

Pantheon Report

Generated at 2022-03-11 09:01:16 (UTC).

Tested in mahimahi: mm-delay 100 mm-link 3Mbps_trace 3Mbps_trace

Repeated the test of 8 congestion control schemes once.

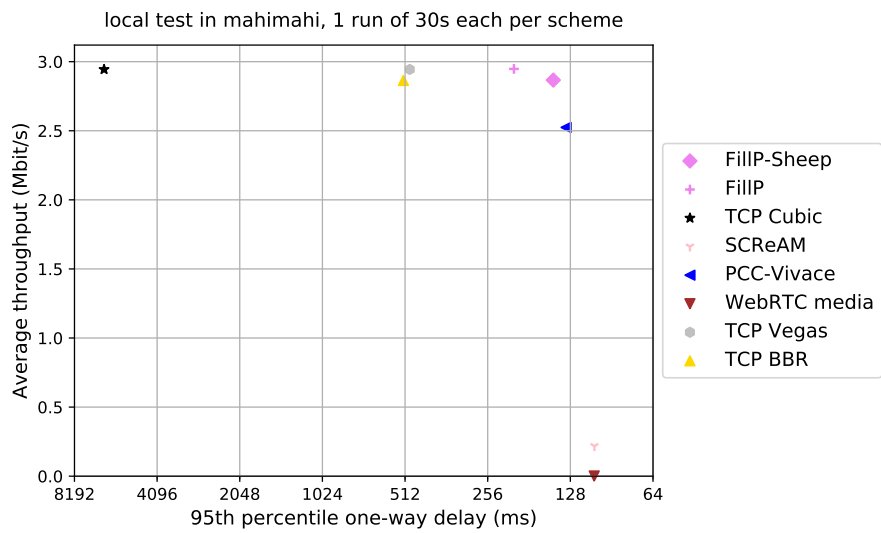
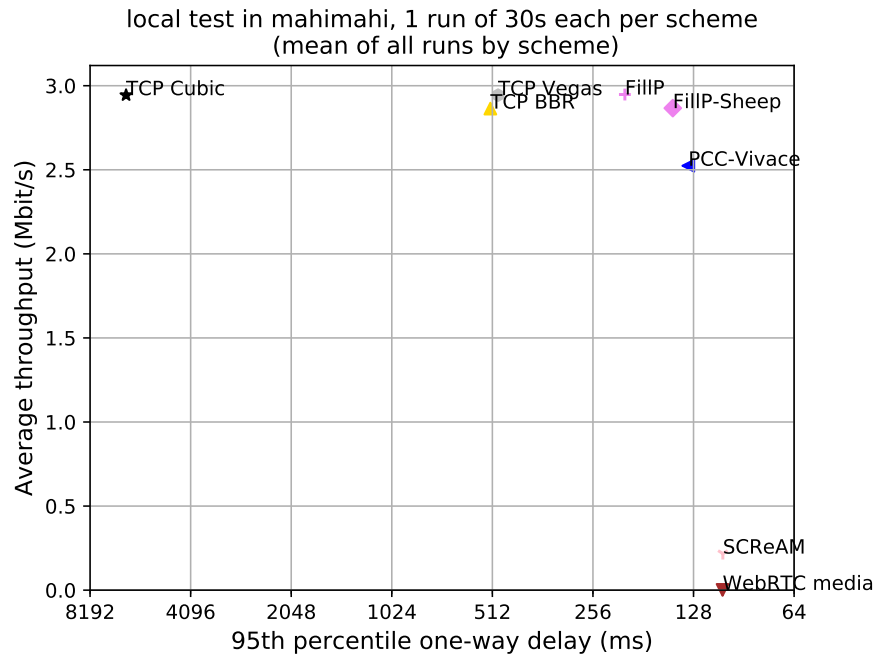
Each test lasted for 30 seconds running 1 flow.

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 @ 5acbbe4d2b6501cba2acdff189e4f6aab57201cd
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfef58e562f4
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
```



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	1	2.86	519.13	1.12
TCP Cubic	1	2.94	6391.39	18.93
FillP	1	2.95	205.44	0.69
FillP-Sheep	1	2.87	147.66	0.43
SCReAM	1	0.22	104.58	0.38
TCP Vegas	1	2.94	492.28	0.91
PCC-Vivace	1	2.52	132.69	0.37
WebRTC media	1	0.00	104.79	0.00

Run 1: Statistics of TCP BBR

Start at: 2022-03-11 08:59:19

End at: 2022-03-11 08:59:49

Below is generated by plot.py at 2022-03-11 09:01:12

Datalink statistics

-- Total of 1 flow:

Average capacity: 3.00 Mbit/s

Average throughput: 2.86 Mbit/s (95.5% utilization)

95th percentile per-packet one-way delay: 519.133 ms

Loss rate: 1.12%

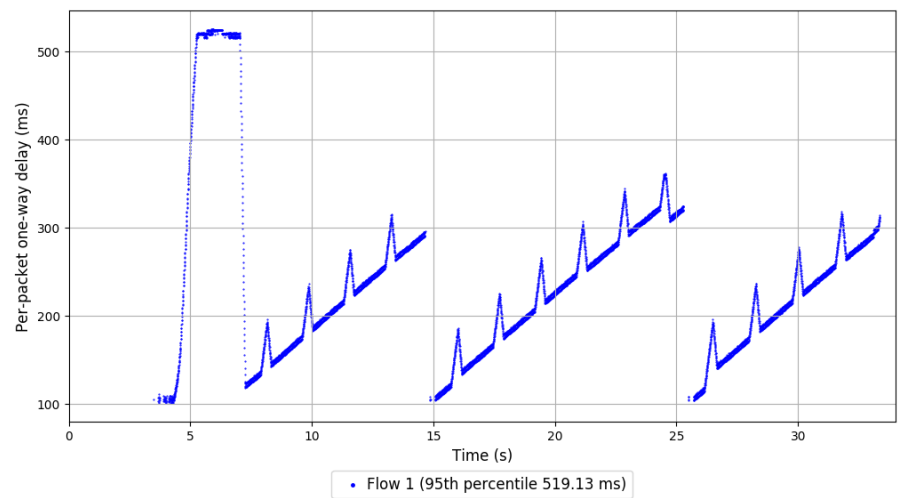
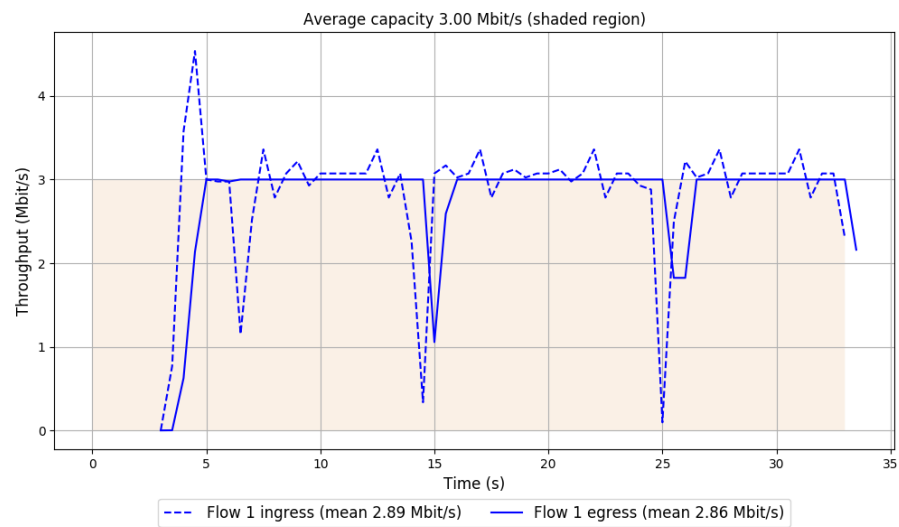
-- Flow 1:

Average throughput: 2.86 Mbit/s

95th percentile per-packet one-way delay: 519.133 ms

Loss rate: 1.12%

Run 1: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2022-03-11 08:57:36

End at: 2022-03-11 08:58:06

Below is generated by plot.py at 2022-03-11 09:01:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 3.00 Mbit/s

Average throughput: 2.94 Mbit/s (98.1% utilization)

95th percentile per-packet one-way delay: 6391.387 ms

Loss rate: 18.93%

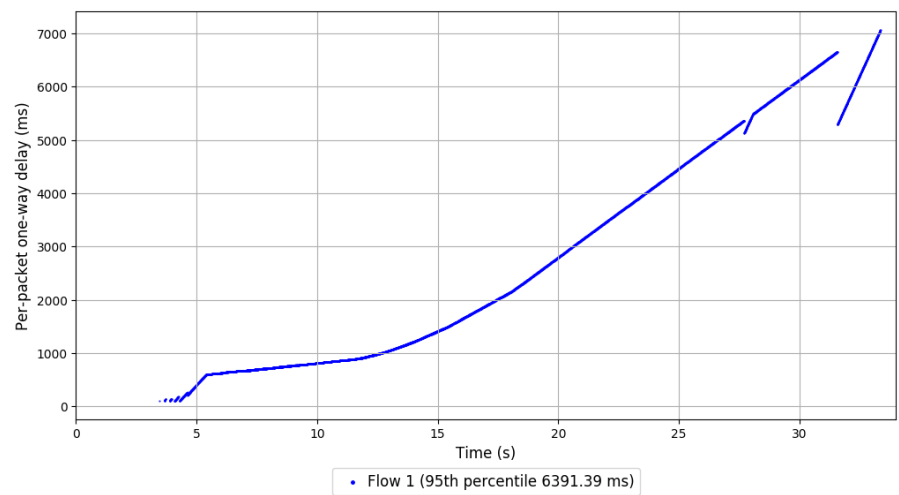
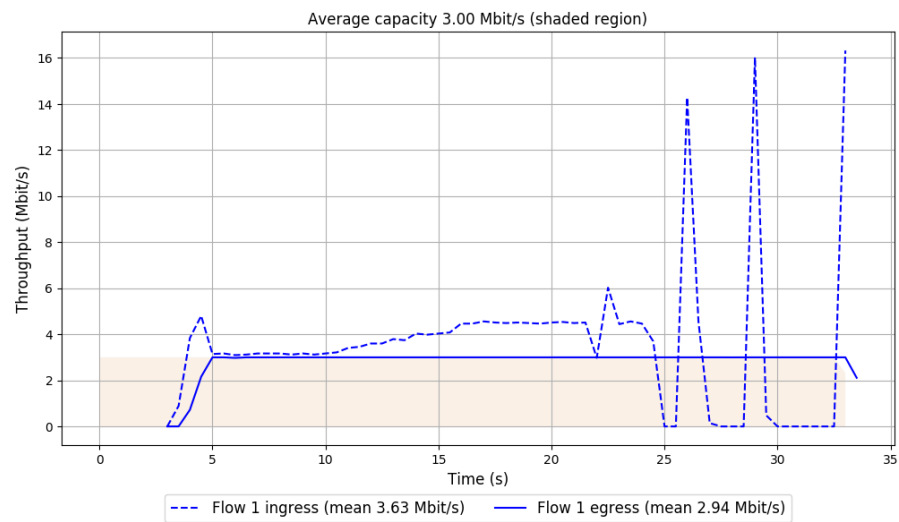
-- Flow 1:

Average throughput: 2.94 Mbit/s

95th percentile per-packet one-way delay: 6391.387 ms

Loss rate: 18.93%

Run 1: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2022-03-11 08:57:02

End at: 2022-03-11 08:57:32

Below is generated by plot.py at 2022-03-11 09:01:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 3.00 Mbit/s

Average throughput: 2.95 Mbit/s (98.2% utilization)

95th percentile per-packet one-way delay: 205.436 ms

Loss rate: 0.69%

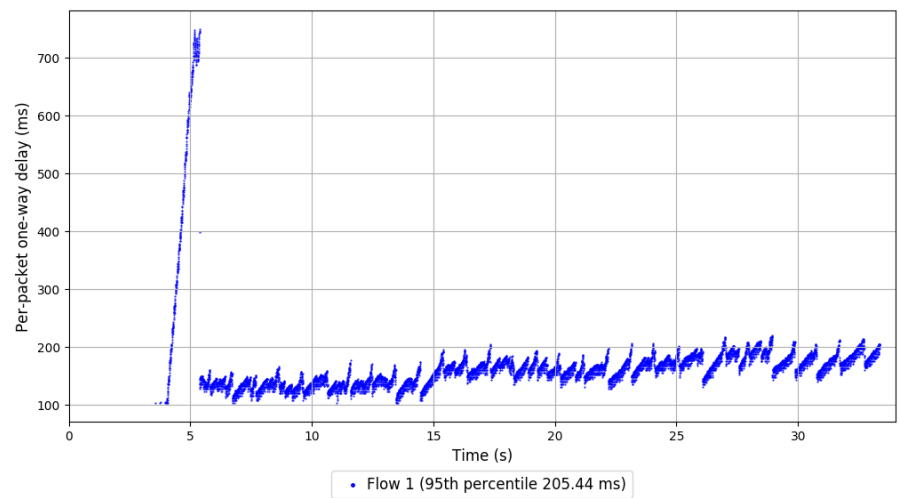
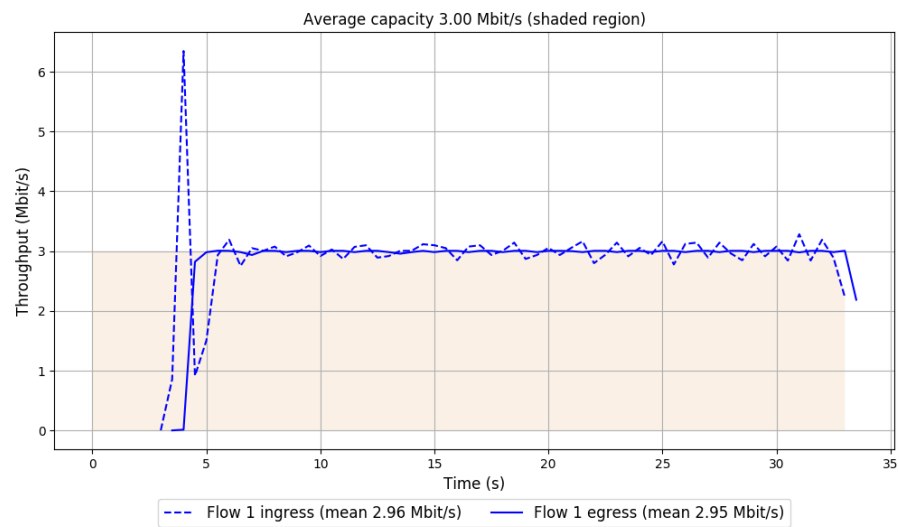
-- Flow 1:

Average throughput: 2.95 Mbit/s

95th percentile per-packet one-way delay: 205.436 ms

Loss rate: 0.69%

Run 1: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2022-03-11 08:56:27

End at: 2022-03-11 08:56:57

Below is generated by plot.py at 2022-03-11 09:01:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 3.00 Mbit/s

Average throughput: 2.87 Mbit/s (95.5% utilization)

95th percentile per-packet one-way delay: 147.660 ms

Loss rate: 0.43%

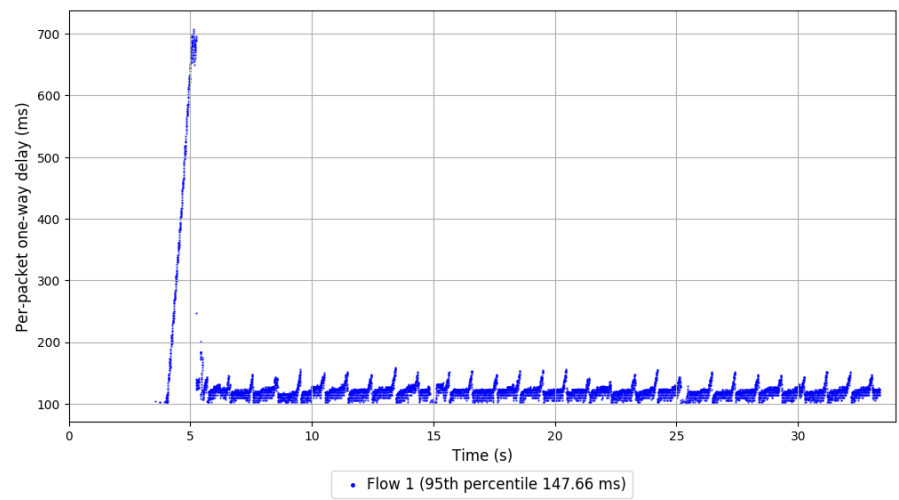
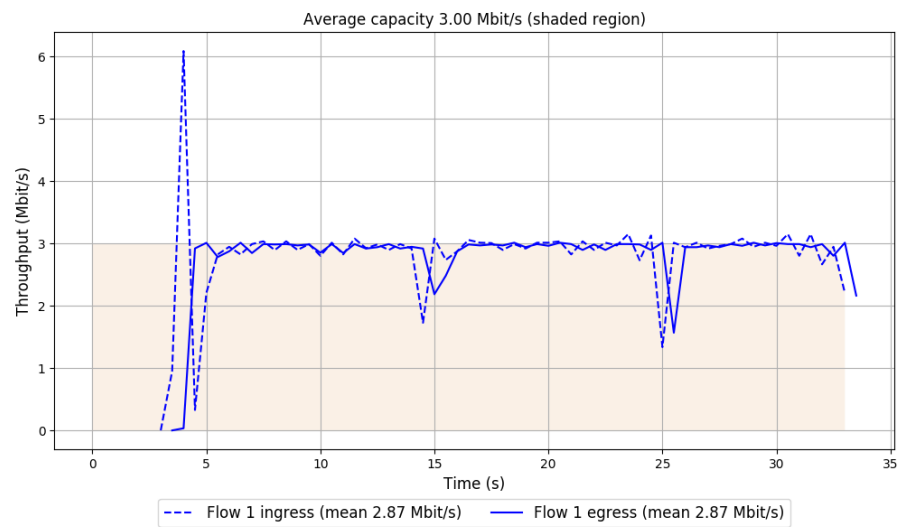
-- Flow 1:

Average throughput: 2.87 Mbit/s

95th percentile per-packet one-way delay: 147.660 ms

Loss rate: 0.43%

Run 1: Report of FillP-Sheep — Data Link

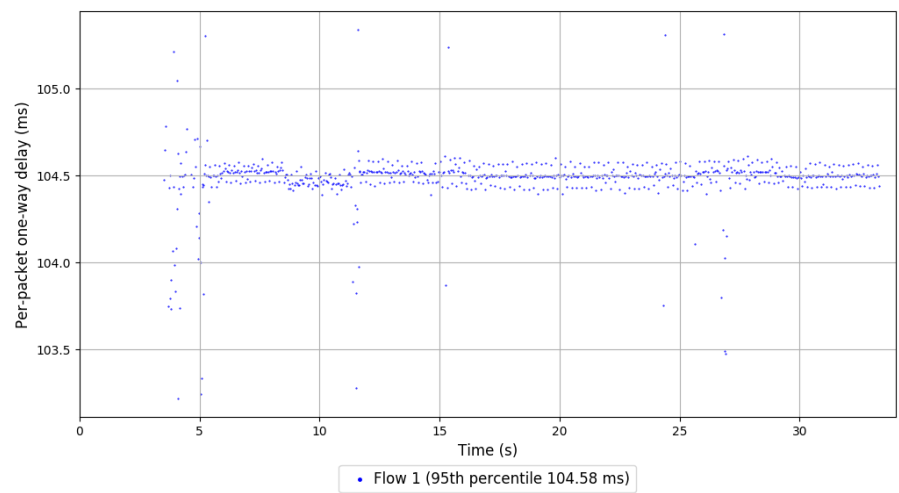
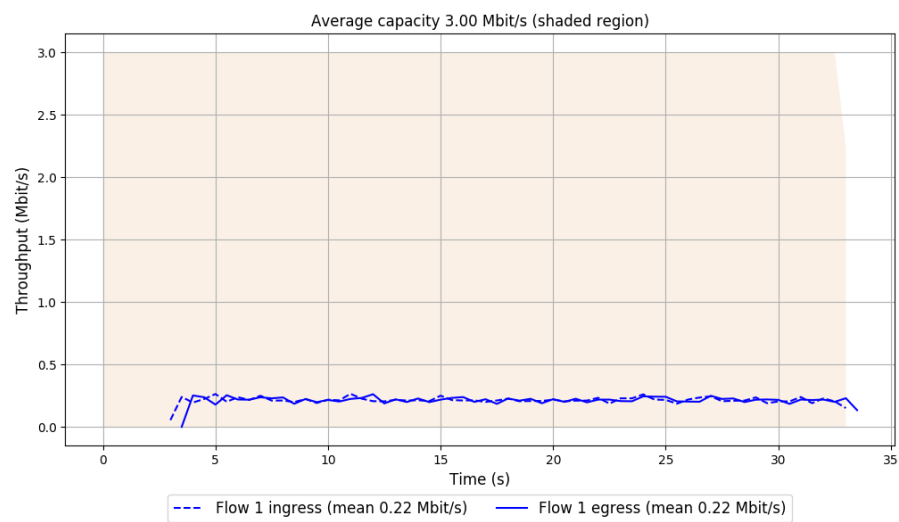


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Run 1: Statistics of SCReAM

Start at: 2022-03-11 08:58:10
End at: 2022-03-11 08:58:40

# Below is generated by plot.py at 2022-03-11 09:01:14
# Datalink statistics
-- Total of 1 flow:
Average capacity: 3.00 Mbit/s
Average throughput: 0.22 Mbit/s (7.2% utilization)
95th percentile per-packet one-way delay: 104.582 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 104.582 ms
Loss rate: 0.38%
```

Run 1: Report of SReAM — Data Link



Run 1: Statistics of TCP Vegas

Start at: 2022-03-11 08:59:53

End at: 2022-03-11 09:00:23

Below is generated by plot.py at 2022-03-11 09:01:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 3.00 Mbit/s

Average throughput: 2.94 Mbit/s (98.1% utilization)

95th percentile per-packet one-way delay: 492.283 ms

Loss rate: 0.91%

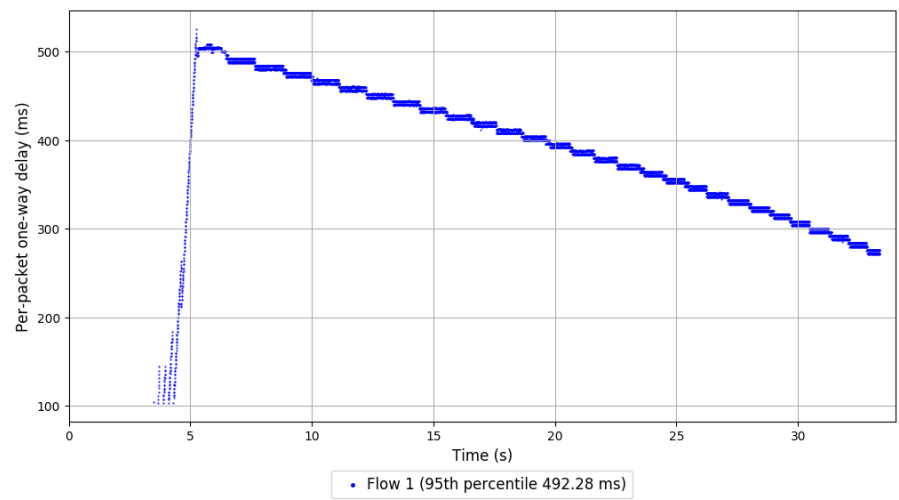
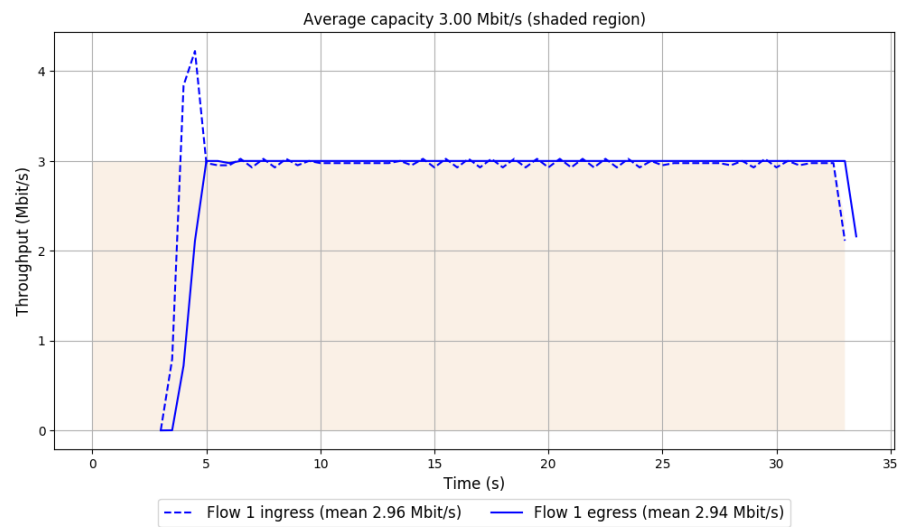
-- Flow 1:

Average throughput: 2.94 Mbit/s

95th percentile per-packet one-way delay: 492.283 ms

Loss rate: 0.91%

Run 1: Report of TCP Vegas — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2022-03-11 08:58:45

End at: 2022-03-11 08:59:15

Below is generated by plot.py at 2022-03-11 09:01:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 3.00 Mbit/s

Average throughput: 2.52 Mbit/s (84.1% utilization)

95th percentile per-packet one-way delay: 132.694 ms

Loss rate: 0.37%

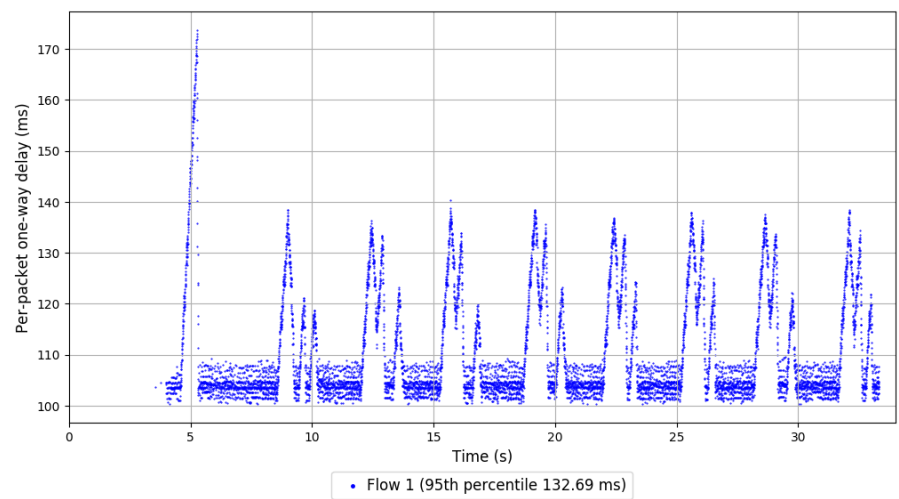
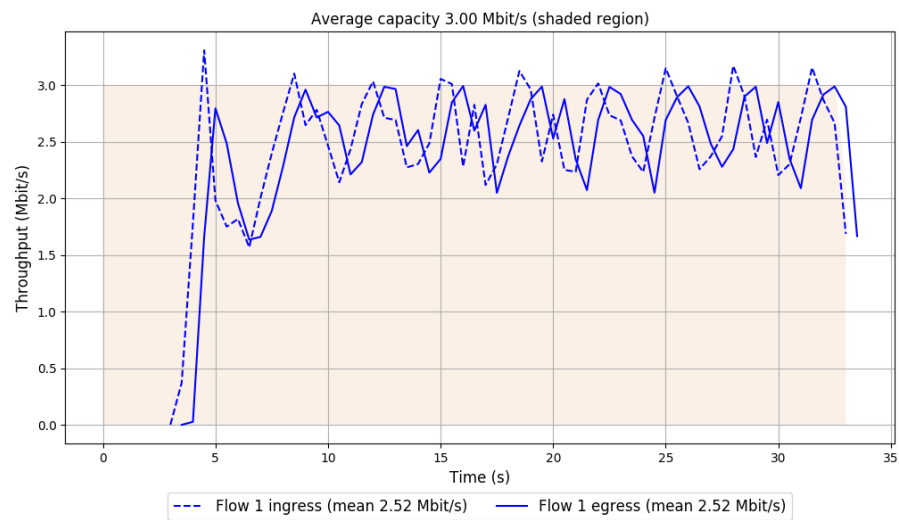
-- Flow 1:

Average throughput: 2.52 Mbit/s

95th percentile per-packet one-way delay: 132.694 ms

Loss rate: 0.37%

Run 1: Report of PCC-Vivace — Data Link



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Run 1: Statistics of WebRTC media

Start at: 2022-03-11 09:00:28
End at: 2022-03-11 09:00:58

# Below is generated by plot.py at 2022-03-11 09:01:14
# Datalink statistics
-- Total of 1 flow:
Average capacity: 3.00 Mbit/s
Average throughput: 0.00 Mbit/s (0.0% utilization)
95th percentile per-packet one-way delay: 104.793 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 104.793 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link

