Department of Computer Science & Engineering

Computer Networks
Mini Project
2022-2023

As a part of CN Lab CSE 3162, all the students must take up a mini project and submit the project report in the format specified (format will be given later). Mini projects can be taken up in a group of a maximum comprising of 2 students. **The brief project abstracts must be submitted, and students have to finalize the title of their projects by the 31/08/2022–Wednesday and fill the same in prescribed project list form shared by CR.** Students are allowed to choose the projects out of the only mentioned titles.

Project Titles list:
All the projects mentioned below are based on the network traffic analysis and hence require a raw traffic file in a proper format, depending on the tools used for the required analysis. Therefore, students have to arrange the raw file and then use a script for investigation or the existing analysis software.

1. Requirement is to develop a tool to visualize the timing of network connections, including the statistics like the Average connection duration, frequency of connections and inter-connect time.
2. Tool to extract the names of vendors that have made ethernet/Bluetooth devices to check the MAC fakeness.
3. Visualization tool shows the flow graph between two given Ip's(Src-Dst) concerning a particular Application Protocol.
4. Network Statistics such as Throughput, Transmission Speed, Average RTT.
5. Topology recreation based on the traffic file within a single LAN.
6. Separation of Traffic based on Link-layer Interfaces and associated statistics.
7. Separation of Traffic based on Application Layer Protocols and associated statistics.
8. Separation of traffic based on control communication and data communication for an entire traffic file.
9. Capture the flow of any application layer protocol using TCP and present its window size updating on both sides(S-D) concerning time.
10. Capture the same traffic and present the MSS with respect to time.
11. Capture the packets wherein at least TCP or IP options are used and mention the options used.
12. Capture the TLS handshaking and figure out the types of cipher suits in use in all the sessions.
13. Design a tool to identify the types of devices used in communication (Such as Mobile/Desktop).
14. Capture the communication involving Cookies and point the server ips using those packets.
15. Design a Tool to capture how many received packets were fragmented and needed to be assembled at the network layer, what were their ids, flag, and offsets.
16. Design a Tool for capturing the traffic based on the TCP header flags. (Urgent, Push, Syn, ACK, FIN)
17. Design a tool to capture the retransmitted packets, there figure out how many packets were sent and received and out of sent, how many were retransmitted.
18. Profiling of Ip's based on their traffic generation rate and profiling them based on the usage rate of application layer protocols.

19. Design a tool to monitor the count of segments in which piggybacking is used an how many segment transmissions it is not used.
20. Design a tool which, take ip along with mask as input and, then, give the validity of the ip, along with first address, last address and the number of address in the block. Keeping the size of this block as constant, it should give at least other three blocks available of the same size with their network address.

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