CSE322-NETWORKING SESSIONAL

NETWORK SIMULATOR 2
OFFLINE 2 (NS2)

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Wireless MAC Type: 802.11

IEEE 802.11 is a set of standards for wireless local area network (WLAN) computer communication. It is commonly used to provide wireless connectivity in homes, offices, and public spaces. There are several different versions of 802.11, with each one providing different levels of performance and security. Some of the most common versions include 802.11a, 802.11b, 802.11g, and 802.11n. The latest version is 802.11ax (Wi-Fi 6) which is designed to provide faster speeds and better performance in crowded environments.

Routing Protocol: DSDV

The Destination-Sequenced Distance-Vector (DSDV) routing protocol is a type of routing protocol used in mobile ad-hoc networks (MANETs). It is a proactive (table-driven) protocol, which means that it periodically exchanges information with other nodes in the network to maintain up-to-date routing information.

In DSDV, each node maintains a routing table that contains the next hop and the number of hops to each destination. The routes are assigned a sequence number, which is used to ensure that the most recent information is used. This routing protocol is based on the Bellman-Ford algorithm and it uses the concept of hop-count as the metric for determining the best path to a destination.

DSDV is known for its stability and fast convergence, but it also has some drawbacks such as high control overhead and high bandwidth consumption due to the frequent updates of the routing table.

Agent: UDP

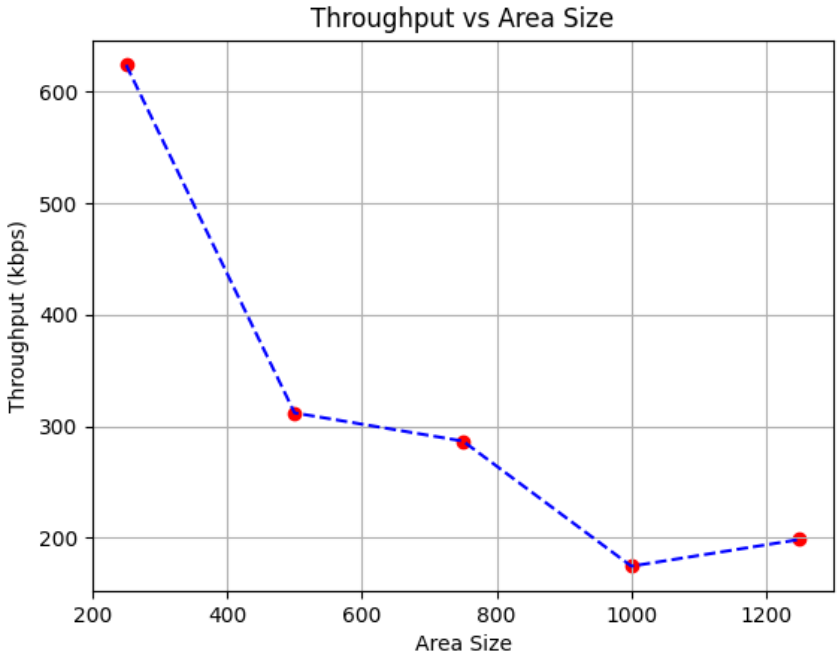
A UDP (User Datagram Protocol) agent is a type of network agent that uses the UDP protocol to send and receive data. UDP is a connectionless protocol, meaning that it does not establish a dedicated connection before sending data. Instead, it sends packets of data, called datagrams, to their destination without first establishing a connection. This makes UDP a good choice for applications that need to send a large amount of data quickly, such as streaming media or online gaming. However, because UDP does not guarantee delivery, it may not be the best choice for applications that require reliable data transfer.

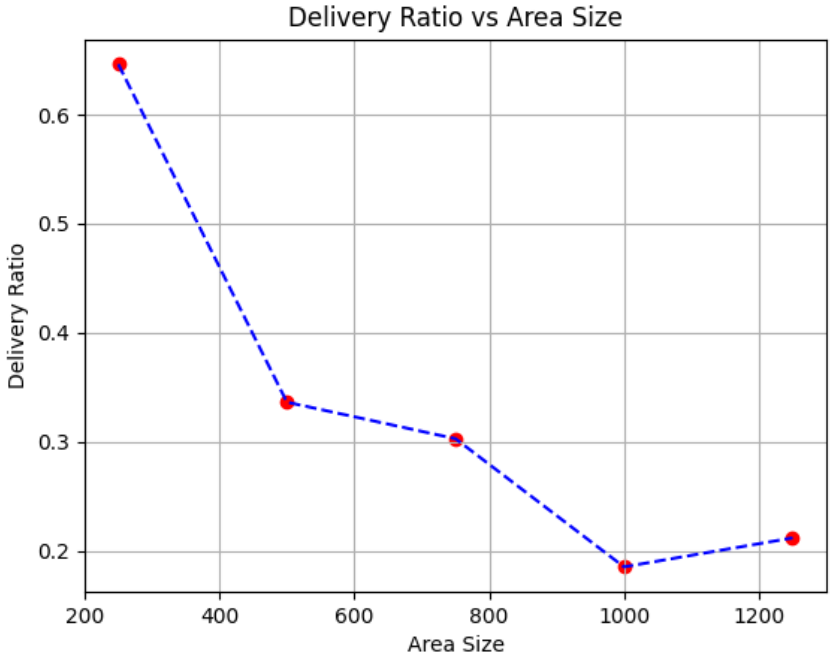
Application: Exponential Traffic

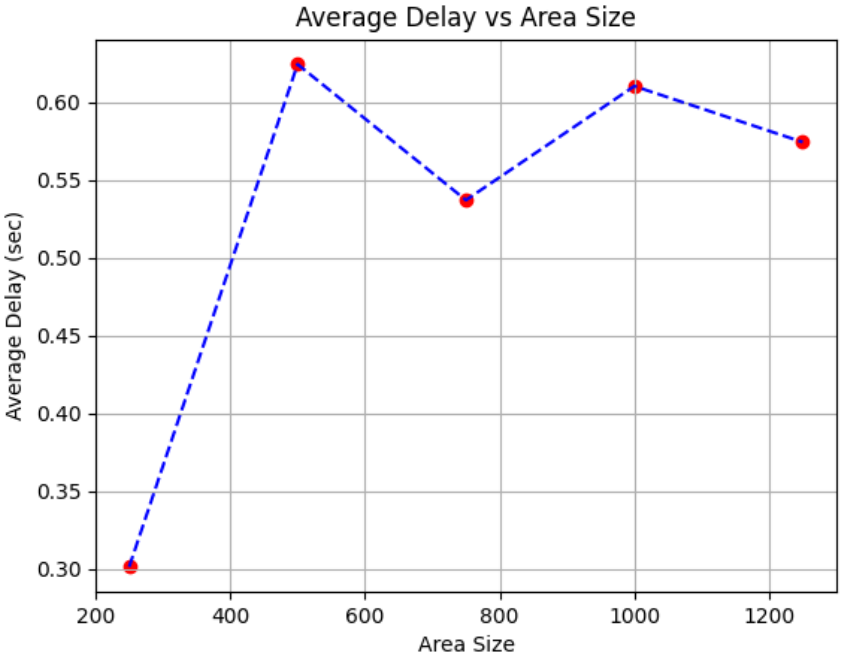
Exponential traffic refers to a type of network traffic that increases at an exponential rate. This type of traffic can occur in a variety of different networking contexts, but is typically seen in applications that generate a large amount of data in a short period of time. Examples of such applications include streaming media, online gaming, and data backup and replication. In these cases, the traffic may start off small but quickly increase as more users join or more data is generated.

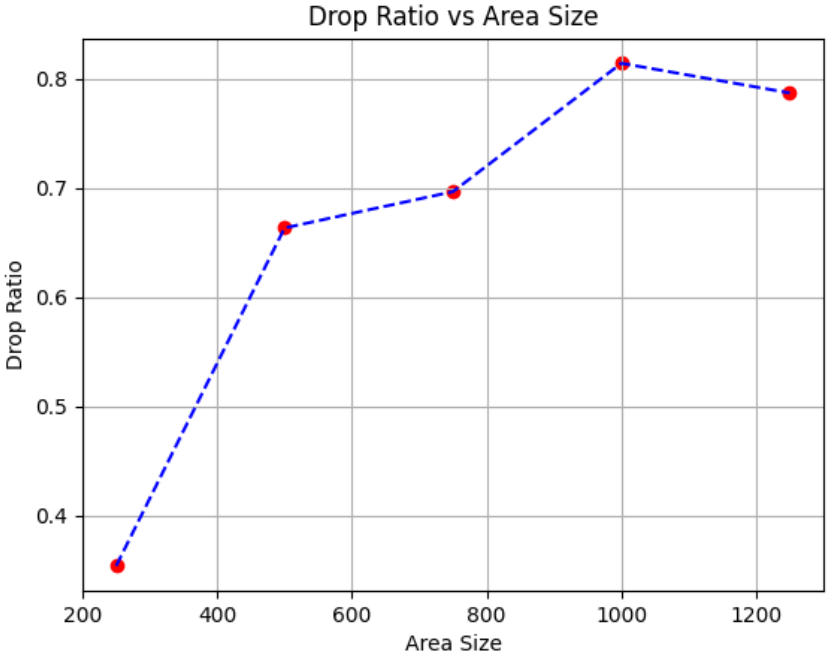
Graphs

Parameter: Area Size

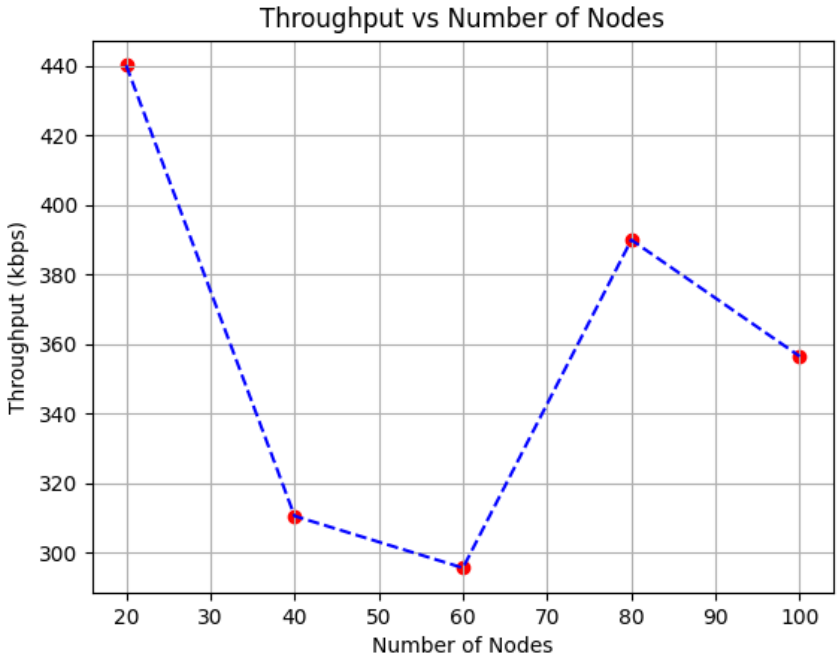


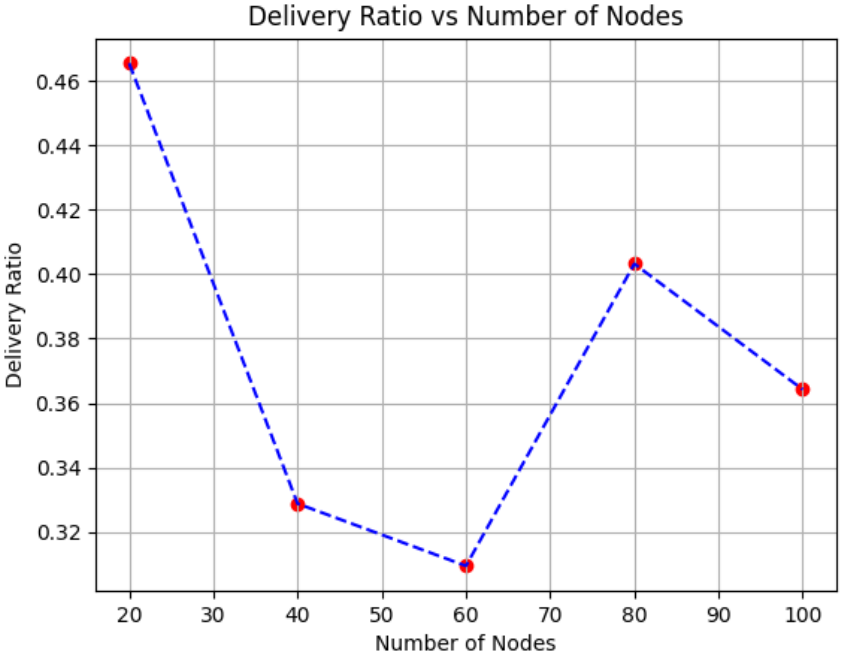


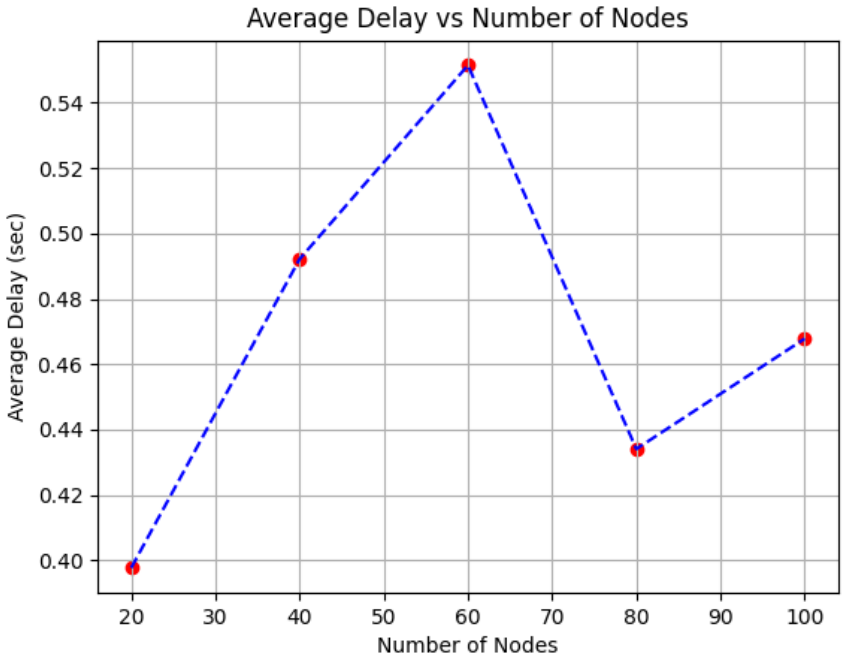

Average Delay vs Area Size
Average Delay (sec)
0.60
0.55
0.50
0.45
0.40
0.35
0.30
200
400
600
800
1000
1200
Area Size

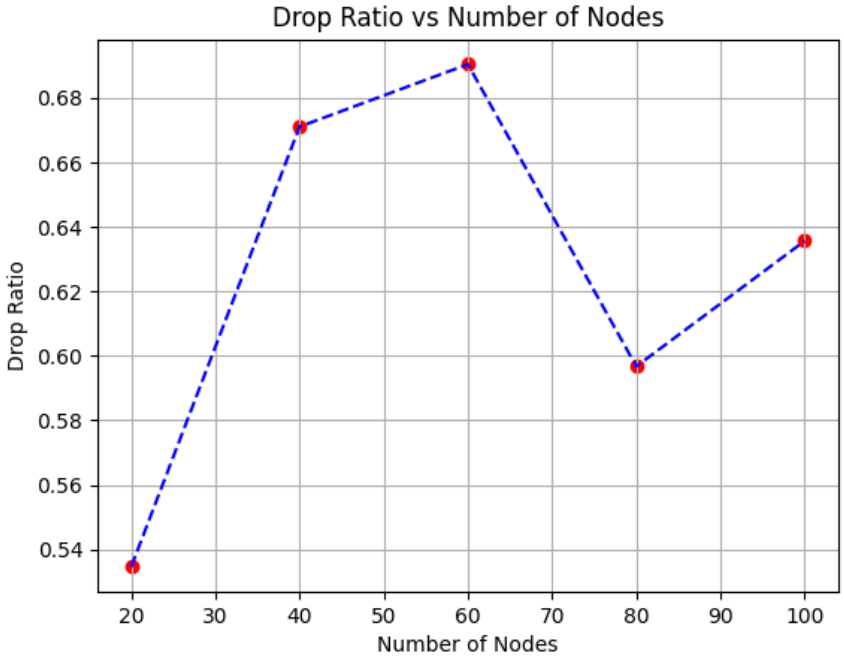

Drop Ratio vs Area Size
Drop Ratio
0.8
0.7
0.6
0.5
0.4
200
400
600
800
1000
1200
Area Size

Parameter: Number of Nodes

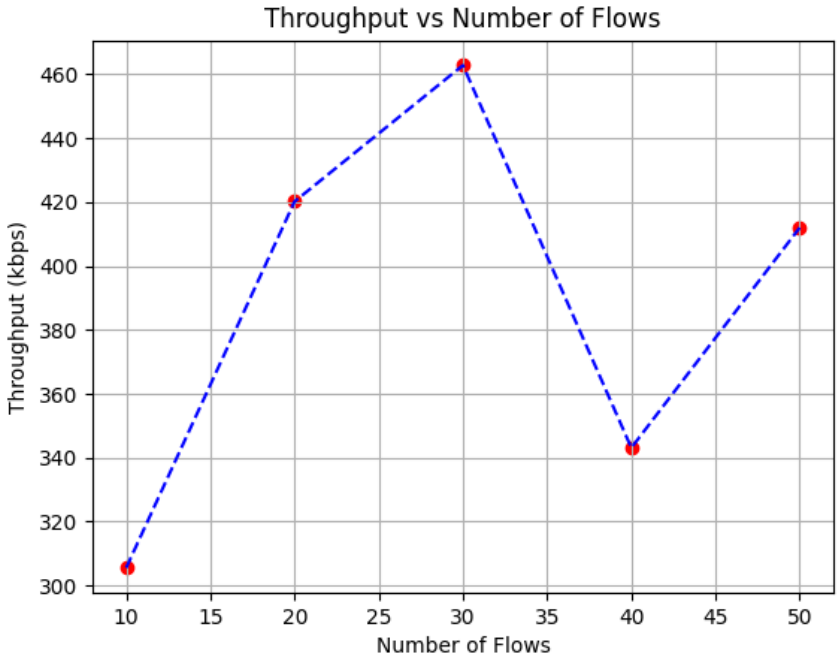


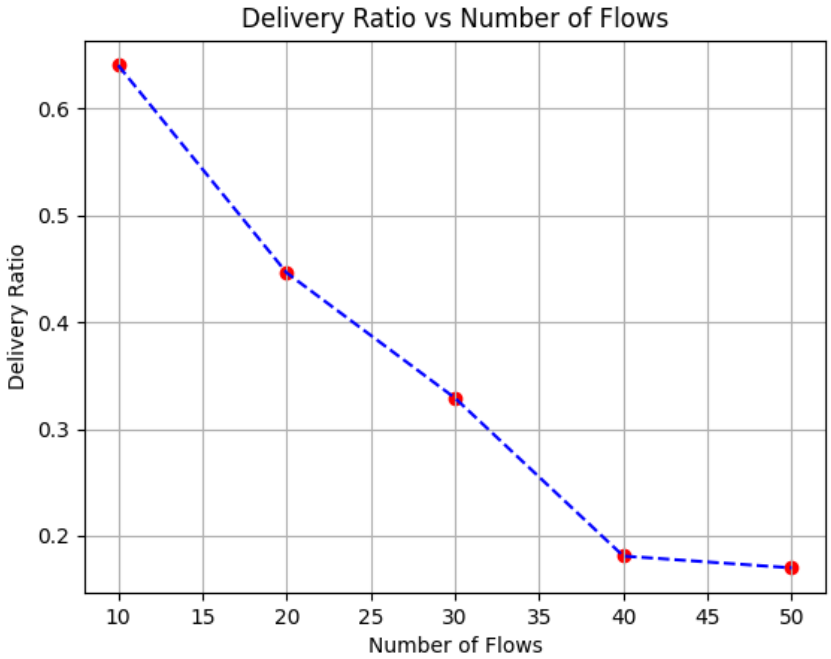


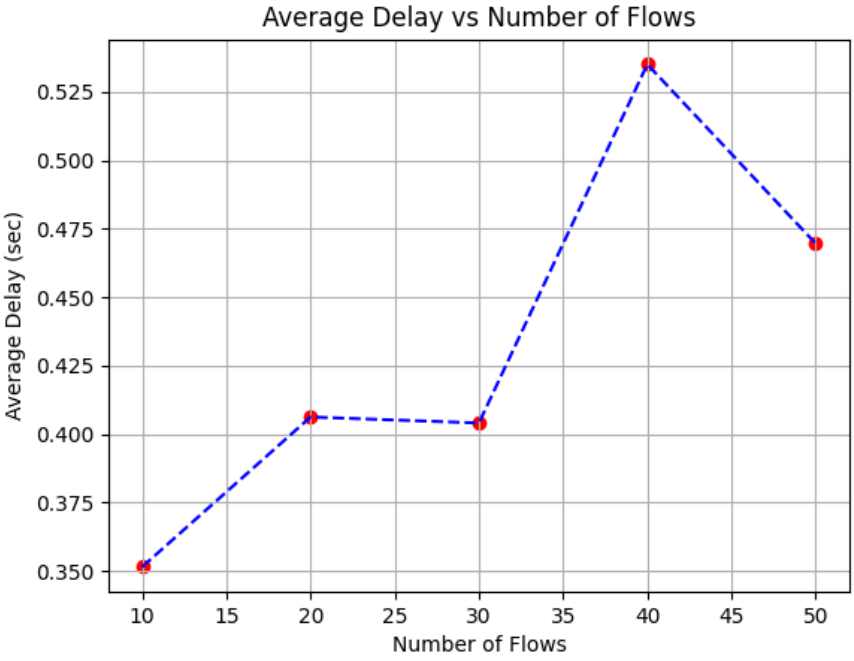

Average Delay vs Number of Nodes
Average Delay (sec)
0.54
0.52
0.50
0.48
0.46
0.44
0.42
0.40
20
30
40
50
60
70
80
90
100
Number of Nodes

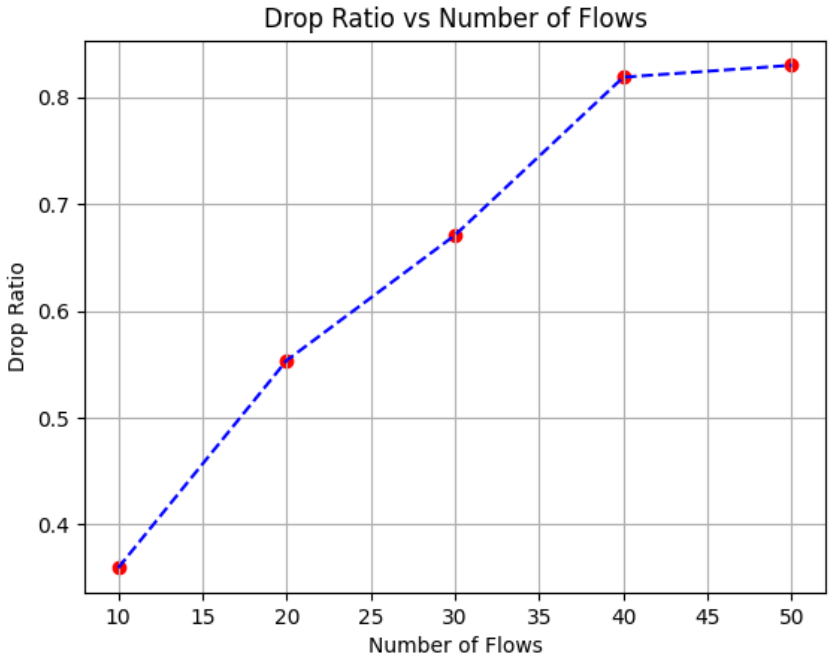

Drop Ratio vs Number of Nodes
Drop Ratio
0.68
0.66
0.64
0.62
0.60
0.58
0.56
0.54
20
30
40
50
60
70
80
90
100
Number of Nodes

Parameter: Number of Flows






Average Delay vs Number of Flows
Average Delay (sec)
0.525
0.500
0.475
0.450
0.425
0.400
0.375
0.350
10
15
20
25
30
35
40
45
50
Number of Flows


Drop Ratio vs Number of Flows
Drop Ratio
0.8
0.7
0.6
0.5
0.4
10
15
20
25
30
35
40
45
50
Number of Flows

Observations

1. The efficiency of packet transmission in ad hoc networks can be influenced by various factors such as the physical distance between nodes and the volume of concurrent data flows. Typically, networks with a weaker packet transfer rate tend to experience longer delays in end-to-end transmission.
2. UDP is considered an unreliable protocol as it lacks error detection and confirmation mechanisms for received packets. This means that packets may not reach their destination, and there is no way to resend lost packets. This can cause a higher rate of packet loss and a lower rate of successful packet delivery.
3. The unpredictability in the transmission of packets in ad hoc networks can be caused by the random positioning and movement of nodes which can result in changes to the network structure and can affect the route taken by packets to reach their destination.
4. The shapes of the graphs depend vasty on the sink nodes created randomly by our simulator. As a result, the graphs vary a little to a significant amount, every time we generate new trace file after simulation.