

## Pantheon Report

Generated at 2022-03-11 09:14:18 (UTC).

Tested in mahimahi: `mm-delay 0 mm-link 12Mbps_trace 12Mbps_trace`

Repeated the test of 8 congestion control schemes once.

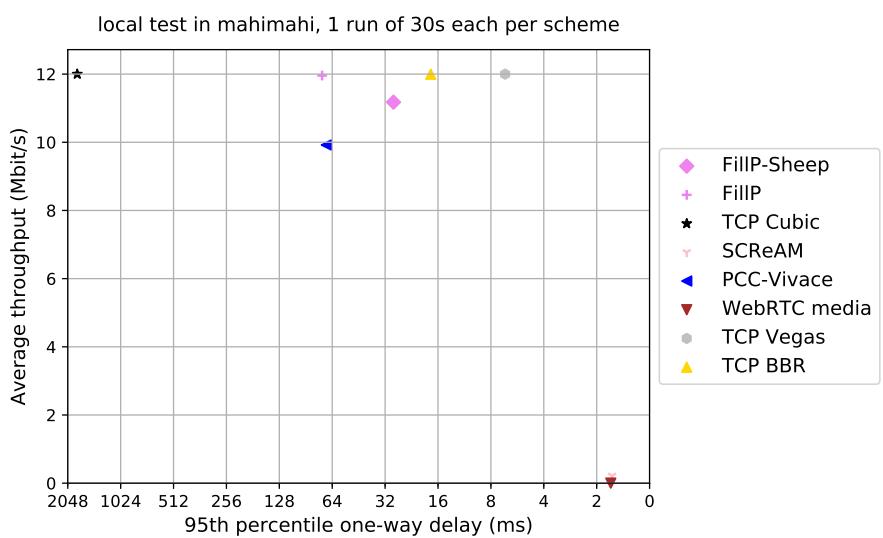
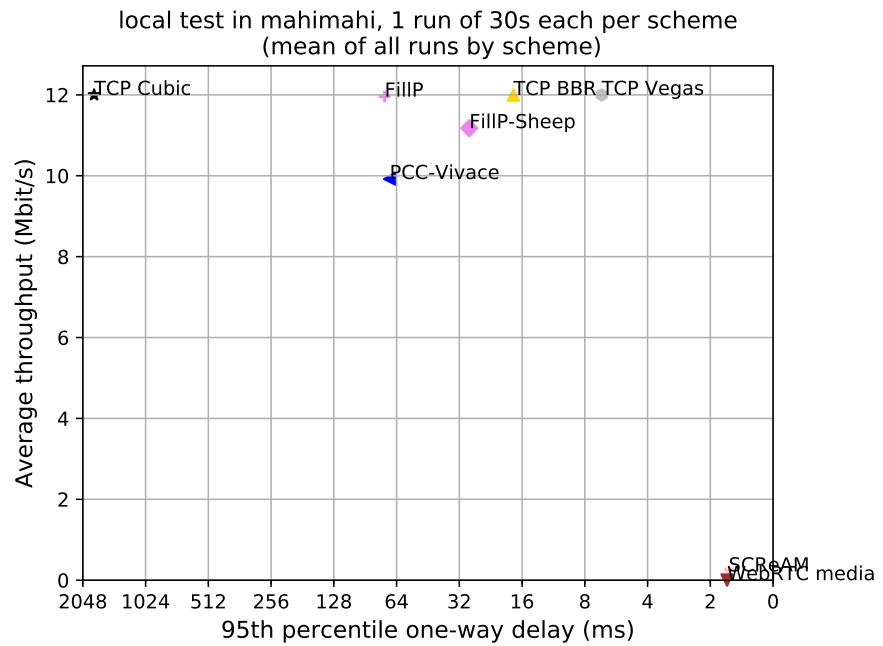
Each test lasted for 30 seconds running 1 flow.

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 @ d7d0a017219828a7eedace04bd1fefef8d5362d2
third_party/fillp @ d6da1459332fceef56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfef58e562f4
third_party/indigo @ 463d89b09699a57bfdfbe351646df6a60040b90
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	12.00	17.60	0.04
TCP Cubic	1	12.00	1808.49	4.75
FillP	1	11.96	73.06	0.25
FillP-Sheep	1	11.18	28.67	0.02
SCReAM	1	0.22	1.42	0.00
TCP Vegas	1	12.00	6.64	0.02
PCC-Vivace	1	9.92	69.13	0.00
WebRTC media	1	0.00	1.47	0.00

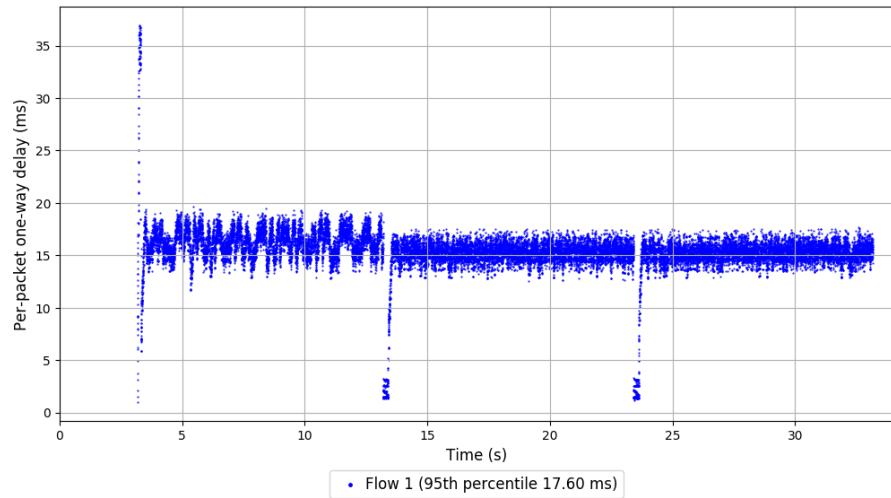
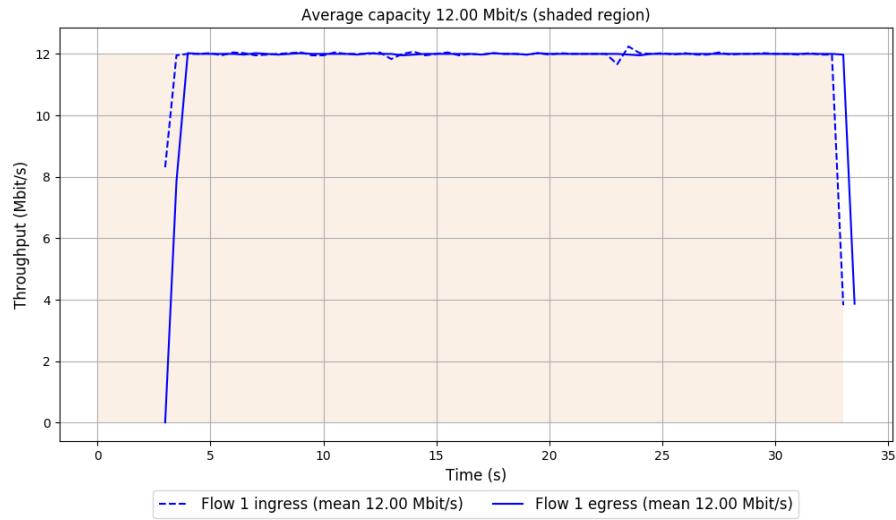
Run 1: Statistics of TCP BBR

Start at: 2022-03-11 09:12:07

End at: 2022-03-11 09:12:37

```
# Below is generated by plot.py at 2022-03-11 09:14:14
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 12.00 Mbit/s (100.0% utilization)
95th percentile per-packet one-way delay: 17.601 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 12.00 Mbit/s
95th percentile per-packet one-way delay: 17.601 ms
Loss rate: 0.04%
```

## Run 1: Report of TCP BBR — Data Link



```
Run 1: Statistics of TCP Cubic
```

```
Start at: 2022-03-11 09:10:23
```

```
End at: 2022-03-11 09:10:54
```

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

```
# Datalink statistics
```

```
-- Total of 1 flow:
```

```
Average capacity: 12.00 Mbit/s
```

```
Average throughput: 12.00 Mbit/s (100.0% utilization)
```

```
95th percentile per-packet one-way delay: 1808.495 ms
```

```
Loss rate: 4.75%
```

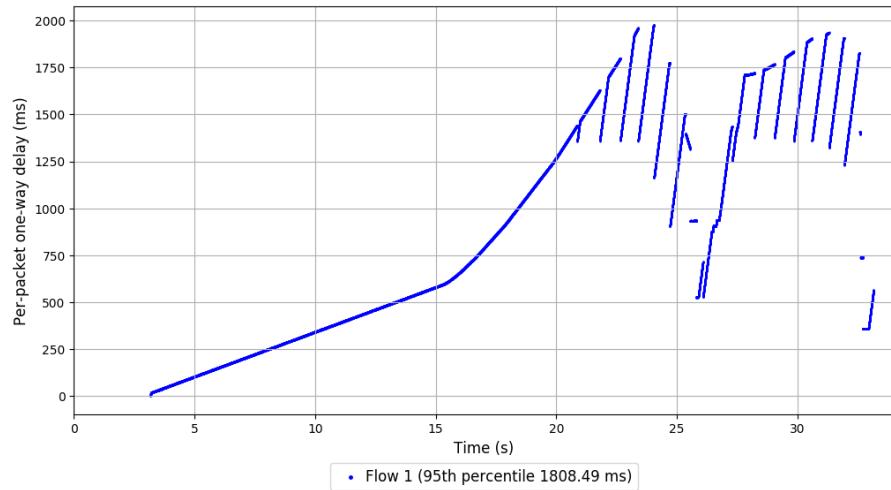
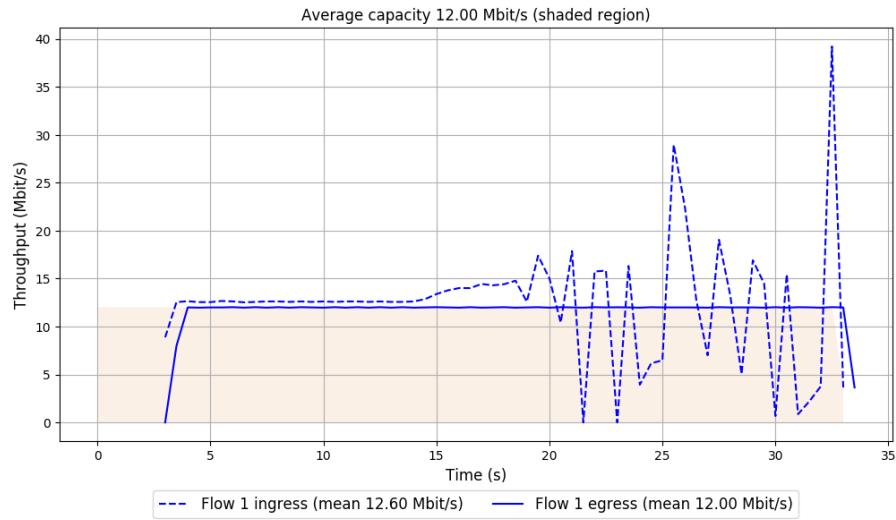
```
-- Flow 1:
```

```
Average throughput: 12.00 Mbit/s
```

```
95th percentile per-packet one-way delay: 1808.495 ms
```

```
Loss rate: 4.75%
```

## Run 1: Report of TCP Cubic — Data Link

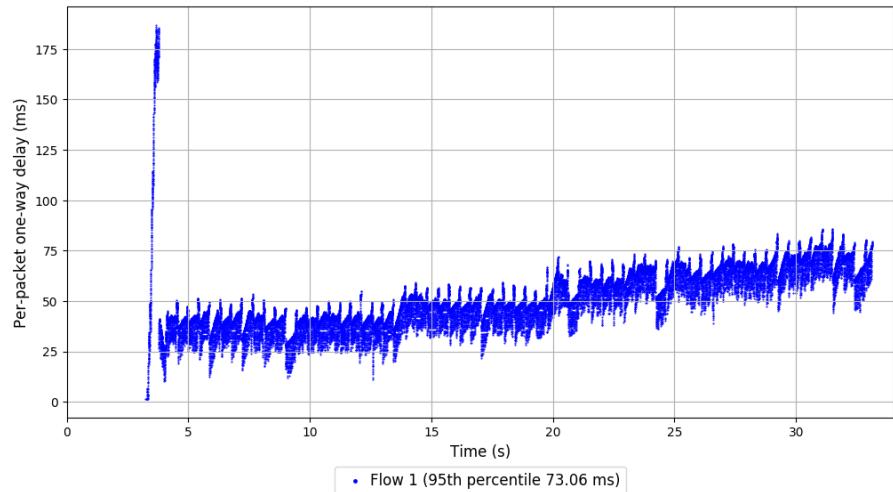
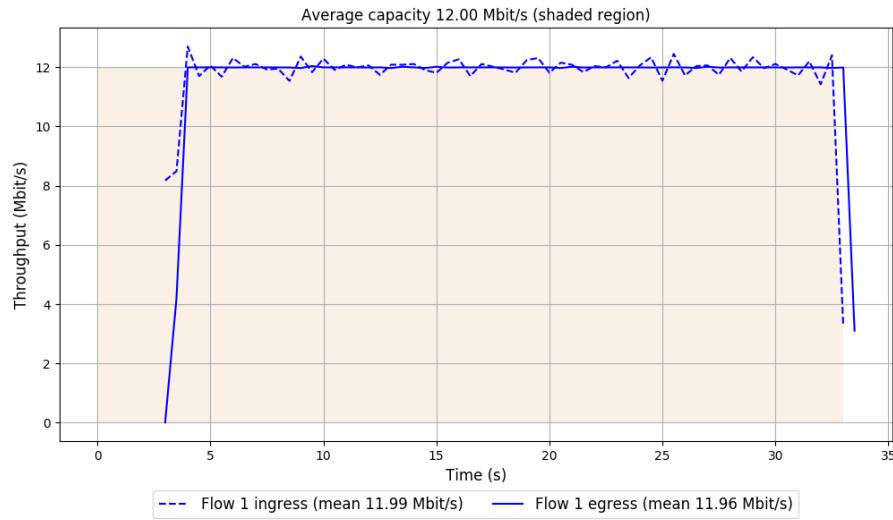


```
Run 1: Statistics of FillP

Start at: 2022-03-11 09:09:49
End at: 2022-03-11 09:10:19

# Below is generated by plot.py at 2022-03-11 09:14:15
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.96 Mbit/s (99.6% utilization)
95th percentile per-packet one-way delay: 73.062 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 11.96 Mbit/s
95th percentile per-packet one-way delay: 73.062 ms
Loss rate: 0.25%
```

## Run 1: Report of FillP — Data Link

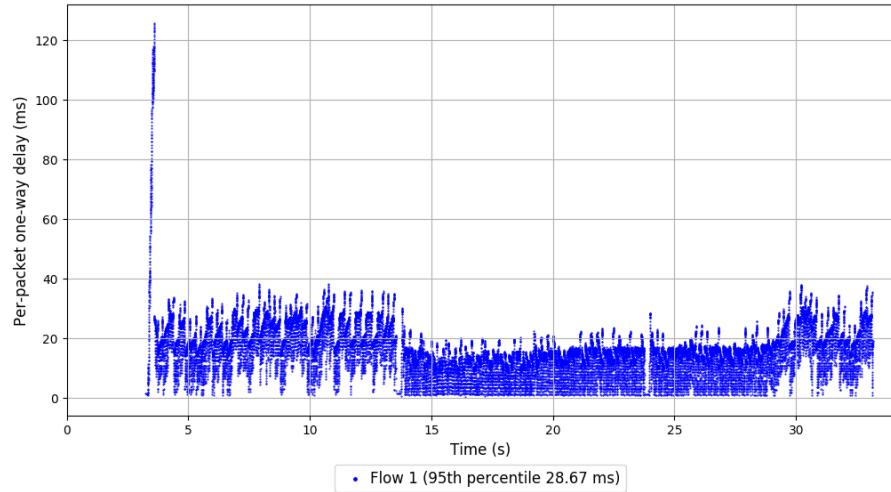
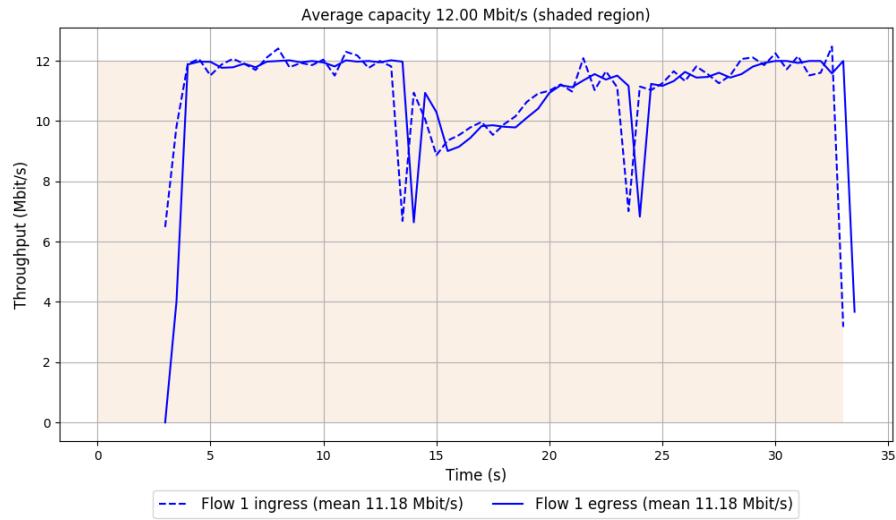


```
Run 1: Statistics of FillP-Sheep

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

# Below is generated by plot.py at 2022-03-11 09:14:15
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.18 Mbit/s (93.1% utilization)
95th percentile per-packet one-way delay: 28.666 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 11.18 Mbit/s
95th percentile per-packet one-way delay: 28.666 ms
Loss rate: 0.02%
```

## Run 1: Report of FillP-Sheep — Data Link

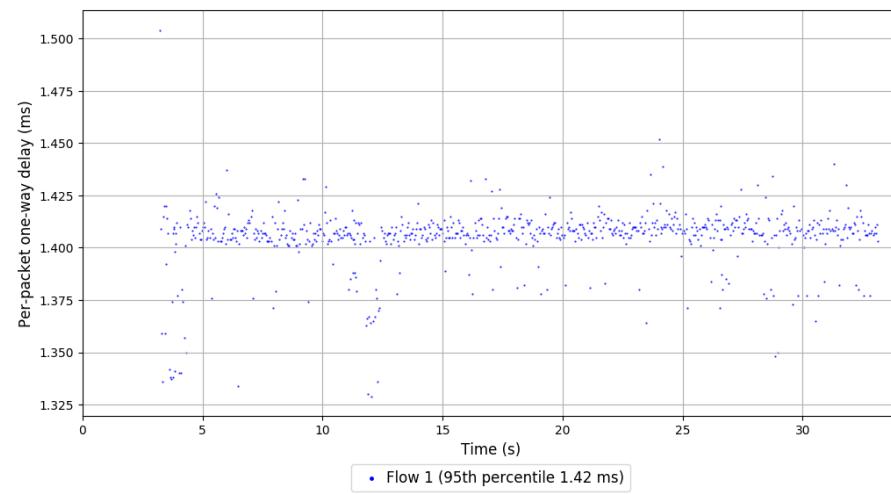
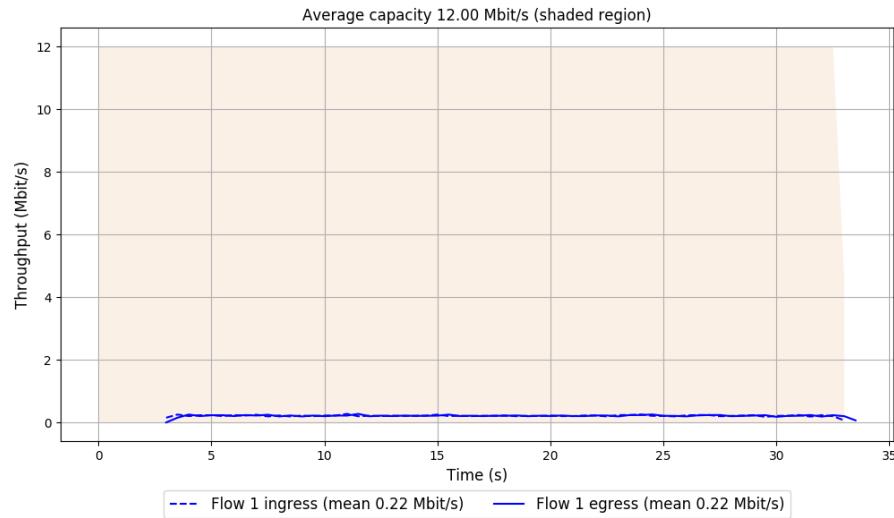


```
Run 1: Statistics of SCReAM

Start at: 2022-03-11 09:10:58
End at: 2022-03-11 09:11:28

# Below is generated by plot.py at 2022-03-11 09:14:15
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 0.22 Mbit/s (1.8% utilization)
95th percentile per-packet one-way delay: 1.418 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.418 ms
Loss rate: 0.00%
```

## Run 1: Report of SCReAM — Data Link

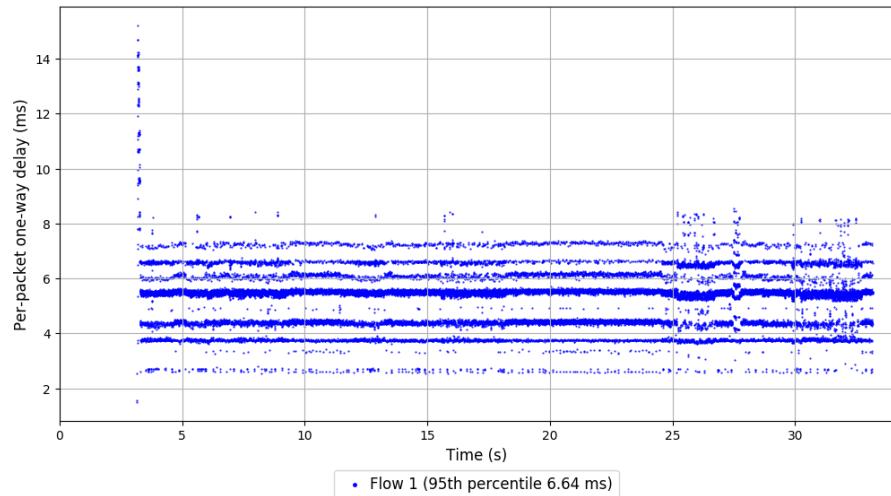
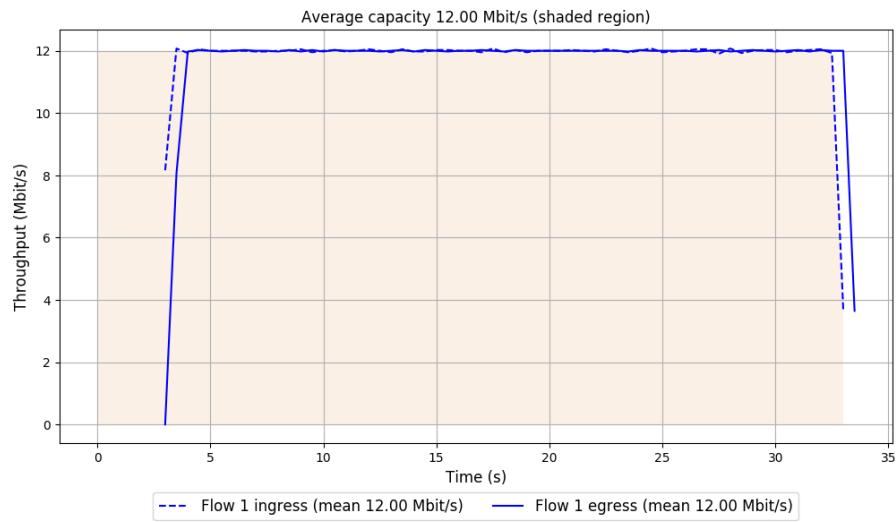


```
Run 1: Statistics of TCP Vegas

Start at: 2022-03-11 09:12:42
End at: 2022-03-11 09:13:12

# Below is generated by plot.py at 2022-03-11 09:14:15
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 12.00 Mbit/s (100.0% utilization)
95th percentile per-packet one-way delay: 6.640 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 12.00 Mbit/s
95th percentile per-packet one-way delay: 6.640 ms
Loss rate: 0.02%
```

## Run 1: Report of TCP Vegas — Data Link

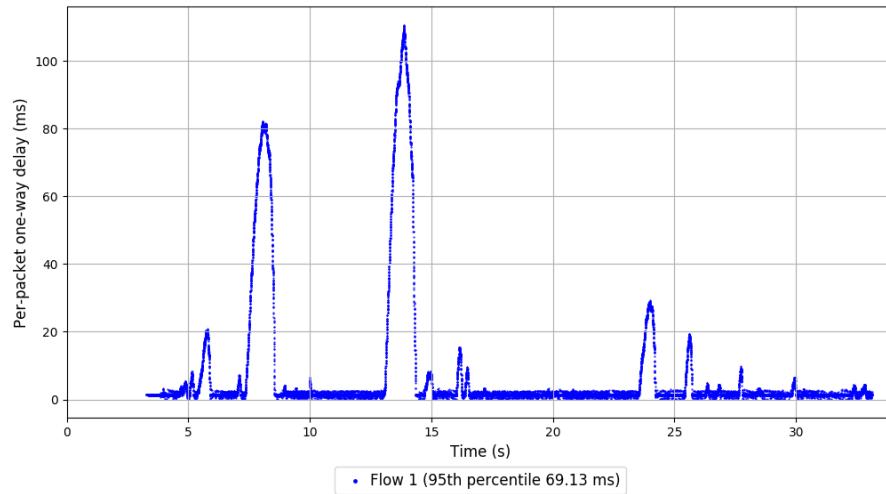
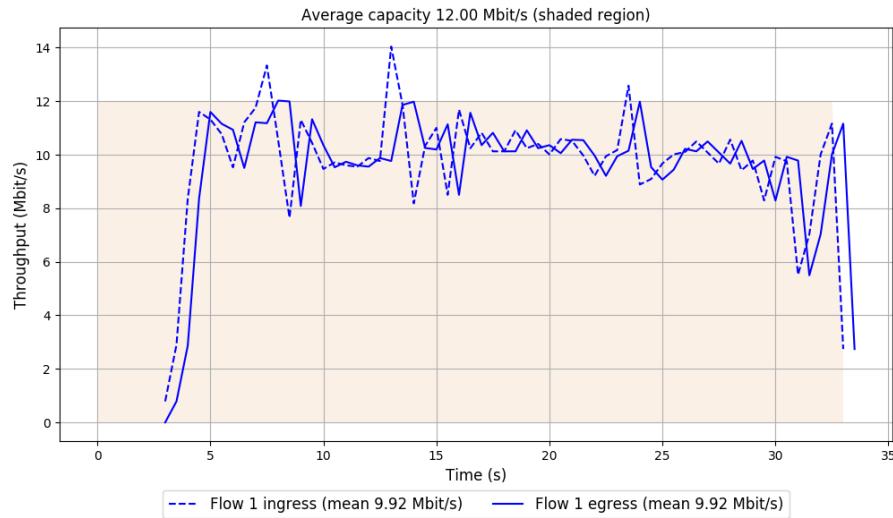


```
Run 1: Statistics of PCC-Vivace

Start at: 2022-03-11 09:11:32
End at: 2022-03-11 09:12:02

# Below is generated by plot.py at 2022-03-11 09:14:15
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 9.92 Mbit/s (82.7% utilization)
95th percentile per-packet one-way delay: 69.132 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 9.92 Mbit/s
95th percentile per-packet one-way delay: 69.132 ms
Loss rate: 0.00%
```

## Run 1: Report of PCC-Vivace — Data Link



```
Run 1: Statistics of WebRTC media

Start at: 2022-03-11 09:13:16
End at: 2022-03-11 09:13:46

# Below is generated by plot.py at 2022-03-11 09:14:15
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 0.00 Mbit/s (0.0% utilization)
95th percentile per-packet one-way delay: 1.467 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1.467 ms
Loss rate: 0.00%
```

## Run 1: Report of WebRTC media — Data Link

