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EN.695.741.81.SP25 Information Assurance Analysis
Mod 14 Lab
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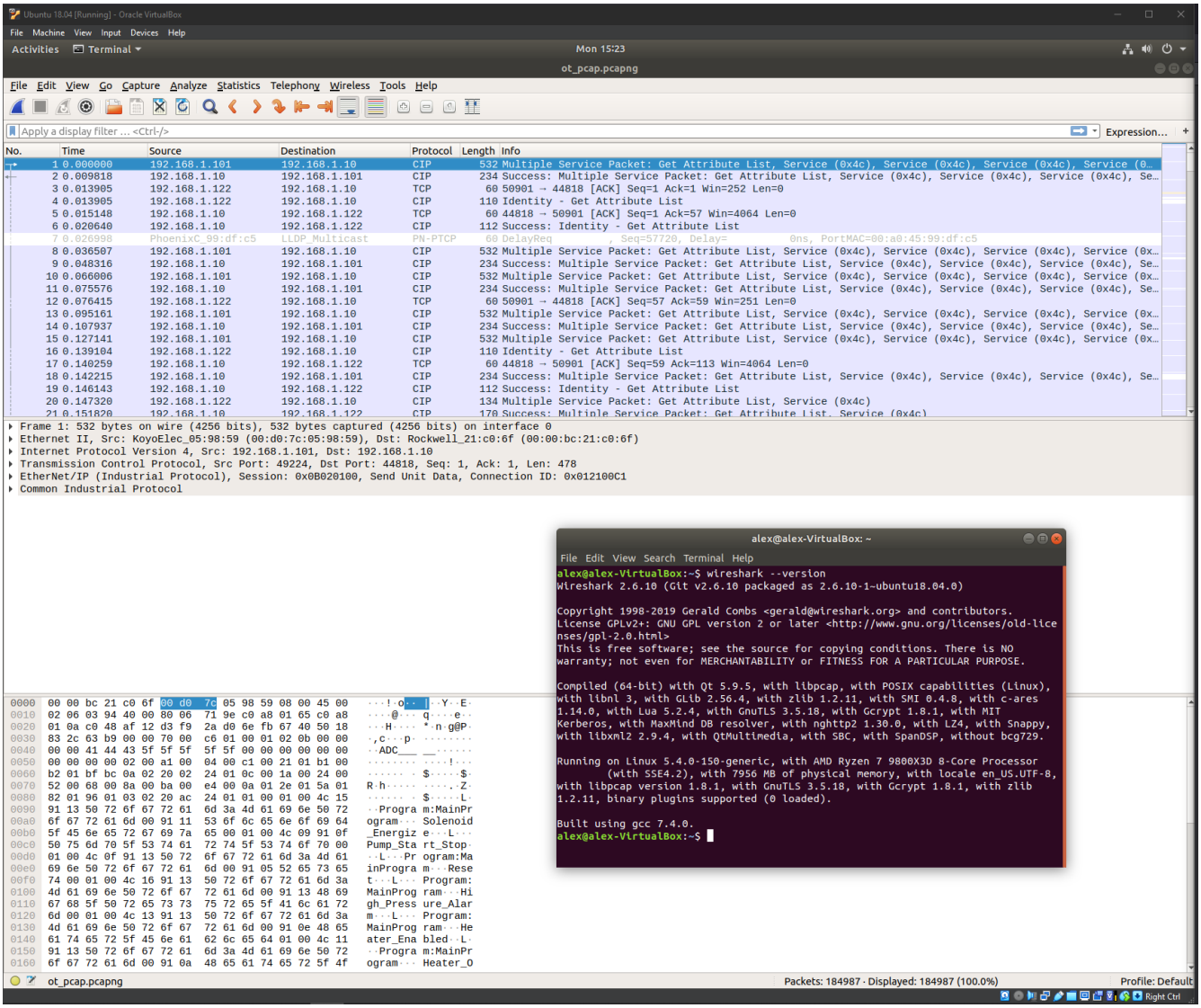
Part 1 Install Wireshark

On a Ubuntu 18.04 VM I installed Wireshark and opened the PCAP file, shown below with the Wireshark version 2.6.10 shown in the terminal window.



Part 2 Analysis

1.) Using Wireshark to find the vendor for all hosts on the network; what kind of devices are 192.168.1.120, 192.168.1.213, & 192.168.1.34?

192.168.1.120 and 192.168.1.213 appear to be VMWare Virtual machines according to the MAC addresses. 192.168.1.34 appears to be a Dell device from the MAC address.

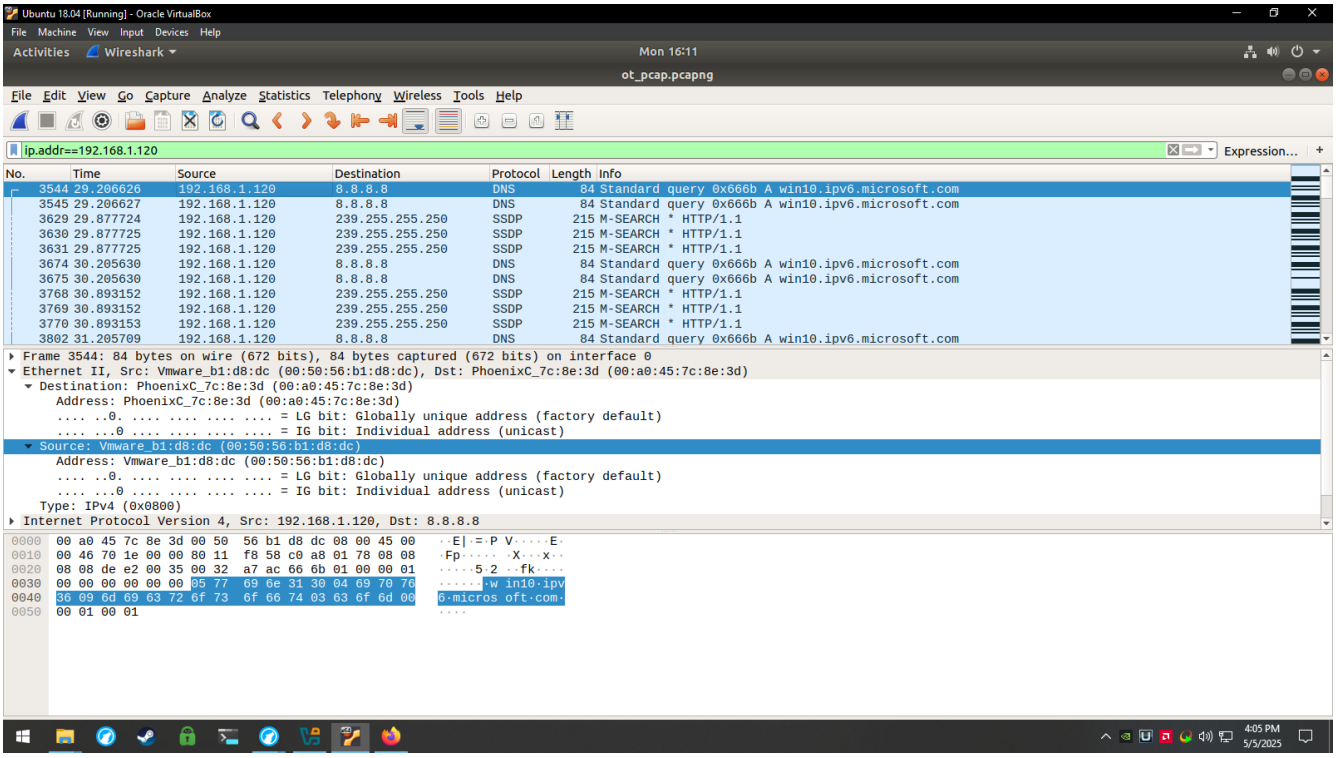


Figure 1: 192.168.1.120 Source Detail

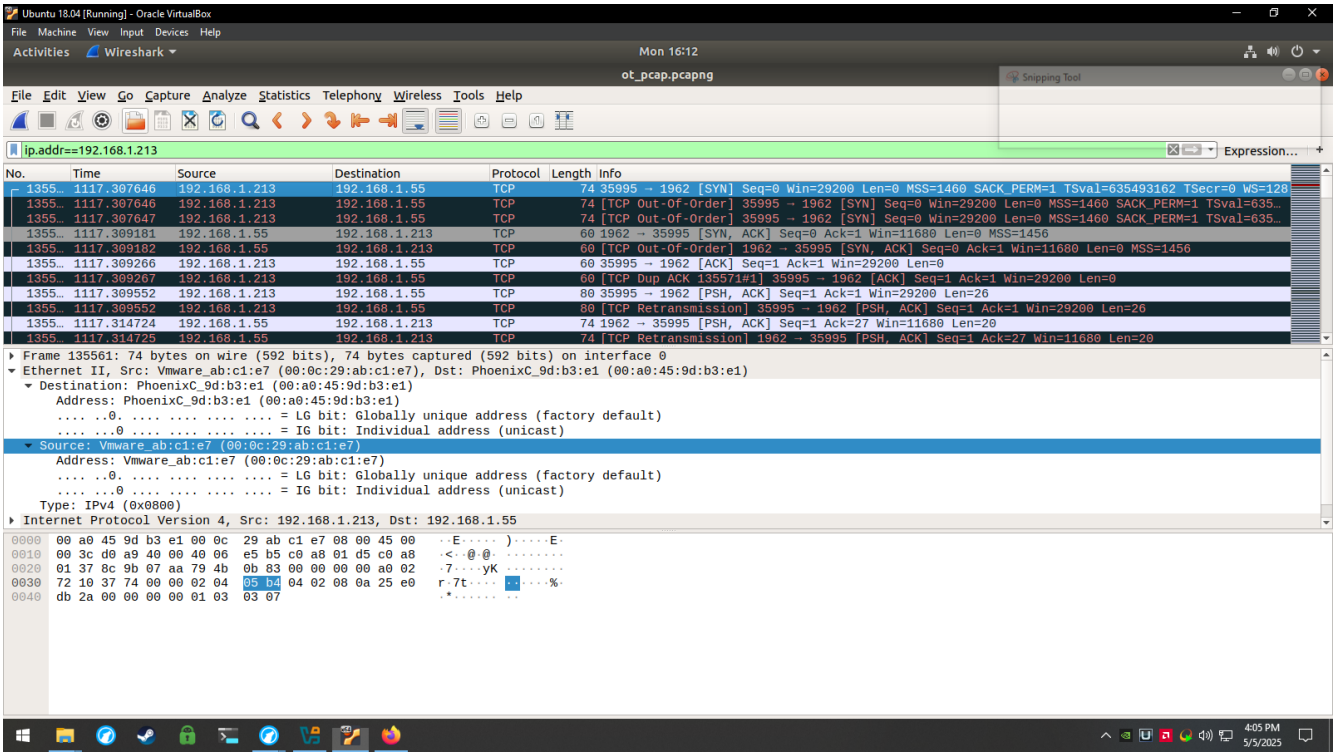


Figure 2: 192.168.1.213 Source Detail

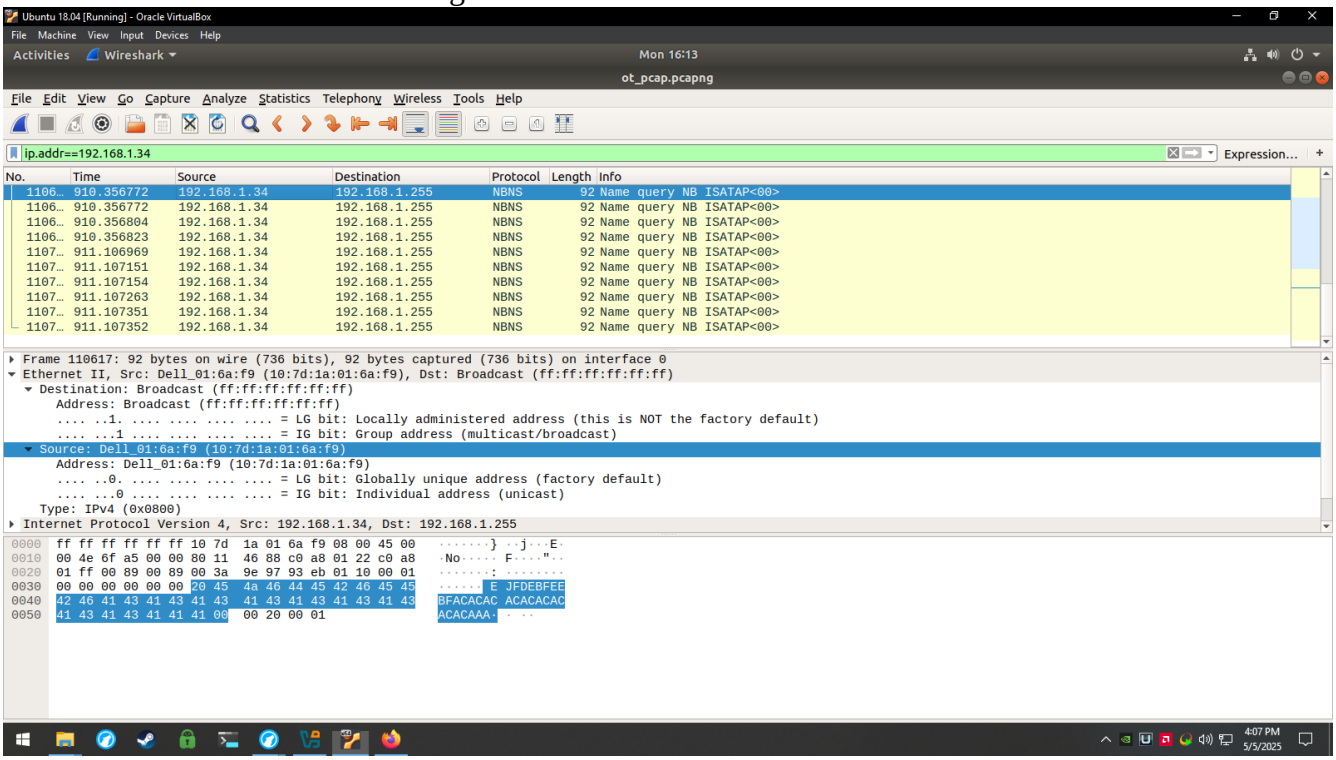


Figure 3: 192.168.1.34 Source Detail

2.) Use bro-cut to parse the conn.log file. Is there a host which initiates a high number of TCP connections?

Using bro-cut to show the host and destination IP and port and protocol, and filtering for TCP using grep, there are only 6 lines that use TCP. 4 of which are form 192.168.1.213 to another device on the network 192.168.1.55, one from 192.168.1.101 to another local device 192.168.1.10, and one from 192.168.1.122 to 192.168.1.10 as before. None of the hosts make a significant amount of connections but the number of packets between 192.168.101 and 192.1 68.1.122 communicating with 192.168.1.10 on port 44818 are higher than the rest.

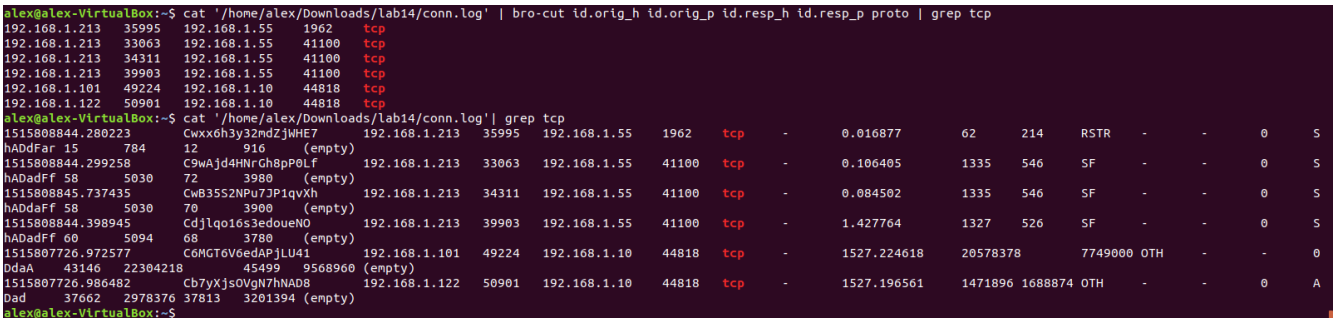


Figure 4: Bro-cut showing TCP connections

3.) Use Wireshark to examine the most “talkative” host’s traffic. Does this look like Nmap scanning
Note: "Talkative" means- the most packets or traffic/sessions seen

The host 192.168.1.10 has the largest number of packets in Wireshark’s endpoints view. It communicated many CIP and ACK packets with 192.168.101 and 192.168.122 with the destination port being 44818. This seems to show legitimate “Common Industrial Protocol” traffic on the known port for CIP 44818.

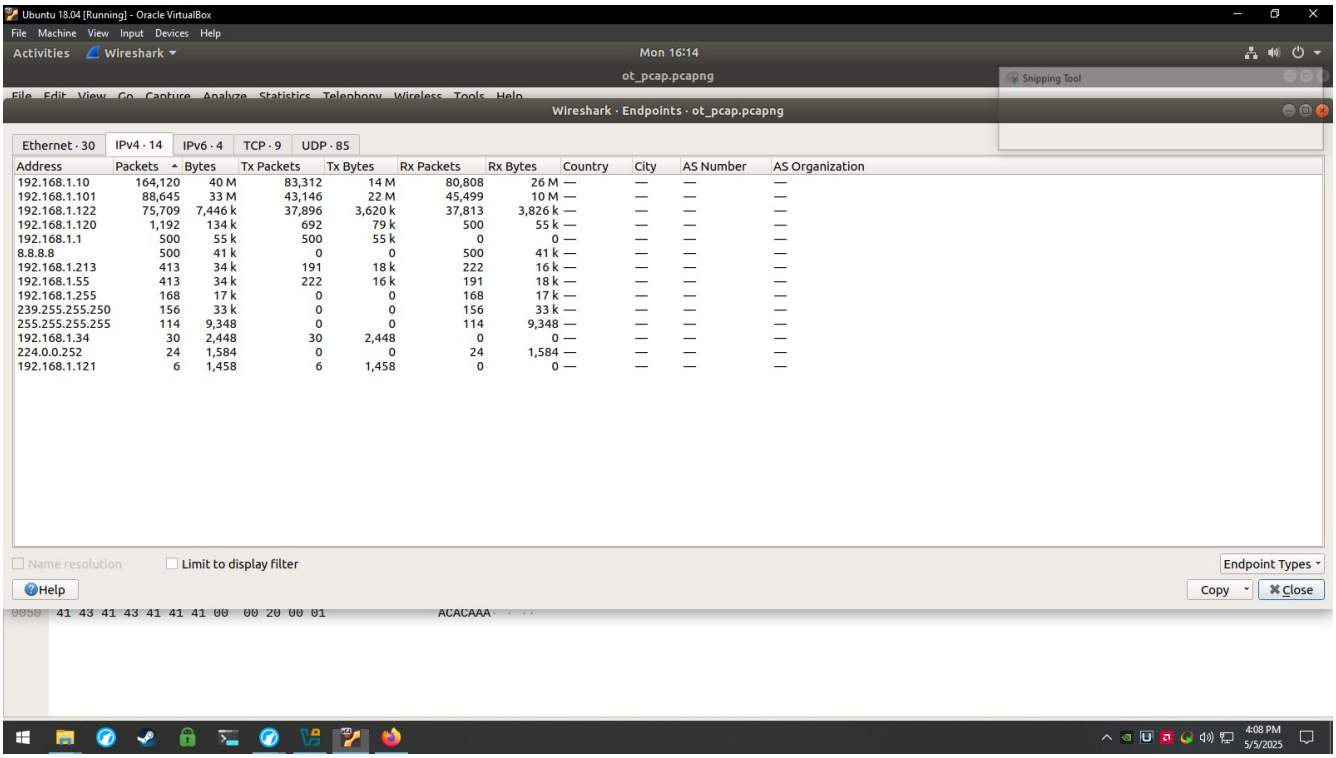


Figure 5: 192.168.1.10 has the most packets

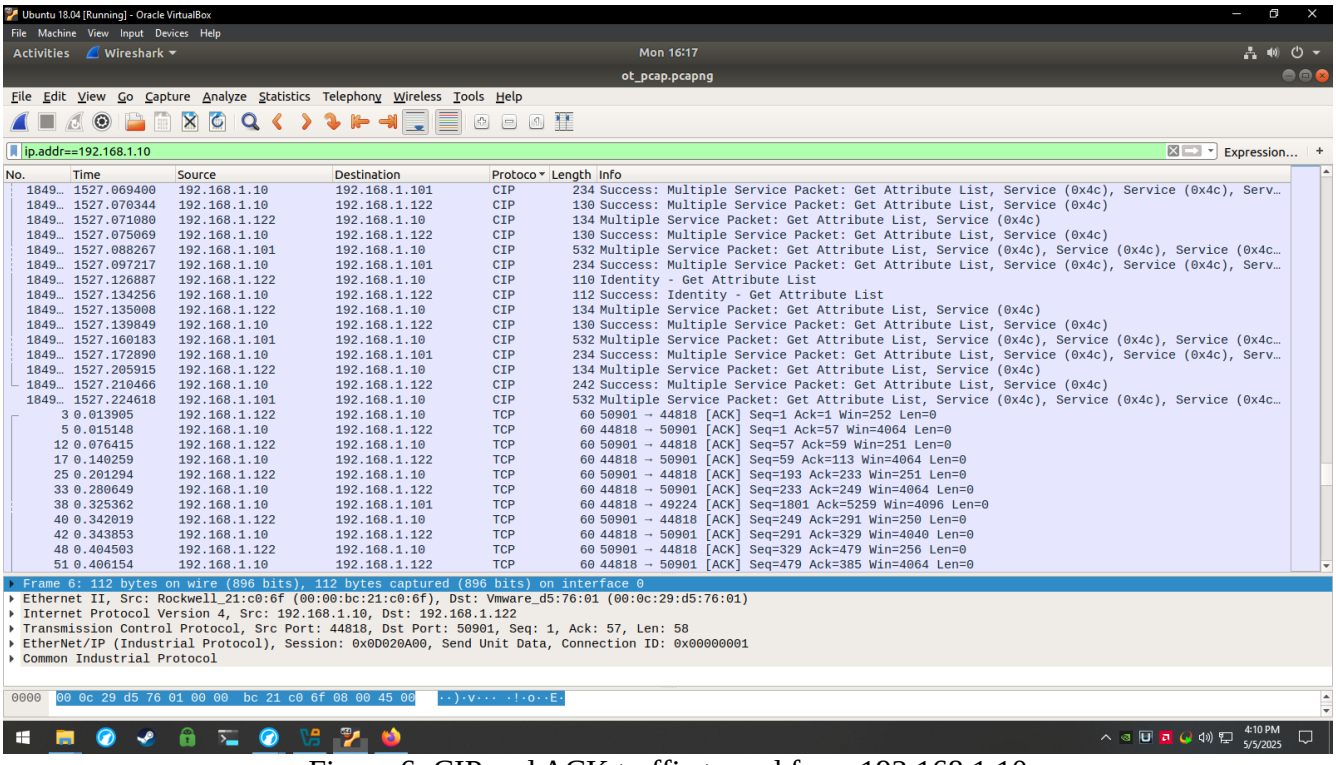


Figure 6: CIP and ACK traffic to and from 192.168.1.10

4.) Each entry in the conn.log file has a “proto” field. Use grep and bro-cut to count the number of ICMP connections. Is there evidence of ping sweeping?

There is only one entry that has ICMP in conn.log where presumably the router at 192.168.1.1 communicates with 192.168.1.120. In wireshark the traffic looks to be multiple failed attempts to query or resolve subdomains on google.com like “clients2.google.com”

```
alex@alex-VirtualBox:~/Downloads/lab14$ cat '/home/alex/Downloads/lab14/conn.log' | grep icmp
1515807759.176461       CAd4AI3Juk80iO6Yue      192.168.1.1     3       192.168.1.120   1       icmp    -       1486.814020     34740   0       OTH     -       -       0       -
500     48740   0       0       (empty)
alex@alex-VirtualBox:~/Downloads/lab14$
```

Figure 6: bro-cut showing ICMP lines

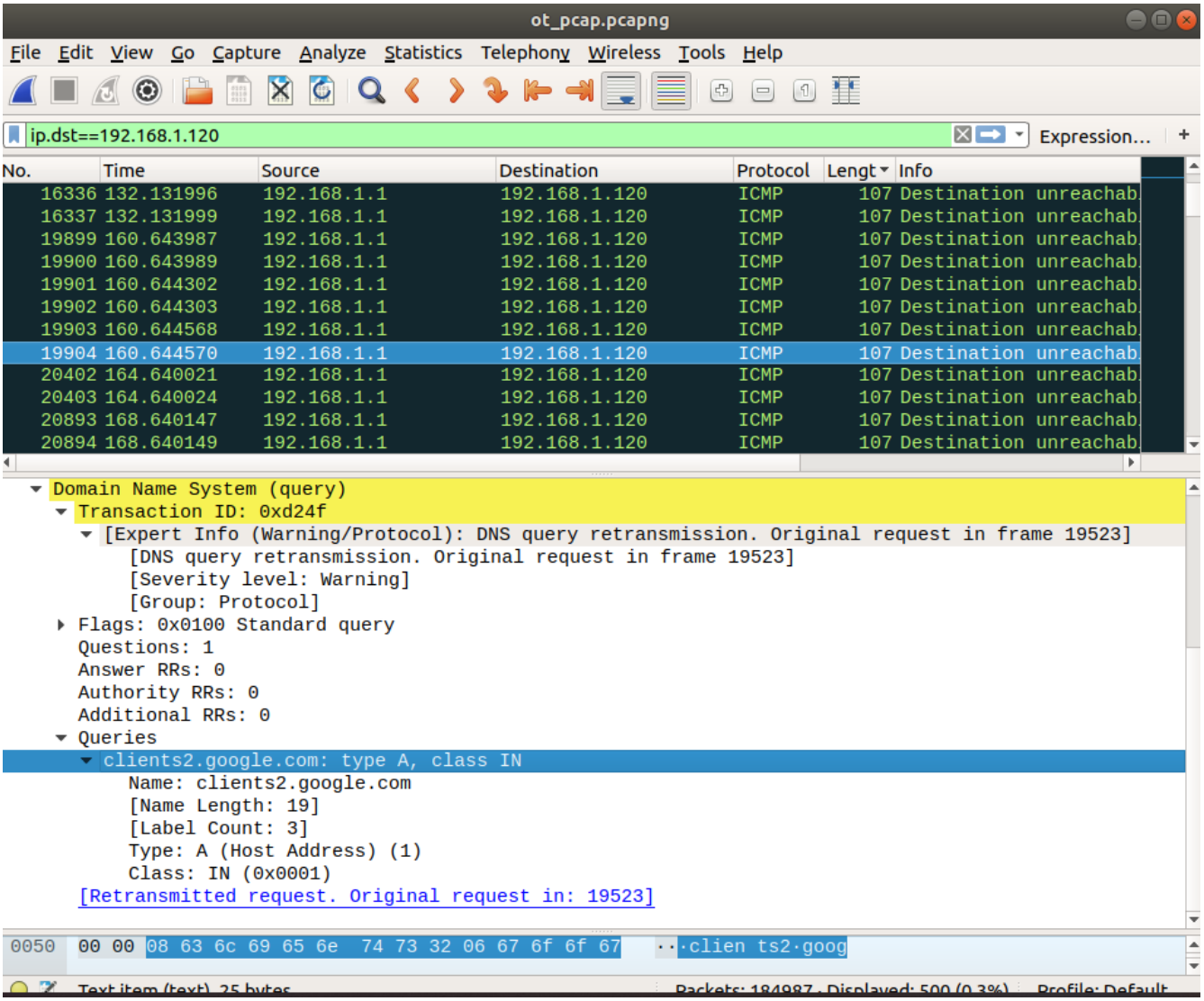


Figure 7: ICMP packets to 192.168.1.120 in wireshark

5.) Each conn.log entry has a field “id.resp_p” which indicates the destination port. Use bro-cut to summarize the connections between hosts in terms of port number. Google any suspicious port numbers you find. Is there evidence of exploitation?

See appendix for a full list of IP/ports

There are several destination ports listed in conn.log, totaling 11. Port 44818 we saw as CIP traffic common for ICS systems. Port 53 is DNS traffic that seems to go to Google’s public DNS. Port 547 is commonly used for DHCPv6 addressing, which should be legitimate traffic. Port 1900 seems to be legitimate traffic to a multicast IP address, which is commonly used for SSDP Simple Service Discovery protocol but it could be used for scanning. Ports 137 and 138 seem to be for Windows NetBIOS which could be legitimate traffic or scanning for vulnerable Windows services. Port 5355 seems to be name discovery for host or MAC address, which could be used for scanning or legitimate traffic. But port 1, 1947, 1962, and 41100, seem to be unusual ports, with port 1 being uncommonly use, and the rest being non standard or product related that could be legitimate depending on the vendor and products on the network, or ephemeral ports that could be used in an attempt to scan the network.

Figure 8: Destination port numbers found in conn.log

Appendix

Ports part 1:

```
alex@alex-VirtualBox:~/Downloads/lab14$ cat '/home/alex/Downloads/lab14/conn.log' | bro-cut id.orig_h id.orig_p id.resp_h id.resp_p | sort | uniq
192.168.1.101   49224   192.168.1.10    44818
192.168.1.120   137     192.168.1.255   137
192.168.1.120   138     192.168.1.255   138
192.168.1.120   49399   8.8.8.8 53
192.168.1.120   50155   8.8.8.8 53
192.168.1.120   50247   8.8.8.8 53
192.168.1.120   50248   239.255.255.250 1900
192.168.1.120   50612   8.8.8.8 53
192.168.1.120   50883   8.8.8.8 53
192.168.1.120   51041   8.8.8.8 53
192.168.1.120   51042   239.255.255.250 1900
192.168.1.120   51644   8.8.8.8 53
192.168.1.120   53100   8.8.8.8 53
192.168.1.120   53108   8.8.8.8 53
192.168.1.120   53157   8.8.8.8 53
192.168.1.120   53158   239.255.255.250 1900
192.168.1.120   53164   8.8.8.8 53
192.168.1.120   53171   8.8.8.8 53
192.168.1.120   53424   8.8.8.8 53
192.168.1.120   53525   8.8.8.8 53
192.168.1.120   53526   239.255.255.250 1900
192.168.1.120   53539   8.8.8.8 53
192.168.1.120   53702   8.8.8.8 53
192.168.1.120   54447   8.8.8.8 53
192.168.1.120   54530   8.8.8.8 53
192.168.1.120   54531   239.255.255.250 1900
192.168.1.120   54979   8.8.8.8 53
192.168.1.120   55104   8.8.8.8 53
192.168.1.120   55105   239.255.255.250 1900
192.168.1.120   55248   8.8.8.8 53
192.168.1.120   55481   8.8.8.8 53
192.168.1.120   55628   8.8.8.8 53
192.168.1.120   55629   239.255.255.250 1900
192.168.1.120   55880   8.8.8.8 53
192.168.1.120   56549   8.8.8.8 53
192.168.1.120   56951   8.8.8.8 53
192.168.1.120   57016   224.0.0.252     5355
192.168.1.120   57058   8.8.8.8 53
192.168.1.120   57059   239.255.255.250 1900
192.168.1.120   57120   8.8.8.8 53
192.168.1.120   57182   8.8.8.8 53
192.168.1.120   57183   239.255.255.250 1900
192.168.1.120   57436   8.8.8.8 53
192.168.1.120   57437   239.255.255.250 1900
192.168.1.120   57494   8.8.8.8 53
192.168.1.120   58000   8.8.8.8 53
192.168.1.120   58597   8.8.8.8 53
192.168.1.120   58618   8.8.8.8 53
192.168.1.120   58682   8.8.8.8 53
192.168.1.120   59274   8.8.8.8 53
192.168.1.120   59275   239.255.255.250 1900
192.168.1.120   59379   8.8.8.8 53
192.168.1.120   59654   8.8.8.8 53
192.168.1.120   60909   8.8.8.8 53
192.168.1.120   61244   8.8.8.8 53
192.168.1.120   61625   8.8.8.8 53
```

Ports part 2:

```
192.168.1.120   55105   239.255.255.250 1900
192.168.1.120   55248   8.8.8.8 53
192.168.1.120   55481   8.8.8.8 53
192.168.1.120   55628   8.8.8.8 53
192.168.1.120   55629   239.255.255.250 1900
192.168.1.120   55880   8.8.8.8 53
192.168.1.120   56549   8.8.8.8 53
192.168.1.120   56951   8.8.8.8 53
192.168.1.120   57016   224.0.0.252     5355
192.168.1.120   57058   8.8.8.8 53
192.168.1.120   57059   239.255.255.250 1900
192.168.1.120   57120   8.8.8.8 53
192.168.1.120   57182   8.8.8.8 53
192.168.1.120   57183   239.255.255.250 1900
192.168.1.120   57436   8.8.8.8 53
192.168.1.120   57437   239.255.255.250 1900
192.168.1.120   57494   8.8.8.8 53
192.168.1.120   58000   8.8.8.8 53
192.168.1.120   58597   8.8.8.8 53
192.168.1.120   58618   8.8.8.8 53
192.168.1.120   58682   8.8.8.8 53
192.168.1.120   59274   8.8.8.8 53
192.168.1.120   59275   239.255.255.250 1900
192.168.1.120   59379   8.8.8.8 53
192.168.1.120   59654   8.8.8.8 53
192.168.1.120   60909   8.8.8.8 53
192.168.1.120   61244   8.8.8.8 53
192.168.1.120   61625   8.8.8.8 53
192.168.1.120   61626   239.255.255.250 1900
192.168.1.120   62379   8.8.8.8 53
192.168.1.120   62566   8.8.8.8 53
192.168.1.120   62598   8.8.8.8 53
192.168.1.120   62666   8.8.8.8 53
192.168.1.120   63080   8.8.8.8 53
192.168.1.120   63172   8.8.8.8 53
192.168.1.120   63279   8.8.8.8 53
192.168.1.120   63280   239.255.255.250 1900
192.168.1.120   63381   8.8.8.8 53
192.168.1.120   63541   224.0.0.252     5355
192.168.1.120   64530   8.8.8.8 53
192.168.1.121   138     192.168.1.255   138
192.168.1.122   138     192.168.1.255   138
192.168.1.122   50901   192.168.1.10    44818
192.168.1.122   63993   192.168.1.255   1947
192.168.1.122   63993   255.255.255.255 1947
192.168.1.1     3       192.168.1.120   1
192.168.1.213   33063   192.168.1.55    41100
192.168.1.213   34311   192.168.1.55    41100
192.168.1.213   35995   192.168.1.55    1962
192.168.1.213   39903   192.168.1.55    41100
192.168.1.34    137     192.168.1.255   137
192.168.1.34    50426   224.0.0.252     5355
192.168.1.34    55068   224.0.0.252     5355
fe80::2d5a:70f8:9de5:b43c       57016   ff02::1:3       5355
fe80::2d5a:70f8:9de5:b43c       63541   ff02::1:3       5355
fe80::8d70:c288:7871:b57e       546     ff02::1:2       547
alex@alex-VirtualBox:~/Downloads/lab14$
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