Domain 02 Demo 03

Investigating DoS and MITM Attacks Using Wireshark

Objective: To investigate DoS and MITM attacks using Wireshark and filter and analyze traffic for anomalies like excessive packets, IP duplication, and irregular ARP entries

Tools required: Wireshark

Prerequisites: None

Steps to be followed:

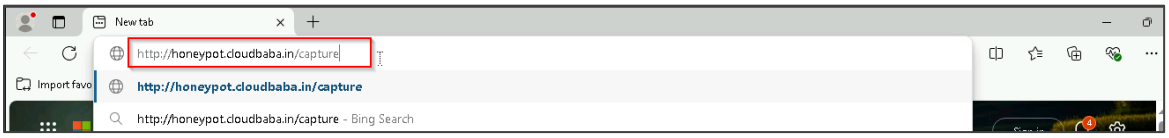
1. Analyze the **MITM.pcapng** file
2. Analyze the **NmapScanANDDoS.pcapng** file
3. Mitigate **MITM** and **DoS** attacks

Step 1: Analyze the MITM.pcapng file

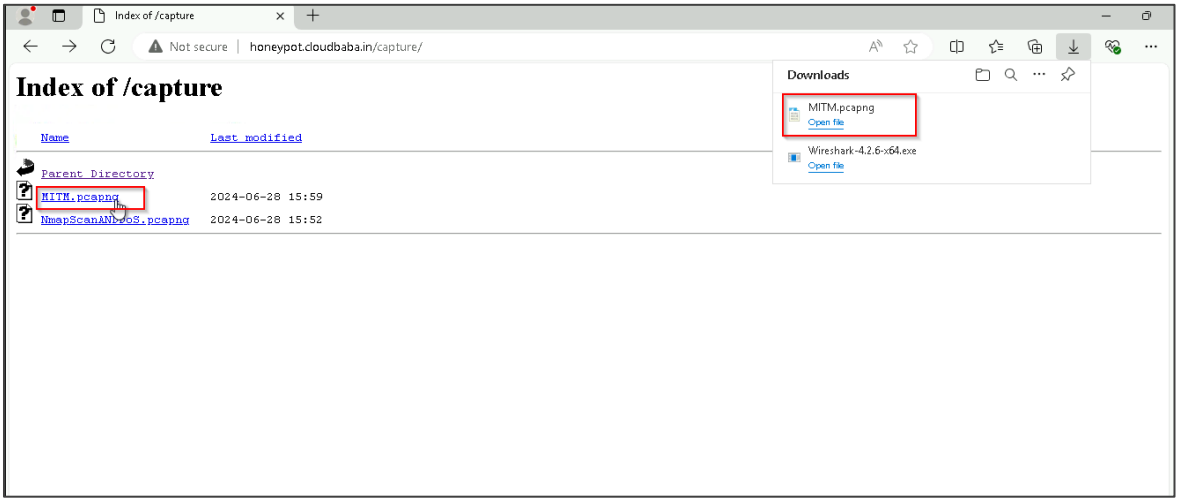
1.1 Open the Microsoft Edge browser

1.2 Browse to the following link:

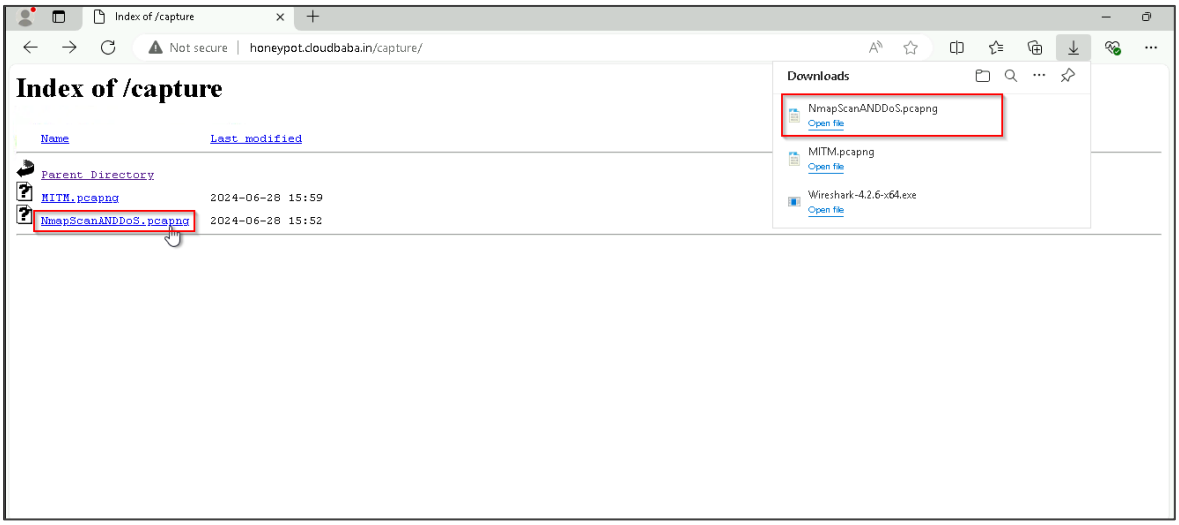
http://honeypot.cloudbaba.in/capture



1.3 Click on the **MITM.pcapng** link to download the file

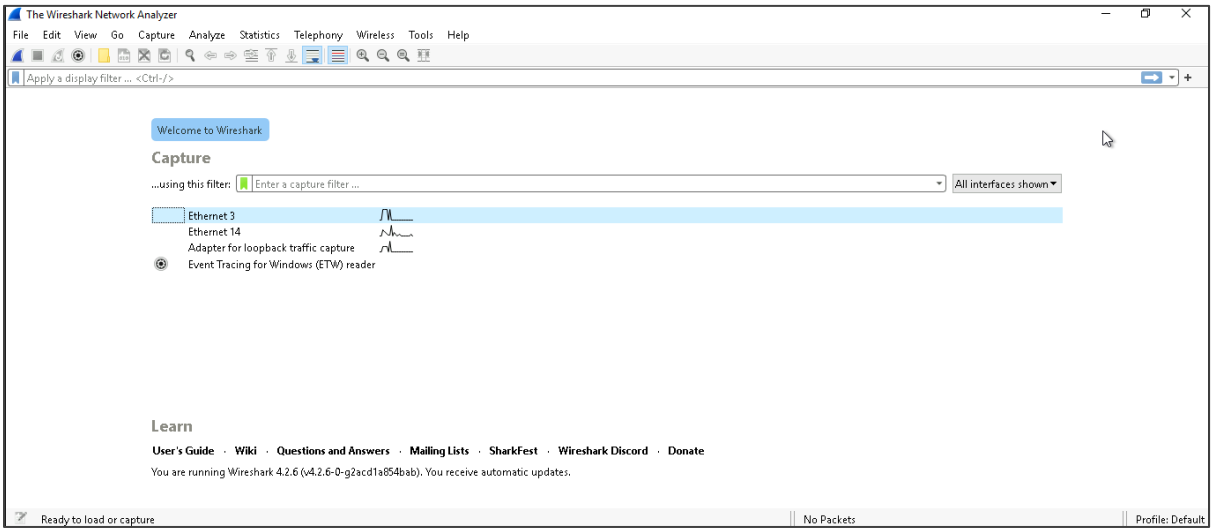


1.4 Further, click on the **NmapScanANDDoS.pcapng** link to download the file

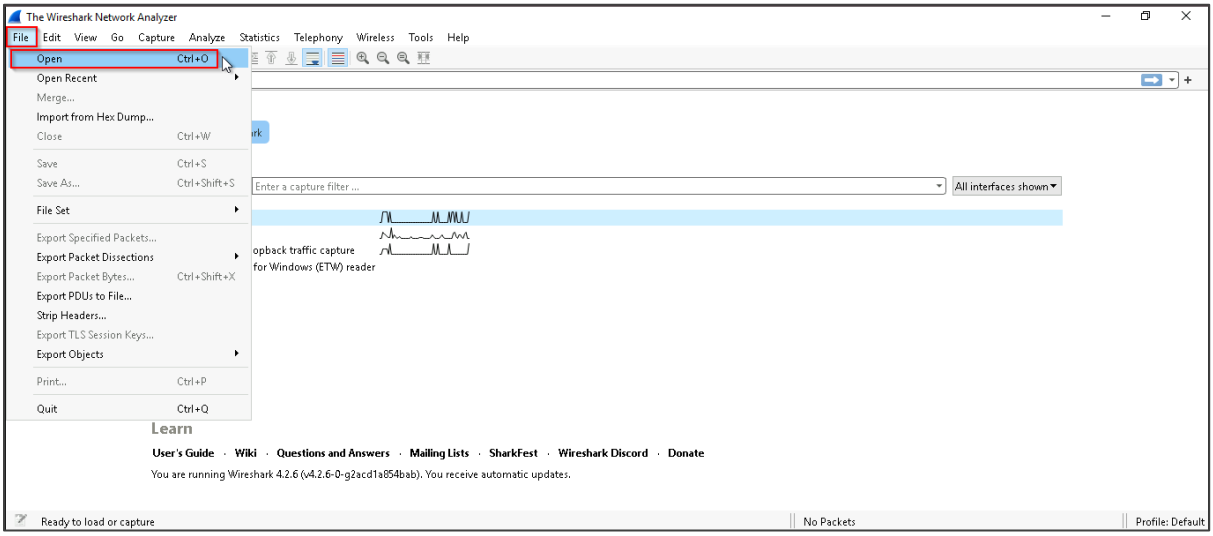


1.5 Navigate to the desktop and open the **Wireshark** application

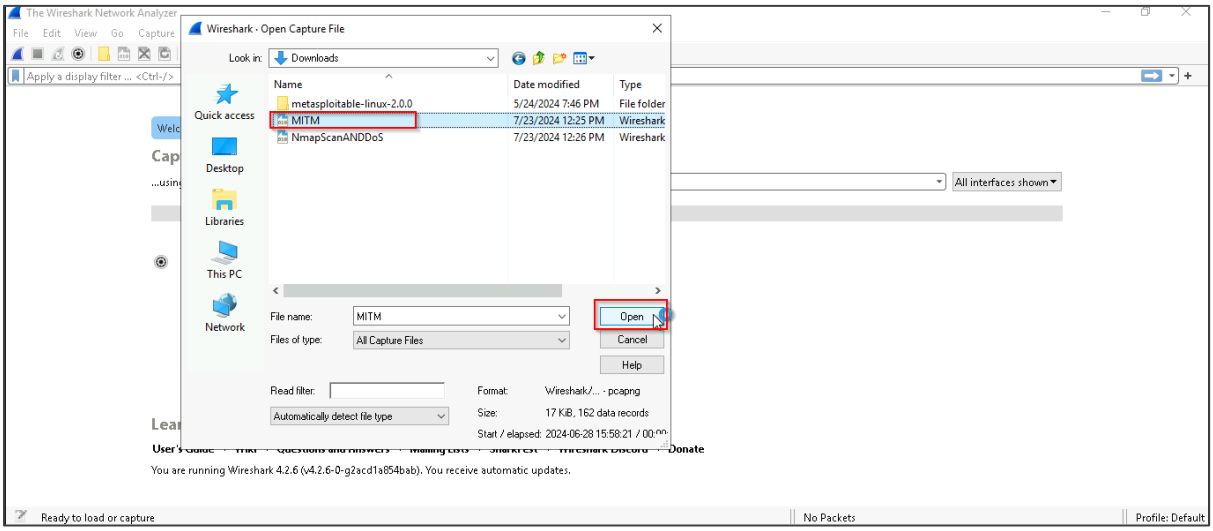
The **Wireshark Network Analyzer** interface opens as shown below:



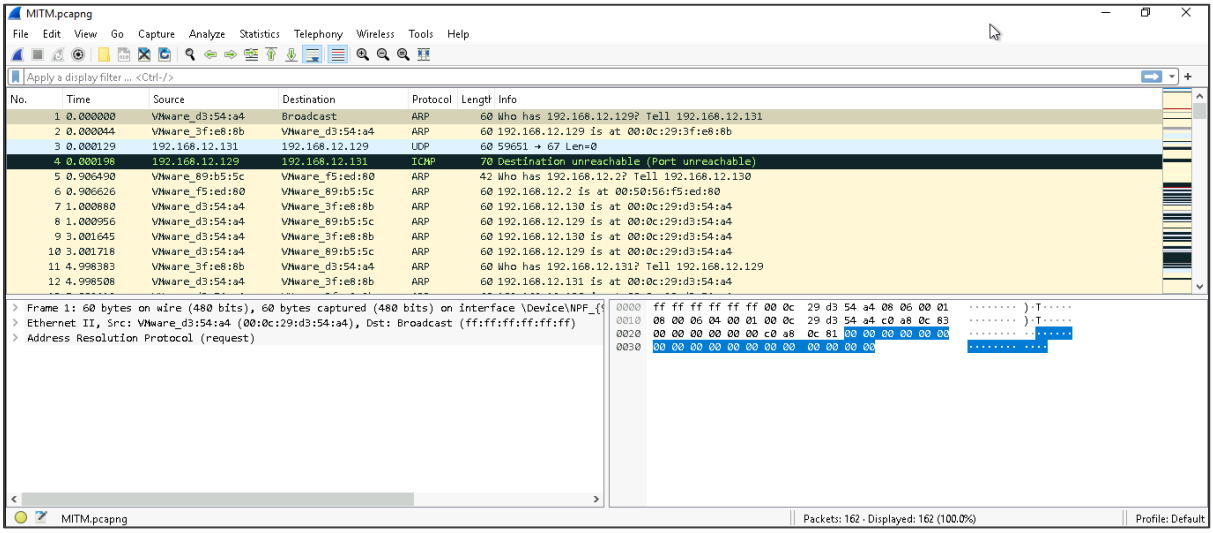
1.6 Click on the **File** option and select **Open**



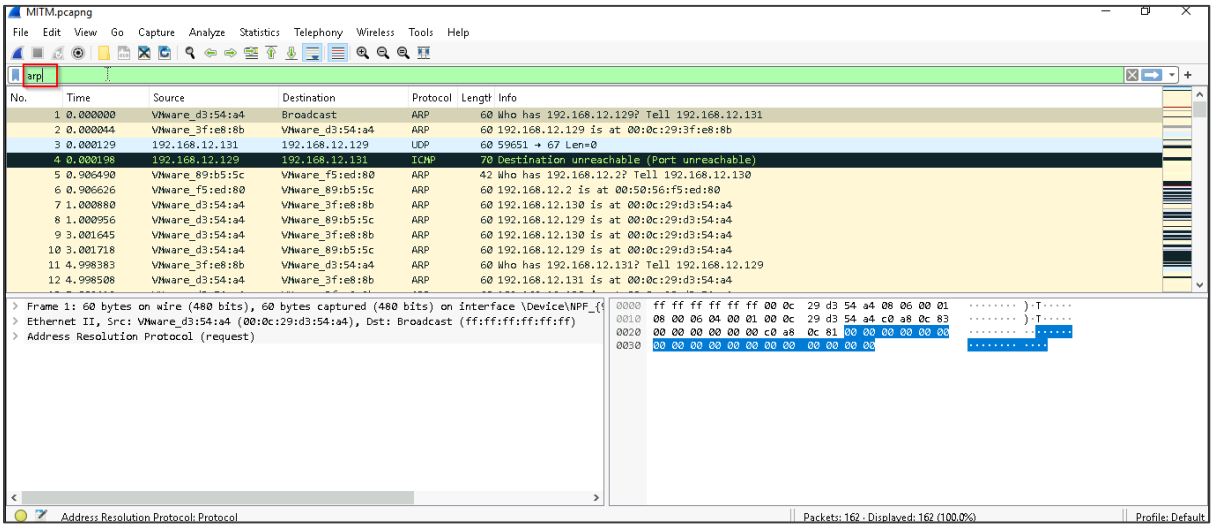
1.7 Select the **MITM** file and click on **Open**



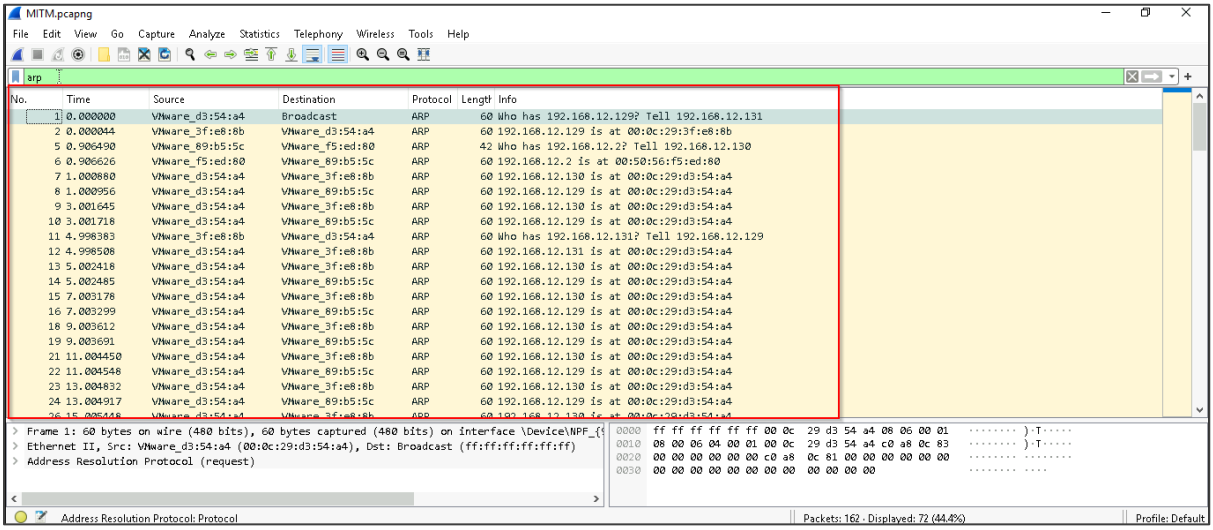
The MITM file opens in the **Wireshark**.



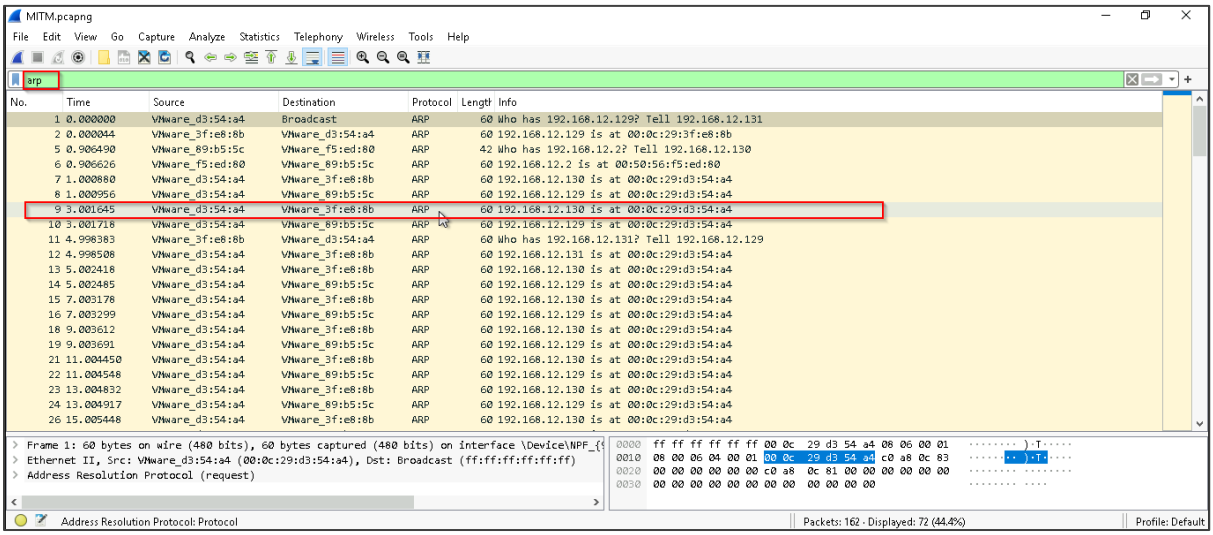
1.8 In the filter section, type **arp** and click **enter** to filter the unexpected ARP traffic



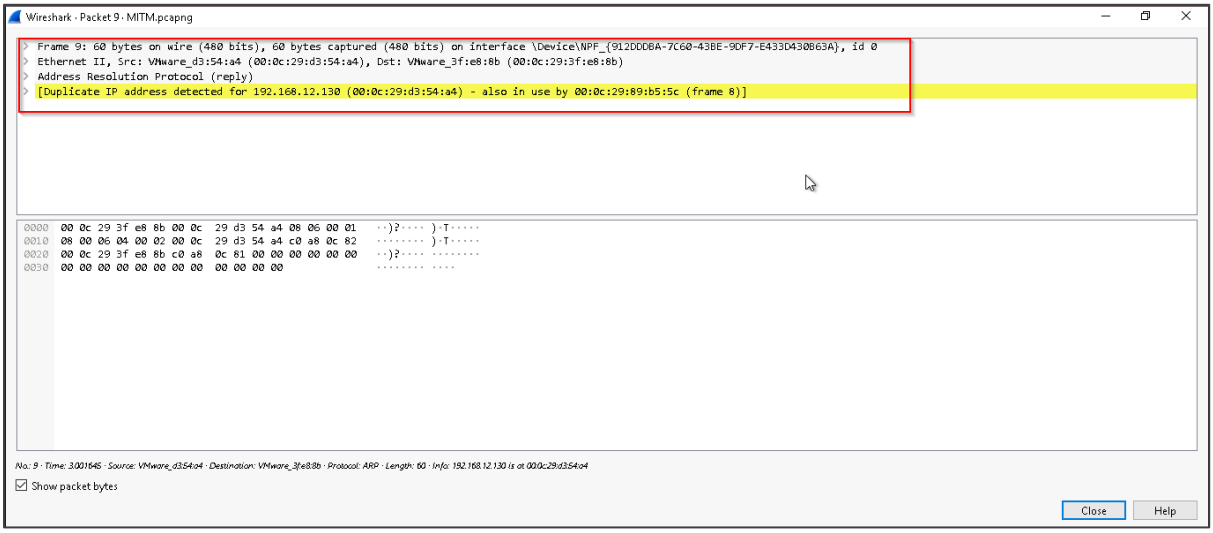
All the **ARP** traffic is filtered out as shown below:



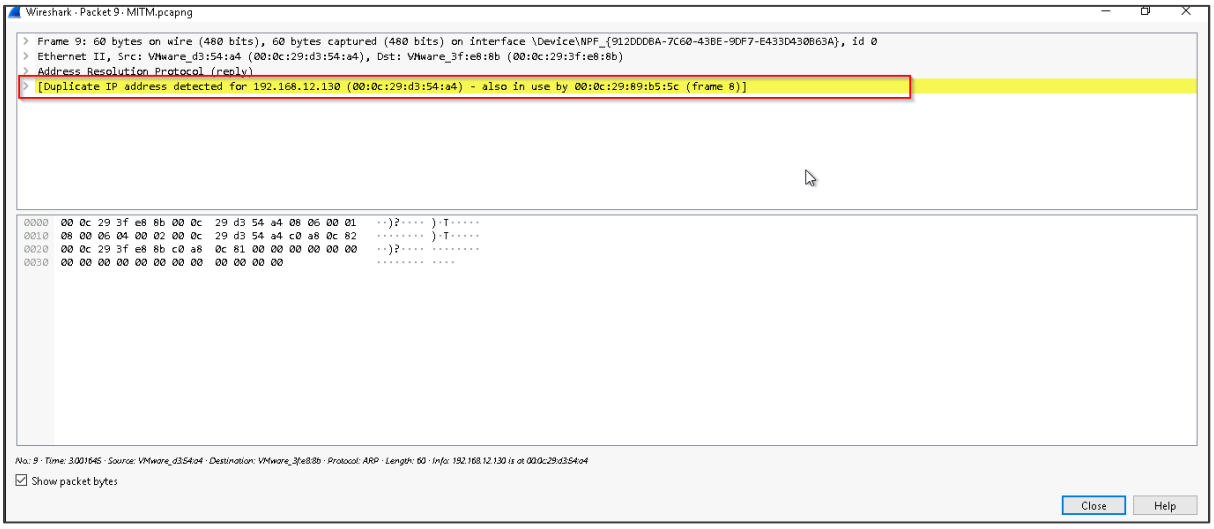
1.9 Double-click on any one **ARP** packet to see the details



The details of the selected ARP packet are available as shown below:



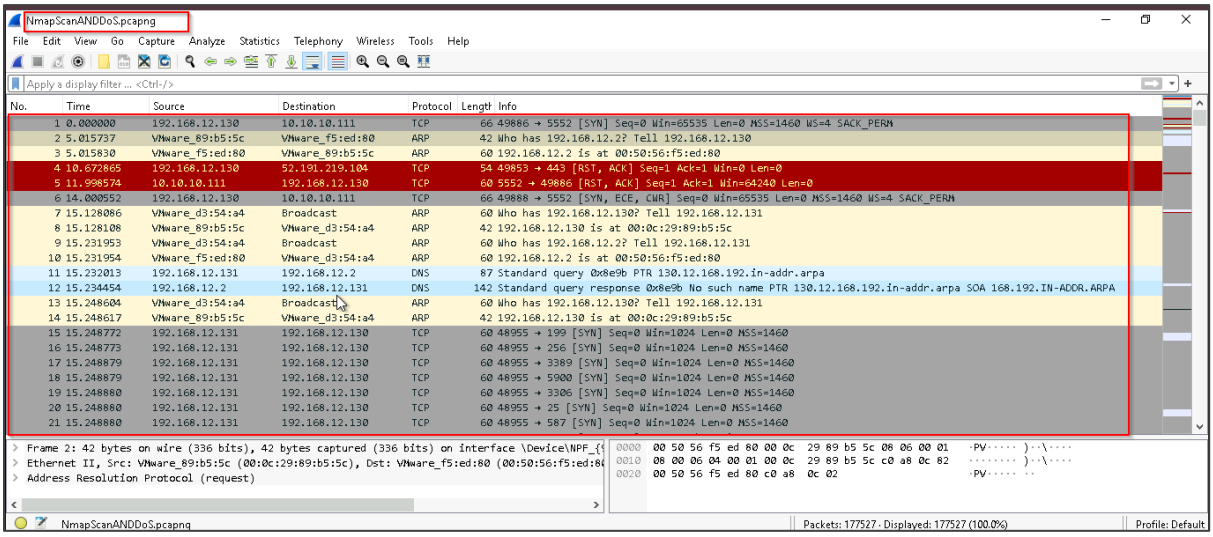
The warning for duplicate IP addresses is also shown below:



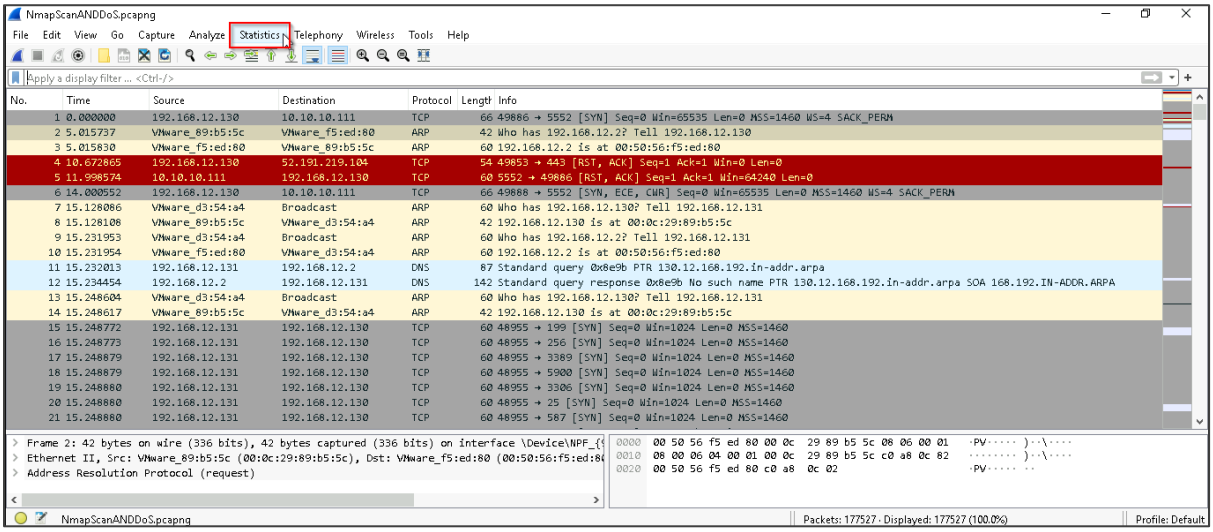
Note: Repeated IP addresses during an MITM attack are often caused by ARP spoofing. This indicates that network devices are receiving conflicting ARP responses, which leads to traffic being redirected to the attacker's MAC address, causing potential data interception and network disruptions.

Step 2: Analyze the NmapScanANDDoS.pcapng file

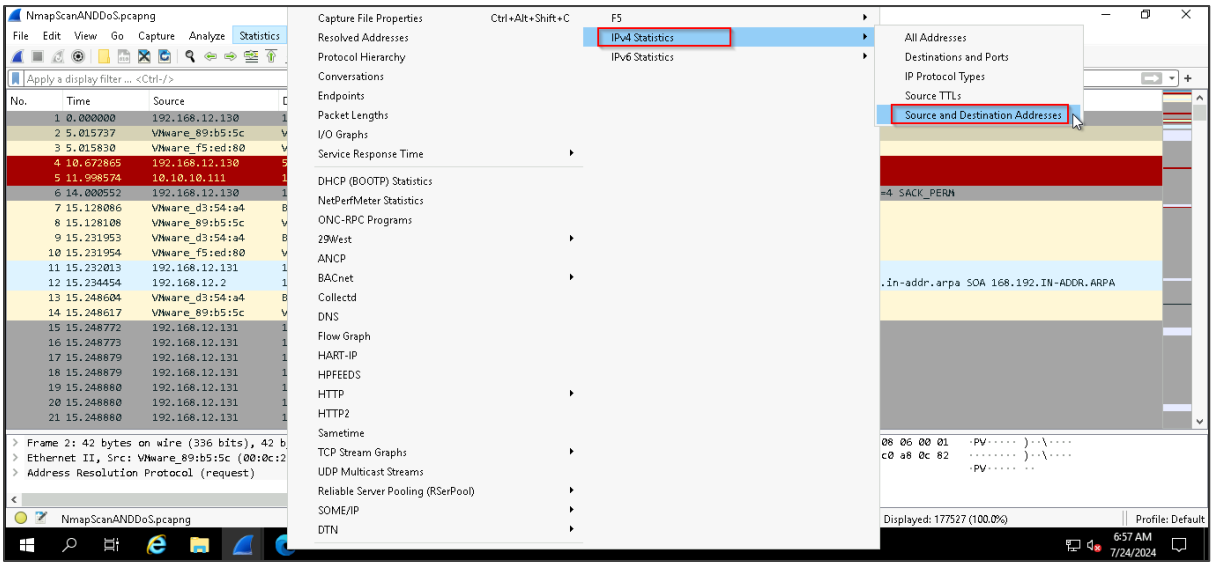
2.1 Open the **NmapScanANDDoS.pcapng** file in **Wireshark**



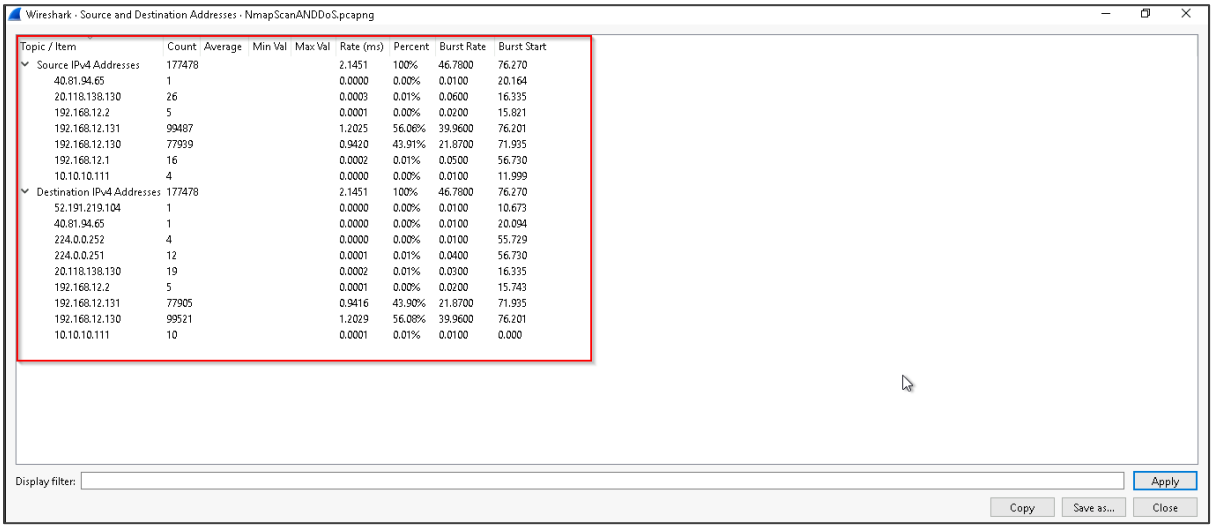
2.2 Click on the **Statistics** option in the menu bar



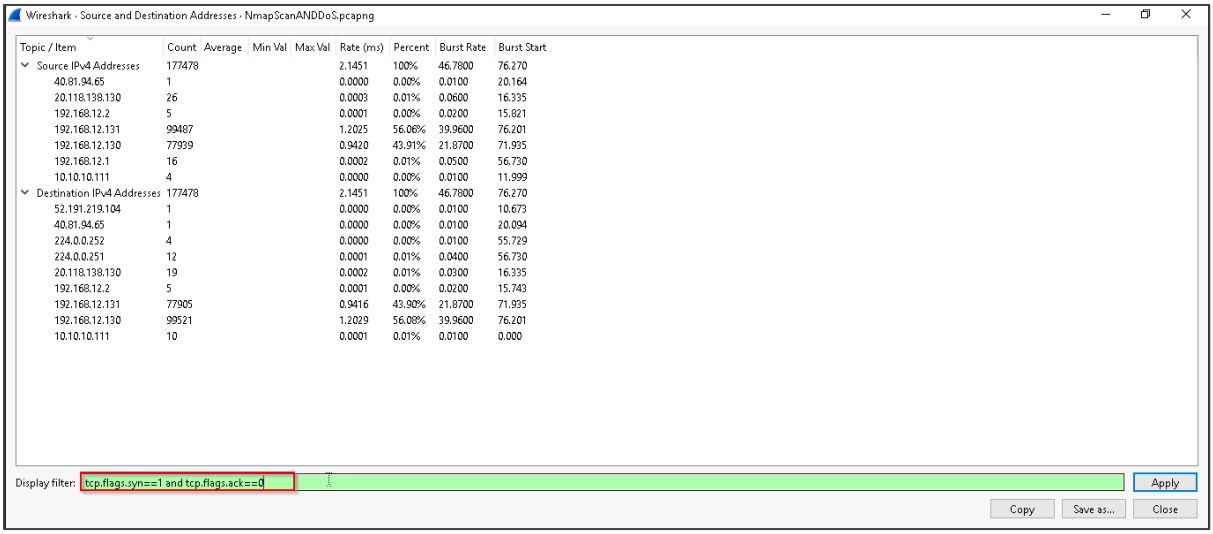
2.3 Further, click on **IPv4 Statistics** and select the **Source and Destination Addresses** option



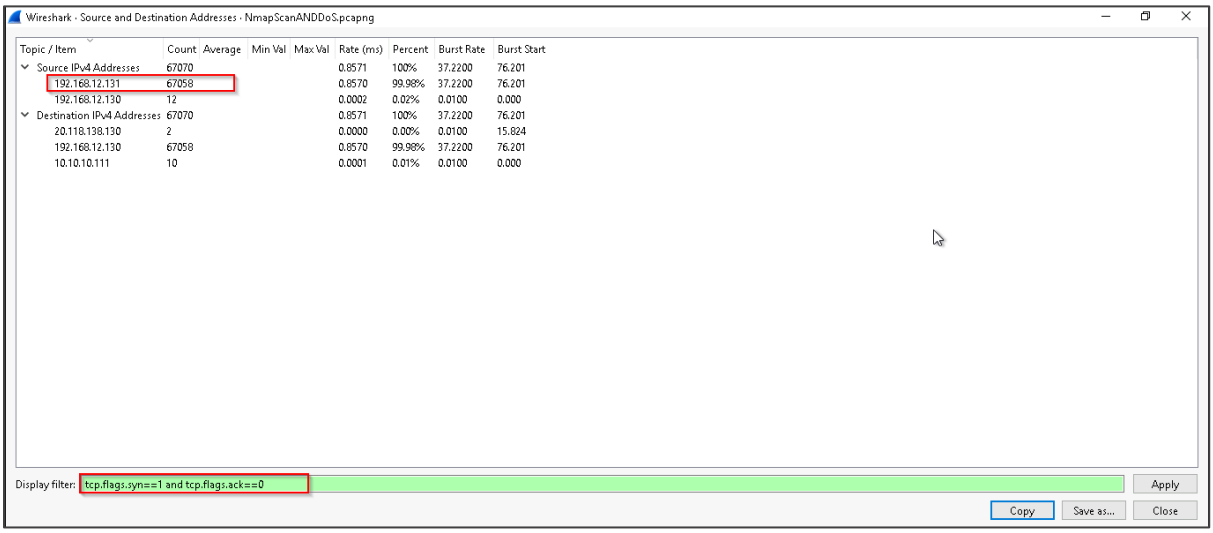
The source IP, along with the packet transmission, is visible.



2.4 In the Display filter field, enter the following filter and press **enter**:
tcp.flags.syn==1 and tcp.flags.ack==0



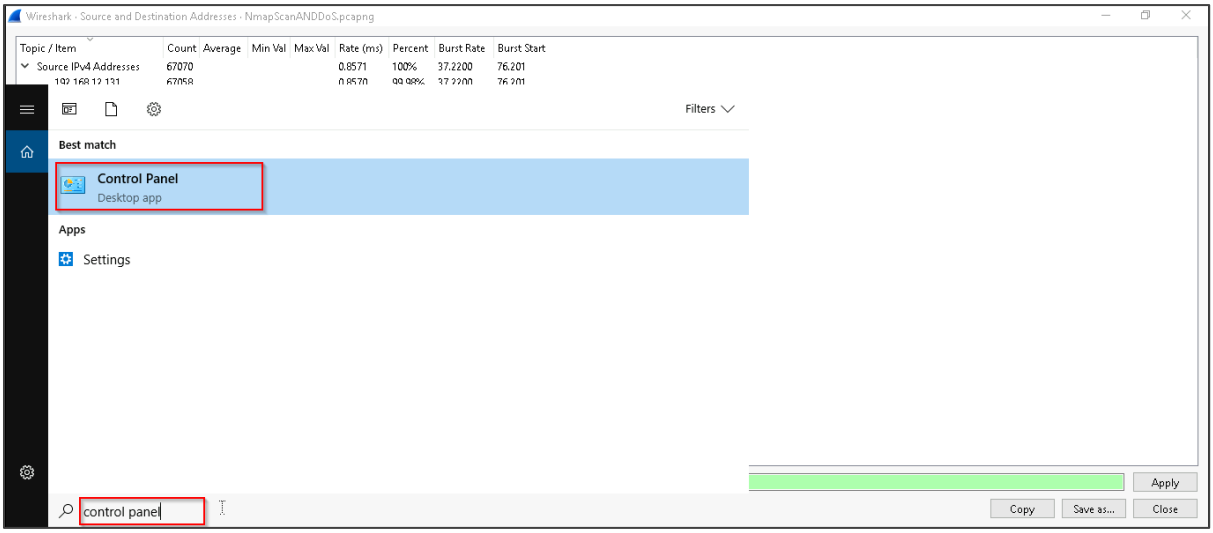
2.5 Copy the **source IP** that has the highest amount of packet transmission as shown below:



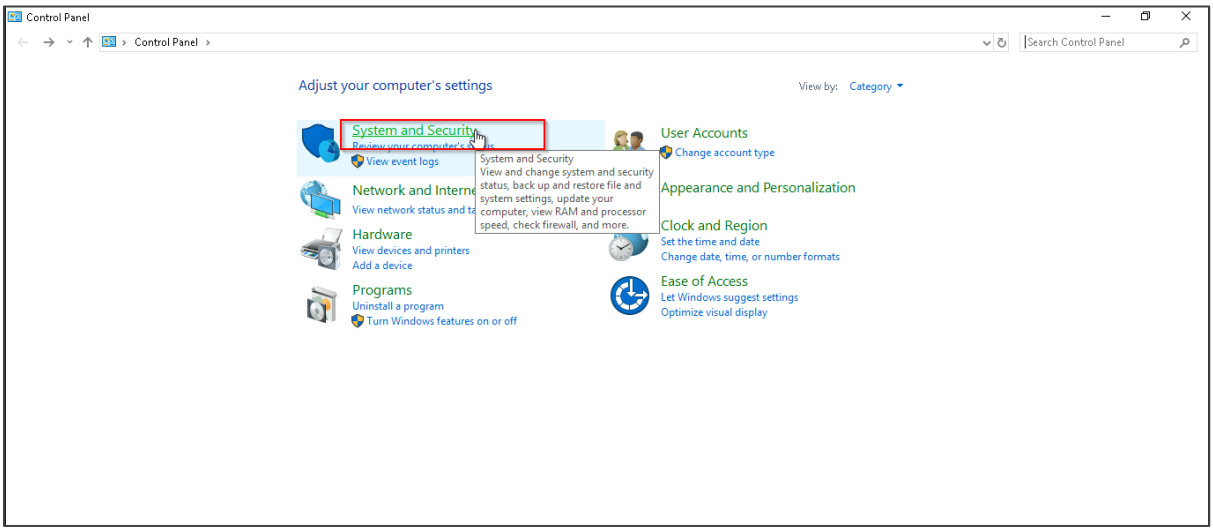
In this case, the **source IP** that has the highest amount of packet transmission is **192.168.12.131**

Step 3: Mitigate MITM and DoS attacks

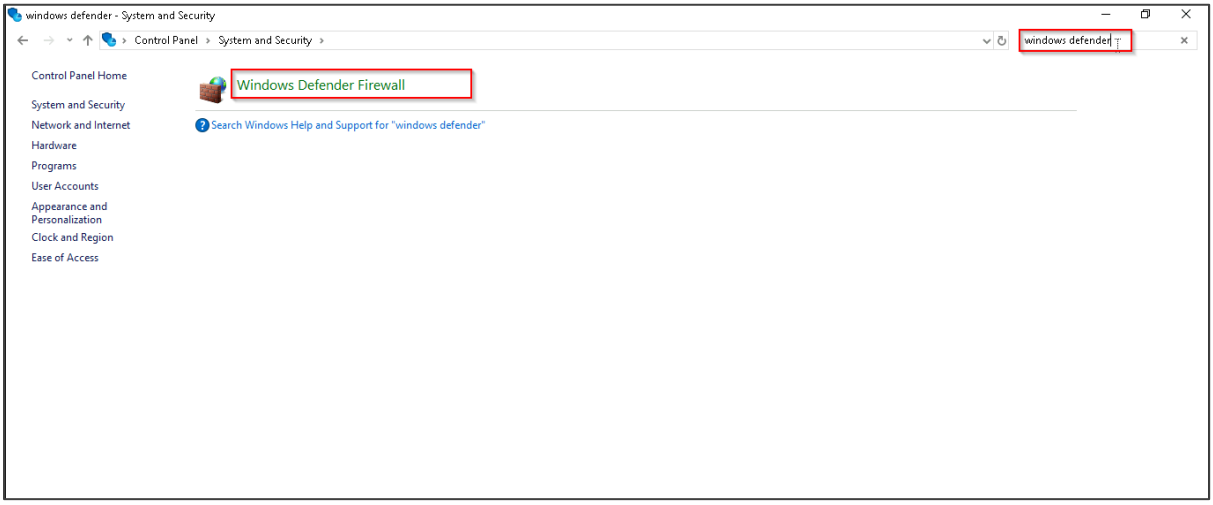
3.1 Open the **Control Panel** from the Windows search button



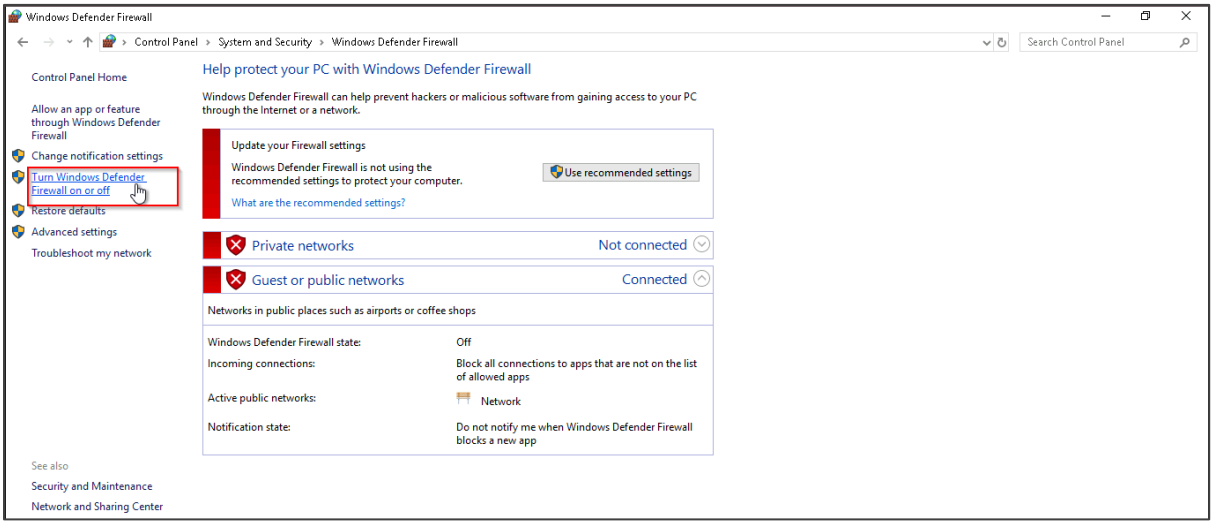
3.2 Select **System and Security**



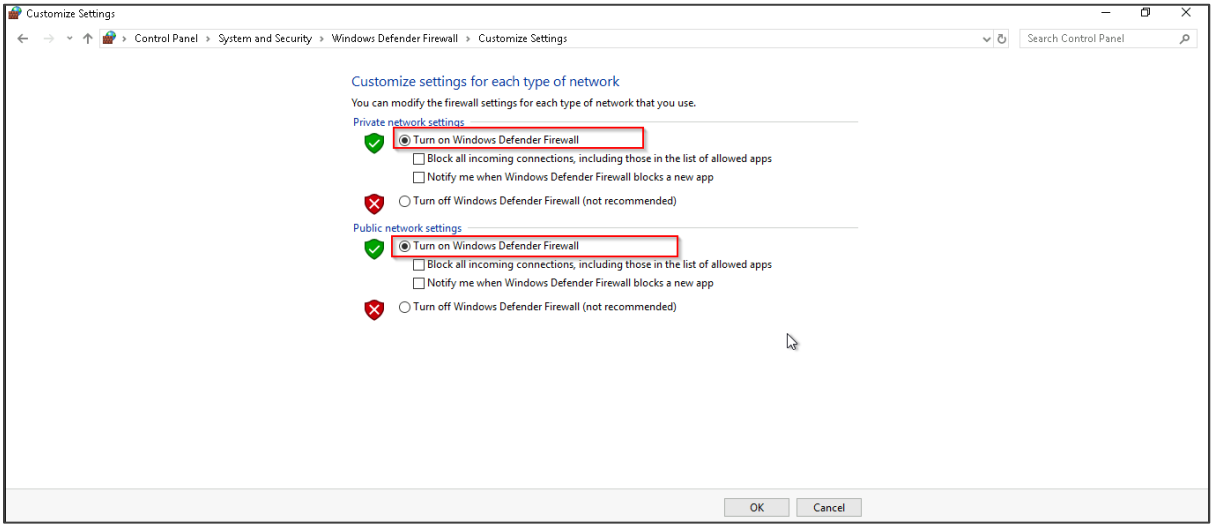
3.3 Search for **windows defender** and click on the **Windows Defender Firewall** option



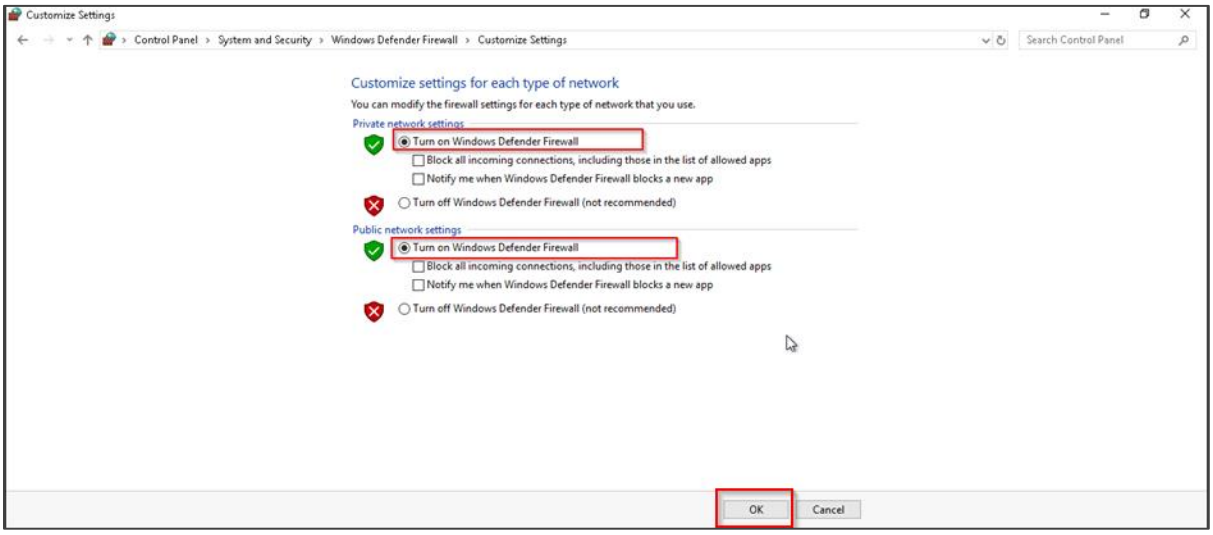
3.4 Click on **Turn Windows Defender Firewall on or off**



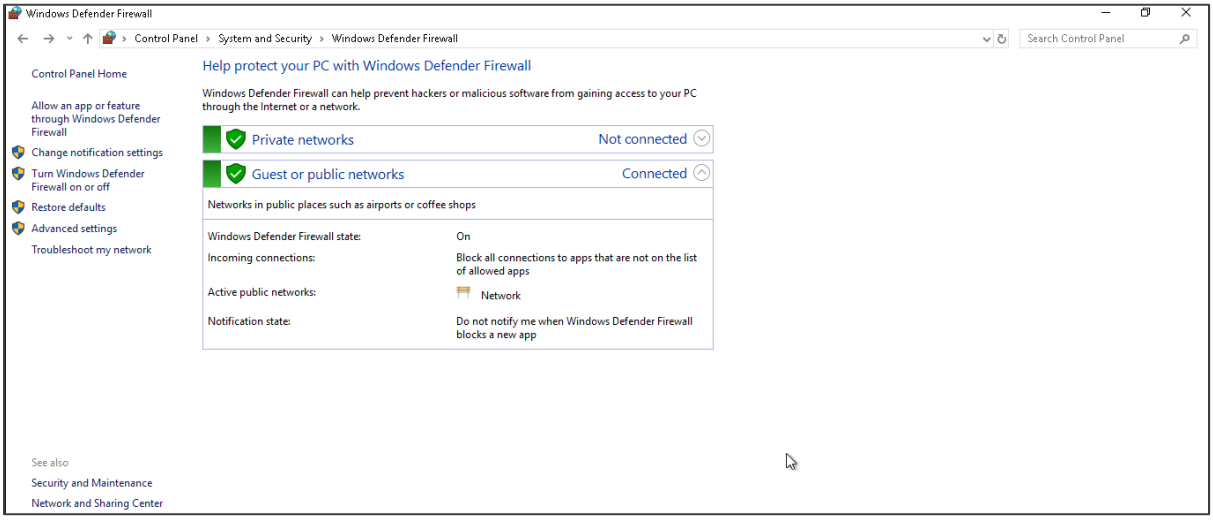
3.5 Select **Turn on Windows Defender Firewall**



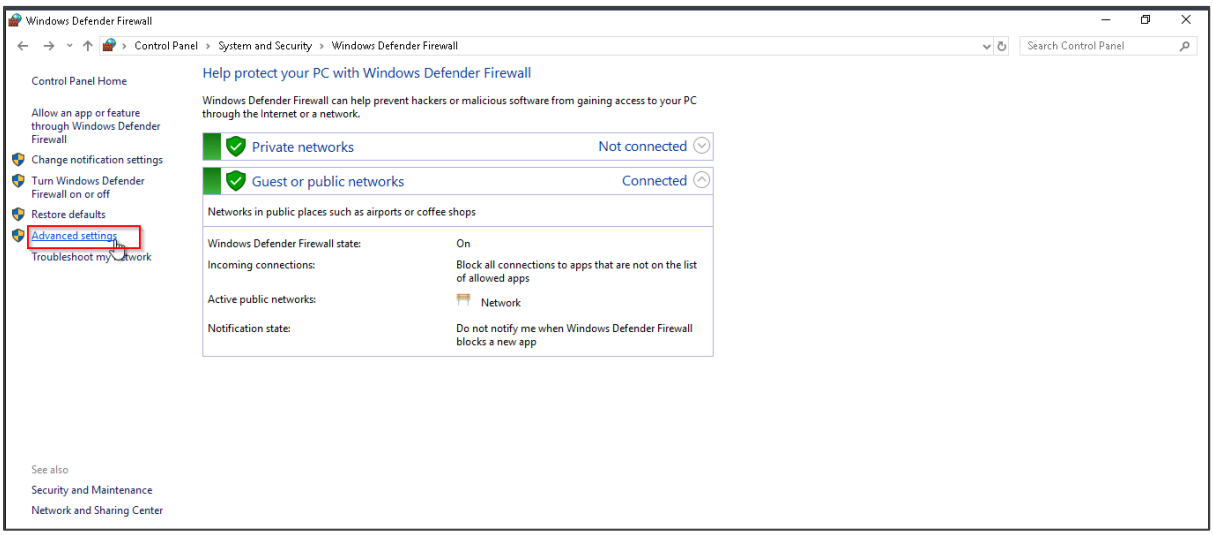
3.6 Click on **OK**



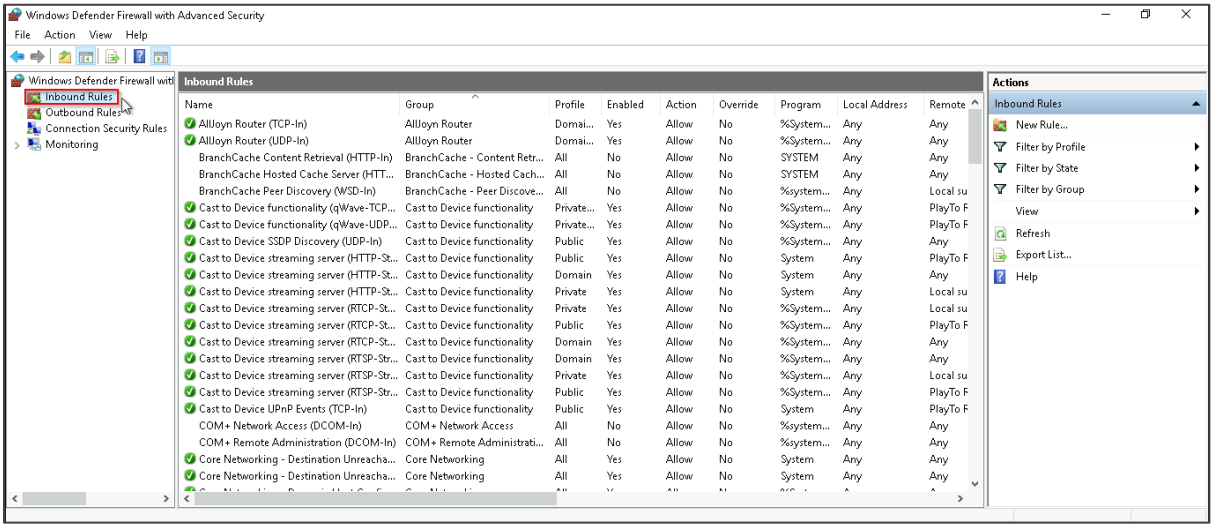
The changes are applied as shown below.



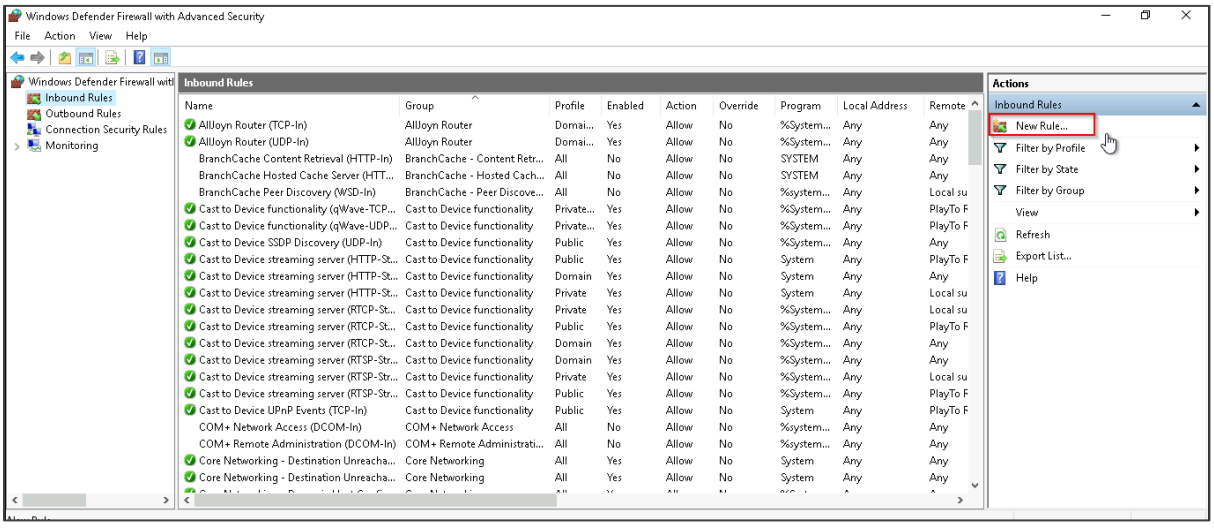
3.7 Click on **Advanced settings**



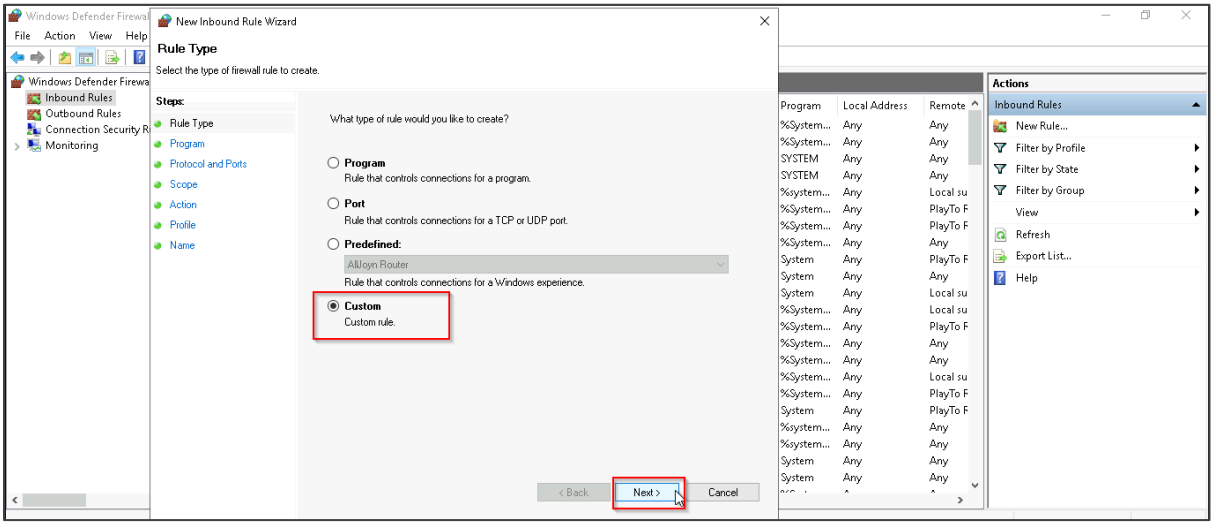
3.8 Click on **Inbound Rules**



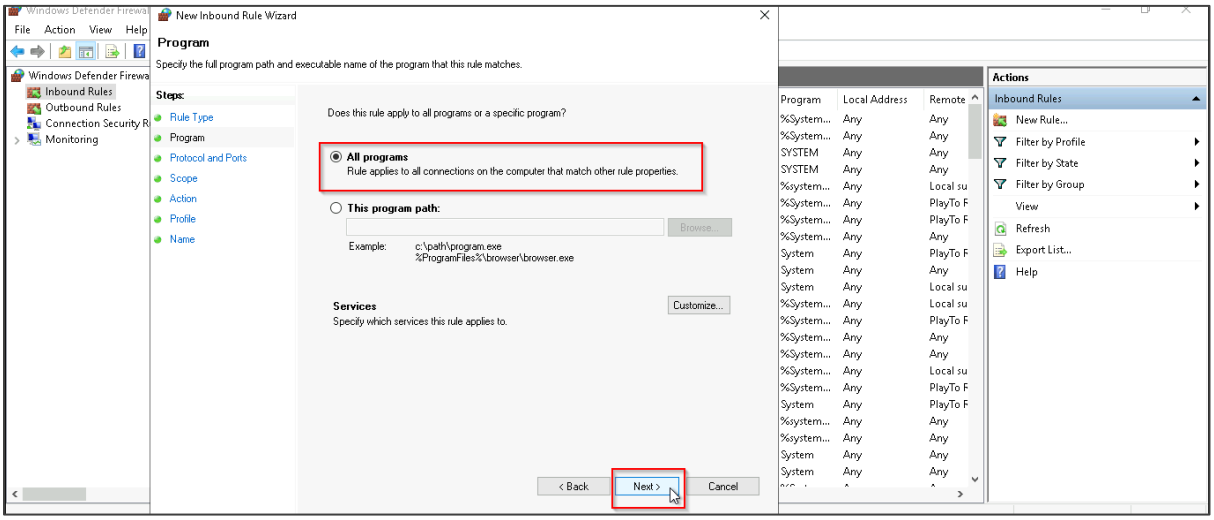
3.9 Further, click on **New Rule**



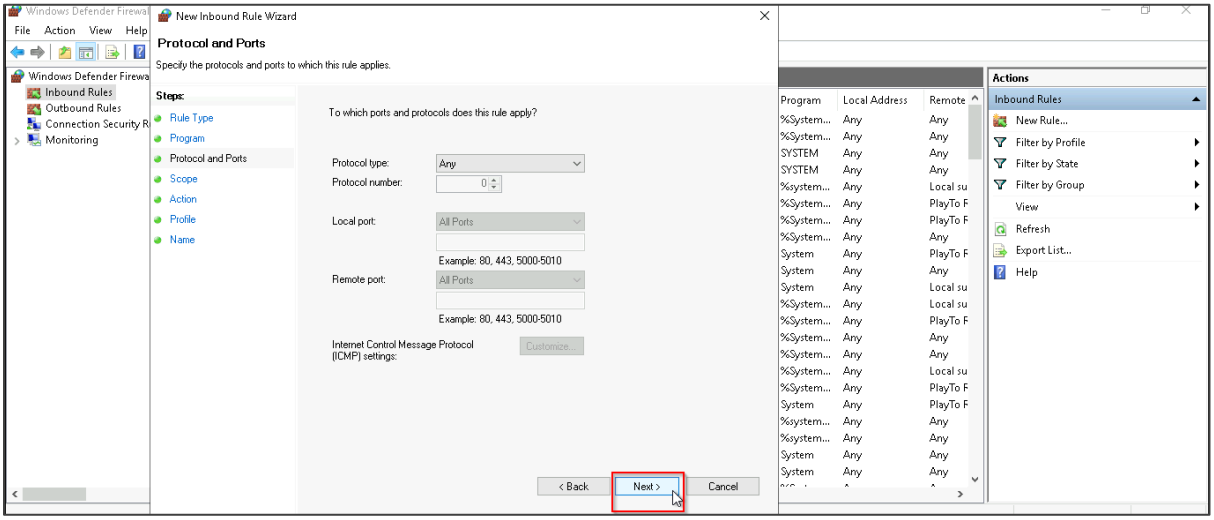
3.10 Select the **Custom** rule and click on **Next**



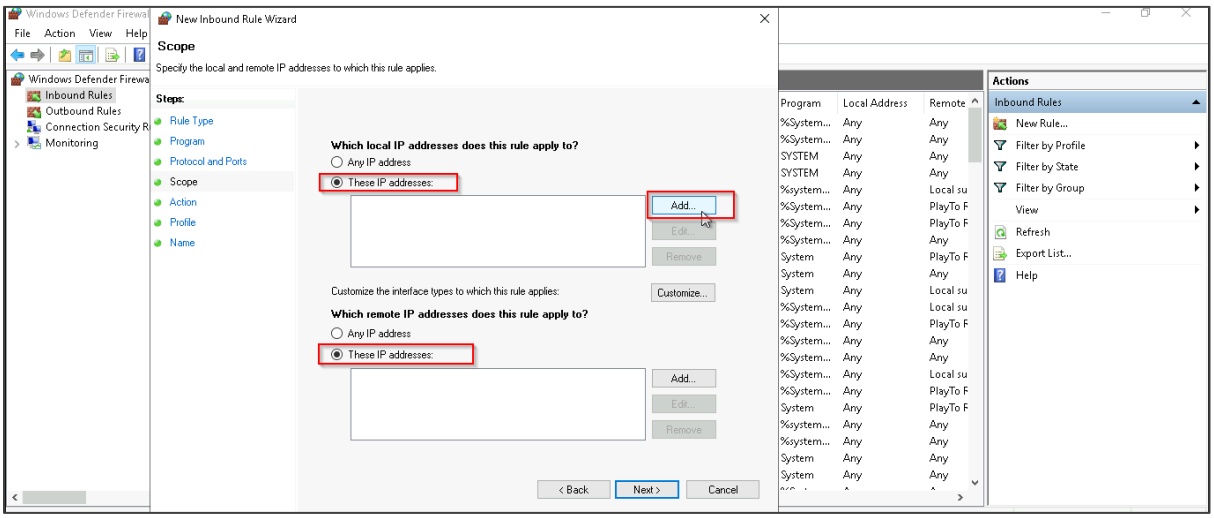
3.11 Select **All programs** and click on **Next**



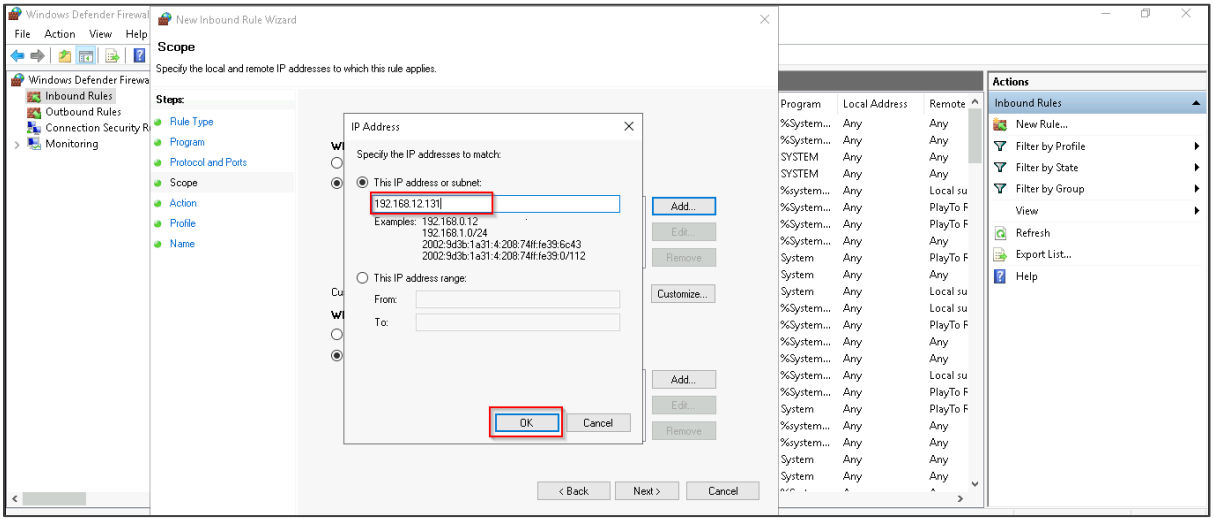
3.12 Further, click on **Next**



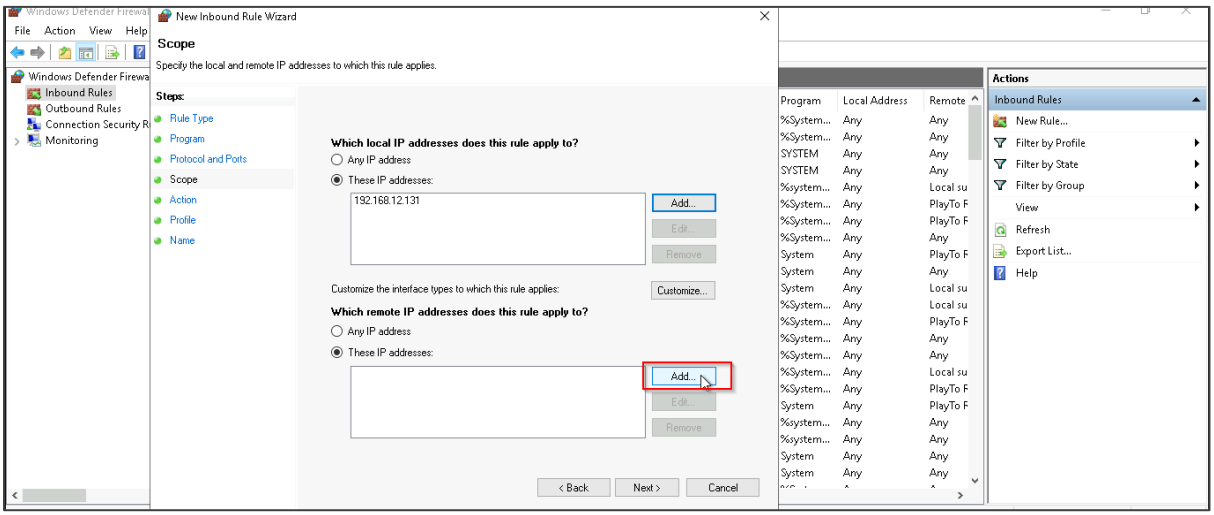
3.13 Click on the **Add** button to add the IP addresses



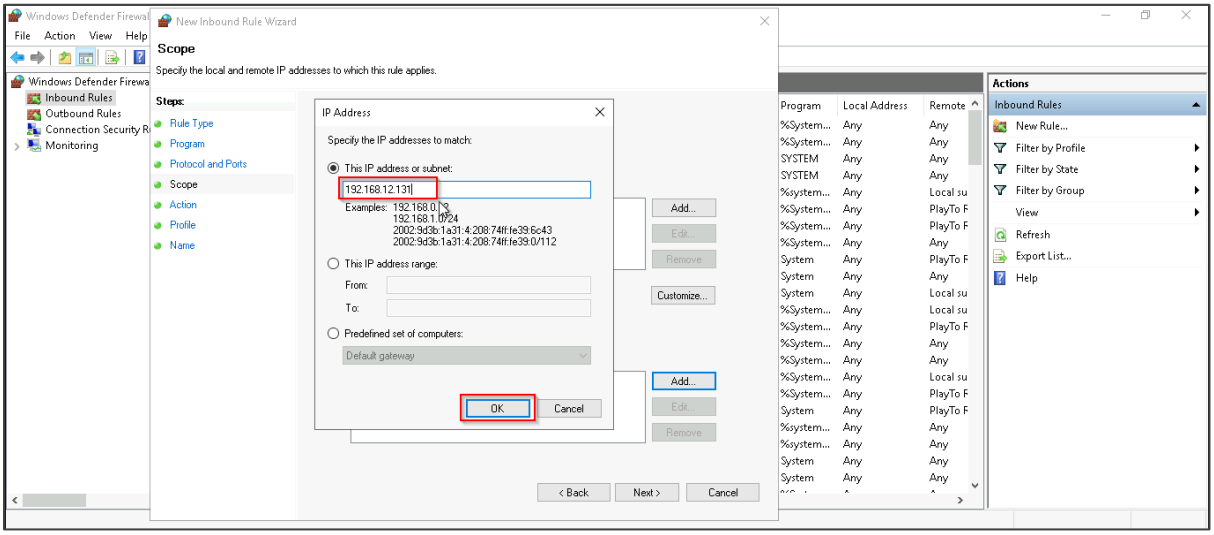
3.14 Add the IP address as **192.168.12.131** and click on **OK**



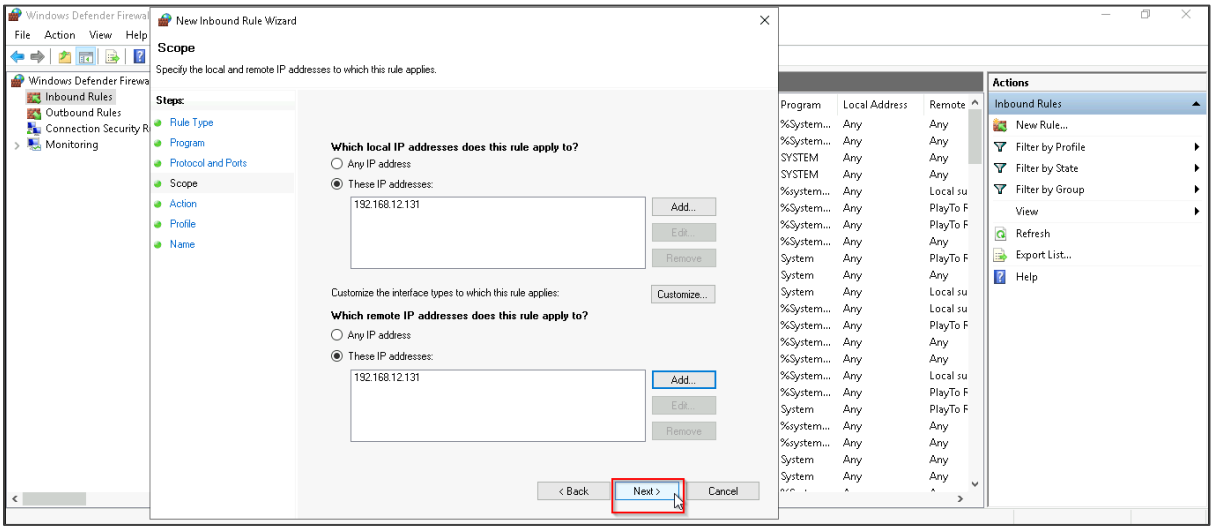
3.15 Further, click on the second **Add** button



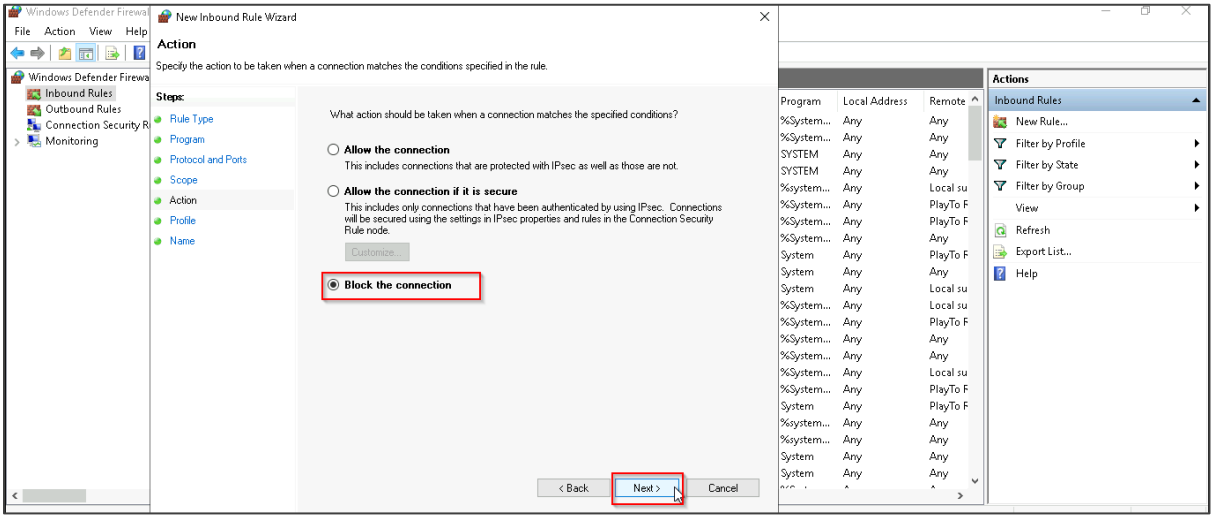
3.16 Add the IP address as **192.168.12.131** and click on **OK**



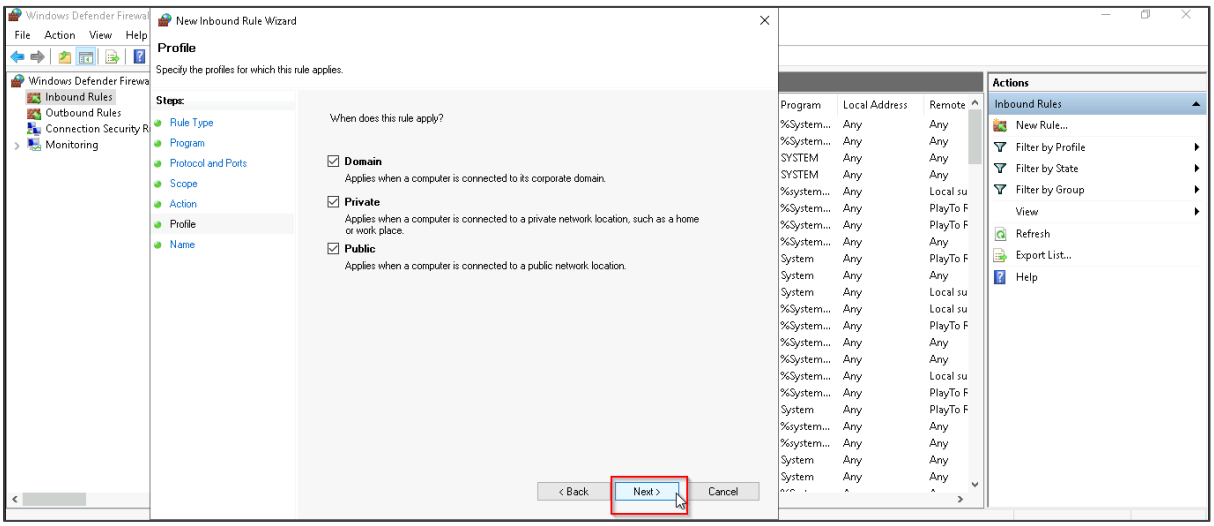
3.17 Click on **Next**



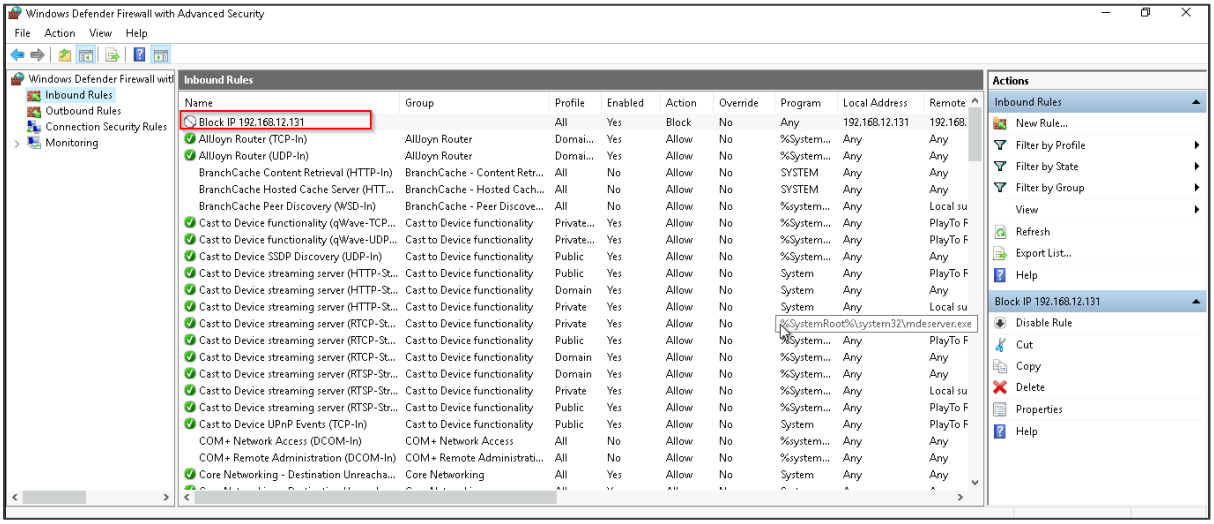
3.18 Select **Block the connection** and click on **Next**



3.19 Keep all default selections and click on **Next**



The rule with the blocked IP address **192.168.12.131** appears in the **Inbound Rules**.



Following the above steps, you have successfully investigated DoS and MITM attacks using a Wireshark capture file. You have filtered and analyzed traffic for signs of anomalies, such as excessive packets or IP duplication, which may indicate potential DoS and irregular ARP entries pointing to possible MITM activities.