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CPE 400

Final project

Project Overview

The focus of this project is to track the network traffic data for the purpose of optimization. Data is collected and saved to a csv file then it gets read in from prefer session if multipole are available. After coming through all the data, the IP addresses of devices that send and receive packets are revealed with that number of packets that were sent. There is also a separate data set of known devices that are connected to the network. I decided to work on this project to have a better understanding of network usage and identify potentially unknown or unauthorized devices that could be on the network. With high performance applications I feel the need for having an optimized network is important. The data collected can be used on any router interface to block any unknow IPs from accessing the network.

Results and Details

Traking my network and seeing the biggest users of my network has shown that there was 1 device that i could not identify but also put everything in perspective of how many data packets are being sent in a span of 10 minutes that I was capturing packets. There were around 25,000 sent and 26,000 received by my phone alone while it was being used.

Conclusion

The results exceeded expectations and gave a great insight into network traffic and the importins of protecting your network and the data that is being sent across it. Detection of unauthorized users and firewalls need to be maintained for sensitive data.

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PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

@illyaGavlovskiy →/workspaces/CS400FP (main) $ python network_analyzer.py

CSV files:
1. Wsdata.csv

Enter file you want to load: 1
Source
173.194.25.39      25609
192.168.50.94      4013
192.168.50.1       435
142.250.188.238    158
162.159.134.234    134
...
184.28.81.201      3
20.59.87.226       3
96.16.68.124       2
20.190.151.134     1
fa:7a:34:8a:f2:a6   1
Name: count, Length: 71, dtype: int64
Destination
192.168.50.94      26839
173.194.25.39      2723
239.255.255.250    301
142.250.188.238    136
162.159.134.234    126
...
96.16.68.124       3
20.59.87.226       3
20.190.151.134     2
172.64.145.151     2
Broadcast          1
Name: count, Length: 72, dtype: int64
      IP      Device
0  192.168.50.1  Router
1  192.168.50.94  MyLaptop
2  173.194.25.39  GoogleServer
@illyaGavlovskiy →/workspaces/CS400FP (main) $
```

Sources used:

<https://www.geeksforgeeks.org/getting-all-csv-files-from-a-directory-using-python/>

<https://www.geeksforgeeks.org/reading-csv-files-in-python/>

<https://www.w3schools.com/python/pandas/default.asp>

<https://www.geeksforgeeks.org/how-to-count-occurrences-of-specific-value-in-pandas-column/>

https://matplotlib.org/stable/plot_types/basic/bar.html#sphx-glr-plot-types-basic-bar-py

<https://www.geeksforgeeks.org/os-module-python-examples/>