

# CSP450 NAA Project 1B

Submitted to  
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April 17, 2025

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## Project Overview

This document provides a comprehensive guide to configuring trunking via one Aruba 6300 and one Aruba 2530 Switch. The 6300 switch functions as a Layer 3 switch, whereas the 2500 switch operates as a Layer 2 switch. This project can be completed with two 6300s, although the configuration will need to be different. With this topology, we have two PCs. PC1 and PC2 must reside within their VLANs and receive an IP via DHCP pools. Successful implementation will allow the virtual machines to communicate via ICMP and enable secure SSH access using key pairs. Lastly, each member must install and configure an Apache webpage. This webpage must display your name and Seneca ID, and each member must be able to access the webpage via the IP received from the DHCP server.

Keyword definition for this project is as outlined

### **DHCP (Dynamic Host Configuration Protocol):**

- DHCP automates the assignment of IP addresses and other network configuration parameters to network devices (hosts), simplifying network administration.

### **VLANs (Virtual Local Area Networks):**

- VLANs logically segment a physical network, allowing devices connected to different switches or ports to communicate as if they were on the same network, or isolating them as needed. This improves network organization, security, and performance.

### **IP Routing:**

- IP routing is the process of forwarding data packets between different networks. Routers use routing tables to determine the optimal path for data to travel, enabling communication across interconnected networks.

### **SSH (Secure Shell):**

- SSH is a cryptographic network protocol that enables secure remote access and communication over an insecure network. It provides authentication, confidentiality, and data integrity.

**Key Pairs (Public/Private Keys):**

- Public/private keys are used for secure authentication and data encryption/decryption. The public key encrypts or verifies; the private key decrypts or signs.

**Link aggregation**

- Link aggregation is a technical technique that allows users to combine multiple Ethernet links into a single logical link. This link enables the network to become stronger and more reliable as the two connections become a theoretical single connection. Moreover, this increases the speed between the two switches.

**Apache Web Server**

- Apache HTTP web server can be installed on any Linux machine and gives users the ability to display a page via your localhost/index.html. Moreover, Apache is open source, cross-platform, Modular, and Reliable.

## Determining the Subnet for this Project

The subnet for this project, as defined within the project 1B diagram, is as follows: 172.20.x.\*/25. Within this subnet, X is the unique student ID number you provided. When you find your number, this helps you determine the subnet, although it does not determine the rest of the IP. It is not as easy as replacing X with your number and continuing with the project. In light of this, let's take a look at an example of how to determine the subnet using each unique number within the group.

For example, we can use James's unique number of 25.

Let's break down some things we already know.

1. We know our unique number is 25
2. We know that from our 172.20 subnet, we have a total of 10 bits to work with, and the 172.20 is fixed and takes up a total of 16 bits

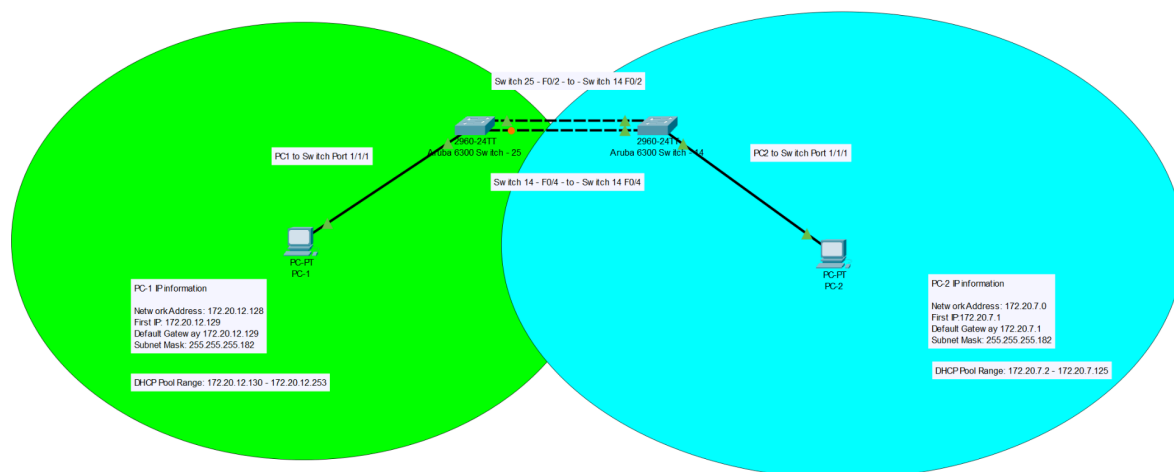
With this information, we can determine our 10-bit representation of our unique ID, which is 25. With this in mind, let's convert our number 25 into binary, which can be represented in the format 0000011001.

Based on this information, we can examine this problem from an IP address standpoint. We know that each section of an IP address contains 8 bits rather than the 10 we had to work with previously. In that case, we can section it off as 8 bits. This can be represented as 110.0100000.

In that case, for James's subnet with the student ID of 25, we can determine that the first IP address is 172.120.12.128 /25

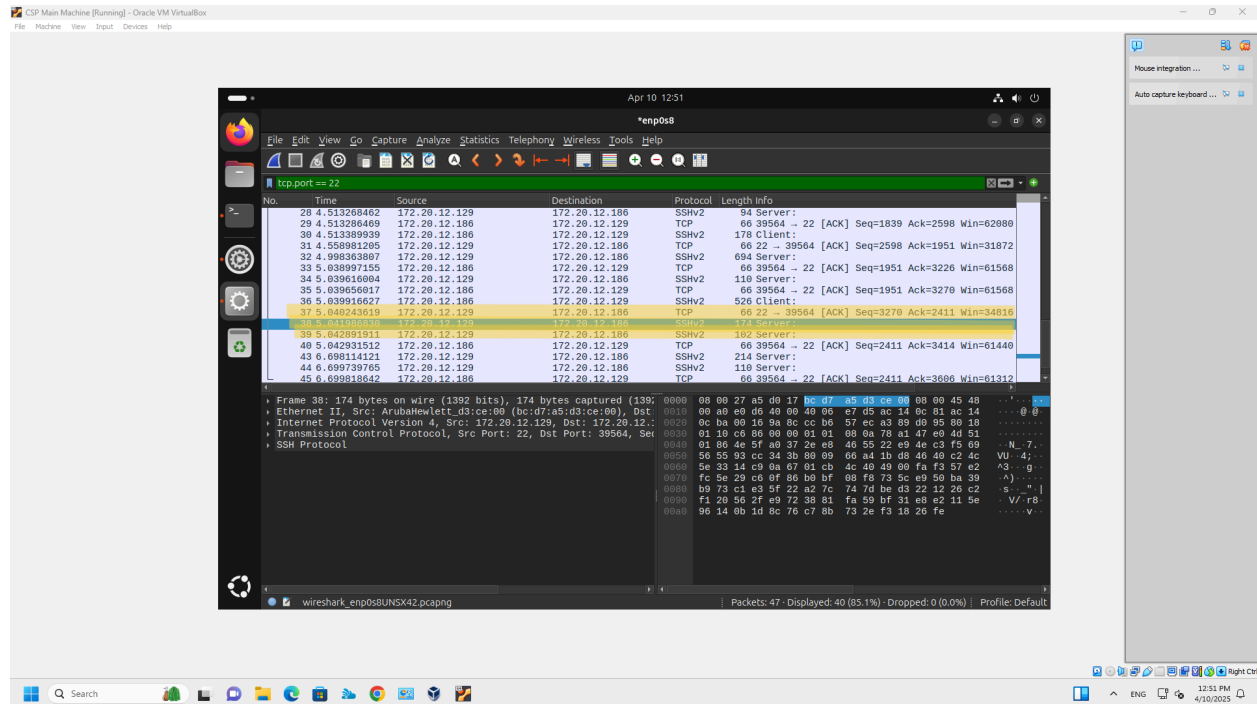
Moreover, if we follow the same rules listed above for Radin's unique number of 14, we get 172.20.7.0

## Network Topology

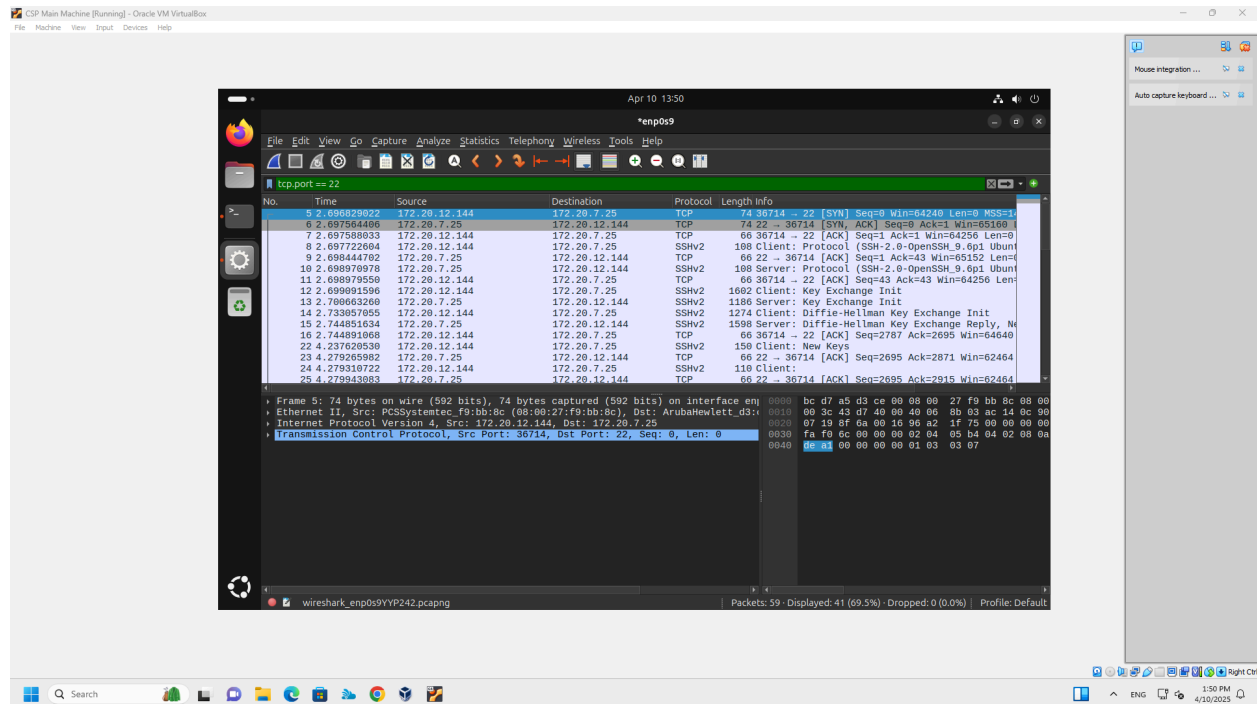


# Student A Screenshots Wireshark

## SSH Request from Ubuntu VM to Switch 6300



## SSH request from Ubuntu VM to Partner\_s Ubuntu VM James to Radin



## HTTP request to partners Apache Server

CSP Main Machine [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Apr 10 13:33

\*enp0s9

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter... <Ctrl+F>

No.	Time	Source	Destination	Protocol	Length	Info
11	2.500176693	SpeedDragonM_11:50:4d	Broadcast	ARP	60	who has 10.101.112.24? Tell 10.10.10.67
12	3.000235759	SpeedDragonM_11:50:4d	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.67
13	3.007965469	SpeedDragonM_11:50:4d	Broadcast	ARP	60	who has 10.101.112.24? Tell 10.10.10.67
14	4.051689100	ArubaHewlett_d3:ce:27	Spanning-tree-(for-... STP	119	RST. Root = 32768/0/90:f2:b3:54:b5:80 Cost	
15	4.234585591	SpeedDragonM_11:50:4d	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.67
16	4.500648769	SpeedDragonM_11:50:4d	Broadcast	ARP	60	who has 10.101.112.24? Tell 10.10.10.67
17	4.628834460	SpeedDragonM_11:50:4d	Broadcast	ARP	60	who has 10.101.100.21? Tell 10.10.10.67
18	4.999926764	SpeedDragonM_11:50:4d	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.67
19	5.025449944	172.20.12.144	172.20.7.25	TCP	74	48834 -> 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1
20	5.026103641	172.20.7.25	172.20.12.144	TCP	74	80 -> 48834 [SYN, ACK] Seq=8 Ack=1 Win=65100
21	5.026103955	172.20.12.144	172.20.7.25	TCP	84	48834 -> 80 [RST] Seq=1 Win=0 Len=0
22	5.500452334	SpeedDragonM_11:50:4d	Broadcast	ARP	60	who has 10.101.112.24? Tell 10.10.10.67
23	5.500452776	SpeedDragonM_11:50:4d	Broadcast	ARP	60	who has 10.101.100.21? Tell 10.10.10.67
24	5.999827633	SpeedDragonM_11:50:4d	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.67
25	6.051327499	ArubaHewlett_d3:ce:27	Spanning-tree-(for-... STP	119	RST. Root = 32768/0/90:f2:b3:54:b5:80 Cost	
26	6.500347253	SpeedDragonM_11:50:4d	Broadcast	ARP	60	who has 10.101.100.21? Tell 10.10.10.67

Frame 1: 60 bytes on wire (480 bits), 00 bytes captured (480 bits) on 0

Ethernet II, Src: SpeedDragonM\_11:50:4d (08:13:3b:11:50:4d), Dst: 08:00:00:00:00:00

Address Resolution Protocol (request)

0000 ff ff ff ff ff ff 00 13 3b 11 50 4d 00 00 00 01

0010 00 00 00 00 01 00 13 3b 11 50 4d 0a 0a 0a 43

0020 00 00 00 00 00 00 0a 65 64 1b 00 00 00 00 00

0030 00 00 00 00 00 00 00 00 00 00 00 00 00 00

wireshark\_enp0s9732142.pcapng

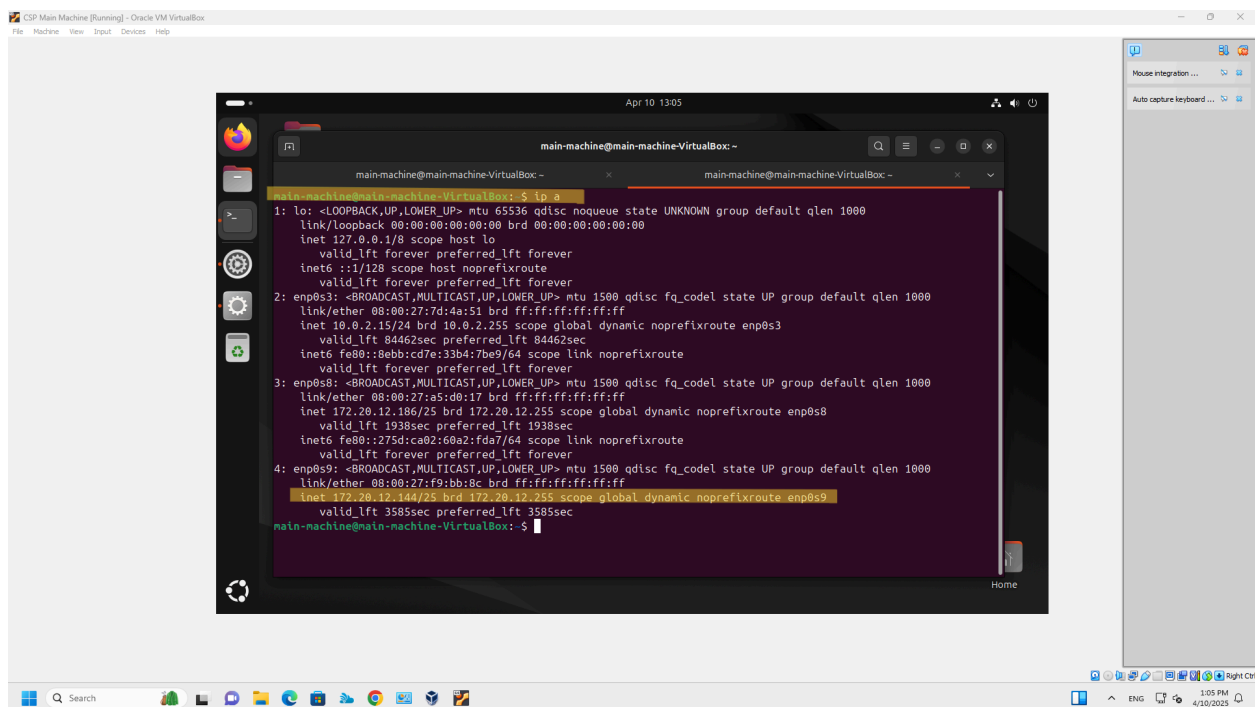
Packets: 37 - Displayed: 37 (100.0%) - Dropped: 0 (0.0%) | Profile: Default

133 PM 4/10/2025

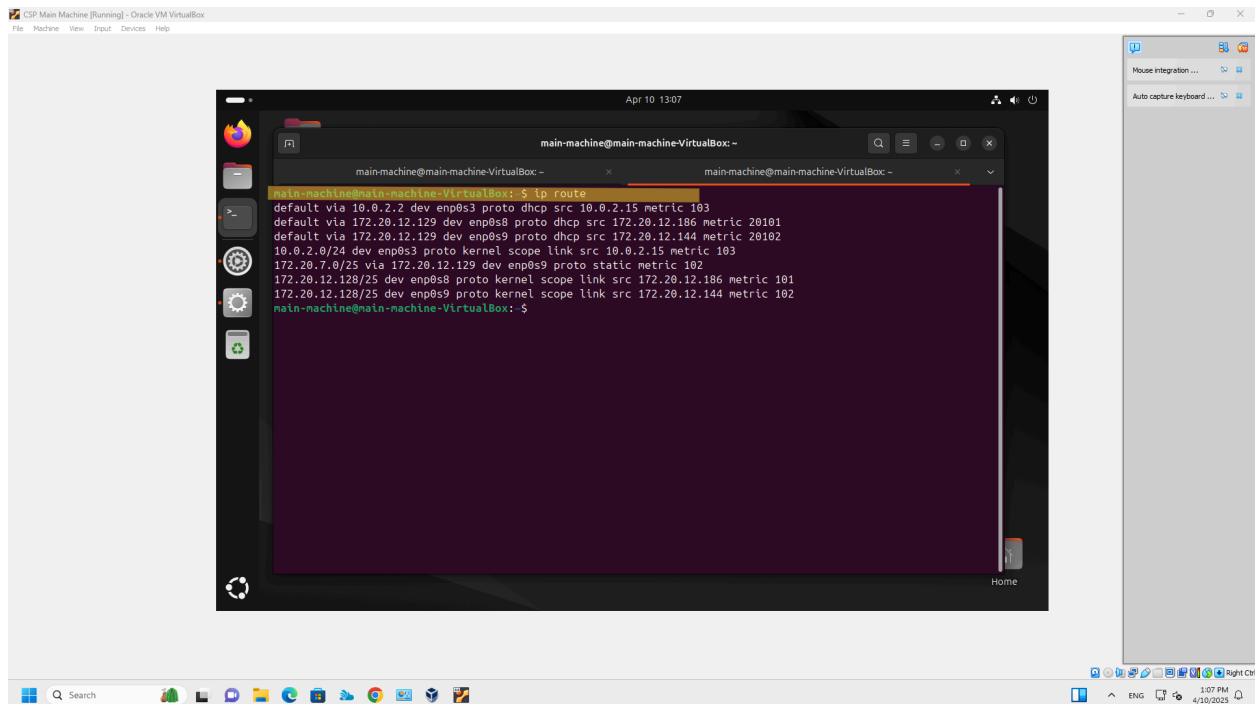


# Student A Screenshots From Ubuntu VM

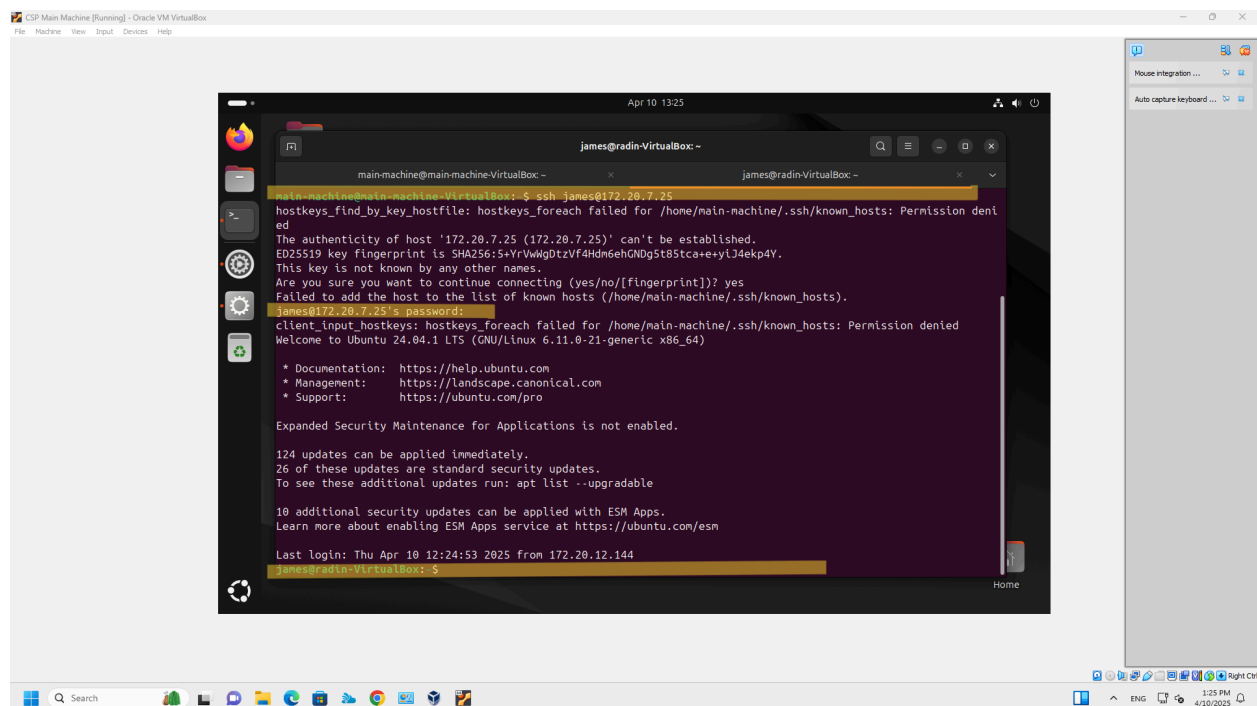
## IP a



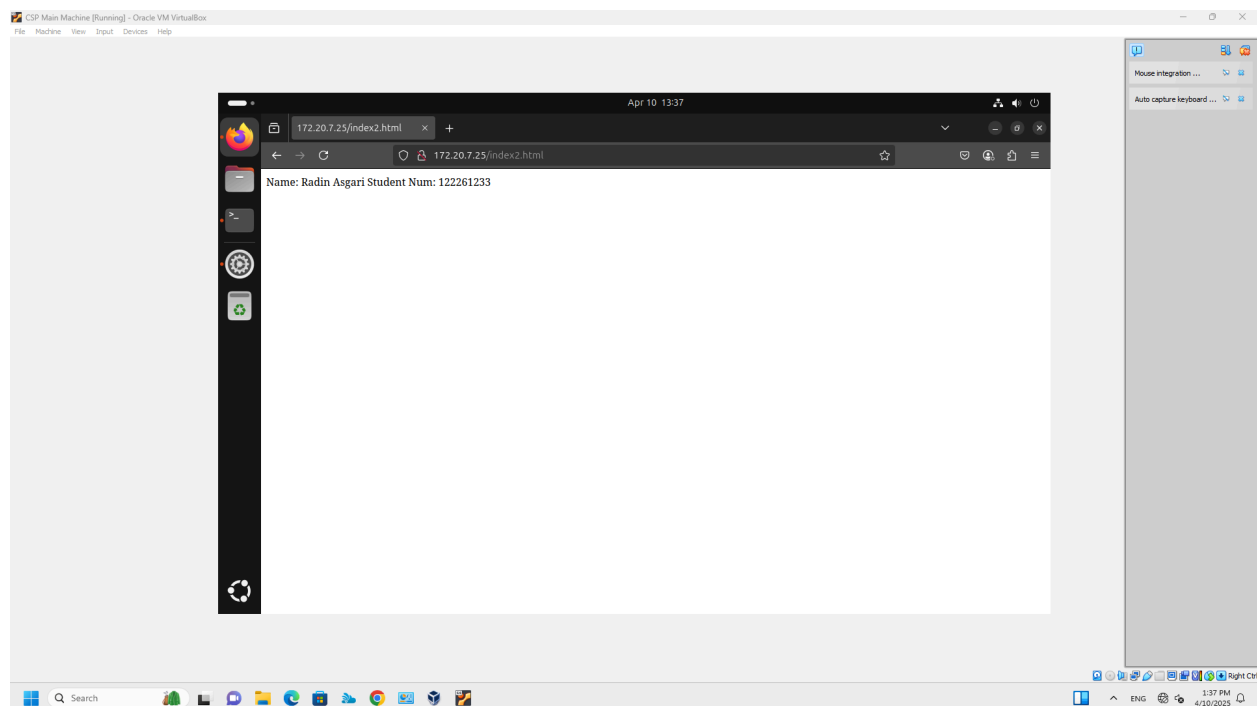
## IP Route



## SSH Result

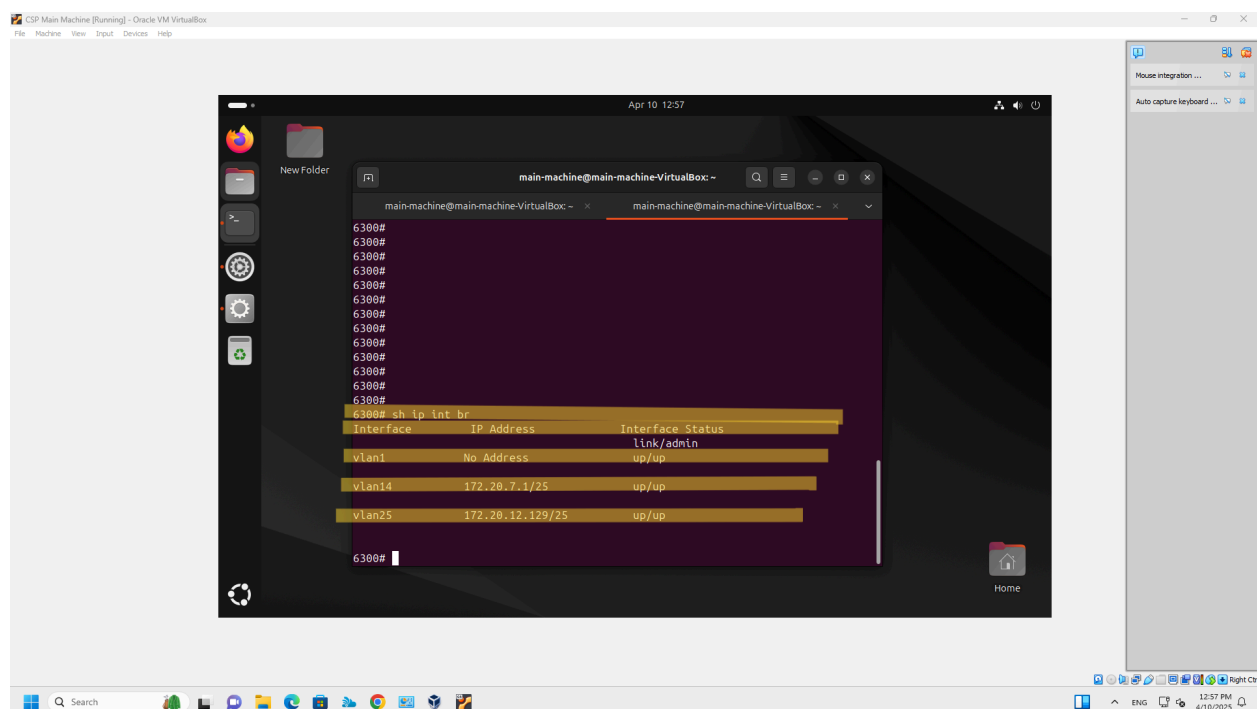


## Partners HTTP Webpage

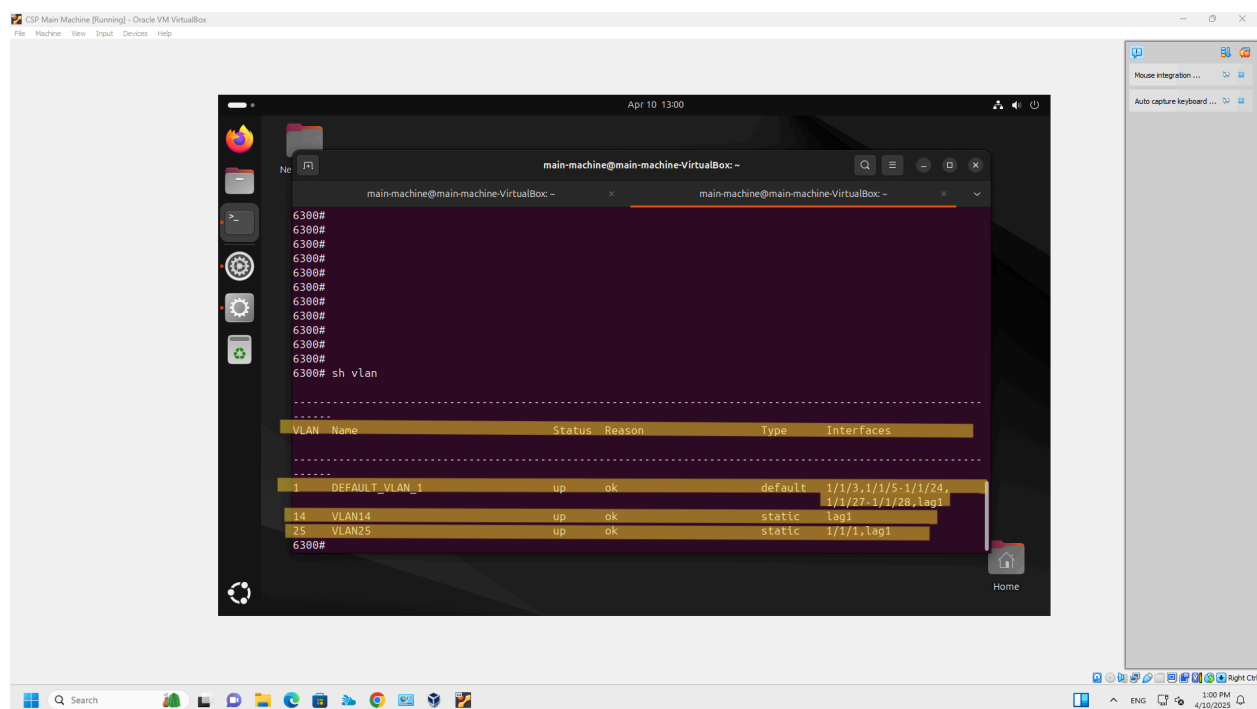


# 6300 Switch Configurations

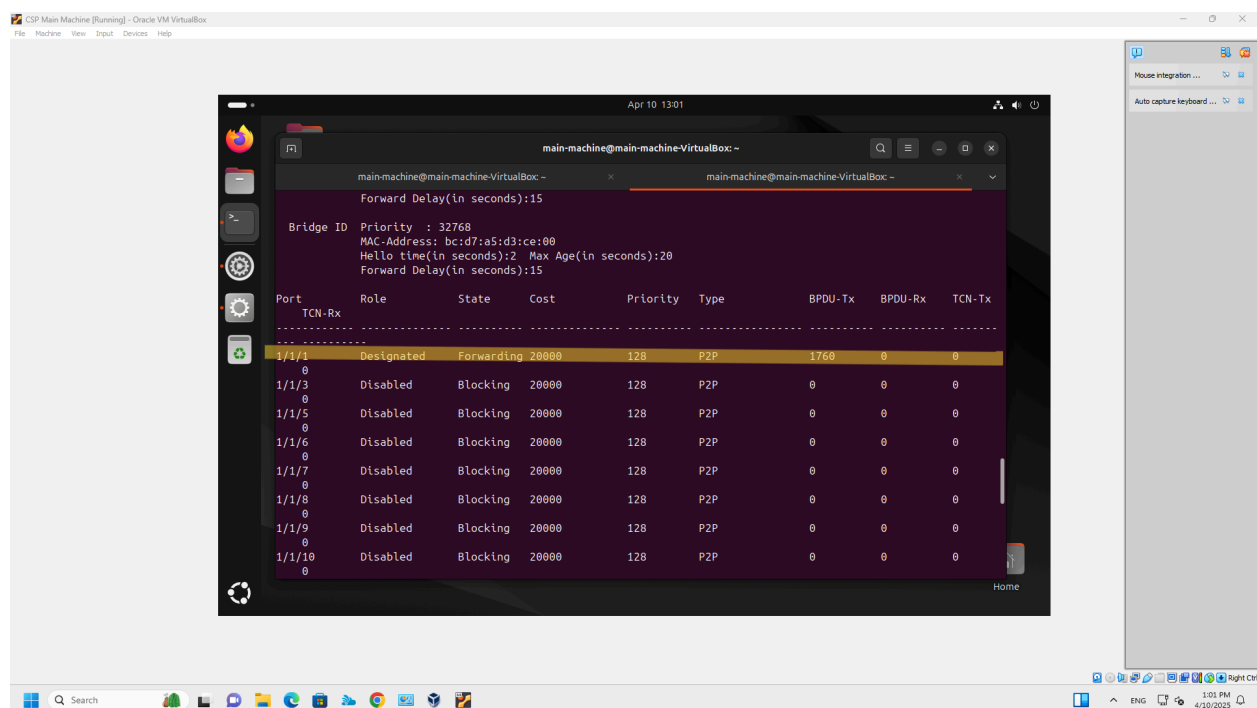
sh ip int br



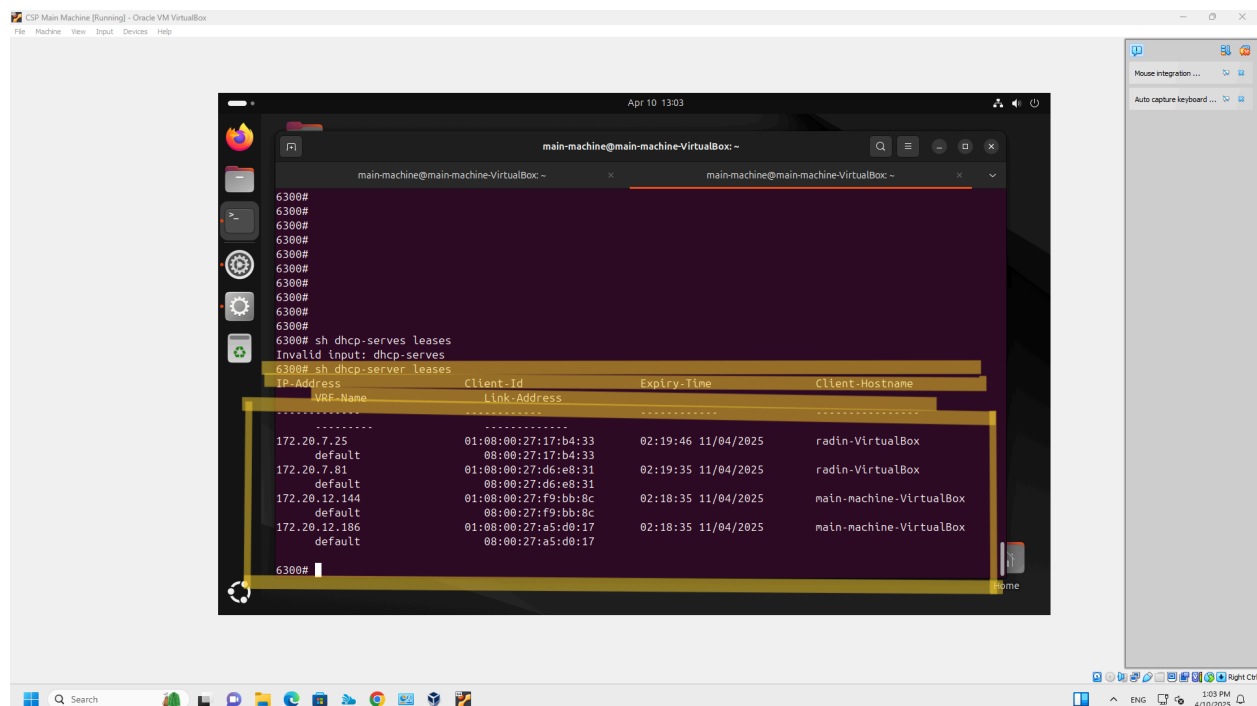
sh vlan



## sh spanning-tree



## sh dhcp-server leases



## Student B Screenshots Wireshark

### SSH Request from Ubuntu VM to Switch 2530

No.	Time	Source	Destination	Protocol	Length	Info
326	39.649280	10.10.10.68	10.10.10.71	TCP	66	60715 → 22 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
327	39.659461	10.10.10.71	10.10.10.68	TCP	66	22 → 60715 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=2 SACK_PERM=1
328	39.659553	10.10.10.68	10.10.10.71	TCP	54	60715 → 22 [ACK] Seq=1 Ack=1 Win=131328 Len=0
331	39.659693	10.10.10.68	10.10.10.71	SSHv2	82	Client: Protocol (SSH-2.0-PuTTY_Release_0.81)
332	39.664641	10.10.10.71	10.10.10.68	SSHv2	78	Server: Protocol (SSH-2.0-Motacna SSH 5.0)
333	39.668876	10.10.10.68	10.10.10.71	TCP	1514	60715 → 22 [ACK] Seq=29 Ack=25 Win=131328 Len=1460 [TCP segment of a reassembled PDU]
334	39.668881	10.10.10.68	10.10.10.71	SSHv2	210	Client: Key Exchange Init
335	39.674864	10.10.10.71	10.10.10.68	SSHv2	462	Server: Key Exchange Init
336	39.680851	10.10.10.68	10.10.10.71	SSHv2	326	Client: Diffie-Hellman Key Exchange Init
337	39.687466	10.10.10.71	10.10.10.68	TCP	60	22 → 60715 [ACK] Seq=433 Ack=1917 Win=65700 Len=0
339	40.069714	10.10.10.71	10.10.10.68	SSHv2	886	Server: Diffie-Hellman Key Exchange Reply
340	40.069243	10.10.10.68	10.10.10.71	TCP	54	60715 → 22 [ACK] Seq=1917 Ack=1265 Win=130048 Len=0
341	40.115281	10.10.10.71	10.10.10.68	SSHv2	79	Server: New Keys
342	40.155819	10.10.10.68	10.10.10.71	TCP	54	60715 → 22 [ACK] Seq=1917 Ack=1281 Win=130048 Len=0
345	41.366257	10.10.10.68	10.10.10.71	SSHv2	70	Client: New Keys
346	41.366323	10.10.10.68	10.10.10.71	SSHv2	106	Client: Encrypted packet (len=52)
347	41.368500	10.10.10.71	10.10.10.68	SSHv2	106	Server: Encrypted packet (len=52)
348	41.400894	10.10.10.68	10.10.10.71	TCP	54	60715 → 22 [ACK] Seq=1985 Ack=1333 Win=130048 Len=0
349	41.400933	10.10.10.71	10.10.10.68	SSHv2	298	Server: Encrypted packet (len=244)
350	41.450250	10.10.10.68	10.10.10.71	TCP	54	60715 → 22 [ACK] Seq=1985 Ack=1577 Win=131328 Len=0
352	42.420856	10.10.10.68	10.10.10.71	SSHv2	122	Client: Encrypted packet (len=68)
353	42.428817	10.10.10.71	10.10.10.68	SSHv2	90	Server: Encrypted packet (len=36)
354	42.429190	10.10.10.68	10.10.10.71	SSHv2	122	Client: Encrypted packet (len=68)
355	42.530206	10.10.10.71	10.10.10.68	SSHv2	106	Server: Encrypted packet (len=52)
356	42.530642	10.10.10.68	10.10.10.71	SSHv2	206	Client: Encrypted packet (len=152)
357	42.627125	10.10.10.71	10.10.10.68	SSHv2	90	Server: Encrypted packet (len=36)
358	42.667470	10.10.10.68	10.10.10.71	TCP	54	60715 → 22 [ACK] Seq=2273 Ack=1701 Win=131072 Len=0
359	42.669174	10.10.10.71	10.10.10.68	SSHv2	90	Server: Encrypted packet (len=36)

### SSH request from Ubuntu VM to Partners Ubuntu VM Radin to James

No.	Time	Source	Destination	Protocol	Length	Info
186	21.837644578	172.20.7.25	172.20.12.144	SSHv2	1602	Client: Key Exchange Init
187	21.839642090	172.20.12.144	172.20.7.25	SSHv2	1186	Server: Key Exchange Init
188	21.872531511	172.20.7.25	172.20.12.144	SSHv2	1274	Client: Diffie-Hellman Key Exchange Init
189	21.884065093	172.20.12.144	172.20.7.25	SSHv2	1598	Server: Diffie-Hellman Key Exchange Reply, New Keys
190	21.884124973	172.20.7.25	172.20.12.144	TCP	66	41430 → 22 [ACK] Seq=2787 Ack=2695 Win=64640 Len=0
191	21.899561929	172.20.7.25	172.20.12.144	SSHv2	150	Client: New Keys
192	21.941675726	172.20.12.144	172.20.7.25	TCP	66	22 → 41430 [ACK] Seq=2695 Ack=2871 Win=62464 Len=0
193	21.941693324	172.20.7.25	172.20.12.144	SSHv2	110	Client:
194	21.942463431	172.20.12.144	172.20.7.25	TCP	66	22 → 41430 [ACK] Seq=2695 Ack=2915 Win=62464 Len=0
195	21.942546817	172.20.12.144	172.20.7.25	SSHv2	110	Server:
196	21.942638067	172.20.7.25	172.20.12.144	SSHv2	134	Client:
197	21.945827959	172.20.12.144	172.20.7.25	SSHv2	330	Server:
198	21.949778095	172.20.7.25	172.20.12.144	SSHv2	206	Client:
199	21.960198635	172.20.12.144	172.20.7.25	SSHv2	118	Server:
201	22.076480820	172.20.7.25	172.20.12.144	TCP	66	41430 → 22 [ACK] Seq=3123 Ack=3055 Win=64384 Len=0
225	28.308380169	172.20.7.25	172.20.12.144	SSHv2	214	Client:
226	28.347138599	172.20.12.144	172.20.7.25	SSHv2	94	Server:
227	28.347164681	172.20.7.25	172.20.12.144	TCP	66	41430 → 22 [ACK] Seq=3271 Ack=3083 Win=64384 Len=0
228	28.347621765	172.20.7.25	172.20.12.144	SSHv2	178	Client:
229	28.375390656	172.20.12.144	172.20.7.25	SSHv2	810	Server:
230	28.429495941	172.20.7.25	172.20.12.144	TCP	66	41430 → 22 [ACK] Seq=3383 Ack=3827 Win=63744 Len=0
231	28.430395445	172.20.12.144	172.20.7.25	SSHv2	110	Server:
232	28.430424335	172.20.7.25	172.20.12.144	TCP	66	41430 → 22 [ACK] Seq=3383 Ack=3871 Win=63744 Len=0
233	28.430555821	172.20.7.25	172.20.12.144	SSHv2	526	Client:
234	28.434087812	172.20.12.144	172.20.7.25	SSHv2	174	Server:
235	28.435449528	172.20.12.144	172.20.7.25	SSHv2	654	Server:
236	28.435607067	172.20.7.25	172.20.12.144	TCP	66	41430 → 22 [ACK] Seq=3843 Ack=4567 Win=63104 Len=0
237	28.453995305	172.20.12.144	172.20.7.25	SSHv2	206	Server:

## HTTP request to partners Apache Server

The screenshot shows a Wireshark capture on interface \*enp0s9. The packet list displays various network protocols including ARP, STP, and TCP. The packet details pane shows the structure of a selected packet, including Ethernet II, Internet Protocol Version 4, and Hypertext Transfer Protocol. The packet bytes pane shows the raw data in hexadecimal and ASCII.

No.	Time	Source	Destination	Protocol	Length	Info
29	6.999837292	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.68
30	7.226355325	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.100.21? Tell 10.10.10.68
31	7.252324998	HewlettPacka_54:b5:...	Spanning-tree-(for-...	STP	119	MST. Root = 32768/0/98:f2:b3:54:b5:80 Cost = 0
32	8.000405840	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.100.21? Tell 10.10.10.68
33	8.999730031	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.100.21? Tell 10.10.10.68
34	9.009507428	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.68
35	9.252169463	HewlettPacka_54:b5:...	Spanning-tree-(for-...	STP	119	MST. Root = 32768/0/98:f2:b3:54:b5:80 Cost = 0
36	9.999686626	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.100.21? Tell 10.10.10.68
37	9.99969031	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.68
38	11.000902155	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.68
39	11.058288089	172.20.7.25	172.20.12.144	TCP	66	49540 → 80 [FIN, ACK] Seq=427 Ack=249 Win=64128 Len=0
40	11.058750819	172.20.12.144	172.20.7.25	TCP	66	80 → 49540 [FIN, ACK] Seq=249 Ack=427 Win=64768 Len=0
41	11.058782069	172.20.7.25	172.20.12.144	TCP	66	49540 → 80 [ACK] Seq=428 Ack=250 Win=64128 Len=0
42	11.058981523	172.20.12.144	172.20.7.25	TCP	66	80 → 49540 [ACK] Seq=250 Ack=428 Win=64768 Len=0
43	11.252232791	HewlettPacka_54:b5:...	Spanning-tree-(for-...	STP	119	MST. Root = 32768/0/98:f2:b3:54:b5:80 Cost = 0
44	11.851032389	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.100.22? Tell 10.10.10.68
45	12.000022069	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.68
46	12.500224736	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.100.22? Tell 10.10.10.68
47	12.862033035	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.100.21? Tell 10.10.10.68
48	13.007998875	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.68
49	13.252753515	HewlettPacka_54:b5:...	Spanning-tree-(for-...	STP	119	MST. Root = 32768/0/98:f2:b3:54:b5:80 Cost = 0
50	13.499935388	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.100.22? Tell 10.10.10.68
51	13.499935555	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.100.21? Tell 10.10.10.68
52	14.000382035	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.68
53	14.500676892	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.100.22? Tell 10.10.10.68
54	14.500677111	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.100.21? Tell 10.10.10.68
55	14.802843830	HewlettPacka_54:b5:...	LLDP Multicast	LLDP	269	MA/98:f2:b3:54:b5:80 LA/1 120 SysN=HP-2530-24-PoE
56	14.999932131	SpeedDragonM_e7:35:...	Broadcast	ARP	60	who has 10.101.102.58? Tell 10.10.10.68

Frame 1: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface enp0s9, id 0  
 Ethernet II, Src: SpeedDragonM\_e7:35:e8 (00:13:3b:e7:35:e8), Dst: Broadcast (ff:ff:ff:ff:ff:ff)  
 Address Resolution Protocol (request)

0000 ff ff ff ff ff ff 00  
 0010 08 00 06 04 00 01 00  
 0020 00 00 00 00 00 00 00  
 0030 00 00 00 00 00 00 00

File Edit View  
 Ln 2, Col 5 22 characters

wireshark\_enp0s9N9FU42.pcapng Packets: 56 · Displayed: 56 (100.0%) · Dropped: 0 (0.0%) Profile: Default

## Student B Screenshots From Ubuntu VM

ip a

```

radin@main-machine-VirtualBox: ~
radin@main-machine-VirtualBox: ~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:7d:4a:51 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
        valid_lft 85407sec preferred_lft 85407sec
    inet6 fe80::8ebb:cd7e:33b4:7be9/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:a5:d0:17 brd ff:ff:ff:ff:ff:ff
    inet 172.20.12.186/25 brd 172.20.12.255 scope global dynamic noprefixroute enp0s8
        valid_lft 3477sec preferred_lft 3477sec
    inet6 fe80::275d:ca02:60a2:fda7/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:f9:bb:8c brd ff:ff:ff:ff:ff:ff
    inet 172.20.12.144/25 brd 172.20.12.255 scope global dynamic noprefixroute enp0s9
        valid_lft 3385sec preferred_lft 3385sec
radin@main-machine-VirtualBox: ~$
  
```

File Edit View

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122261233

Ln 2, Col 5 | 22 characters

ip route

```

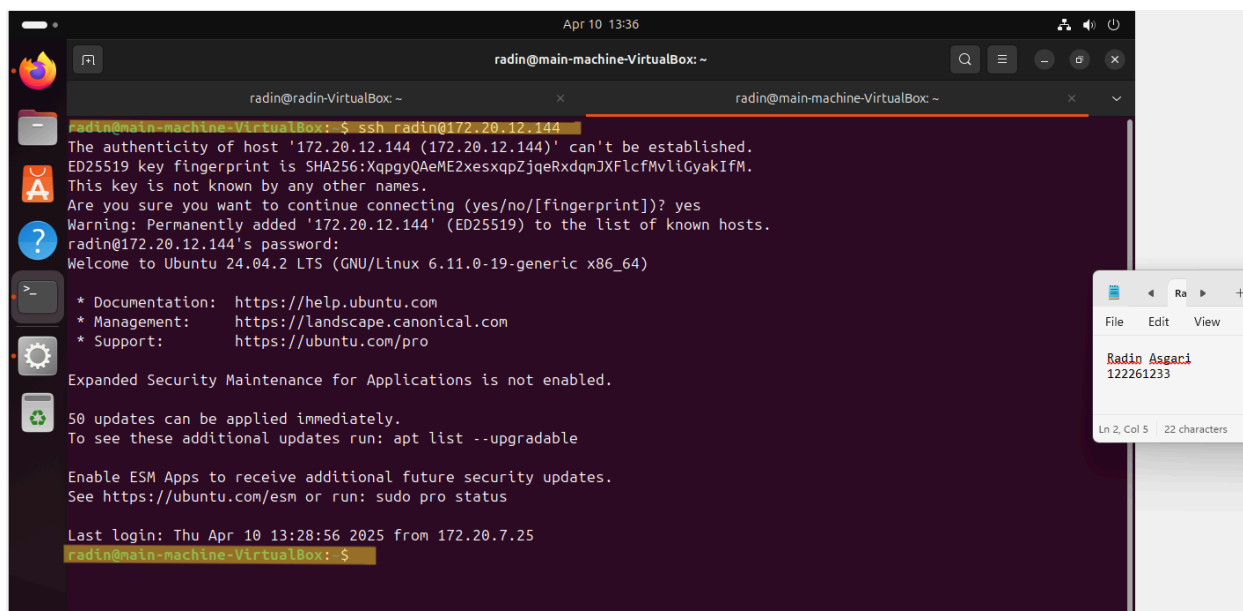
radin@main-machine-VirtualBox: ~
radin@main-machine-VirtualBox: ~$ ip route
default via 172.20.12.129 dev enp0s8 proto dhcp src 172.20.12.186 metric 20101
default via 172.20.12.129 dev enp0s9 proto dhcp src 172.20.12.144 metric 20102
default via 10.0.2.2 dev enp0s3 proto dhcp src 10.0.2.15 metric 20103
10.0.2.0/24 dev enp0s3 proto kernel scope link src 10.0.2.15 metric 103
172.20.7.0/25 via 172.20.12.129 dev enp0s9 proto static metric 102
172.20.12.128/25 dev enp0s8 proto kernel scope link src 172.20.12.186 metric 101
172.20.12.128/25 dev enp0s9 proto kernel scope link src 172.20.12.144 metric 102
radin@main-machine-VirtualBox: ~$
  
```

File Edit View

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Ln 2, Col 5 | 22 characters

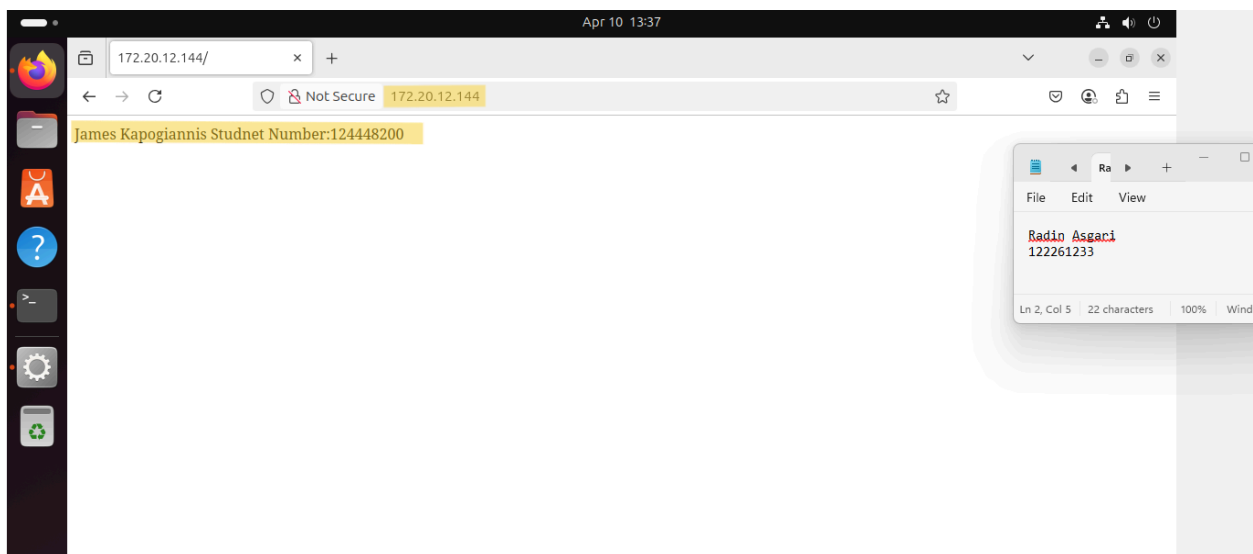
## SSH Request



The screenshot shows a terminal window titled "radin@main-machine-VirtualBox: ~" with a timestamp of "Apr 10 13:36". The terminal displays the output of an SSH command: `ssh radin@172.20.12.144`. The output includes a warning about the host's authenticity, a confirmation to continue, and a password prompt. The user "radin" successfully logs in, and the terminal shows the Ubuntu 24.04.2 LTS welcome message, system information, and update status. A floating window on the right shows the text "Radin Asgaci 122261233".

```
radin@main-machine-VirtualBox: ~  
radin@main-machine-VirtualBox: $ ssh radin@172.20.12.144  
The authenticity of host '172.20.12.144 (172.20.12.144)' can't be established.  
ED25519 key fingerprint is SHA256:XqpgyQAeME2xesxqpZjqeRxdqmJXFfclFMvliGyakIfM.  
This key is not known by any other names.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added '172.20.12.144' (ED25519) to the list of known hosts.  
radin@172.20.12.144's password:  
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.11.0-19-generic x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/pro  
  
Expanded Security Maintenance for Applications is not enabled.  
  
50 updates can be applied immediately.  
To see these additional updates run: apt list --upgradable  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
Last login: Thu Apr 10 13:28:56 2025 from 172.20.7.25  
radin@main-machine-VirtualBox: $
```

## Partners HTTP Webpage





## Student B Screenshots 2560 Switch

### sh spanning-tree

```
HP-2530-24-PoEP# sh spanning-tree
```

Multiple Spanning Tree (MST) Information

STP Enabled : Yes  
Force Version : MSTP-operation  
IST Mapped VLANs : 1-4094  
Switch MAC Address : 98f2b3-54b580  
Switch Priority : 32768  
Max Age : 20  
Max Hops : 20  
Forward Delay : 15

Topology Change Count : 1  
Time Since Last Change : 98 mins

CST Root MAC Address : 98f2b3-54b580  
CST Root Priority : 32768  
CST Root Path Cost : 0  
CST Root Port : This switch is root

IST Regional Root MAC Address : 98f2b3-54b580  
IST Regional Root Priority : 32768  
IST Regional Root Path Cost : 0  
IST Remaining Hops : 20

Root Guard Ports :  
Loop Guard Ports :  
TCN Guard Ports :  
BPDU Protected Ports :  
BPDU Filtered Ports :  
PVST Protected Ports :  
PVST Filtered Ports :

Root Inconsistent Ports :  
Loop Inconsistent Ports :

Port	Type	Cost	Prio	rity	State	Designated	Hello	Time	PtP	Edge
						Bridge				
1	10/100TX	Auto	128	Disabled			2	Yes	No	
5	10/100TX	Auto	128	Disabled			2	Yes	No	
6	10/100TX	Auto	128	Disabled			2	Yes	No	
7	10/100TX	Auto	128	Disabled			2	Yes	No	
8	10/100TX	Auto	128	Disabled			2	Yes	No	
9	10/100TX	Auto	128	Disabled			2	Yes	No	
10	10/100TX	Auto	128	Disabled			2	Yes	No	
11	10/100TX	Auto	128	Disabled			2	Yes	No	
12	10/100TX	Auto	128	Disabled			2	Yes	No	
13	10/100TX	Auto	128	Disabled			2	Yes	No	
14	10/100TX	Auto	128	Disabled			2	Yes	No	
15	10/100TX	Auto	128	Disabled			2	Yes	No	
16	10/100TX	Auto	128	Disabled			2	Yes	No	
17	10/100TX	Auto	128	Disabled			2	Yes	No	
18	10/100TX	Auto	128	Disabled			2	Yes	No	
19	10/100TX	Auto	128	Disabled			2	Yes	No	
20	10/100TX	Auto	128	Disabled			2	Yes	No	
21	10/100TX	Auto	128	Disabled			2	Yes	No	
22	10/100TX	Auto	128	Disabled			2	Yes	No	
23	10/100TX	Auto	128	Disabled			2	Yes	No	
24	10/100TX	200000	128	Forwarding		98f2b3-54b580	2	Yes	Yes	
25	100/1000T	Auto	128	Disabled			2	Yes	No	

## sh vlan

```
HP-2530-24-PoEP# sh vlan
```

Status and Counters - VLAN Information

Maximum VLANs to support : 256  
Primary VLAN : DEFAULT\_VLAN  
Management VLAN :

VLAN ID	Name	Status	Voice	Jumbo
1	DEFAULT_VLAN	Port-based	No	No
14	VLAN14	Port-based	No	No
25	VLAN25	Port-based	No	No

HP-2530-24-PoEP#

Radin Asgari  
122261233

Ln 2, Col 5 | 22 characters | 100% | Window | UTF-8