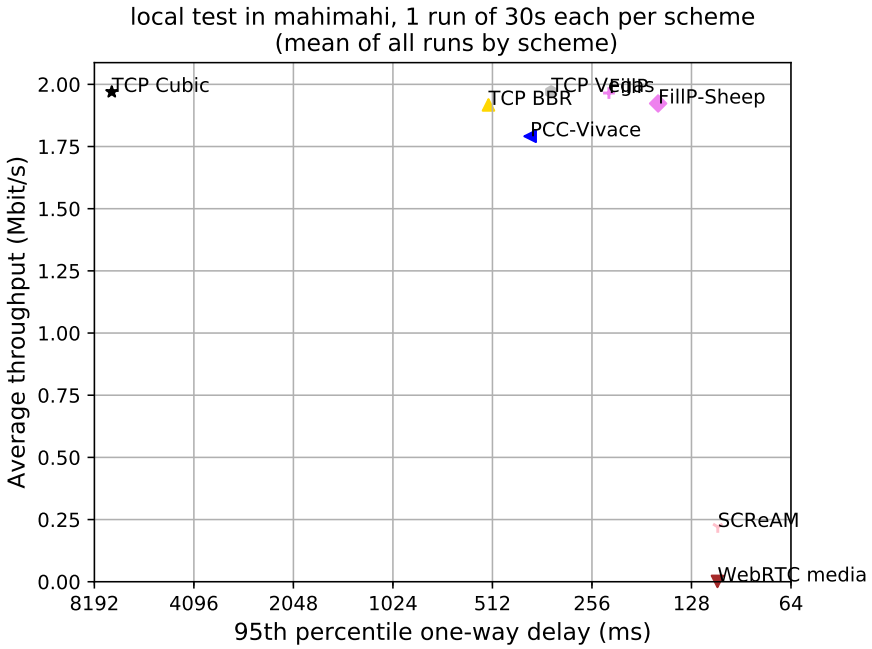
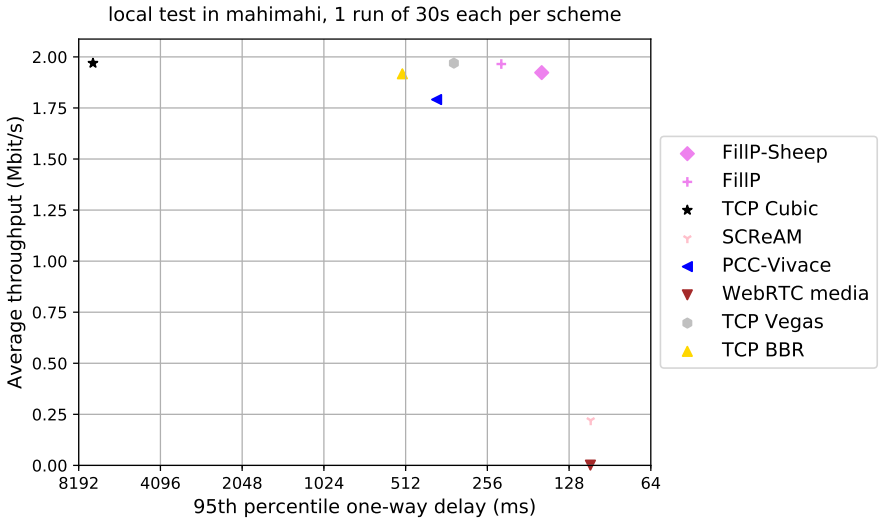
Pantheon Report

Generated at 2022-03-11 09:08:12 (UTC).
Tested in mahimahi: `mm-delay 100 mm-link 2Mbps_trace 2Mbps_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 @ b71cd4641761ebffa4c7996f12f9bb6b1db739fc
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
FillP
TCP BBR
FillP-Sheep
PCC-Vivace
SCReAM
WebRTC media
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
8192
4096
2048
1024
512
256
128
64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Average throughput (Mbit/s)
95th percentile one-way delay (ms)
2.00
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1.25
1.00
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0.25
0.00
8192
4096
2048
1024
512
256
128
64
FillP-Sheep
FillP
TCP Cubic
SCReAM
PCC-Vivace
WebRTC media
TCP Vegas
TCP BBR

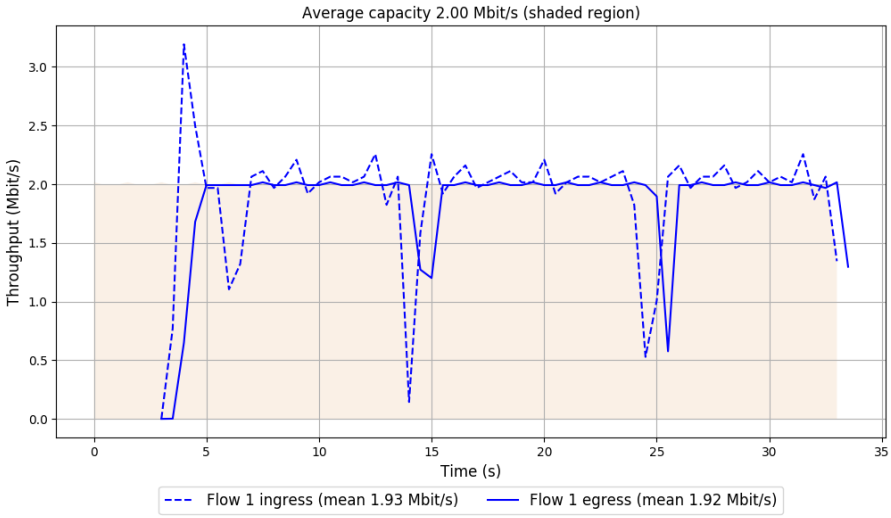
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	1	1.92	526.32	1.18
TCP Cubic	1	1.97	7258.15	28.18
FillP	1	1.97	227.46	0.70
FillP-Sheep	1	1.92	161.47	0.48
SCReAM	1	0.22	106.57	0.26
TCP Vegas	1	1.97	340.07	0.43
PCC-Vivace	1	1.79	393.78	0.50
WebRTC media	1	0.00	106.82	0.00

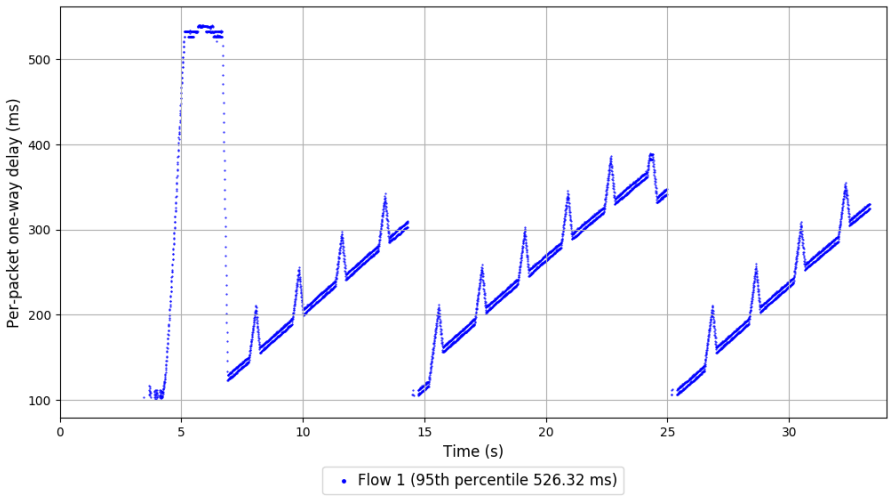
```
Run 1: Statistics of TCP BBR

Start at: 2022-03-11 09:05:06
End at: 2022-03-11 09:05:36

# Below is generated by plot.py at 2022-03-11 09:08:08
# Datalink statistics
-- Total of 1 flow:
Average capacity: 2.00 Mbit/s
Average throughput: 1.92 Mbit/s (95.8% utilization)
95th percentile per-packet one-way delay: 526.315 ms
Loss rate: 1.18%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 526.315 ms
Loss rate: 1.18%
```

Run 1: Report of TCP BBR — Data Link



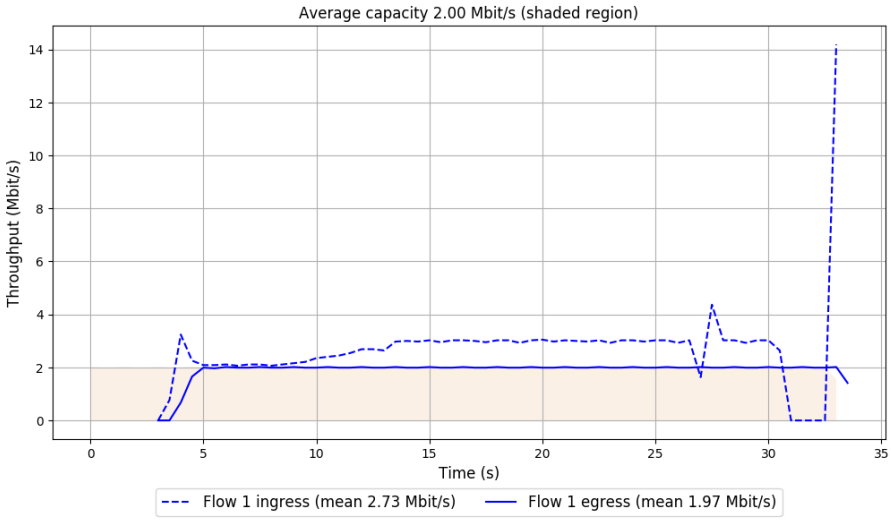


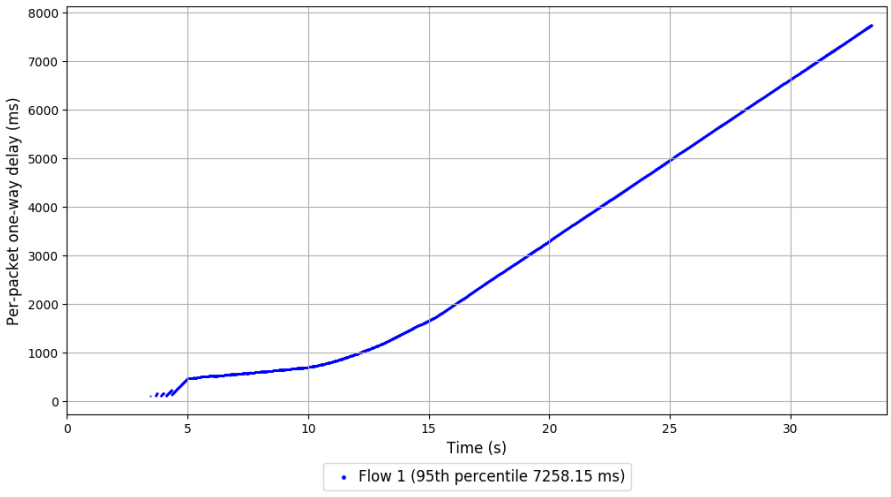
```
Run 1: Statistics of TCP Cubic

Start at: 2022-03-11 09:03:23
End at: 2022-03-11 09:03:53

# Below is generated by plot.py at 2022-03-11 09:08:08
# Datalink statistics
-- Total of 1 flow:
Average capacity: 2.00 Mbit/s
Average throughput: 1.97 Mbit/s (98.5% utilization)
95th percentile per-packet one-way delay: 7258.154 ms
Loss rate: 28.18%
-- Flow 1:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 7258.154 ms
Loss rate: 28.18%
```

Run 1: Report of TCP Cubic — Data Link



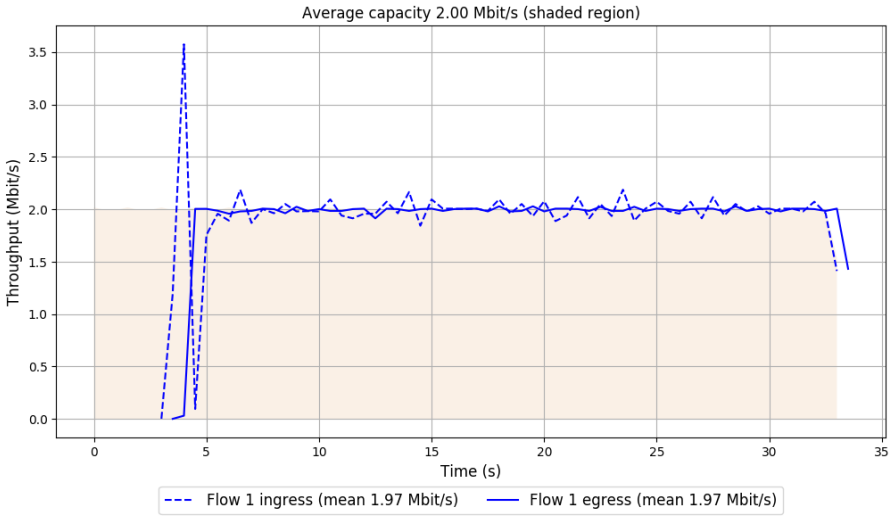


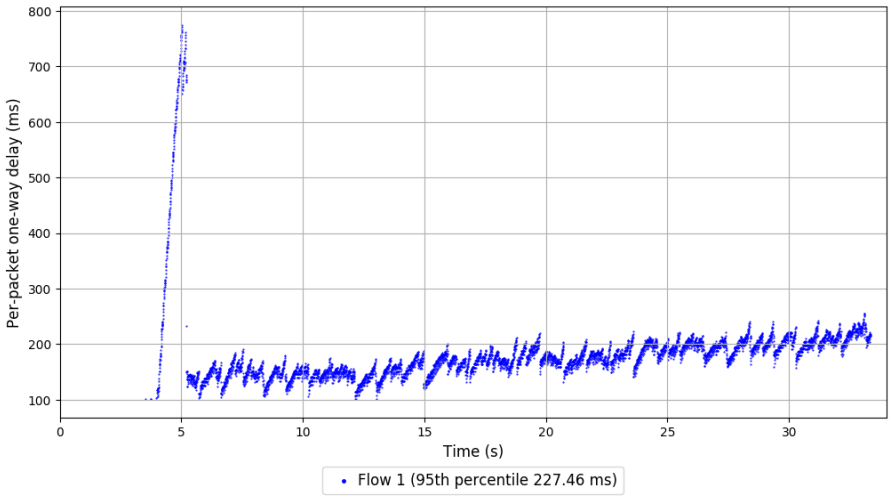
```
Run 1: Statistics of FillP

Start at: 2022-03-11 09:02:49
End at: 2022-03-11 09:03:19

# Below is generated by plot.py at 2022-03-11 09:08:10
# Datalink statistics
-- Total of 1 flow:
Average capacity: 2.00 Mbit/s
Average throughput: 1.97 Mbit/s (98.2% utilization)
95th percentile per-packet one-way delay: 227.458 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 227.458 ms
Loss rate: 0.70%
```

Run 1: Report of FillP — Data Link



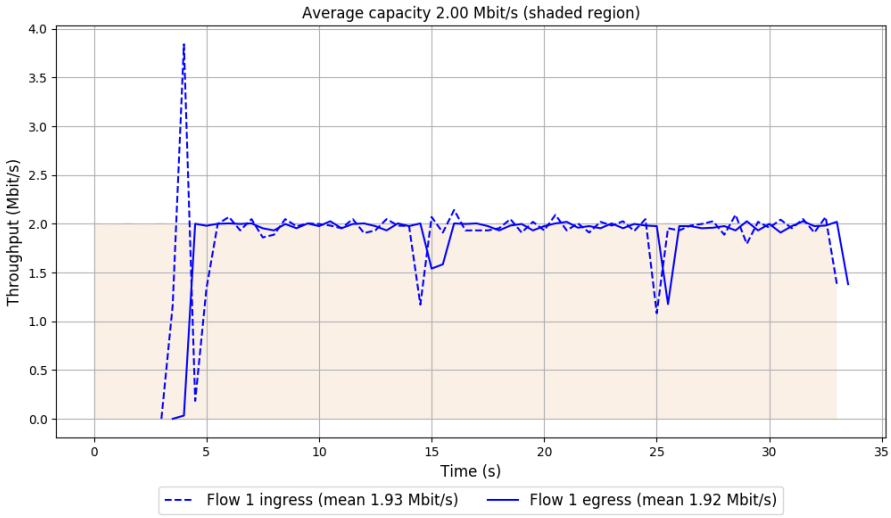


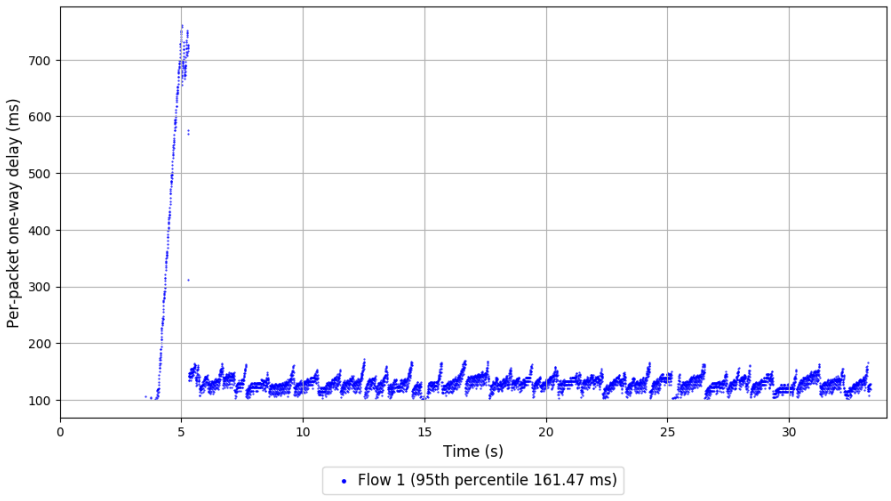
```
Run 1: Statistics of FillP-Sheep

Start at: 2022-03-11 09:02:14
End at: 2022-03-11 09:02:44

# Below is generated by plot.py at 2022-03-11 09:08:10
# Datalink statistics
-- Total of 1 flow:
Average capacity: 2.00 Mbit/s
Average throughput: 1.92 Mbit/s (96.1% utilization)
95th percentile per-packet one-way delay: 161.475 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 161.475 ms
Loss rate: 0.48%
```

Run 1: Report of FillP-Sheep — Data Link



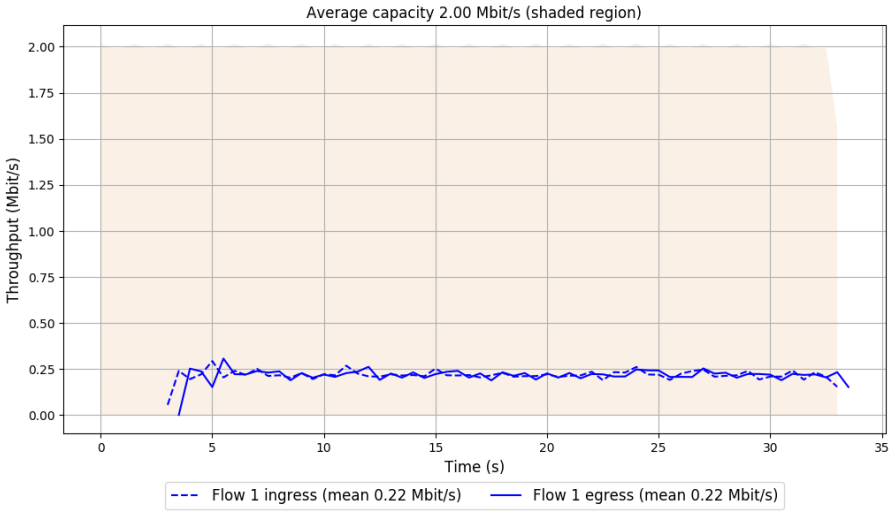


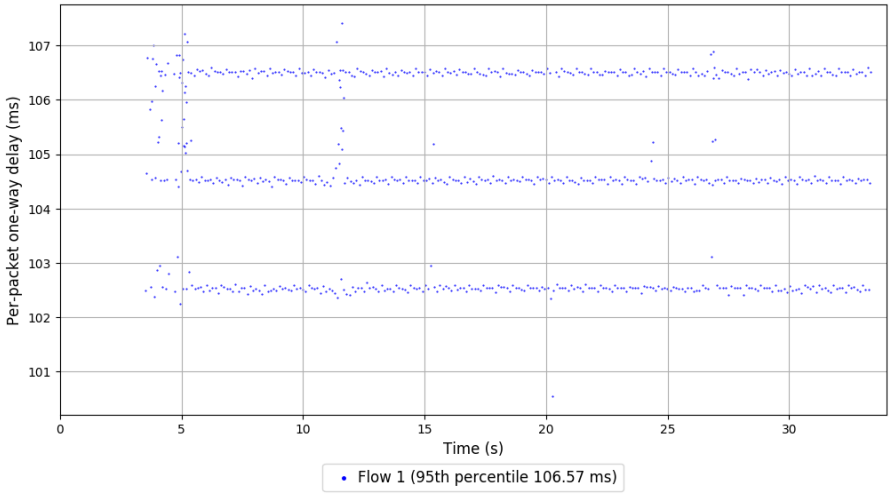
```
Run 1: Statistics of SCReAM

Start at: 2022-03-11 09:03:57
End at: 2022-03-11 09:04:27

# Below is generated by plot.py at 2022-03-11 09:08:10
# Datalink statistics
-- Total of 1 flow:
Average capacity: 2.00 Mbit/s
Average throughput: 0.22 Mbit/s (11.0% utilization)
95th percentile per-packet one-way delay: 106.572 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 106.572 ms
Loss rate: 0.26%
```

Run 1: Report of SCReAM — Data Link



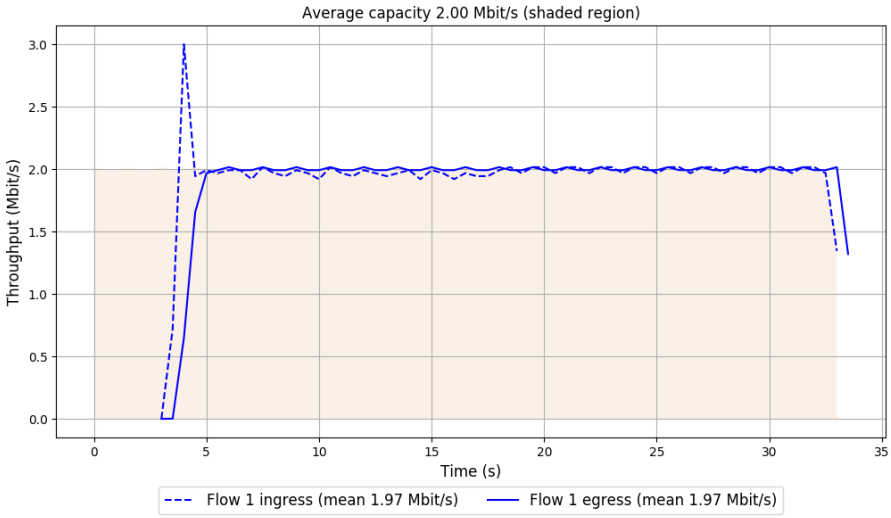


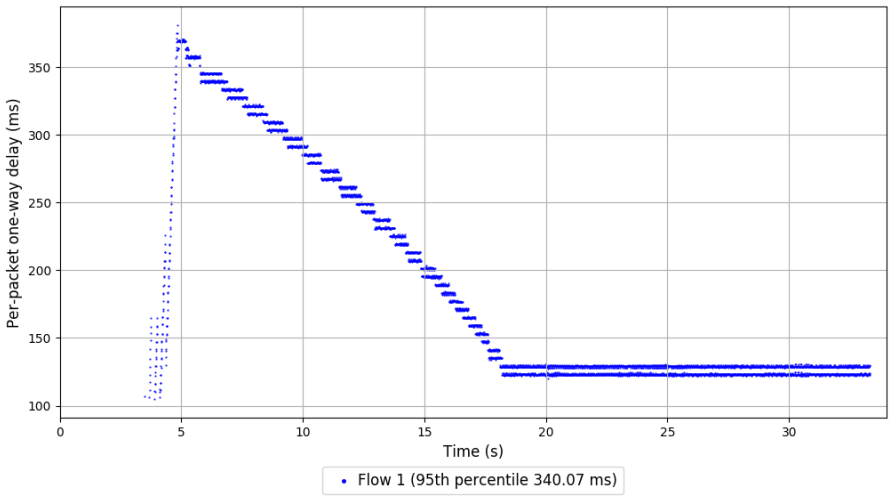
```
Run 1: Statistics of TCP Vegas

Start at: 2022-03-11 09:05:40
End at: 2022-03-11 09:06:10

# Below is generated by plot.py at 2022-03-11 09:08:10
# Datalink statistics
-- Total of 1 flow:
Average capacity: 2.00 Mbit/s
Average throughput: 1.97 Mbit/s (98.5% utilization)
95th percentile per-packet one-way delay: 340.075 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 340.075 ms
Loss rate: 0.43%
```

Run 1: Report of TCP Vegas — Data Link



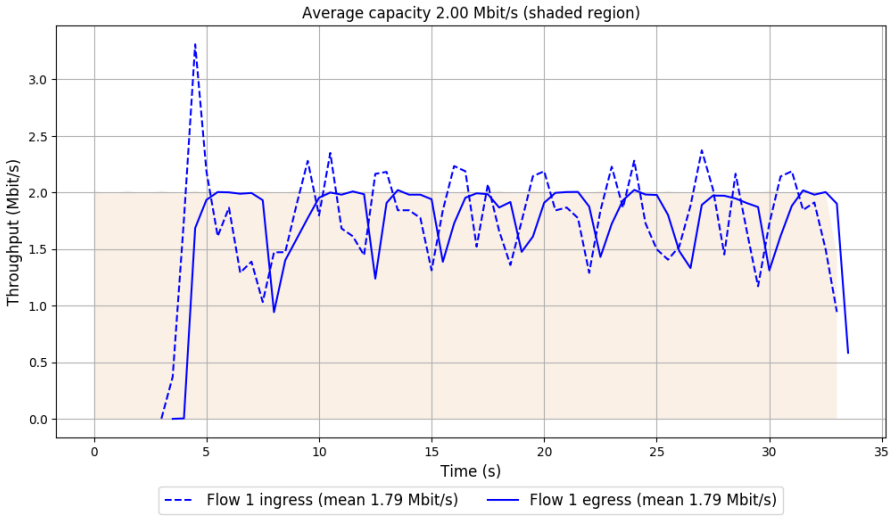


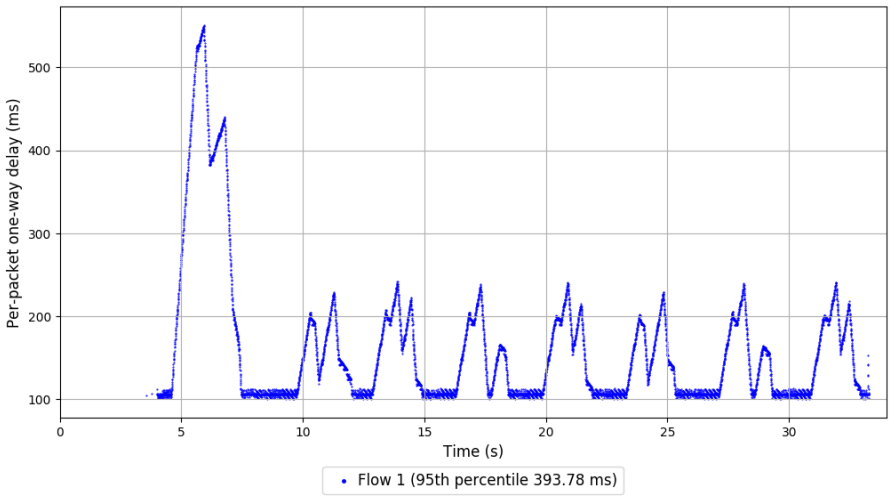
```
Run 1: Statistics of PCC-Vivace

Start at: 2022-03-11 09:04:31
End at: 2022-03-11 09:05:01

# Below is generated by plot.py at 2022-03-11 09:08:10
# Datalink statistics
-- Total of 1 flow:
Average capacity: 2.00 Mbit/s
Average throughput: 1.79 Mbit/s (89.5% utilization)
95th percentile per-packet one-way delay: 393.779 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 1.79 Mbit/s
95th percentile per-packet one-way delay: 393.779 ms
Loss rate: 0.50%
```

Run 1: Report of PCC-Vivace — Data Link





```
Run 1: Statistics of WebRTC media

Start at: 2022-03-11 09:06:14
End at: 2022-03-11 09:06:44

# Below is generated by plot.py at 2022-03-11 09:08:10
# Datalink statistics
-- Total of 1 flow:
Average capacity: 2.00 Mbit/s
Average throughput: 0.00 Mbit/s (0.1% utilization)
95th percentile per-packet one-way delay: 106.816 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 106.816 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link