

Pantheon Report

Generated at 2022-03-11 08:55:44 (UTC).

Tested in mahimahi: `mm-delay 100 mm-link 4Mbps_trace 4Mbps_trace`

Repeated the test of 8 congestion control schemes once.

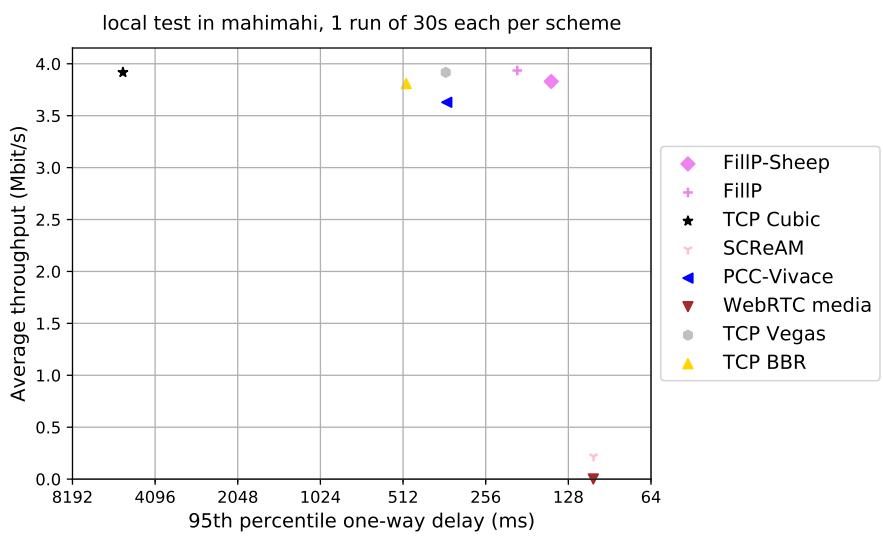
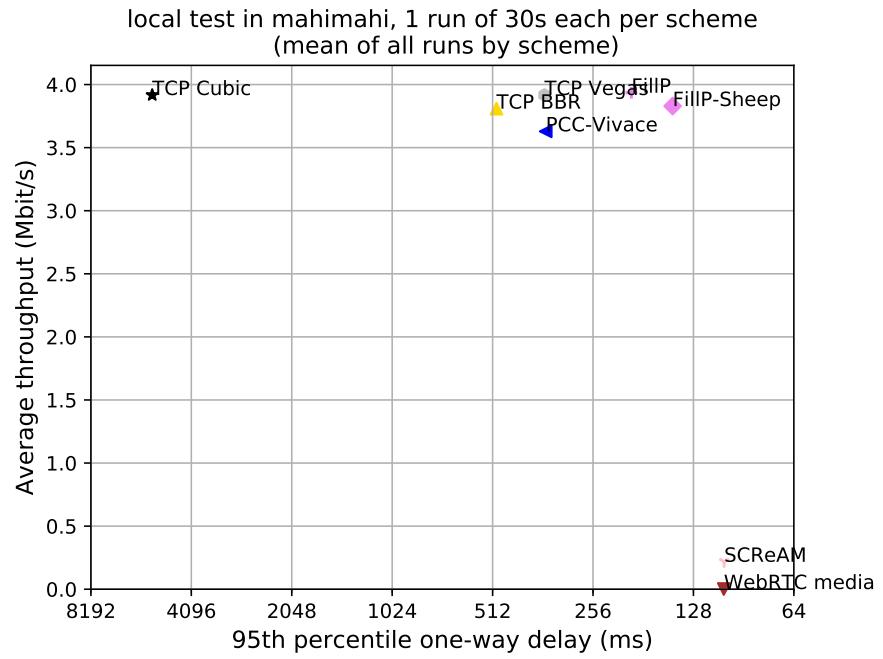
Each test lasted for 30 seconds running 1 flow.

System info:

```
Linux 4.15.0-159-generic
net.core.default_qdisc = fq_codel
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 131072 6291456
net.ipv4.tcp_wmem = 4096 16384 4194304
```

Git summary:

```
branch: master @ 57a2d389e1c05b57f87a075cf613dedb2fe667fd
third_party/fillp @ d6da1459332fceef56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 463d89b09699a57bfdfe351646df6a60040b90
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ f866d3f58d27af942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
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
TCP BBR	1	3.81	498.51	1.06
TCP Cubic	1	3.92	5365.13	9.79
FillP	1	3.94	196.41	0.67
FillP-Sheep	1	3.83	147.78	0.39
SCReAM	1	0.22	103.57	0.38
TCP Vegas	1	3.92	357.89	0.44
PCC-Vivace	1	3.63	354.87	0.48
WebRTC media	1	0.00	103.81	0.00

Run 1: Statistics of TCP BBR

Start at: 2022-03-11 08:53:35

End at: 2022-03-11 08:54:05

Below is generated by plot.py at 2022-03-11 08:55:40

Datalink statistics

-- Total of 1 flow:

Average capacity: 4.00 Mbit/s

Average throughput: 3.81 Mbit/s (95.2% utilization)

95th percentile per-packet one-way delay: 498.506 ms

Loss rate: 1.06%

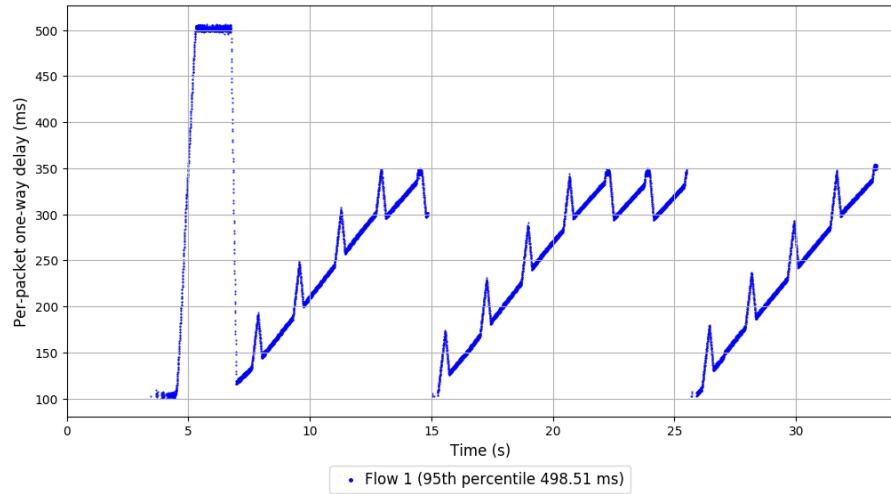
-- Flow 1:

Average throughput: 3.81 Mbit/s

95th percentile per-packet one-way delay: 498.506 ms

Loss rate: 1.06%

Run 1: Report of TCP BBR — Data Link

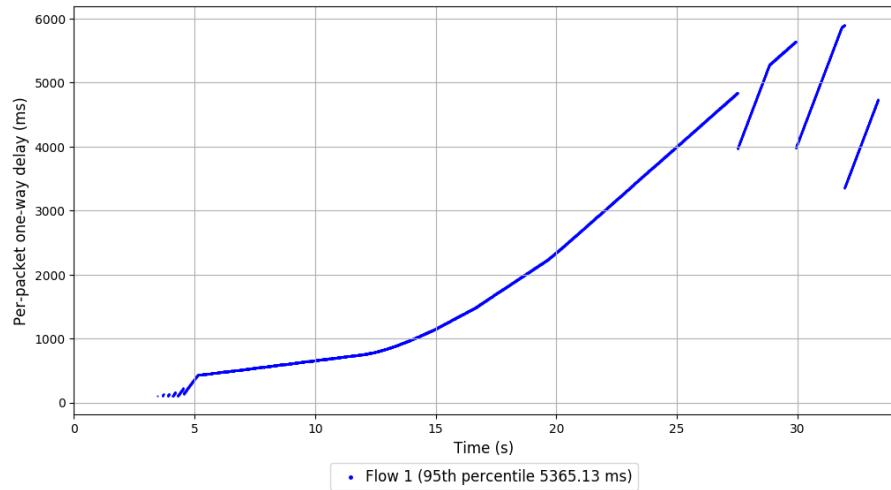
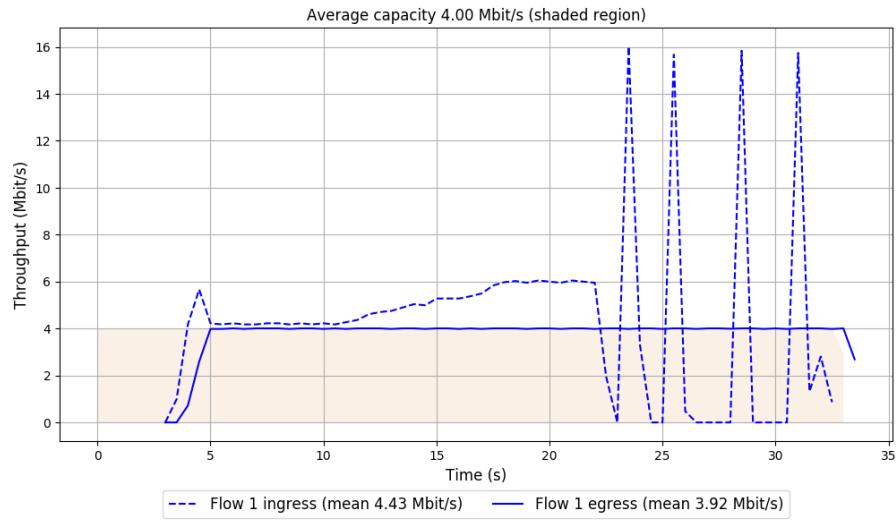


```
Run 1: Statistics of TCP Cubic

Start at: 2022-03-11 08:51:52
End at: 2022-03-11 08:52:22

# Below is generated by plot.py at 2022-03-11 08:55:41
# Datalink statistics
-- Total of 1 flow:
Average capacity: 4.00 Mbit/s
Average throughput: 3.92 Mbit/s (97.9% utilization)
95th percentile per-packet one-way delay: 5365.128 ms
Loss rate: 9.79%
-- Flow 1:
Average throughput: 3.92 Mbit/s
95th percentile per-packet one-way delay: 5365.128 ms
Loss rate: 9.79%
```

Run 1: Report of TCP Cubic — Data Link

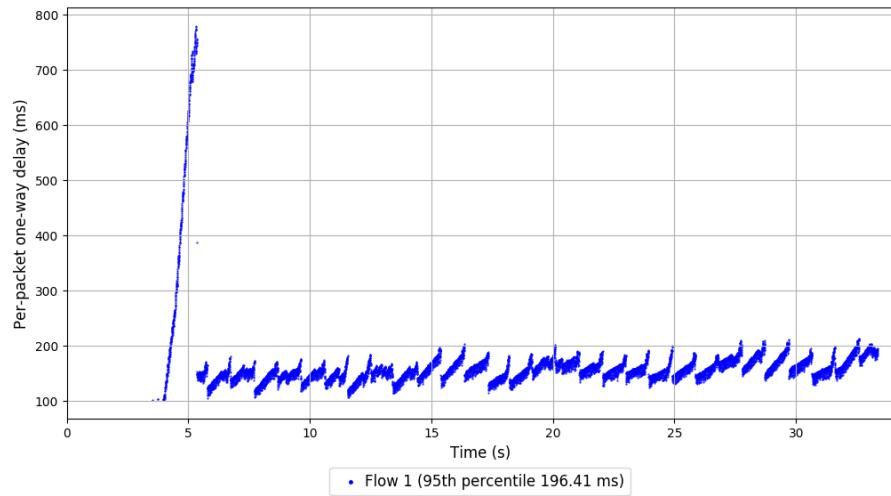
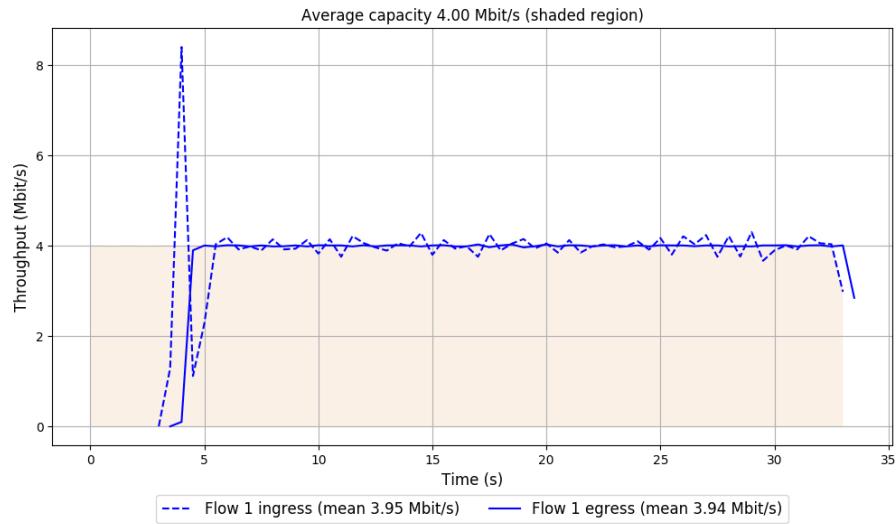


```
Run 1: Statistics of FillP

Start at: 2022-03-11 08:51:18
End at: 2022-03-11 08:51:48

# Below is generated by plot.py at 2022-03-11 08:55:41
# Datalink statistics
-- Total of 1 flow:
Average capacity: 4.00 Mbit/s
Average throughput: 3.94 Mbit/s (98.4% utilization)
95th percentile per-packet one-way delay: 196.408 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 3.94 Mbit/s
95th percentile per-packet one-way delay: 196.408 ms
Loss rate: 0.67%
```

Run 1: Report of FillP — Data Link

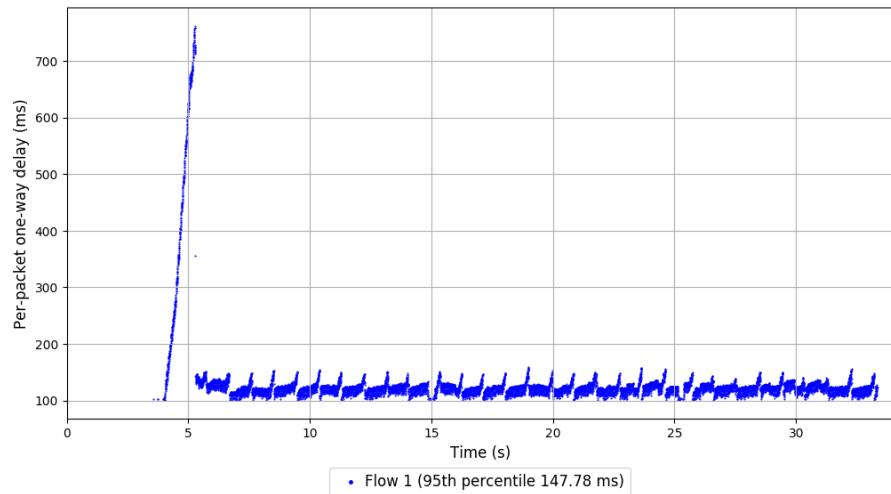
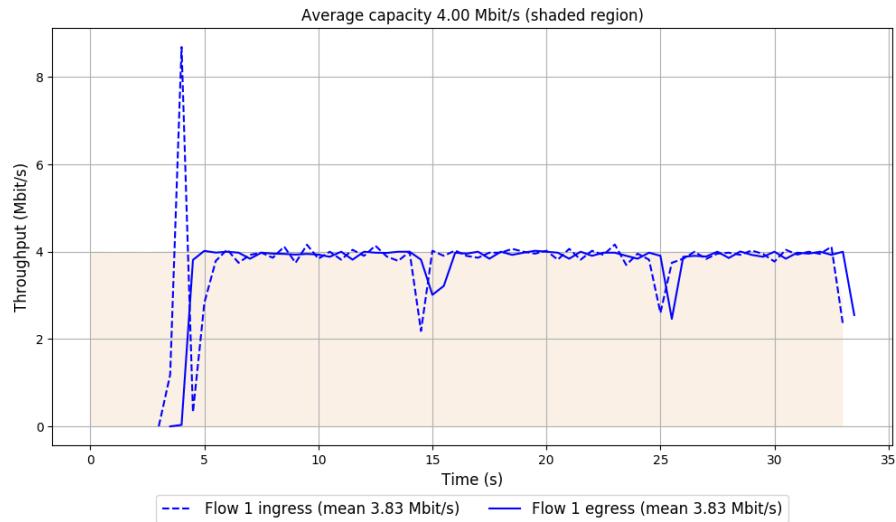


```
Run 1: Statistics of FillP-Sheep

Start at: 2022-03-11 08:50:44
End at: 2022-03-11 08:51:14

# Below is generated by plot.py at 2022-03-11 08:55:41
# Datalink statistics
-- Total of 1 flow:
Average capacity: 4.00 Mbit/s
Average throughput: 3.83 Mbit/s (95.7% utilization)
95th percentile per-packet one-way delay: 147.775 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 3.83 Mbit/s
95th percentile per-packet one-way delay: 147.775 ms
Loss rate: 0.39%
```

Run 1: Report of FillP-Sheep — Data Link

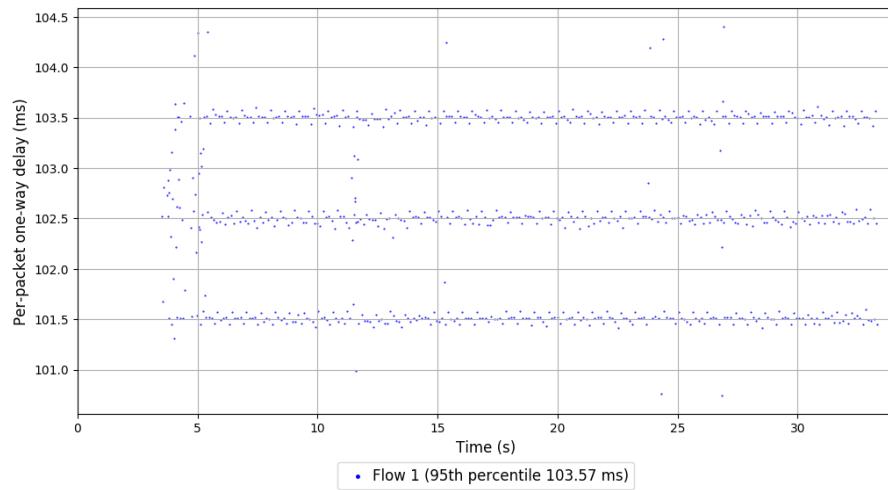
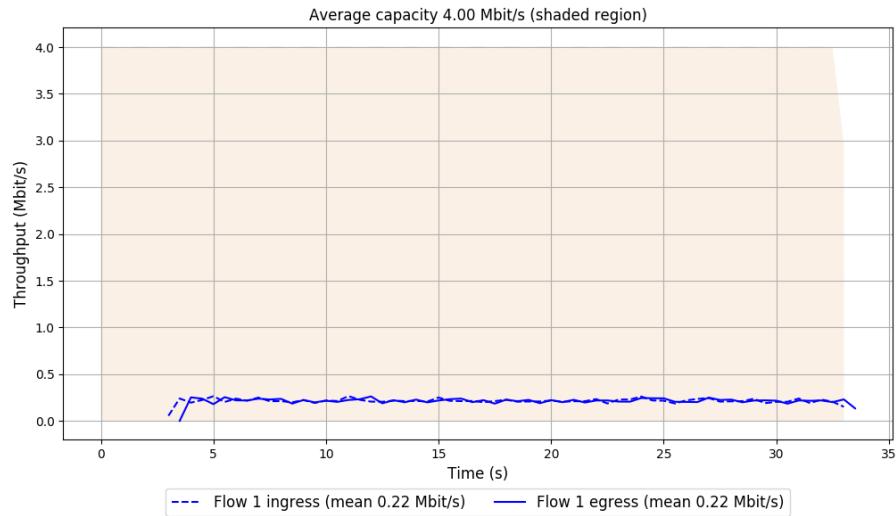


```
Run 1: Statistics of SCReAM

Start at: 2022-03-11 08:52:27
End at: 2022-03-11 08:52:57

# Below is generated by plot.py at 2022-03-11 08:55:41
# Datalink statistics
-- Total of 1 flow:
Average capacity: 4.00 Mbit/s
Average throughput: 0.22 Mbit/s (5.4% utilization)
95th percentile per-packet one-way delay: 103.568 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 103.568 ms
Loss rate: 0.38%
```

Run 1: Report of SCReAM — Data Link

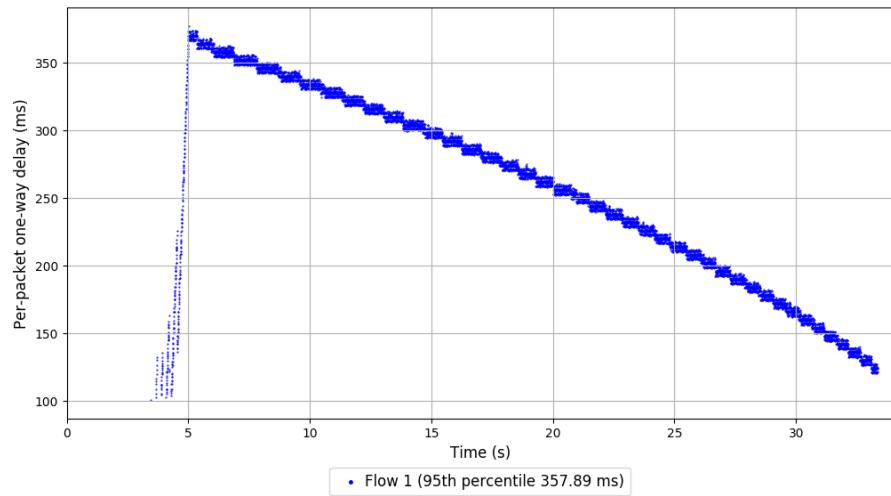
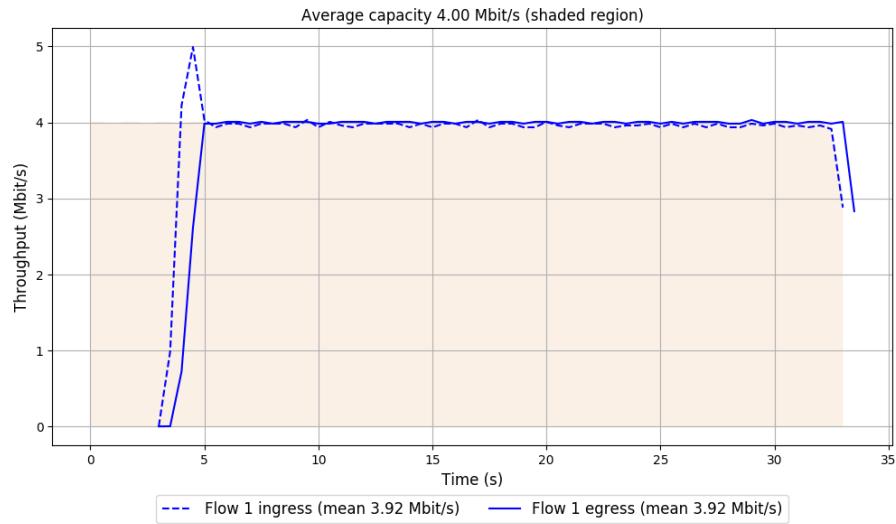


```
Run 1: Statistics of TCP Vegas

Start at: 2022-03-11 08:54:10
End at: 2022-03-11 08:54:40

# Below is generated by plot.py at 2022-03-11 08:55:41
# Datalink statistics
-- Total of 1 flow:
Average capacity: 4.00 Mbit/s
Average throughput: 3.92 Mbit/s (97.9% utilization)
95th percentile per-packet one-way delay: 357.894 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 3.92 Mbit/s
95th percentile per-packet one-way delay: 357.894 ms
Loss rate: 0.44%
```

Run 1: Report of TCP Vegas — Data Link

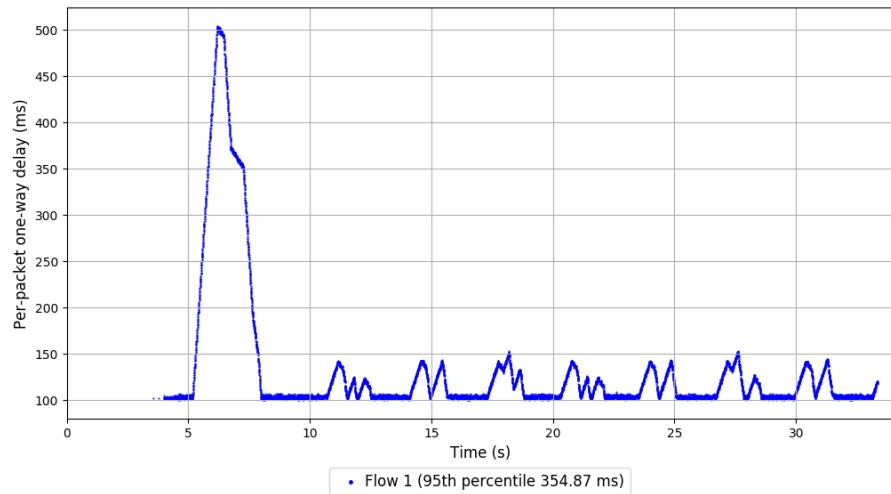
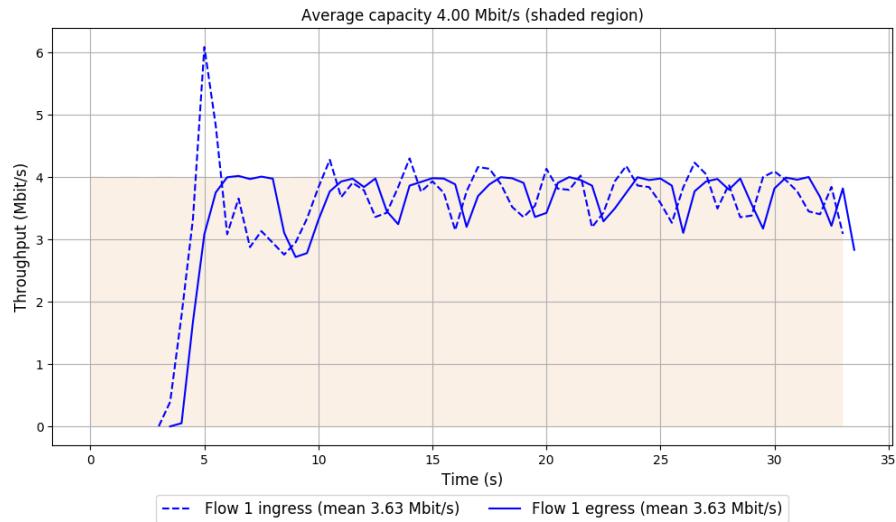


```
Run 1: Statistics of PCC-Vivace

Start at: 2022-03-11 08:53:01
End at: 2022-03-11 08:53:31

# Below is generated by plot.py at 2022-03-11 08:55:42
# Datalink statistics
-- Total of 1 flow:
Average capacity: 4.00 Mbit/s
Average throughput: 3.63 Mbit/s (90.7% utilization)
95th percentile per-packet one-way delay: 354.868 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 3.63 Mbit/s
95th percentile per-packet one-way delay: 354.868 ms
Loss rate: 0.48%
```

Run 1: Report of PCC-Vivace — Data Link



```
Run 1: Statistics of WebRTC media

Start at: 2022-03-11 08:54:44
End at: 2022-03-11 08:55:14

# Below is generated by plot.py at 2022-03-11 08:55:42
# Datalink statistics
-- Total of 1 flow:
Average capacity: 4.00 Mbit/s
Average throughput: 0.00 Mbit/s (0.0% utilization)
95th percentile per-packet one-way delay: 103.811 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 103.811 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link

