

## Pantheon Report

Generated at 2019-07-31 15:00:42 (UTC).

Tested in mahimahi: mm-delay 50 mm-link 10mbps.trace 10mbps.trace

Repeated the test of 7 congestion control schemes once.

Each test lasted for 3 seconds running 1 flow.

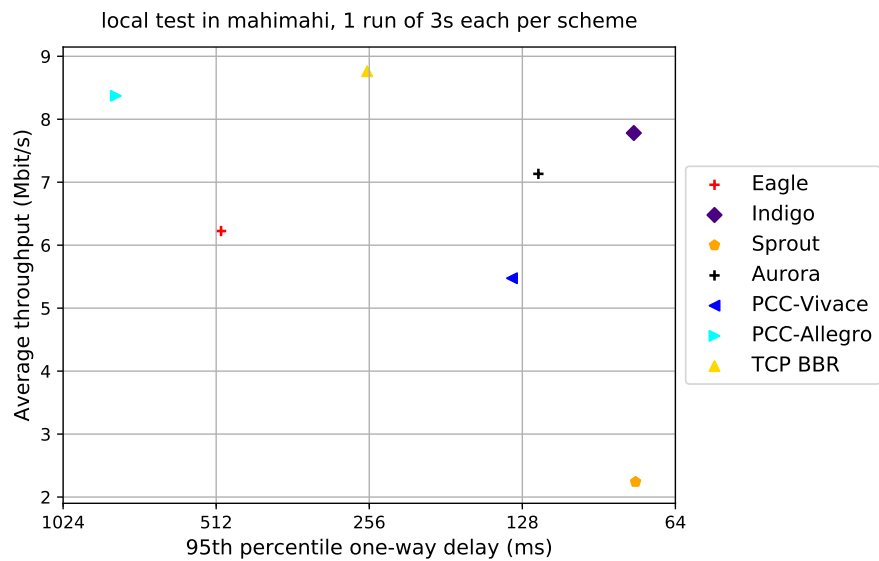
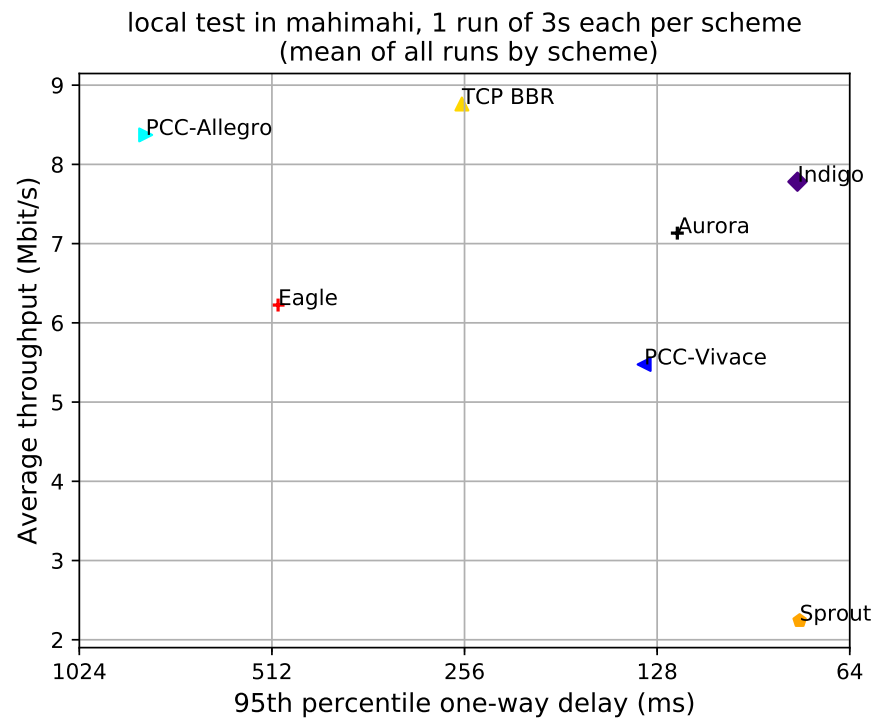
### System info:

```
Linux 4.15.0-54-generic
net.core.default_qdisc = fq
net.core.rmem_default = 212992
net.core.rmem_max = 212992
net.core.wmem_default = 212992
net.core.wmem_max = 212992
net.ipv4.tcp_rmem = 4096 87380 6291456
net.ipv4.tcp_wmem = 4096 16384 4194304
```

### Git summary:

```
branch: master @ eaba26a28ebb139e493aff86db48ac7747532433
third_party/aurora @ f3e943d61015b39960854ba6391797e0c7984d74
third_party/aurora-model @ e292c316c23fb837255c4e142e40590d154bbe95
third_party/eagle @ f66d3a824f0abdd3b1d0afc0cc323607b2c38eca
M sender-receiver/sender-receiver/sender_receiver/envs/example-xentropy.py
D sender-receiver/sender-receiver/sender_receiver/envs/model-xentropy.pt
third_party/illp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/illp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfef58e562f4
third_party/gold @ e47bed6d7495aa223eec8de2c7a43035967074ef
M environment/__pycache__/datagram_pb2.cpython-36.opt-1.pyc
M environment/__pycache__/datagram_pb2.cpython-36.pyc
M environment/__pycache__/environment.cpython-36.opt-1.pyc
M environment/__pycache__/helpers.cpython-36.opt-1.pyc
M environment/__pycache__/helpers.cpython-36.pyc
M environment/__pycache__/mahimahi.cpython-36.opt-1.pyc
M environment/__pycache__/project_root.cpython-36.opt-1.pyc
M environment/__pycache__/project_root.cpython-36.pyc
M environment/__pycache__/receiver.cpython-36.opt-1.pyc
M environment/__pycache__/receiver.cpython-36.pyc
M environment/logs.txt
M model
third_party/goldLSTM @ 6b512ee75b163fd680d7bf3cde4cf6d6aa7102c4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
```

```
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11fff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
Aurora	1	7.13	119.03	2.47
TCP BBR	1	8.76	258.44	2.65
Eagle	1	6.22	500.78	15.40
Indigo	1	7.78	77.26	2.23
PCC-Allegro	1	8.37	806.43	18.49
Sprout	1	2.24	76.65	3.60
PCC-Vivace	1	5.47	134.14	2.13

Run 1: Statistics of Aurora

Start at: 2019-07-31 14:59:49

End at: 2019-07-31 14:59:52

# Below is generated by plot.py at 2019-07-31 15:00:39

# Datalink statistics

-- Total of 1 flow:

Average capacity: 10.00 Mbit/s

Average throughput: 7.13 Mbit/s (71.3% utilization)

95th percentile per-packet one-way delay: 119.028 ms

Loss rate: 2.47%

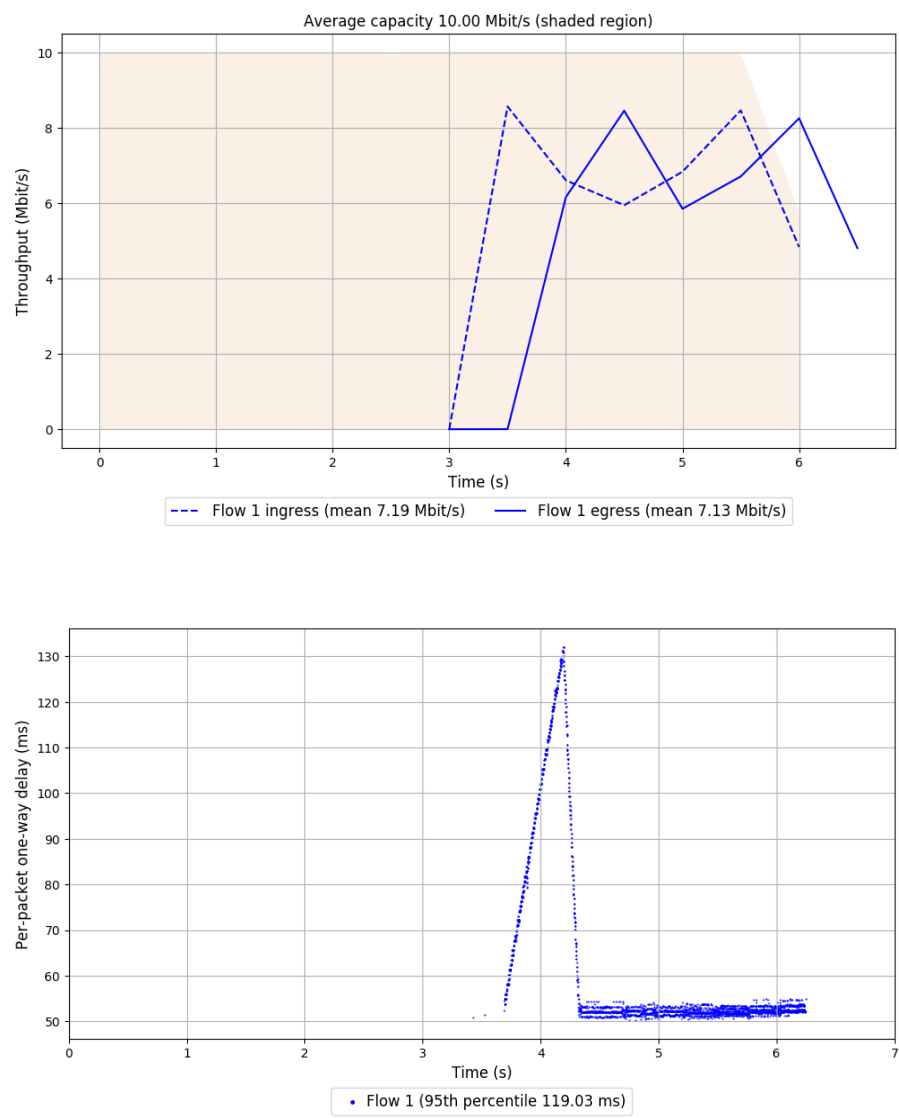
-- Flow 1:

Average throughput: 7.13 Mbit/s

95th percentile per-packet one-way delay: 119.028 ms

Loss rate: 2.47%

Run 1: Report of Aurora — Data Link



Run 1: Statistics of TCP BBR

Start at: 2019-07-31 14:59:21

End at: 2019-07-31 14:59:24

# Below is generated by plot.py at 2019-07-31 15:00:39

# Datalink statistics

-- Total of 1 flow:

Average capacity: 10.00 Mbit/s

Average throughput: 8.76 Mbit/s (87.6% utilization)

95th percentile per-packet one-way delay: 258.440 ms

Loss rate: 2.65%

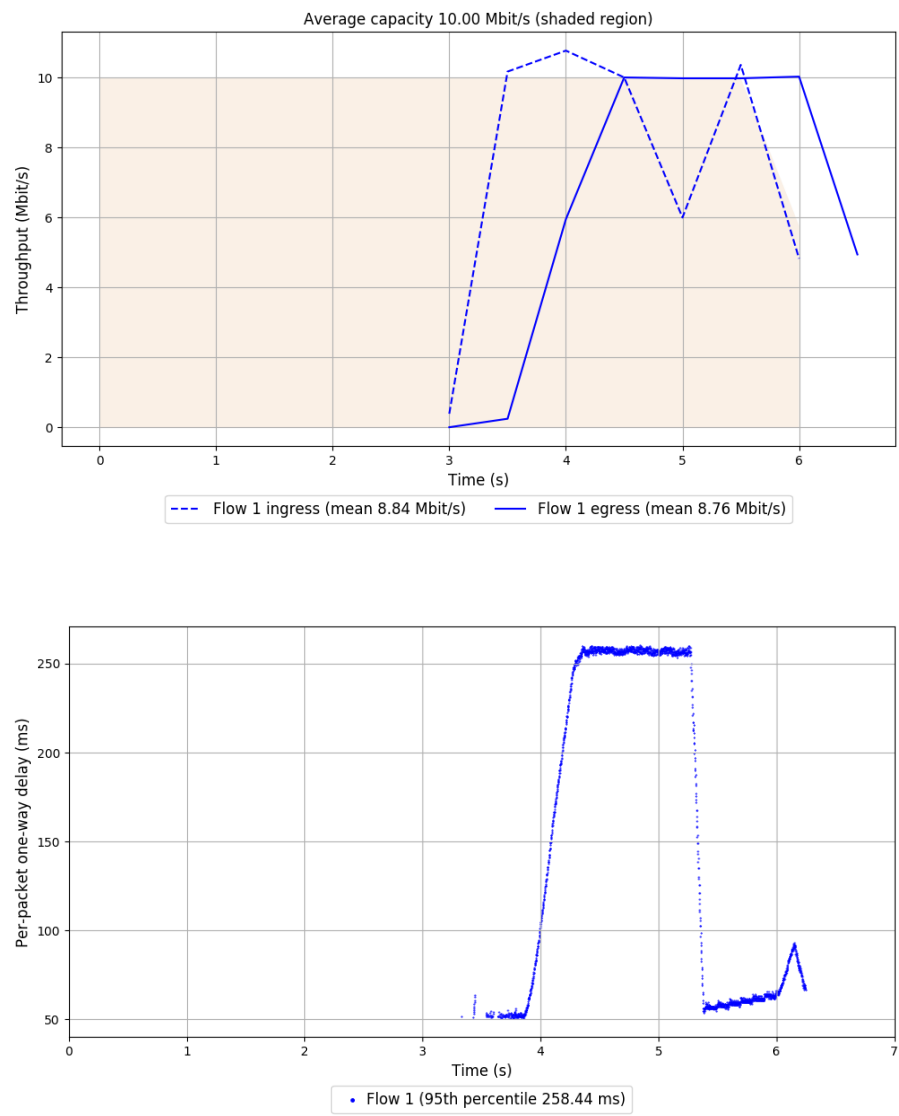
-- Flow 1:

Average throughput: 8.76 Mbit/s

95th percentile per-packet one-way delay: 258.440 ms

Loss rate: 2.65%

Run 1: Report of TCP BBR — Data Link





Run 1: Statistics of Eagle

Start at: 2019-07-31 14:59:14

End at: 2019-07-31 14:59:17

# Below is generated by plot.py at 2019-07-31 15:00:39

# Datalink statistics

-- Total of 1 flow:

Average capacity: 10.00 Mbit/s

Average throughput: 6.22 Mbit/s (62.2% utilization)

95th percentile per-packet one-way delay: 500.779 ms

Loss rate: 15.40%

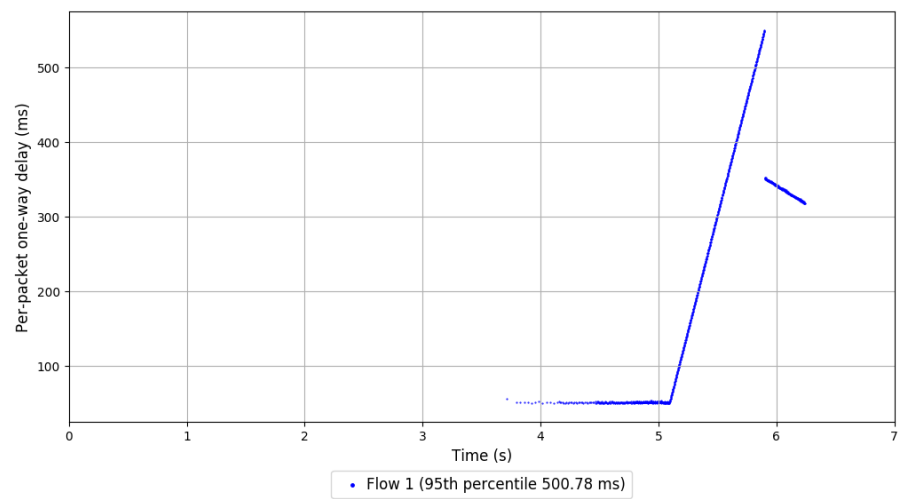
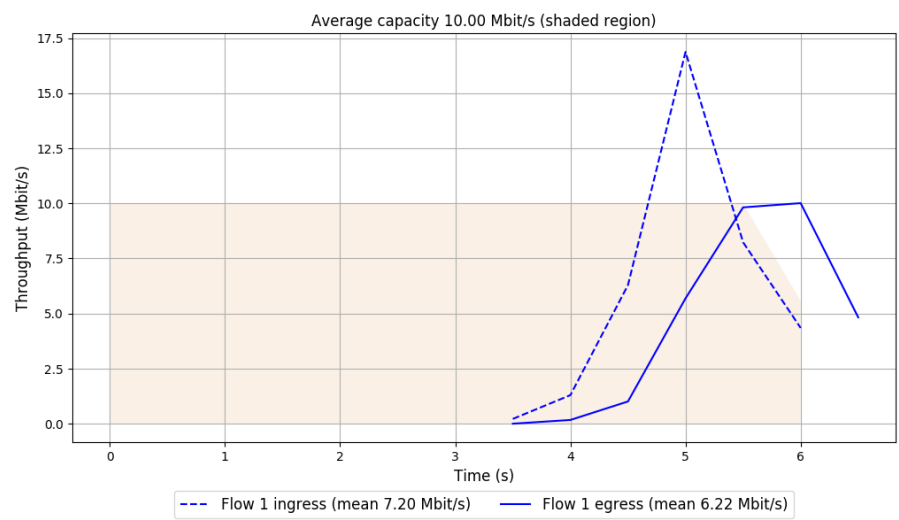
-- Flow 1:

Average throughput: 6.22 Mbit/s

95th percentile per-packet one-way delay: 500.779 ms

Loss rate: 15.40%

Run 1: Report of Eagle — Data Link



Run 1: Statistics of Indigo

Start at: 2019-07-31 14:59:28

End at: 2019-07-31 14:59:31

# Below is generated by plot.py at 2019-07-31 15:00:39

# Datalink statistics

-- Total of 1 flow:

Average capacity: 10.00 Mbit/s

Average throughput: 7.78 Mbit/s (77.8% utilization)

95th percentile per-packet one-way delay: 77.261 ms

Loss rate: 2.23%

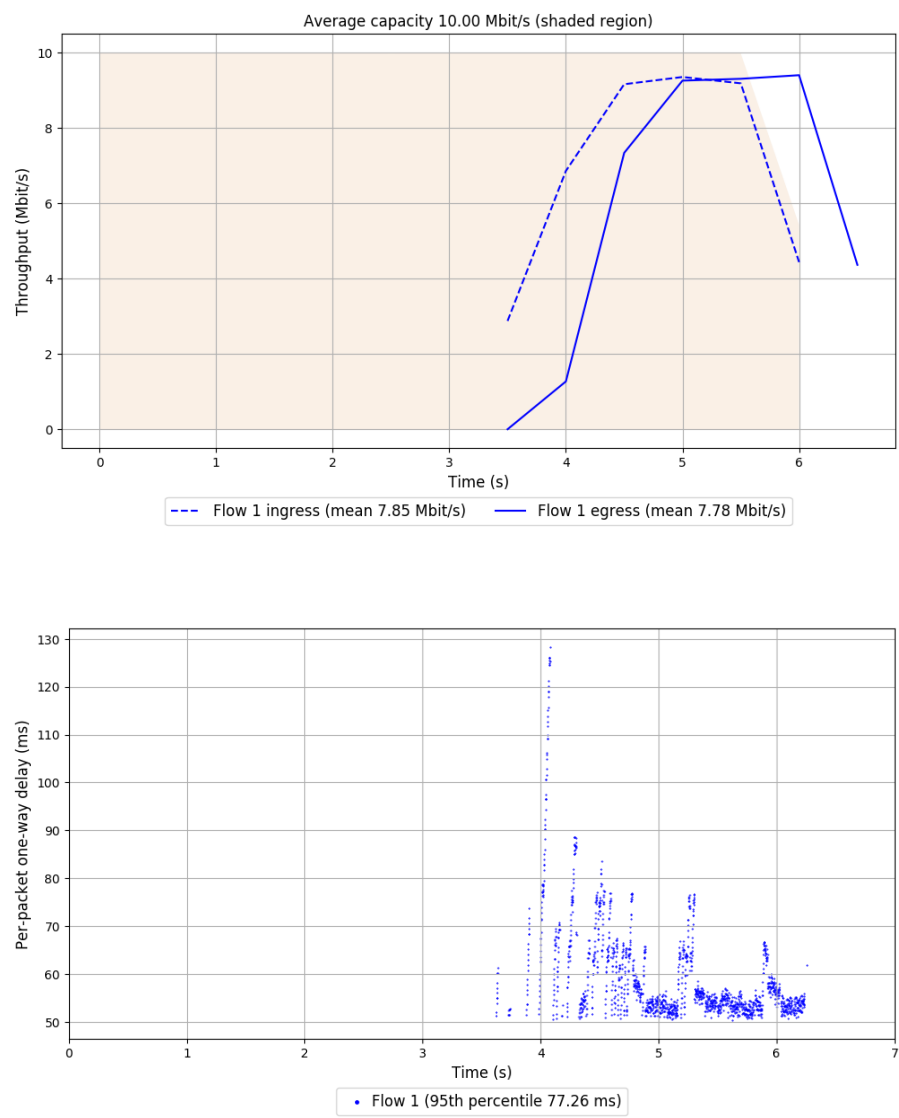
-- Flow 1:

Average throughput: 7.78 Mbit/s

95th percentile per-packet one-way delay: 77.261 ms

Loss rate: 2.23%

Run 1: Report of Indigo — Data Link

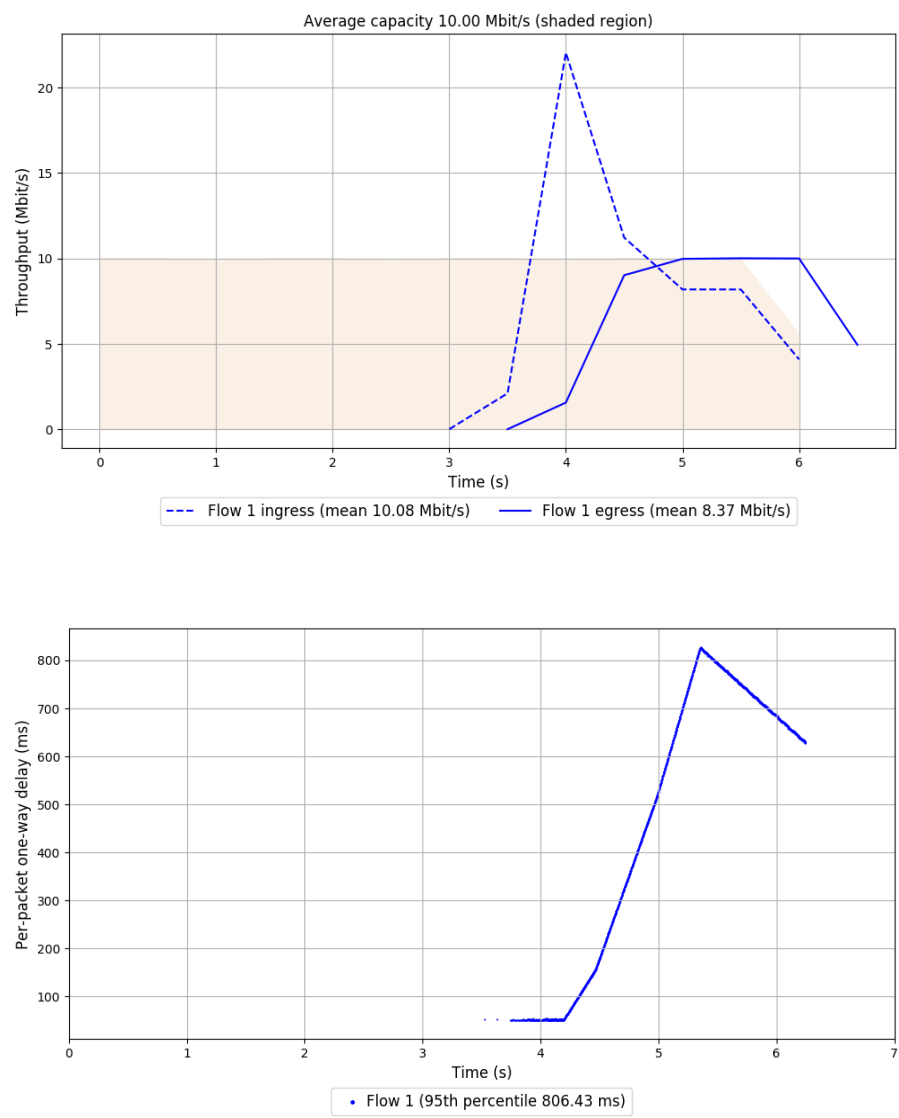


```
Run 1: Statistics of PCC-Allegro

Start at: 2019-07-31 14:59:35
End at: 2019-07-31 14:59:38

# Below is generated by plot.py at 2019-07-31 15:00:39
# Datalink statistics
-- Total of 1 flow:
Average capacity: 10.00 Mbit/s
Average throughput: 8.37 Mbit/s (83.7% utilization)
95th percentile per-packet one-way delay: 806.434 ms
Loss rate: 18.49%
-- Flow 1:
Average throughput: 8.37 Mbit/s
95th percentile per-packet one-way delay: 806.434 ms
Loss rate: 18.49%
```

Run 1: Report of PCC-Allegro — Data Link



Run 1: Statistics of Sprout

Start at: 2019-07-31 14:59:56

End at: 2019-07-31 14:59:59

# Below is generated by plot.py at 2019-07-31 15:00:39

# Datalink statistics

-- Total of 1 flow:

Average capacity: 10.00 Mbit/s

Average throughput: 2.24 Mbit/s (22.4% utilization)

95th percentile per-packet one-way delay: 76.646 ms

Loss rate: 3.60%

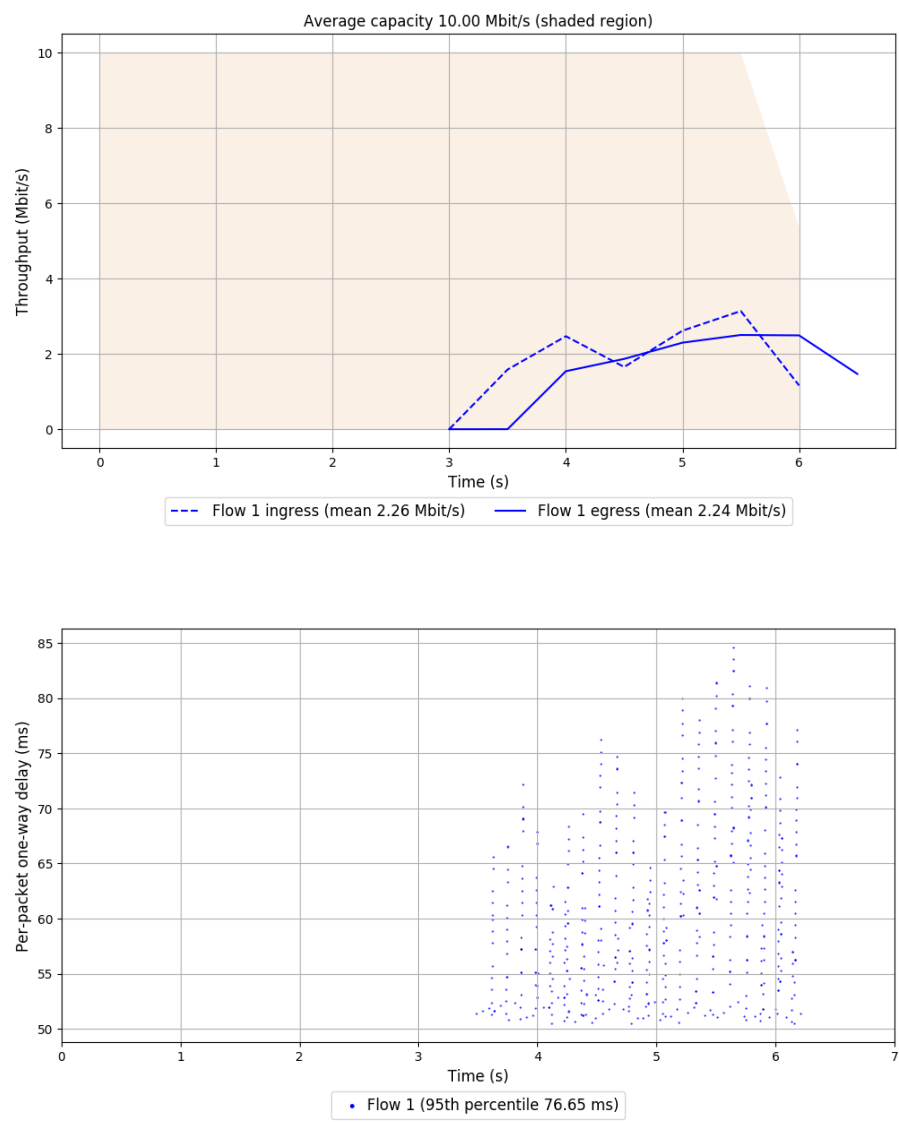
-- Flow 1:

Average throughput: 2.24 Mbit/s

95th percentile per-packet one-way delay: 76.646 ms

Loss rate: 3.60%

Run 1: Report of Sprout — Data Link





Run 1: Statistics of PCC-Vivace

Start at: 2019-07-31 14:59:42

End at: 2019-07-31 14:59:45

# Below is generated by plot.py at 2019-07-31 15:00:40

# Datalink statistics

-- Total of 1 flow:

Average capacity: 10.00 Mbit/s

Average throughput: 5.47 Mbit/s (54.7% utilization)

95th percentile per-packet one-way delay: 134.144 ms

Loss rate: 2.13%

-- Flow 1:

Average throughput: 5.47 Mbit/s

95th percentile per-packet one-way delay: 134.144 ms

Loss rate: 2.13%

Run 1: Report of PCC-Vivace — Data Link

