

CSCE 5580: Computer Network

Project-1

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Task-1:

1. Locate and install a wiretapping software tool such as Wireshark. It can eavesdrop on both wired and wireless networks. Make sure that you are downloading from the reliable source such as www.wireshark.org. Do not use third party websites since attackers may embed malware in it.

Ans: Downloaded Wireshark on my MacBook from www.wireshark.org.

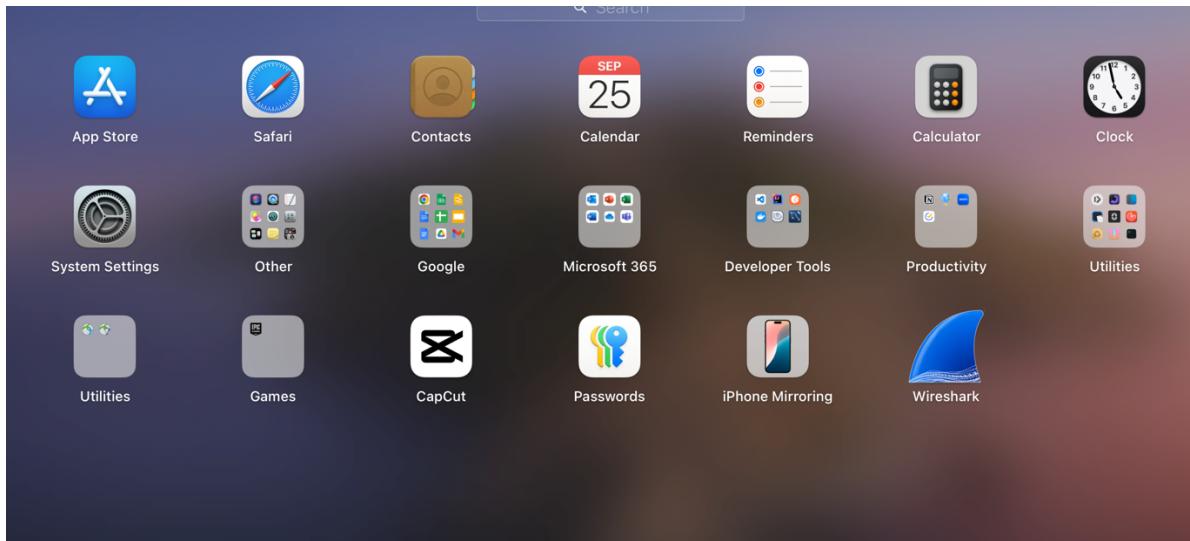


Figure 1

2. (a) How many unique MAC addresses were on the network?

Ans: 12

- First, upload the file given in Wireshark.
- Navigate to Statistics -> Endpoints, as you can see in Figure 2.
- Under the 'Ethernet' tab, you can see all the unique MAC addresses as you can see in Figure 3.

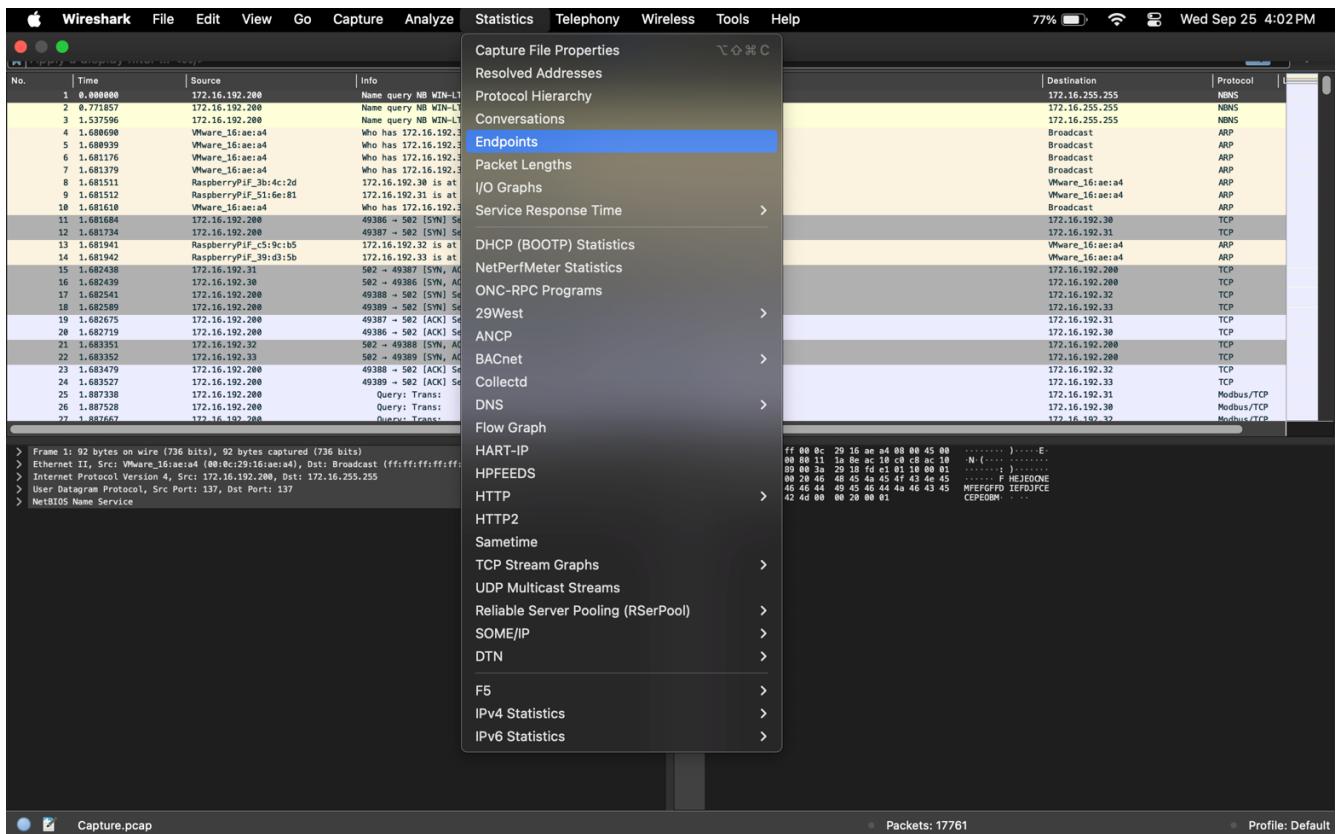


Figure 2

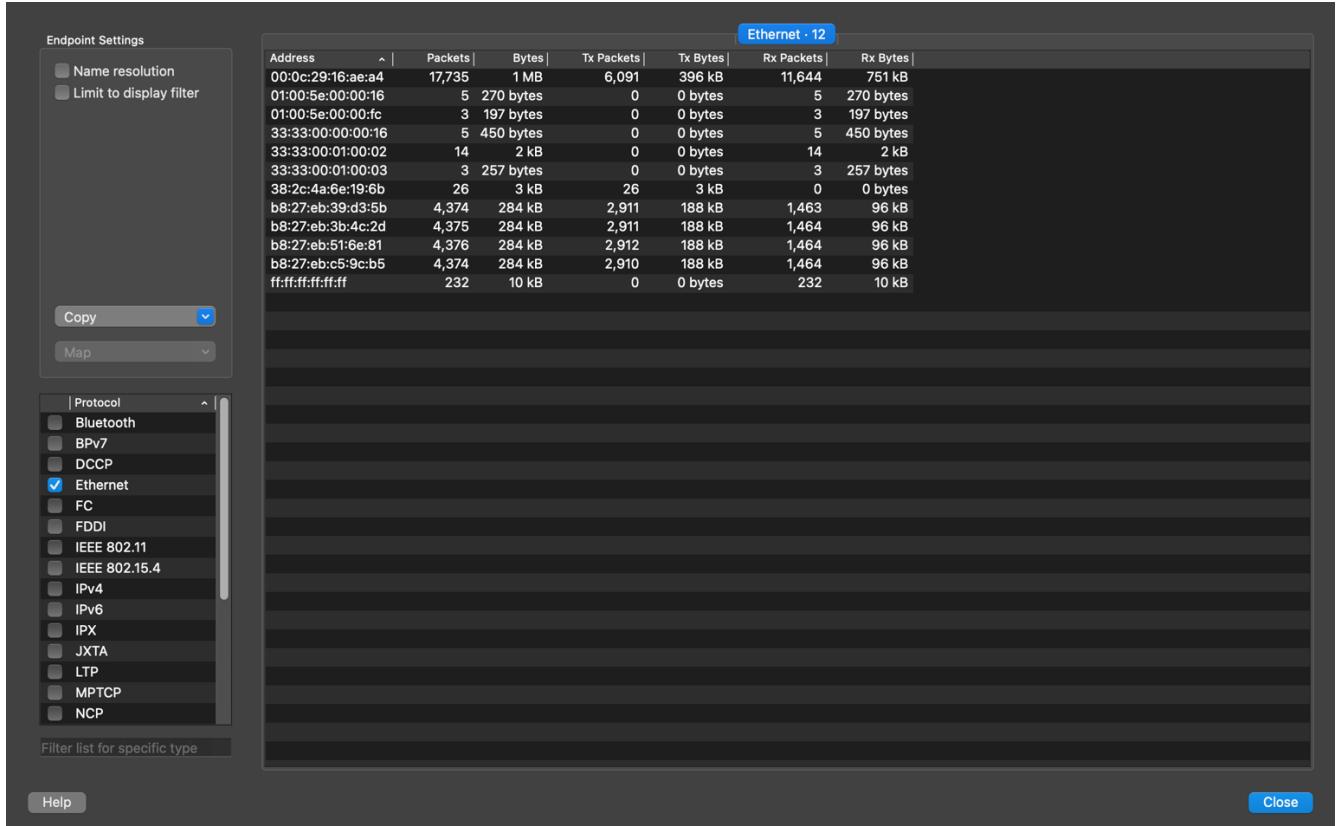


Figure 3

(b) How many unique IP addresses were on the network (IPv4 and IPv6)?

Ans:

- IPv4: 9
- IPv6: 5
- Similar to finding unique MAC addresses, first, upload the file.
- Then go to statistics -> Endpoints as you can see in Figure 2.
- By selecting IPv4 and IPv6 from the options on the left-hand side, you can see all the unique addresses associated with them, as you can see in Figure 4.



Figure 4

(c) What were the two UDP protocols used?

Ans:

- The two UDP protocols used are
 - Link-local Multicast Name Resolution
 - DHCPv6
- First, upload the given file to Wireshark.
- Navigate to Statistics-> Protocol Hierarchy, as you can see in Figure 5.
- In the list, you can see all the protocols used, as you can see in Figure 6.

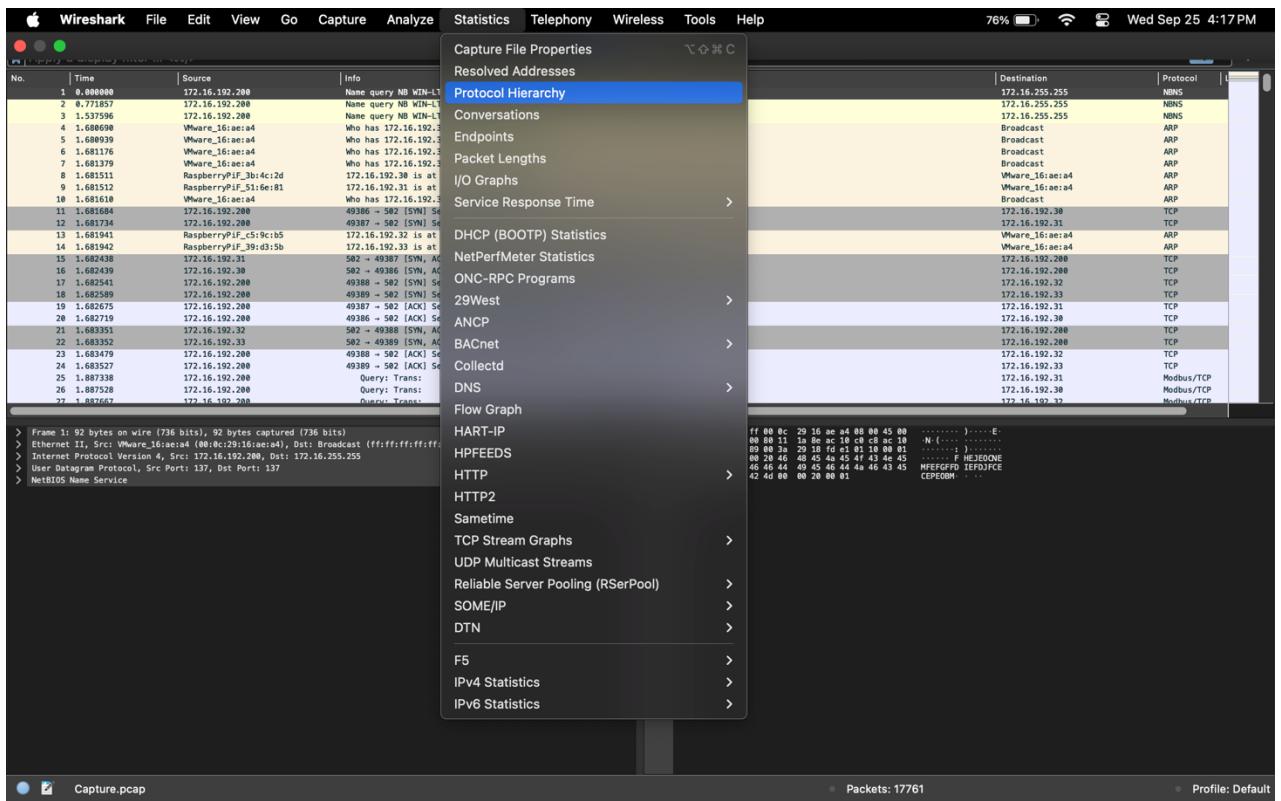


Figure 5

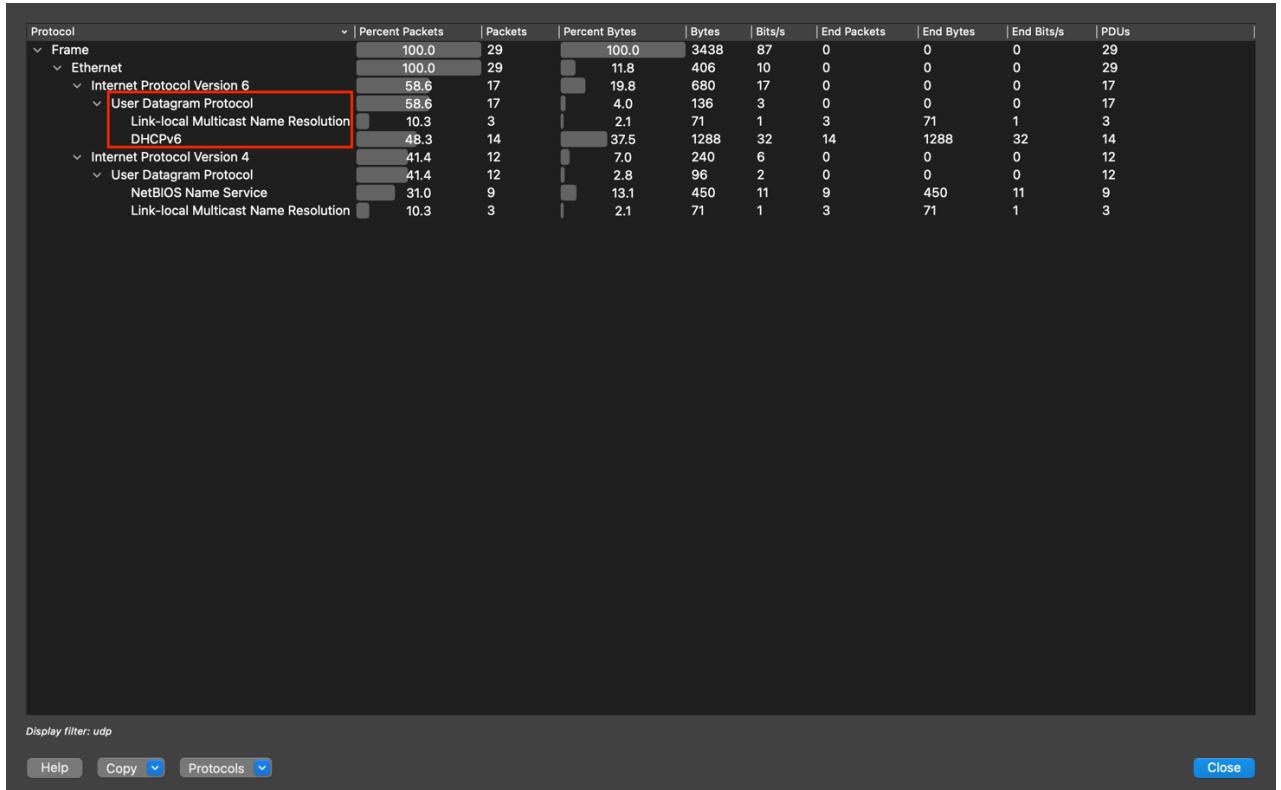


Figure 6

(d) Which Ethernet address was shared between an IPv4 and IPv6 address?

Ans:

To find the ethernet address shared between IPv4 and IPv6 address, first, let us filter the search results with IPv4 by typing “ip” in the search bar. Figure 1.d.1 shows all the results related to IPv4.

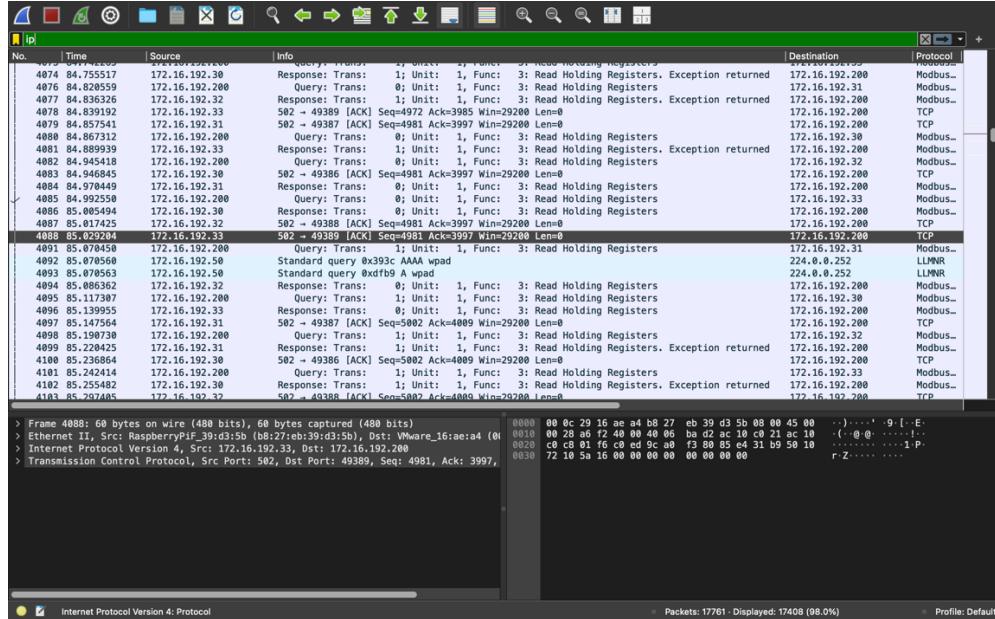


Figure 1.d.1

Now, get to statistics → Endpoint and note down all the ethernet addresses as shown in Figure 1.d.2.

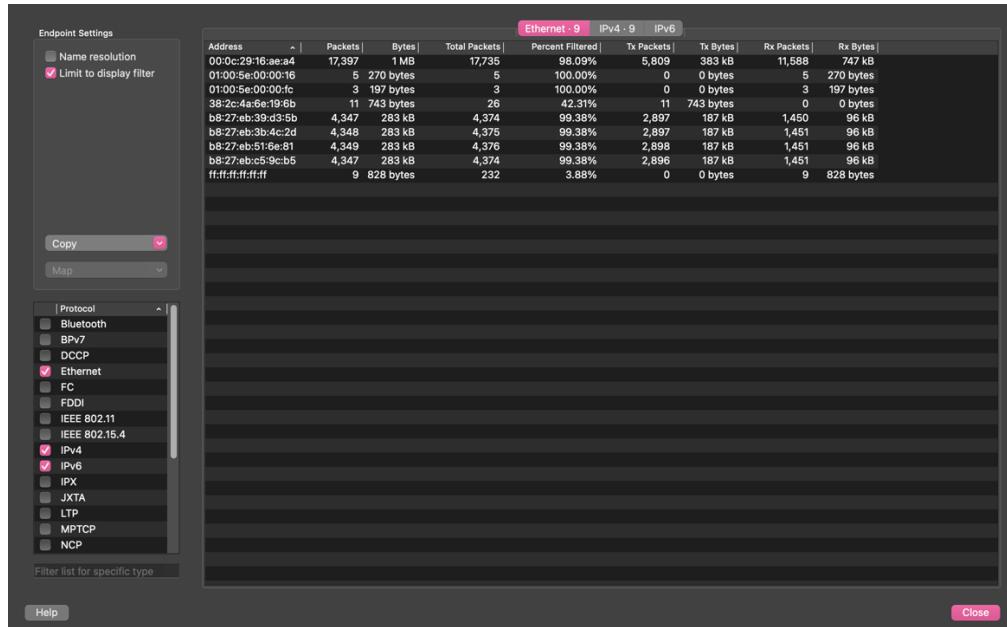


Figure 1.d.2

Now, let us filter the search results with IPv6 by typing “ipv6” in the search bar. Figure 1.d.3 shows all the results related to IPv6.

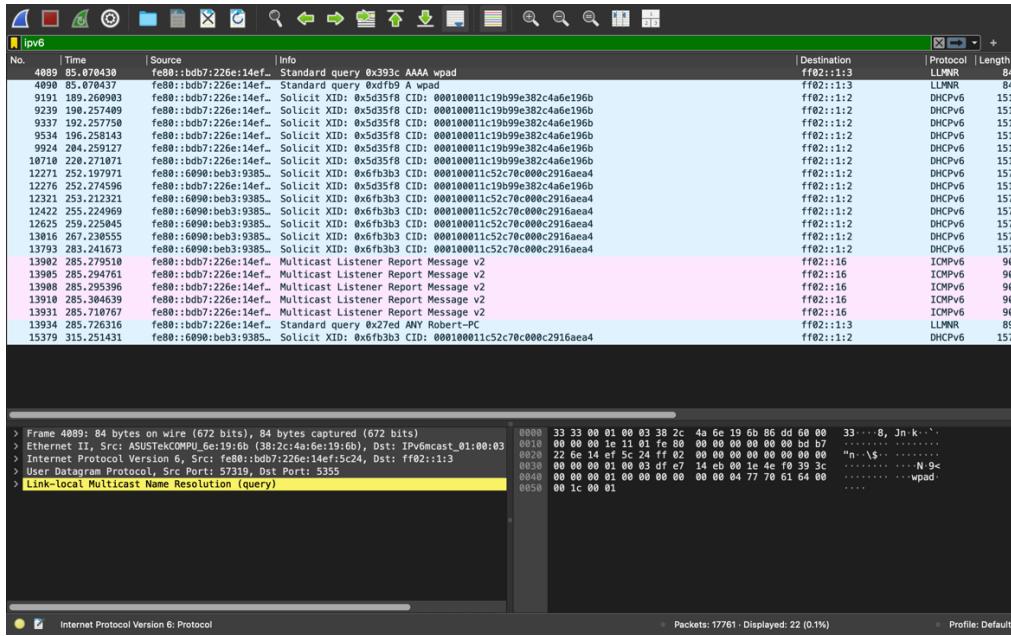


Figure 1.d.3

Now, get to statistics → Endpoint and note all the ethernet addresses as shown in Figure 1.d.4.



Figure 1.d.4

As you can compare the result, the ethernet address which is common is the one that is shared between IPv4 and IPv6.

There are two addresses shared, which are **00:0c:29:16:ae:a4** and **38:2c:4a:6e:19:6b**.

(e) It seems that there is a Human-Machine Interface (HMI) server that interacts with

multiple devices in the network through Modbus. What is the IP address of the server?

Ans: The IP address of the server is "172.16.192.200"

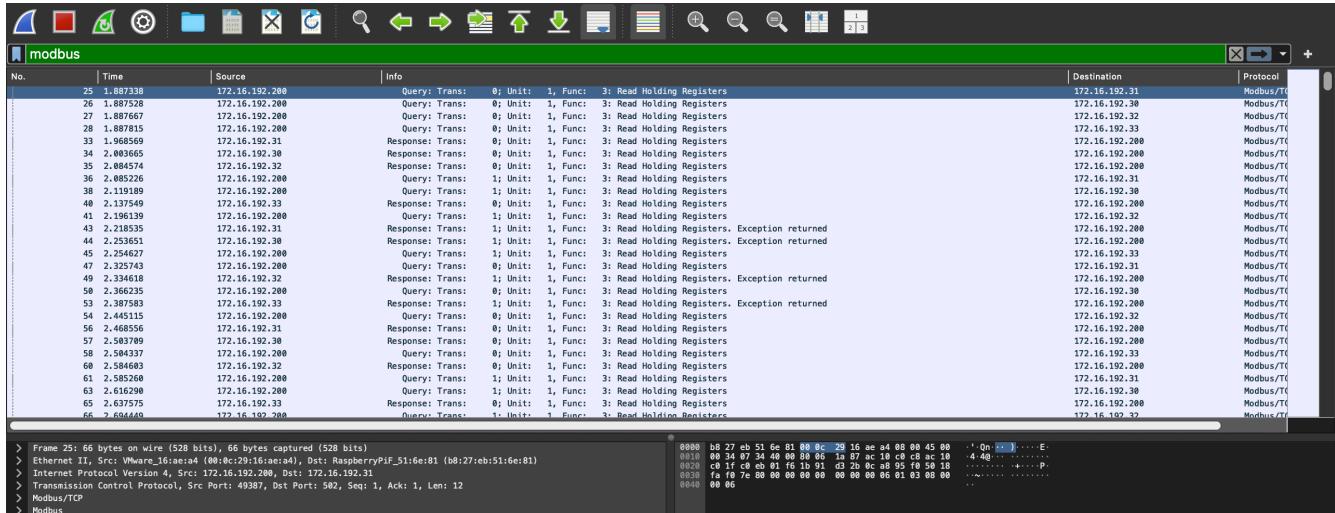


Figure 9

- To see all the addresses related to Modbus, type "modbus" in the search bar.
- Then you can see all the details related to only 'modbus,' as you can see in Figure 9.
- To see all the unique addresses related to modbus, go to statistics->Endpoints, as you can see in Figure 10.

Ethernet · 5 IPv4 · 5 IPv6										
Address	Packets	Bytes	Total Packets	Percent Filtered	Tx Packets	Tx Bytes	Rx Packets	Rx Bytes	Country	City
172.16.192.30	2,897	196 kB	4,348	66.63%	1,448	100 kB	1,449	96 kB		
172.16.192.31	2,897	196 kB	4,349	66.61%	1,448	100 kB	1,449	96 kB		
172.16.192.32	2,897	196 kB	4,347	66.64%	1,448	100 kB	1,449	96 kB		
172.16.192.33	2,896	195 kB	4,347	66.62%	1,448	100 kB	1,448	96 kB		
172.16.192.200	11,587	782 kB	17,397	66.60%	5,795	382 kB	5,792	400 kB		

Figure 10

- There are 5 IP addresses related to the Modbus, but the high usage IP address which has the most number of packets is "172.16.192.200".

Explanation -2:

First, go to statistics→ Conversations to see all the conversations.

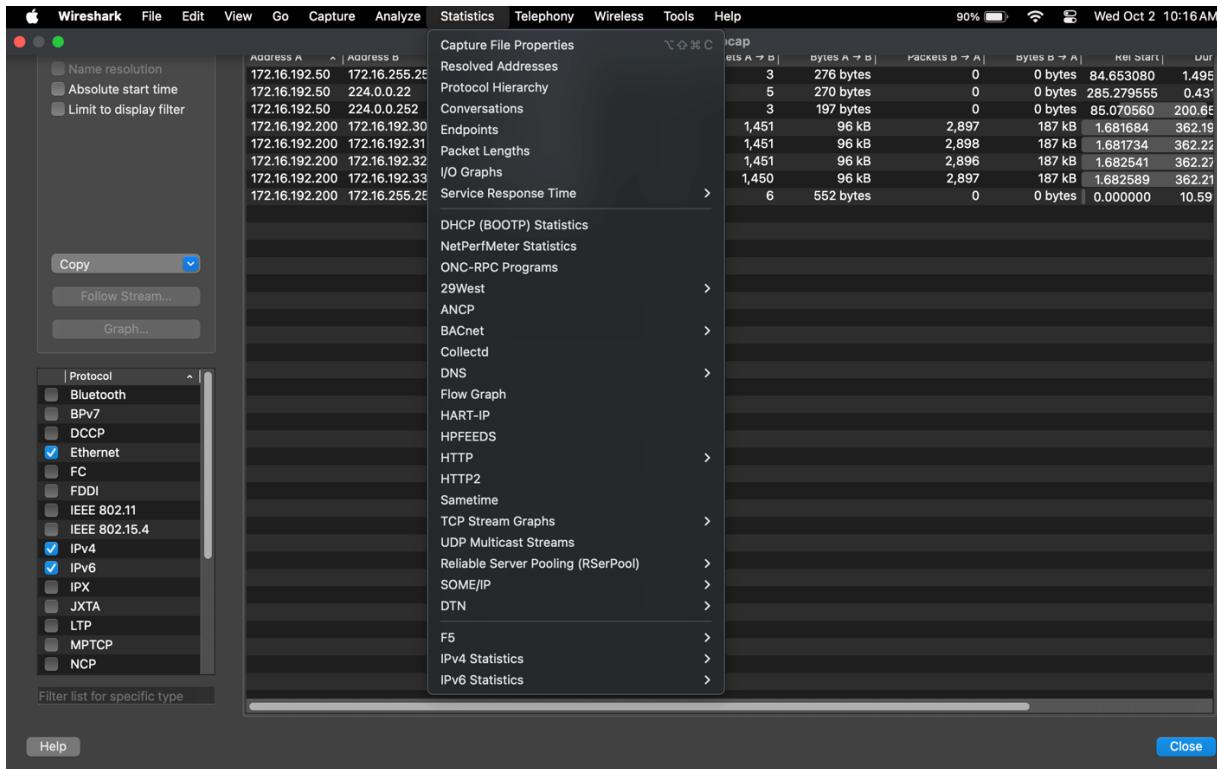


Figure 11

Ethernet · 12 IPv4 · 8 IPv6 · 4 TCP · 4 UDP · 10										
Address A	^ Address B	Packets	Bytes	Stream ID	Packets A → B	Bytes A → B	Packets B → A	Bytes B → A	Rel Start	Dur
172.16.192.50	172.16.255.255	3	276 bytes	5	3	276 bytes	0	0 bytes	84.653080	1.495
172.16.192.50	224.0.0.22	5	270 bytes	7	5	270 bytes	0	0 bytes	285.279555	0.43
172.16.192.50	224.0.0.252	3	197 bytes	6	3	197 bytes	0	0 bytes	85.070560	200.65
172.16.192.200	172.16.192.30	4,348	283 kB	1	1,451	96 kB	2,897	187 kB	1.681684	362.19
172.16.192.200	172.16.192.31	4,349	283 kB	2	1,451	96 kB	2,898	187 kB	1.681734	362.22
172.16.192.200	172.16.192.32	4,347	283 kB	3	1,451	96 kB	2,896	187 kB	1.682541	362.27
172.16.192.200	172.16.192.33	4,347	283 kB	4	1,450	96 kB	2,897	187 kB	1.682589	362.21
172.16.192.200	172.16.255.255	6	552 bytes	0	6	552 bytes	0	0 bytes	0.000000	10.59

Figure 12

As you can see in Figure 11, a high number of packets have been sent from IP address 172.16.192.200. That means this can be the server.

So, therefore, "**172.16.192.200**" is the IP address of the server.

Task-2:

TOTAL RESULTS
1,104

TOP CITIES

Mumbai	587
Doddaballapura	58
Chennai	42
Delhi	40
Bengaluru	38
More...	

Access Granted: Want to get more out of your existing Shodan account? Check out [everything you have access to](#).

136.233.170.74
Reliance Jio Infocomm Limited
India, Ahmedabad
ics

117.247.111.52
Broadband Multiplay Project, O/o DGM BB, NOC BSNL Bangalore
India, Mettur
ics

103.56.211.24
Hungama Digital Media Entertainment Pvt Ltd
India, Mumbai
No data returned

172.105.60.148
172-105-60-148.ip.linodeusercontent.com
Linode
India, Mumbai
honeypot cloud

TOP PRODUCTS

Microsoft IIS httpd	77
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TOP ORGANIZATIONS

Amazon Data Services India	310
Hungama Digital Media Ente...	125
DigitalOcean, LLC	56
Broadband Multiplay Project,...	44
Amazon.com, Inc.	31
More...	

TOP CITIES

Mumbai	587
Doddaballapura	58
Chennai	42
Delhi	40
Bengaluru	38
More...	

TOP ORGANIZATIONS

Amazon Data Services India	310
Hungama Digital Media Ente...	125
DigitalOcean, LLC	56
Broadband Multiplay Project,...	44
Amazon.com, Inc.	31
More...	

TOP PRODUCTS

Microsoft IIS httpd	77
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Figure 11

172.105.60.148

[Regular View](#) [Raw Data](#)

// TAGS: cloud honeypot

// LAST SEEN: 2024-09-25

General Information

Hostnames	172-105-60-148.ip.linodeusercontent.com
Domains	LINODEUSERCONTENT.COM
Cloud Provider	Linode
Cloud Region	in-mh
Country	India
City	Mumbai
Organization	Linode
ISP	Akamai Connected Cloud
ASN	AS63949

Open Ports

21	22	23	80	161	502	623	5900	10001
11112	50100							

// 21 / TCP

200 FTP server ready.
220- Technodrome - Mouser Factory. Authorized personnel only
220
214-The following commands are recognized:
'ABOR' 'ALLO' 'APPE' 'CDUP' 'CWD' 'DELE' 'HELP' 'LIST'
'MDTM' 'MKD' 'MODE' 'NLST' 'NOOP' 'PASS' 'PASV' 'PORT'
'PWD' 'QUIT' 'REIN' 'REST' 'RETR' 'RMD' 'RNFR' 'RNTO'
'SITE' 'SIZE' 'STAT' 'STOR' 'STOU' 'STRU' 'SYST' 'TYPE'
'USER'
214 Help command successful.
500 Command 'FEAT' not understood

1124735066 | 2024-09-16T09:04:17.282171

Figure 12

```
// 502 / TCP+
-312016474 | 2024-09-25T15:51:16.023392



# Conpot


Unit ID: 1
-- Slave ID Data:      (110101ff)
-- Device Identification: Siemens SIMATIC S7-200

Unit ID: 255
```

Figure 13

Device/IP address returned by Shodan that does not show “error” or illegal: 172.105.60.148

Device Identification: siemens simatic s7-200

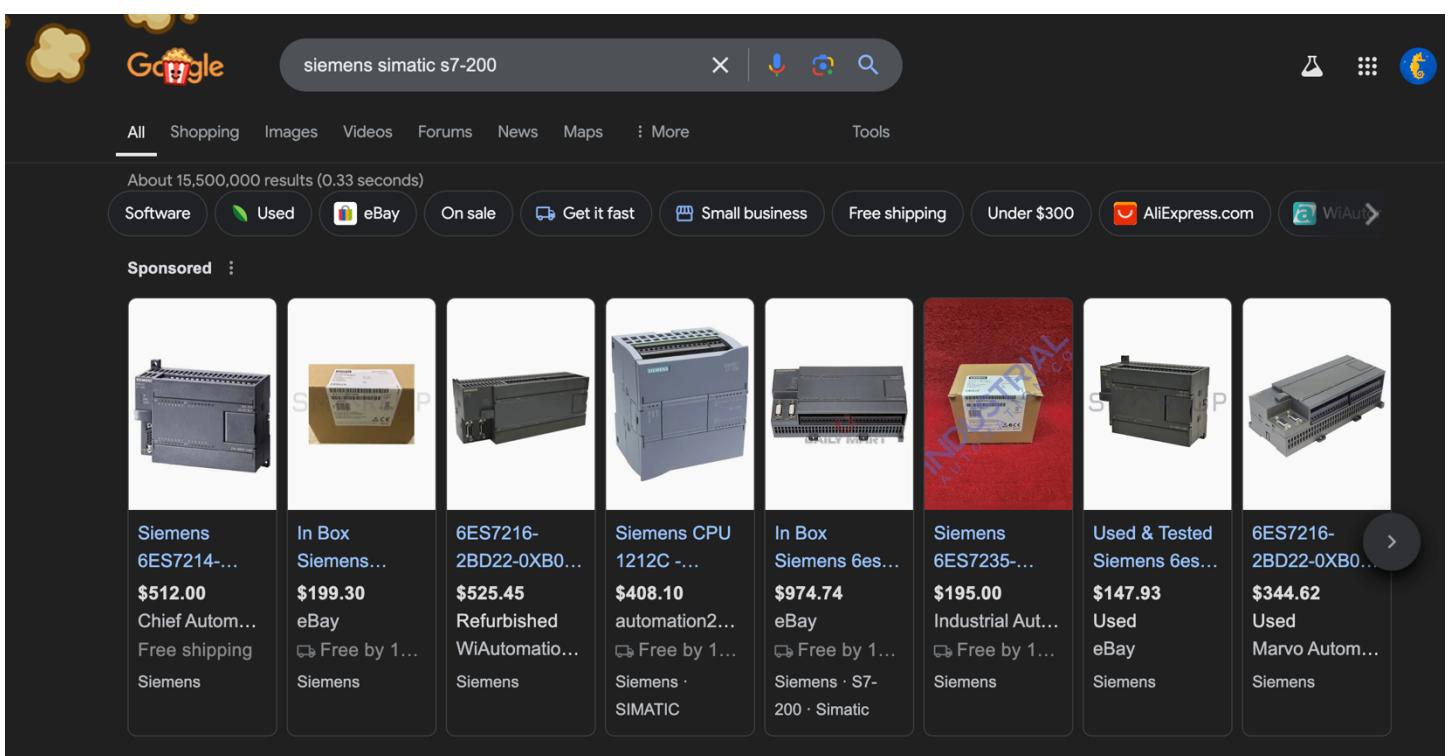


Figure 14

About the device: <https://www.cisa.gov/news-events/ics-advisories/icsa-24-261-01>

Vulnerability Overview

Uncontrolled Resource Consumption:

If a device is vulnerable to this, it will not handle the TCP packets which are in incorrect structure. Using this vulnerability, an unauthenticated attacker can cause a denial of

service condition. This device does not manage how it uses its limited resources. Because of that, someone can use more resources than what they want, which will lead to a position where there are no further resources left, eventually causing the product to stop working.

Some limited resources are storage, CPU power, and memory. The attacker can use all the resources, leading to a denial of service where authenticated and authorized users cannot use the service.

Because of the denial of service, the device speed can decrease, or the device can crash.

To avoid these types of attacks, where the resource is exhausted, there should be some mechanisms implemented that will limit the use of resources by unauthorized users. Caching database outputs can be used to minimize resource usage. The system should identify the attackers and block offenders.
