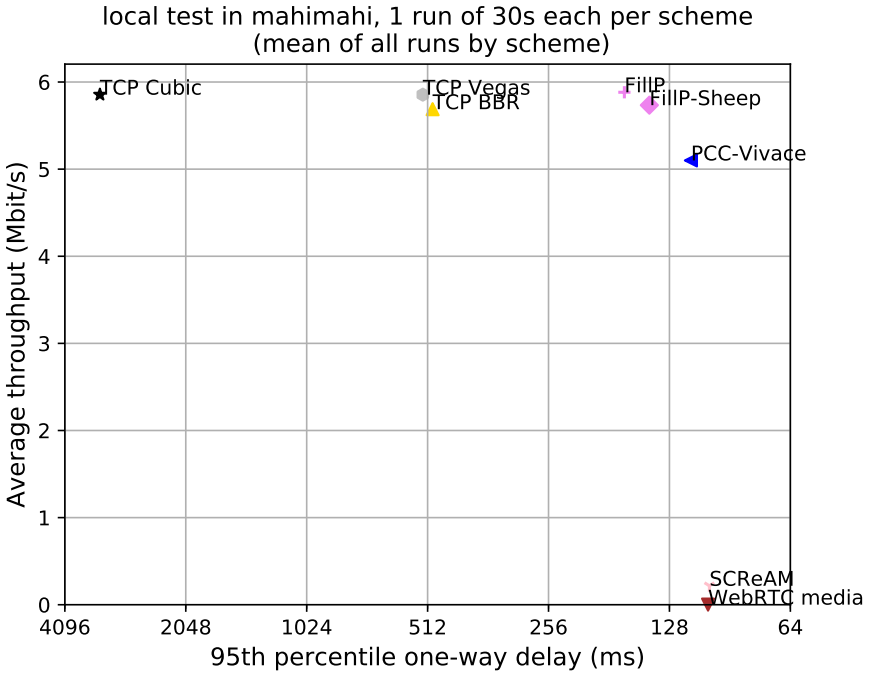
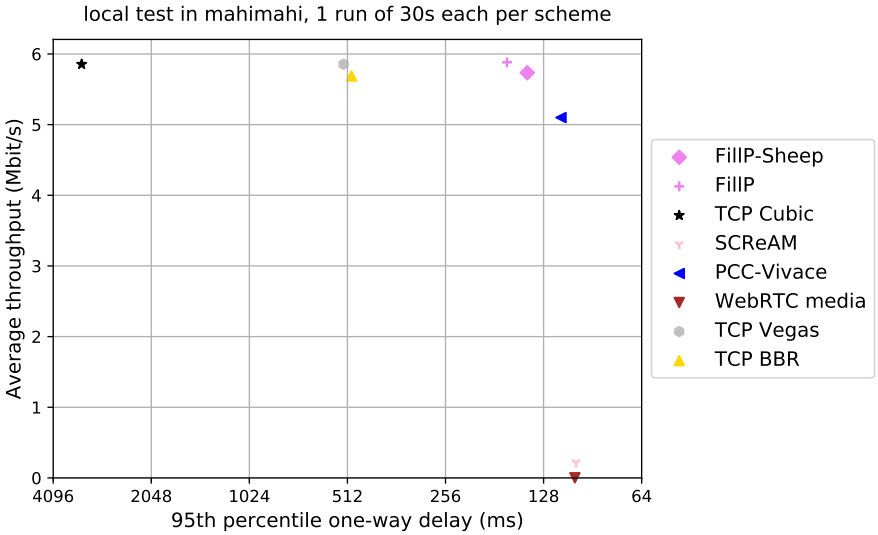
Pantheon Report

Generated at 2022-03-11 08:49:00 (UTC).
Tested in mahimahi: `mm-delay 100 mm-link 6Mbps_trace 6Mbps_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 @ 456f1f8978efa6b752d81d5d30a438ad33781749
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 463d89b09699a57bfdfbae351646df6a60040b90
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
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
```


local test in mahimahi, 1 run of 30s each per scheme
(mean of all runs by scheme)
TCP Cubic
TCP Vegas
TCP BBR
FillP
FillP-Sheep
PCC-Vivace
SCReAM
WebRTC media
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
0
1
2
3
4
5
6
4096
2048
1024
512
256
128
64


local test in mahimahi, 1 run of 30s each per scheme
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
FillP-Sheep
FillP
TCP Cubic
SCReAM
PCC-Vivace
WebRTC media
TCP Vegas
TCP BBR
0
1
2
3
4
5
6
4096
2048
1024
512
256
128
64

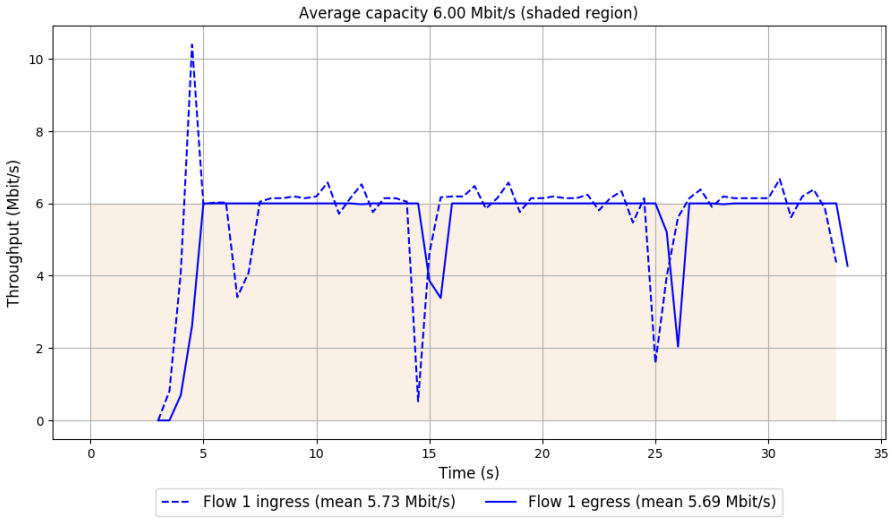
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	1	5.69	497.54	1.05
TCP Cubic	1	5.85	3350.52	9.68
FillP	1	5.88	165.73	0.44
FillP-Sheep	1	5.73	143.62	0.43
SCReAM	1	0.22	101.80	0.26
TCP Vegas	1	5.85	526.21	1.47
PCC-Vivace	1	5.10	113.19	0.44
WebRTC media	1	0.00	102.59	0.00

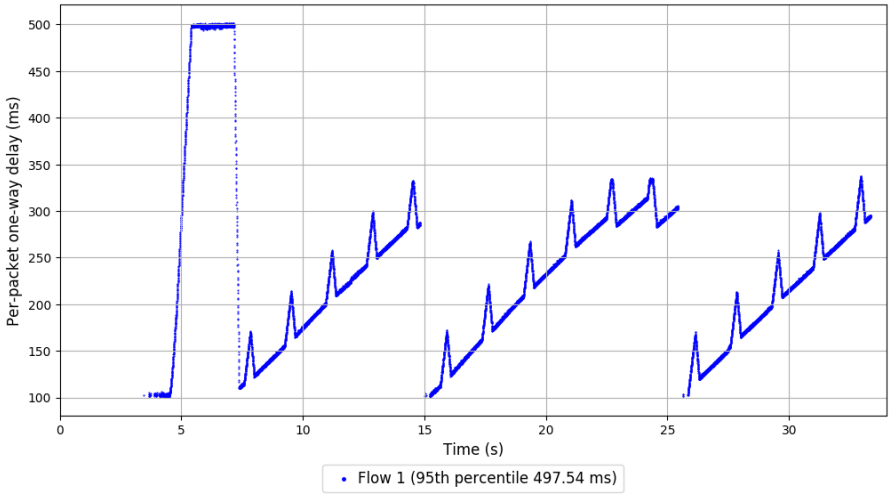
```
Run 1: Statistics of TCP BBR

Start at: 2022-03-11 08:46:56
End at: 2022-03-11 08:47:26

# Below is generated by plot.py at 2022-03-11 08:48:56
# Datalink statistics
-- Total of 1 flow:
Average capacity: 6.00 Mbit/s
Average throughput: 5.69 Mbit/s (94.8% utilization)
95th percentile per-packet one-way delay: 497.536 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 5.69 Mbit/s
95th percentile per-packet one-way delay: 497.536 ms
Loss rate: 1.05%
```

Run 1: Report of TCP BBR — Data Link



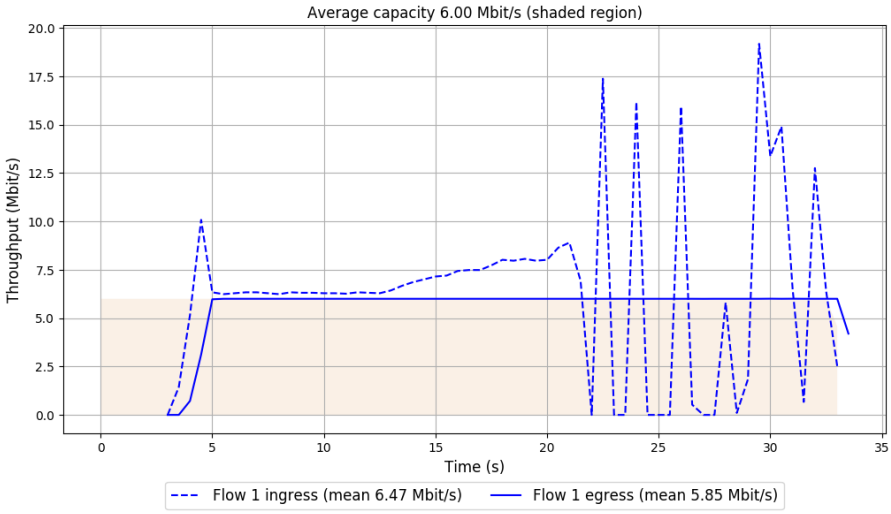


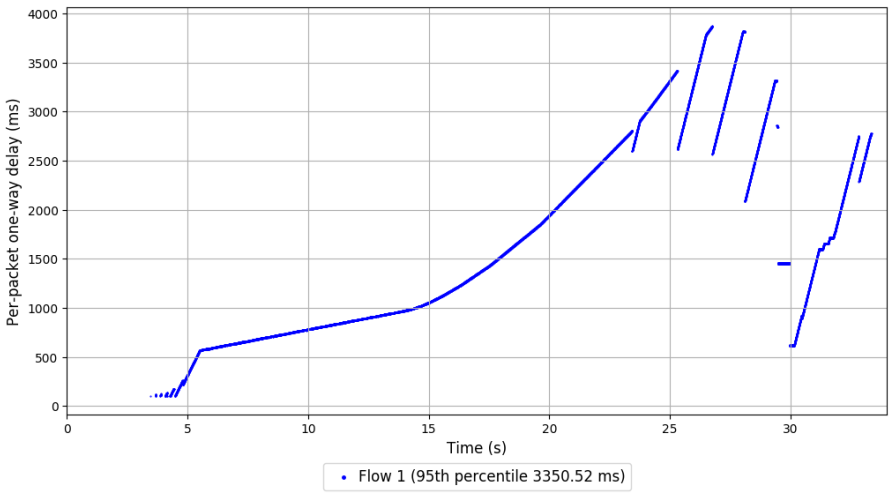
```
Run 1: Statistics of TCP Cubic

Start at: 2022-03-11 08:45:13
End at: 2022-03-11 08:45:43

# Below is generated by plot.py at 2022-03-11 08:48:57
# Datalink statistics
-- Total of 1 flow:
Average capacity: 6.00 Mbit/s
Average throughput: 5.85 Mbit/s (97.6% utilization)
95th percentile per-packet one-way delay: 3350.520 ms
Loss rate: 9.68%
-- Flow 1:
Average throughput: 5.85 Mbit/s
95th percentile per-packet one-way delay: 3350.520 ms
Loss rate: 9.68%
```

Run 1: Report of TCP Cubic — Data Link



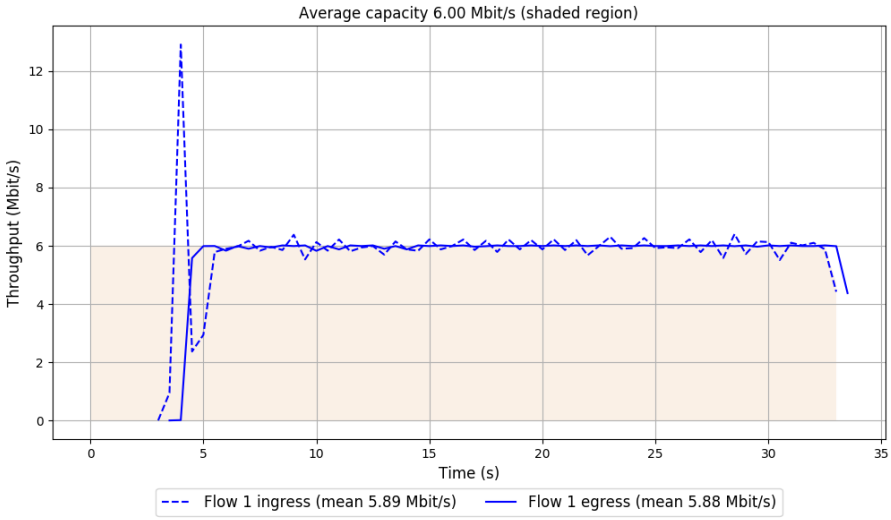


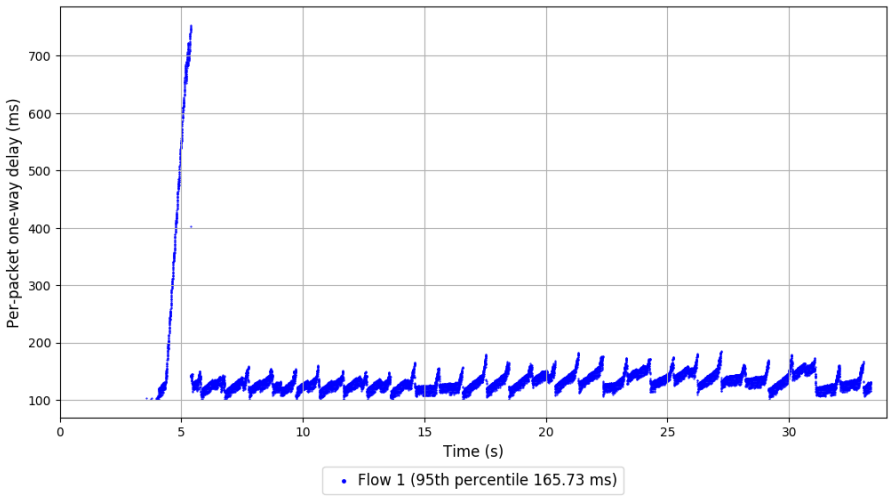
```
Run 1: Statistics of FillP

Start at: 2022-03-11 08:44:38
End at: 2022-03-11 08:45:08

# Below is generated by plot.py at 2022-03-11 08:48:57
# Datalink statistics
-- Total of 1 flow:
Average capacity: 6.00 Mbit/s
Average throughput: 5.88 Mbit/s (98.0% utilization)
95th percentile per-packet one-way delay: 165.733 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 5.88 Mbit/s
95th percentile per-packet one-way delay: 165.733 ms
Loss rate: 0.44%
```

Run 1: Report of FillP — Data Link



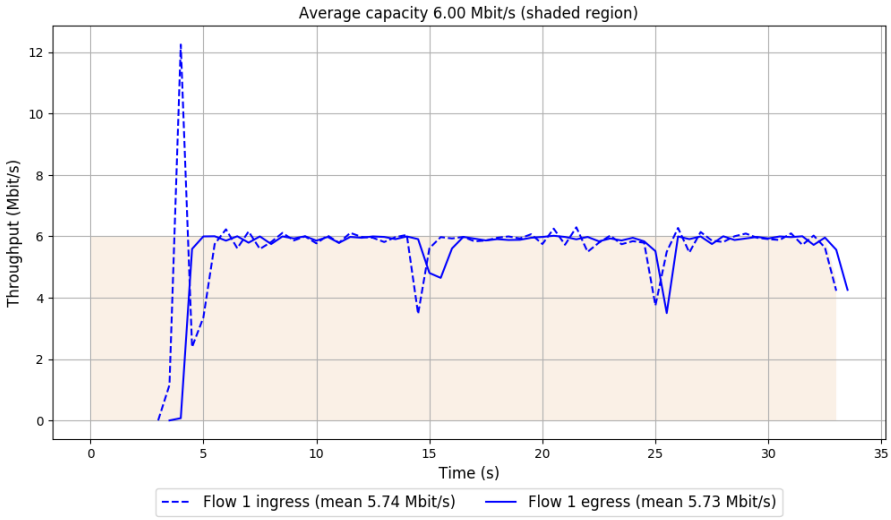


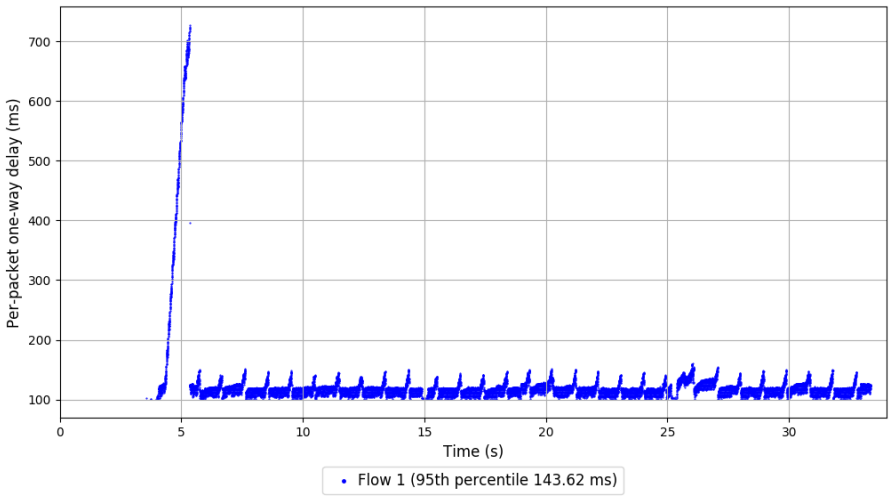
```
Run 1: Statistics of FillP-Sheep

Start at: 2022-03-11 08:44:04
End at: 2022-03-11 08:44:34

# Below is generated by plot.py at 2022-03-11 08:48:58
# Datalink statistics
-- Total of 1 flow:
Average capacity: 6.00 Mbit/s
Average throughput: 5.73 Mbit/s (95.6% utilization)
95th percentile per-packet one-way delay: 143.620 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 5.73 Mbit/s
95th percentile per-packet one-way delay: 143.620 ms
Loss rate: 0.43%
```

Run 1: Report of FillP-Sheep — Data Link



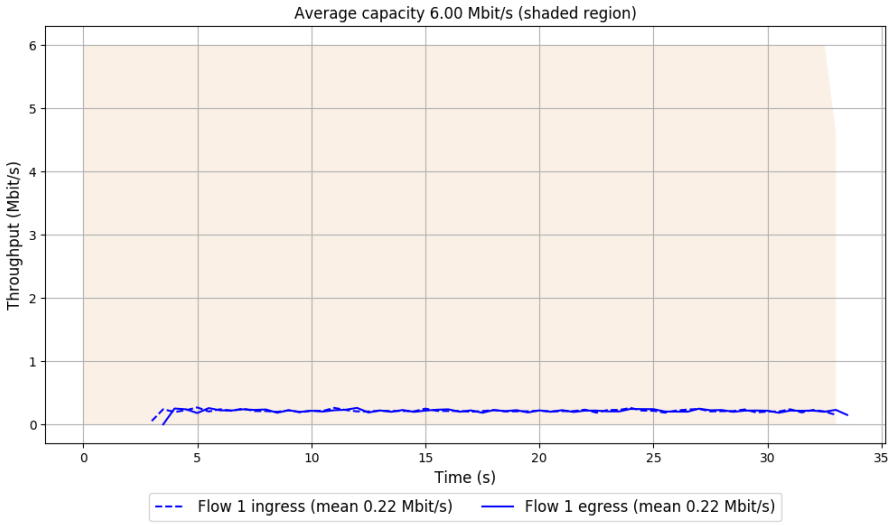


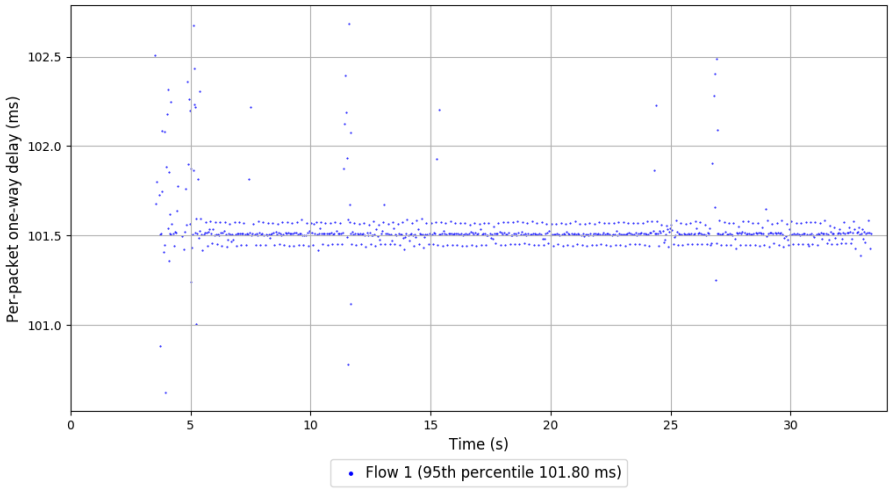
```
Run 1: Statistics of SCReAM

Start at: 2022-03-11 08:45:47
End at: 2022-03-11 08:46:17

# Below is generated by plot.py at 2022-03-11 08:48:58
# Datalink statistics
-- Total of 1 flow:
Average capacity: 6.00 Mbit/s
Average throughput: 0.22 Mbit/s (3.6% utilization)
95th percentile per-packet one-way delay: 101.802 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 101.802 ms
Loss rate: 0.26%
```

Run 1: Report of SCReAM — Data Link



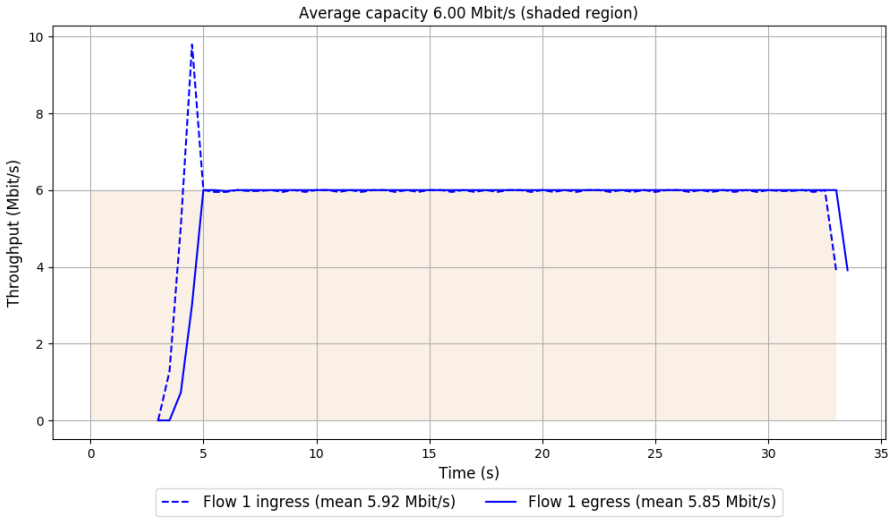


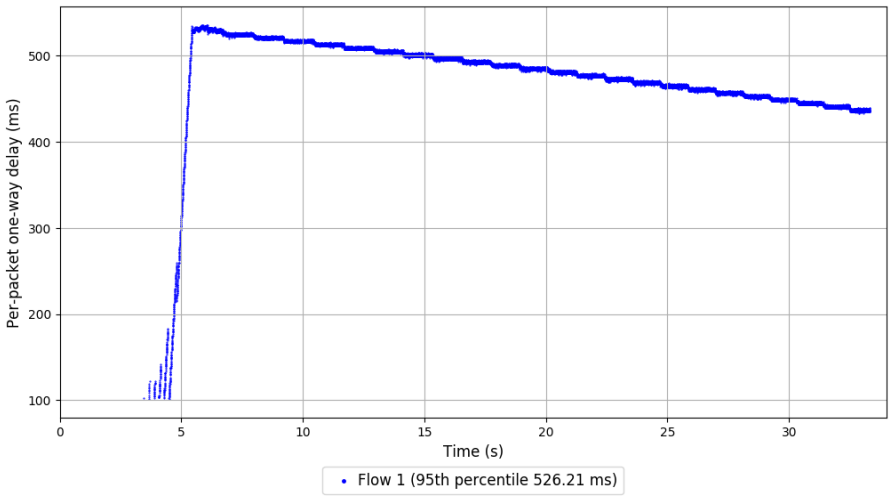
```
Run 1: Statistics of TCP Vegas

Start at: 2022-03-11 08:47:30
End at: 2022-03-11 08:48:00

# Below is generated by plot.py at 2022-03-11 08:48:58
# Datalink statistics
-- Total of 1 flow:
Average capacity: 6.00 Mbit/s
Average throughput: 5.85 Mbit/s (97.6% utilization)
95th percentile per-packet one-way delay: 526.205 ms
Loss rate: 1.47%
-- Flow 1:
Average throughput: 5.85 Mbit/s
95th percentile per-packet one-way delay: 526.205 ms
Loss rate: 1.47%
```

Run 1: Report of TCP Vegas — Data Link



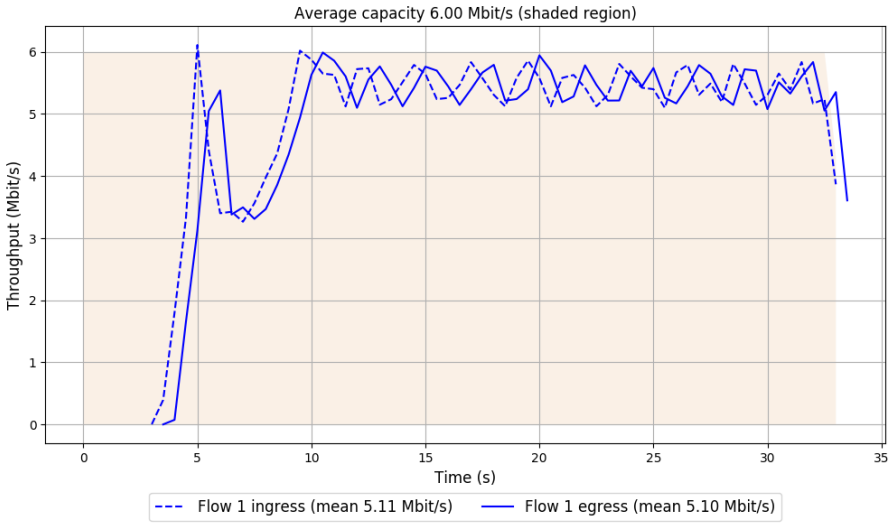


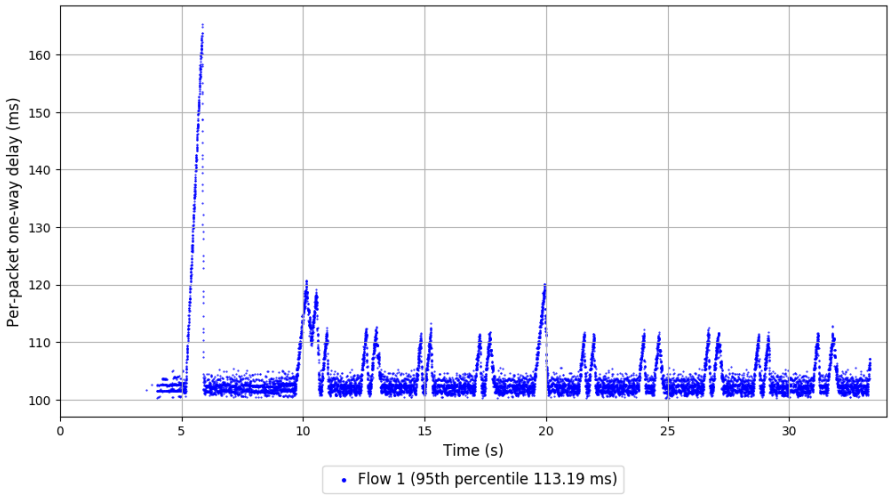
```
Run 1: Statistics of PCC-Vivace

Start at: 2022-03-11 08:46:21
End at: 2022-03-11 08:46:51

# Below is generated by plot.py at 2022-03-11 08:48:58
# Datalink statistics
-- Total of 1 flow:
Average capacity: 6.00 Mbit/s
Average throughput: 5.10 Mbit/s (85.0% utilization)
95th percentile per-packet one-way delay: 113.194 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 5.10 Mbit/s
95th percentile per-packet one-way delay: 113.194 ms
Loss rate: 0.44%
```

Run 1: Report of PCC-Vivace — Data Link





```
Run 1: Statistics of WebRTC media

Start at: 2022-03-11 08:48:05
End at: 2022-03-11 08:48:35

# Below is generated by plot.py at 2022-03-11 08:48:58
# Datalink statistics
-- Total of 1 flow:
Average capacity: 6.00 Mbit/s
Average throughput: 0.00 Mbit/s (0.0% utilization)
95th percentile per-packet one-way delay: 102.594 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 102.594 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link