Module 10: Denial-of-Service

Lab 1: Perform DoS and DDoS Attacks using Various Techniques

Lab Scenario

DoS and DDoS attacks have become popular, because of the easy accessibility of exploit plans and the negligible amount of brainwork required while executing them. These attacks can be very dangerous, because they can quickly consume the largest hosts on the Internet, rendering them useless. The impact of these attacks includes loss of goodwill, disabled networks, financial loss, and disabled organizations.

In a DDoS attack, many applications pound the target browser or network with fake exterior requests that make the system, network, browser, or site slow, useless, and disabled or unavailable.

The attacker initiates the DDoS attack by sending a command to the zombie agents. These zombie agents send a connection request to a large number of reflector systems with the spoofed IP address of the victim. The reflector systems see these requests as coming from the victim's machine instead of as zombie agents, because of the spoofing of the source IP address. Hence, they send the requested information (response to connection request) to the victim. The victim's machine is flooded with unsolicited responses from several reflector computers at once. This may reduce performance or may even cause the victim's machine to shut down completely.

As an expert ethical hacker or pen tester, you must have the required knowledge to perform DoS and DDoS attacks to be able to test systems in the target network.

In this lab, you will gain hands-on experience in auditing network resources against DoS and DDoS attacks.

Lab Objectives

- Perform a DoS attack (SYN flooding) on a target host using Metasploit
- Perform a DoS attack on a target host using hping3
- Perform a DoS attack using Raven-storm
- Perform a DDoS attack using HOIC
- Perform a DDoS attack using LOIC

Overview of DoS and DDoS Attacks

DDoS attacks mainly aim at the network bandwidth; they exhaust network, application, or service resources, and thereby restrict legitimate users from accessing their system or network resources.

In general, the following are categories of DoS/DDoS attack vectors:

- **Volumetric Attacks**: Consume the bandwidth of the target network or service

  Attack techniques:

  - UDP flood attack
  - ICMP flood attack
  - Ping of Death and smurf attack
  - Pulse wave and zero-day attack

- **Protocol Attacks**: Consume resources like connection state tables present in the network infrastructure components such as load-balancers, firewalls, and application servers

  Attack techniques:

  - SYN flood attack
  - Fragmentation attack
  - Spoofed session flood attack
  - ACK flood attack
- **Application Layer Attacks**: Consume application resources or services, thereby making them unavailable to other legitimate users

  Attack techniques:

  - HTTP GET/POST attack
  - Slowloris attack
  - UDP application layer flood attack
  - DDoS extortion attack

Tasks 1: Perform a DoS Attack (SYN Flooding) on a Target Host using Metasploit

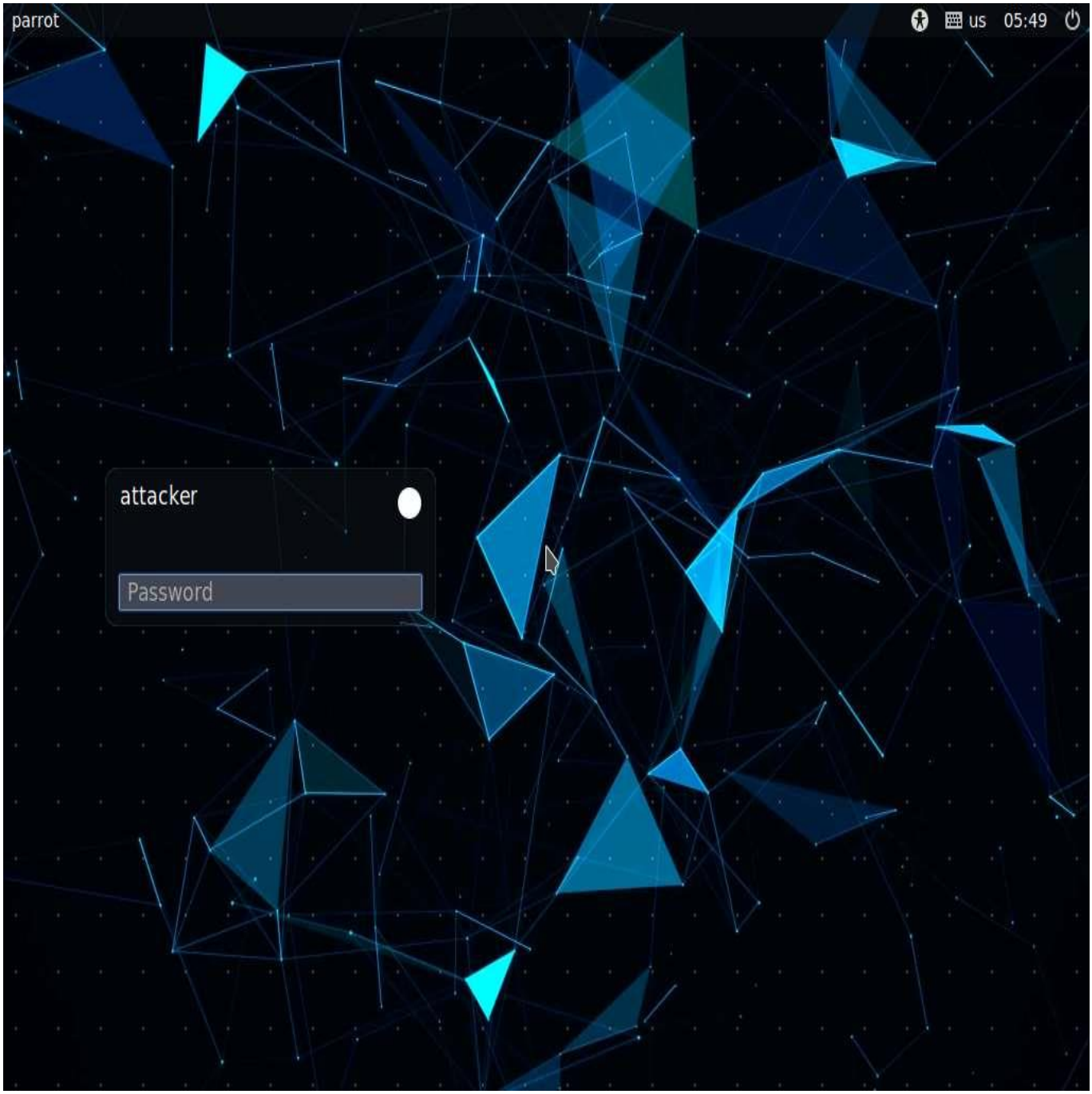
SYN flooding takes advantage of a flaw with regard to how most hosts implement the TCP three-way handshake. This attack occurs when the intruder sends unlimited SYN packets (requests) to the host system. The process of transmitting such packets is faster than the system can handle. Normally, the connection establishes with the TCP three-way handshake, and the host keeps track of the partially open connections while waiting in a listening queue for response ACK packets.

Metasploit is a penetration testing platform that allows a user to find, exploit, and validate vulnerabilities. Also, it provides the infrastructure, content, and tools to conduct penetration tests and comprehensive security auditing. The Metasploit framework has numerous auxiliary module scripts that can be used to perform DoS attacks.

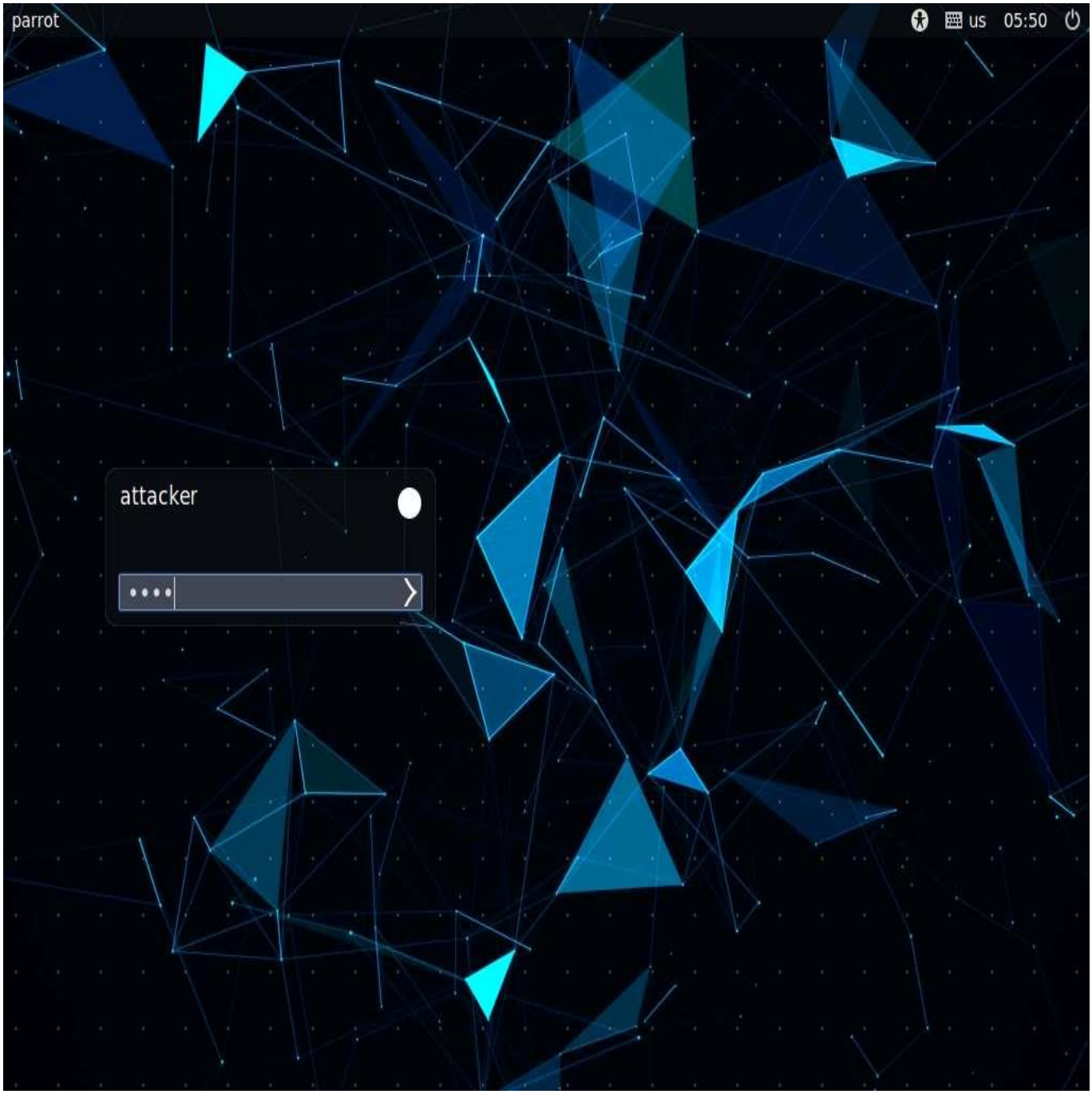
Here, we will use the Metasploit tool to perform a DoS attack (SYN flooding) on a target host.

In this task, we will use the **Parrot Security (10.10.1.13)** machine to perform SYN flooding on the **Windows 11 (10.10.1.11)** machine through **port 21**.

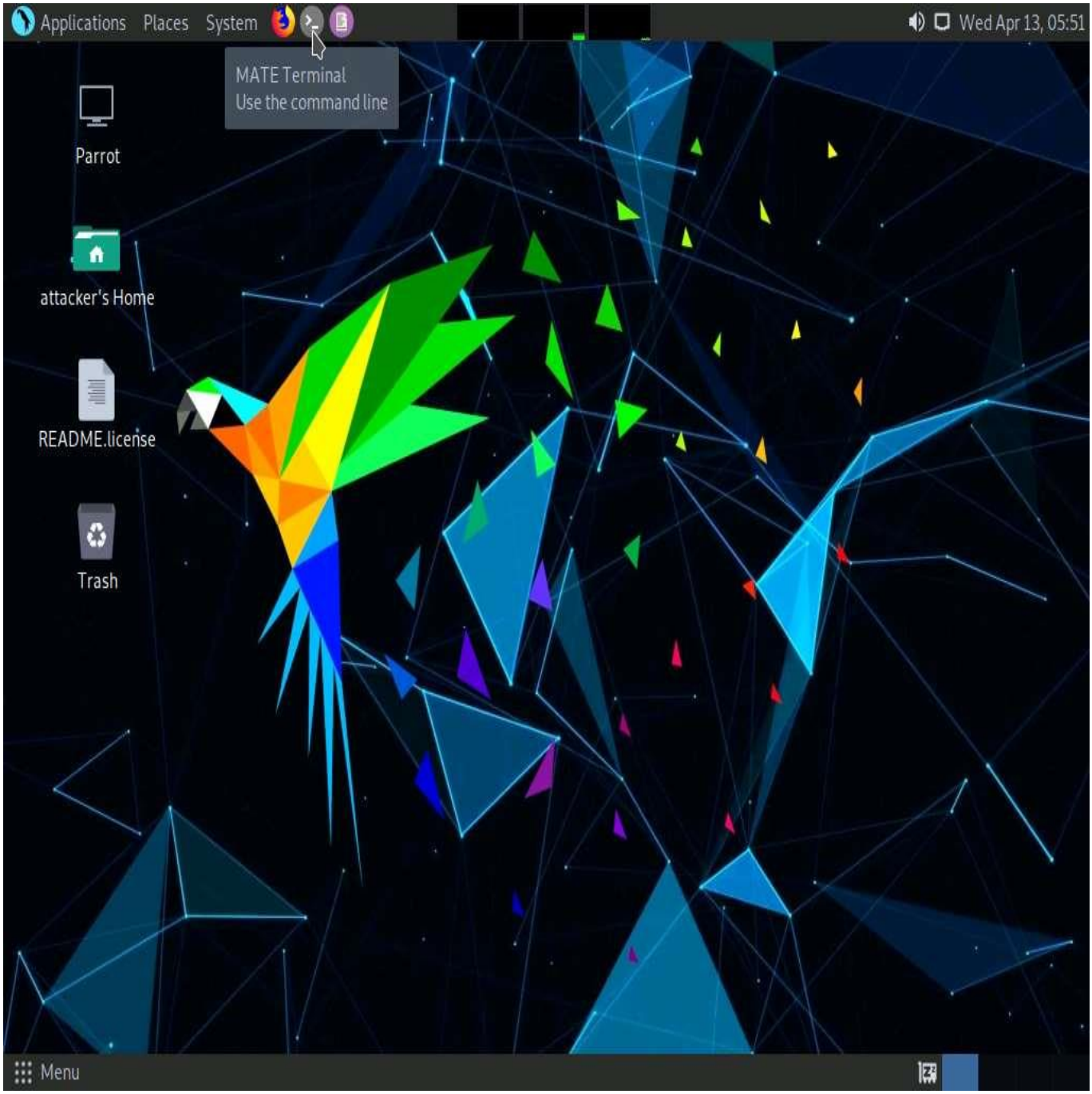
1. Click Parrot Security to switch to the **Parrot Security** machine.



2. ☐ In the login page, the **attacker** username will be selected by default. Enter password as **toor** in the **Password** field and press **Enter** to log in to the machine..



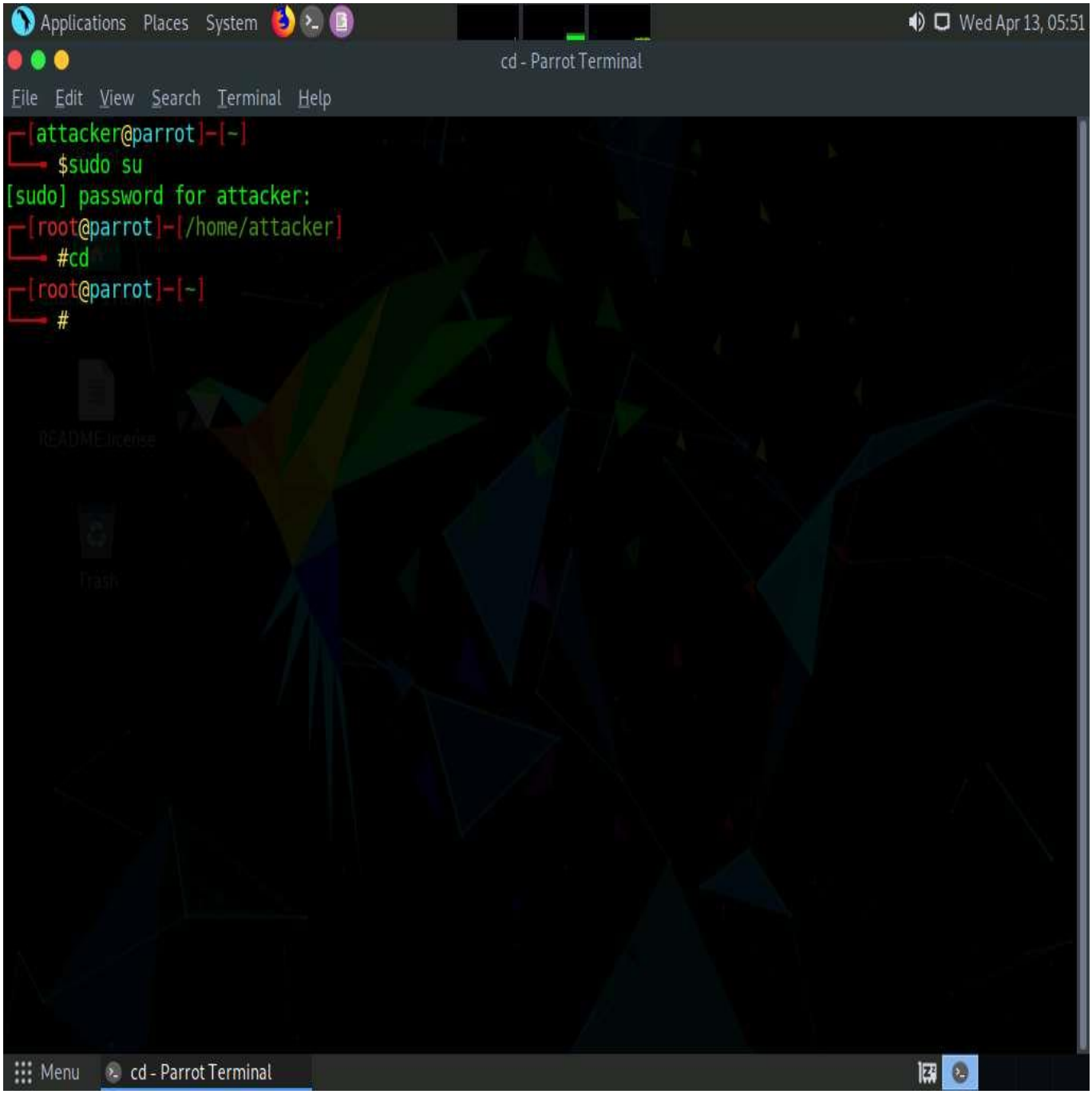
3. Click the **MATE Terminal** icon at the top of the **Desktop** window to open a **Terminal** window.
    - If a **Question** pop-up window appears asking for you to update the machine, click **No** to close the window.



4. A **Parrot Terminal** window appears. In the terminal window, type **sudo su** and press **Enter** to run the programs as a root user.
5. In the **[sudo] password for attacker** field, type **toor** as a password and press **Enter**.

The password that you type will not be visible.

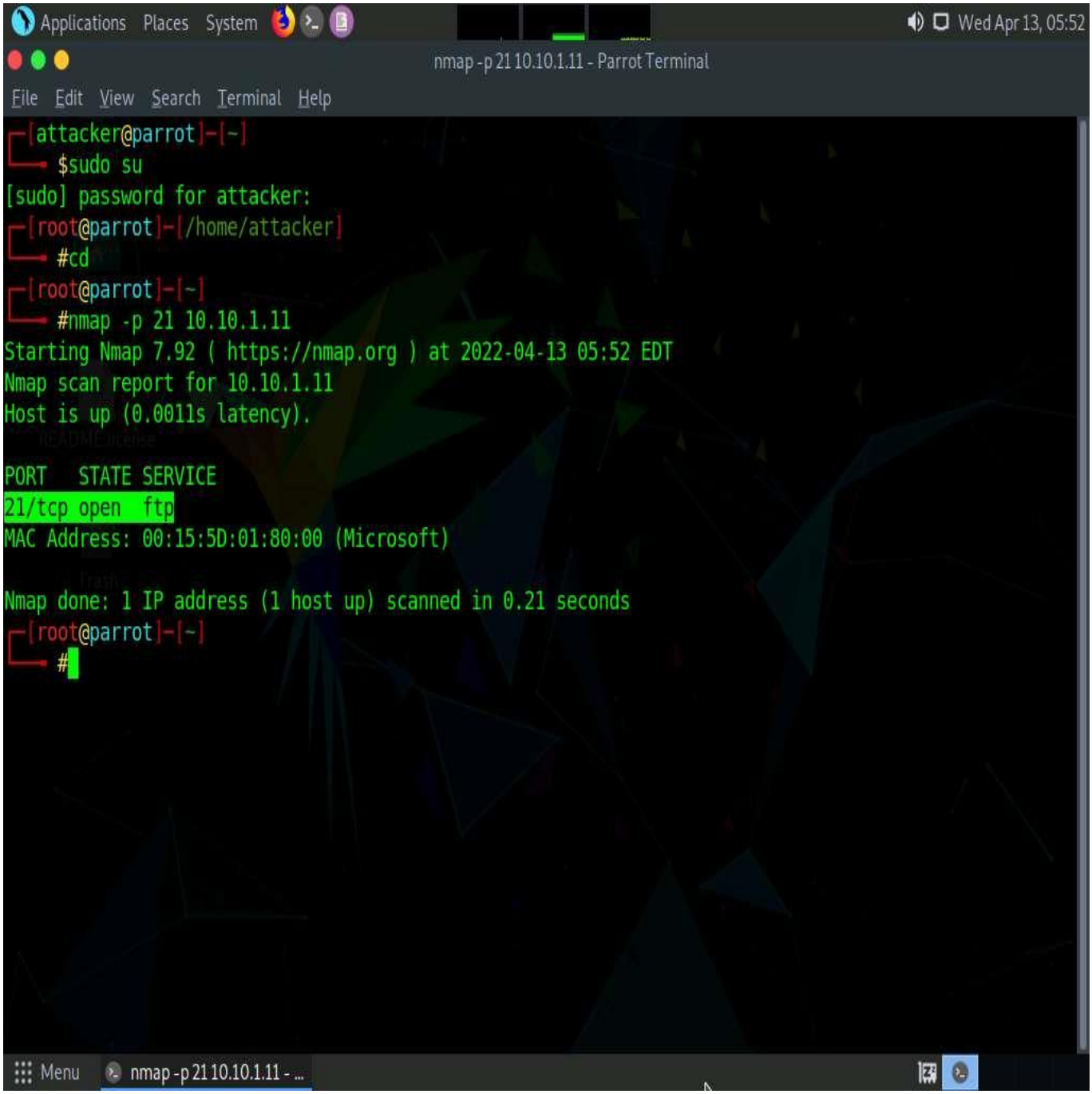
6. Now, type **cd** and press **Enter** to jump to the root directory.



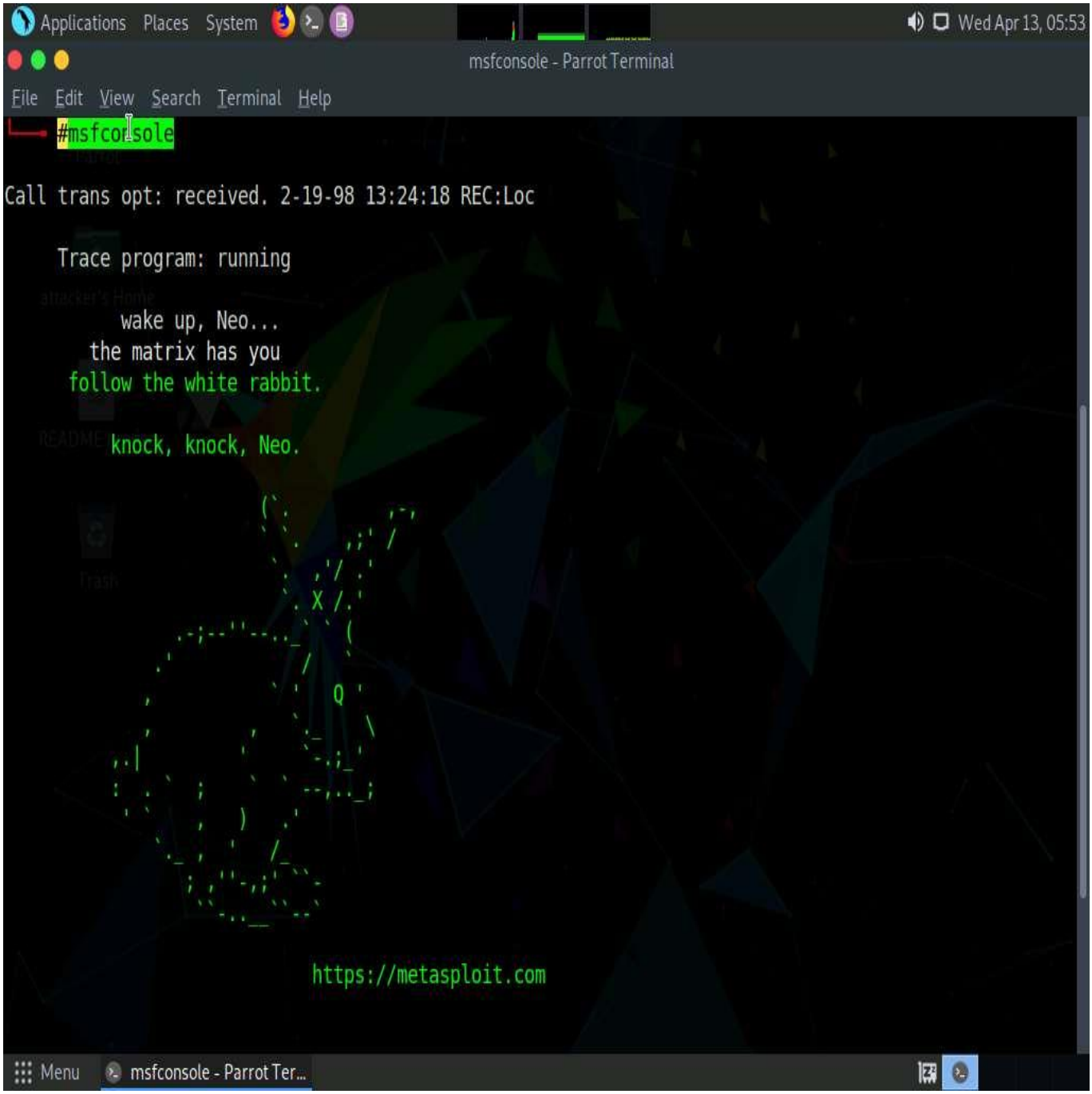
7. ☐ First, determine whether port 21 is open or not. This involves using Nmap to determine the state of the port.
8. ☐ On the **Parrot Terminal** window, type **nmap -p 21 (Target IP address)** (here, target IP address is **10.10.1.11 [Windows 11]**) and press **Enter**.

-p: specifies the port to be scanned.

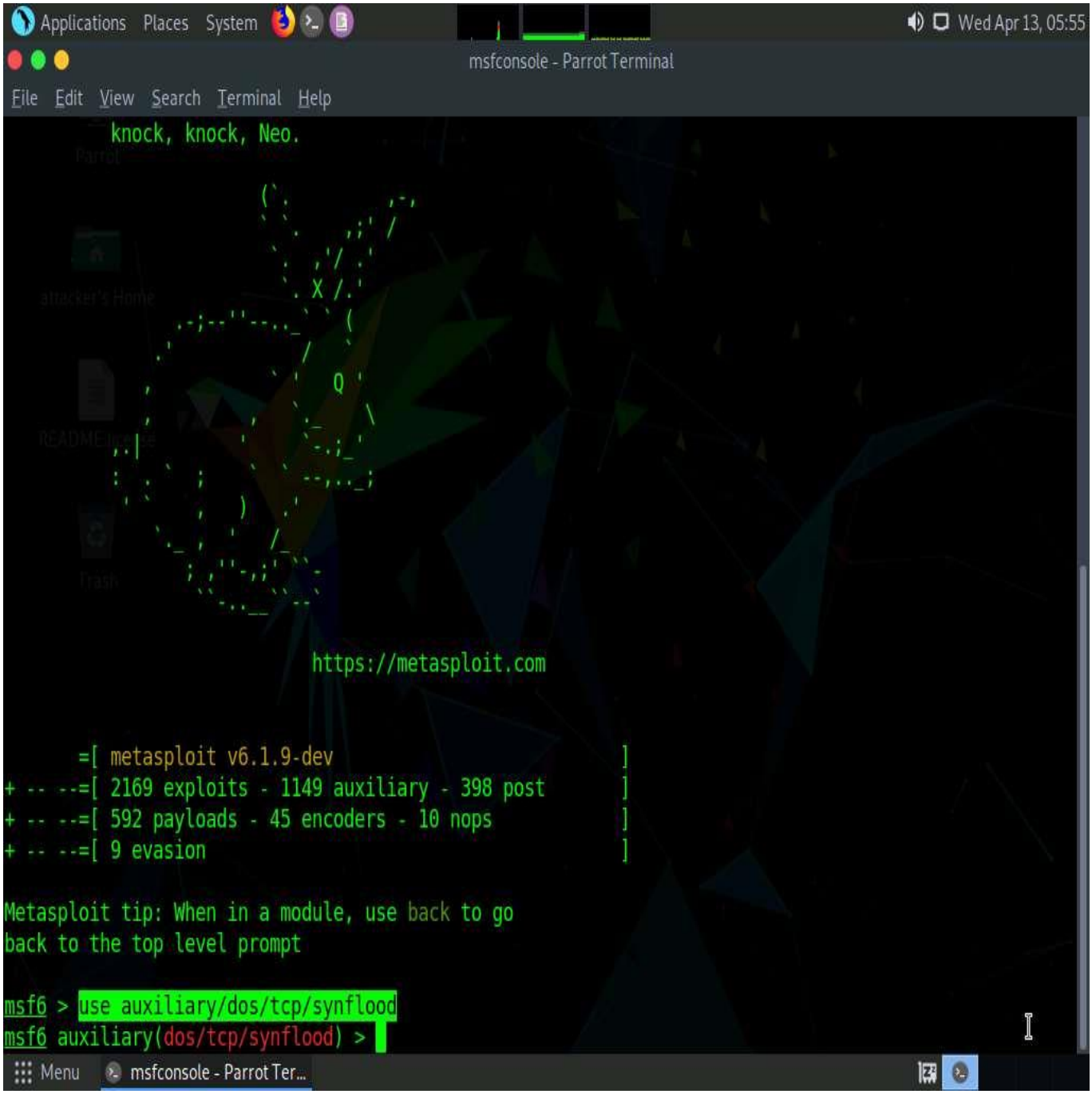
9. ☐ The result appears, displaying the port status as open, as shown in the screenshot.



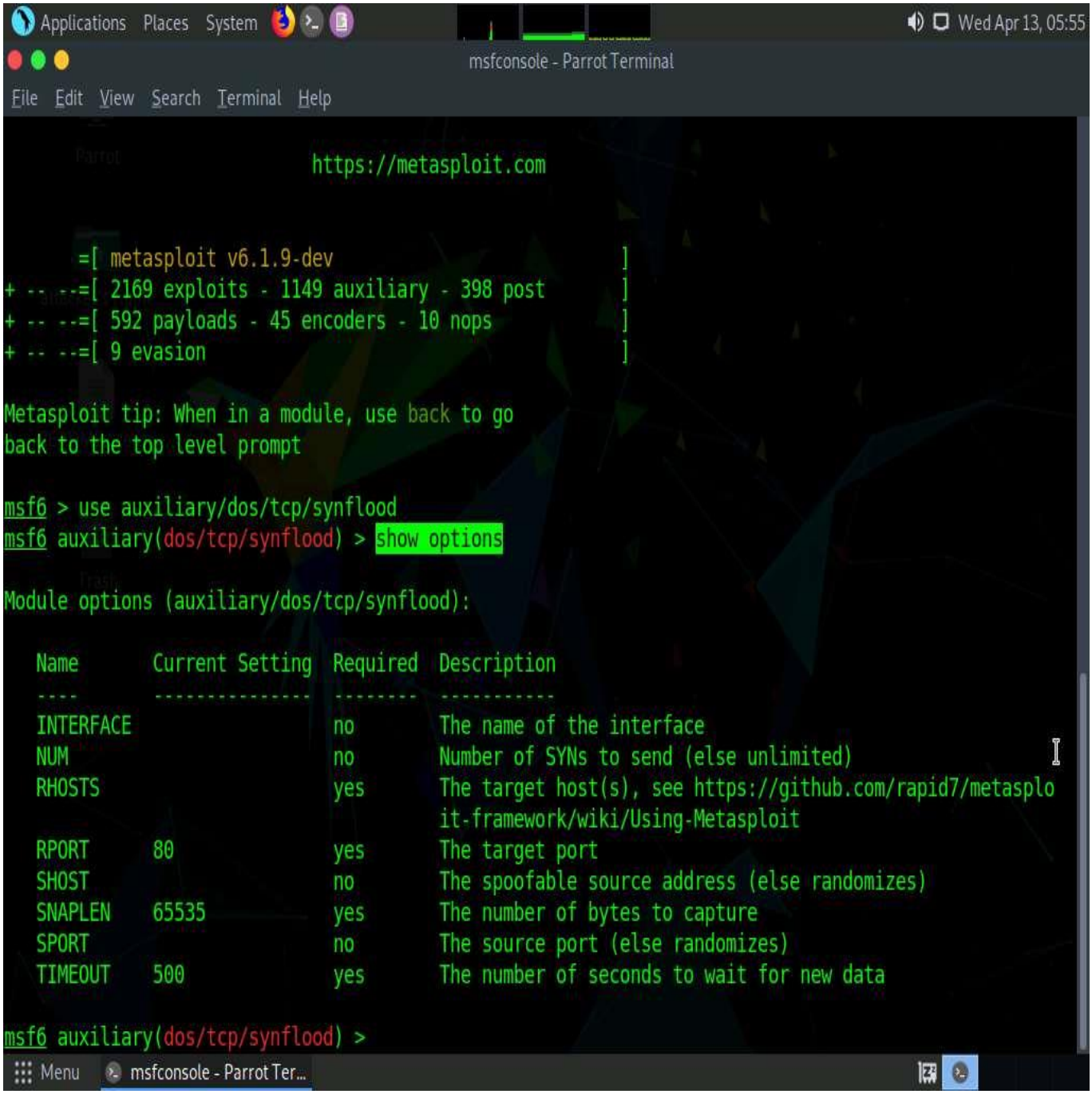
10. ☐ Now, we will perform SYN flooding on the target machine (**Windows 11**) using port 21.
11. ☐ In this task, we will use an auxiliary module of Metasploit called **synflood** to perform a DoS attack on the target machine.
12. ☐ Type **msfconsole** from a command-line terminal and press **Enter** to launch msfconsole.



13. In the **msf** command line, type **use auxiliary/dos/tcp/synflood** and press **Enter** to launch a SYN flood module.

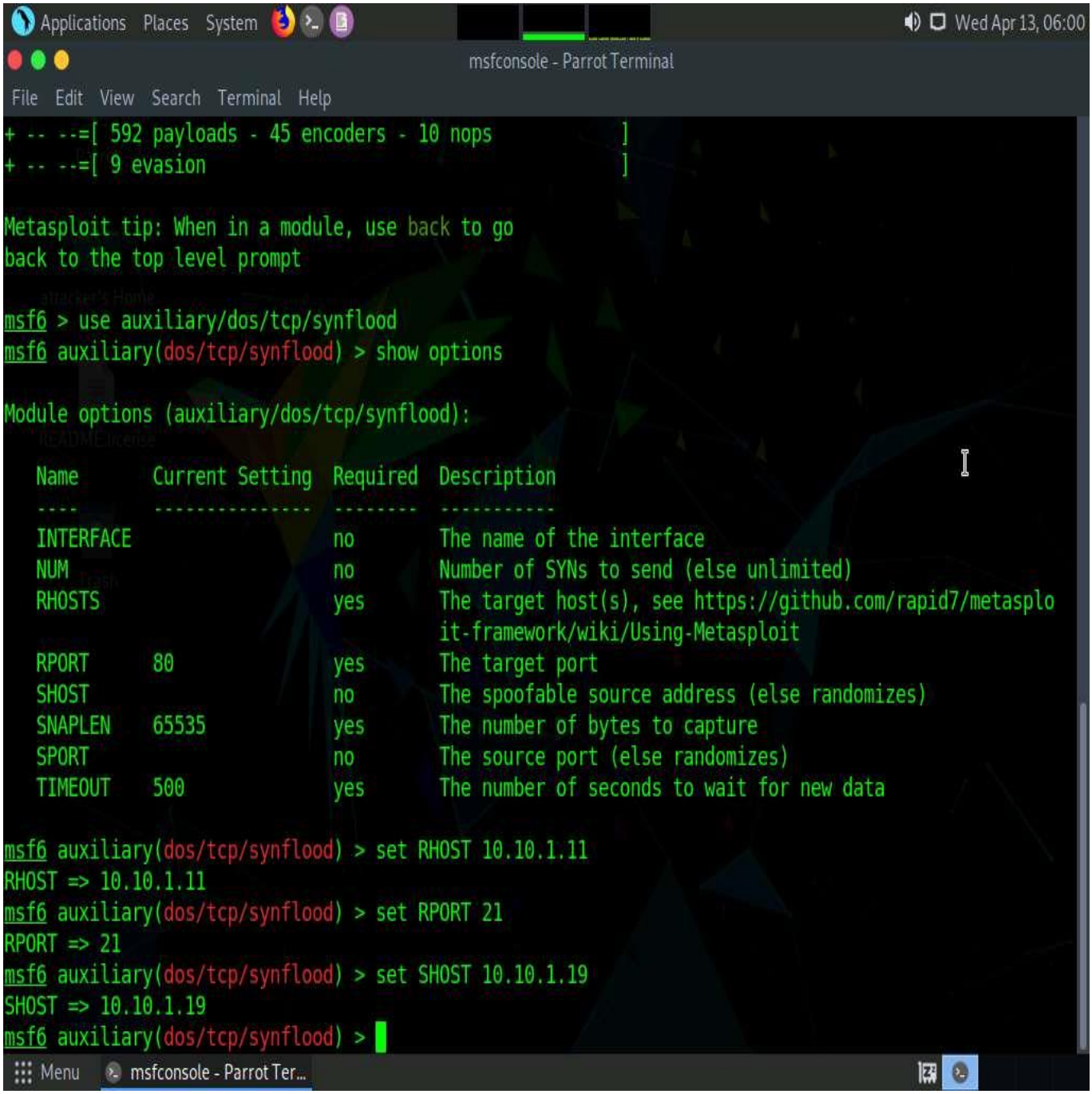


14. ☐ Now, determine which module options need to be configured to begin the DoS attack.
15. ☐ Type **show options** and press **Enter**. This displays all the options associated with the auxiliary module.

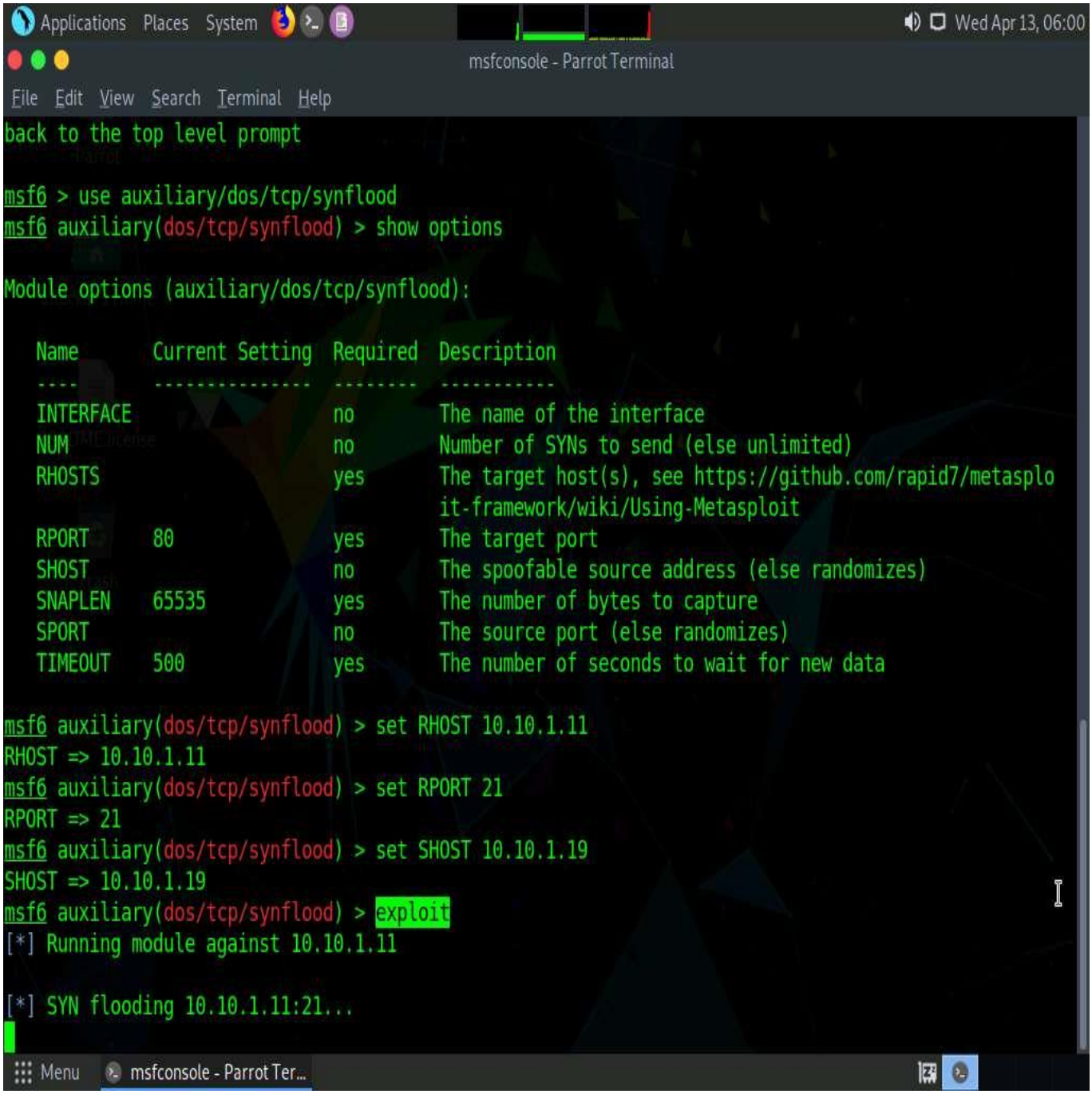


16. Here, we will perform SYN flooding on port **21** of the **Windows 11** machine by spoofing the IP address of the **Parrot Security** machine with that of the **Windows Server 2019 (10.10.1.19)** machine.
17. Issue the following commands:
    - **set RHOST (Target IP Address)** (here, **10.10.1.11**)
    - **set RPORT 21**
    - **set SHOST (Spoofable IP Address)** (here, **10.10.1.19**)

By setting the SHOST option to the IP address of the Windows Server 2019 machine, you are spoofing the IP address of the Parrot Security machine with that of Windows Server 2019.

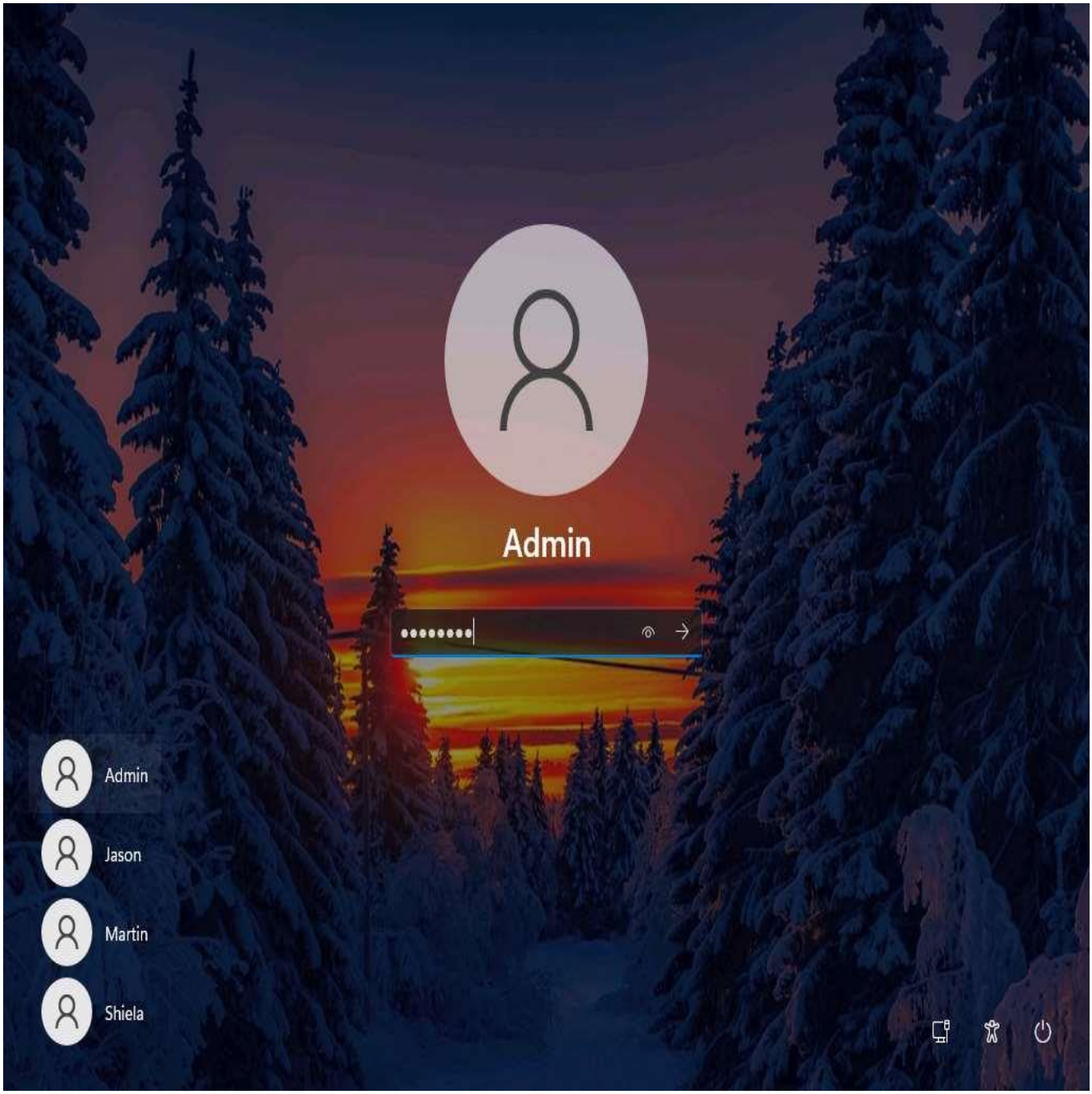


18. ☐ Once the auxiliary module is configured with the required options, start the DoS attack on the **Windows 11** machine.
19. ☐ To do so, type **exploit** and press **Enter**. This begins SYN flooding the **Windows 11** machine.

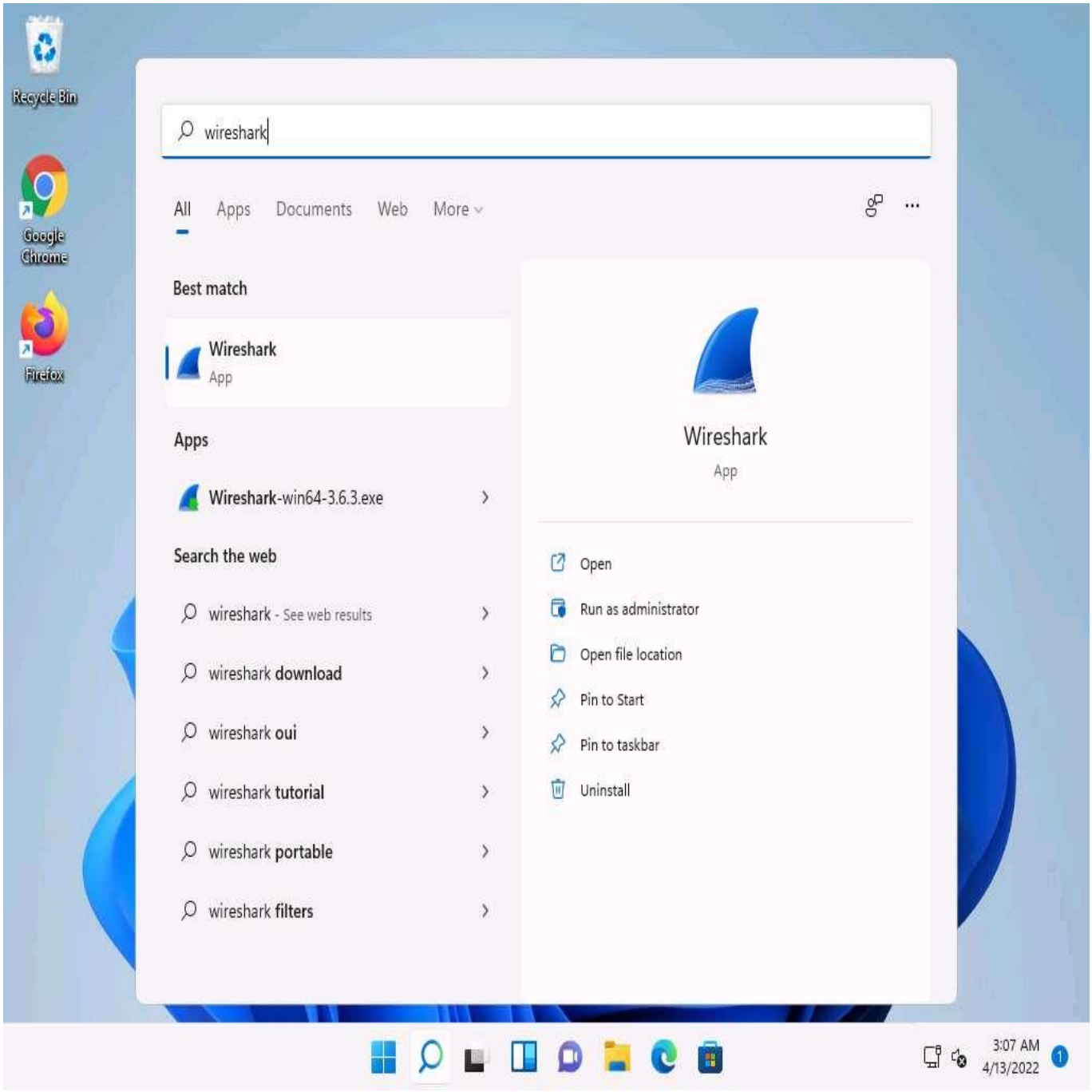


20. To confirm, click Windows 11 to switch to the **Windows 11** machine and click Ctrl+Alt+Delete. By default, **Admin** user profile is selected, click Pa$$w0rd to paste the password in the Password field and press **Enter** to login.

Alternatively, you can also click **Pa$$w0rd** under **Windows 11** machine thumbnail in the **Resources** pane or Click **Type Text | Type Password** button under Commands (**thunder** icon) menu.
If **Welcome to Windows** wizard appears, click **Continue** and in **Sign in with Microsoft** wizard, click **Cancel**.
Networks screen appears, click **Yes** to allow your PC to be discoverable by other PCs and devices on the network.

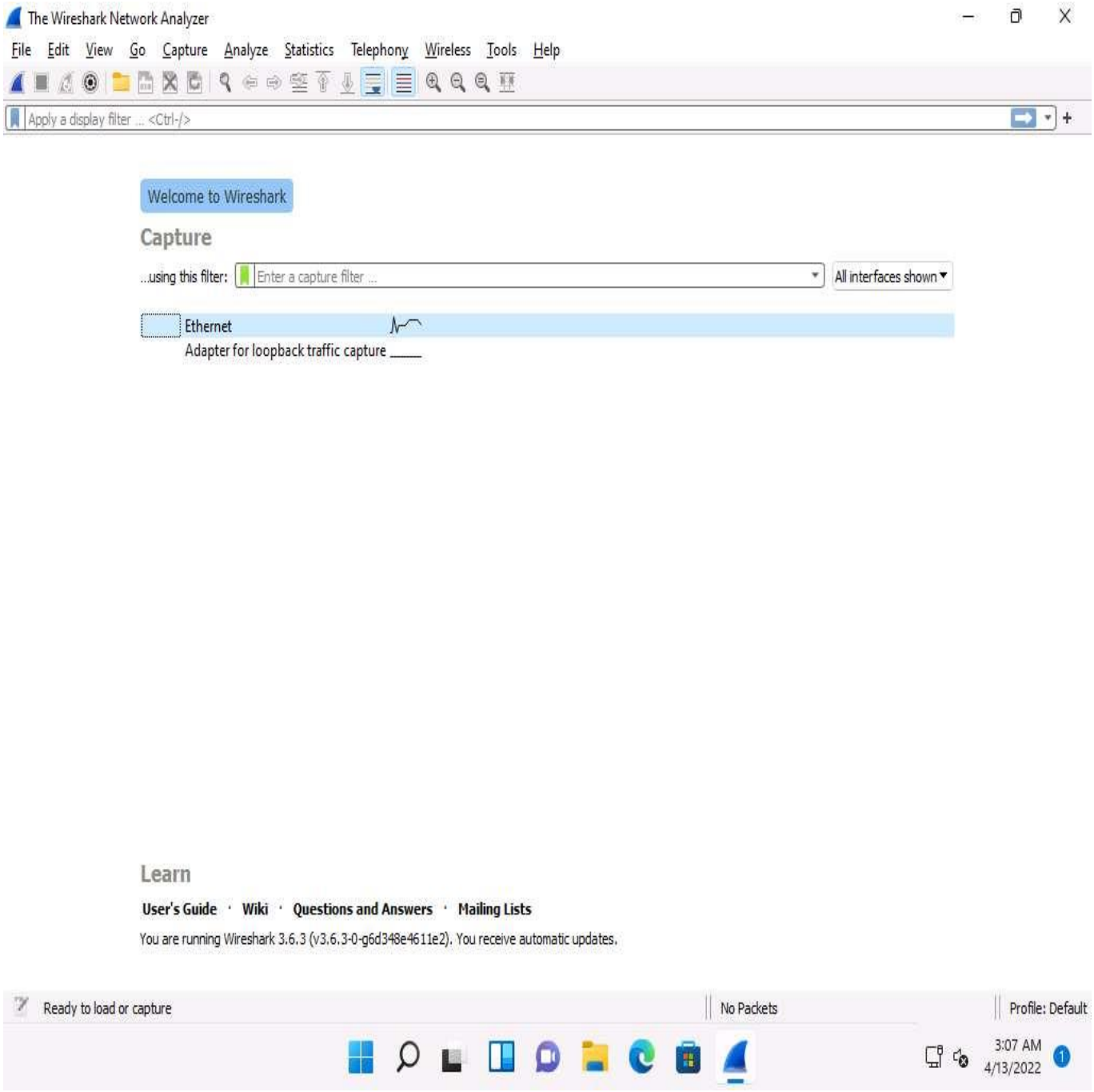


21. ☐ Click **Search** icon ( ) on the **Desktop**. Type **wireshark** in the search field, the **Wireshark** appears in the results, click **Open** to launch it.

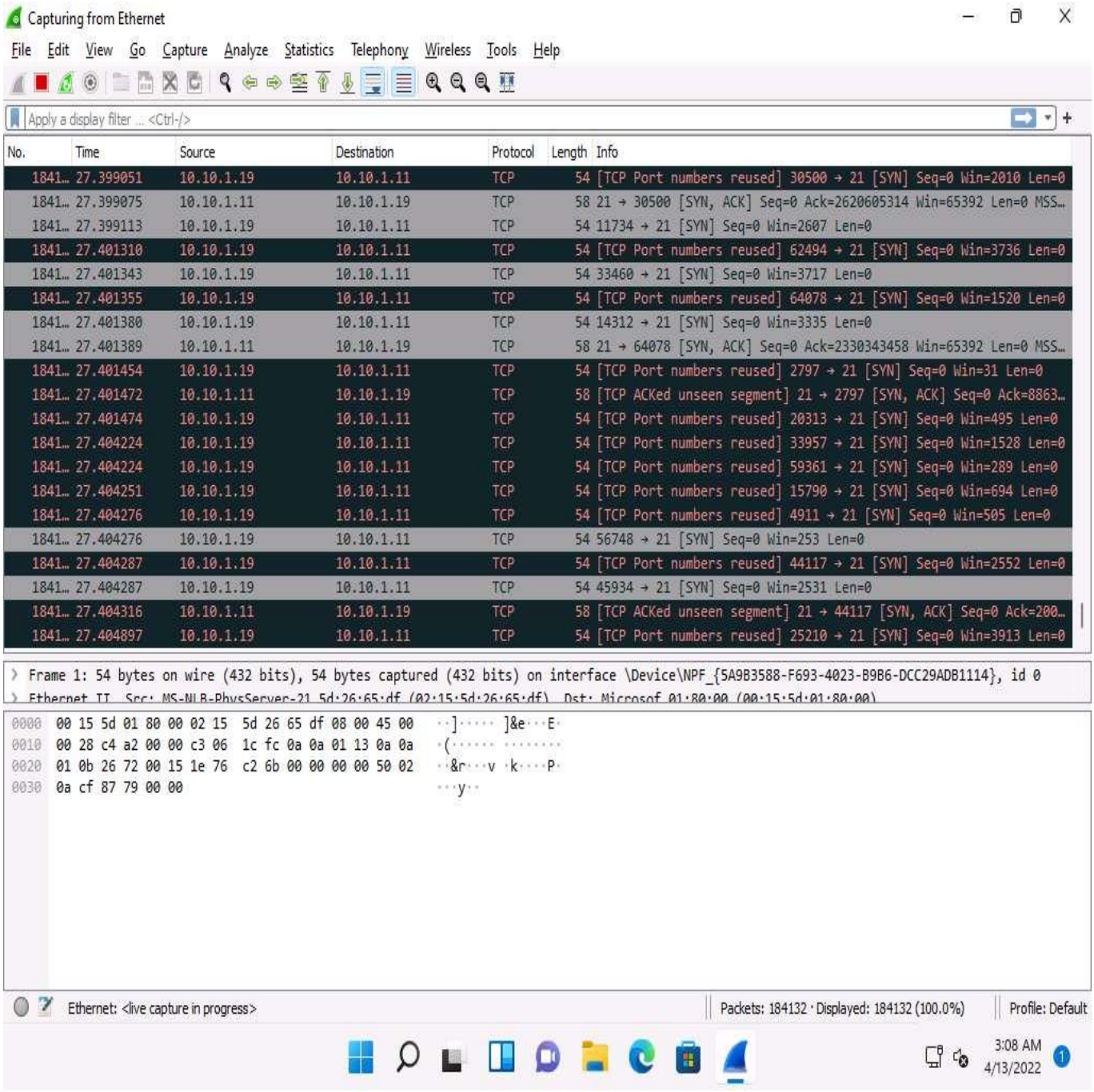


22. ☐ The **Wireshark Network Analyzer** window appears. Double-click on the primary network interface (here, **Ethernet**) to start capturing the network traffic.

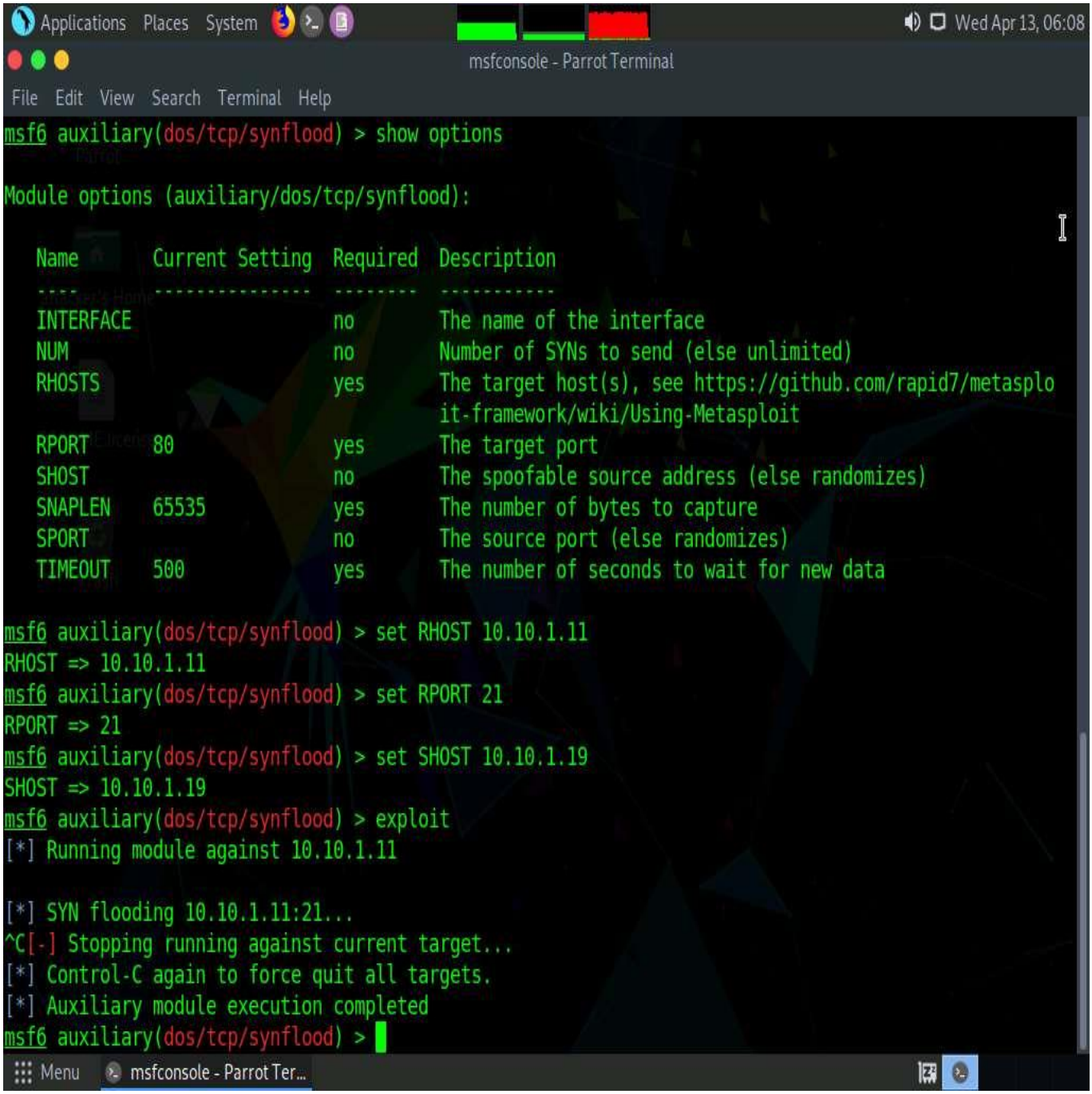
The network interface might differ when you perform the task.



23. ☐ **Wireshark** displays the traffic coming from the machine. Here, you can observe that the **Source IP** address is that of the **Windows Server 2019** (10.10.1.19) machine. This implies that the IP address of the **Parrot Security** machine has been spoofed.



24. ☐ Observe that the target machine (**Windows 11**) has drastically slowed, implying that the DoS attack is in progress on the machine. If the attack is continued for some time, the machine's resources will eventually be completely exhausted, causing it to stop responding.
25. ☐ Once the performance analysis of the machine is complete, click on Parrot Security to switch to the **Parrot Security** machine and press **Ctrl+C** to terminate the attack.



26. ☐ This concludes the demonstration of how to perform SYN flooding on a target host using Metasploit.
27. ☐ Close all open windows and document all the acquired information.

Task 2: Perform a DoS Attack on a Target Host using hping3

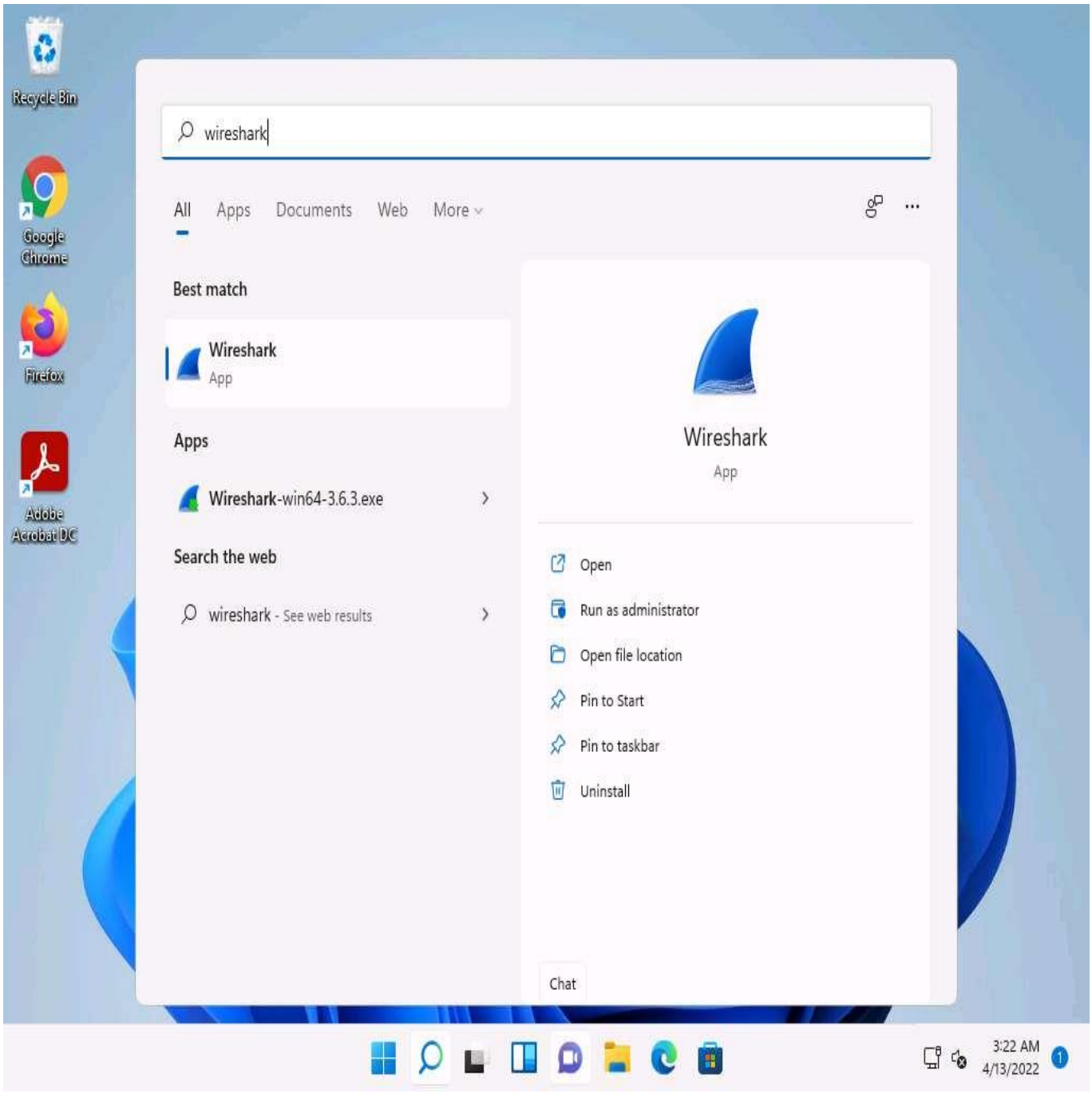
hping3 is a command-line-oriented network scanning and packet crafting tool for the TCP/IP protocol that sends ICMP echo requests and supports TCP, UDP, ICMP, and raw-IP protocols.

It performs network security auditing, firewall testing, manual path MTU discovery, advanced traceroute, remote OS fingerprinting, remote uptime guessing, TCP/IP stacks auditing, and other functions.

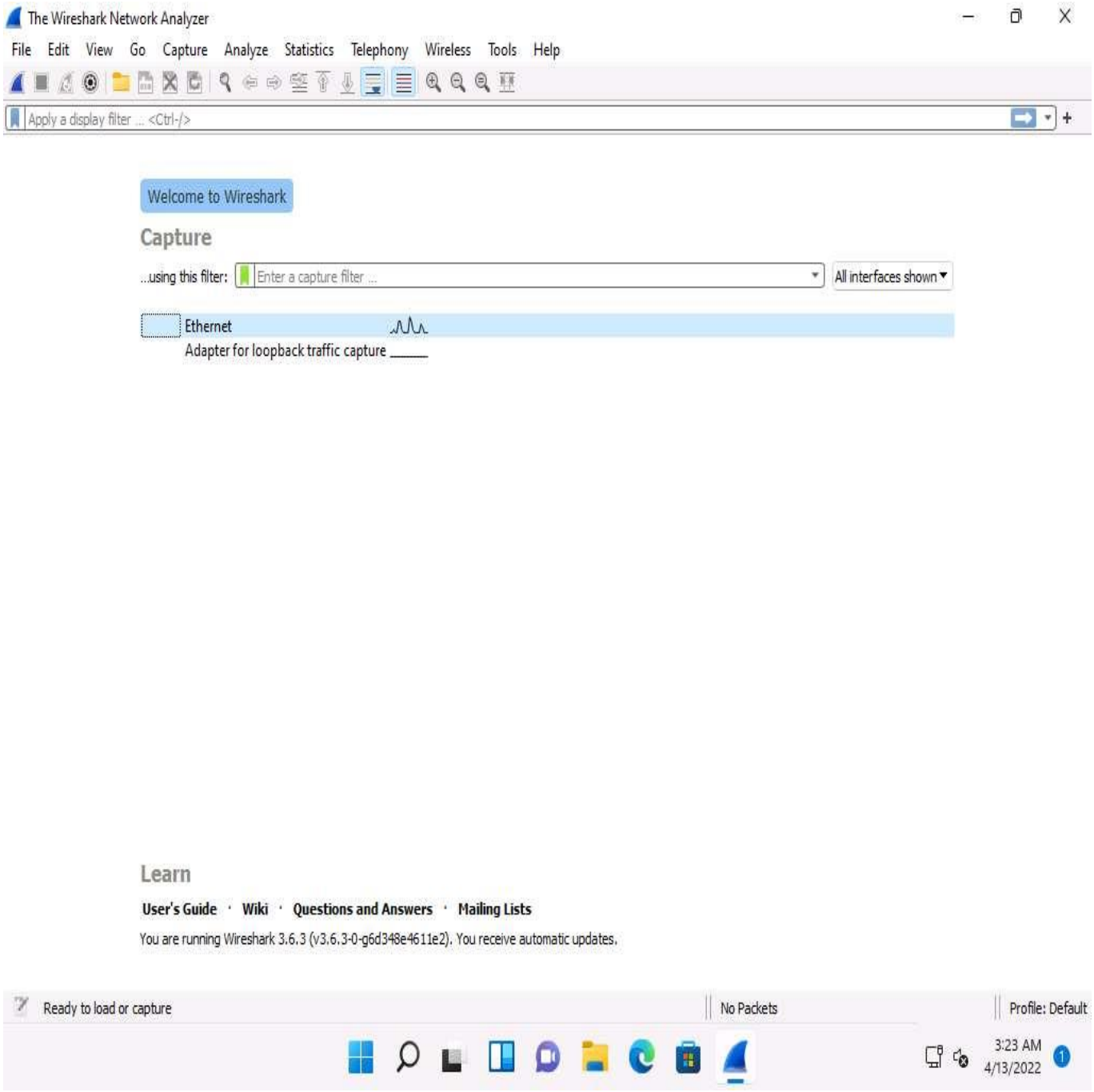
Here, we will use the hping3 tool to perform DoS attacks such as SYN flooding, Ping of Death (PoD) attacks, and UDP application layer flood attacks on a target host.

1. Click Windows 11 to switch to the **Windows 11** machine. On the **Windows 11** machine,

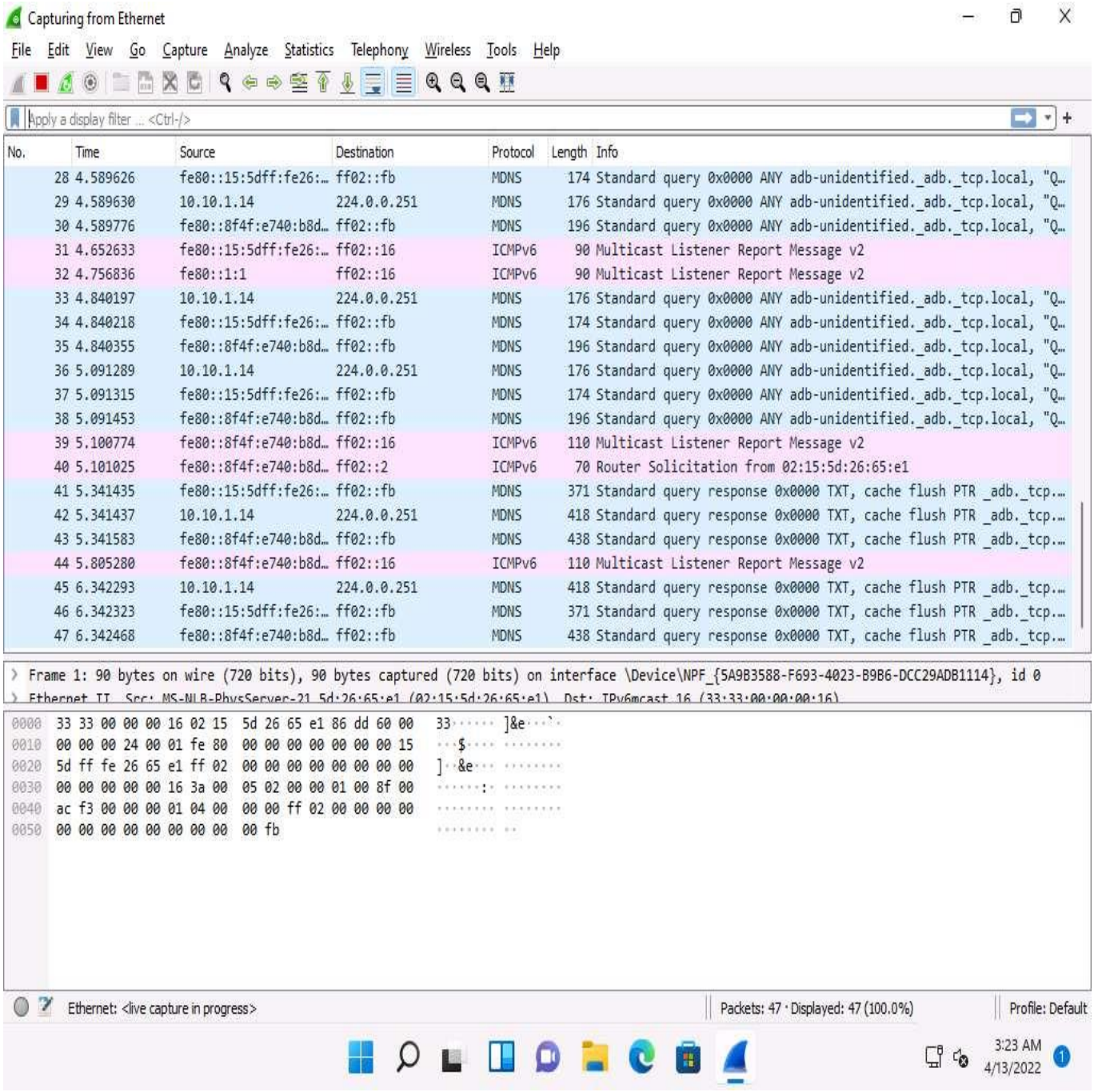
   Click **Search** icon ( ) on the **Desktop**. Type **wireshark** in the search field, the **Wireshark** appears in the results, click **Open** to launch it.



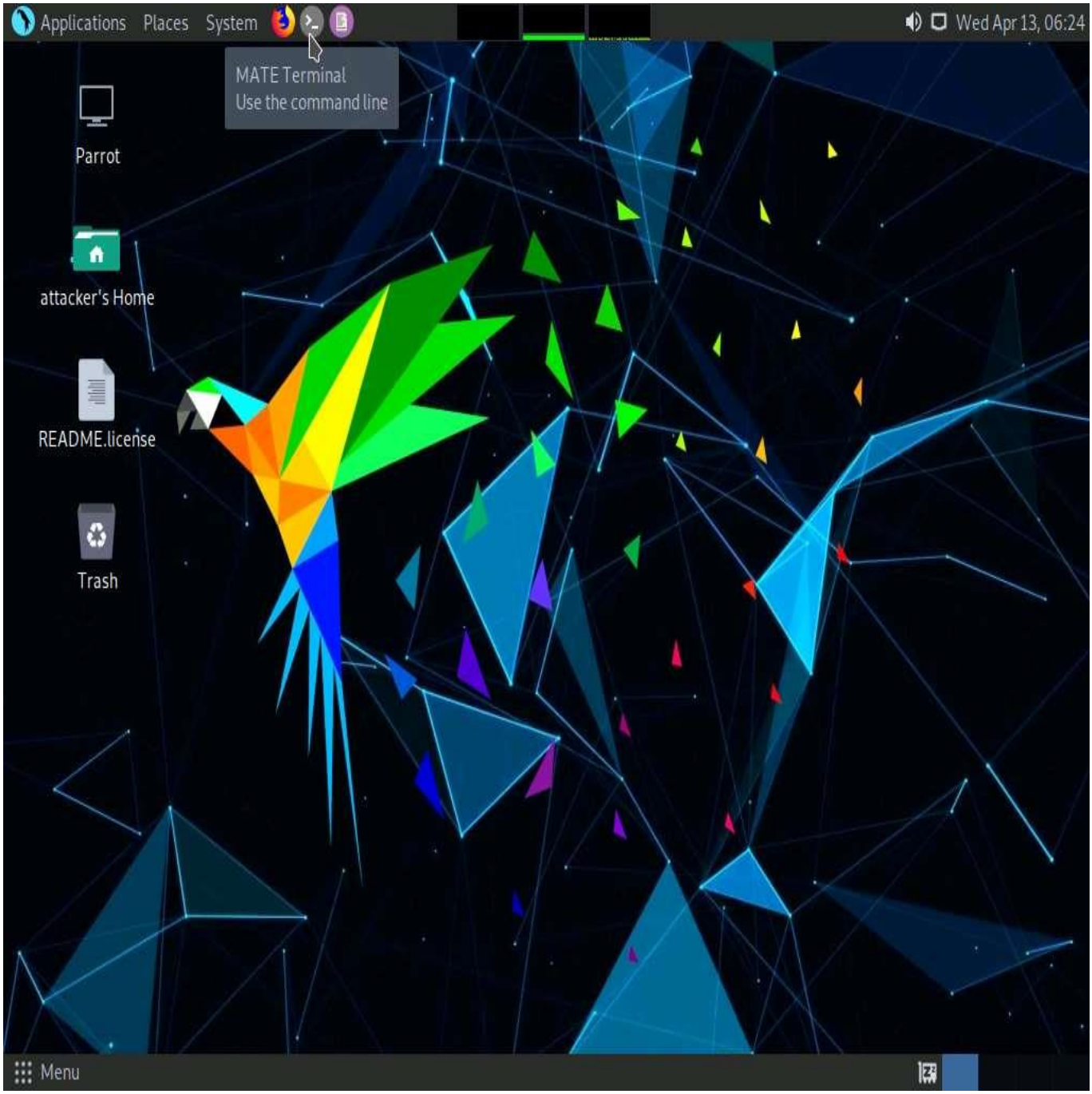
2. **The Wireshark Network Analyzer** window appears. Double-click on the primary network interface (here, **Ethernet**) to start capturing the network traffic.



3. ☐ **Wireshark** starts capturing the packets; leave it running.



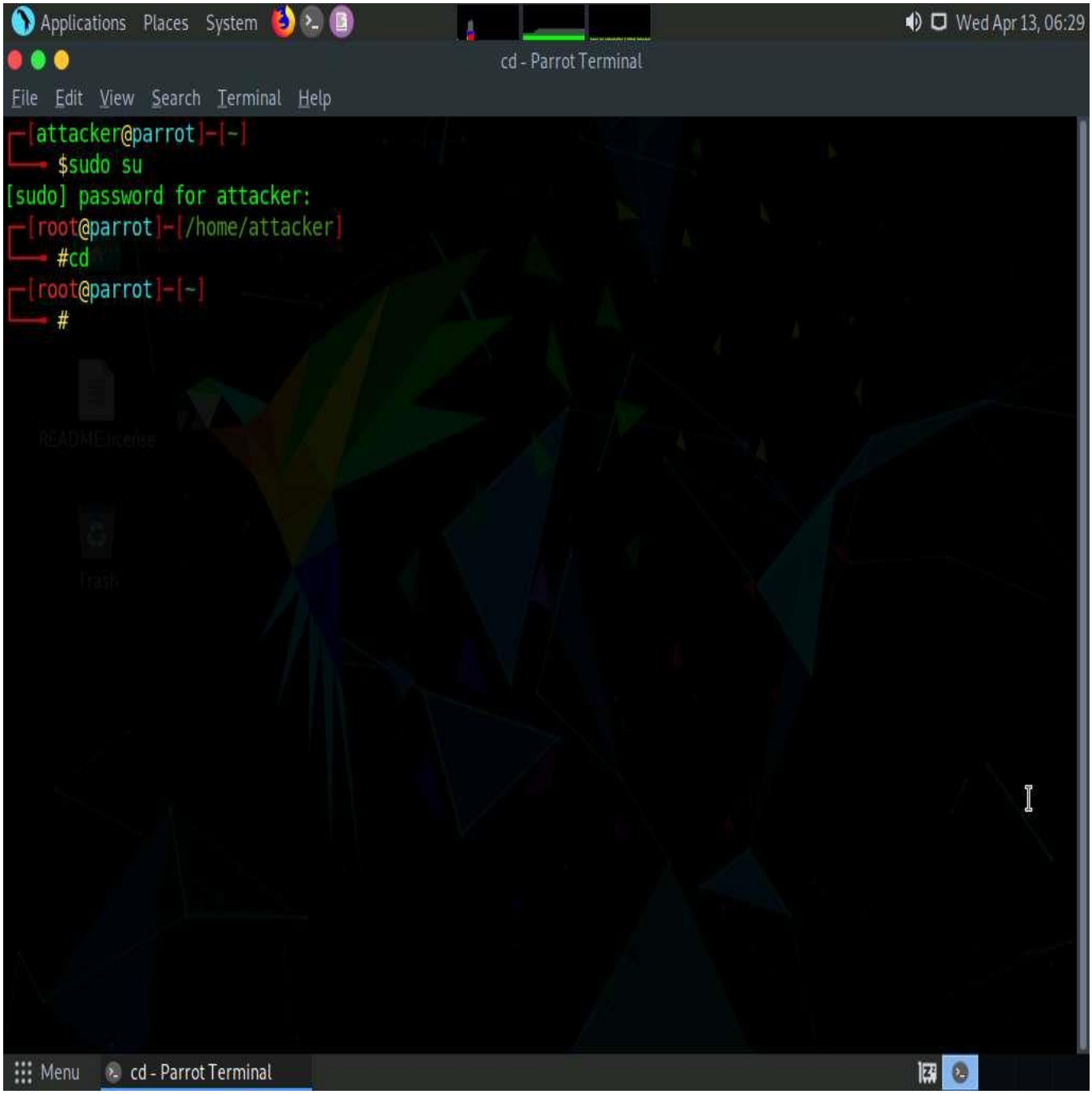
4. Click Parrot Security to switch to the **Parrot Security** machine.
5. Click the **MATE Terminal** icon at the top of the **Desktop** window to open a **Terminal** window.



6. ☐ The **terminal** window appears. In the terminal window, type **sudo su** and press **Enter** to run the programs as a root user.
7. ☐ In the **[sudo] password for attacker** field, type **toor** as a password and press **Enter**.

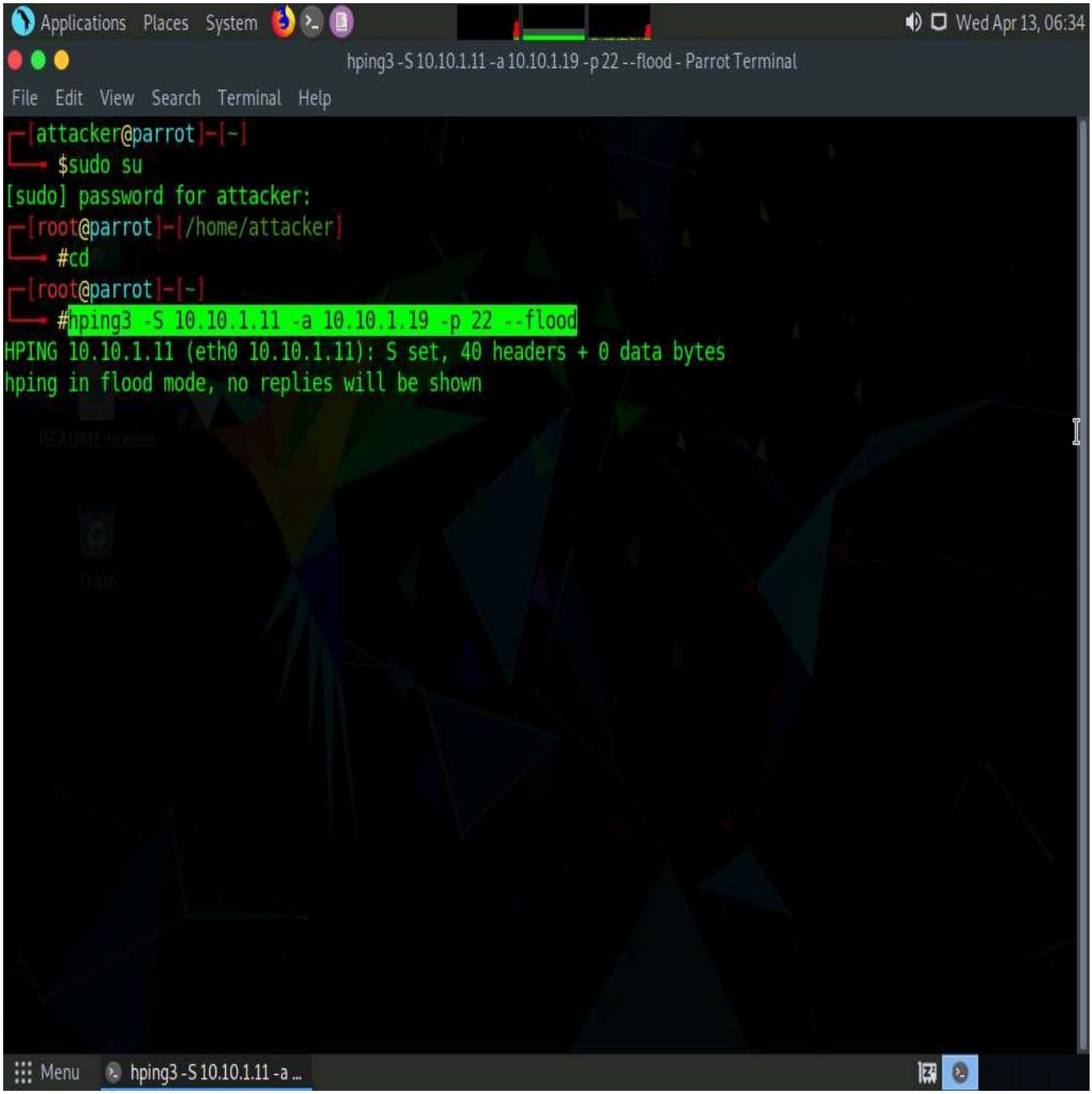
The password that you type will not be visible.

8. ☐ Now, type **cd** and press **Enter** to jump to the root directory.



9. A **Parrot Terminal** window appears; type **hping3 -S (Target IP Address) -a (Spoofable IP Address) -p 22 --flood** and press **Enter**.

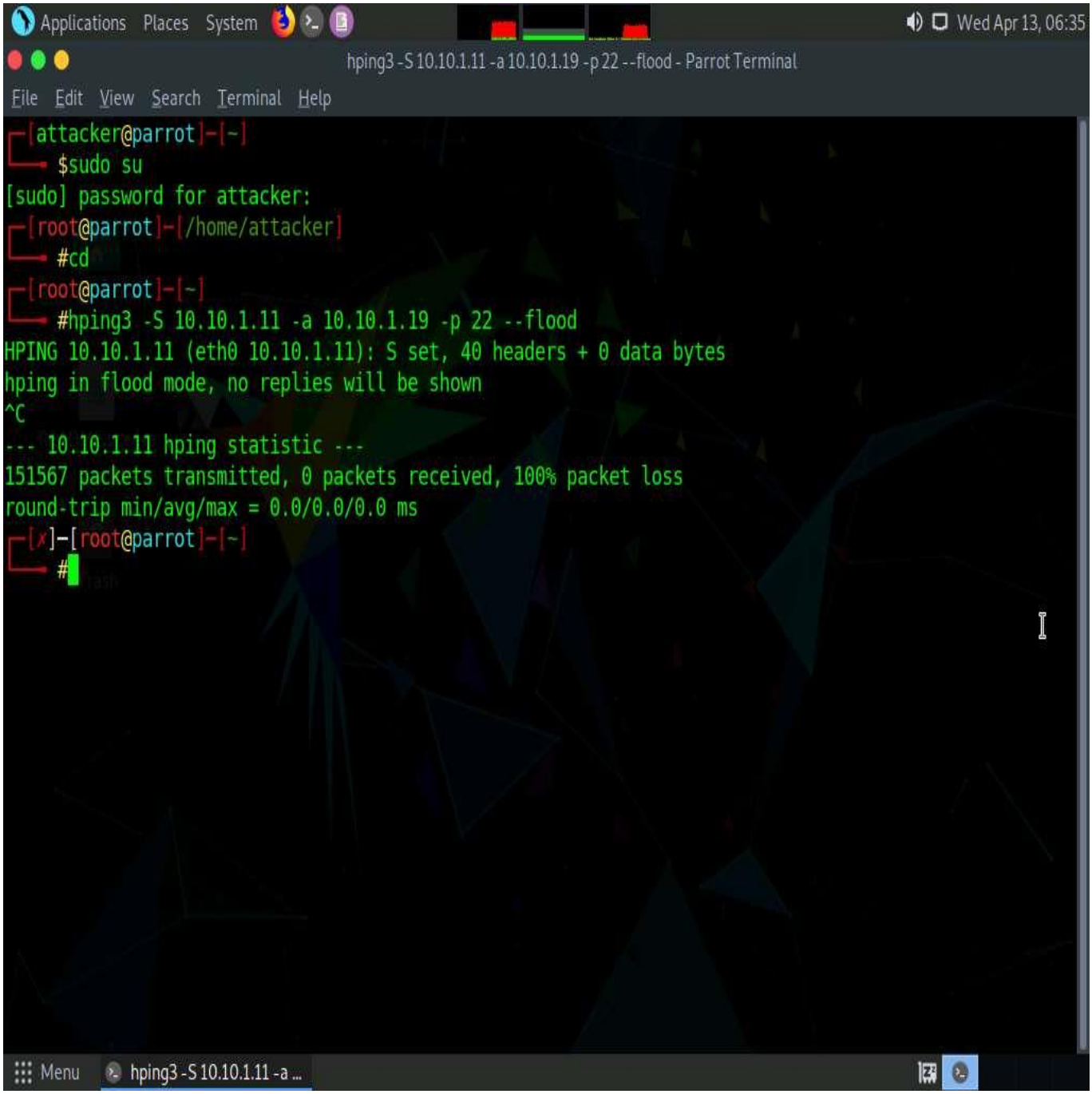
Here, the target IP address is **10.10.1.11 [Windows 11]**, and the spoofable IP address is **10.10.1.19 [Windows Server 2019]**
-S: sets the SYN flag; **-a**: spoofs the IP address; **-p**: specifies the destination port; and **--flood**: sends a huge number of packets.



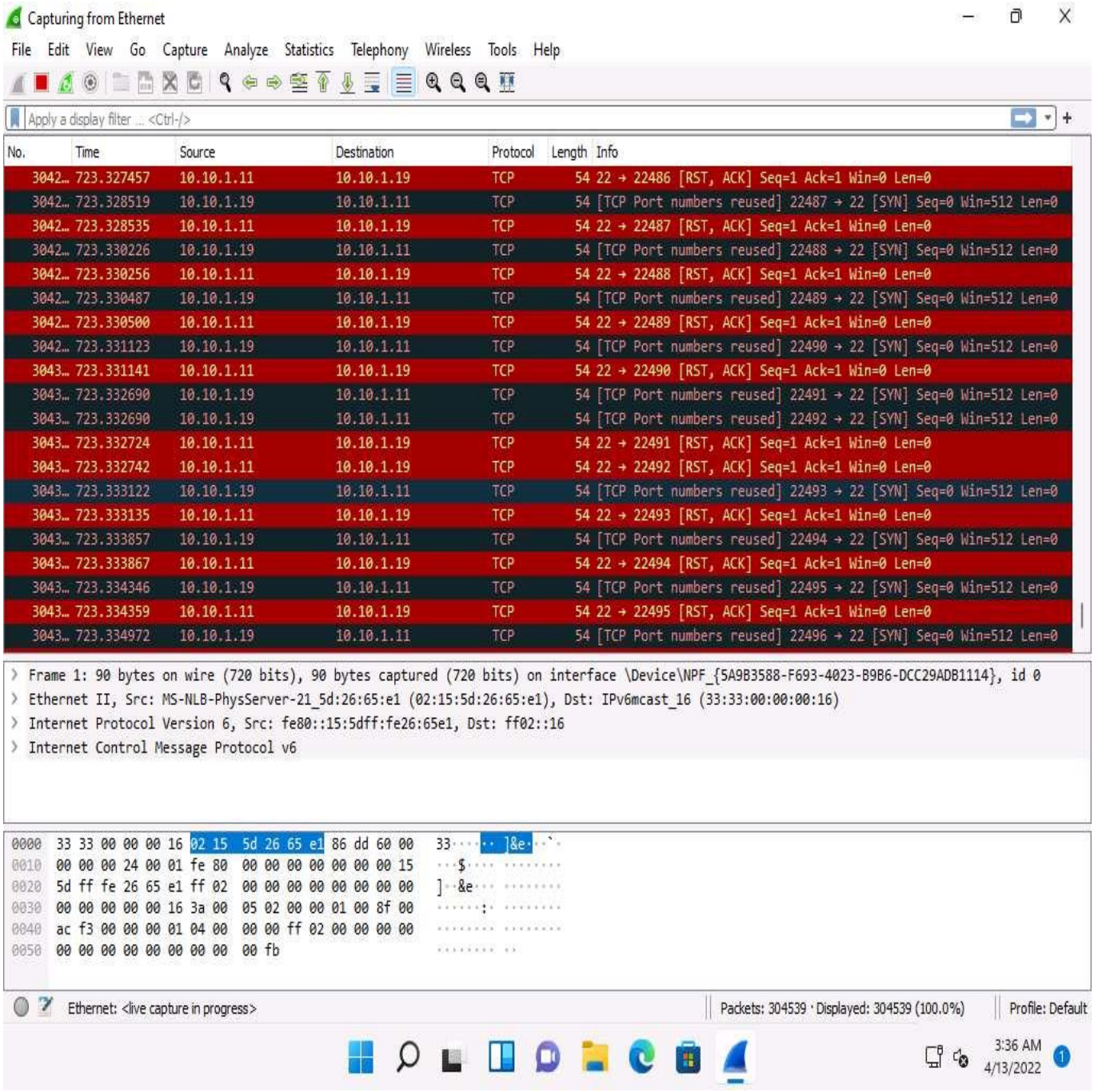
10. ☐ This command initiates the SYN flooding attack on the **Windows 11** machine. After a few seconds, press **Ctrl+C** to stop the SYN flooding of the target machine.

If you send the SYN packets for a long period, then the target system may crash.

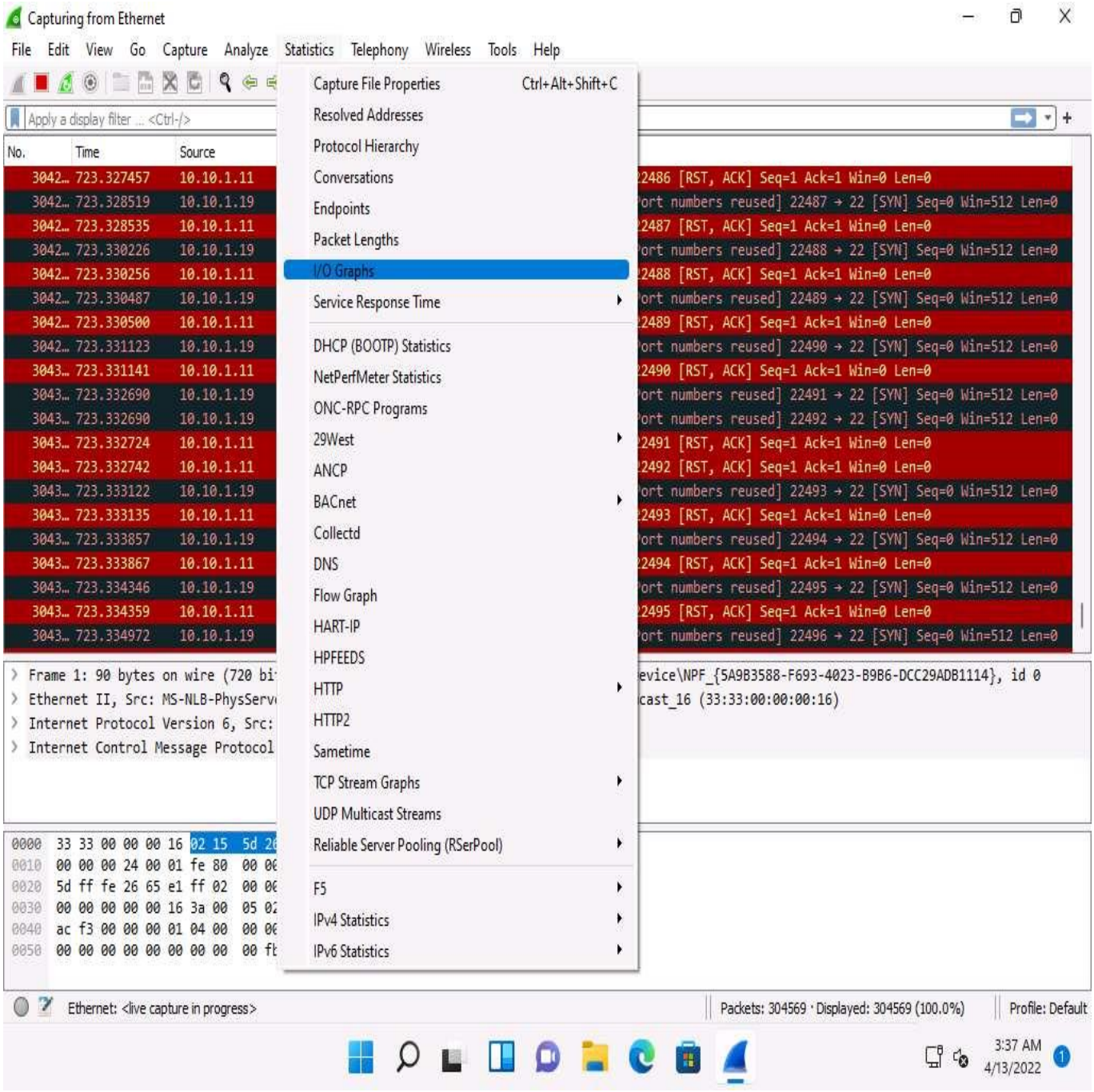
11. ☐ Observe how, in very little time, the huge number of packets are sent to the target machine.



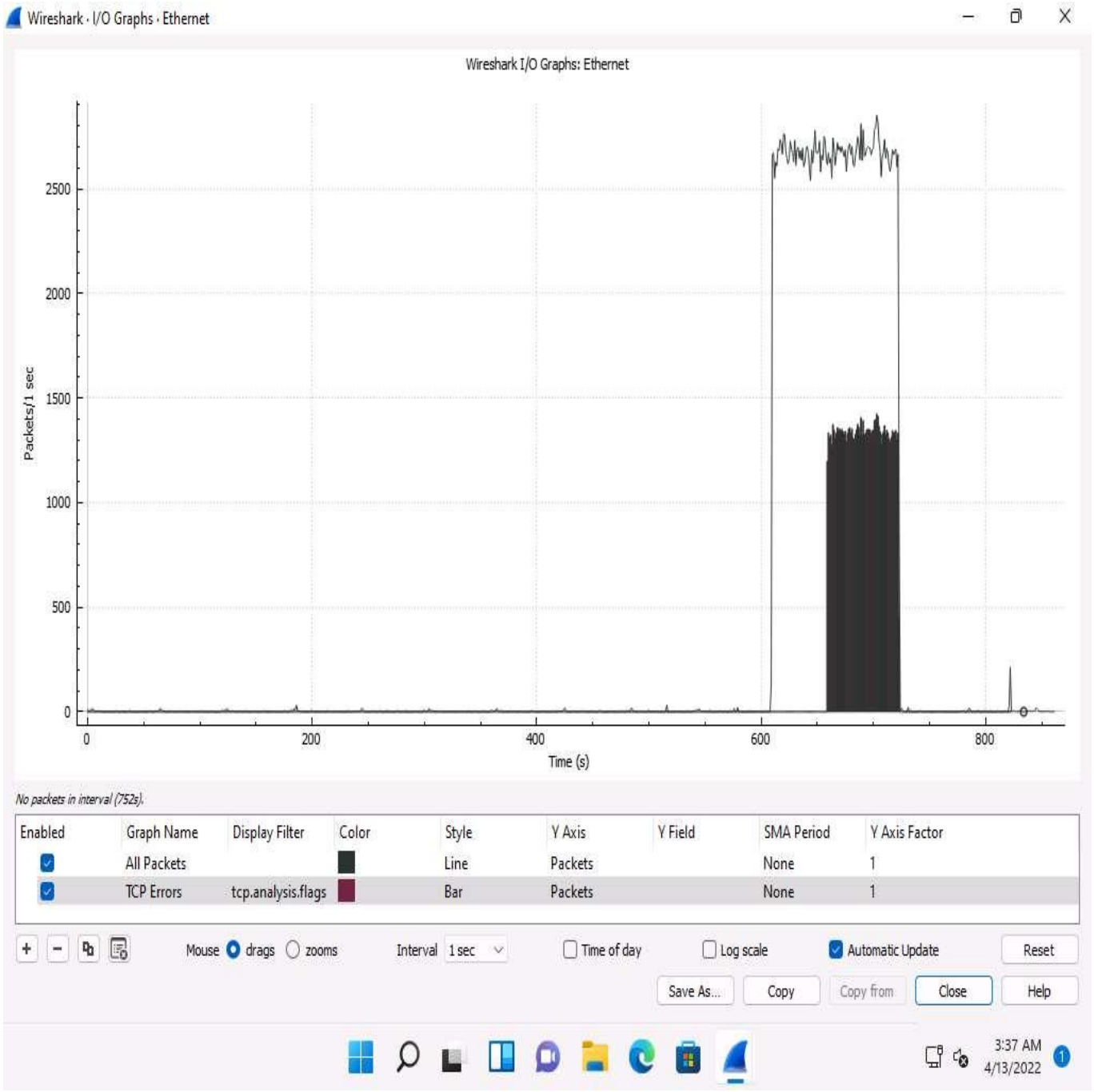
12. ☐ **hping3** floods the victim machine by sending bulk **SYN packets** and **overloading** the victim's resources.
13. ☐ Click Windows 11 to switch to the **Windows 11** machine and observe the TCP-SYN packets captured by **Wireshark**.



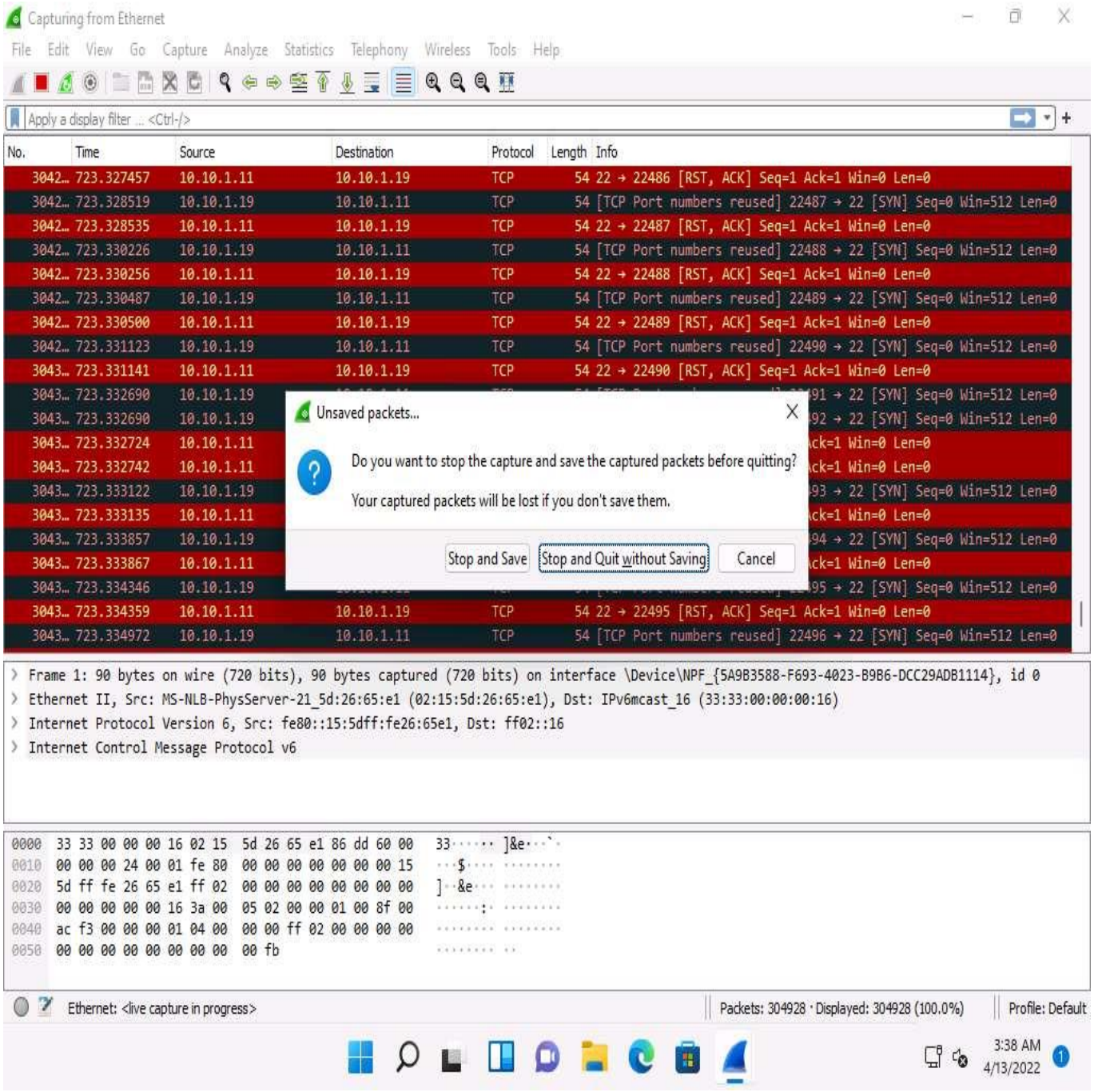
14. Now, observe the graphical view of the captured packets. To do so, click **Statistics** from the menu bar, and then click the **I/O Graph** option from the drop-down list.



15. ☐ The **Wireshark** . **IO Graphs** . **Ethernet** window appears, displaying the graphical view of the captured packets. Observe the huge number of TCP packets captured by Wireshark, as shown in the screenshot.

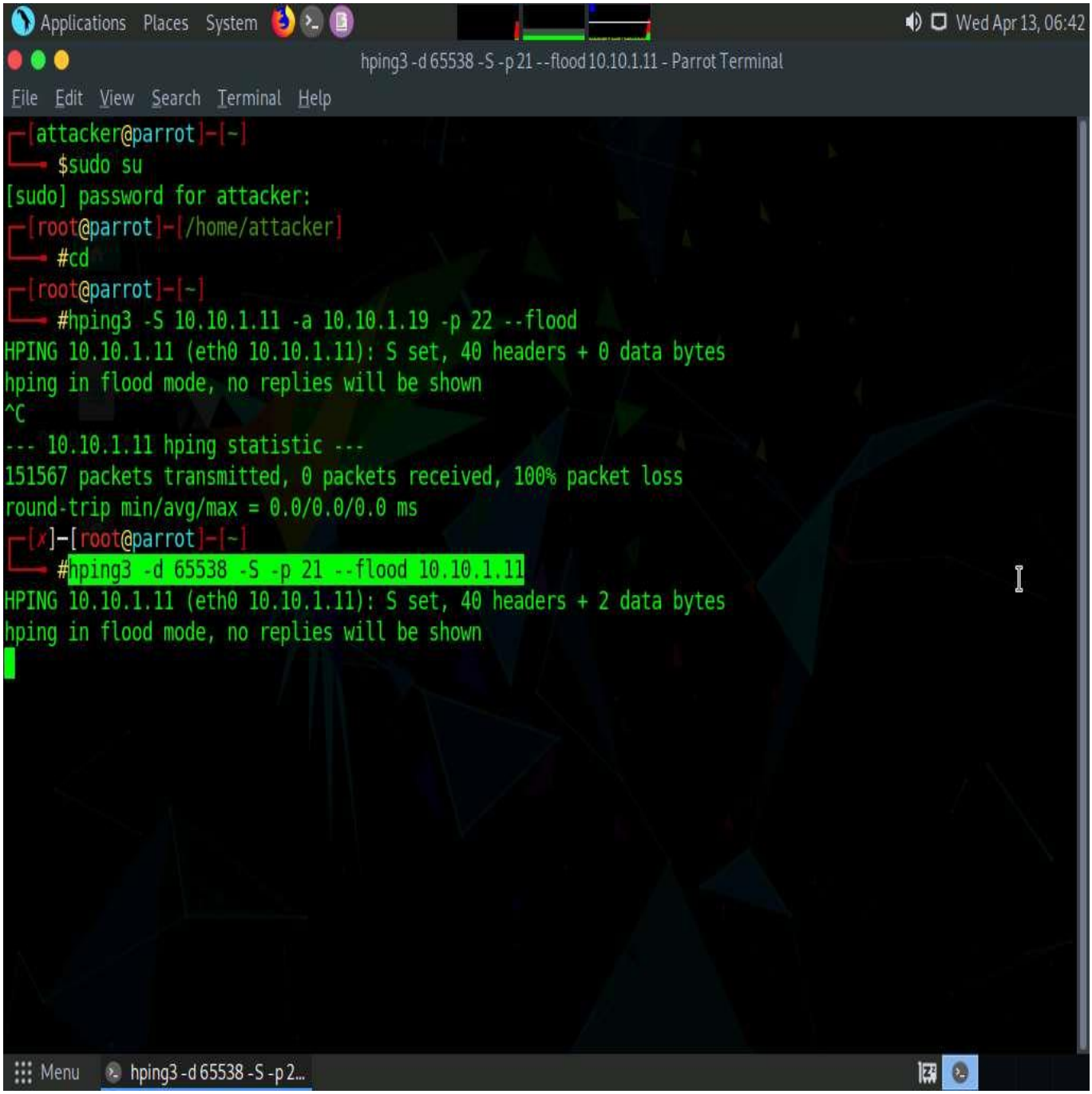


16. ☐ After analyzing the **I/O Graph**, click **Close** to close the **Wireshark** . **IO Graphs** . **Ethernet** window.
17. ☐ Close the **Wireshark** main window. If an **Unsaved packets…** pop-up appears, click **Stop and Quit without Saving**.



18. ☐ Now, we shall perform a PoD attack on the target system.
19. ☐ Now, click Parrot Security to switch to the **Parrot Security** machine. In the **Terminal** window, type **hping3 -d 65538 -S -p 21 --flood (Target IP Address)** (here, the target IP address is **10.10.1.11 [Windows 11]**) and press **Enter**.

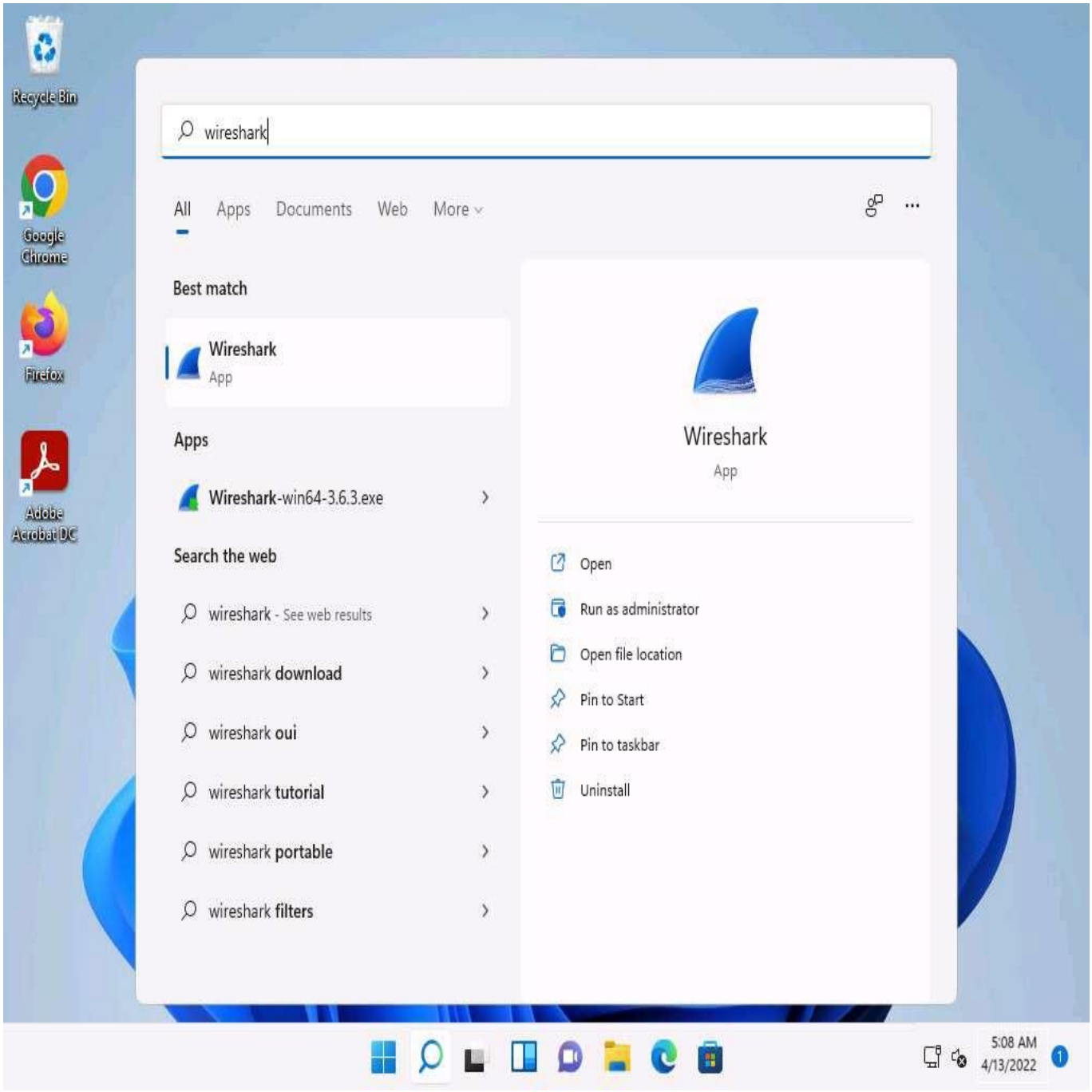
-d: specifies data size; **-S**: sets the SYN flag; **-p**: specifies the destination port; and **--flood**: sends a huge number of packets.



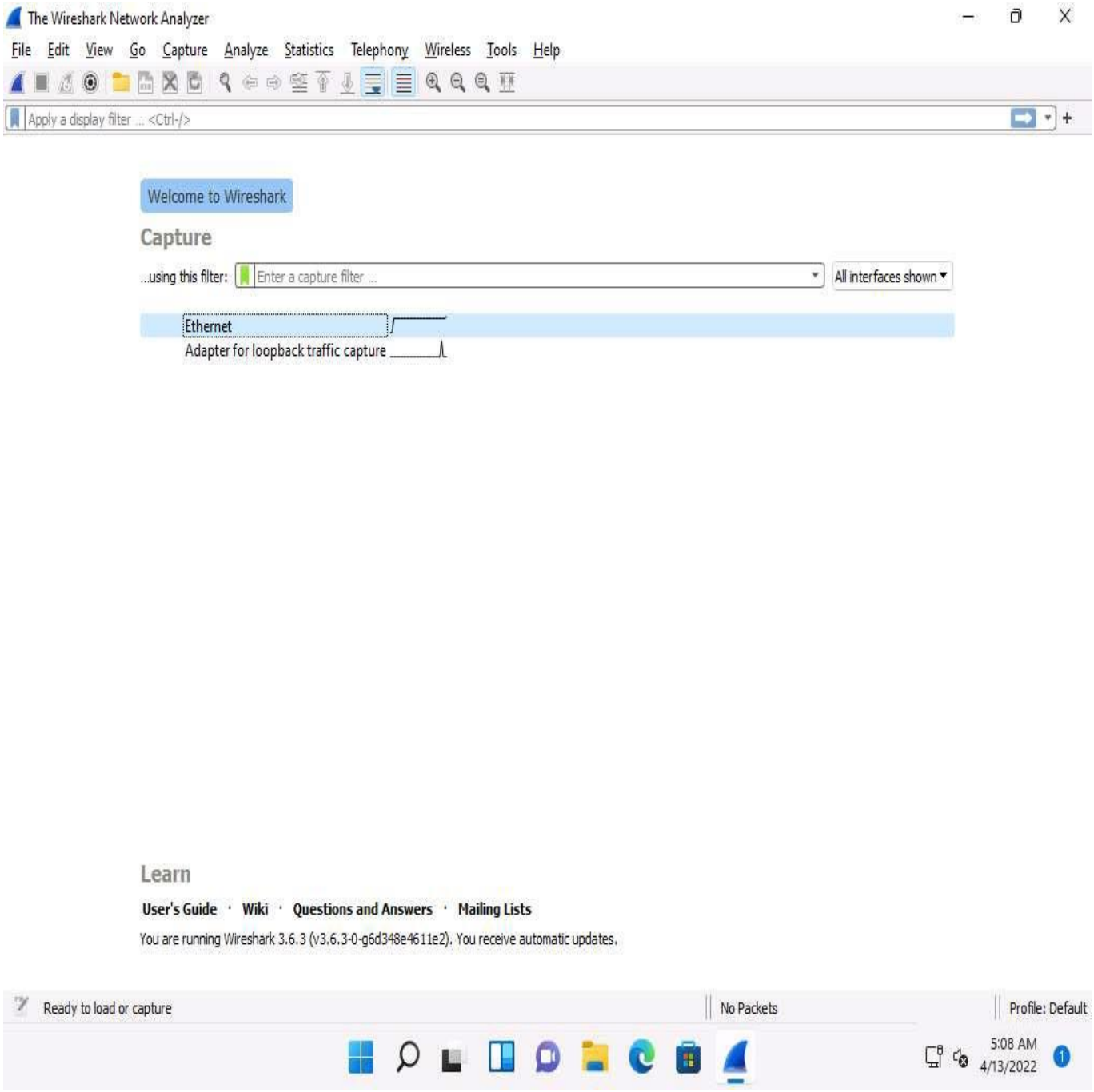
20. ☐ This command initiates the PoD attack on the **Windows 11** machine.

In a PoD attack, the attacker tries to crash, freeze, or destabilize the targeted system or service by sending malformed or oversized packets using a simple ping command.
For example, the attacker sends a packet that has a size of 65,538 bytes to the target web server. This packet size exceeds the size limit prescribed by RFC 791 IP, which is 65,535 bytes. The receiving system's reassembly process might cause the system to crash.

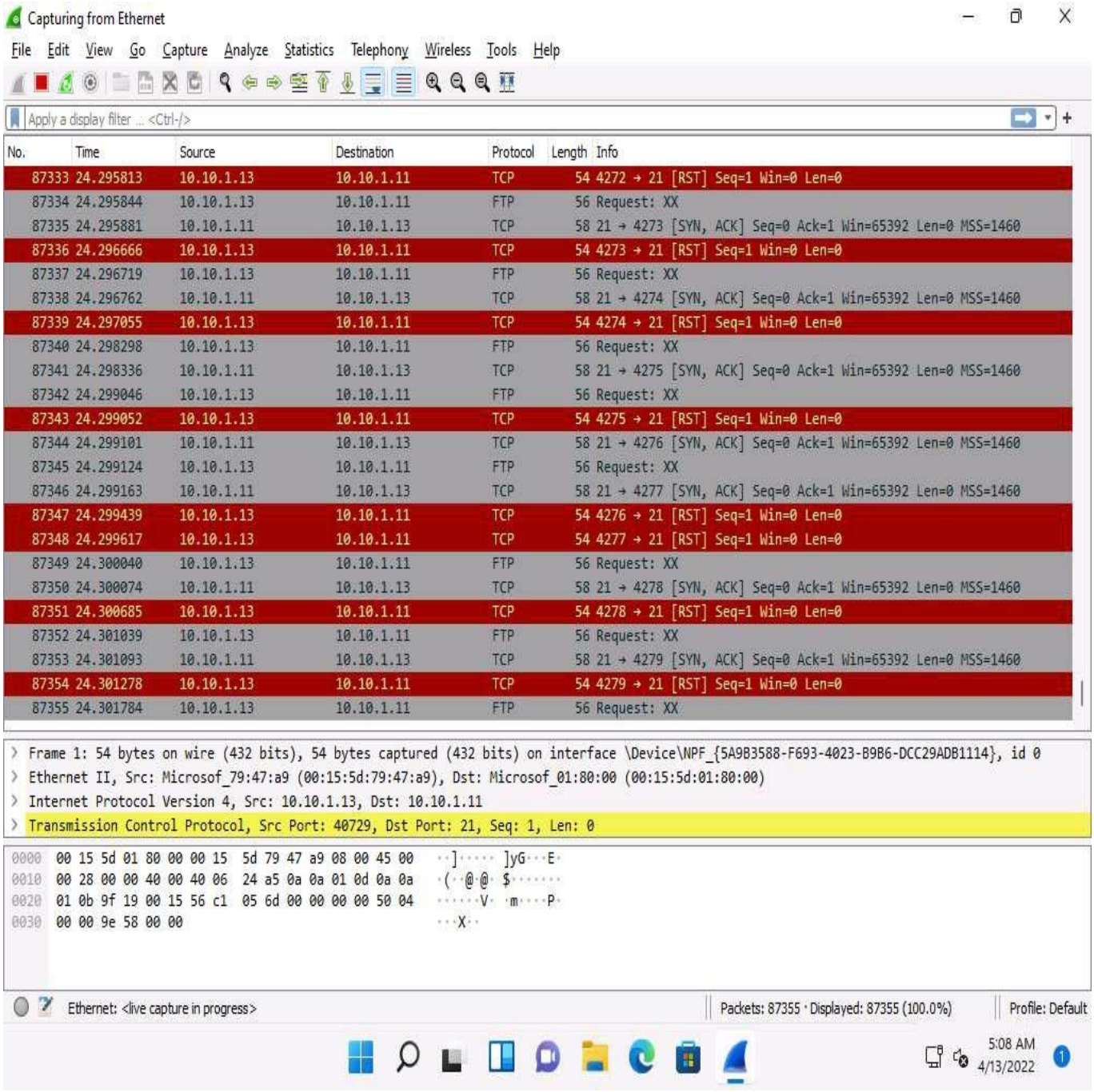
21. ☐ **hping3** floods the victim machine by sending bulk packets, and thereby overloading the victim's resources.
22. ☐ Click Windows 11 to switch to the **Windows 11** machine.
23. ☐ Click **Search** icon ( ) on the **Desktop**. Type **wireshark** in the search field, the **Wireshark** appears in the results, click **Open** to launch it.



24. ☐ **The Wireshark Network Analyzer** window appears. Double-click on the primary network interface (here, **Ethernet**) to start capturing the network traffic.



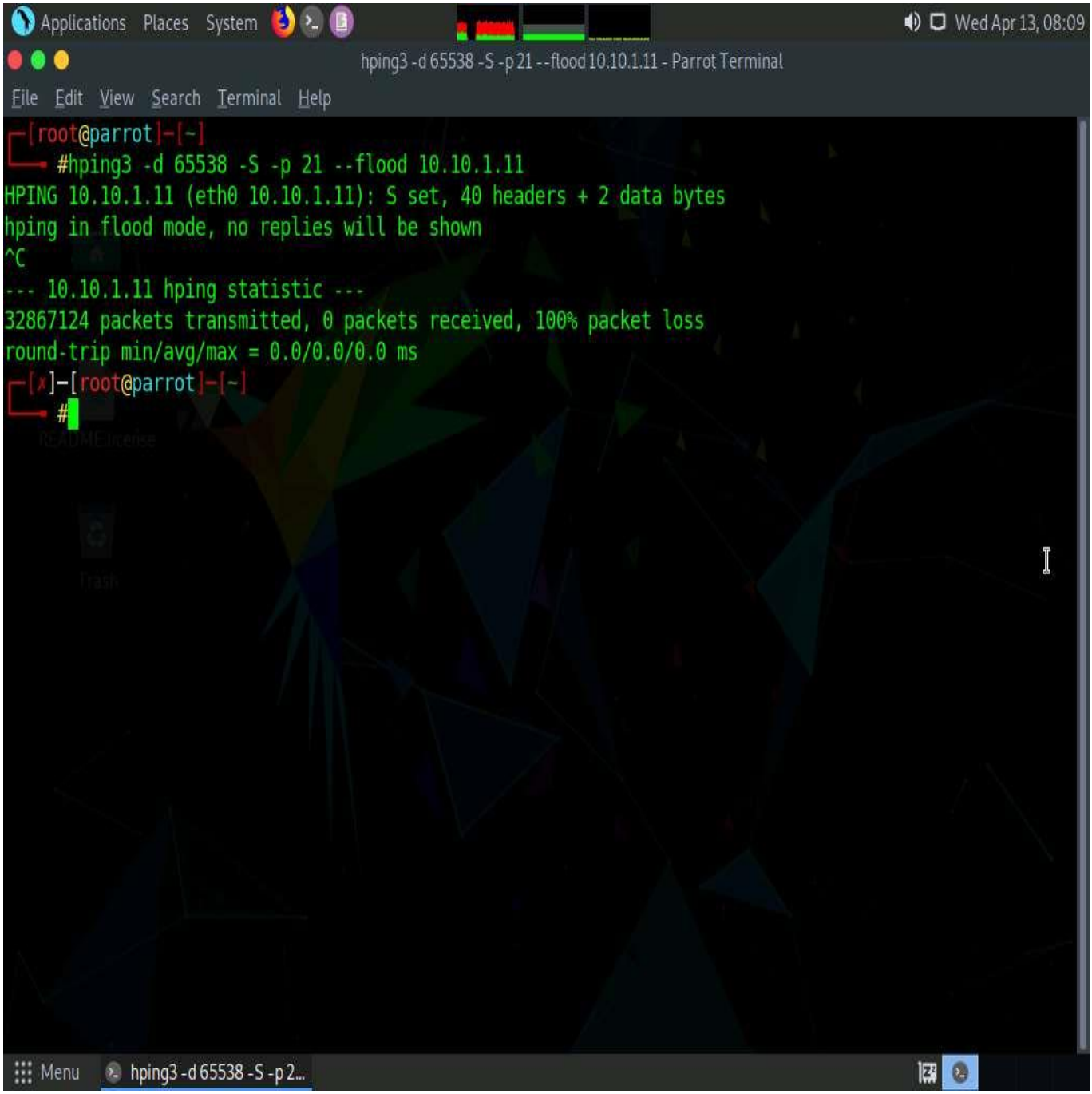
25. ☐ Observe the large number of packets captured by **Wireshark**.



26. ☐ You can observe the degradation in the performance of the system.

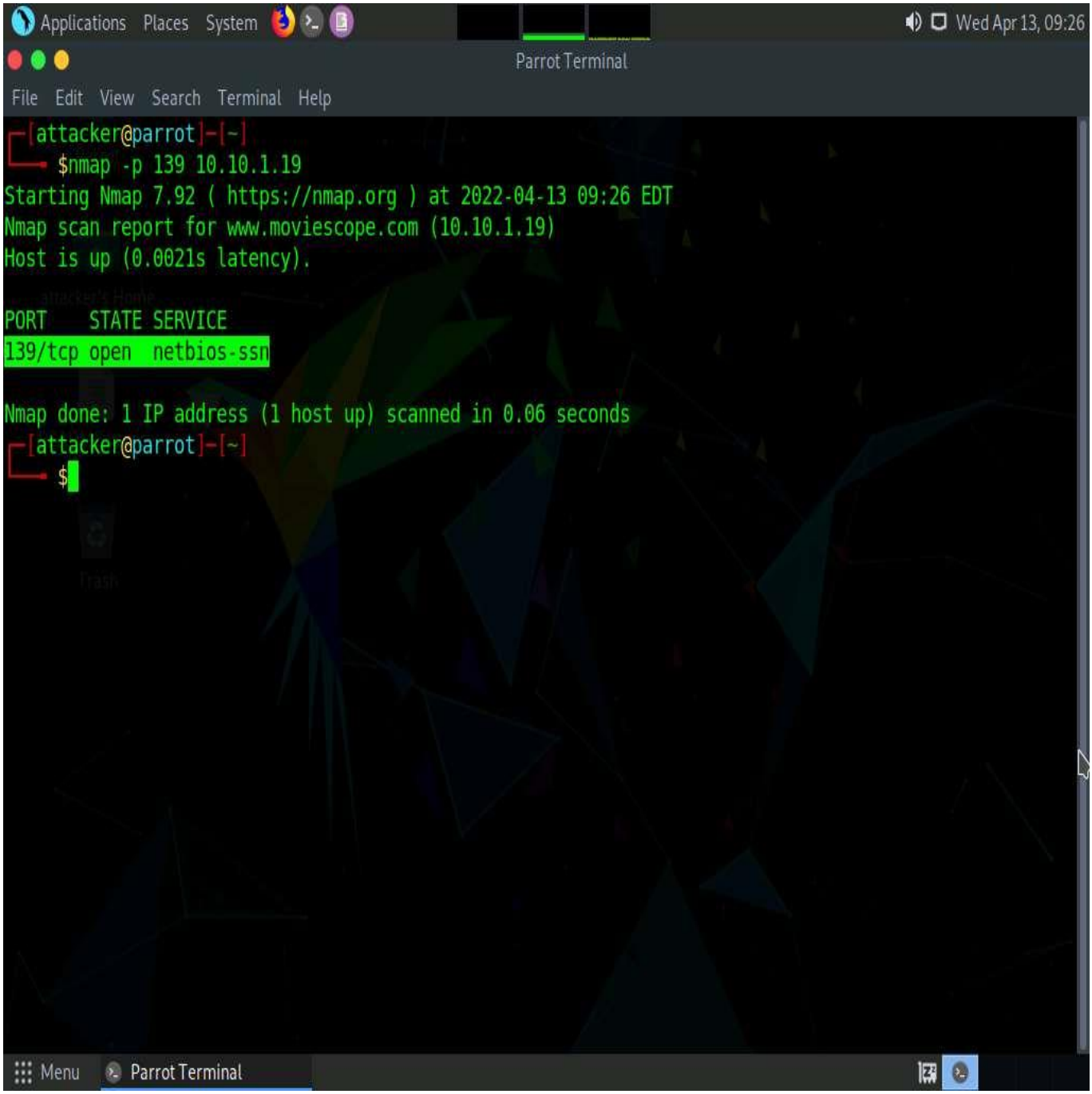
The results might differ when you perform the task.

27. ☐ Click Parrot Security to switch to the **Parrot Security** machine. In the **Terminal** window, press **Ctrl+C** to terminate the PoD attack using hping3.



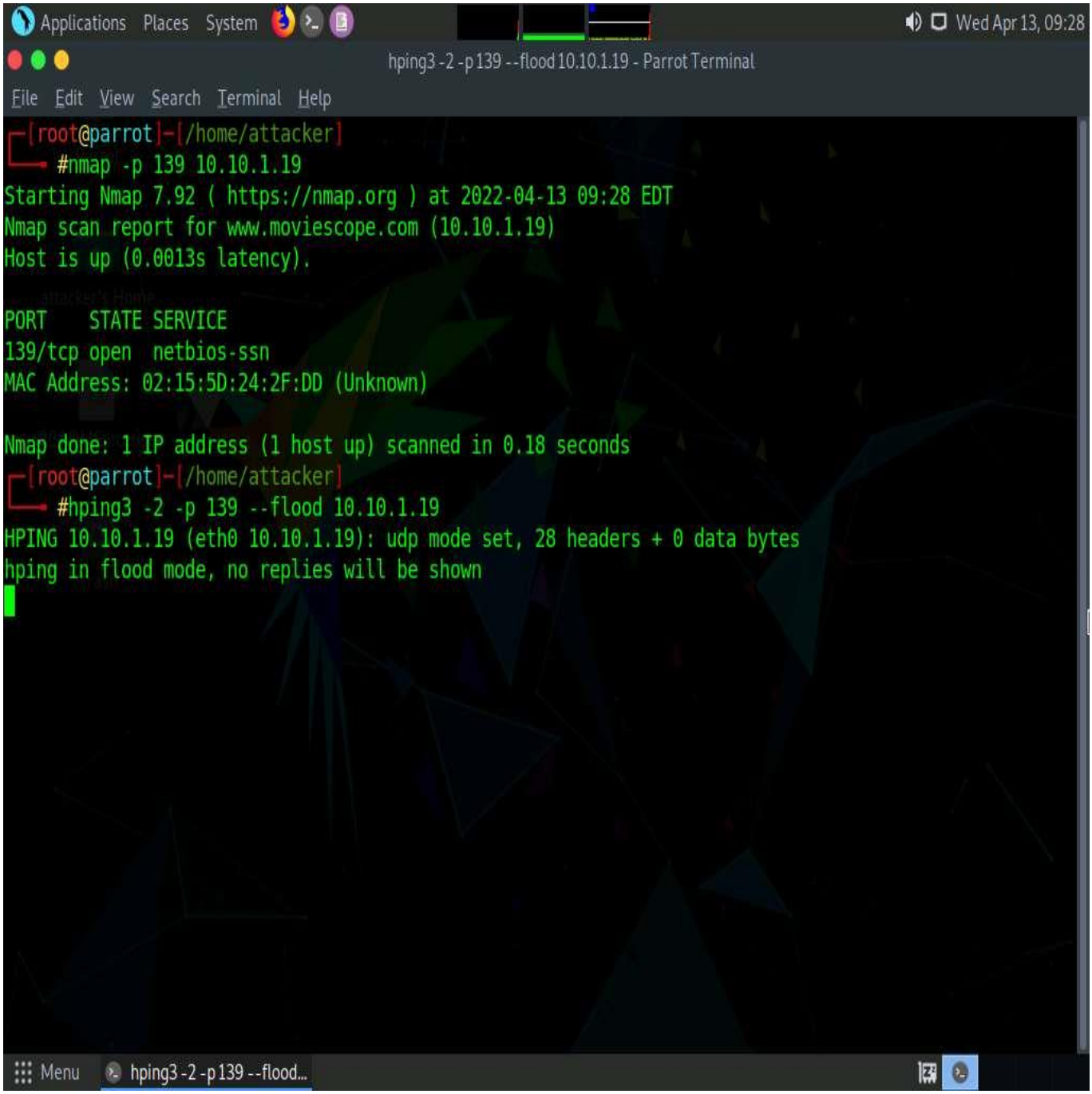
28. ☐ Now, we shall perform a UDP application layer flood attack on the **Windows Server 2019** machine using NetBIOS port 139. To do so, first, determine whether NetBIOS port 139 is open or not.
29. ☐ In the terminal window, type **nmap -p 139 (Target IP Address)** (here, the target IP address is **10.10.1.19 [Windows Server 2019]**) and press **Enter**.

Here, we will use NetBIOS port 139 to perform a UDP application layer flood attack.

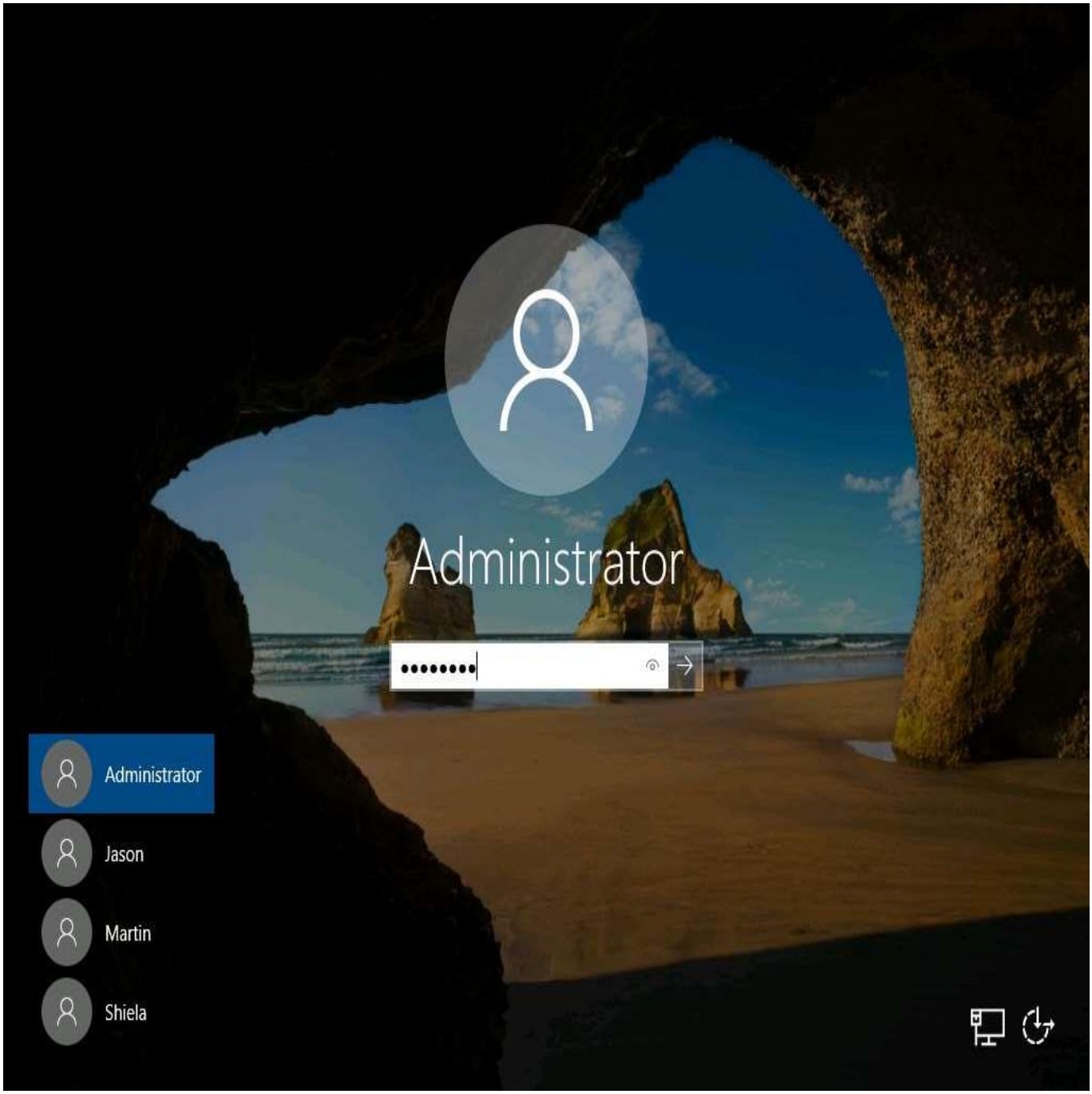


30. Now, type **hping3 -2 -p 139 --flood (Target IP Address)** (here, the target IP address is **10.10.1.19 [Windows Server 2019]**) and press **Enter**.

-2: specifies the UDP mode; **-p**: specifies the destination port; and **--flood**: sends a huge number of packets.

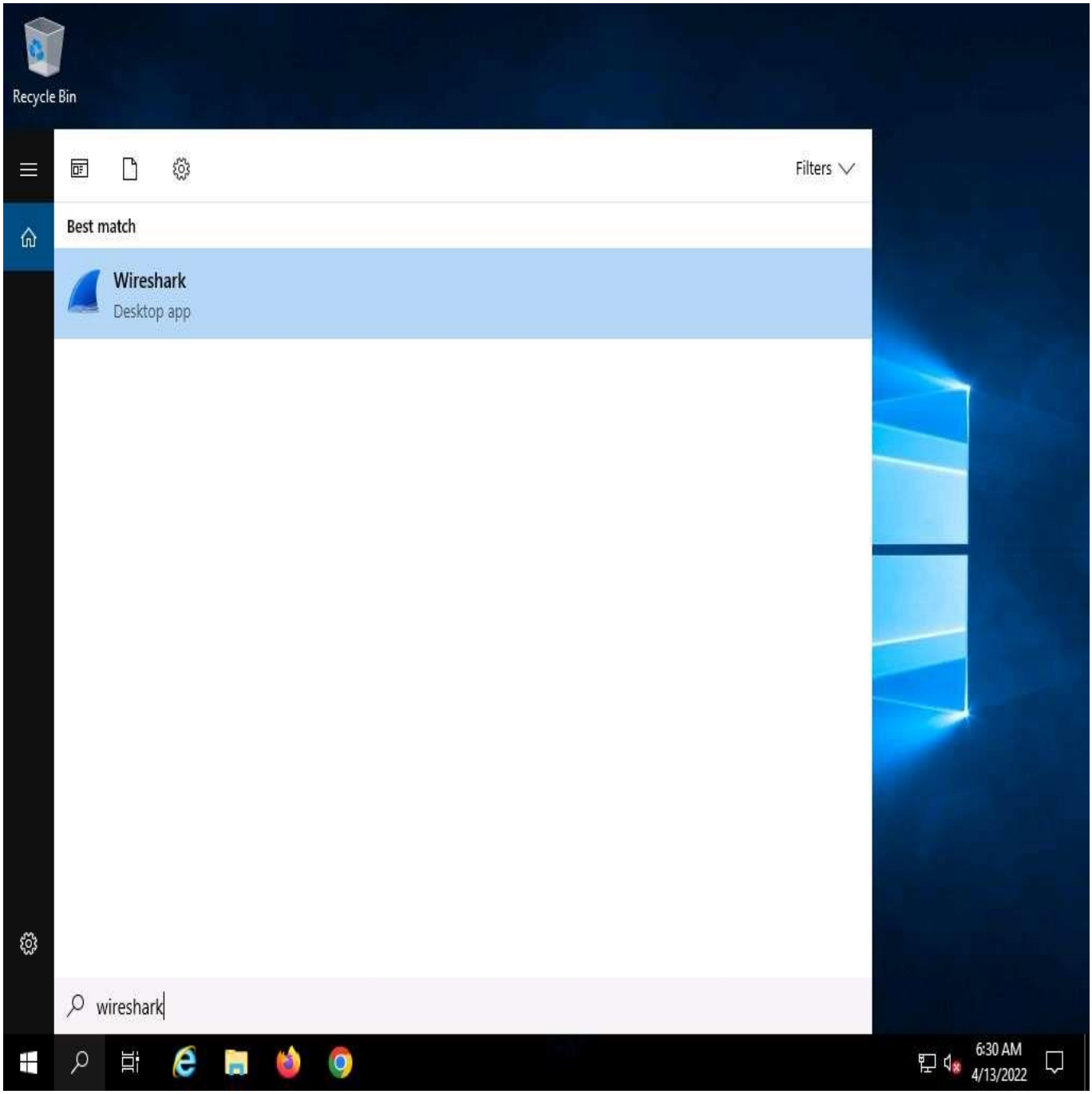


31. Click Windows Server 2019 to switch to the **Windows Server 2019** machine, click Ctrl+Alt+Delete to activate the machine. By default, **Administrator** account is selected, click Pa$$w0rd to enter the password and press **Enter** to log in.



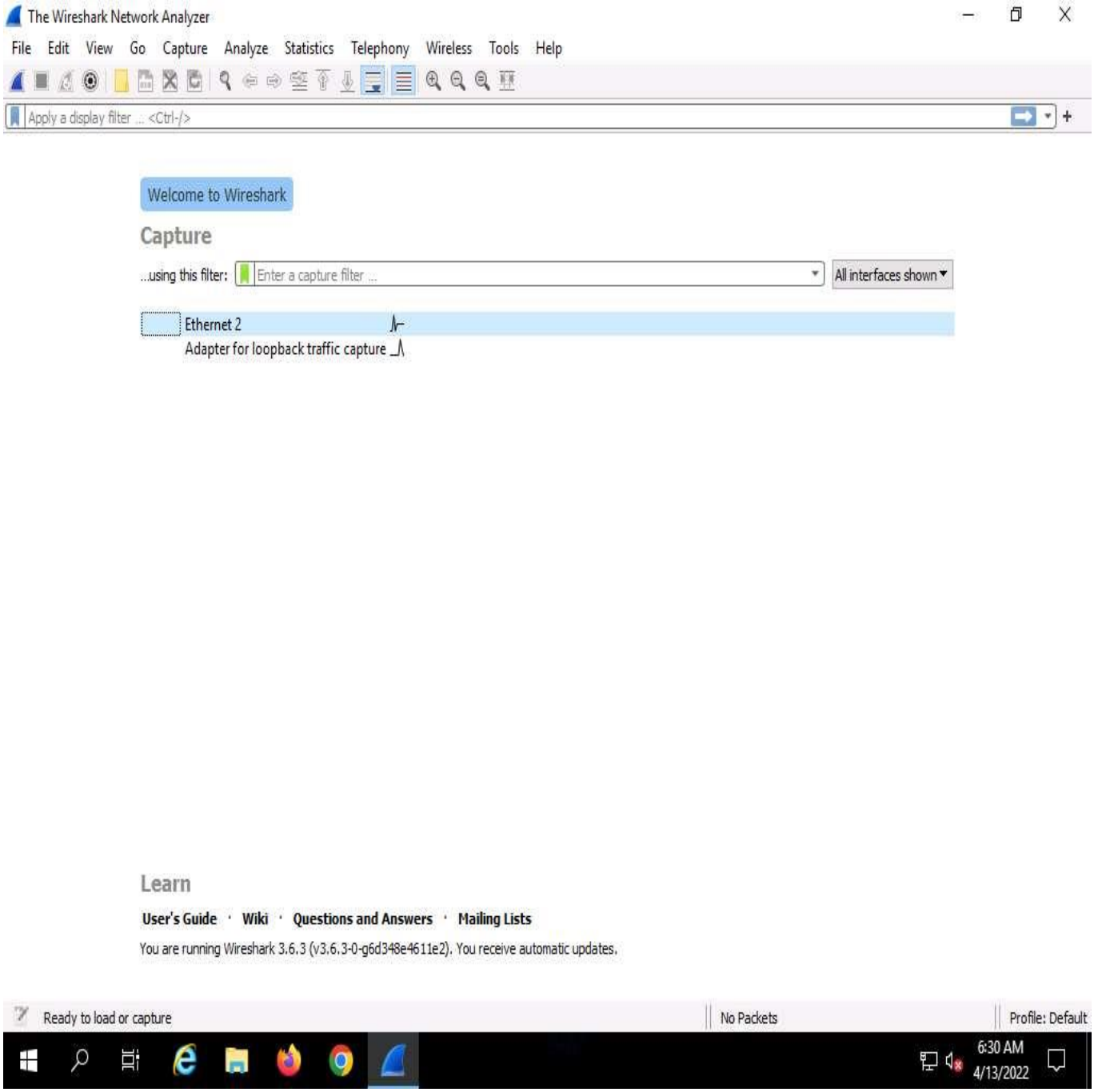
32. ☐ In the **Type here to search** field on the **Desktop**, type **wireshark** in the search field, the **Wireshark** appears in the results, click **Wireshark** to launch it.

You might experience degradation in the **Window Server 2019** machine's performance.

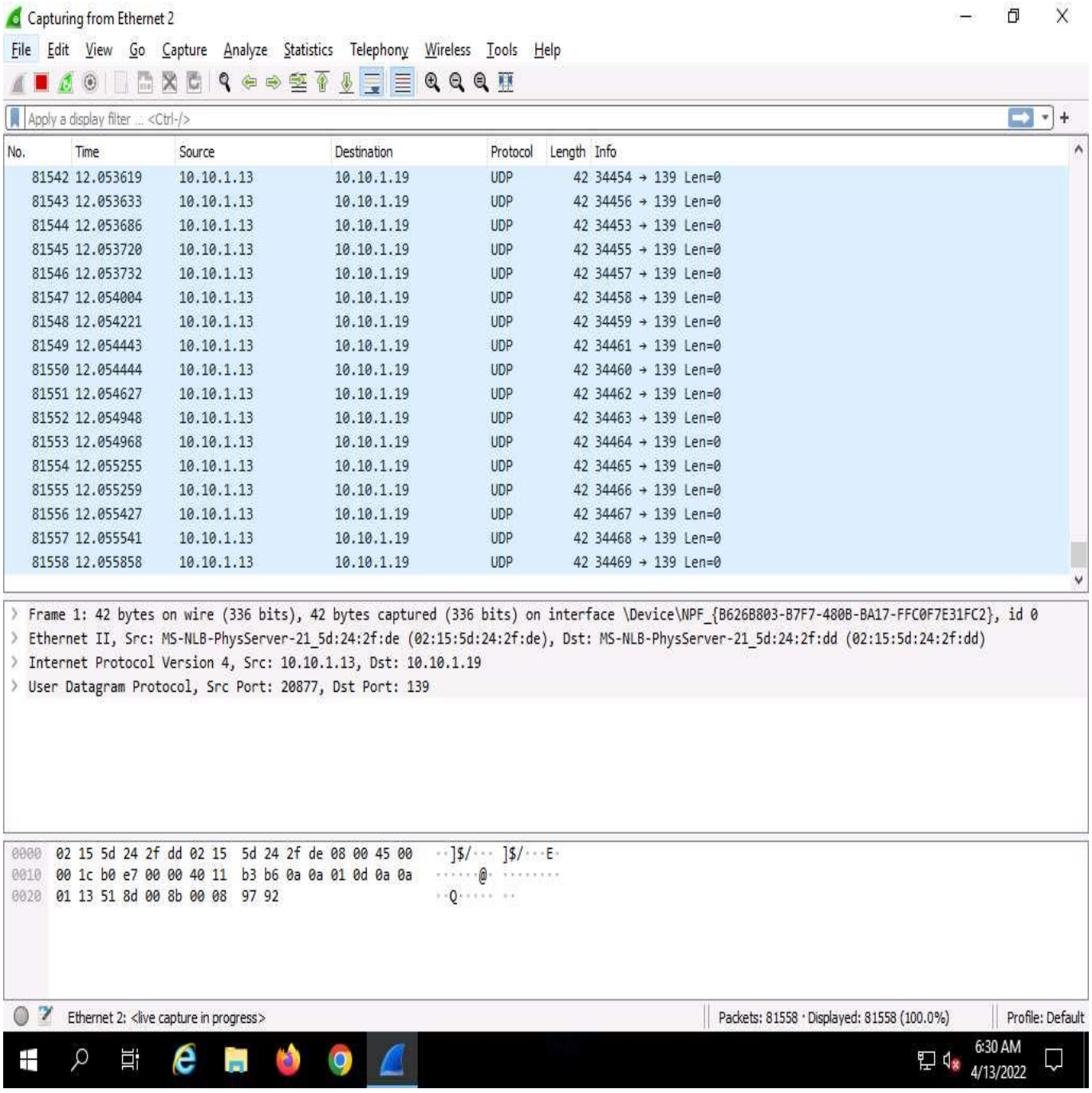


33. ☐ **The Wireshark Network Analyzer** window appears. Double-click on the primary network interface (here, **Ethernet 2**) to start capturing the network traffic.

The network interface might differ when you perform the task.



34. ☐ **Wireshark** displays the network's flow of traffic. Here, observe the huge number of **UDP** packets coming from the **Source** IP address **10.10.1.13** via port **139**.

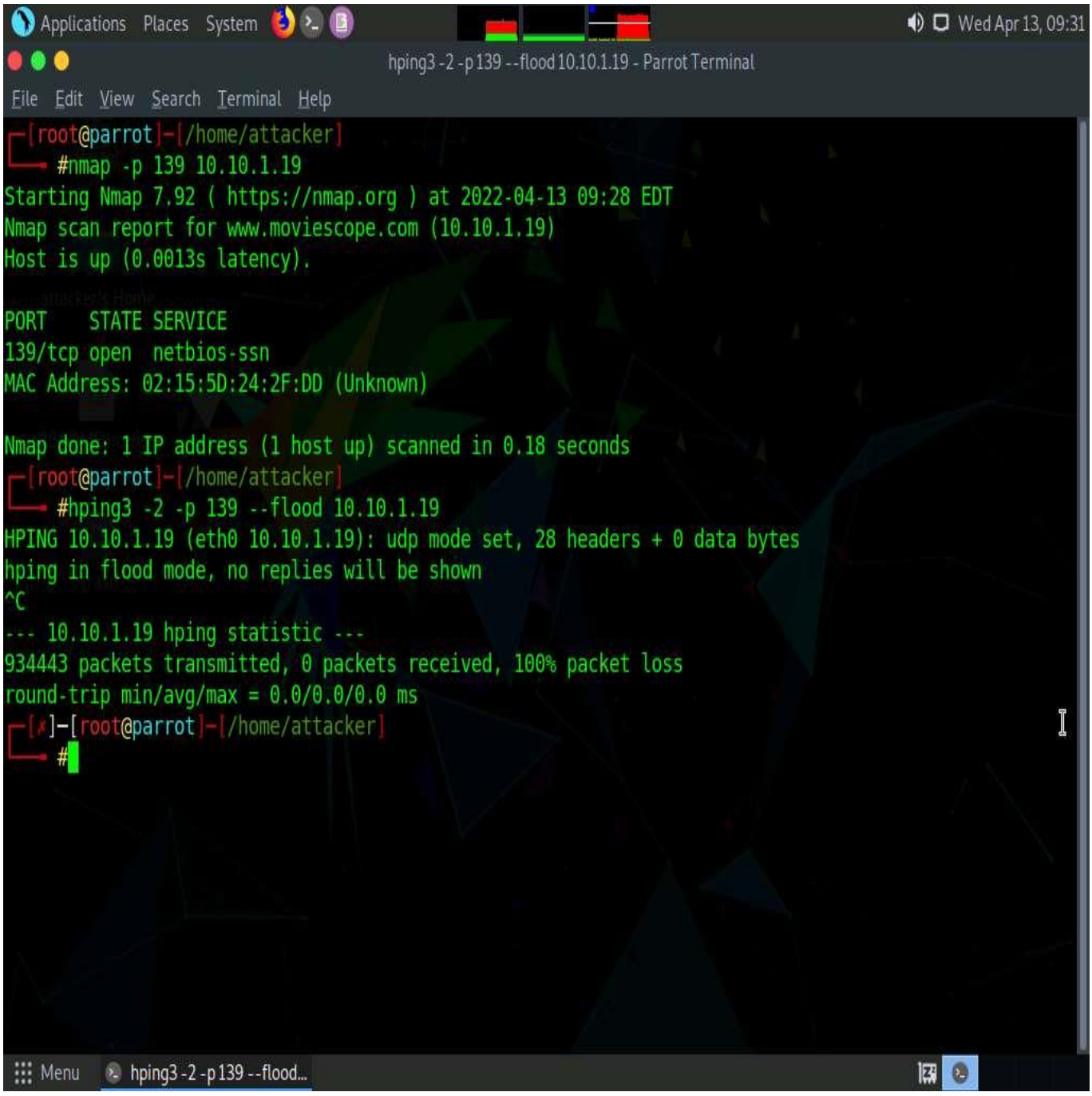


35. Click Parrot Security to switch to the **Parrot Security** machine. In the **Terminal** window, press **Ctrl+C** to terminate the DoS attack.

Here, we have used NetBIOS port 139 to perform a UDP application layer flood attack. Similarly, you can employ other application layer protocols to perform a UDP application layer flood attack on a target network.
Some of the UDP based application layer protocols that attackers can employ to flood target networks include:

- **CharGEN** (Port 19)
- **SNMPv2** (Port 161)
- **QOTD** (Port 17)
- **RPC** (Port 135)
- **SSDP** (Port 1900)
- **CLDAP** (Port 389)
- **TFTP** (Port 69)

- **NetBIOS** (Port 137,138,139)
- **NTP** (Port 123)
- **Quake Network Protocol** (Port 26000)
- **VoIP** (Port 5060)



36. ☐ This concludes the demonstration of how to perform DoS attacks (SYN flooding, PoD attacks, and UDP Application Layer Flood Attacks) on a target host using hping3.
37. ☐ Close all open windows and document all the acquired information.

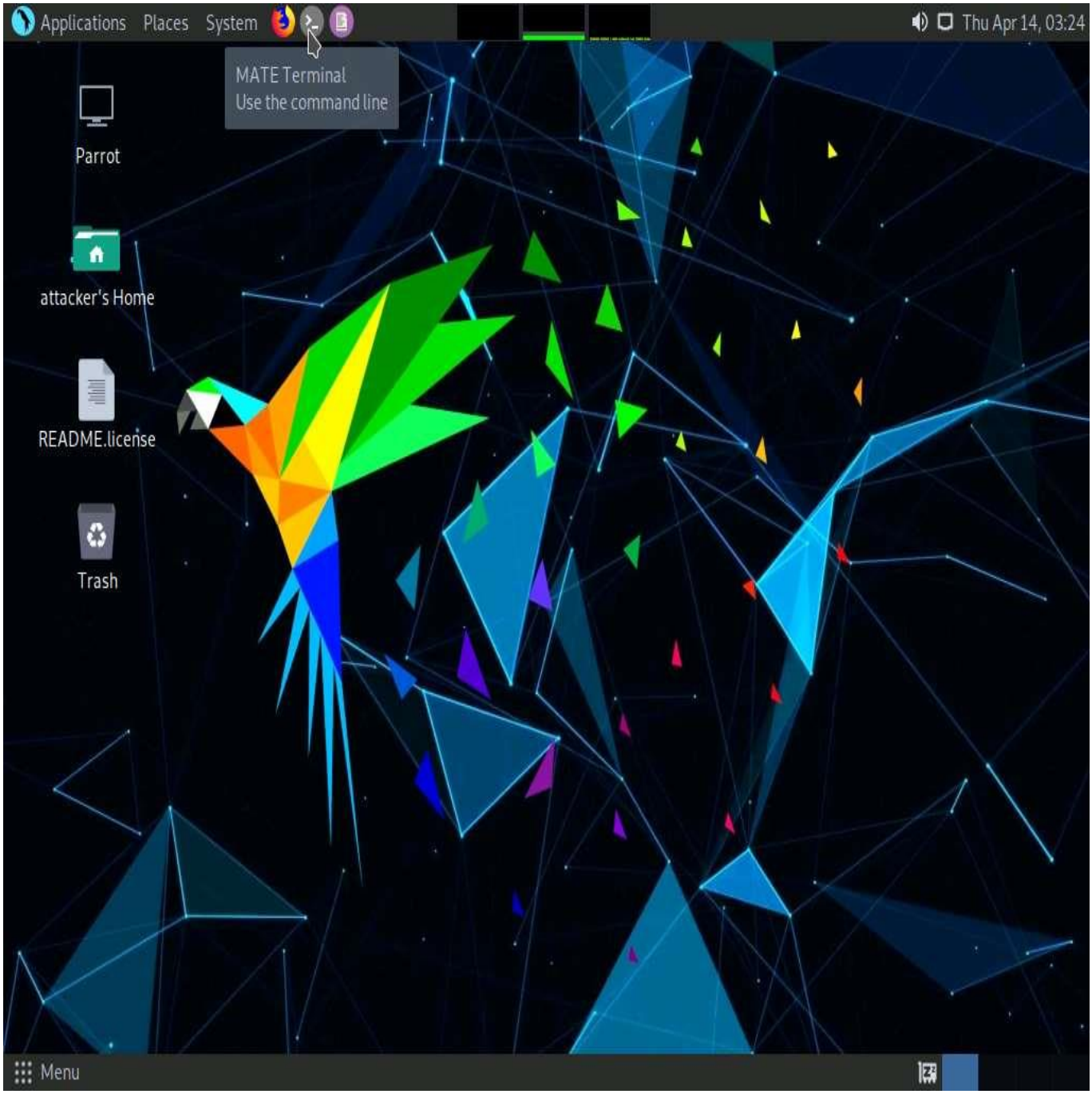
Task 3: Perform a DoS Attack using Raven-storm

Raven-Storm is a DDoS tool for penetration testing that features Layer 3, Layer 4, and Layer 7 attacks. It is written in python3 and is effective and powerful in shutting down hosts and servers. It can be used to perform strong attacks and can be optimized for non typical targets.

Here, we will use Raven-storm tool to perform a DoS attack.

1. Click Parrot Security switch to the **Parrot Security** machine.
2. Click the **MATE Terminal** icon at the top of the **Desktop** window to open a **Terminal** window.

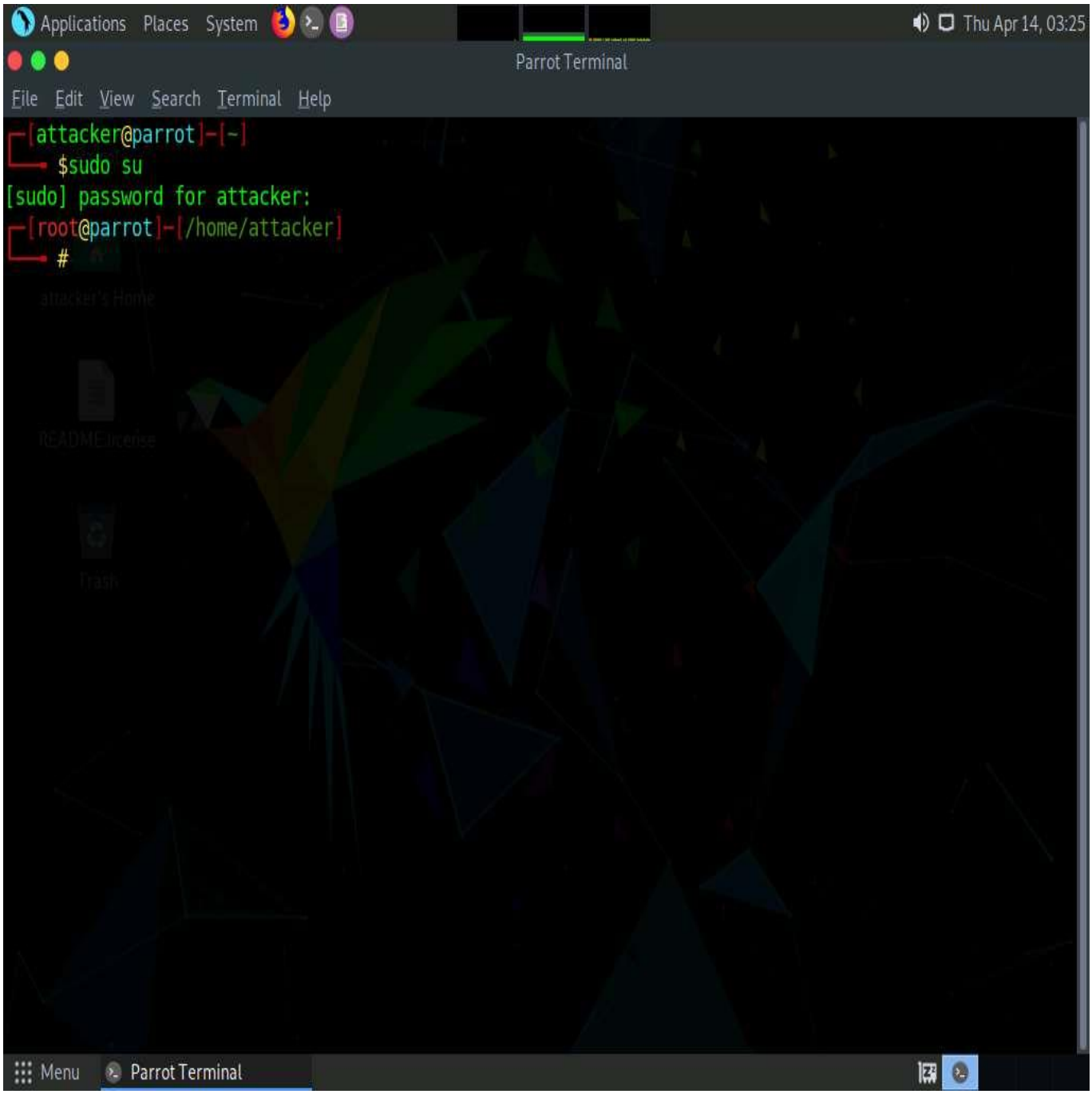
If a **Question** pop-up window appears asking for you to update the machine, click **No** to close the window.



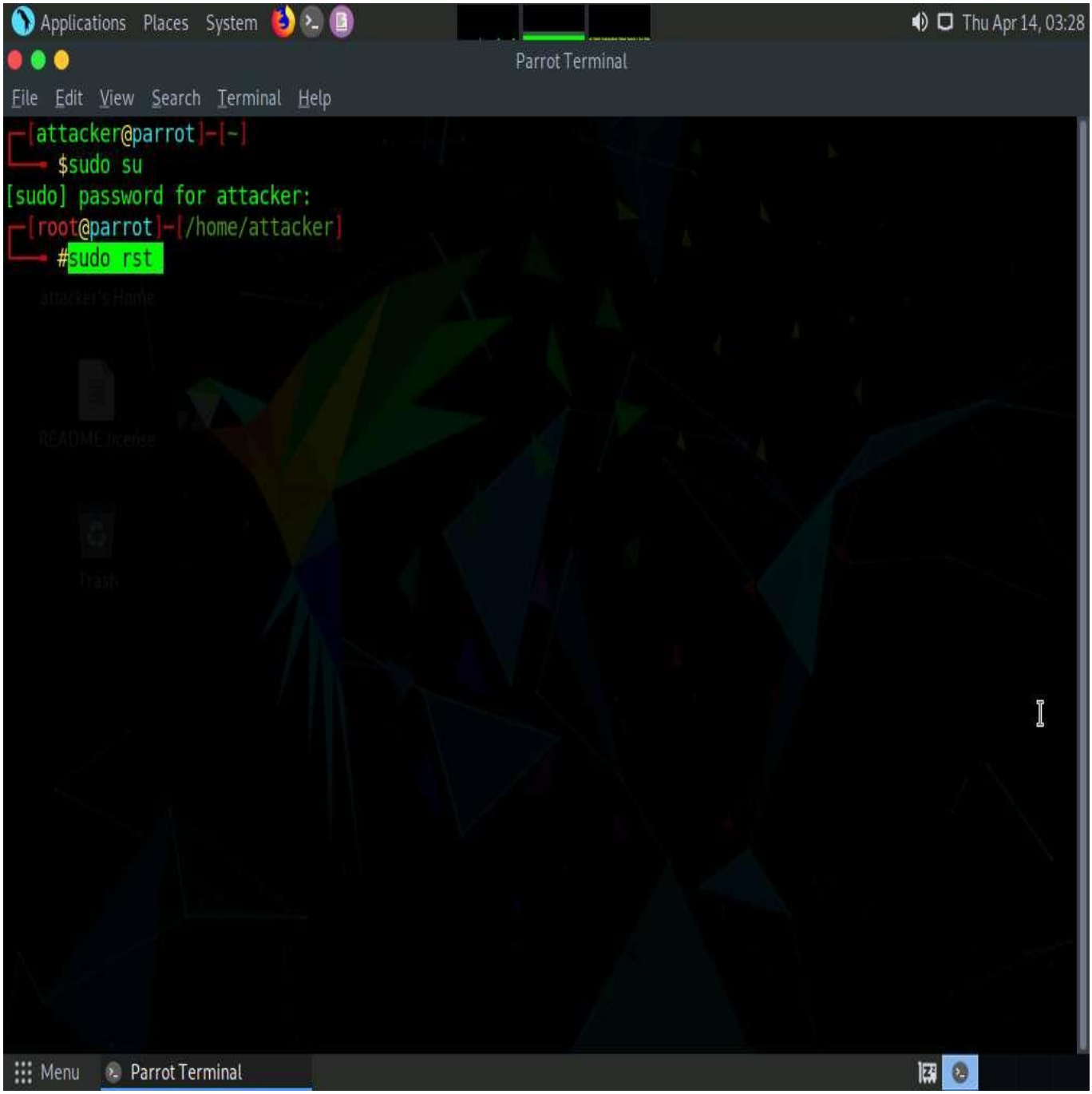
3. A **Parrot Terminal** window appears. In the terminal window, type **sudo su** and press **Enter** to run the programs as a root user.

4. In the **[sudo] password for attacker** field, type **toor** as a password and press **Enter**.

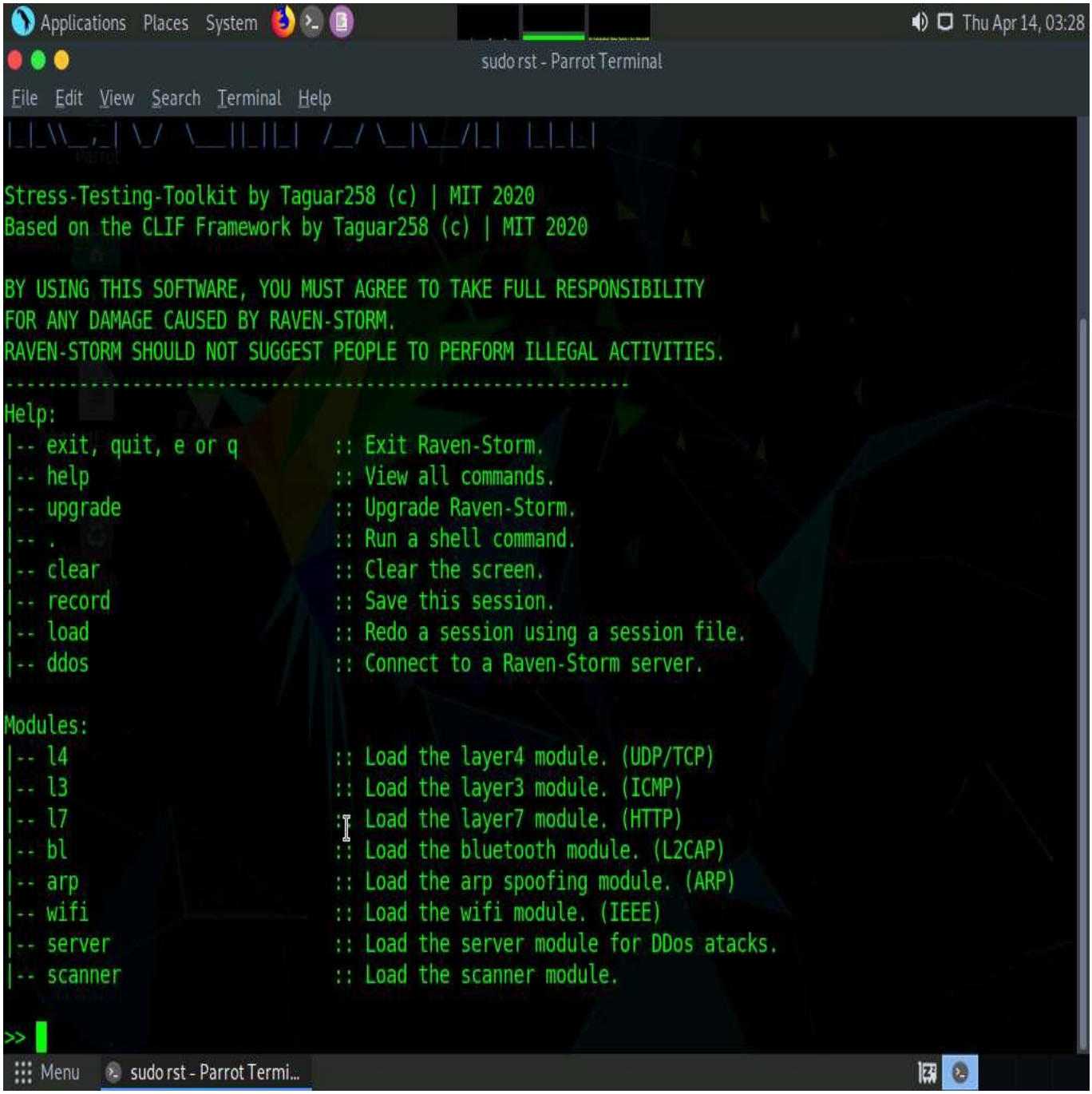
The password that you type will not be visible.



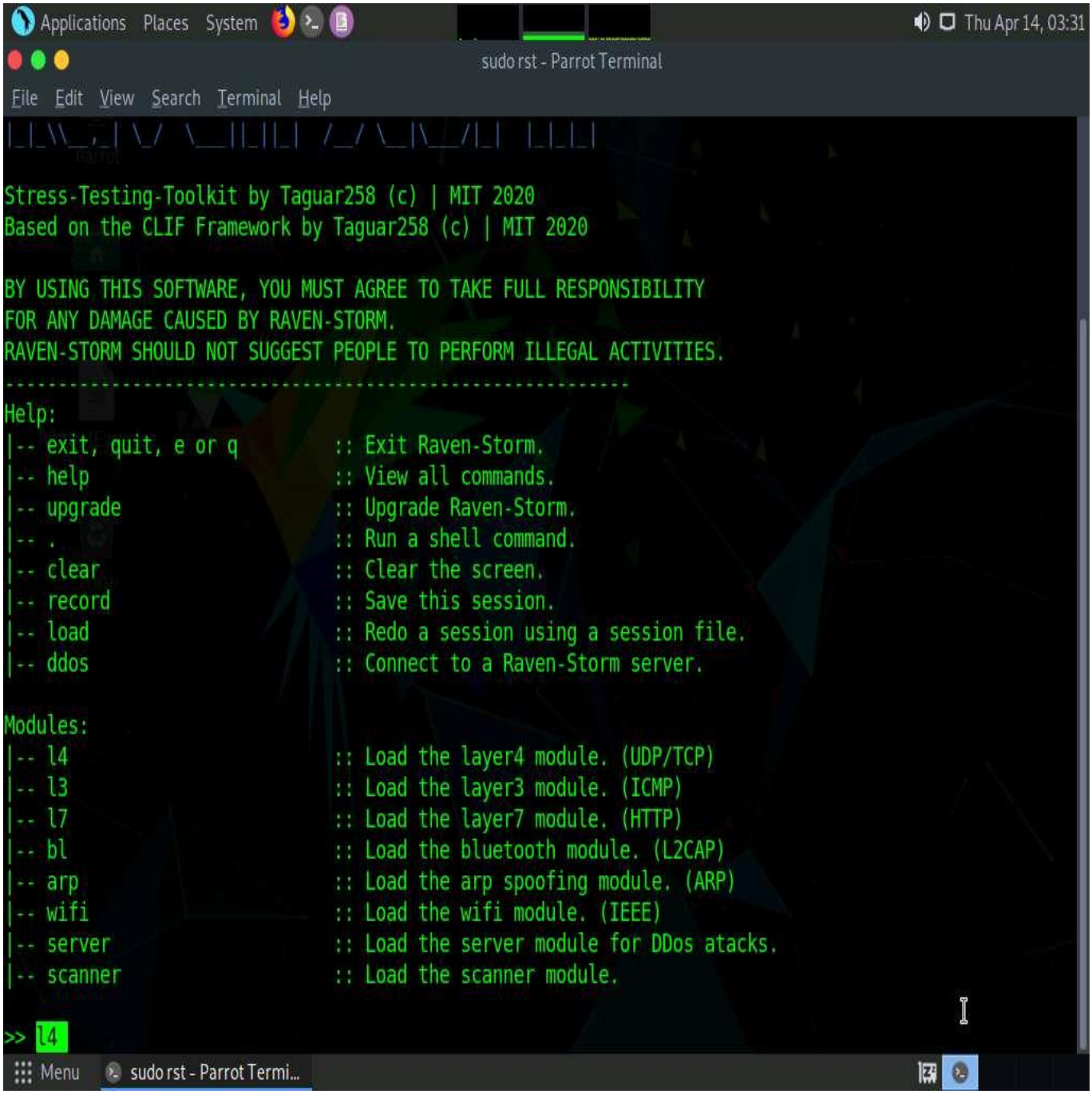
5. Type **sudo rst** and press **Enter** to start Raven-storm tool.



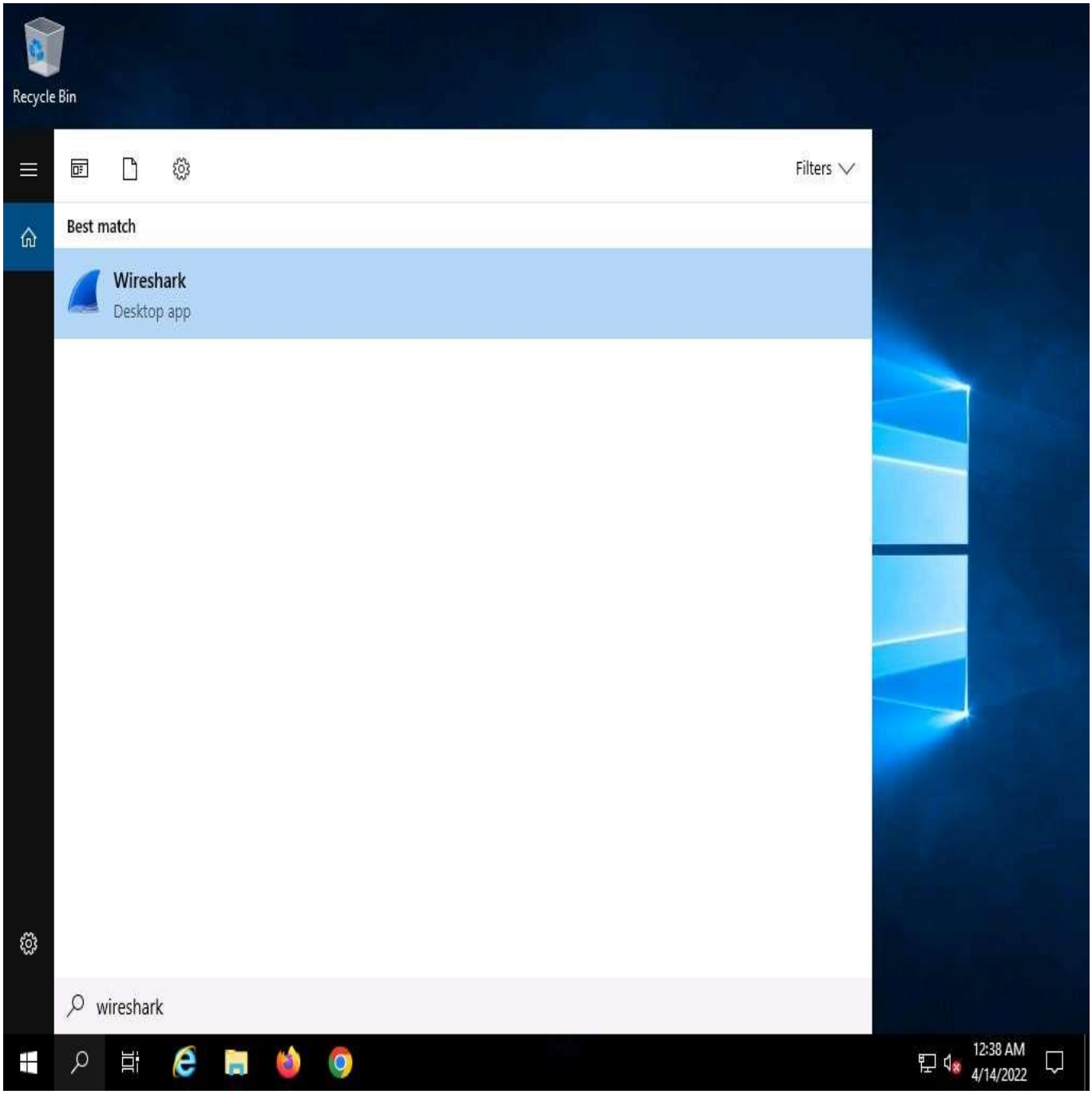
6. Raven-storm tool initializes, as shown in the screenshot.



7. ☐ Type **l4** and press **Enter** to load **layer4** module (UDP/TCP).

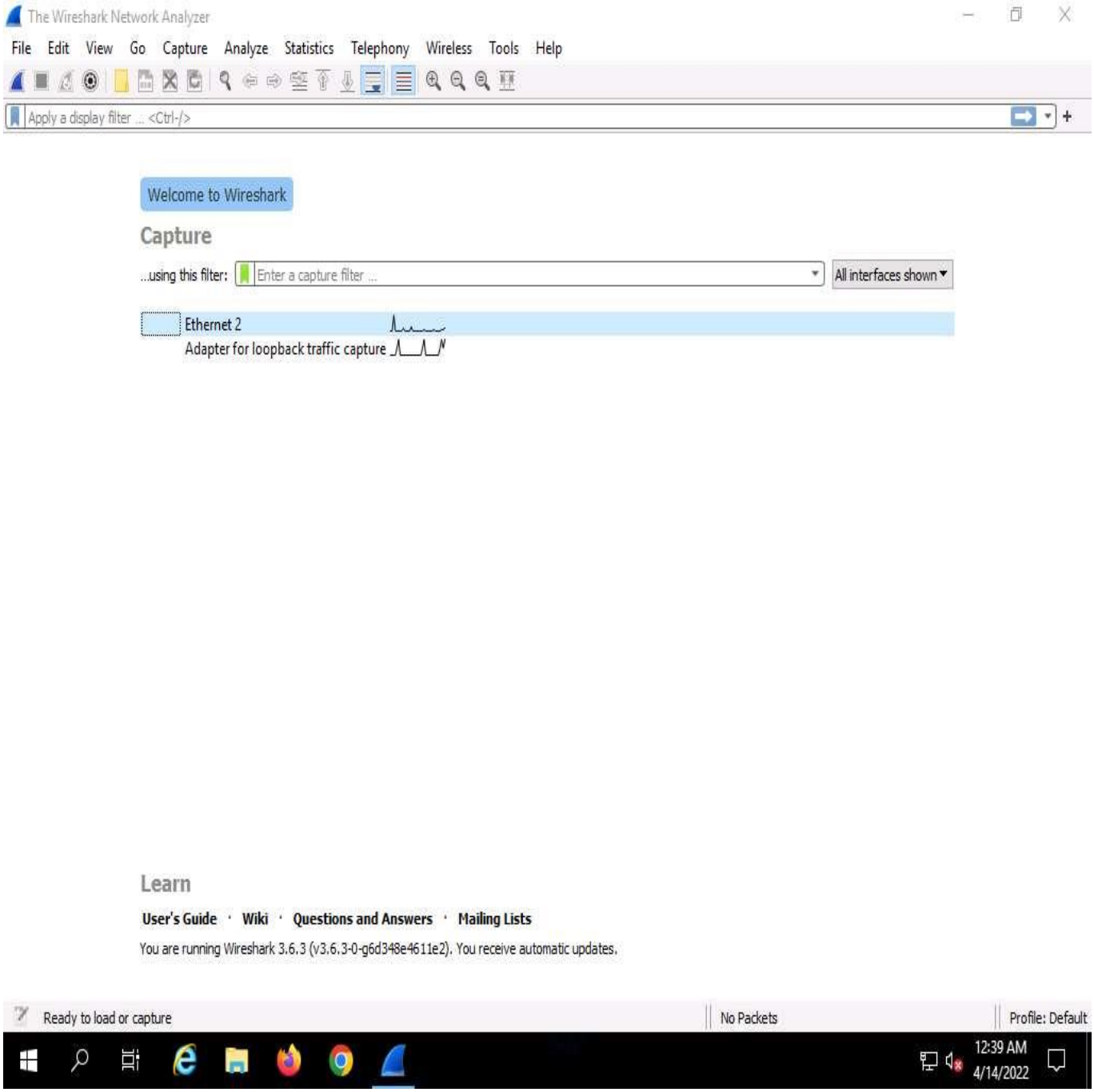


8. Now click Windows Server 2019 to switch to **Windows Server 2019** machine.
9. In the **Type here to search** field on the **Desktop**, type **wireshark** in the search field, the **Wireshark** appears in the results, click **Wireshark** to launch it.

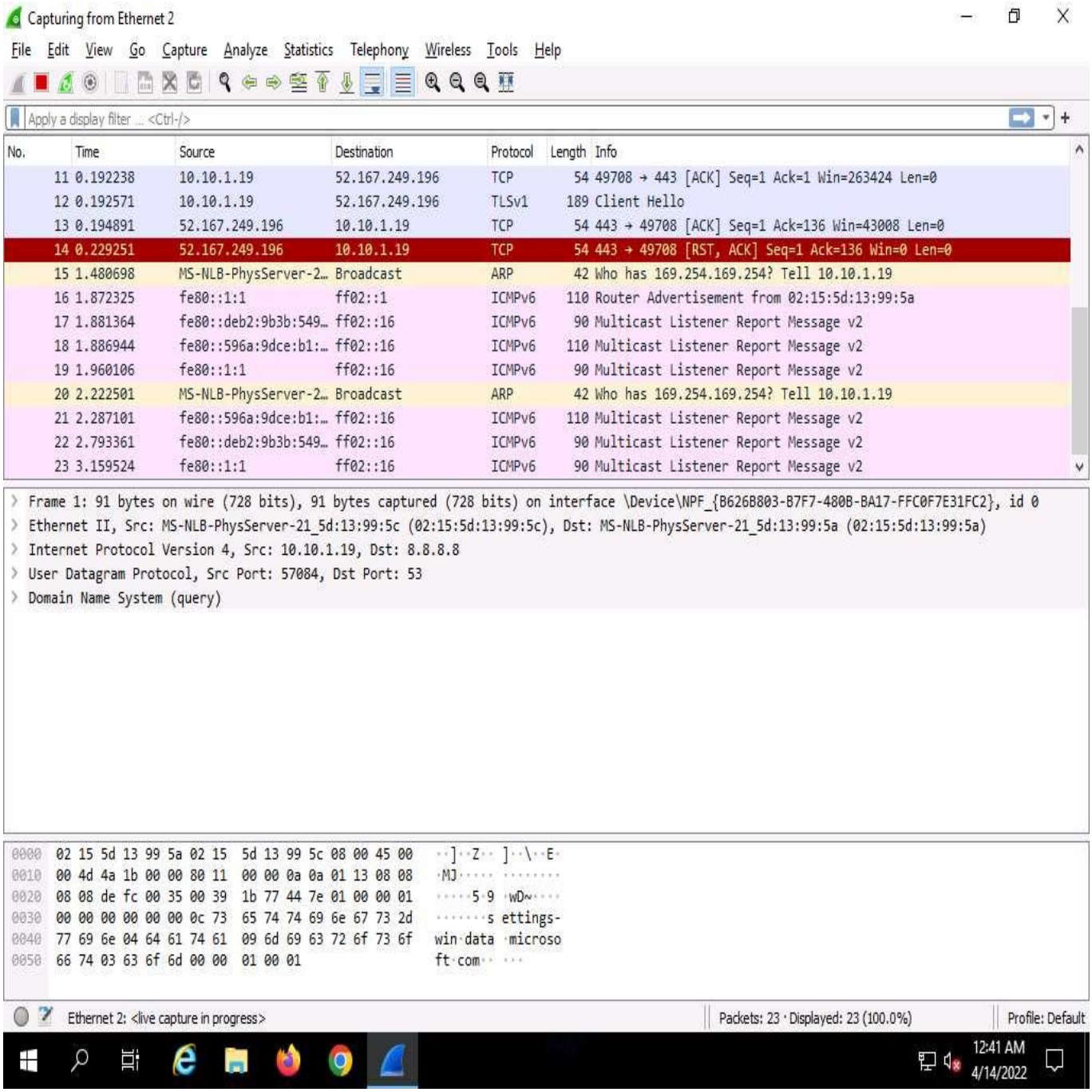


10. ☐ The **Wireshark Network Analyzer** window appears. Double-click on the primary network interface (here, **Ethernet 2**) to start capturing the network traffic.

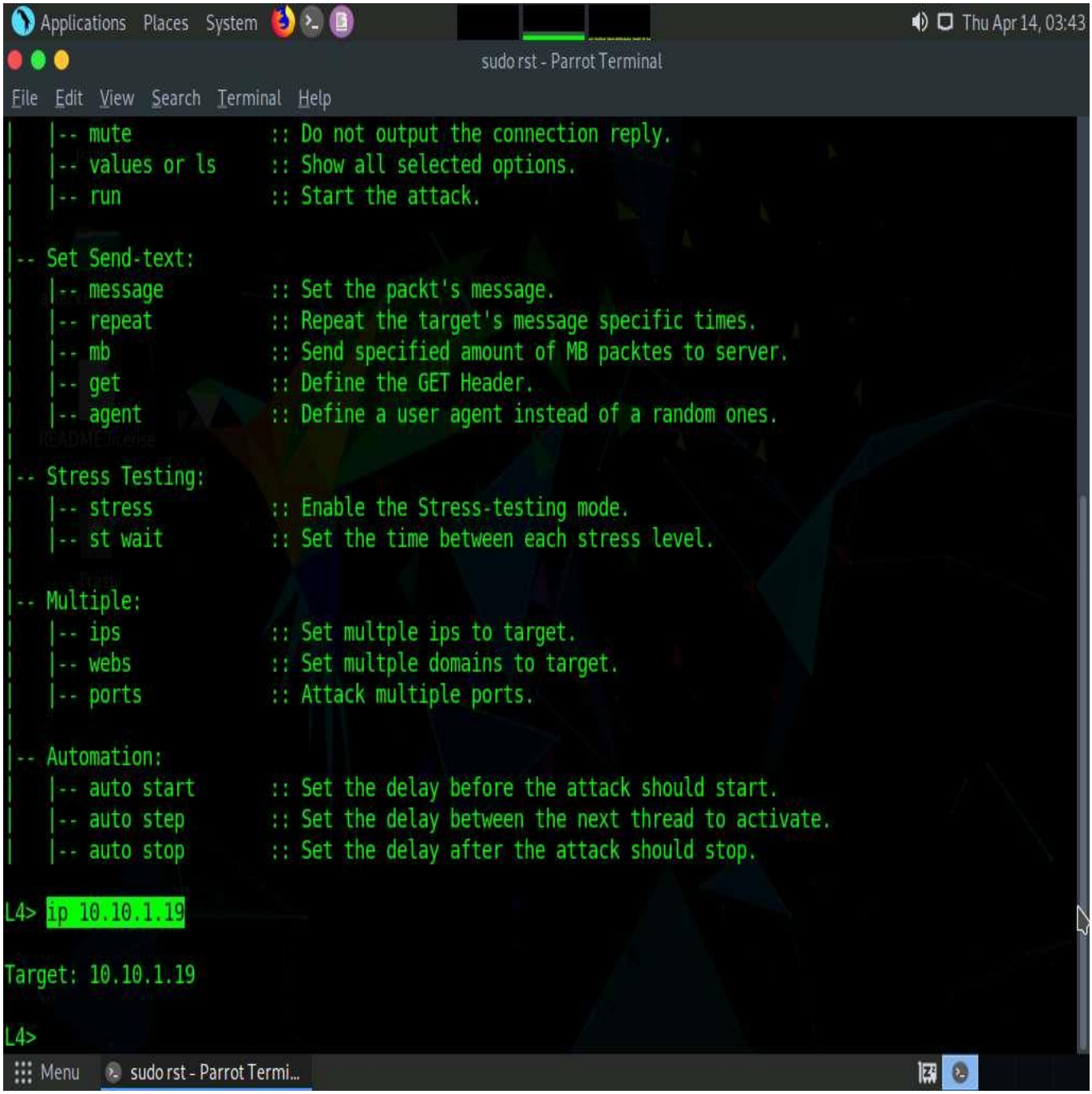
The network interface might differ when you perform the task.



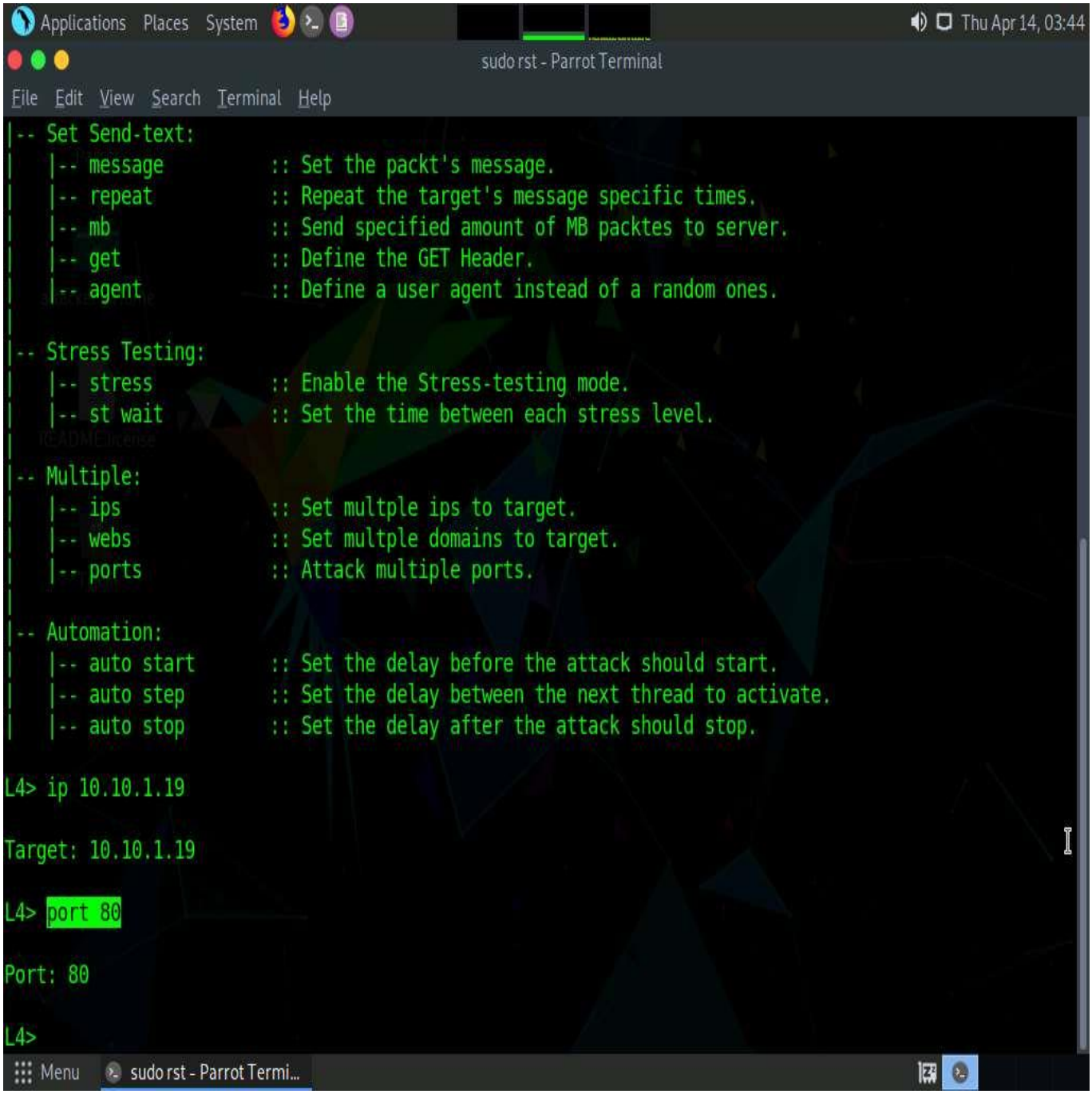
11. ☐ **Wireshark** starts capturing the packets; leave it running.



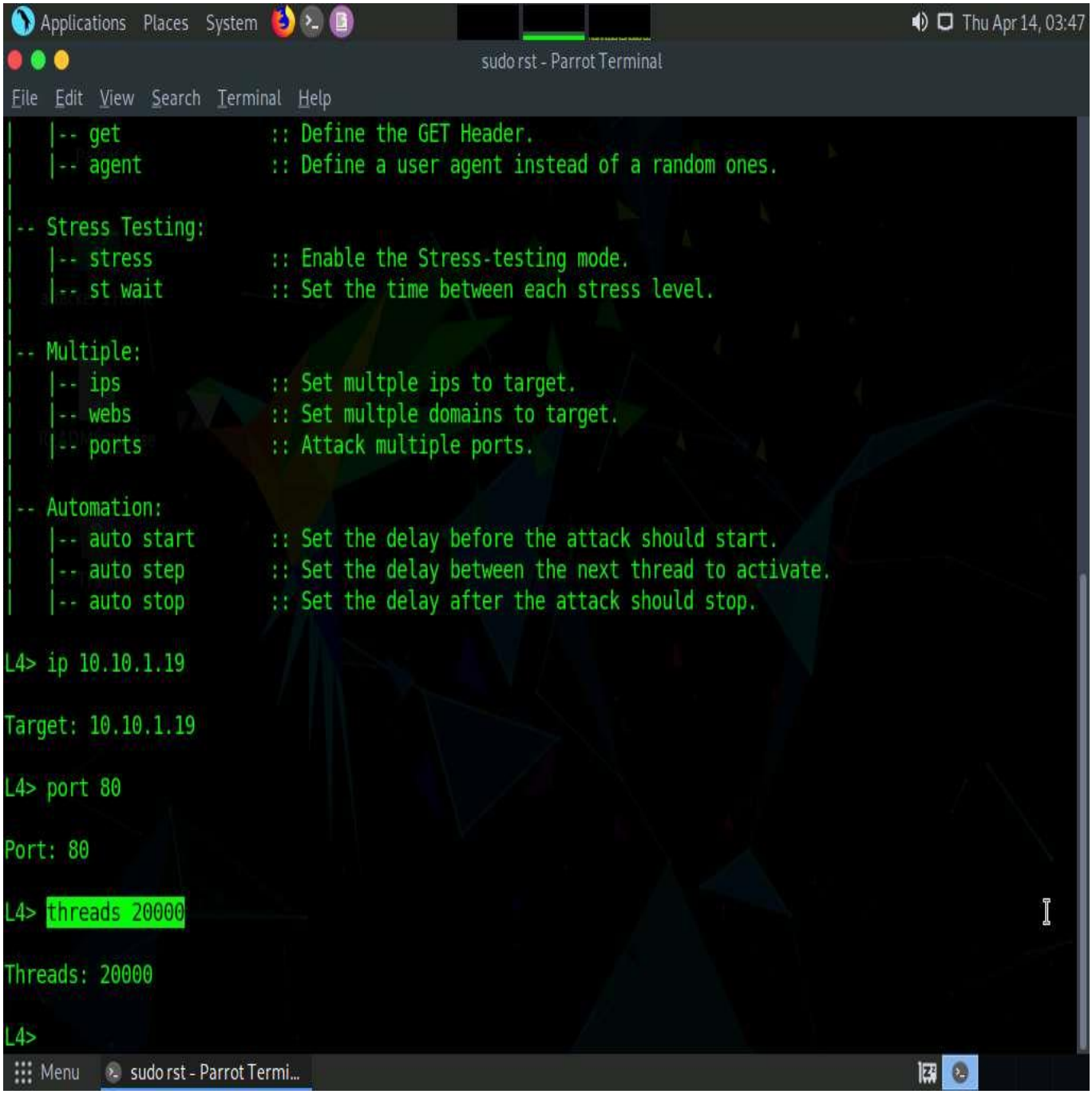
12. Click Parrot Security to switch to **Parrot Security** window.
13. In the terminal window, type **ip 10.10.1.19** and press **Enter** to specify the target IP address.



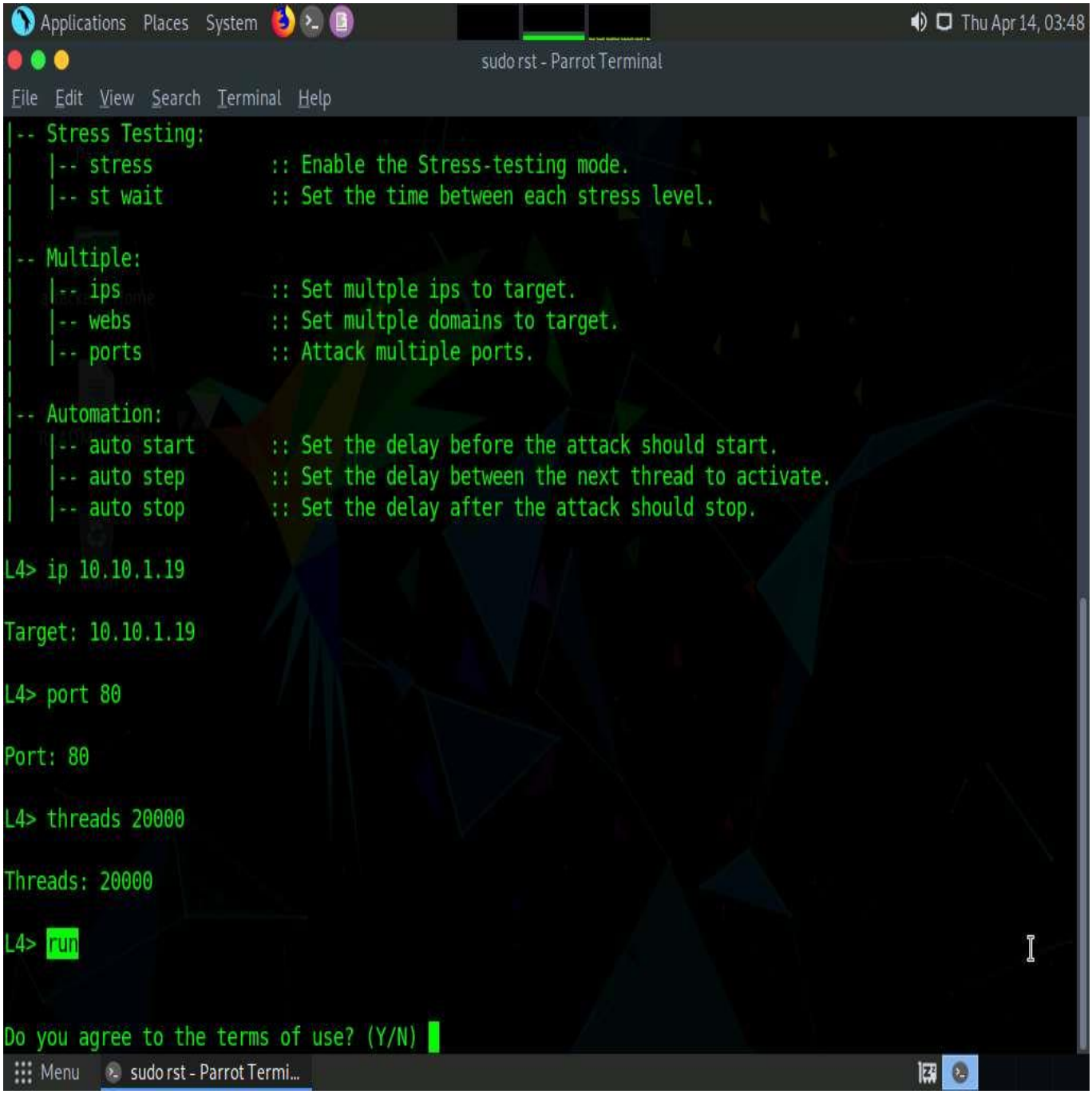
14. ☐ Type **port 80** and press **Enter**, to specify the target port.



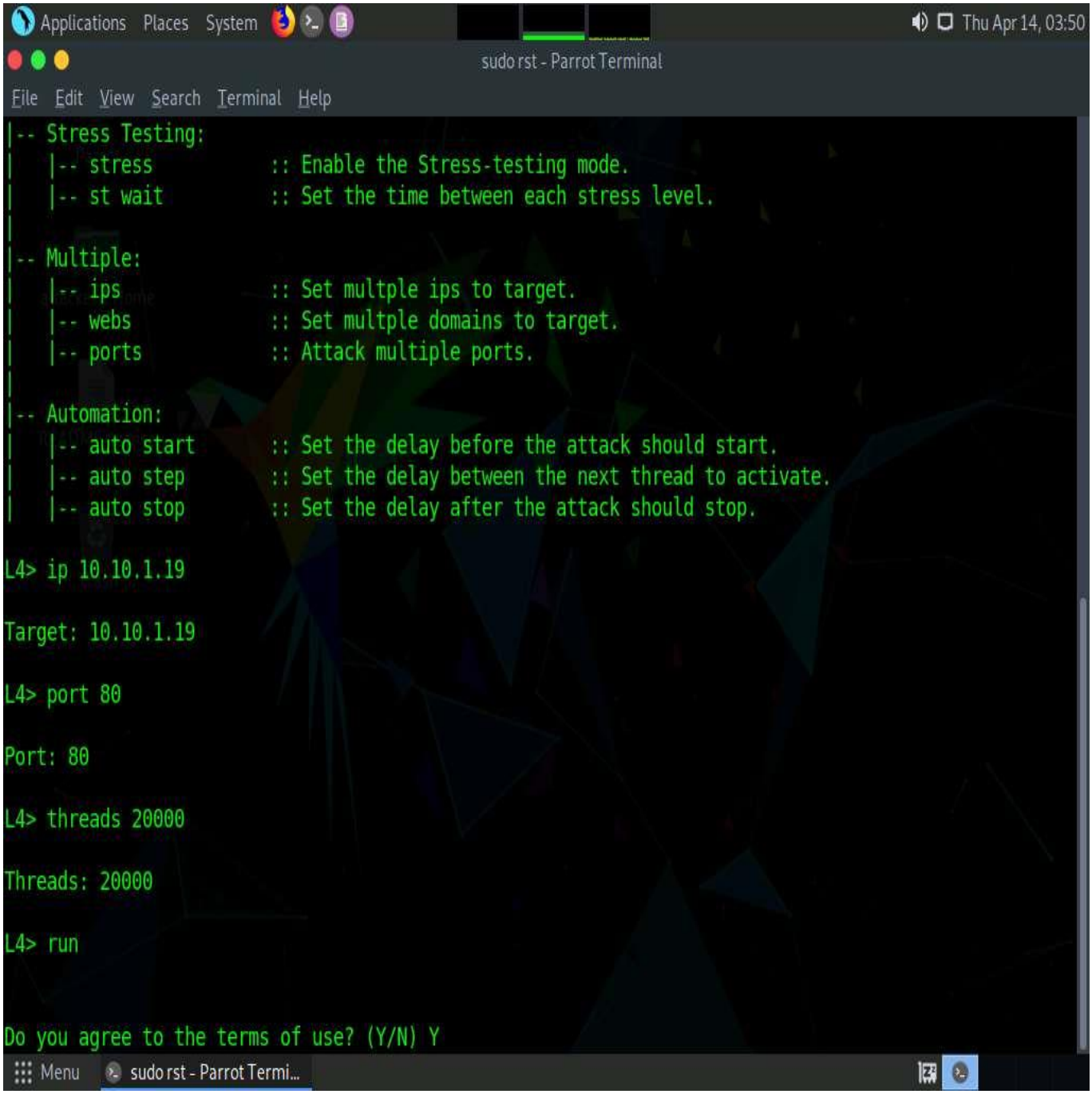
15. ☐ Type **threads 20000** and press **Enter**, to specify number of threads.



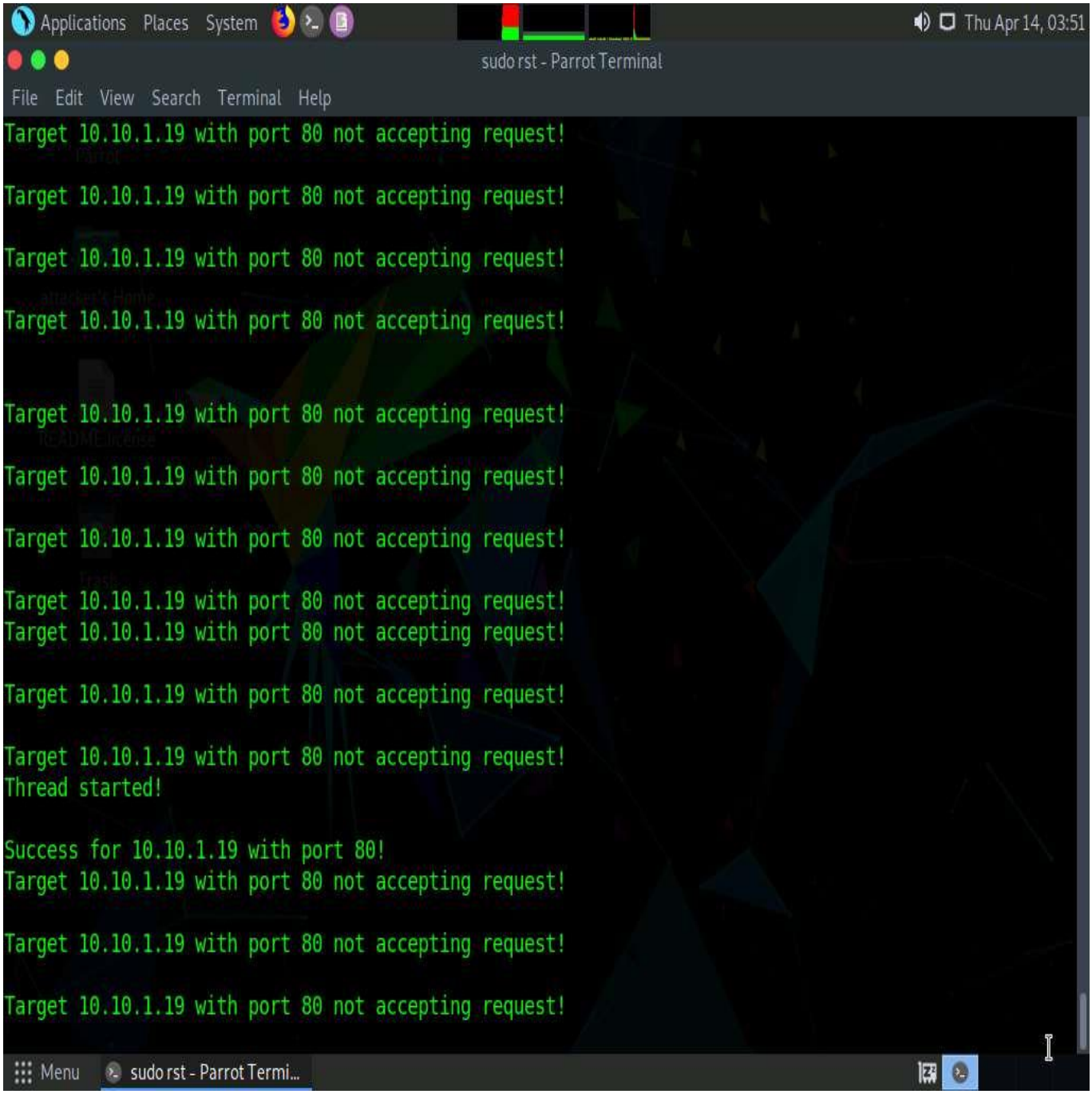
16. ☐ Now, in the terminal type **run** and press **Enter**, to start the DoS attack on the target machine.



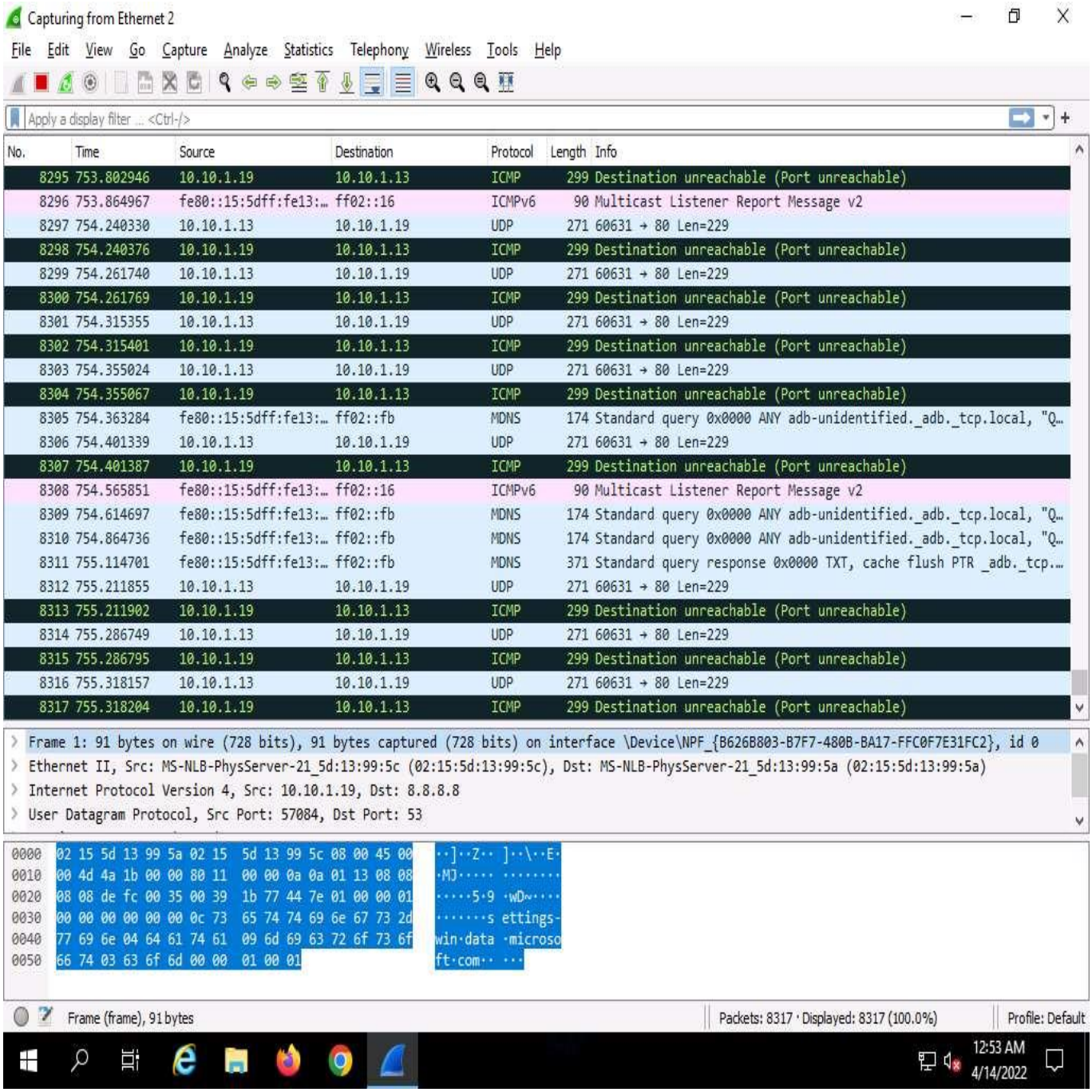
17. ☐ In the **Do you agree to the terms of use? (Y/N)** field, type **Y** and press **Enter**.



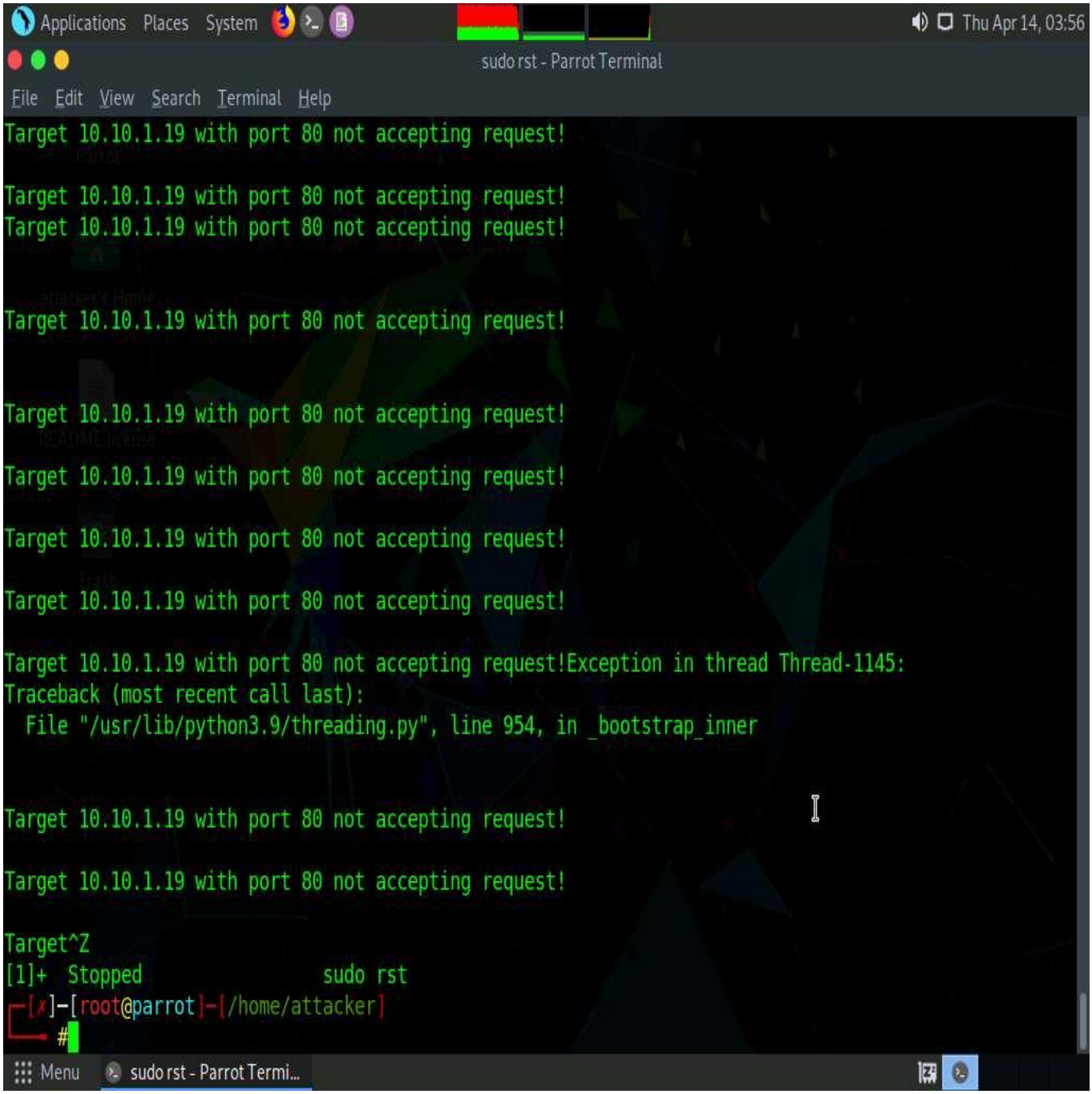
18. Raven-storm starts DoS attack on the target machine (here, **Windows Server 2019**).



19. ☐ Click Windows Server 2019 to switch to **Windows Server 2019**.
20. ☐ You can observe a large number of packets received from **Parrot Security** machine (**10.10.1.13**).



21. ☐ Click Parrot Security to switch to **Parrot Security** machine and press **ctrl+z** to stop the attack.



22. ☐ This concludes the demonstration of a DoS attack using Raven-storm.
23. ☐ Close all open windows and document all the acquired information.

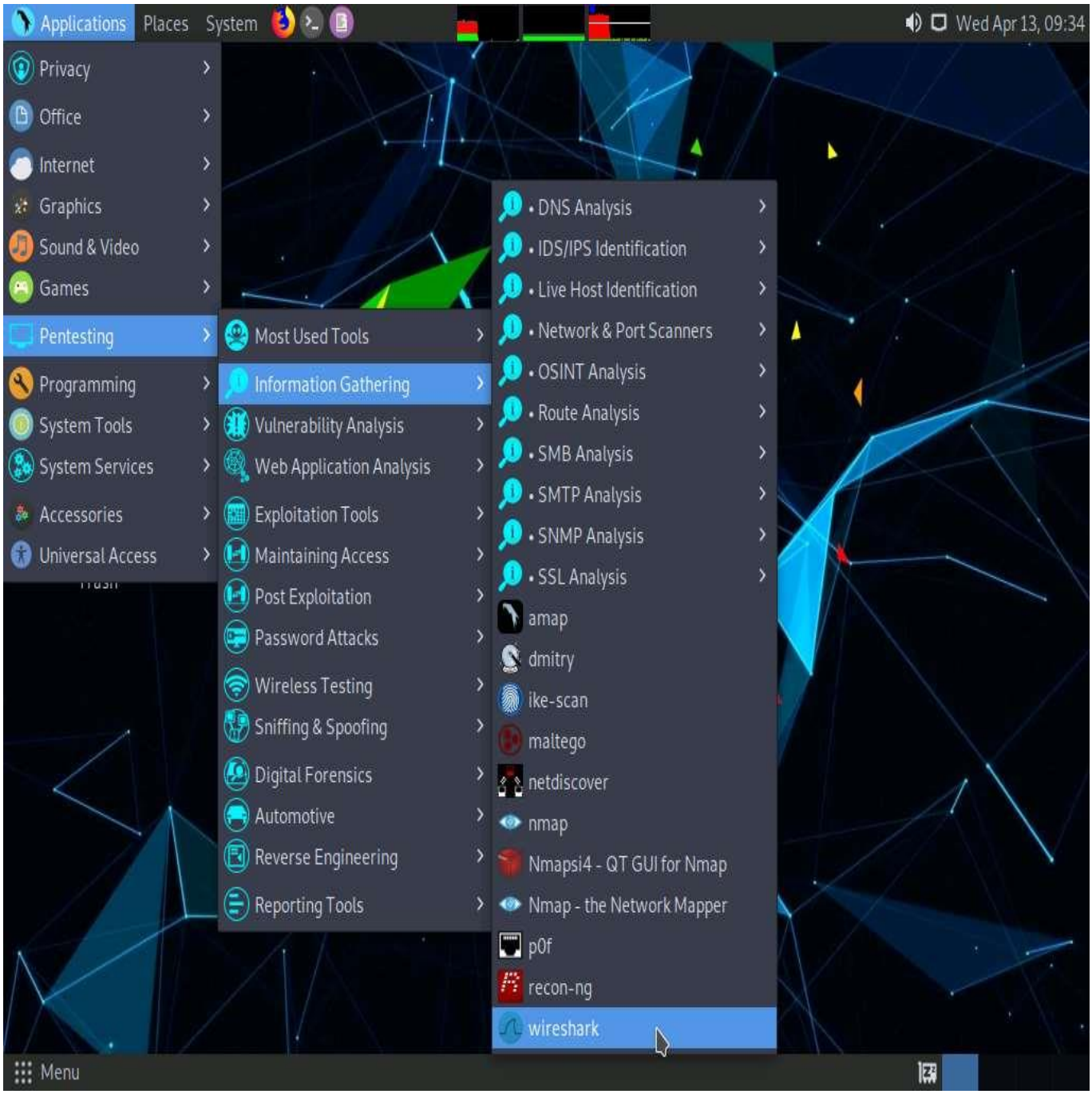
Task 4: Perform a DDoS Attack using HOIC

HOIC (High Orbit Ion Cannon) is a network stress and DoS/DDoS attack application. This tool is written in the BASIC language. It is designed to attack up to 256 target URLs simultaneously. It sends HTTP, POST, and GET requests to a computer that uses lulz inspired GUIs. It offers a high-speed multi-threaded HTTP Flood; a built-in scripting system allows the deployment of "boosters," which are scripts designed to thwart DDoS countermeasures and increase DoS output.

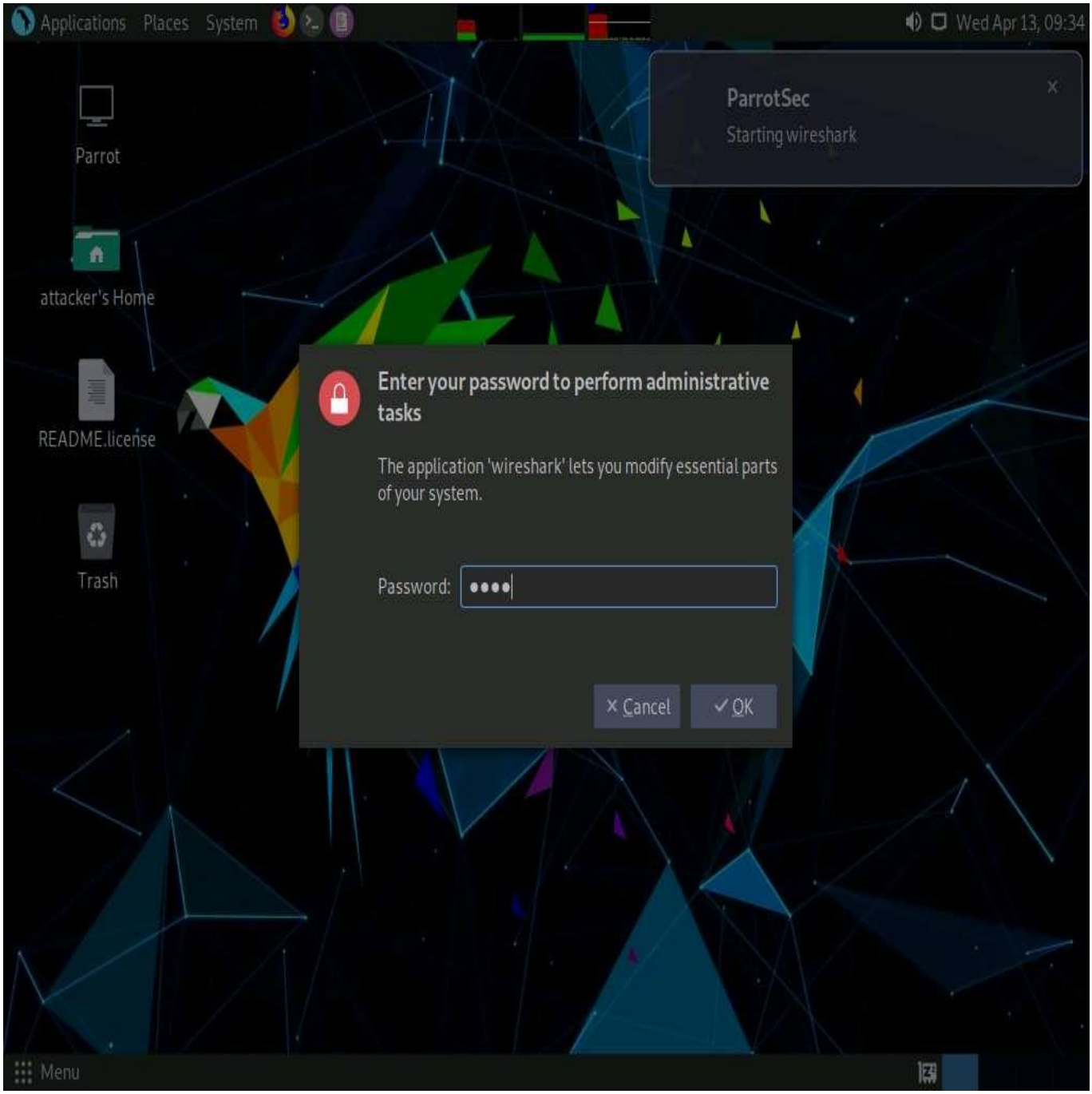
Here, we will use the HOIC tool to perform a DDoS attack on the target machine.

In this task, we will use the **Windows 11**, **Windows Server 2019** and **Windows Server 2022** machines to launch a DDoS attack on the **Parrot Security** machine.

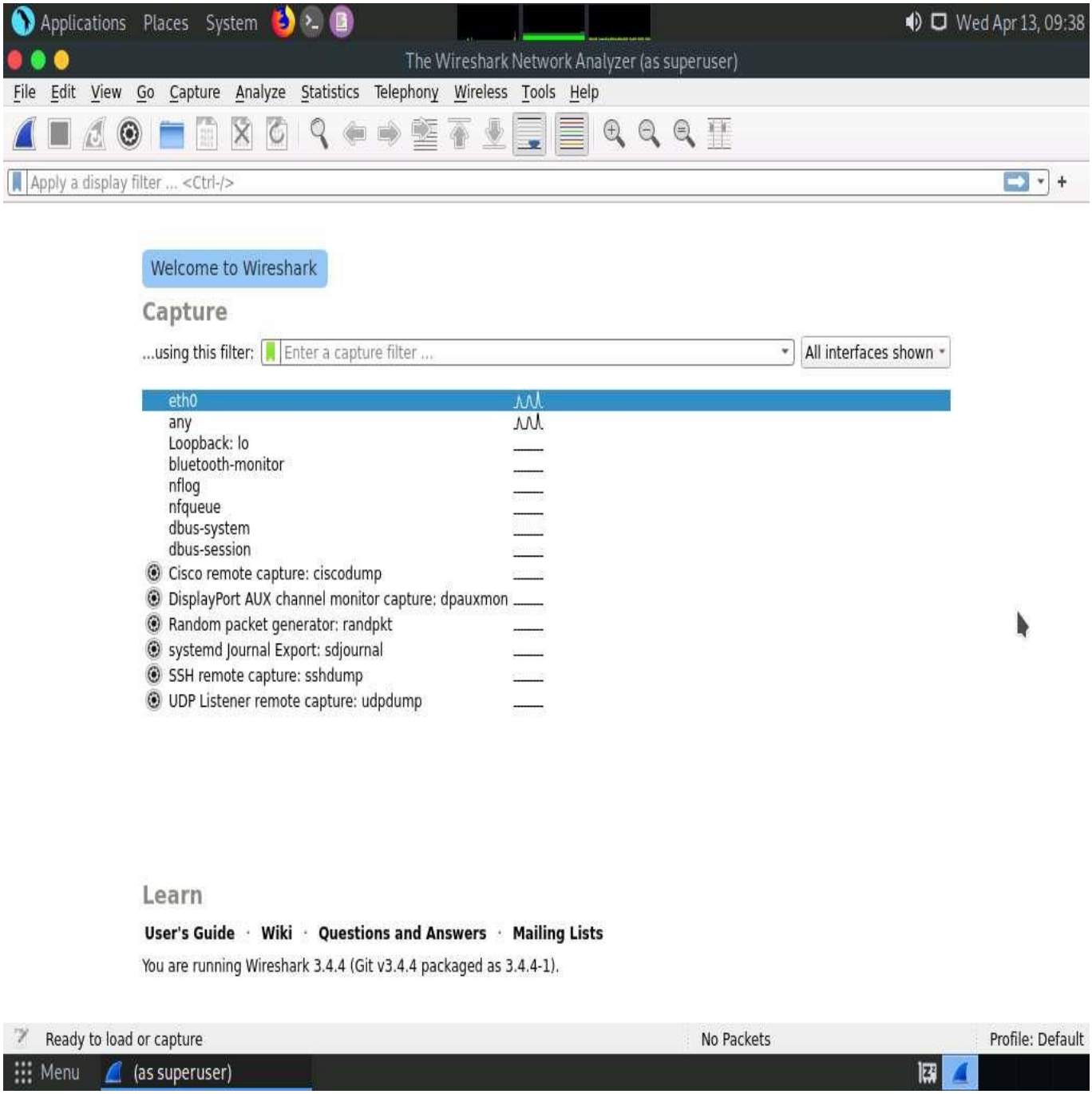
1. Click Parrot Security switch to the **Parrot Security** machine. Click **Applications** in the top-left corner of **Desktop** and navigate to **Pentesting** --> **Information Gathering** --> **wireshark**.



2. A security pop-up appears, enter the password as **toor** in the **Password** field and click **OK**.

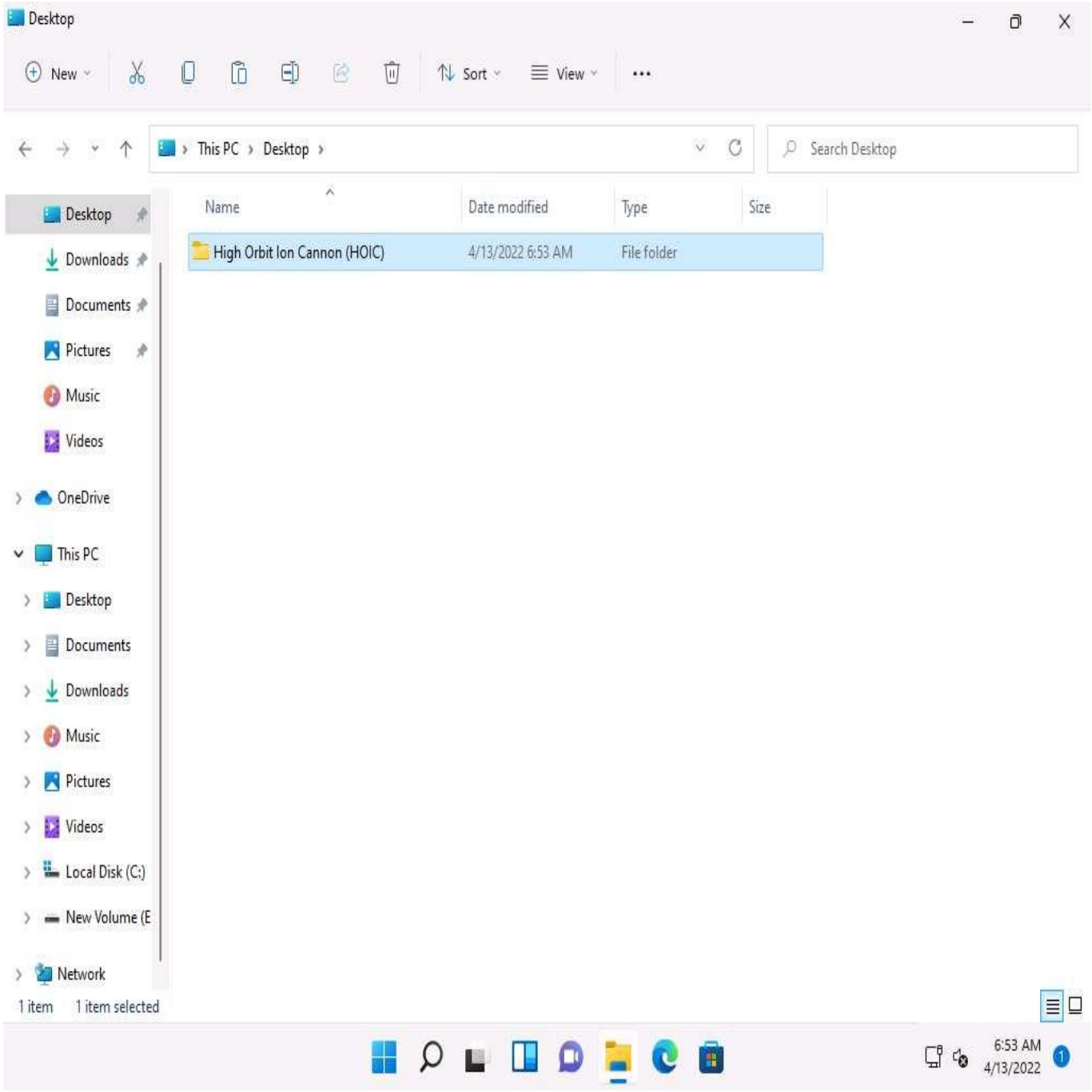


3. ☐ The **Wireshark Network Analyzer** window appears; double-click on the primary network interface (here, **eth0**) to start capturing the network traffic.



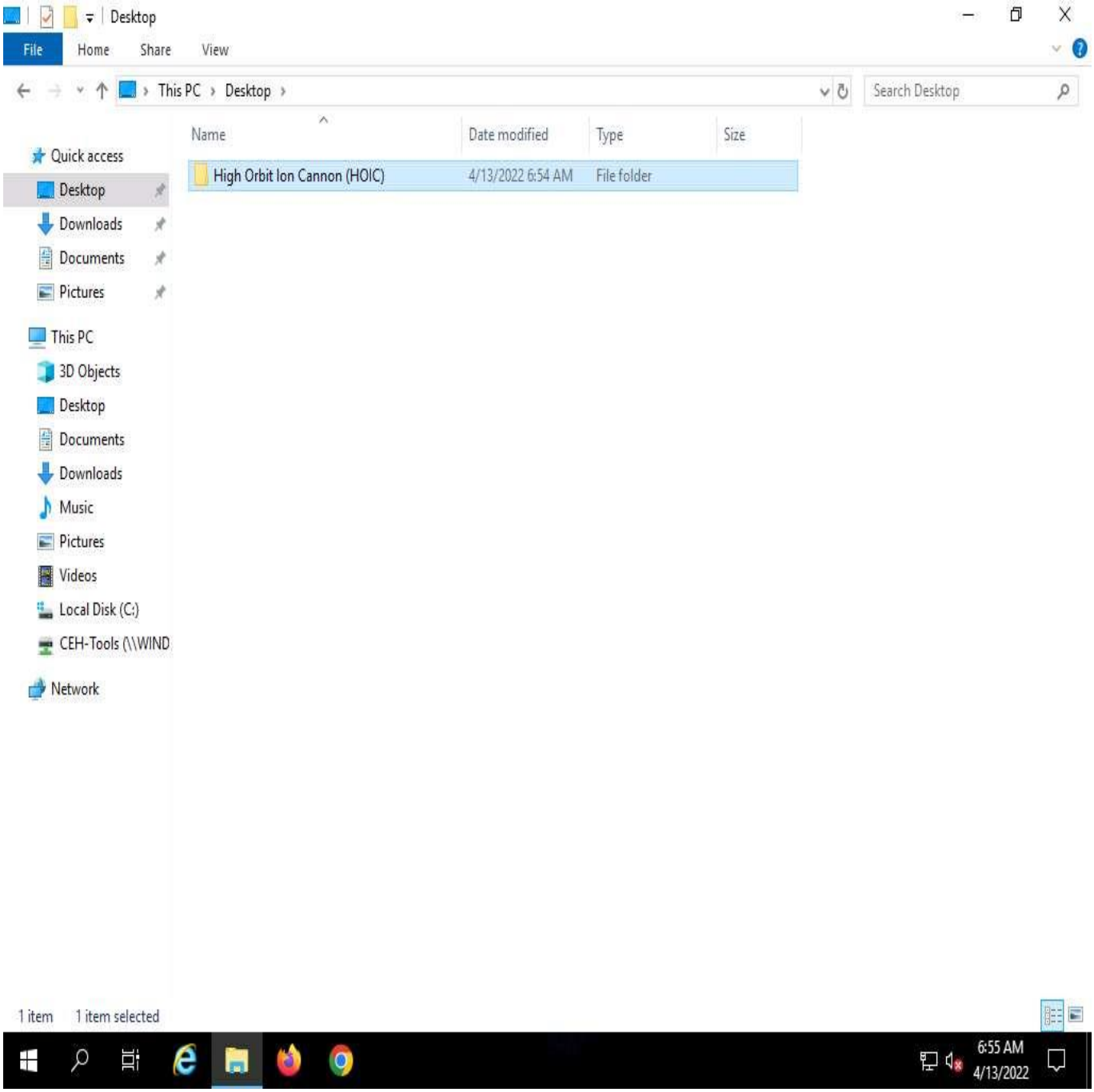
4. ☐ Click Windows 11 to switch to the **Windows 11** machine.
5. ☐ Navigate to **E:\CEH-Tools\CEHv12 Module 10 Denial-of-Service\DoS and DDoS Attack Tools** and copy the **High Orbit Ion Cannon (HOIC)** folder to **Desktop**.

To perform the DDoS attack, run this tool from various machines at once. If you run the tool directly from the shared drive in the machines one at a time, errors might occur. To avoid errors, copy the folder **High Orbit Ion Cannon (HOIC)** individually to each machine's **Desktop**, and then run the tool.



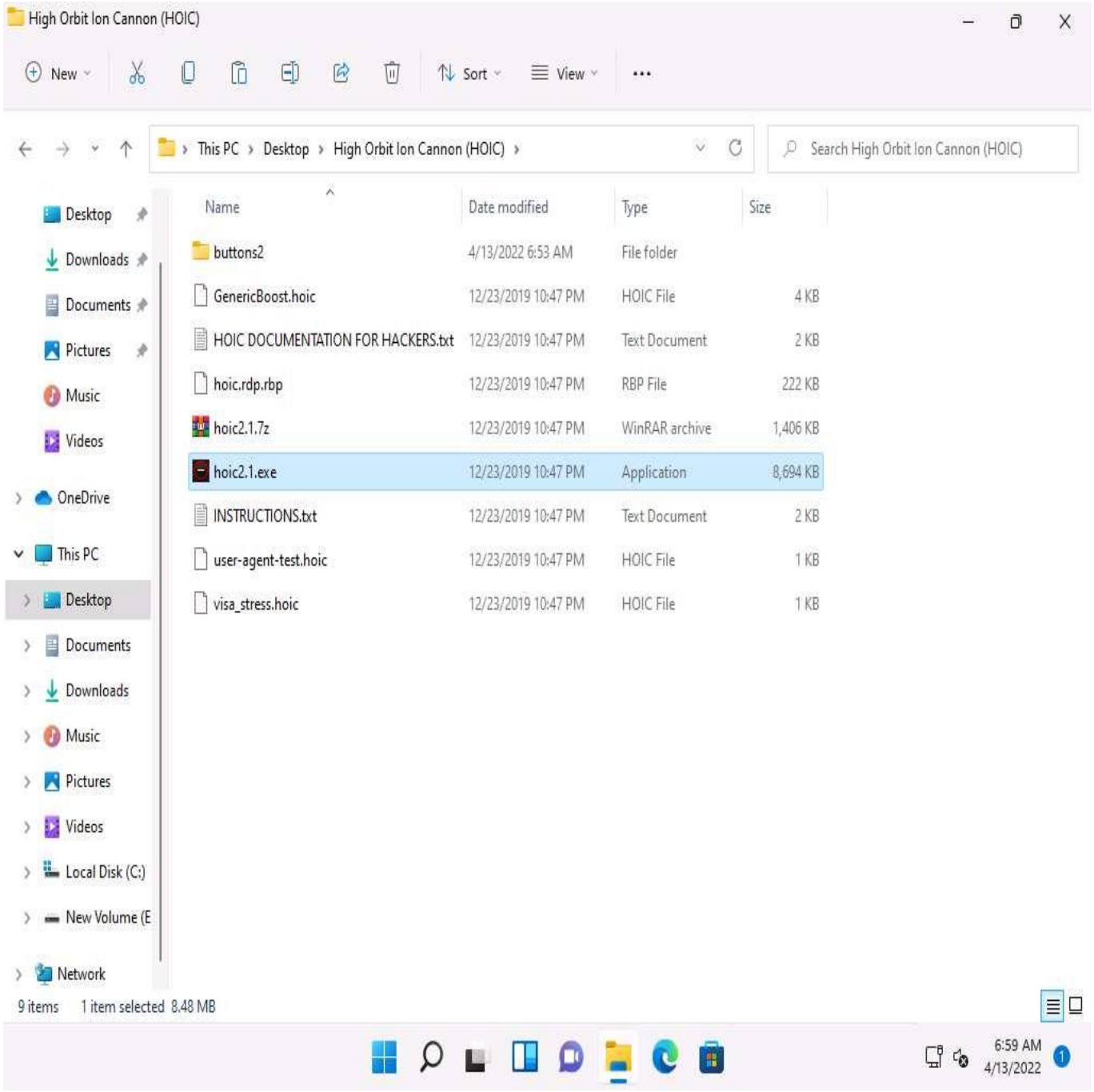
6. Similarly, follow the previous step (**Step #5**) on the **Windows Server 2019** (click Windows Server 2019 to switch to the **Windows Server 2019**) and **Windows Server 2022** (click Windows Server 2022 to switch to the **Windows Server 2022**) machines.

In **Windows Server 2019**, click Ctrl+Alt+Delete to activate the machine, by default, **Administrator** profile is selected, click Pa$$w0rd to enter the password and press **Enter** to log in.
In **Windows Server 2022**, click Ctrl+Alt+Delete to activate the machine, by default, **CEH\Administrator** profile is selected, click Pa$$w0rd to enter the password and press **Enter** to log in.
On the **Windows Server 2019** and **Windows Server 2022** machines, the **High Orbit Ion Cannon (HOIC)** folder is located at **Z:\CEHv12 Module 10 Denial-of-Service\DoS and DDoS Attack Tools.**

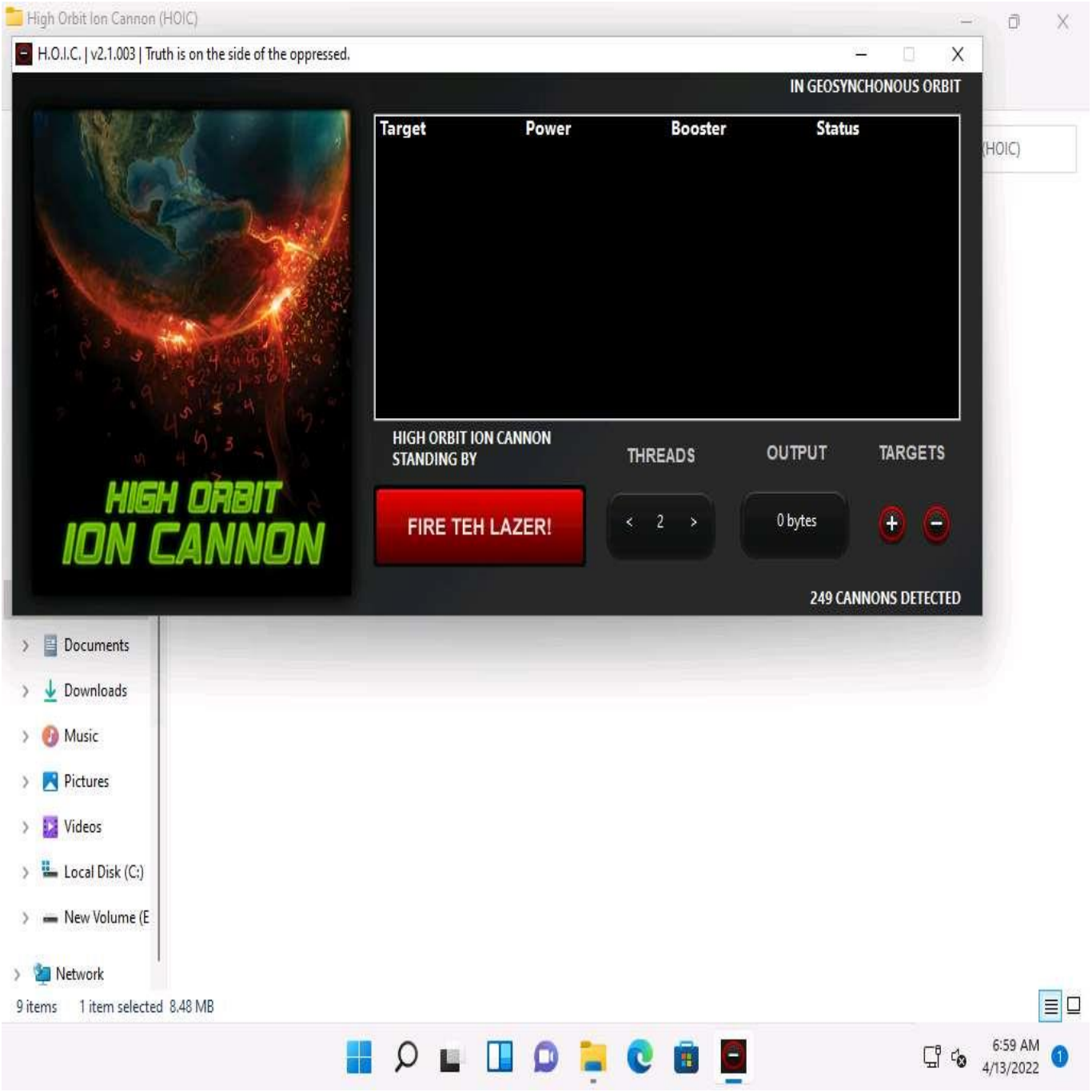


7. Now, click Windows 11 to switch to the **Window 11** machine and navigate to **Desktop**. Open the **High Orbit Ion Cannon (HOIC)** folder and double-click **hoic2.1.exe**.

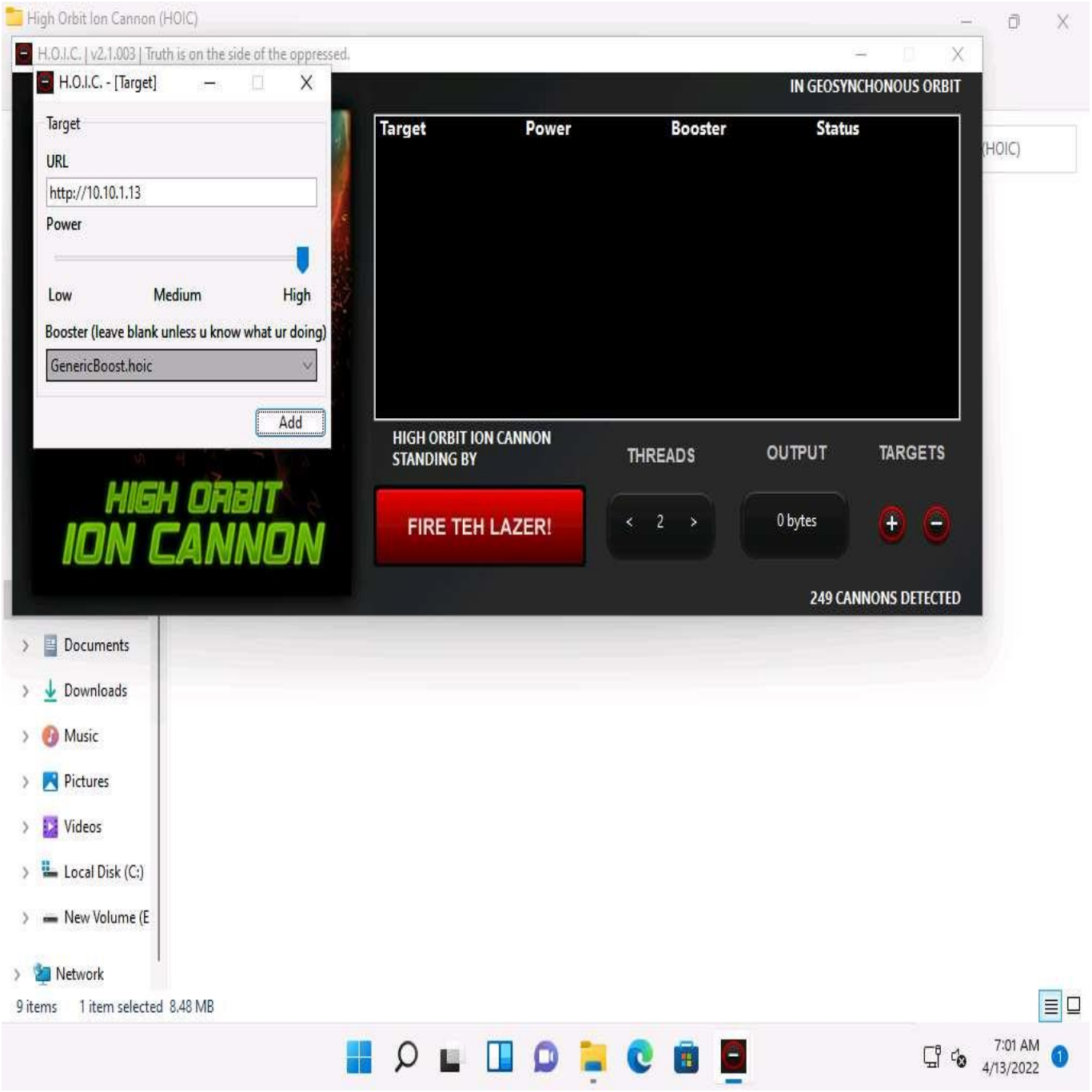
If an **Open File - Security Warning** pop-up appears, click **Run**.



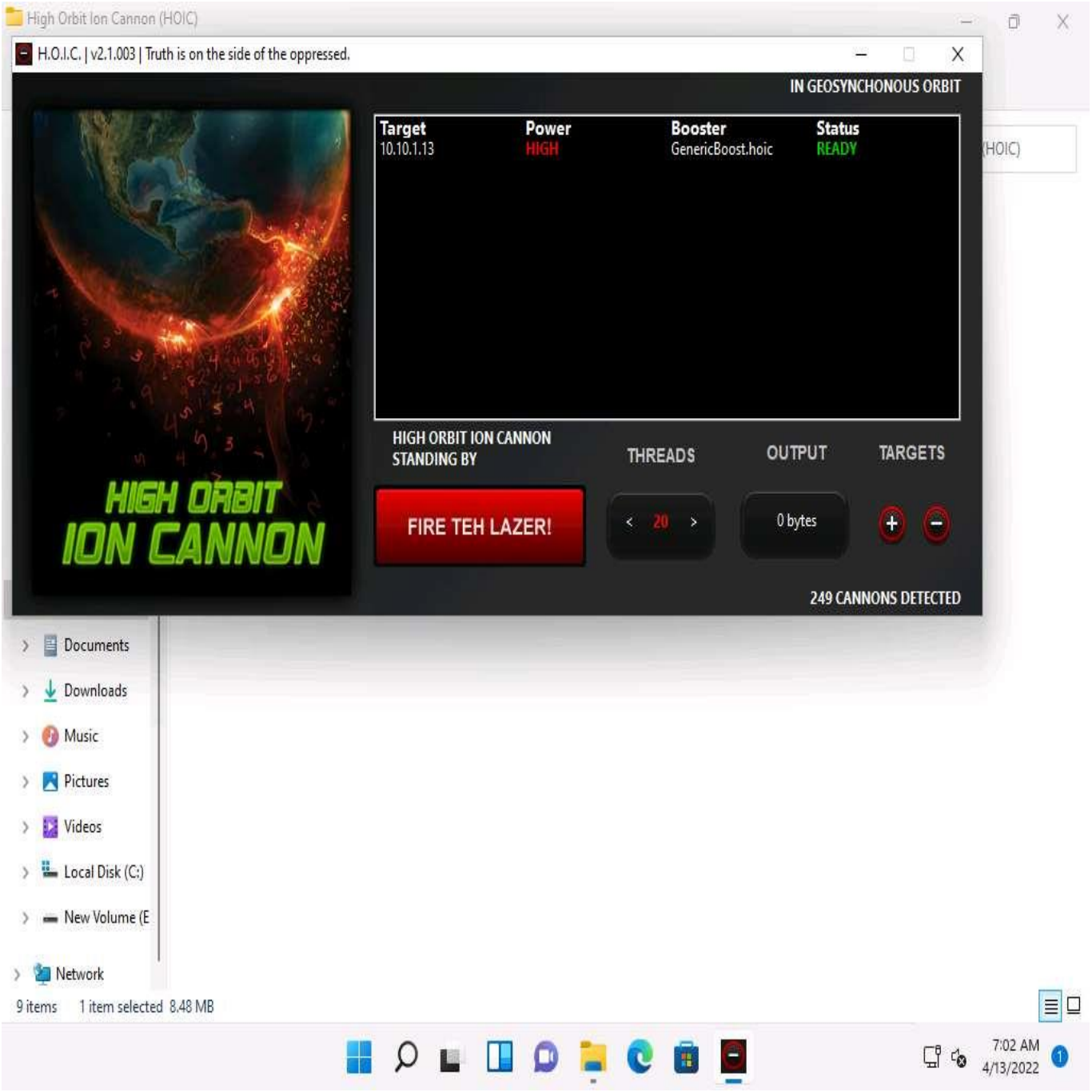
8. ☐ The **HOIC** GUI main window appears; click the "**+**" button below the **TARGETS** section.



9. The **HOIC - [Target]** pop-up appears. Type the target URL such as **http://[Target IP Address]** (here, the target IP address is **10.10.1.13 [Parrot Security]**) in the URL field. Slide the **Power** bar to **High**. Under the **Booster** section, select **GenericBoost.hoic** from the drop-down list, and click **Add**.

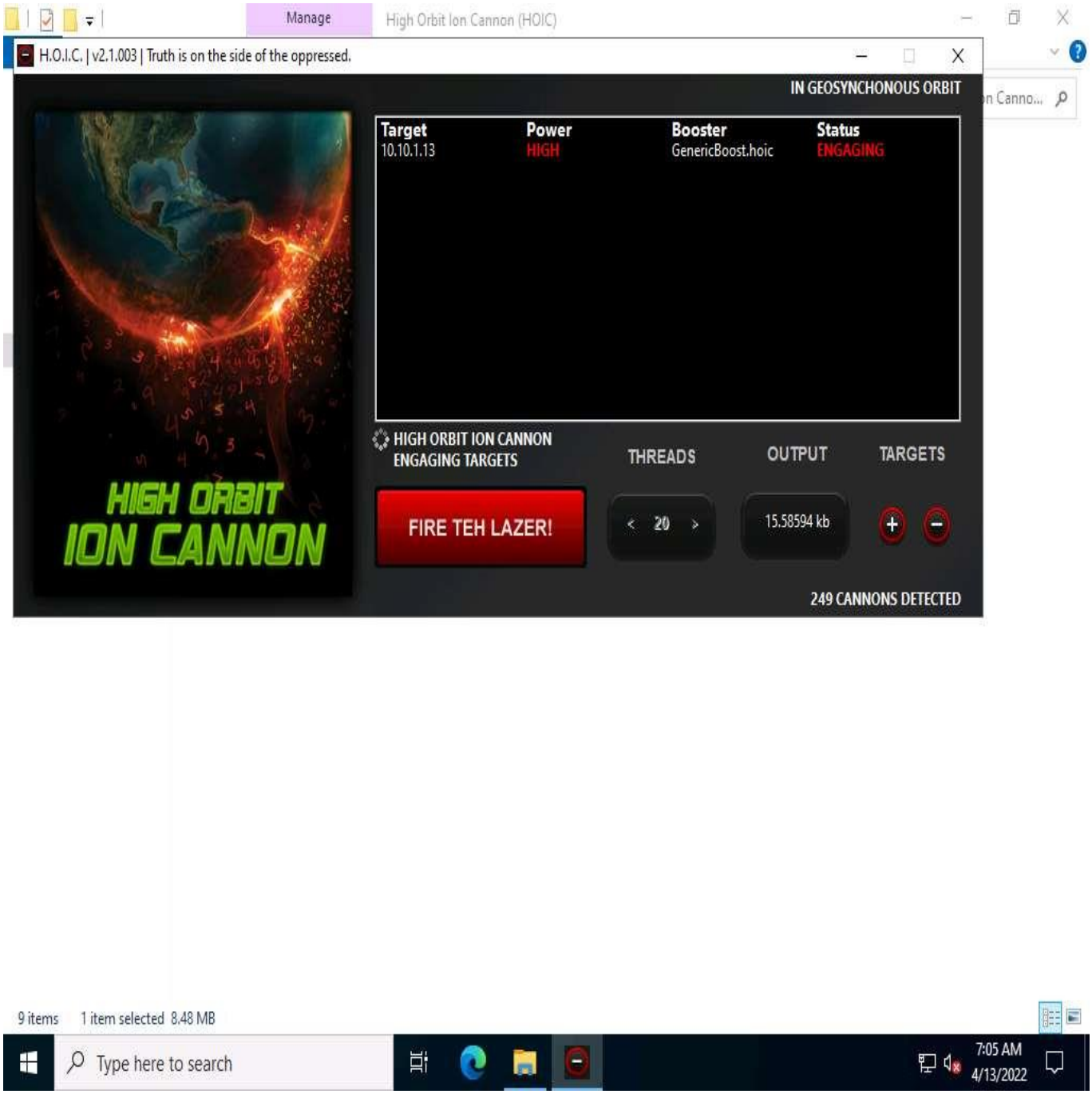


10. ☐ Set the **THREADS** value to **20** by clicking the **>** button until the value is reached.

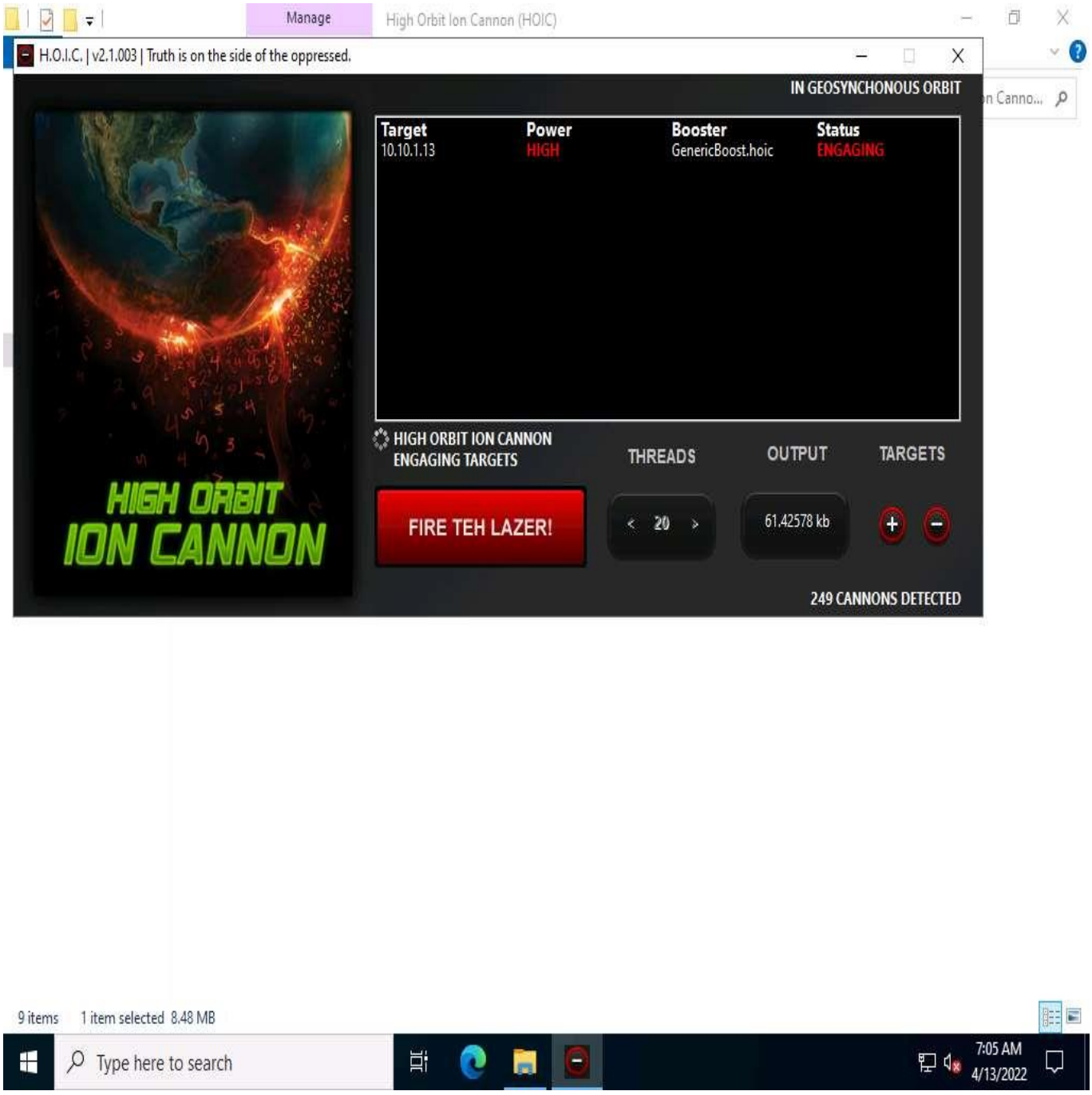


11. ☐ Now, switch to the **Windows Server 2019** (click Windows Server 2019 to switch to the **Windows Server 2019**) and **Windows Server 2022** (click Windows Server 2022 to switch to the **Windows Server 2022**) machines and follow **Steps 7-10** to configure HOIC.
12. ☐ Once **HOIC** is configured on all machines, switch to each machine (**Windows 11**, **Windows Server 2019**, and **Windows Server 2022**) and click the **FIRE TEH LAZER!** button to initiate the DDoS attack on the target the **Parrot Security** machine.

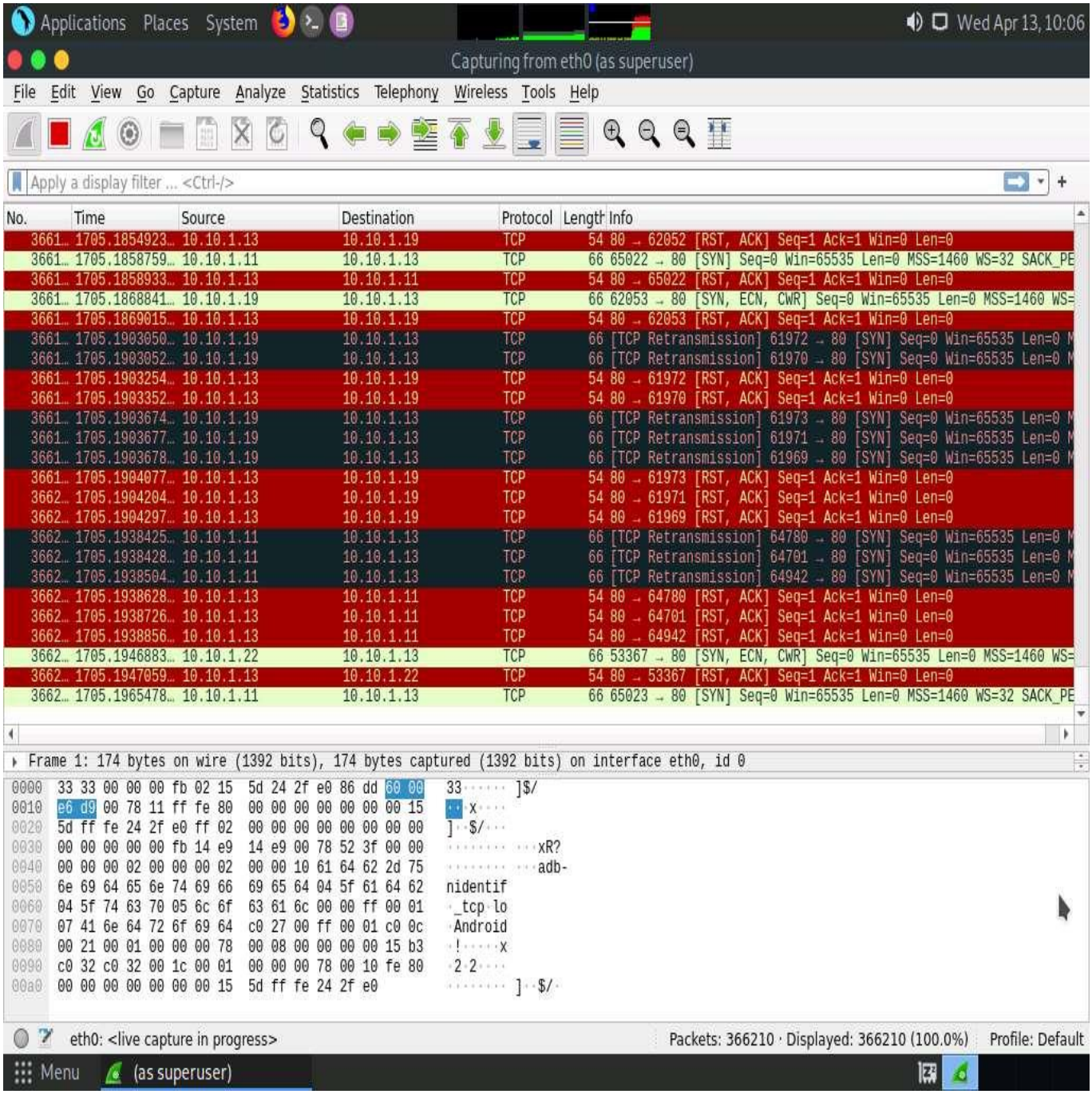
To switch to the **Windows 11**, click Windows 11.
To switch to the **Windows Server 2019**, click Windows Server 2019.
To switch to the **Windows Server 2022**, click Windows Server 2022.



13. ☐ Observe that the **Status** changes from **READY** to **ENGAGING**, as shown in the screenshot.



14. ☐ Click Parrot Security switch to the **Parrot Security** machine.
15. ☐ Observe that **Wireshark** starts capturing a large volume of packets, which means that the machine is experiencing a huge number of incoming packets. These packets are coming from the **Windows 11, Windows Server 2019**, and **Windows Server 2022** machines.



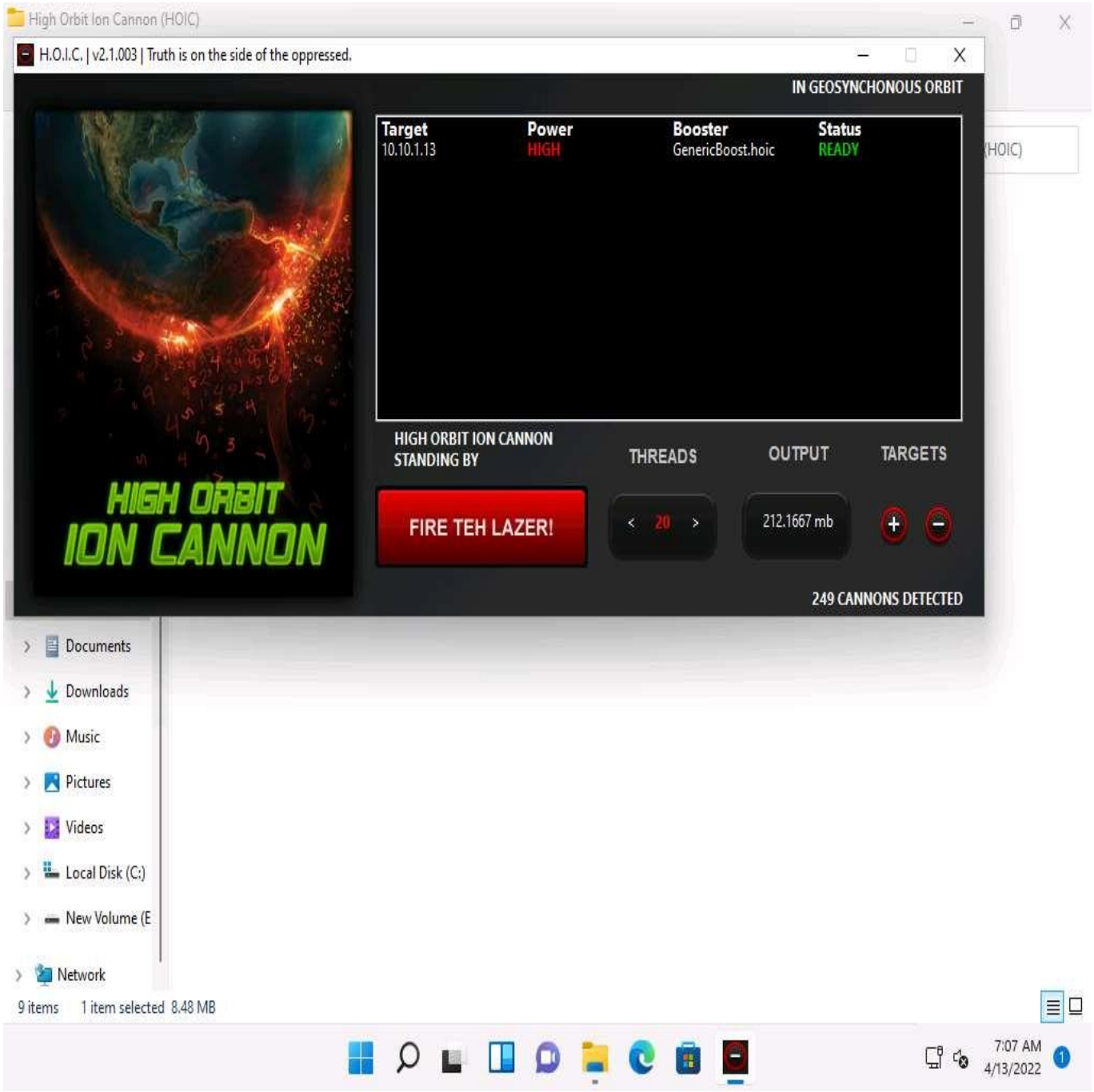
16. ☐ You can observe that the performance of the machine is slightly affected and that its response is slowing down.
17. ☐ In this lab, only three machines are used to demonstrate the flooding of a single machine. If there are a large number of machines performing flooding, then the target machine's (here, **Parrot Security**) resources are completely consumed, and the machine is overwhelmed.

In real-time, a group of hackers operating hundreds or thousands of machines configure this tool on their machines, communicate with each other through IRCs, and simulate the DDoS attack by flooding a target machine or website at the same time. The target is overwhelmed and stops responding to user requests or starts dropping packets coming from legitimate users. The larger the number of attacker machines, the higher the impact of the attack on the target machine or website.

18. ☐ On completion of the task, click **FIRE TEH LAZER!** again, and then close the HOIC window on all the attacker machines. Also, close the **Wireshark** window on the **Parrot Security** machine.

To switch to the **Windows 11**, click Windows 11.

To switch to the **Windows Server 2019**, click Windows Server 2019.
To switch to the **Windows Server 2022**, click Windows Server 2022.
To switch to **Parrot Security** machine click Parrot Security.



19. ☐ This concludes the demonstration of how to perform a DDoS attack using HOIC.
20. ☐ Close all open windows and document all the acquired information.

Task 5: Perform a DDoS Attack using LOIC

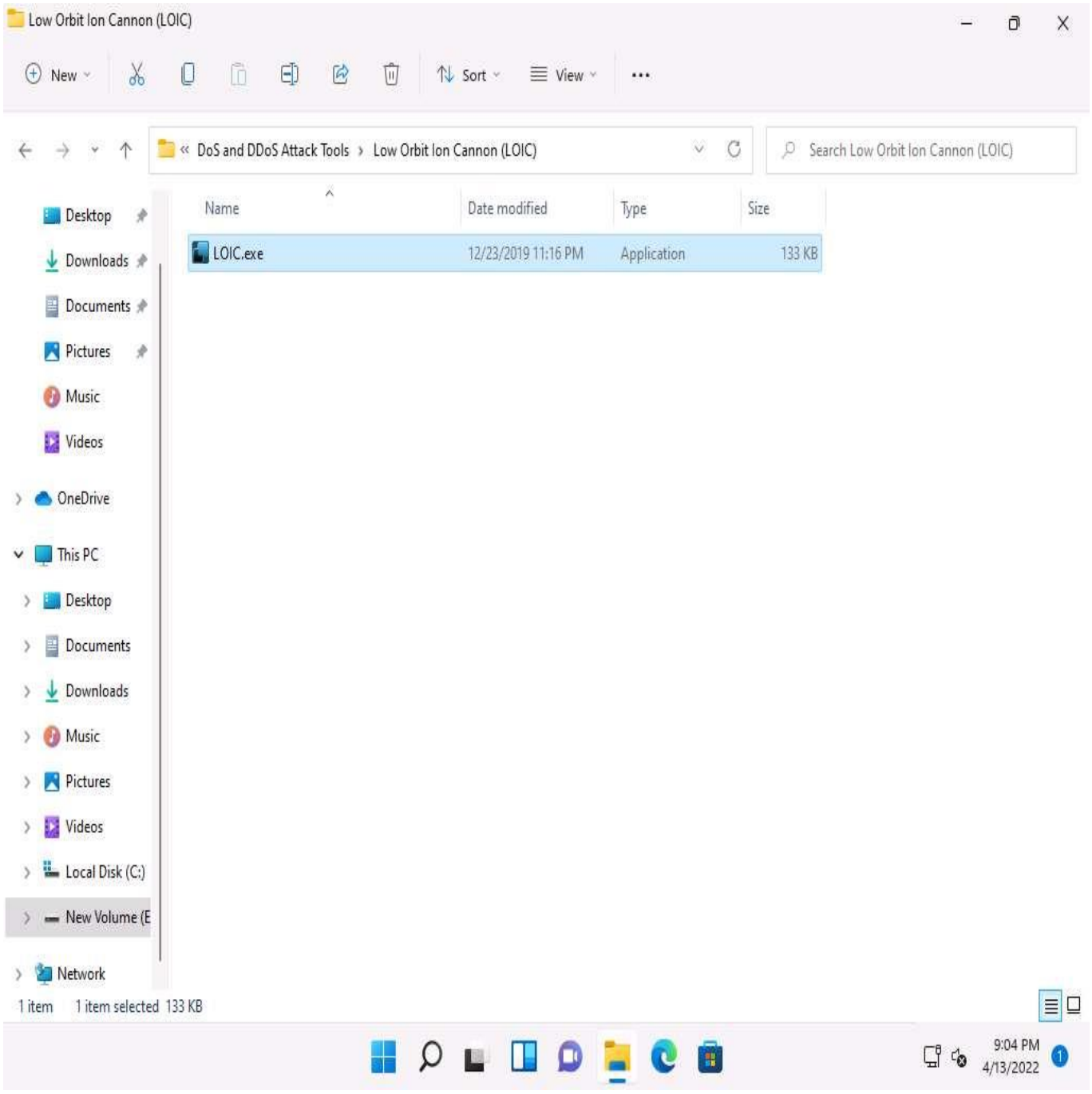
LOIC (Low Orbit Ion Cannon) is a network stress testing and DoS attack application. We can also call it an application-based DOS attack as it mostly targets web applications. We can use LOIC on a target site to flood the server with TCP packets, UDP packets, or HTTP requests with the intention of disrupting the service of a particular host.

Here, we will use the LOIC tool to perform a DDoS attack on the target system.

In this task, we will use the **Windows 11**, **Windows Server 2019**, and **Windows Server 2022** machines to launch a DDoS attack on the **Parrot Security** machine.

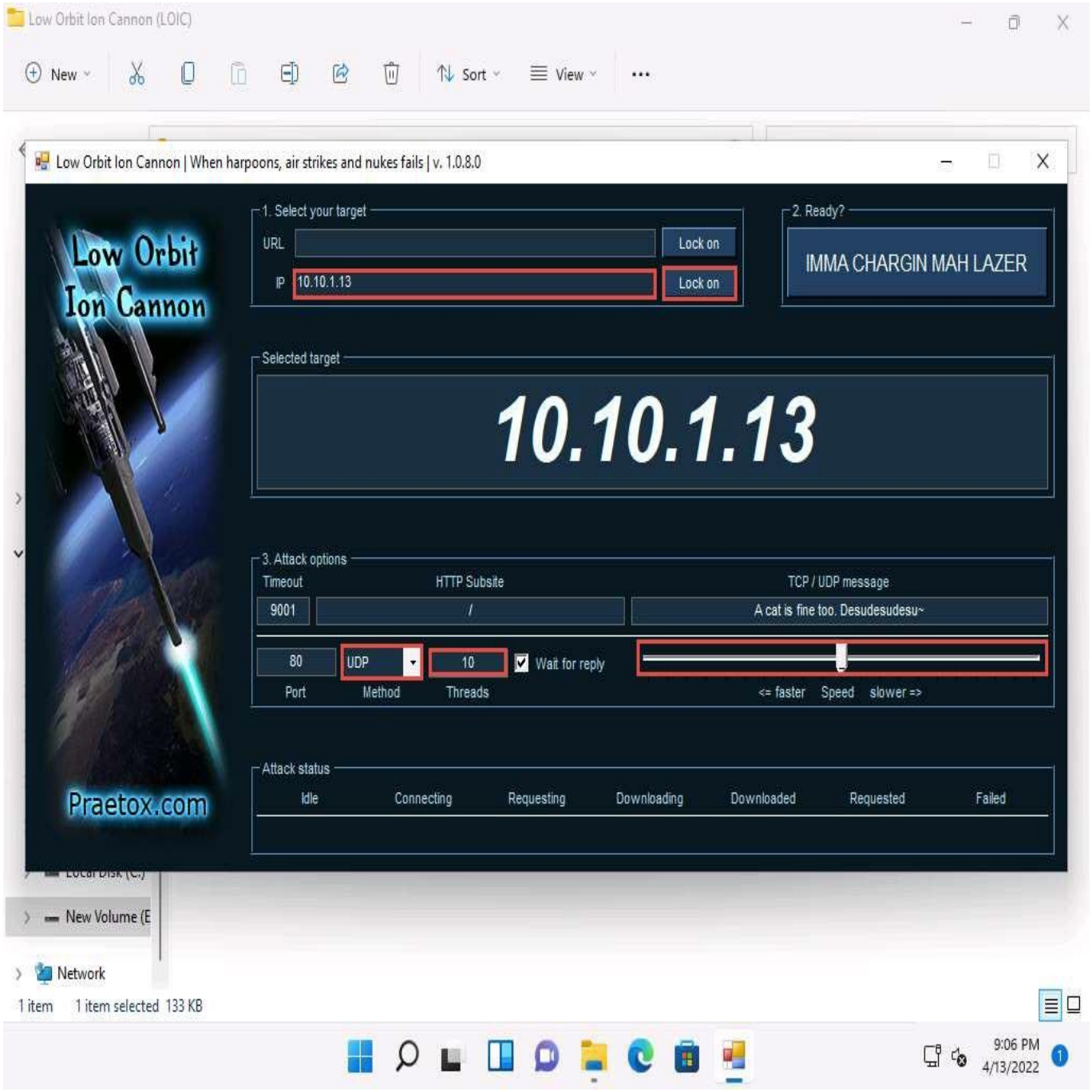
1. Click Windows 11 to switch to the **Windows 11** machine, navigate to **E:\CEH-Tools\CEHv12 Module 10 Denial-of-Service\DoS and DDoS Attack Tools\Low Orbit Ion Cannon (LOIC)** and double-click **LOIC.exe**.

   If an **Open File - Security Warning** pop-up appears, click **Run**.



2. The **Low Orbit Ion Cannon** main window appears.
3. Perform the following settings:
   - Under the **Select your target** section, type the target IP address under the **IP** field (here, **10.10.1.13**), and then click the **Lock on** button to add the target devices.

- Under the **Attack options** section, select **UDP** from the drop-down list in **Method**. Set the thread's value to **10** under the **Threads** field. Slide the power bar to the middle.



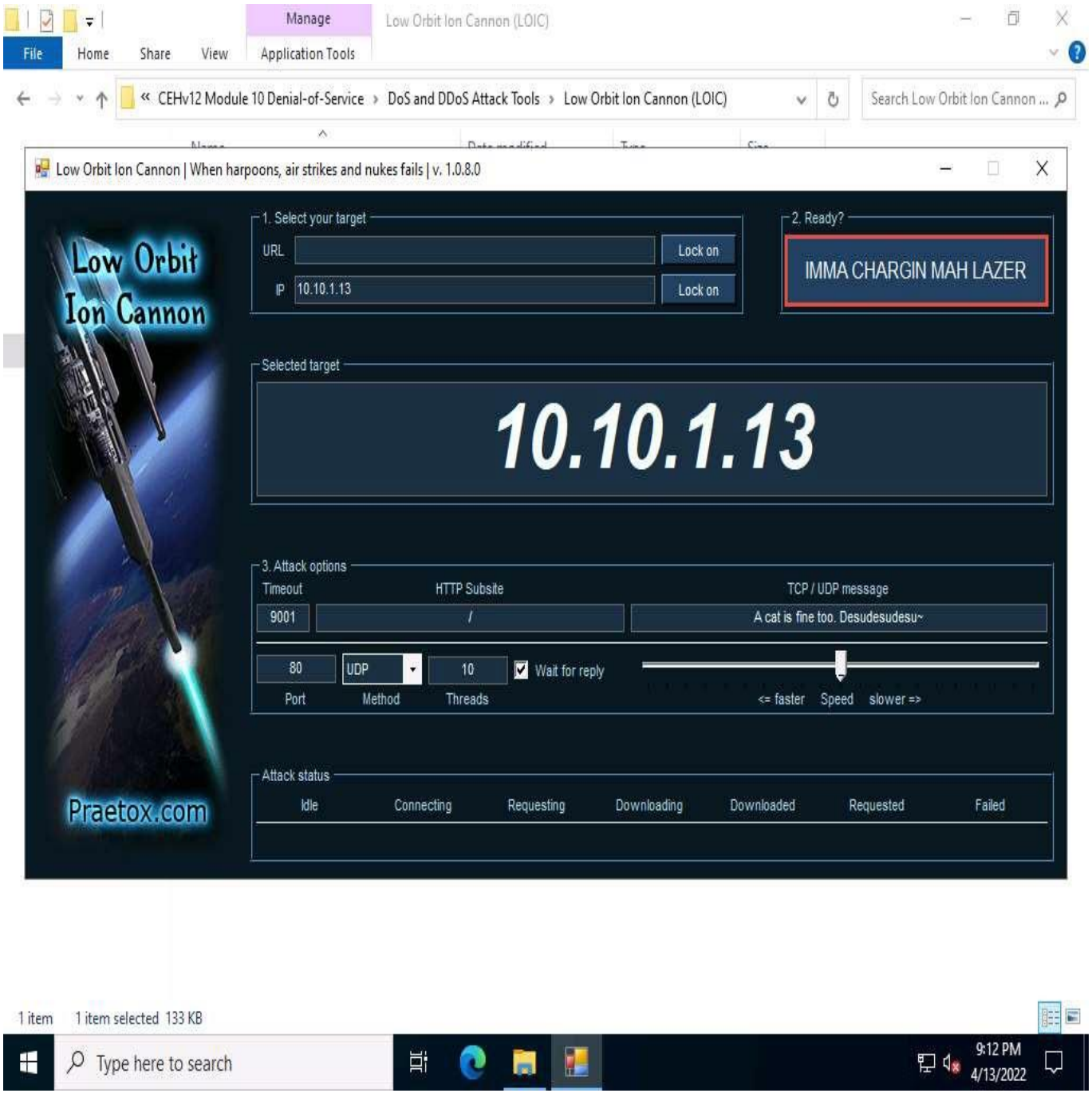
4. ☐ Now, switch to the **Windows Server 2019** and **Windows Server 2022** machines and follow **Steps 1 - 3** to launch LOIC and configure it.

To switch to the **Windows Server 2019**, click Windows Server 2019.
To switch to the **Windows Server 2022**, click Windows Server 2022.
On the **Windows Server 2019** and **Windows Server 2022** machines, LOIC is located at **Z:\CEHv12 Module 10 Denial-of-Service\DoS and DDoS Attack Tools\Low Orbit Ion Cannon (LOIC).**

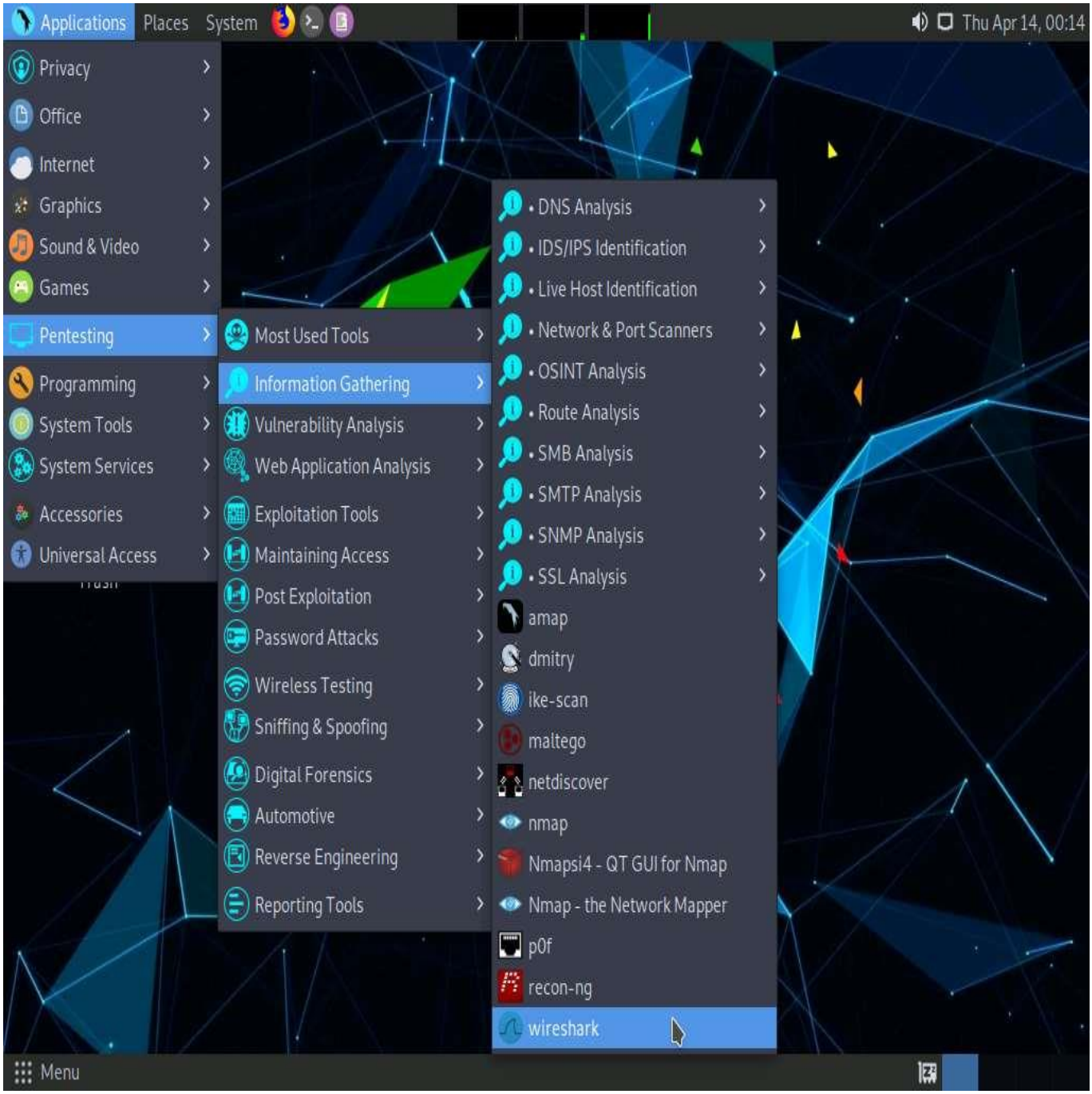
5. ☐ Once **LOIC** is configured on all machines, switch to each machine (**Windows 11, Windows Server 2019**, and **Windows Server 2022**) and click the **IMMA CHARGIN MAH LAZER** button under the **Ready?** section to initiate the DDoS attack on the target **Parrot Security** machine.

To switch to the **Windows 11**, click Windows 11.

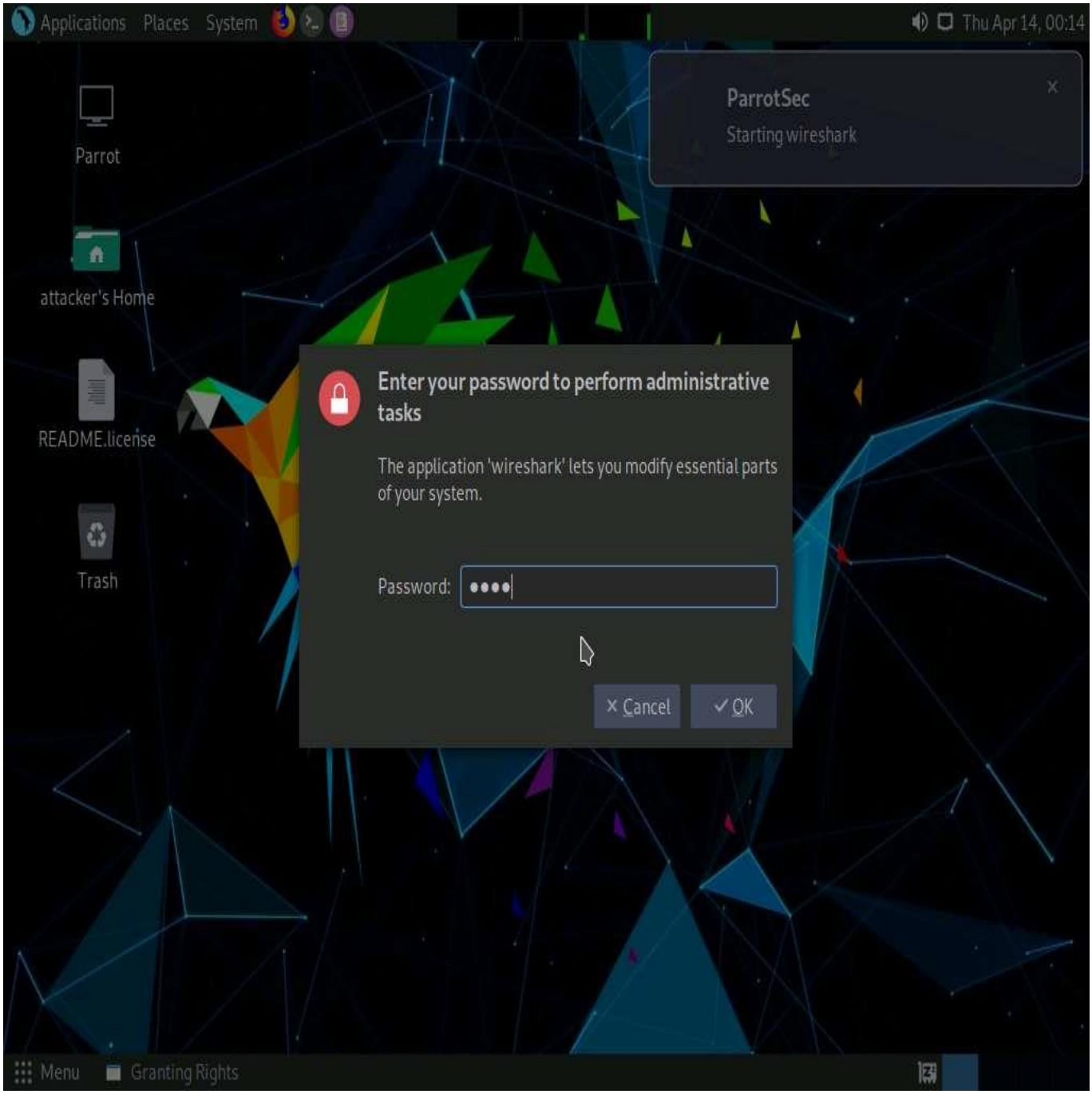
To switch to the **Windows Server 2019**, click Windows Server 2019.
To switch to the **Windows Server 2022**, click Windows Server 2022.



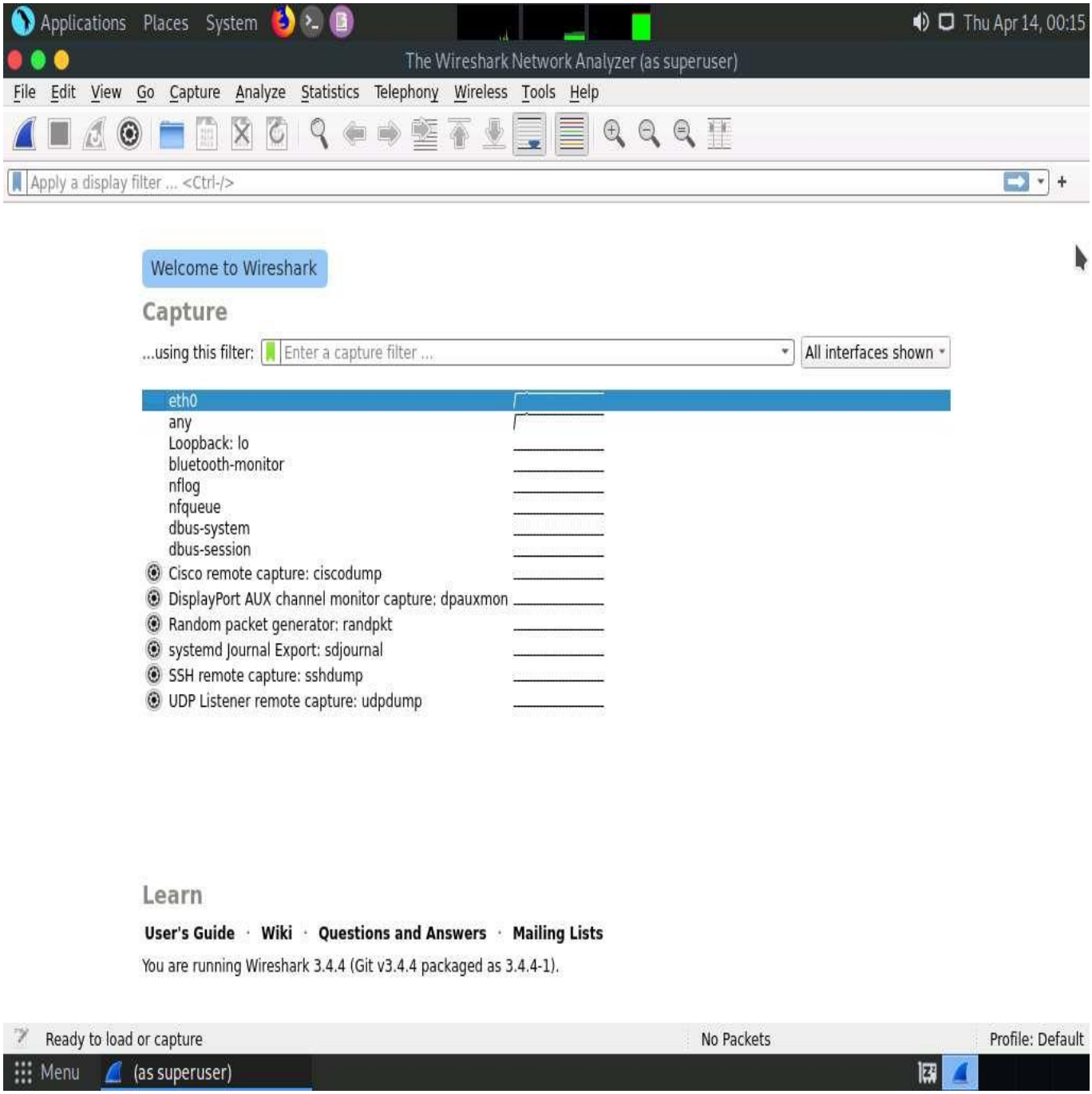
6. ☐ Click Parrot Security to switch to the **Parrot Security** machine.
7. ☐ Click **Applications** in the top-left corner of **Desktop** and navigate to **Pentesting** --> **Information Gathering** --> **wireshark**.



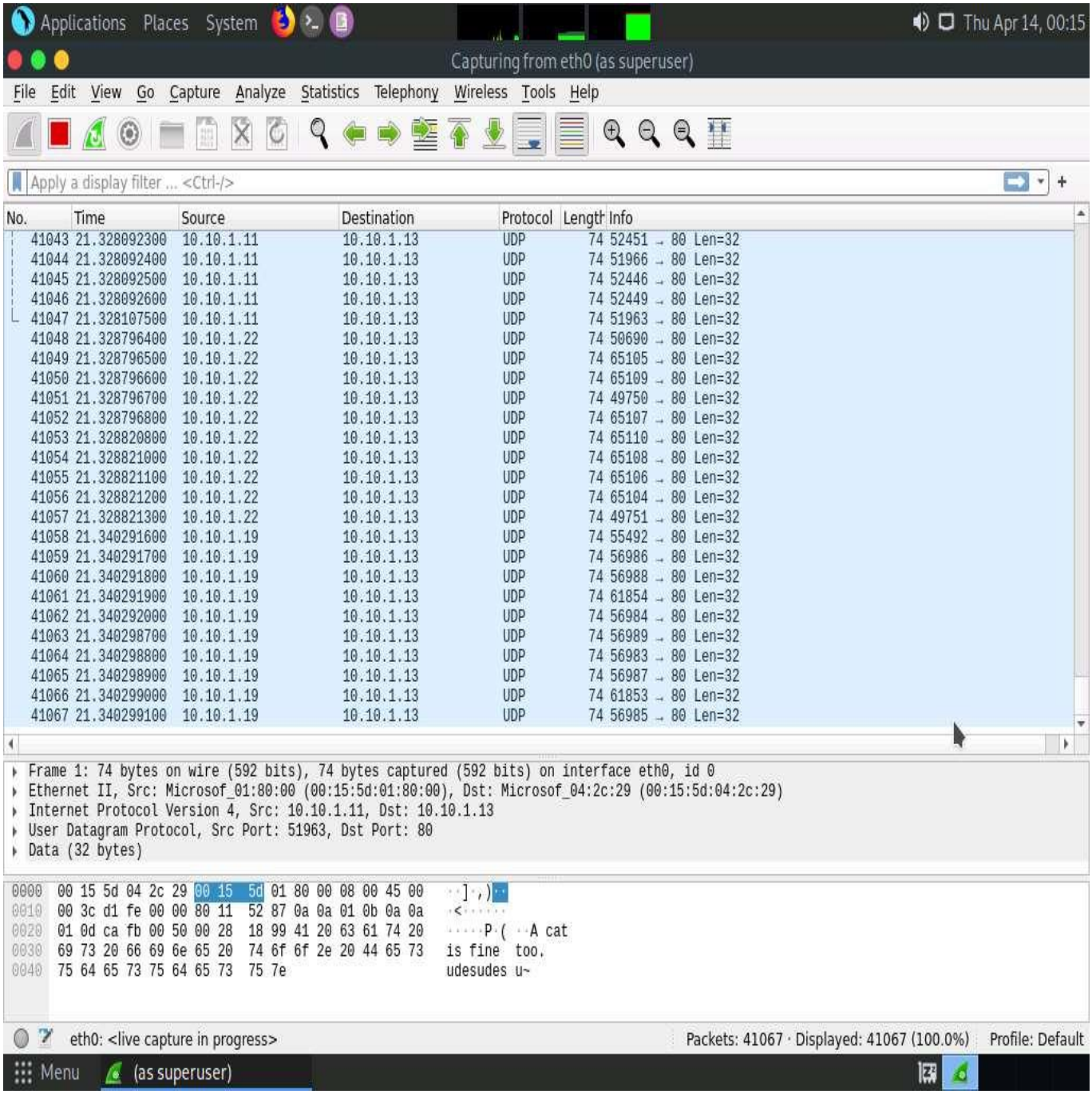
8. ☐ A security pop-up appears, enter the password as **toor** in the **Password** field and click **OK**.



9. **The Wireshark Network Analyzer** window appears. Double-click on the primary network interface (here, **eth0**) to start capturing the network traffic.

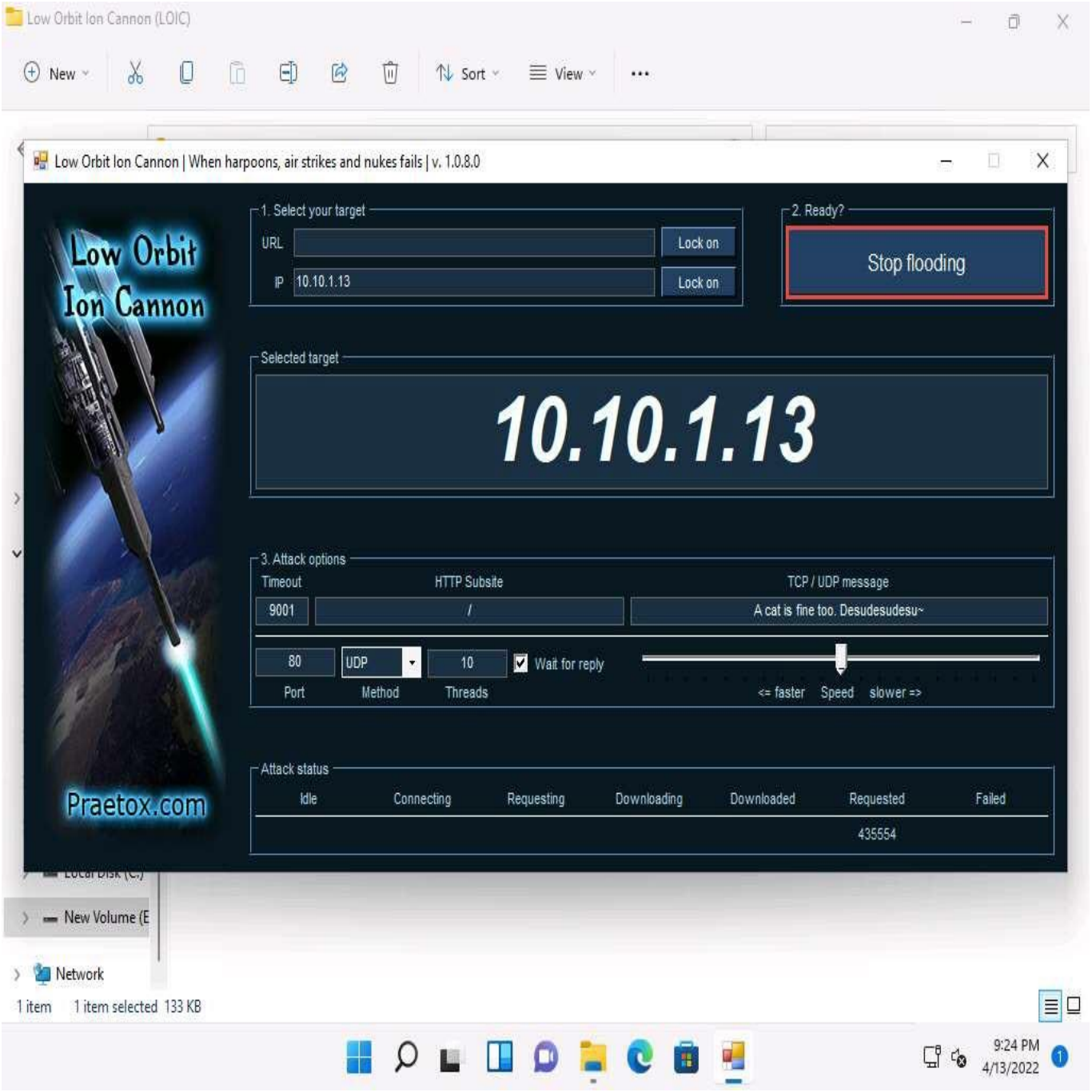


10. ☐ Observe that **Wireshark** starts capturing a large volume of packets, which means that the machine is experiencing a huge number of incoming packets. These packets are coming from the **Windows 11, Windows Server 2019**, and **Windows Server 2022** machines.



11. ☐ Leave the machine intact for 5–10 minutes, and then open it again. You will observe that the performance of the machine is slightly affected and that its response is slowing down.
12. ☐ On completion of the task, click **Stop flooding**, and then close the LOIC window on all the attacker machines.

To switch to the **Windows 11**, click Windows 11.
To switch to the **Windows Server 2019**, click Windows Server 2019.
To switch to the **Windows Server 2022**, click Windows Server 2022.



13. ☐ This concludes the demonstration of how to perform a DDoS attack using LOIC.
14. ☐ Close all open windows and document all the acquired information.