

# Packet size vs Throughput

```
fardin@fardin-X556UQK:~/Desktop/ns-allinone-3.40/ns-3.40$ python3 examples/tutorial/first.py
AnimationInterface WARNING:Node:0 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:1 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:0 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:1 Does not have a mobility model. Use SetConstantPosition if it is stationary
At time +2s client sent 128 bytes to 10.1.1.2 port 9
At time +2.00225s server received 128 bytes from 10.1.1.1 port 49153
At time +2.00225s server sent 128 bytes to 10.1.1.1 port 49153
At time +2.00451s client received 128 bytes from 10.1.1.2 port 9
FlowID: 1 (UDP 10.1.1.1/49153 --> 10.1.1.2/9)
Tx Bytes: 156
Rx Bytes: 156
Tx Packets: 1
Rx Packets: 1
Lost Packets: 0
Mean Delay: 0.0022528
Throughput: 69.33333333333333
FlowID: 2 (UDP 10.1.1.2/9 --> 10.1.1.1/49153)
Tx Bytes: 156
Rx Bytes: 156
Tx Packets: 1
Rx Packets: 1
Lost Packets: 0
Mean Delay: 0.0022528
Throughput: 69.33333333333333
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AnimationInterface WARNING:Node:0 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:1 Does not have a mobility model. Use SetConstantPosition if it is stationary
At time +2s client sent 256 bytes to 10.1.1.2 port 9
At time +2.00246s server received 256 bytes from 10.1.1.1 port 49153
At time +2.00246s server sent 256 bytes to 10.1.1.1 port 49153
At time +2.00492s client received 256 bytes from 10.1.1.2 port 9
FlowID: 1 (UDP 10.1.1.1/49153 --> 10.1.1.2/9)
Tx Bytes: 284
Rx Bytes: 284
Tx Packets: 1
Rx Packets: 1
Lost Packets: 0
Mean Delay: 0.0024576
Throughput: 126.22222222222223
FlowID: 2 (UDP 10.1.1.2/9 --> 10.1.1.1/49153)
Tx Bytes: 284
Rx Bytes: 284
Tx Packets: 1
Rx Packets: 1
Lost Packets: 0
Mean Delay: 0.0024576
Throughput: 126.22222222222223
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fardin@fardin-X556UQK:~/Desktop/ns-allinone-3.40/ns-3.40$ ./ns3 shell
fardin@fardin-X556UQK:~/Desktop/ns-allinone-3.40/ns-3.40$ python3 examples/tutorial/first.py
At time +2s client sent 512 bytes to 10.1.1.2 port 9
At time +2.00287s server received 512 bytes from 10.1.1.1 port 49153
At time +2.00287s server sent 512 bytes to 10.1.1.1 port 49153
At time +2.00573s client received 512 bytes from 10.1.1.2 port 9
FlowID: 1 (UDP 10.1.1.1/49153 --> 10.1.1.2/9)
Tx Bytes: 540
Rx Bytes: 540
Tx Packets: 1
Rx Packets: 1
Lost Packets: 0
Mean Delay: 0.0028672
Throughput: 240.0
FlowID: 2 (UDP 10.1.1.2/9 --> 10.1.1.1/49153)
Tx Bytes: 540
Rx Bytes: 540
Tx Packets: 1
Rx Packets: 1
Lost Packets: 0
Mean Delay: 0.0028672
Throughput: 240.0
fardin@fardin-X556UQK:~/Desktop/ns-allinone-3.40/ns-3.40$
```

```
fardin@fardin-X556UQK:~/Desktop$ cd ns-allinone-3.40/
fardin@fardin-X556UQK:~/Desktop/ns-allinone-3.40$ cd ns-3.40/
fardin@fardin-X556UQK:~/Desktop/ns-allinone-3.40/ns-3.40$ python3 examples/tutorial/first.py
AnimationInterface WARNING:Node:0 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:1 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:0 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:1 Does not have a mobility model. Use SetConstantPosition if it is stationary
At time +2s client sent 1024 bytes to 10.1.1.2 port 9
At time +2.00369s server received 1024 bytes from 10.1.1.1 port 49153
At time +2.00369s server sent 1024 bytes to 10.1.1.1 port 49153
At time +2.00737s client received 1024 bytes from 10.1.1.2 port 9
FlowID: 1 (UDP 10.1.1.1/49153 --> 10.1.1.2/9)
Tx Bytes: 1052
Rx Bytes: 1052
Tx Packets: 1
Rx Packets: 1
Lost Packets: 0
Mean Delay: 0.0036864
Throughput: 467.5555555555554
FlowID: 2 (UDP 10.1.1.2/9 --> 10.1.1.1/49153)
Tx Bytes: 1052
Rx Bytes: 1052
Tx Packets: 1
Rx Packets: 1
Lost Packets: 0
Mean Delay: 0.0036864
Throughput: 467.5555555555554
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fardin@fardin-X556UQK:~/Desktop/ns-allinone-3.40/ns-3.40$ python3 examples/tutorial/first.py
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AnimationInterface WARNING:Node:1 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:0 Does not have a mobility model. Use SetConstantPosition if it is stationary
AnimationInterface WARNING:Node:1 Does not have a mobility model. Use SetConstantPosition if it is stationary
At time +2s client sent 2048 bytes to 10.1.1.2 port 9
At time +2.00536s server received 2048 bytes from 10.1.1.1 port 49153
At time +2.00536s server sent 2048 bytes to 10.1.1.1 port 49153
At time +2.01072s client received 2048 bytes from 10.1.1.2 port 9
FlowID: 1 (UDP 10.1.1.1/49153 --> 10.1.1.2/9)
Tx Bytes: 2076
Rx Bytes: 2076
Tx Packets: 1
Rx Packets: 1
Lost Packets: 0
Mean Delay: 0.00536
Throughput: 922.6666666666666
FlowID: 2 (UDP 10.1.1.2/9 --> 10.1.1.1/49153)
Tx Bytes: 2076
Rx Bytes: 2076
Tx Packets: 1
Rx Packets: 1
Lost Packets: 0
Mean Delay: 0.00536
Throughput: 922.6666666666666
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```

From the above py file execution we got,

Packet Size	Throughput
128	69.33
256	126.22
512	240
1024	467.555
2028	922.667

There a graph of “Throughput vs Packet size” has been plotted. Distinct packet sizes were taken, they are **[128, 256, 512, 1024, 2048]** bytes. After running the python first.py file respective throughputs were seen **[69.33, 126.22, 240, 467.555, 922.6667]** unit. After plotting the points on the graph, a linear line appears. That means the throughput is linearly proportional to the packet size. If a packet size increases then the throughput will also increase accordingly and take more time to send.

