Network Simulation Offline

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MAC Type

802.15.4:

IEEE 802.15.4 is a technical standard which defines the operation of low-rate wireless personal area networks.

It is a standard that has short range,low bit rate and low power consumption.

Routing Protocol

DSR(Dynamic Source Routing):

DSR uses source routing. So to send a packet,whole route from source to sink is needed. Addresses of all devices between source and sink is stored in packet overhead.

Agent Type

TCP TAHOE:

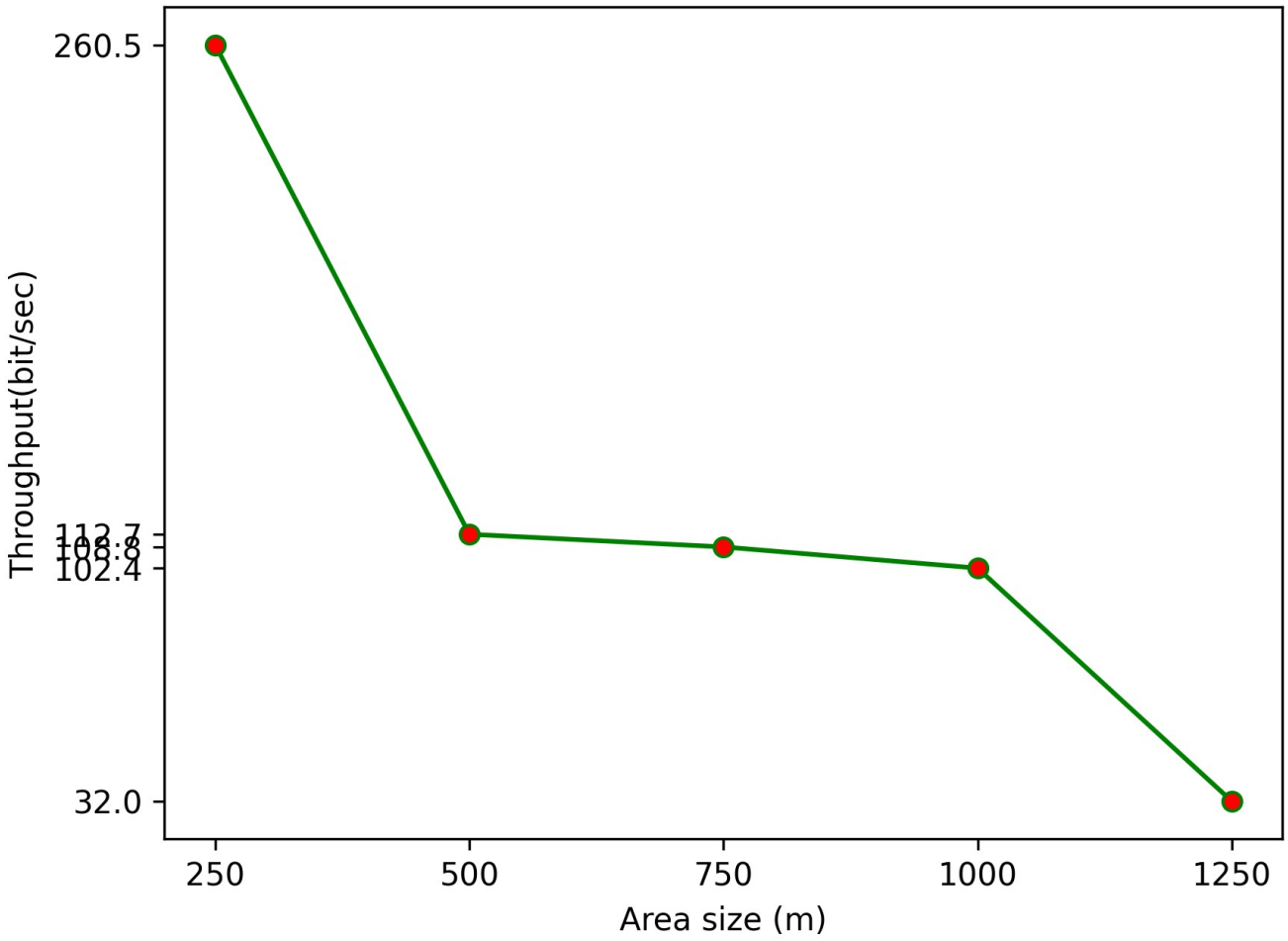
Tcp tahoe is a tcp congession control algorithm.TCP is based on a principle of ‘conservation of packets’.It means if the connection is running at the available bandwidth capacity then a packet is not injected into the network unless a packet is taken out as well. TCP implements this principle by using the acknowledgements to clock outgoing packets because an acknowledgement means that a packet was taken off the wire by the receiver.

Application

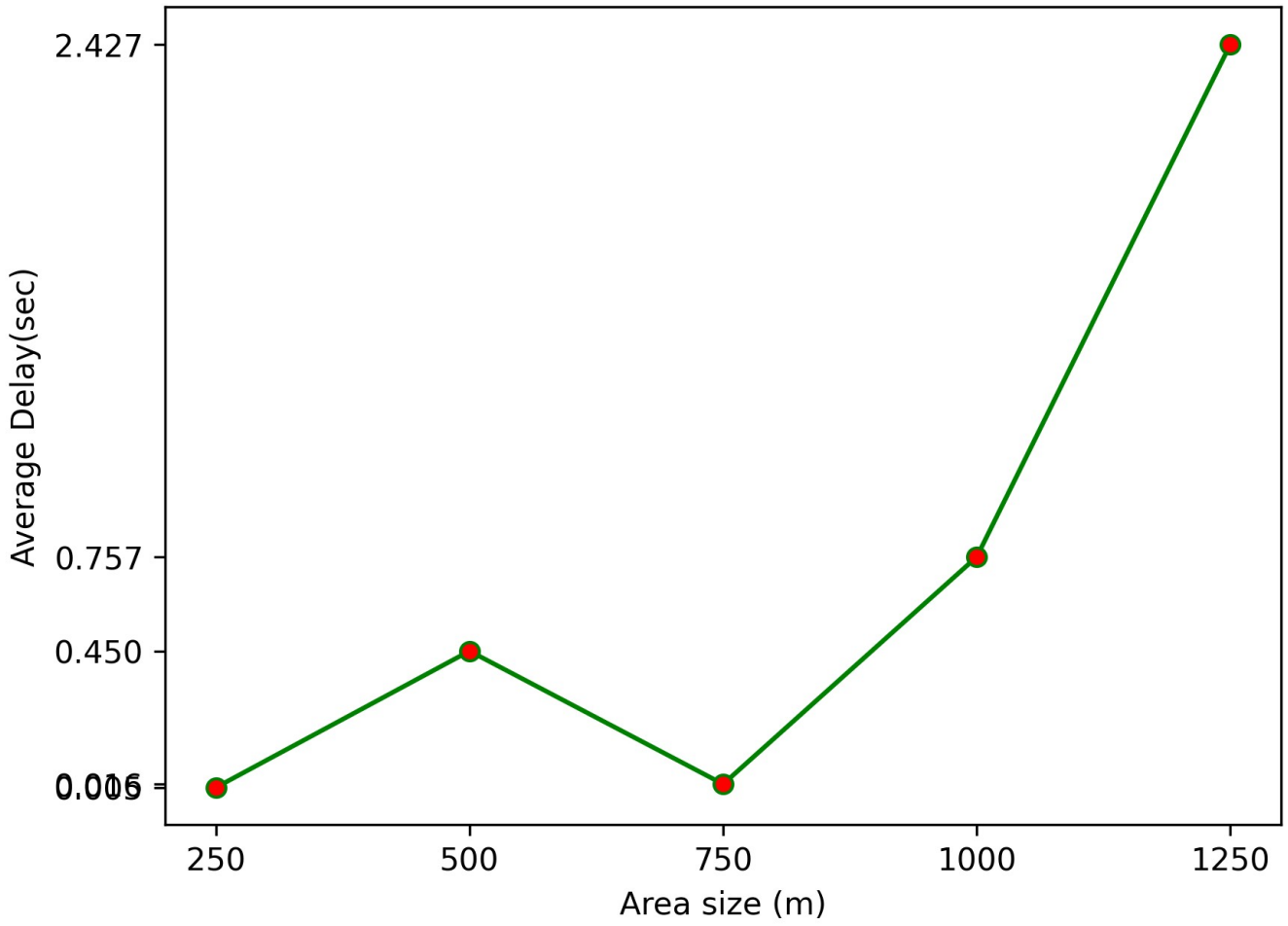
Telnet:

Telnet is an application protocol used on the Internet or local area network to provide a bidirectional interactive text-oriented communication facility using a virtual terminal connection. User data is interspersed in-band with Telnet control information in an 8-bit byte oriented data connection over the Transmission Control Protocol (TCP).

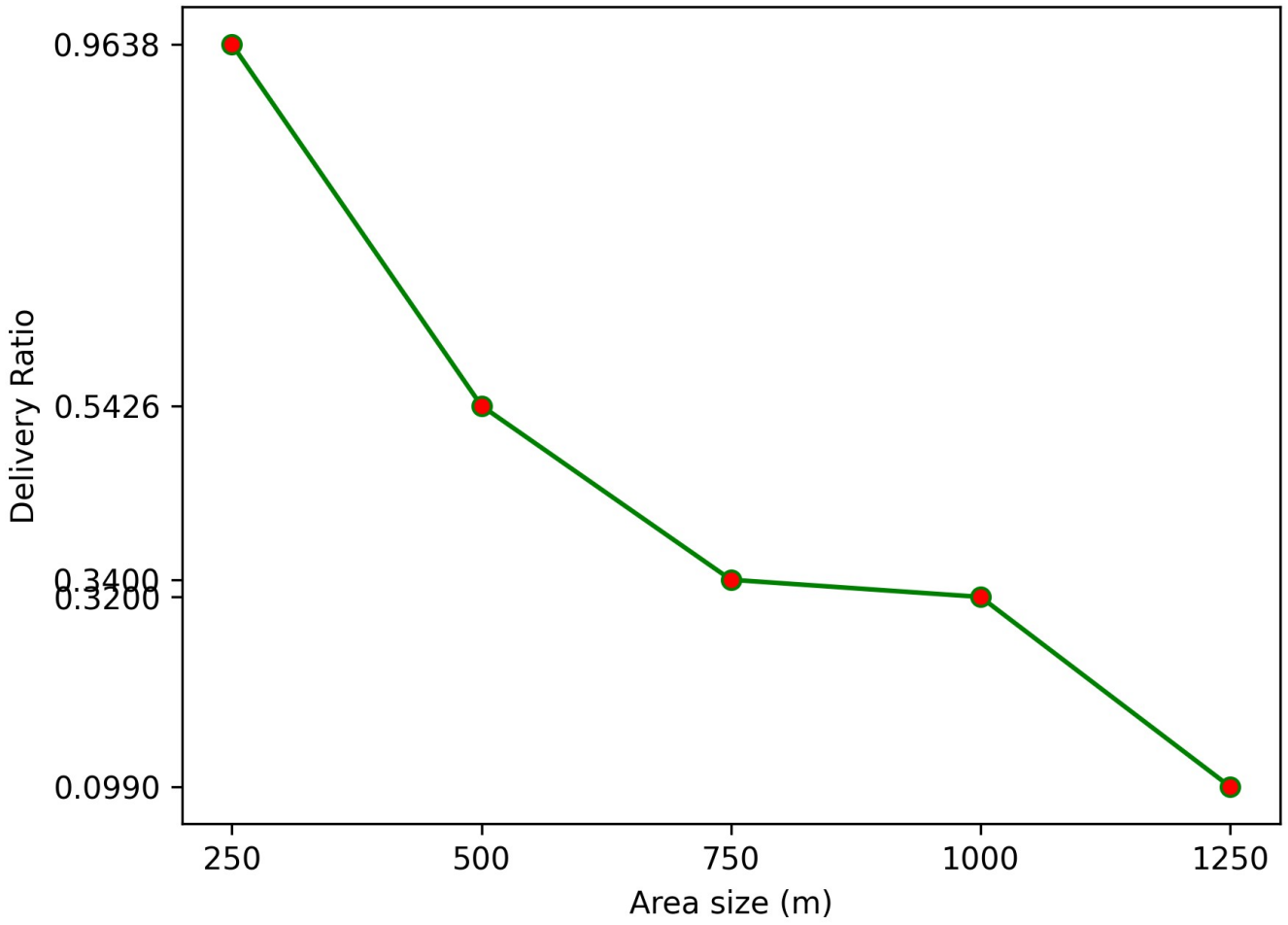
Graph:Throughput vs Area



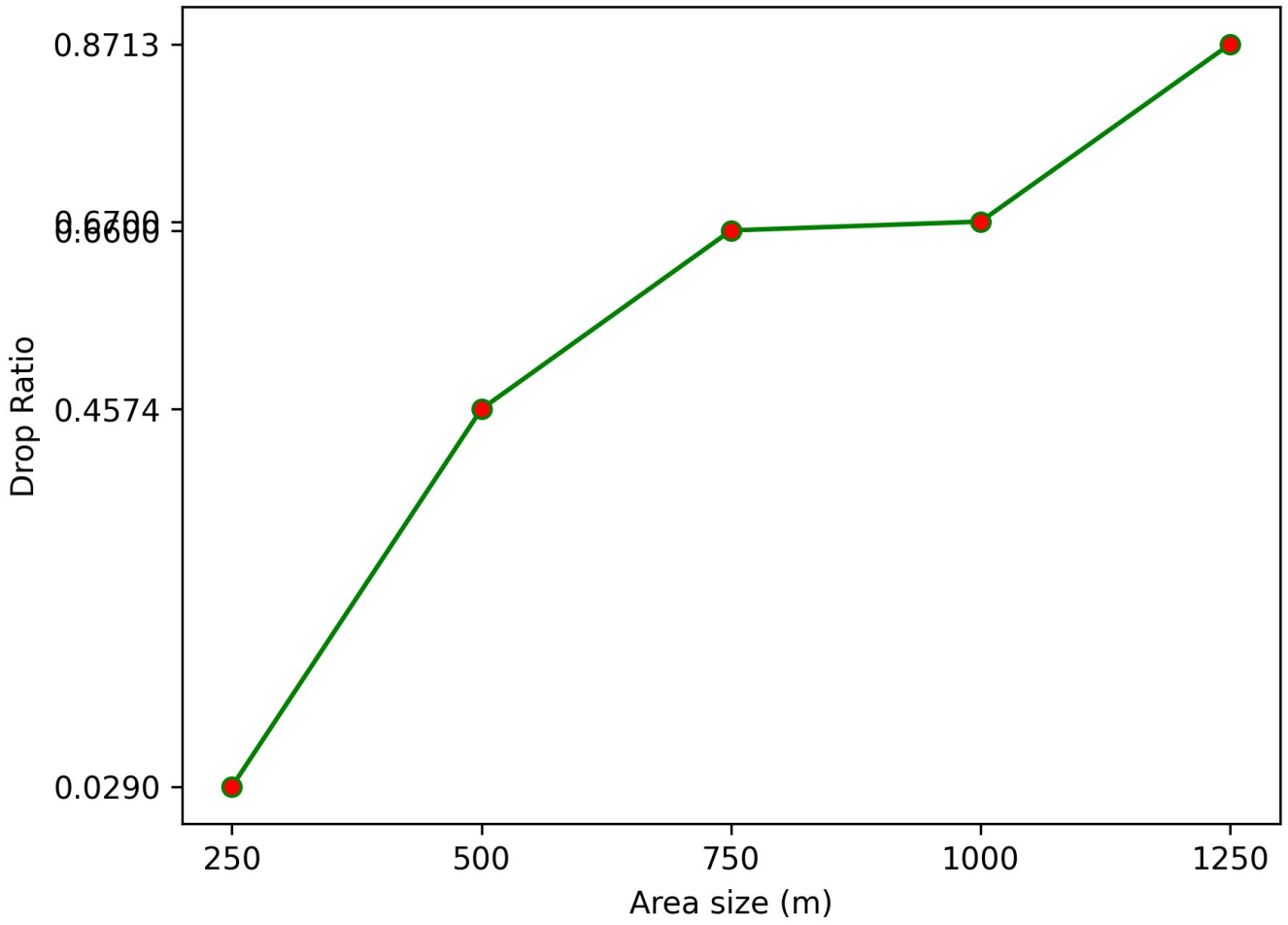
Graph: Average Delay vs Area



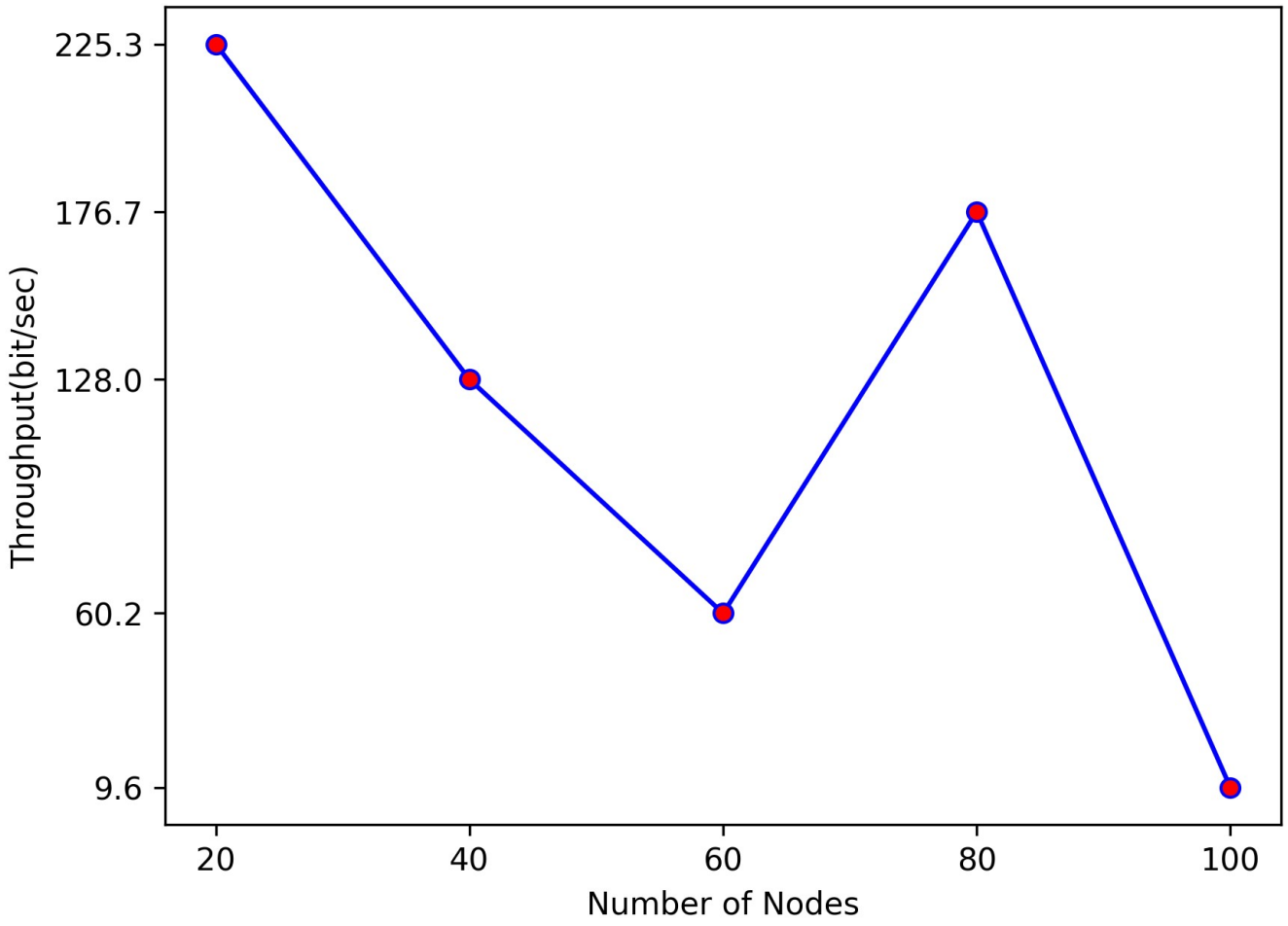
Graph: Delivery Ratio vs Area



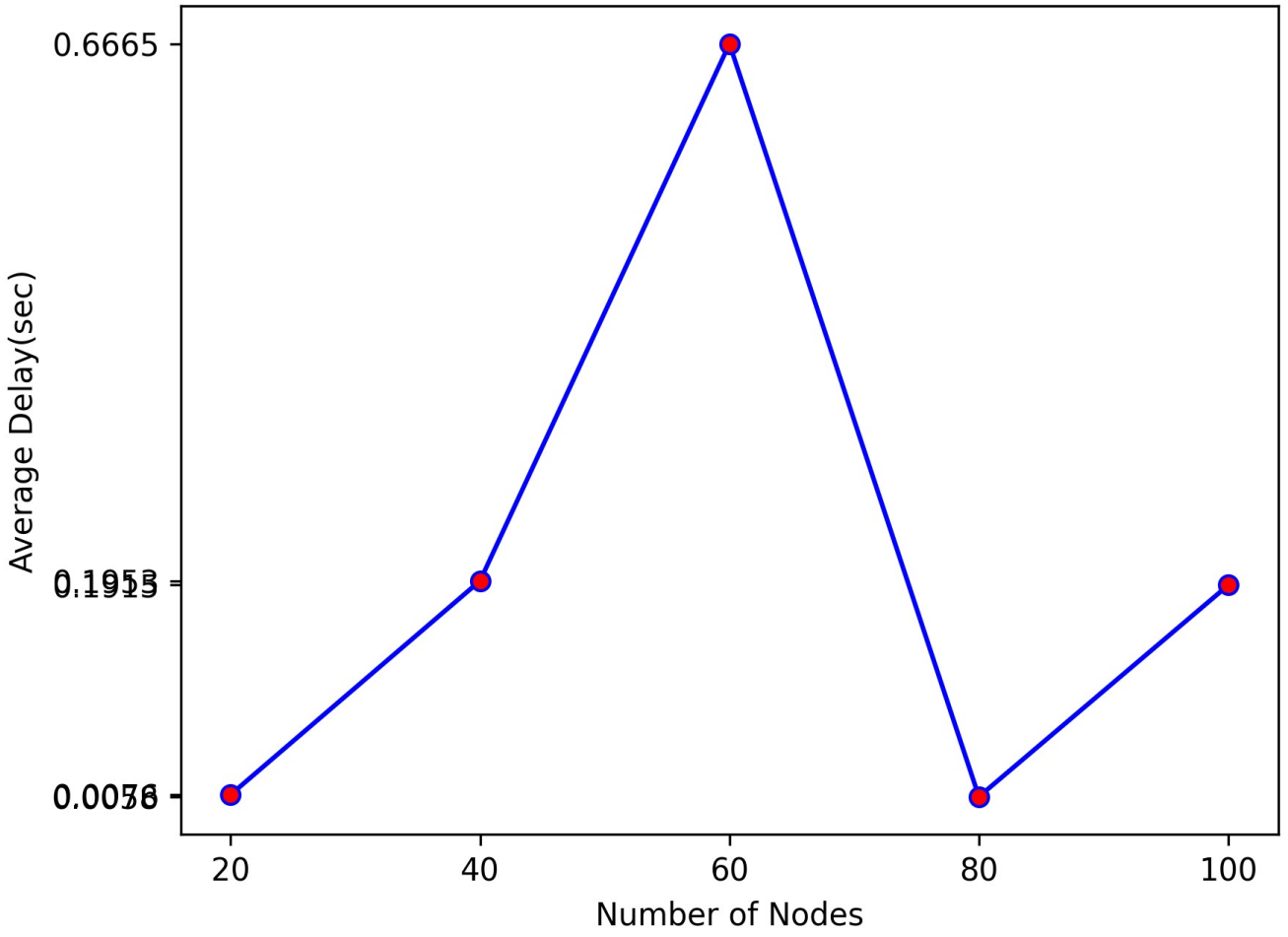
Graph: Drop Ratio vs Area



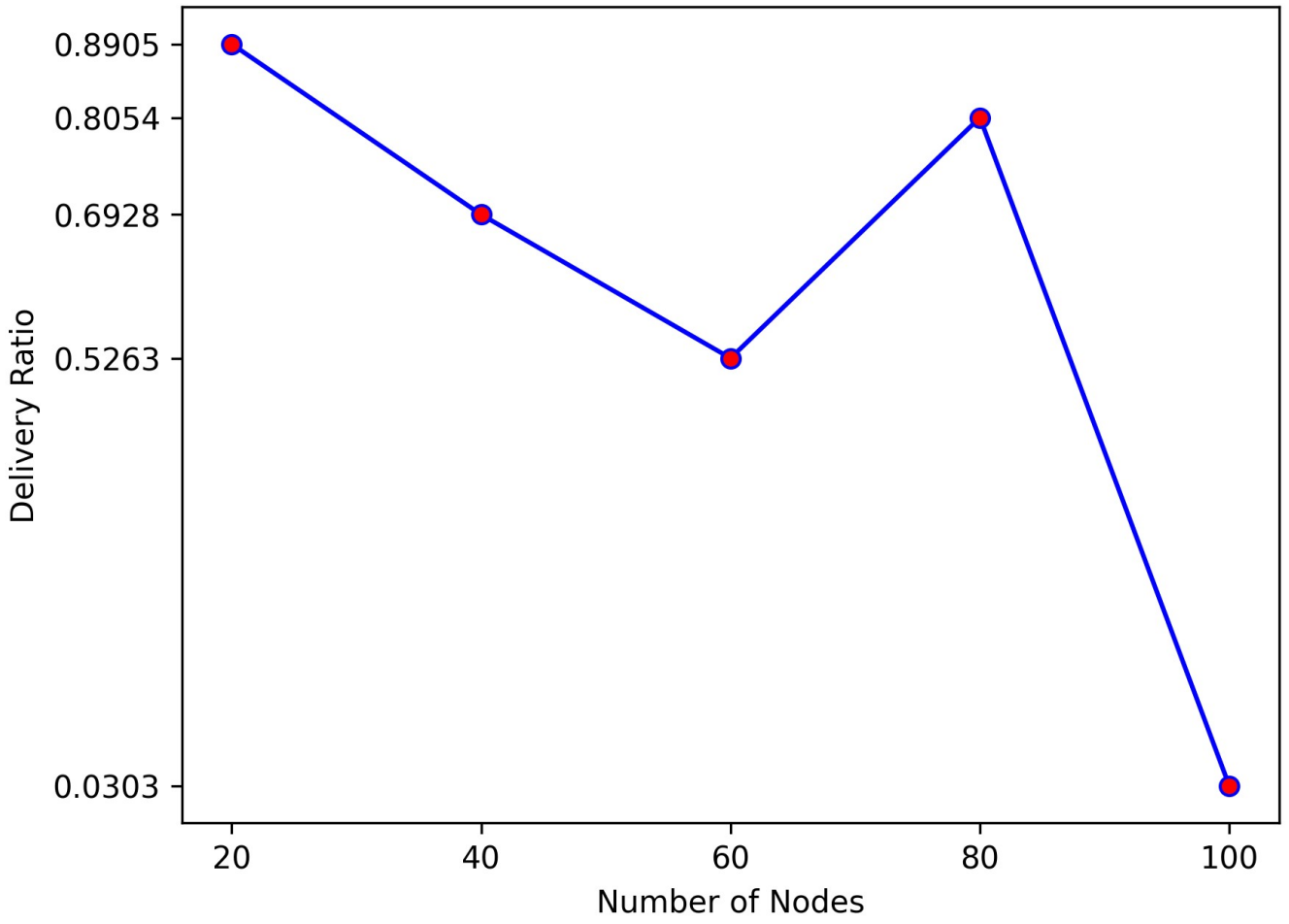
Graph: Throughput vs Number of nodes



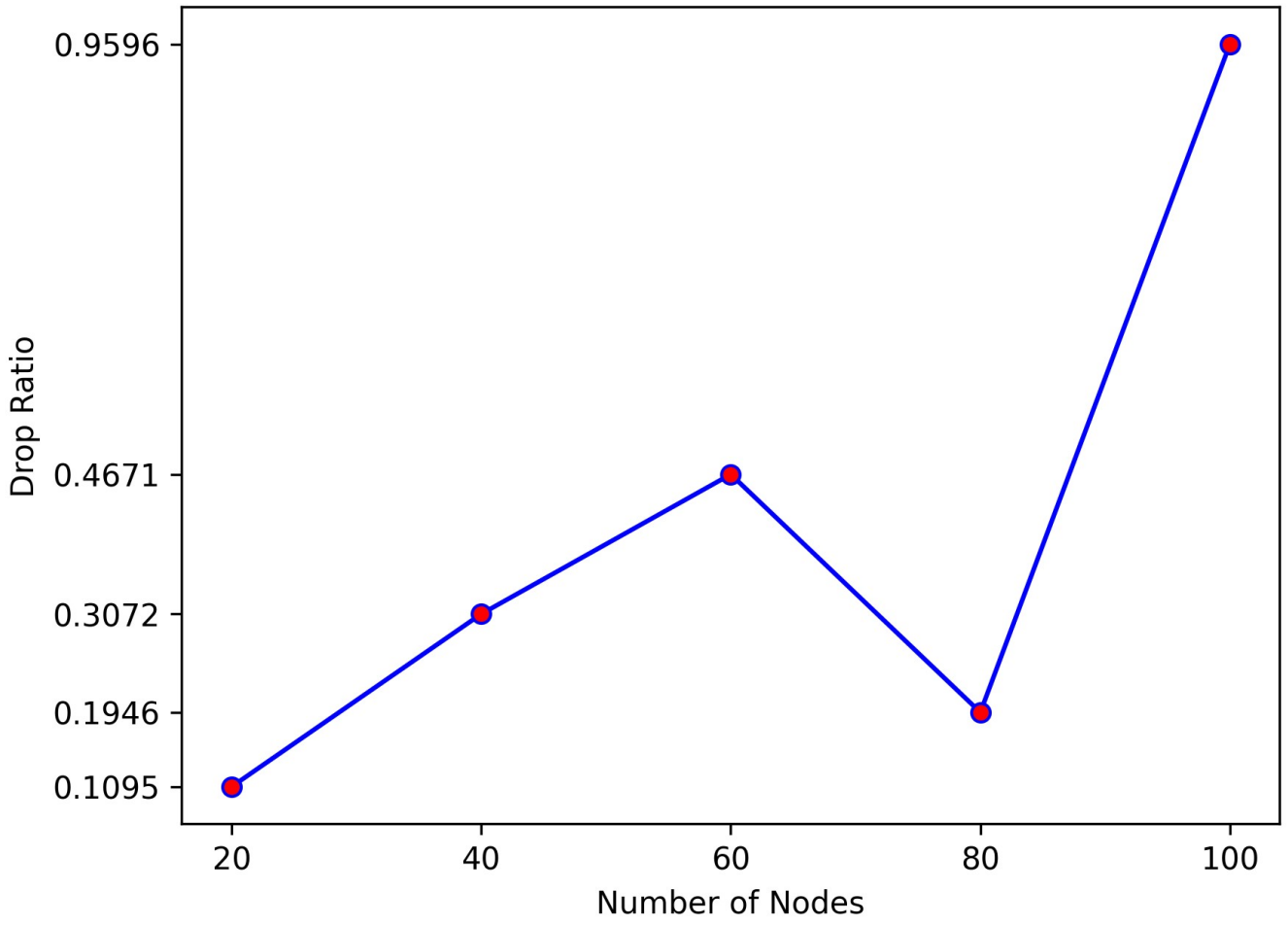
Graph:Avarage Delay vs Number of Nodes



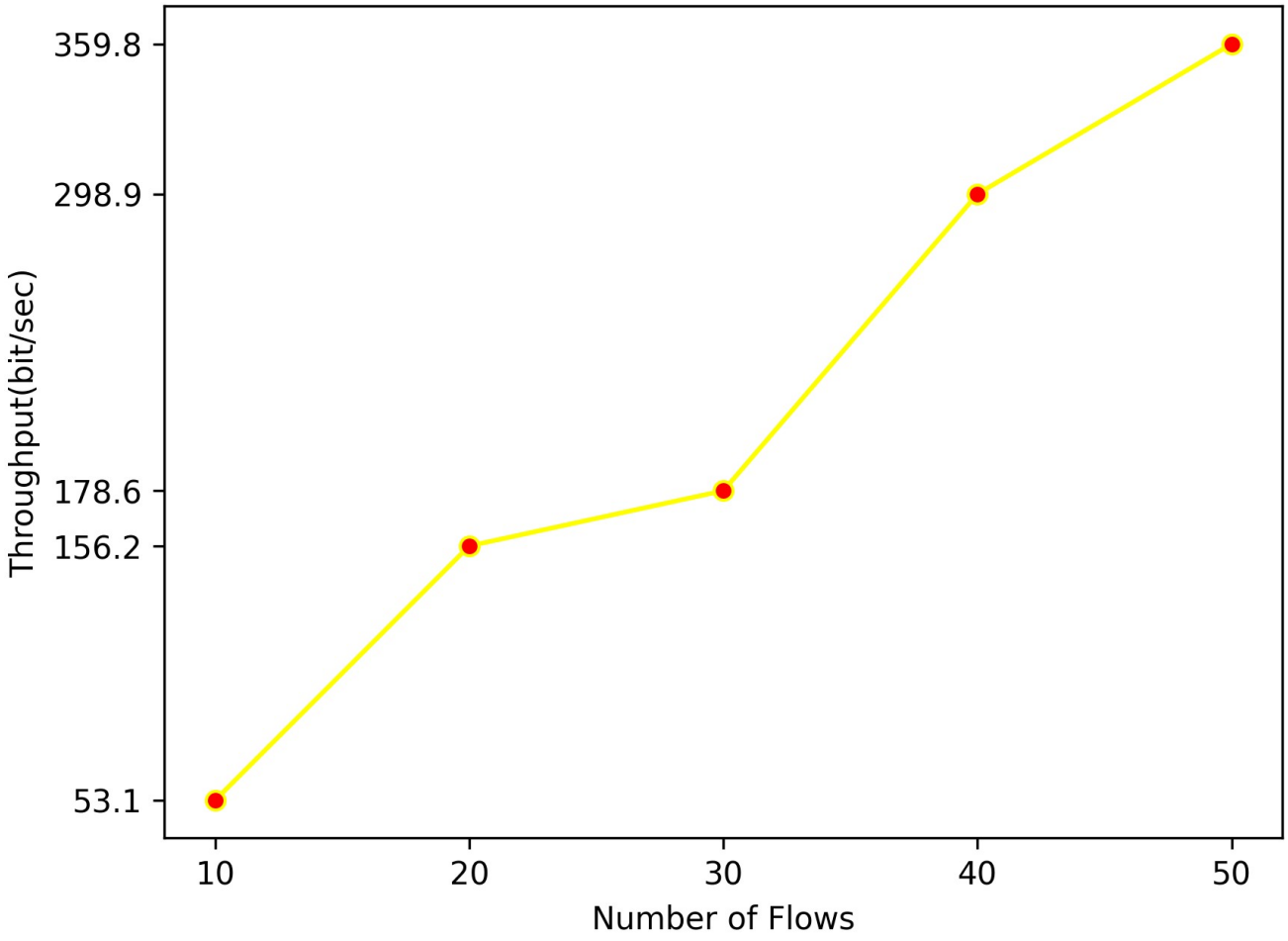
Graph: Delivery Ratio vs Number of Nodes



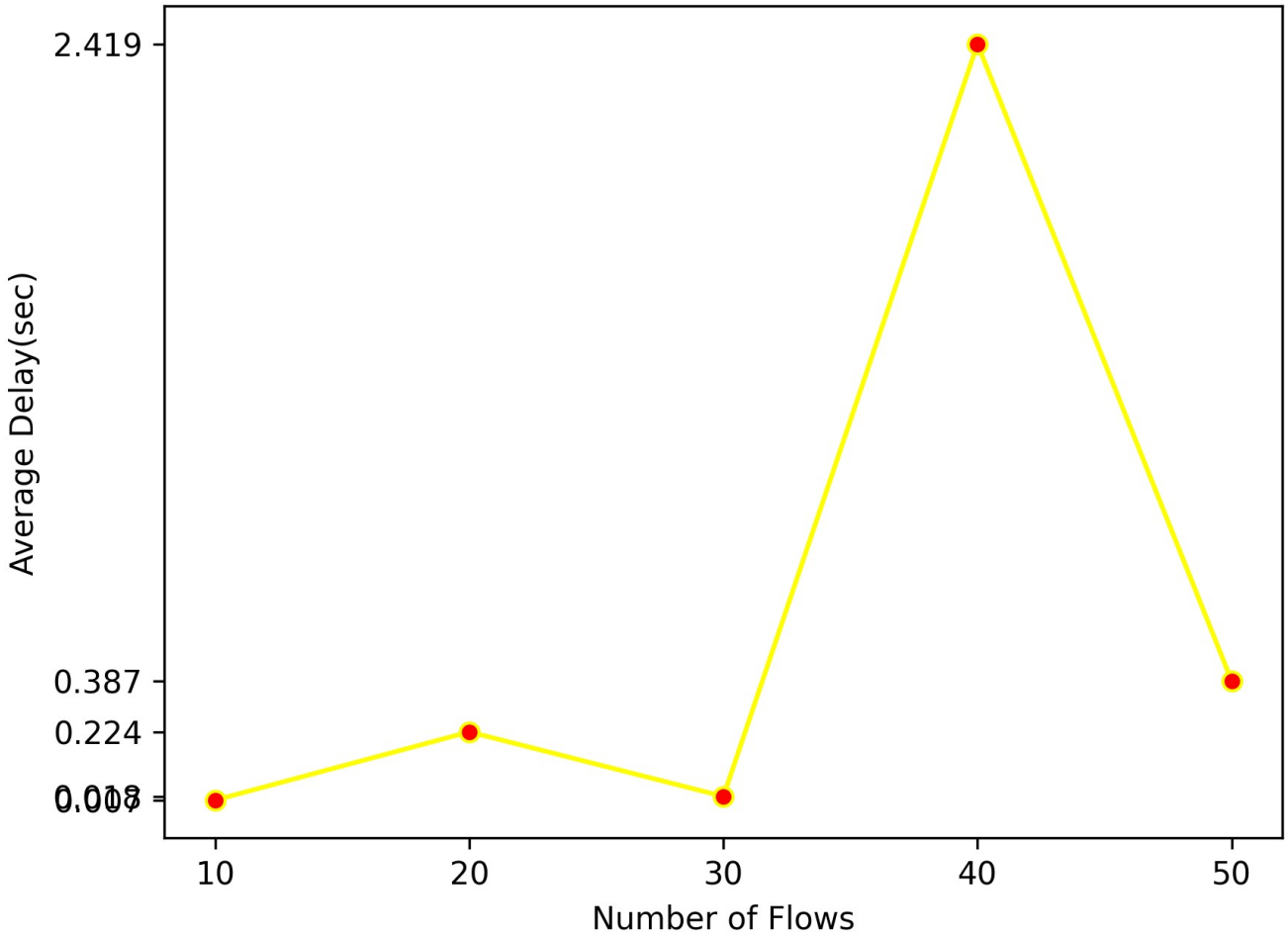
Graph:Drop Raio vs Number of Nodes



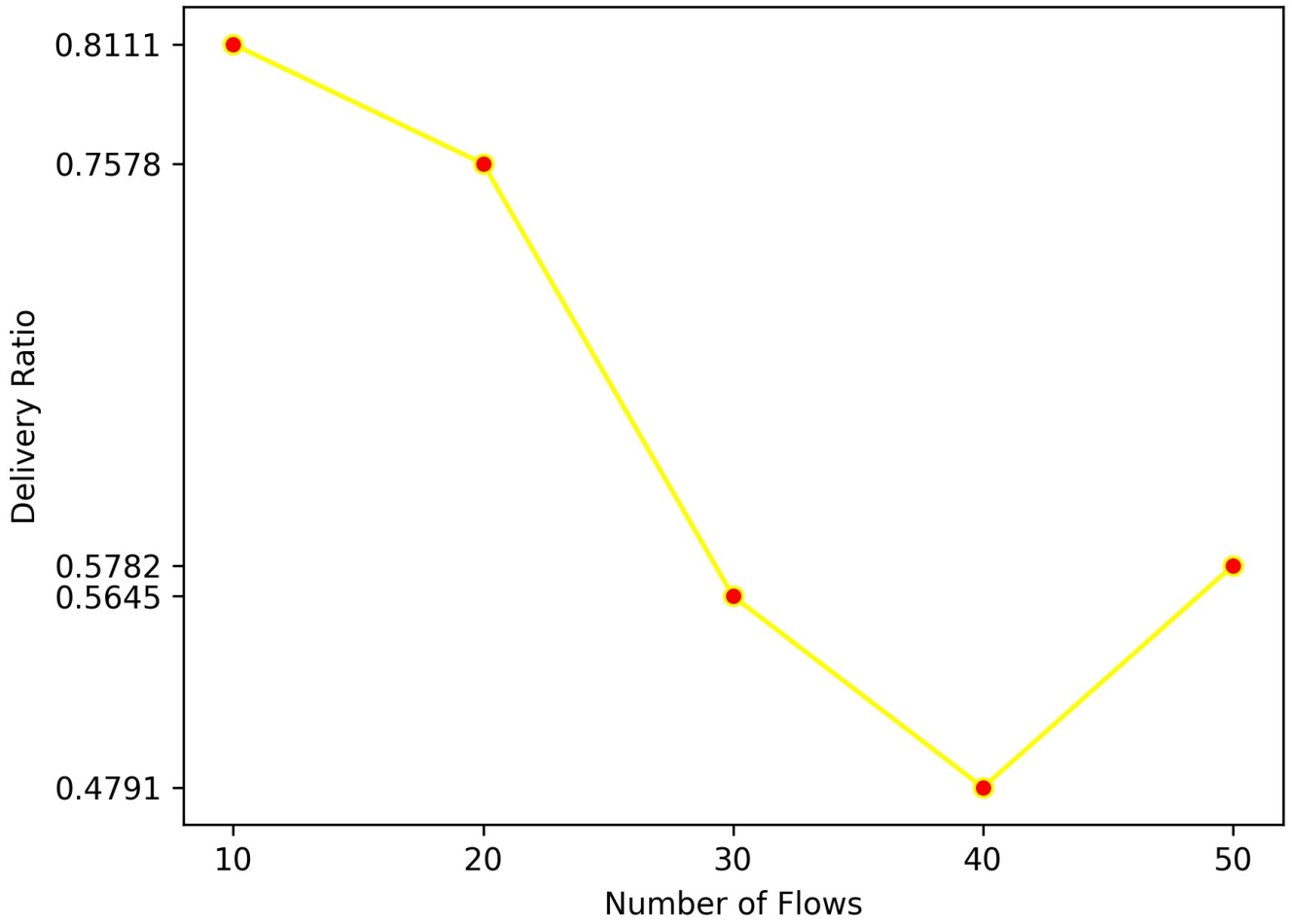
Graph: Throughput vs Number of Flows



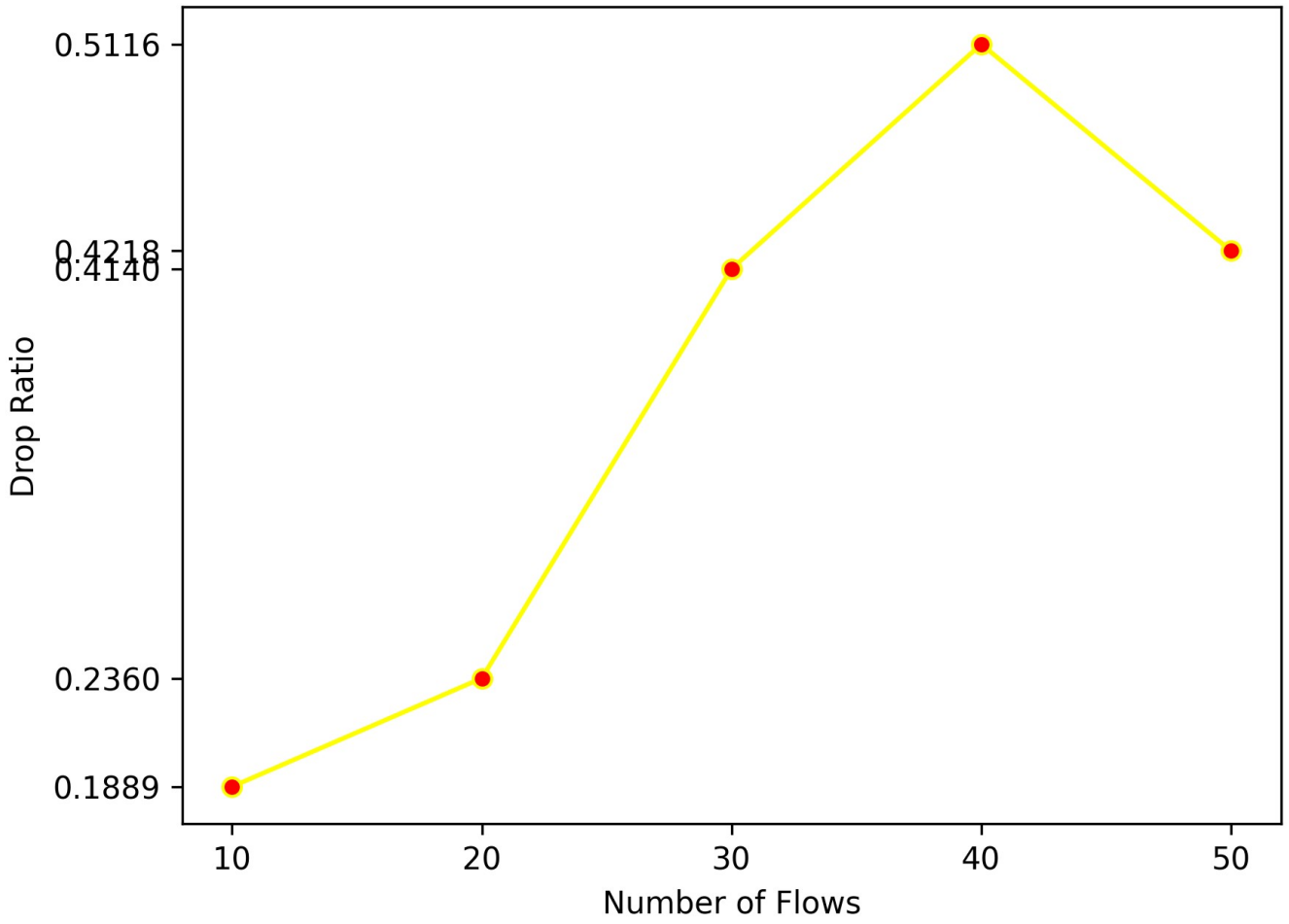
Graph:Average Delay vs Number of Flows



Graph:Delivery Ratio vs Number of flows



Graph:Drop ratio vs Number of flows



Observation

As area increases,throughput and delivery ratio decreases & average delay and drop ratio increases.

If we increase more nodes, throughput & delivery ratio is decreasing and drop ratio & average delay is increasing.

In case of flow,throughput is increasing with more flow. As more flow is established and there is only one sink, drop ratio is also increasing.

Observation

For different area size:

With increasing area size-

1. Throughput decreases
2. Average delay increases
3. Delivery ratio decreases
4. Drop ratio increases

As area increases, the distance between source and sink also increases. So more time is needed to data communication. This is the reason above observation.

Observation

For different number of nodes:

With increasing number of nodes-

1. Throughput decreases
2. Average delay increases
3. Delivery ratio decreases
4. Drop ratio increases

Observation

For different number of flows:

With increasing number of flows-

1. Throughput increases
2. Average delay increases
3. Delivery ratio decreases
4. Drop ratio increases

As more flows are introduced, more packets are waiting in queue because there is only one sink. As a result, drop ratio increases.