bor
Cultores de espíritu hum-nist-
Unid-d de intelecto y cor-zon.

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aqui perdura mientras todo pasa
Cimiento de la fe y la integridad.

Ofrecemos la mano ## que tropieza
La hid##guia del di##ogo ## riu##
Ofrecemos la duda y la certeza
Mediamos entre hierro y el crist##

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Aqui perdura mientras todo pasa
CIMIENTO DE LA FE Y LA INTEGRIDAD
Ofrecemos la duda y la certeza
Mediamos entre hierro y el crist##
~
~
~
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~

Search wrapped

- Move to line 5 of the text using a command.

:5

HIMNO DE LA ESCUELA

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Ser- h-cer con -mor nuestr- l-bor
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Ofrecemos la mano ## que tropieza
La hid##guia del di##ogo ## riu##
Ofrecemos la duda u la certeza

- Create a summary table with VI commands.

- Save the work and exit the editor.

:wq

```
himno.txt: 22 lines, 627 characters.  
root@local:~#
```

- Reopen the file and delete the first five lines.

151

Escuela de ingenio es nuestra casa
Libro abierto a nuestra universidad
Aquí perdura mientras todo pasa
Cimiento de la fe y la integridad.

Ofrecemos la mano que tropieza
La hiduia del diogo rive
Ofrecemos la duda y la certeza
Mediamos entre hierro y el crist

Escuela de ingenio es nuestra casa
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CIMIENTO DE LA FE Y LA INTEGRIDAD
Ofrecemos la duda y la certeza
Mediamos entre hierro y el cristal

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6

- Exit the file without saving.

```
:q!  
root@local:~# _
```

3. Virtual Machine Deployment

For the semester project, two virtual machines of each installed operating system will be required, except for Windows Server without GUI and Android. Create the new virtual machines and verify that they can communicate with each other and access the internet.

4. File Sharing

One of the key services in a business environment is shared file systems, where employees can store files and share them with their workgroups. The task for this session is to configure a file server on Solaris using SMB/SAMBA to enable file sharing between the three operating systems (Linux Slackware, Solaris, and Windows). For groups of three students, also include CentOS in the configuration.

```
pkg install samba
```

```
root@solaris:~# pkg install samba  
          Paquetes que instalar: 4  
          Mediadores que cambiar: 1  
          Servicios que cambiar: 2  
          Crear entorno de inicio: No  
          Crear copia de seguridad de entorno de inicio: No  
  
DOWNLOAD          PKGS      FILES      XFER (MB)      SPEED  
Completado        4/4       996/996    19.5/19.5   991k/s  
  
PHASE           ITEMS  
Instalando acciones nuevas      1214/1214  
Actualizando base de datos de estado de paquete      Listo  
Actualizando cach  de paquete      0/0  
Actualizando estado de imagen      Listo  
Creando base de datos de b osqueda r ipida en proceso /Loading smf(7) service d  
Creando base de datos de b osqueda r ipida en proceso /Aug 28 06:45:23 solaris  
sendmail[1196]: My unqualified host name (solaris) unknown; sleeping for retry  
Creando base de datos de b osqueda r ipida en proceso -4/4  
Creando base de datos de b osqueda r ipida      Listo  
Actualizando cach  de paquete      1/1  
root@solaris:~# Aug 28 06:46:23 solaris sendmail[1196]: unable to qualify my own
```

```
root@solaris:~# vi /etc/samba/smb.conf
```

```
root@solaris:~# cat /etc/samba/smb.conf
[global]
    workgroup = WORKGROUP
    server string = Solaris File Server
    security = user
    map to guest = Bad User
    dns proxy = no

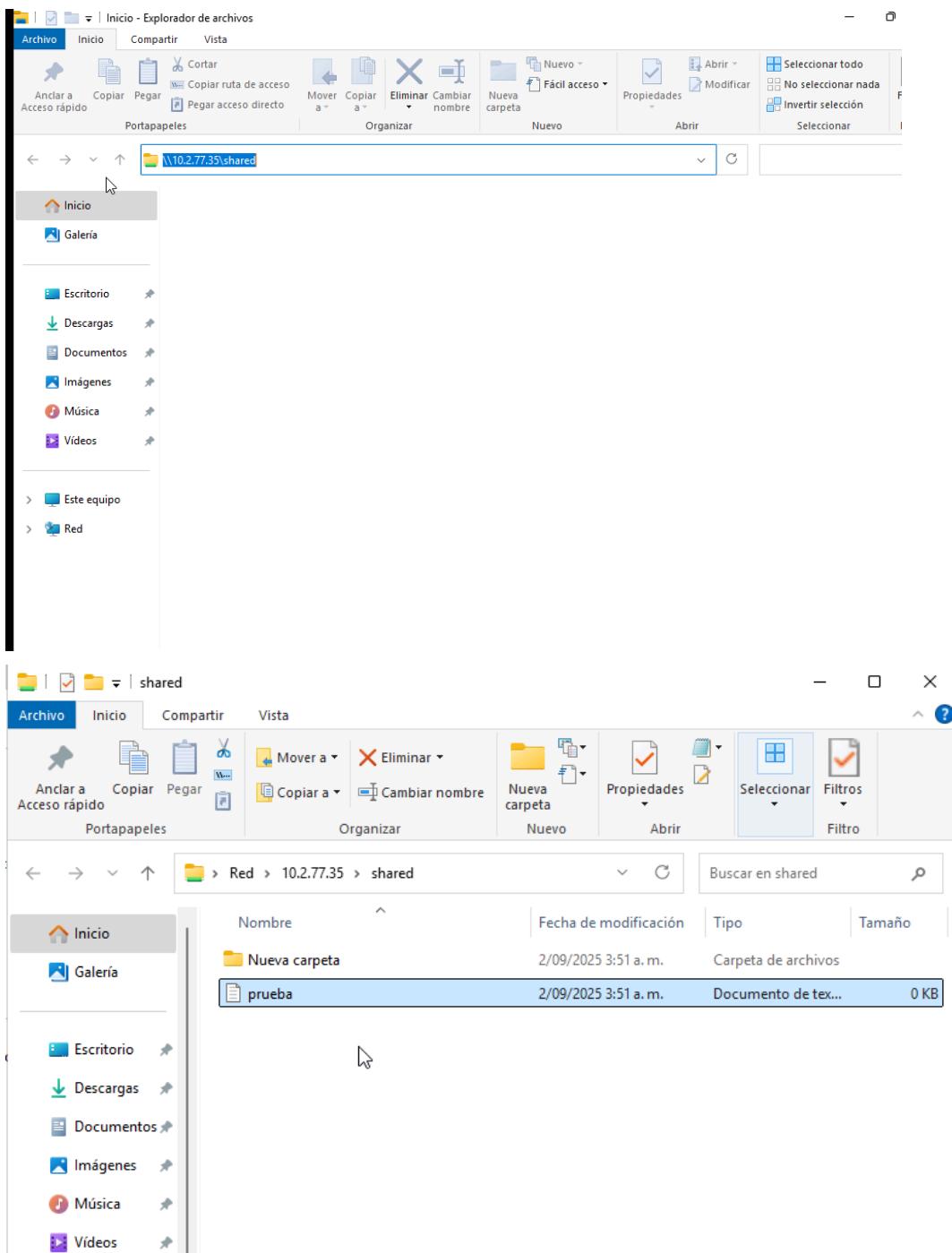
[shared]
    path = /path/to/shared/directory
    valid users = @users
    read only = no
    guest ok = yes
root@solaris:~#
```

```
root@solaris:~# mkdir -p /path/to/shared/directory
root@solaris:~# chmod -R 0777 /path/to/shared/directory
root@solaris:~#
```

```
root@solaris:~# smbpasswd -a claudia
New SMB password:
Retype new SMB password:
Added user claudia.
root@solaris:~#
```

```
root@solaris:~# smbpasswd -e claudia
Enabled user claudia.
root@solaris:~#
```

```
root@solaris:~# svcadm enable samba
root@solaris:~# svcs -xv samba
svc:/network/samba:default (SMB file server)
  Estado: online desde 28 de agosto de 2025, 7:22:27 -05
    Consulte: man -M /usr/share/man -s 4 smb.conf
    Consulte: man -M /usr/share/man -s 1m smbsmbd
    Consulte: /var/svc/log/network-samba:default.log
  Impacto: ninguno.
root@solaris:~#
```



```
root@solaris:~# ls /path/to/shared/directory
Nueva carpeta prueba.txt
root@solaris:~#
```

```

GNU nano 6.0                               /etc/slackpkg/slackpkg.conf
# Usually slackpkg can automatically discover this variable. If you want
# to override the discovered variable, then uncomment this line and edit
# as needed
#SLACKKEY="Slackware Linux Project <security@slackware.com>

# Downloaded files will be in the TEMP directory:
TEMP=/var/cache/packages

# Package lists, file lists, and others will be stored in WORKDIR:
WORKDIR=/var/lib/slackpkg

# Special options for wget (default is WGETFLAGS="--passive-ftp")
WGETFLAGS="--passive-ftp"

# If DELALL is "on", all downloaded files will be removed after install.
DELALL=on

# If CHECKMD5 is "on", the system will check the md5sums of all packages before
# install/upgrade/reinstall is performed.
CHECKMD5=off

# If CHECKGPG is "on", the system will verify the GPG signature of each package
# before install/upgrade/reinstall is performed.
CHECKGPG=off

# If CHECKSIZE is "on", the system will check if we have sufficient disk
# space to install selected package. This make upgrade/install safer, but
# will also slow down the upgrade/install process.
CHECKSIZE=off

# PRIORITY sets the download priority. slackpkg will try to found the
# package first in the first value, then the second one, through all
# values in list.
[ Wrote 157 lines ]
^G Help      ^U Write Out   ^M Where Is   ^K Cut        ^T Execute    ^C Location   ^I-U Undo
^X Exit      ^R Read File   ^N Replace    ^U Paste       ^J Justify    ^L Go To Line ^I-E Redo

```



```

GNU nano 6.0                               /etc/slackpkg/mirrors                         Modified
# list is not guaranteed to be up-to-date
#
# AUSTRALIA (AU)
# ftp://ftp.cc.swin.edu.au/slackware/slackware64-15.0/
# http://ftp.cc.swin.edu.au/slackware/slackware64-15.0/
# ftp://ftp.iinet.net.au/pub/slackware/slackware64-15.0/
# http://ftp.iinet.net.au/pub/slackware/slackware64-15.0/
# ftp://mirror.as24220.net/pub/slackware/slackware64-15.0/
# http://mirror.as24220.net/pub/slackware/slackware64-15.0/
# ftp://mirror.internode.on.net/.pub2/slackware/slackware64-15.0/
# http://mirror.internode.on.net/pub/slackware/slackware64-15.0/
# AUSTRIA (AT)
# http://gd.tuwien.ac.at/opsys/linux/freesoftware.com/slackware64-15.0/
# BELARUS (BY)
# ftp://mirror.datacenter.by/pub/slackware/slackware64-15.0/
# http://mirror.datacenter.by/pub/slackware/slackware64-15.0/
# BRAZIL (BR)
_ftp://ftp.slackware-brasil.com.br/slackware64-15.0/
# http://ftp.slackware-brasil.com.br/slackware64-15.0/
# BULGARIA (BG)
# ftp://mirrors.unixsol.org/slackware/slackware64-15.0/
# http://mirrors.unixsol.org/slackware/slackware64-15.0/
# CANADA (CA)
# ftp://mirror.csclub.uwaterloo.ca/slackware/slackware64-15.0/
# http://mirror.csclub.uwaterloo.ca/slackware/slackware64-15.0/
# ftp://mirror.its.dal.ca/slackware/slackware64-15.0/
# http://mirror.its.dal.ca/slackware/slackware64-15.0/
# CHINA (CN)
# http://mirrors.163.com/slackware/slackware64-15.0/
# http://mirrors.ustc.edu.cn/slackware/slackware64-15.0/
# COSTA RICA (CR)
# ftp://mirrors.ucr.ac.cr/slackware/slackware64-15.0/
# http://mirrors.ucr.ac.cr/slackware/slackware64-15.0/
[ Wrote 157 lines ]
^G Help      ^U Write Out   ^M Where Is   ^K Cut        ^T Execute    ^C Location   ^I-U Undo
^X Exit      ^R Read File   ^N Replace    ^U Paste       ^J Justify    ^L Go To Line ^I-E Redo

```

Second part - knowing cloud

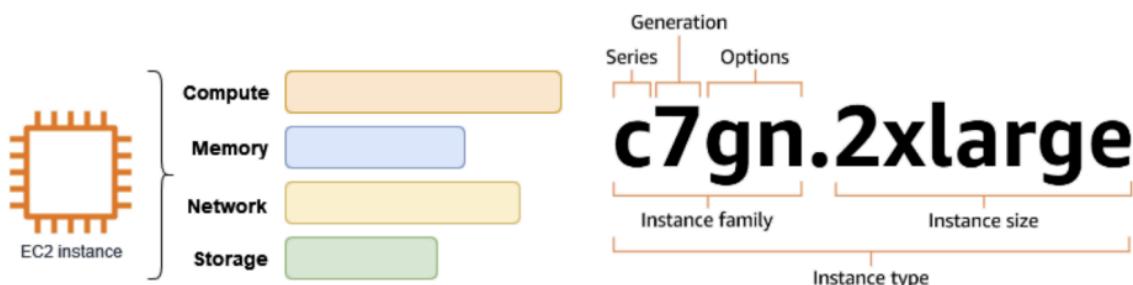
What is cloud computing?

Cloud computing is the on-demand delivery of computing power, databases, storage, applications, and other IT resources through a cloud services platform via the Internet with pay-as-you-go pricing. Whether you're running applications that share photos with millions of mobile device users or supporting your company's core operations, a cloud services platform provides fast access to flexible, low-cost IT resources. With cloud computing, you don't need to make large upfront investments in hardware and spend a lot of time on the tedious task of managing that hardware. Instead, you can provision exactly the type and size of computing resources you need to power your brilliant new idea or manage your IT department. You can access as many resources as you need, almost instantly, and pay only for what you use. Cloud computing provides an easy way to access servers, storage, databases, and a wide range of application services over the Internet. A cloud services platform such as Amazon Web Services owns and maintains the network-connected hardware required for these application services, while you provision and use what you need through a web application.

Elastic Compute Cloud

What is Amazon EC2?

Amazon Elastic Compute Cloud (Amazon EC2) provides on-demand, scalable computing capacity in the Amazon Web Services (AWS) Cloud. Using Amazon EC2 reduces hardware costs so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. You can add capacity (scale up) to handle compute-heavy tasks, such as monthly or yearly processes, or spikes in website traffic. When usage decreases, you can reduce capacity (scale down) again. An EC2 instance is a virtual server in the AWS Cloud. When you launch an EC2 instance, the instance type that you specify determines the hardware available to your instance. Each instance type offers a different balance of compute, memory, network, and storage resources. For more information, see the Amazon EC2 Instance Types Guide.



1. What are the main features of Amazon EC2?

Amazon EC2 (Elastic Compute Cloud) is the most widely used cloud computing service on AWS. Its main features are:

- Elasticity: You can launch and stop instances in minutes, scaling up or down based on demand.
- Variety of instance types: It offers many instance types (optimized for CPU, memory, GPU, storage, etc.).
- Pay as you go: You pay only for the time you use them (On-Demand, Reserved, Spot Instances).
- Choice of OS: You can run Linux, Windows, or even custom images (AMIs).
- Networking & Security: Configuration of VPCs, Security Groups, Elastic IPs, and load balancers.
- Storage Options: Integration with EBS (Elastic Block Store), S3, and ephemeral storage.
- Monitoring & Management: Connection to CloudWatch for metrics and alarms, and to Systems Manager for management.

2. What services can be used with Amazon EC2?

EC2 integrates with many AWS services. Some of the most important:

- Amazon EBS (Elastic Block Store): For persistent disks attached to instances.
- Amazon S3: For bulk and cost-effective data storage and retrieval.
- Amazon RDS / DynamoDB: Managed databases that you can use alongside your application on EC2.
- Elastic Load Balancing (ELB): Distributes traffic across multiple EC2 instances.
- Amazon VPC: To define the network where your instances will be located.
- AWS CloudWatch: For monitoring and metrics for your instances.
- IAM (Identity and Access Management): To manage permissions and roles for secure access to EC2 and other resources.
- AWS Auto Scaling: Automatically scales the number of instances based on load.

Step 1: Launch an instance

You can launch an EC2 instance using the AWS Management Console as described in the following procedure. This tutorial is intended to help you quickly launch your first instance, so it doesn't cover all possible options.

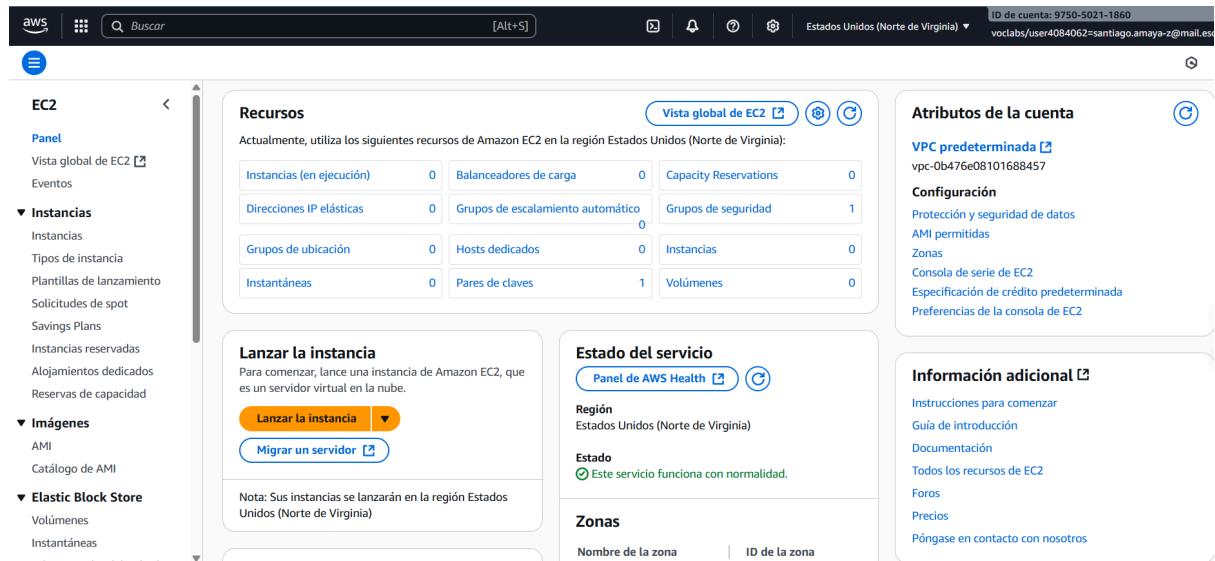
To launch an instance

1. Open the Amazon EC2 console

First, we access from AWS Academy Learner Lab, click on "Start Lab", and then press the green AWS button



In the search bar above we look for Amazon EC2 Console



2. In the navigation bar at the top of the screen, we display the current AWS Region — for example, Ohio. You can use the selected Region, or optionally select a Region that is closer to you.

The screenshot shows the AWS Home Dashboard. At the top, it displays "ID de cuenta: 9750-5021-1860" and "Estados Unidos (Norte de Virginia)". The dashboard includes sections for "Visitados recientemente" (Recent Visits) showing a cube icon, "Aplicaciones" (Applications) with a message to create one, "Le damos la bienvenida a AWS" (Welcome to AWS), "AWS Health" (Health) with open issues, and "Costo y uso" (Cost and Usage). There are also links to "Ver todos los servicios" (View all services) and "Ir a myApplications". The bottom navigation bar includes CloudShell, Comentarios, and links to 2025 AWS terms and conditions.

We chose N. Virginia (us-east-1)

3. From the EC2 console dashboard, in the Launch instance pane, choose Launch instance.

The screenshot shows the "Launch instance" wizard in the EC2 console. The steps are: "Lanzar una instancia" (Launch instance), "Nombre y etiquetas" (Name and tags), "Imagenes de aplicaciones y sistemas operativos (Imagen de máquina de Amazon)" (Images of applications and operating systems (Amazon Machine Image)), and "Resumen" (Summary). In the "Nombre y etiquetas" step, there is a text input field for "Nombre" (Name) with placeholder "por ejemplo, Mi servidor web" and a button "Agregar etiquetas adicionales" (Add additional tags). In the "Imagenes de aplicaciones y sistemas operativos" step, there is a search bar "Busque en nuestro catálogo completo que incluye miles de imágenes de sistemas operativos y aplicaciones" (Search our complete catalog which includes thousands of operating system and application images) and a list of operating systems: Amazon Linux, macOS, Ubuntu, Windows, Red Hat, SUSE Linux, and Debian. In the "Resumen" step, it shows "Número de instancias" (Number of instances) set to 1, "Imagen de software (AMI)" (Image software (AMI)) set to "Amazon Linux 2023 AMI 2023.8.2... más información" (Amazon Linux 2023 AMI 2023.8.2... more information), "Tipo de servidor virtual (tipo de instancia)" (Type of server virtual (instance type)) set to "t3.micro", "Firewall (grupo de seguridad)" (Firewall (security group)) set to "Nuevo grupo de seguridad" (New security group), and "Almacenamiento (volúmenes)" (Storage (volumes)) set to "Volumenes: 1 (8 GiB)" (Volumes: 1 (8 GiB)). At the bottom, there are "Cancelar" (Cancel) and "Lanzar instancia" (Launch instance) buttons, and a "Código de versión preliminar" (Preview code) link.

4. Under Name and tags, for Name, enter a descriptive name for your instance.

Lanzar una instancia Información

Amazon EC2 le permite crear máquinas virtuales, o instancias, que se ejecutan en la nube de AWS. Comience rápidamente siguiendo los sencillos pasos que se indican a continuación.

Nombre y etiquetas Información

Nombre Agregar etiquetas adicionales

Imagen de software (AMI)
Amazon Linux 2023.8.2...más información
ami-00ca32bbc84273381

Tipo de servidor virtual (tipo de instancia)
t3.micro

Firewall (grupo de seguridad)
Nuevo grupo de seguridad

Almacenamiento (volúmenes)
Volúmenes: 1 (8 GiB)

Resumen

Número de instancias Información
1

Cancelar **Lanzar instancia** Código de versión preliminar

5. Under Application and OS Images (Amazon Machine Image), do the following:

- Choose Quick Start, and then choose the operating system (OS) for your instance. For your first Linux instance, we recommend that you choose Amazon Linux.

Imagen de aplicaciones y sistemas operativos (Imagen de máquina de Amazon) Información

An AMI contiene el sistema operativo, el servidor de aplicaciones y las aplicaciones para su instancia. Si no ve una AMI adecuada en la lista, utilice el campo de búsqueda o seleccione **Buscar más AMIs**.

Inicio rápido

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Linux Debian > Buscar más AMI

Inclusión de AMI de AWS, Marketplace y la comunidad

Buscar más AMI
Inclusión de AMI de AWS, Marketplace y la comunidad

- From Amazon Machine Image (AMI), select an AMI that is marked Free Tier eligible.

Imágenes de máquina de Amazon (AMI)

AMI de Amazon Linux 2023 kernel-6.1	Apto para la capa gratuita
ami-00ca32bbc84273381 (64 bits (x86), uefi-preferred) / ami-0aa7db6294d00216f (64 bits (Arm), uefi) Virtualización: hvm Activado para ENA: true Tipo de dispositivo raíz: ebs	▼

Descripción

Amazon Linux 2023 (kernel-6.1) es un sistema operativo moderno y de uso general basado en Linux que incluye 5 años de soporte a largo plazo. Está optimizado para AWS y diseñado para proporcionar un entorno de ejecución seguro, estable y de alto desempeño para desarrollar y ejecutar sus aplicaciones en la nube.

Amazon Linux 2023 AMI 2023.8.20250818.0 x86_64 HVM kernel-6.1

Arquitectura	Modo de arranque	ID de AMI	Fecha de publicación	Nombre de usuario
64 bits (x86) ▾	uefi-preferred	ami-00ca32bbc84273381	2025-08-13	ec2-user

Proveedor verificado

6. Under Instance type, for Instance type, select an instance type that is marked Free Tier eligible.

▼ Tipo de instancia [Información](#) | [Obtener asesoramiento](#)

Tipo de instancia

t3.micro	Apto para la capa gratuita
Familia: t3 2 vCPU 1 GiB Memoria Generación actual: true	▼
Bajo demanda Ubuntu Pro base precios: 0.0139 USD por hora	
Bajo demanda SUSE base precios: 0.0104 USD por hora	
Bajo demanda Linux base precios: 0.0104 USD por hora	
Bajo demanda RHEL base precios: 0.0392 USD por hora	
Bajo demanda Windows base precios: 0.0196 USD por hora	

Se aplican costos adicionales a las AMI con software preinstalado

Todas las generaciones

[Comparar tipos de instancias](#)

7. Under Key pair (login), for Key pair name, choose an existing key pair or choose Create new key pair to create your first key pair.

Crear par de claves



Nombre del par de claves

Con los pares de claves es posible conectarse a la instancia de forma segura.

KeyPairLab02AYSR

El nombre puede incluir hasta 255 caracteres ASCII. No puede incluir espacios al principio ni al final.

Tipo de par de claves

RSA

Par de claves pública y privada cifradas mediante RSA

ED25519

Par de claves privadas y públicas cifradas ED25519

Formato de archivo de clave privada

.pem

Para usar con OpenSSH

.ppk

Para usar con PuTTY

⚠️ Cuando se le solicite, almacene la clave privada en un lugar seguro y accesible del equipo. **Lo necesitará más adelante para conectarse a la instancia.** [Más información ↗](#)

[Cancelar](#)

[Crear par de claves](#)

8. Under Network settings, notice that we selected your default VPC, selected the option to use the default subnet in an Availability Zone that we choose for you, and configured a security group with a rule that allows connections to your instance from anywhere (0.0.0.0/0)

Configuraciones de red

Red: Información
vpc-0b476e08101688457

Subred: Información
Sin preferencias (subred predeterminada en cualquier zona de disponibilidad)

Asignar automáticamente la IP pública: Información
Habilitar

Firewall (grupos de seguridad): Información
Un grupo de seguridad es un conjunto de reglas de firewall que controlan el tráfico de la instancia. Agregue reglas para permitir que un tráfico específico llegue a la instancia.

Crear grupo de seguridad Seleccionar un grupo de seguridad existente

Crearemos un nuevo grupo de seguridad denominado "launch-wizard-1" con las siguientes reglas:

- Permitir el tráfico de SSH desde Anywhere a establecer conexión con la instancia
- Permitir el tráfico de HTTPS desde Internet Para configurar un punto de enlace, por ejemplo, al crear un servidor web
- Permitir el tráfico de HTTP desde Internet Para configurar un punto de enlace, por ejemplo, al crear un servidor web

Resumen

Número de instancias | Información
1

Imagen de software (AMI)
Amazon Linux 2023 AMI 2023.8.2...más información
ami-00ca32bbc84273381

Tipo de servidor virtual (tipo de instancia)
t3.micro

Firewall (grupo de seguridad)
Nuevo grupo de seguridad

Almacenamiento (volúmenes)
Volúmenes: 1 (8 GiB)

Lanzar instancia

9. Under Configure storage, notice that we configured a root volume but no data volumes. This is sufficient for test purposes.

Permitir el tráfico de HTTP desde Internet
Para configurar un punto de enlace, por ejemplo, al crear un servidor web

⚠️ Las reglas con origen 0.0.0.0/0 permiten que todas las direcciones IP tengan acceso a la instancia. Le recomendamos que configure las reglas del grupo de seguridad para permitir el acceso únicamente desde direcciones IP conocidas.

Configurar almacenamiento

1x 8 GiB gp3 Volumen raíz, 3000 IOPS, No cifrado

Detalles avanzados

Resumen

Número de instancias | Información
1

Imagen de software (AMI)
Amazon Linux 2023 AMI 2023.8.2...más información
ami-00ca32bbc84273381

Tipo de servidor virtual (tipo de instancia)
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Nuevo grupo de seguridad

Almacenamiento (volúmenes)
Volúmenes: 1 (8 GiB)

Lanzar instancia

10. Review a summary of your instance configuration in the Summary panel, and when you're ready, choose Launch instance.

Número de instancias | [Información](#)

Imagen de software (AMI)
Amazon Linux 2023 AMI 2023.8.2...[más información](#)
ami-00ca32bbc84273381

Tipo de servidor virtual (tipo de instancia)
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Almacenamiento (volúmenes)
Volúmenes: 1 (8 GiB)

[Cancelar](#) [Lanzar instancia](#)

[Código de versión preliminar](#)

11. If the launch is successful, choose the ID of the instance from the Success notification to open the Instances page and monitor the status of the launch.

Correcto
El lanzamiento de la instancia se inició correctamente (i-0573f9e4764da00bc)

Registro de lanzamiento

- Inicialización de solicitudes Se realizó correctamente
- Creación de grupos de seguridad Se realizó correctamente
- Creación de reglas de grupo de seguridad Se realizó correctamente
- Inicio del lanzamiento Se realizó correctamente

Pasos siguientes

- Crea alertas de uso de facturación**
Para controlar los costos y evitar cargos inesperados, configure notificaciones por correo electrónico que avisen cuando se alcancen ciertos umbrales de uso.
[Crear alertas de facturación](#)
- Conectarse a la instancia**
Una vez que la instancia esté en ejecución, inicie sesión en ella desde el equipo local.
[Conectarse a la instancia](#)
- Conectar una base de datos de RDS**
Configure la conexión entre una instancia de EC2 y una base de datos para permitir el flujo de tráfico entre ellas.
[Conectar una base de datos de RDS](#)

12. Select the checkbox for the instance. The initial instance state is pending. After the instance starts, its state changes to running. Choose the Status and alarms tab. After your instance passes its status checks, it is ready to receive connection requests

Resumen de instancia de i-0573f9e4764da00bc (InstanceLab02AYSR) [información](#)

[Conectar](#) [Estado de la instancia](#) [Acciones](#)

Se ha actualizado hace 1 minute

ID de la instancia	i-0573f9e4764da00bc	Dirección IPv4 pública	18.209.160.187 dirección abierta	Direcciones IPv4 privadas	172.31.46.92
Dirección IPv6	-	Estado de la instancia	En ejecución	DNS público	ec2-18-209-160-187.compute-1.amazonaws.com dirección abierta
Tipo de nombre de anfitrión	Nombre de IP: ip-172-31-46-92.ec2.internal	Nombre DNS de IP privada (solo IPv4)	ip-172-31-46-92.ec2.internal	Direcciones IP elásticas	-
Responder al nombre DNS de recurso privado IPv4 (A)	-	Tipo de instancia	t3.micro	Hallazgo de AWS Compute Optimizer	Suscribirse a AWS Compute Optimizer para recibir recomendaciones.
Dirección IP asignada automáticamente	18.209.160.187 [IP pública]	ID de VPC	vpc-0b476e08101688457	Más información	-
Rol de IAM	-	ID de subred	subnet-05edf166211344a58	Nombre del grupo de Auto Scaling	-
IMDSv2	-	ARN de instancia	-	Administradas	-

Comprobaciones de estado [información](#)

Las comprobaciones de estado detectan problemas que pueden impedir que i-0573f9e4764da00bc (InstanceLab02AYSR) ejecute las aplicaciones.

Comprobaciones de estado de sistemas	Comprobaciones de estado de instancias	Comprobaciones de estado de EBS asociado
Comprobación de accesibilidad del sistema superada	Comprobación de accesibilidad de la instancia superada	Comprobación de accesibilidad de EBS asociado superada

Métricas

Alarms

Las instancias lanzadas recientemente pueden tardar hasta 5 minutos en mostrar las alarmas asociadas.

Encontrar alarmas por nombre

Nombre	Estado	Descripción	Nombre de m...	Motivo del estado
La instancia no tiene alarmas asociadas				

Step 2: Connect to your instance

You can connect to your Linux instance using any SSH client. If you are running Windows on your computer, open a terminal and run the ssh command to verify that you have an SSH client installed. If the command is not found, install OpenSSH for Windows.

```

Símbolo del sistema Microsoft Windows [Versión 10.0.26100.4946]
(c) Microsoft Corporation. Todos los derechos reservados.

C:\Users\SANTIAGO AMAYA>ssh
usage: ssh [-46] [-c cipher_spec] [-D [bind_address:]port] [-E log_file]
           [-e escape_char] [-F configfile] [-I pkcs11] [-i identity_file]
           [-J destination] [-L address] [-l login_name] [-m mac_spec]
           [-O ctl_cmd] [-o option] [-P tag] [-p port] [-Q query_option]
           [-R address] [-S ctl_path] [-W host:port] [-w local_tun[:remote_tun]]
           destination [command [argument ...]]

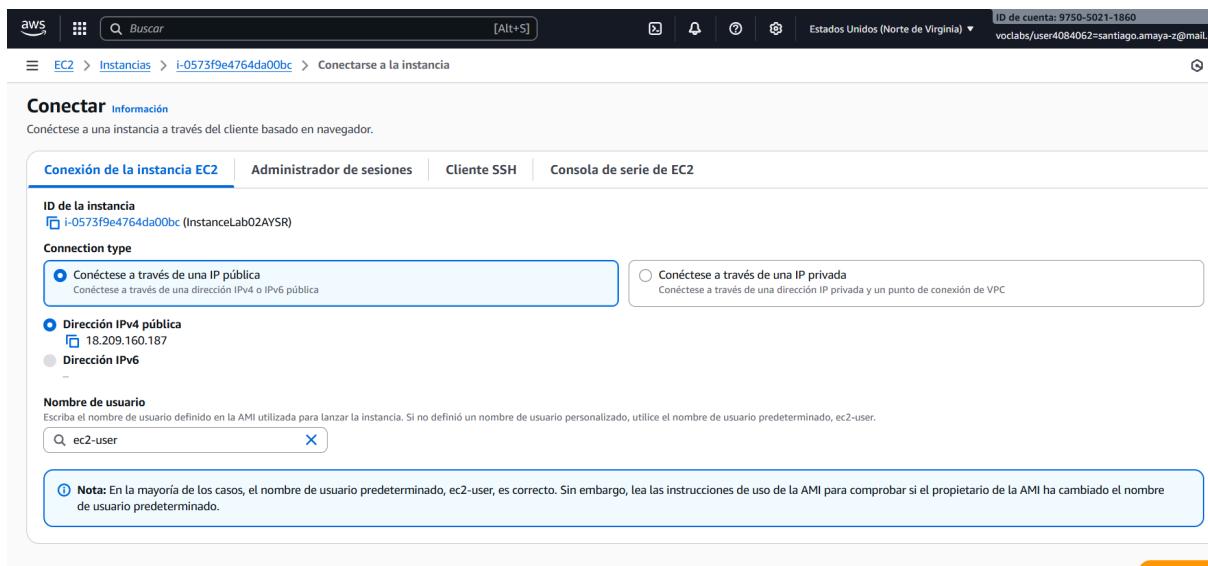
C:\Users\SANTIAGO AMAYA>

```

To connect to your instance using SSH

1. In the navigation pane, choose Instances.

2. Select the instance and then choose Connect.



3. On the Connect to instance page, choose the SSH client tab.

Conexión de la instancia EC2 | Administrador de sesiones | **Cliente SSH** | Consola de serie de EC2

ID de la instancia
 i-0573f9e4764da00bc (InstanceLab02AYSR)

1. Abra un cliente SSH.
2. Localice el archivo de clave privada. La clave utilizada para lanzar esta instancia es KeyPairLab02AYSR.pem
3. Ejecute este comando, si es necesario, para garantizar que la clave no se pueda ver públicamente.
 chmod 400 "KeyPairLab02AYSR.pem"
4. Conéctese a la instancia mediante su DNS público:
 ec2-18-209-160-187.compute-1.amazonaws.com

Ejemplo:
 ssh -i "KeyPairLab02AYSR.pem" ec2-user@ec2-18-209-160-187.compute-1.amazonaws.com

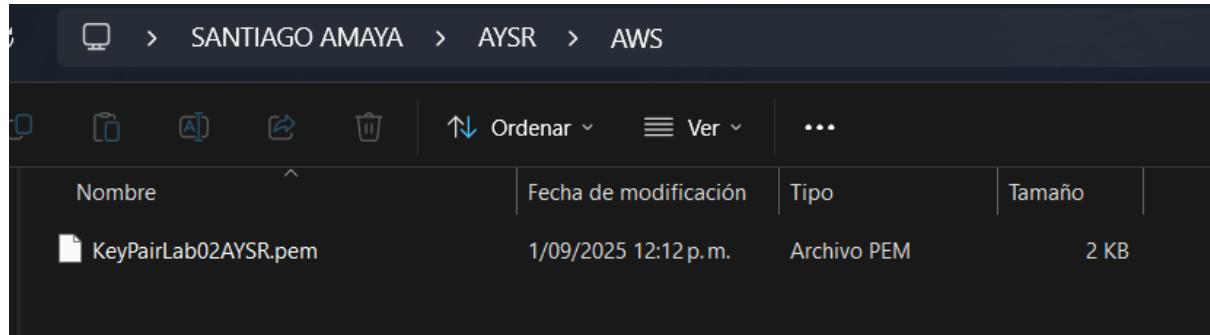
Nota: En la mayoría de los casos, el nombre de usuario adivinado es correcto. Sin embargo, lea las instrucciones de uso de la AMI para comprobar si el propietario de la AMI ha cambiado el nombre de usuario predeterminado de la AMI.

[Cancelar](#)

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4. (Optional) If you created a key pair when you launched the instance and downloaded the private key (.pem file) to a computer running Linux or macOS, run the example chmod command to set the permissions for your private key.

I'm working from Windows, just have it in an easy-to-locate folder



5. Copy the example SSH command. The following is an example, where key-pair-name.pem is the name of your private key file, ec2-user is the username associated with the image, and the string after the @ symbol is the public DNS name of the instance. ssh -i key-pair-name.pem ec2-user@ec2-198-51-100-1.us-east-2.compute.amazonaws.com

ID de la instancia
 i-0573f9e4764da00bc (InstanceLab02AYSR)

1. Abra un cliente SSH.
2. Localice el archivo de clave privada. La clave utilizada para lanzar esta instancia es KeyPairLab02AYSR.pem
3. Ejecute este comando, si es necesario, para garantizar que la clave no se pueda ver públicamente.
 chmod 400 "KeyPairLab02AYSR.pem"
4. Conéctese a la instancia mediante su DNS público:
 ec2-18-209-160-187.compute-1.amazonaws.com

Comando copiado

ssh -i "KeyPairLab02AYSR.pem" ec2-user@ec2-18-209-160-187.compute-1.amazonaws.com

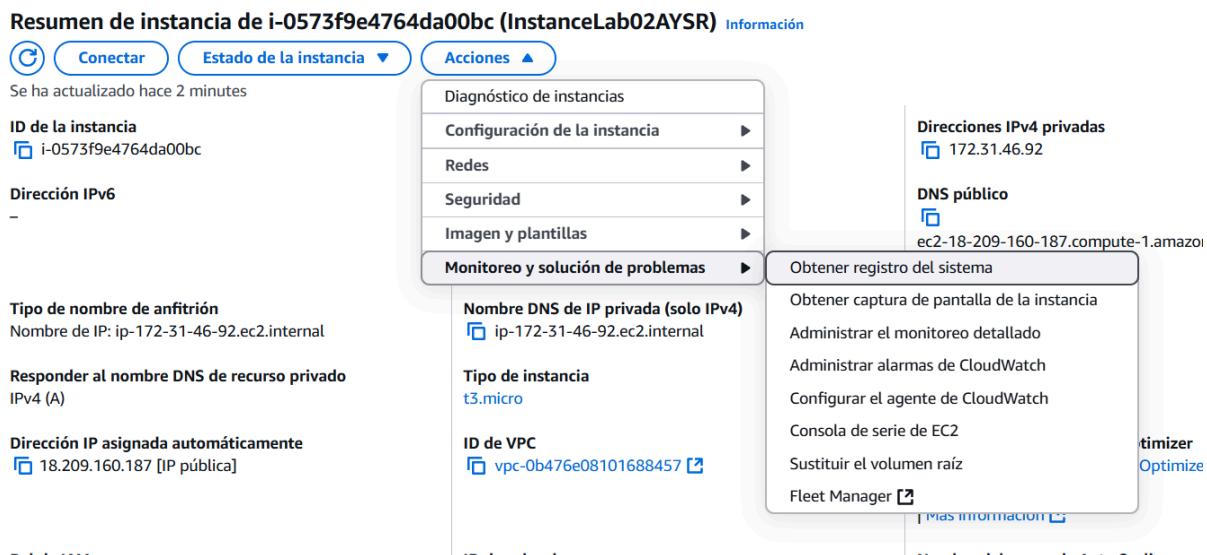
Nota: En la mayoría de los casos, el nombre de usuario adivinado es correcto. Sin embargo, lea las instrucciones de uso de la AMI para comprobar si el propietario de la AMI ha cambiado el nombre de usuario predeterminado de la AMI.

```
ssh -i "KeyPairLab02AYSR.pem"
ec2-user@ec2-18-209-160-187.compute-1.amazonaws.com
```

6. In a terminal window on your computer, run the ssh command that you saved in the previous step. If the private key file is not in the current directory, you must specify the fully-qualified path to the key file in this command. The following is an example response: The authenticity of host 'ec2-198-51-100-1.us-east-2.compute.amazonaws.com (198-51-100-1)' can't be established. ECDSA key fingerprint is l4UB/neBad9tvkgJf1QZWxheQmR59WgrgzEimCG6kZY. Are you sure you want to continue connecting (yes/no)?

```
C:\Users\SANTIAGO AMAYA>cd AYSR
C:\Users\SANTIAGO AMAYA\AYSR>cd aws
C:\Users\SANTIAGO AMAYA\AYSR>ssh -i "KeyPairLab02AYSR.pem" ec2-user@ec2-18-209-160-187.compute-1.amazonaws.com
The authenticity of host 'ec2-18-209-160-187.compute-1.amazonaws.com (18.209.160.187)' can't be established.
ED25519 key fingerprint is SHA256:39zooYwufx2PuZwKlhy+Avd3ITShm0lCEldPrNJtMxY.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes|
```

7. (Optional) Verify that the fingerprint in the security alert matches the instance fingerprint contained in the console output when you first start an instance. To get the console output, choose Actions, Monitor and troubleshoot, Get system log. If the fingerprints don't match, someone might be attempting a man-in-the-middle attack. If they match, continue to the next step.



8. Enter yes.

```
C:\Users\ANTONIO AMAYA\AYSR>ssh -i "KeyPairLab02AYSR.pem" ec2-user@ec2-18-209-160-187.compute-1.amazonaws.com
The authenticity of host 'ec2-18-209-160-187.compute-1.amazonaws.com (18.209.160.187)' can't be established.
ED25519 key fingerprint is SHA256:39zooYwufx2PuZwKlh+yAvd3ITShm0lCEldPrNJtMxY.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-18-209-160-187.compute-1.amazonaws.com' (ED25519) to the list of known hosts.

          _#
  _\_\_ #####_      Amazon Linux 2023
~~ \_\_ #####\_
~~   \###|
~~     \#/  ___  https://aws.amazon.com/linux/amazon-linux-2023
~~       V~'  '-->
~~         /
~~ .--. /_/
~~ /_/' [ec2-user@ip-172-31-46-92 ~]$ |
```

Next steps

After you start your instance, you might want to explore the following next steps:

- What is the difference between stopping, terminating, and restarting an EC2 instance?
Stopping → The instance is shut down, but the EBS root volume remains, and you can start it again later. (AWS Console or CLI).

Terminating → The instance is permanently deleted, including the root volume (unless you disabled “Delete on Termination”). Data is lost. (AWS Console or CLI).

Restarting → Similar to rebooting a physical machine. The instance stops and starts again, but the instance ID stays the same. (AWS Console or CLI).

- What role does an AMI (Amazon Machine Image) play when launching an instance?

An AMI is like a template. It contains:

- The operating system
- Pre-installed software (if any)
- Configuration and permissions

When you launch an EC2 instance, you pick an AMI as the base image.

- In what cases would it be advisable to choose an AMI other than the default Amazon Linux AMI?

- When you need a **different OS** (e.g., Ubuntu, Windows, Red Hat, Debian).
- When you need **specialized software preinstalled** (e.g., a database, machine learning stack, or security tools).
- When using a **custom AMI** your team created for consistency.

- How to add and attach volumes, distinguish between EBS and ephemeral storage?

EBS (Elastic Block Store): Persistent storage, survives stop/start, behaves like a hard drive.

Ephemeral (Instance Store): Temporary storage, data is lost when instance stops or terminates.

Name	ID de volumen	Tipo	Tamaño	IOPS	Rendimiento	ID de instancia	Creada
vol-0b113cccd34e164b77	gp3	8 GiB	3000	125	snap-Of9367e...	2025/09/01 12:23 GMT-5	

Resumen de instantáneas

Volumenes con copia de seguridad reciente / Cantidad total de volúmenes
0 / 1

Última actualización realizada el Mon, Sep 01, 2025, 01:09:37 PM (GMT-05:00)

Política predeterminada de Data Lifecycle Manager para el estado de las instantáneas de EBS

No se pudo recuperar el estado de la política predeterminada

- How to execute remote commands without SSH?

You can use:

- **AWS Systems Manager (SSM) Session Manager** → lets you run commands without SSH.
- **AWS CLI** with SSM plugin.

- What steps are required to attach an additional EBS volume to an existing Linux instance?

In AWS Console -> EC2 -> Volumes -> Create volume, attach the volume to the target instance. In the instance (Linux terminal), check device (lsblk), format (sudo mkfs -t ext4 /dev/xvdf), next Mount:

sudo mkdir /data

sudo mount /dev/xvdf /data

- What happens to the data on an EBS volume when the instance is stopped or terminated?

When is stopped: Data is preserved. You only pay for storage.

When is terminated: By default, the root EBS volume is deleted. Additional attached volumes are preserved unless you selected “Delete on termination”

- Will the shell we configured in linux Slackware work in the instance we created? What do I need to change? Test its functionality.

The default EC2 Amazon Linux instance usually comes with bash or sh. Since the shell we previously configured in Linux Slackware was sh, it will still work in the new instance because sh is also available on Amazon Linux.

Test its functionality

First we copy the script in the EC2 Console. To do this, we must go to the website and search for the public IP that was assigned to the instance.

```
PS C:\Users\SANTIAGO AMAYA\aysr\aws> scp -i "KeyPairLab02AYSR.pem" listar.sh ec2-user@18.209.160.187:~
The authenticity of host '18.209.160.187 (18.209.160.187)' can't be established.
ED25519 key fingerprint is SHA256:39zooYwufx2PuZwKlhy+Avd3ITShm0lCEldPrNJtMxY.
This host key is known by the following other names/addresses:
  C:\Users\SANTIAGO AMAYA/.ssh/known_hosts:1: ec2-18-209-160-187.compute-1.amazonaws.com
Are you sure you want to continue connecting (yes/no/[fingerprint])?
Please type 'yes', 'no' or the fingerprint:
Warning: Permanently added '18.209.160.187' (ED25519) to the list of known hosts.
listar.sh      100% 6961     66.0KB/s   00:00
PS C:\Users\SANTIAGO AMAYA\aysr\aws> |
```

Now, in the EC2 Console we can see the script:

```
[ec2-user@ip-172-31-46-92 ~]$ ls
listar.sh
[ec2-user@ip-172-31-46-92 ~]$
```

We give it execution permissions and then create some files to test.

```
[ec2-user@ip-172-31-46-92 ~]$ chmod +x listar.sh
[ec2-user@ip-172-31-46-92 ~]$ ./listar.sh /etc
-bash: ./listar.sh: cannot execute: required file not found
[ec2-user@ip-172-31-46-92 ~]$ echo "This is a test file
in EC2" > test_file.txt
[ec2-user@ip-172-31-46-92 ~]$ mkdir -p ~/documents
[ec2-user@ip-172-31-46-92 ~]$ echo "Secret document in EC2" > ~/documents/secret.txt
[ec2-user@ip-172-31-46-92 ~]$ |
```

When copying the shell to the EC2 console, the file was uploaded in CRLF format from Windows, therefore, we must convert it to Unix format to be able to execute it.

```
[ec2-user@ip-172-31-46-92 ~]$ sudo yum install -y dos2unix
Amazon Linux 2023 Kernel Livepatch repository
Dependencies resolved.
=====
 Package           Architecture      Version       Repository      Size
=====
Installing:
dos2unix          x86_64          7.4.2-2.amzn2023.0.2      amazonlinux    236 k
=====
Transaction Summary
=====
Install 1 Package
=====
Total download size: 236 k
Installed size: 692 k
Downloading Packages:
dos2unix-7.4.2-2.amzn2023.0.2.x86_64.rpm
=====
Total                                         5.8 MB/s | 236 kB   00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : 1/1
Installing : dos2unix-7.4.2-2.amzn2023.0.2.x86_64 1/1
Running scriptlet: dos2unix-7.4.2-2.amzn2023.0.2.x86_64 1/1
Verifying  : dos2unix-7.4.2-2.amzn2023.0.2.x86_64 1/1
=====
Installed:
dos2unix-7.4.2-2.amzn2023.0.2.x86_64
=====
Complete!
[ec2-user@ip-172-31-46-92 ~]$ |
```

We run the shell and see that it works correctly on Amazon Linux.

```
[ec2-user@ip-172-31-46-92 ~]$ ./listar.sh documents
Menu
1. Sort by feature
2. Sort by conditions
3. Finish
Enter an option: |
```

```
[ec2-user@ip-172-31-46-92 ~]$ ./listar.sh documents
Menu
1. Sort by feature
2. Sort by conditions
3. Finish
Enter an option: 1
1. Sort files by most recent
2. Sort files by Oldest
3. Sort files from largest to smallest size
4. Sort files from smallest to largest size
5. Sort files by file type
Enter an option: 1|
```

```
total 4
-rw-r--r--. 1 ec2-user ec2-user 23 Sep  1 18:51 secret.txt
(END)
```

As we use a student account in AWS Learned Lab, after the time range given to us when clicking on "Start Lab" or if we click on "End Lab", the instance will be deleted and we will have to create it again if necessary later.