Pantheon Report

Generated at 2022-03-11 09:37:43 (UTC).
Tested in mahimahi: `mm-delay 50 mm-link 12Mbps_trace 12Mbps_trace`
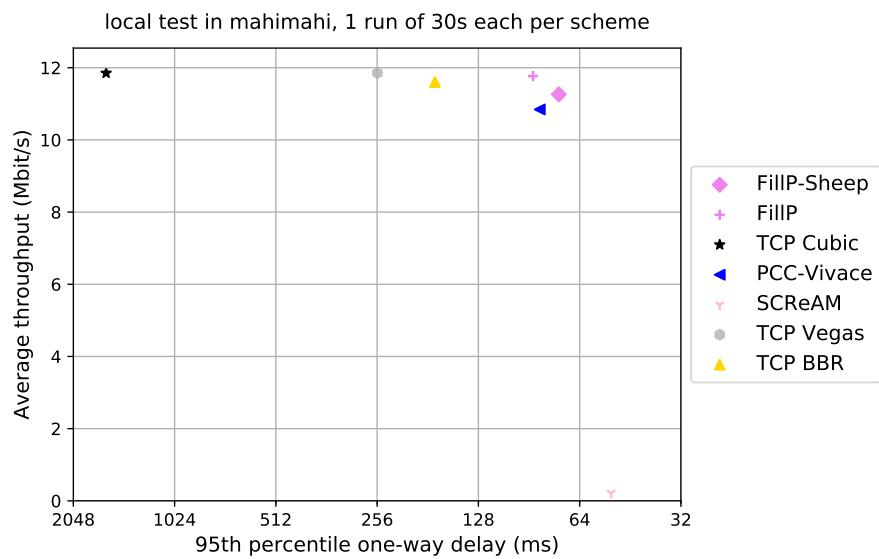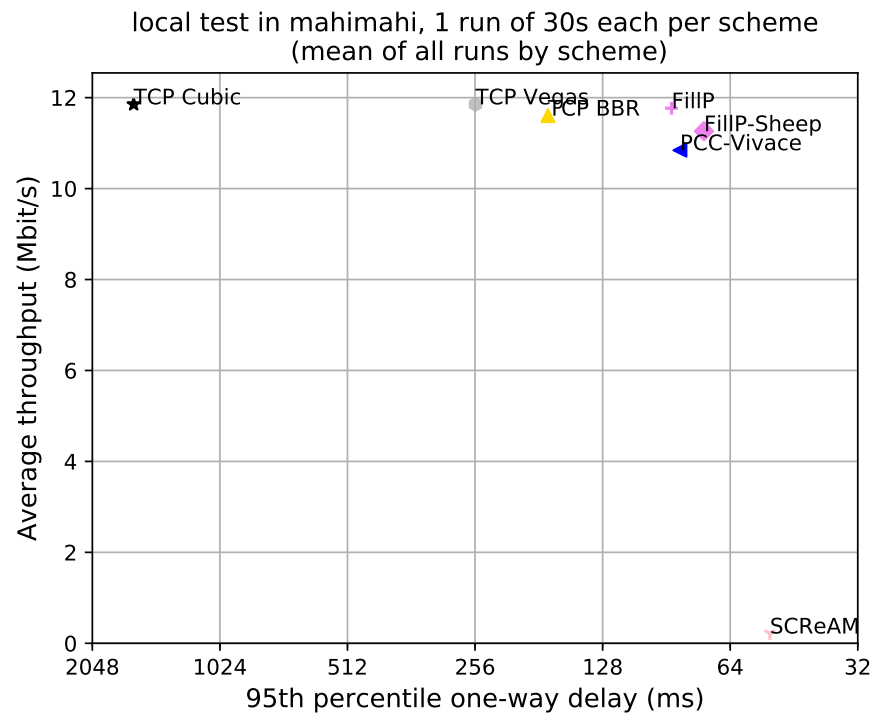Repeated the test of 7 congestion control schemes once.
Each test lasted for 30 seconds running 1 flow.

```
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 @ 9be33a6bb7c123039018bba8a791bdd100201f8a
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)

local test in mahimahi, 1 run of 30s each per scheme

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scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	1	11.60	172.30	0.55
TCP Cubic	1	11.85	1636.11	2.94
FillP	1	11.77	88.03	0.28
FillP-Sheep	1	11.26	73.81	0.24
SCReAM	1	0.22	51.59	0.13
TCP Vegas	1	11.85	255.44	0.49
PCC-Vivace	1	10.84	84.10	0.19

```
Run 1: Statistics of TCP BBR

Start at: 2022-03-11 09:35:21
End at: 2022-03-11 09:35:51

# Below is generated by plot.py at 2022-03-11 09:37:39
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.60 Mbit/s (96.7% utilization)
95th percentile per-packet one-way delay: 172.298 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 11.60 Mbit/s
95th percentile per-packet one-way delay: 172.298 ms
Loss rate: 0.55%
```
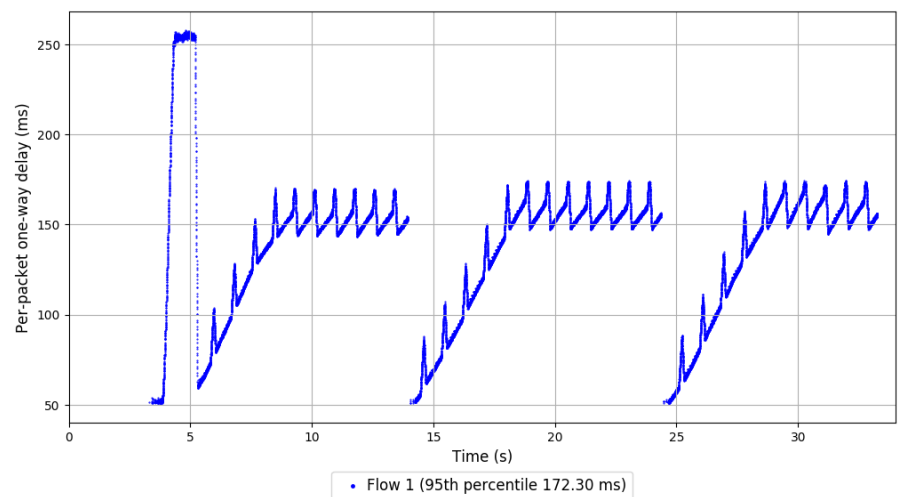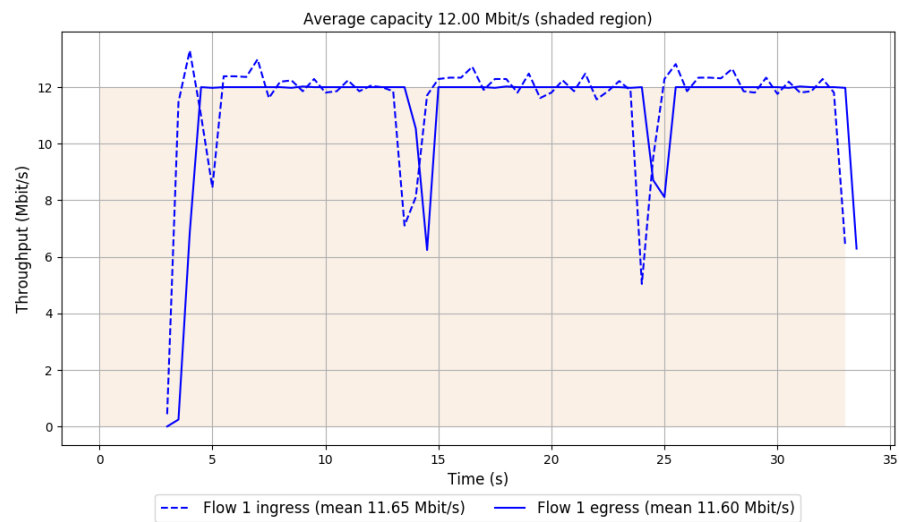
Run 1: Report of TCP BBR — Data Link

Average capacity 12.00 Mbit/s (shaded region)

Flow 1 ingress (mean 11.65 Mbit/s) ----   Flow 1 egress (mean 11.60 Mbit/s) ——

• Flow 1 (95th percentile 172.30 ms)

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```
Run 1: Statistics of TCP Cubic

Start at: 2022-03-11 09:34:46
End at: 2022-03-11 09:35:16

# Below is generated by plot.py at 2022-03-11 09:37:40
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.85 Mbit/s (98.8% utilization)
95th percentile per-packet one-way delay: 1636.106 ms
Loss rate: 2.94%
-- Flow 1:
Average throughput: 11.85 Mbit/s
95th percentile per-packet one-way delay: 1636.106 ms
Loss rate: 2.94%
```
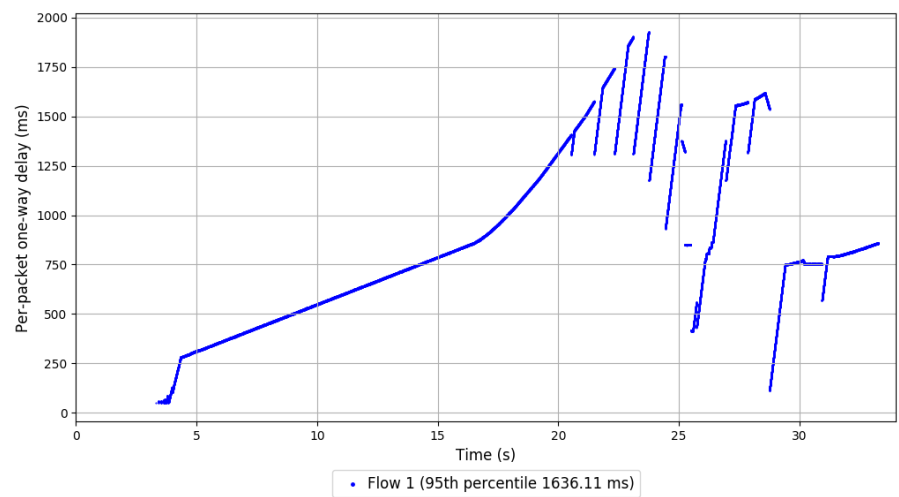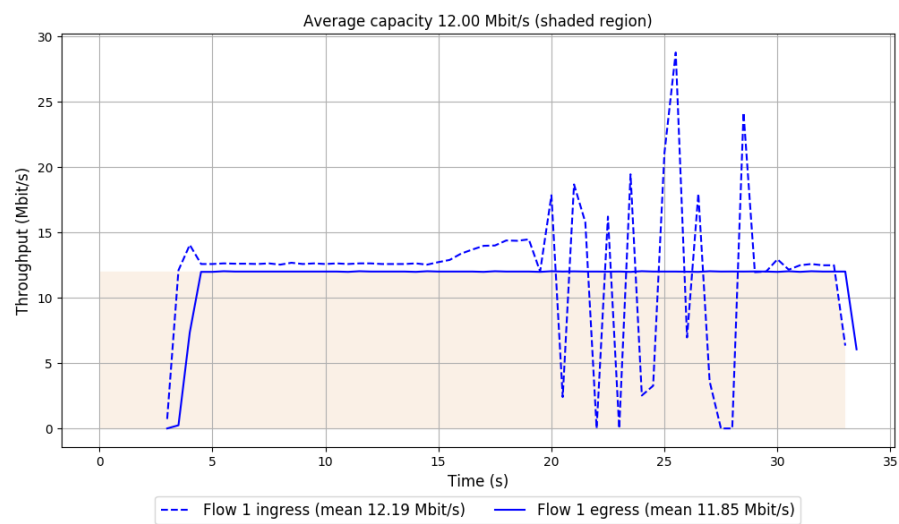
Run 1: Report of TCP Cubic — Data Link

Average capacity 12.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 12.19 Mbit/s) —— Flow 1 egress (mean 11.85 Mbit/s)

• Flow 1 (95th percentile 1636.11 ms)

```
Run 1: Statistics of FillP

Start at: 2022-03-11 09:34:11
End at: 2022-03-11 09:34:41

# Below is generated by plot.py at 2022-03-11 09:37:41
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.77 Mbit/s (98.1% utilization)
95th percentile per-packet one-way delay: 88.031 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 11.77 Mbit/s
95th percentile per-packet one-way delay: 88.031 ms
Loss rate: 0.28%
```
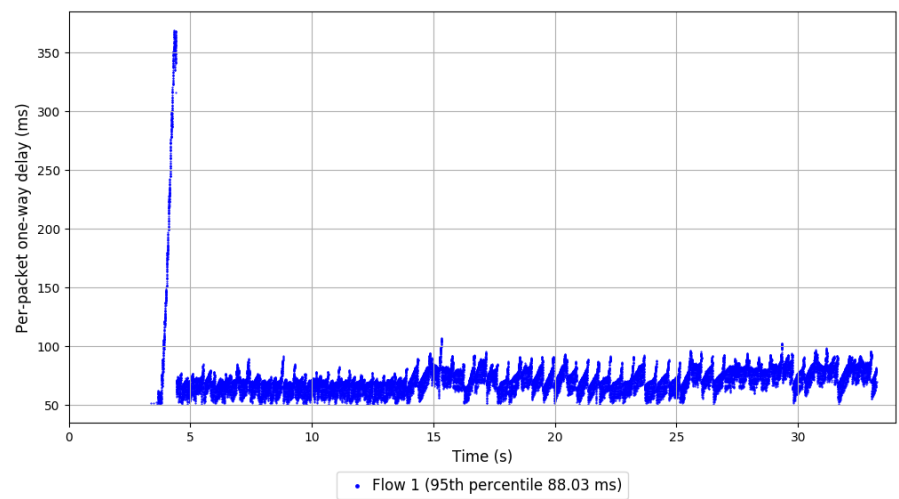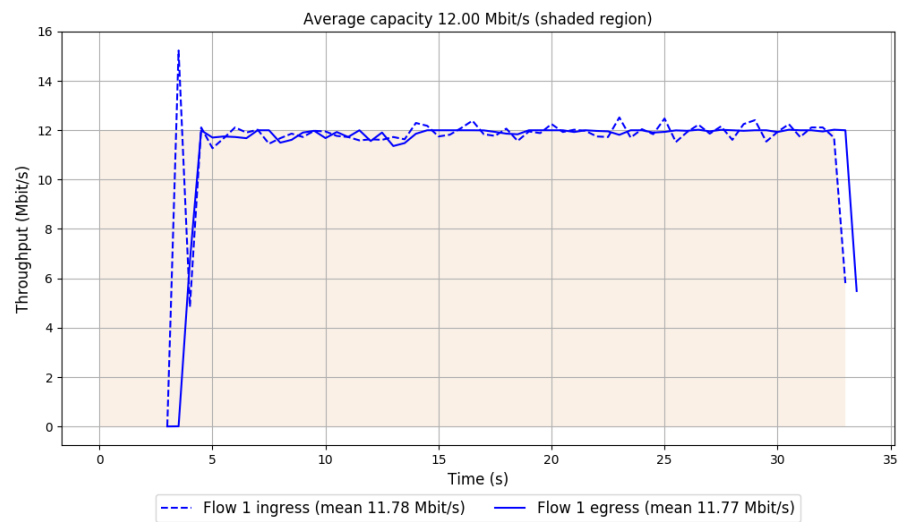
Run 1: Report of FillP — Data Link

Average capacity 12.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 11.78 Mbit/s) ——— Flow 1 egress (mean 11.77 Mbit/s)

• Flow 1 (95th percentile 88.03 ms)

```
Run 1: Statistics of FillP-Sheep

Start at: 2022-03-11 09:33:02
End at: 2022-03-11 09:33:32

# Below is generated by plot.py at 2022-03-11 09:37:41
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.26 Mbit/s (93.9% utilization)
95th percentile per-packet one-way delay: 73.814 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 11.26 Mbit/s
95th percentile per-packet one-way delay: 73.814 ms
Loss rate: 0.24%
```
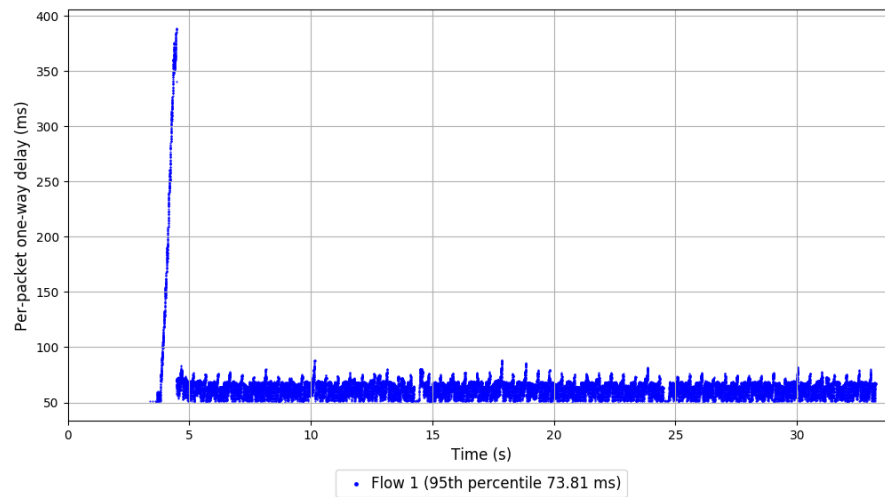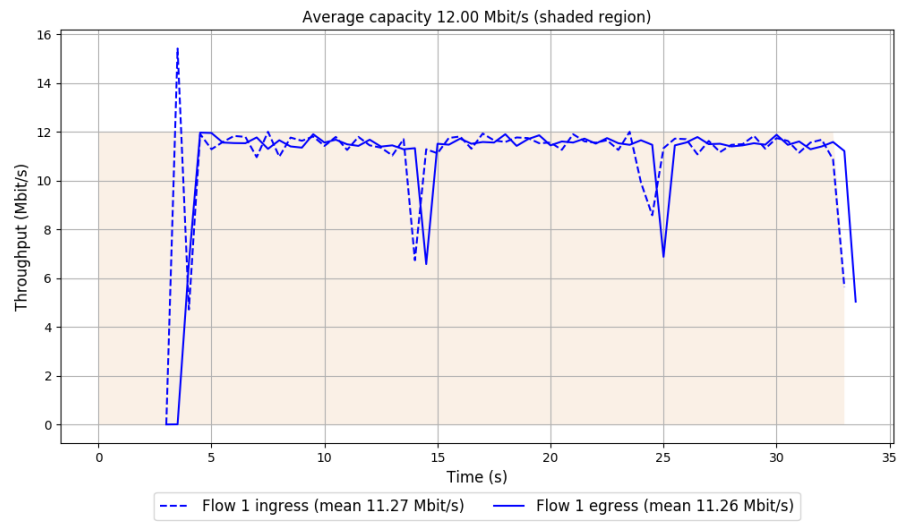
Run 1: Report of FillP-Sheep — Data Link

Average capacity 12.00 Mbit/s (shaded region)

Flow 1 ingress (mean 11.27 Mbit/s) ——— Flow 1 egress (mean 11.26 Mbit/s)

• Flow 1 (95th percentile 73.81 ms)

```
Run 1: Statistics of SCReAM

Start at: 2022-03-11 09:36:31
End at: 2022-03-11 09:37:01

# Below is generated by plot.py at 2022-03-11 09:37:41
# 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: 51.585 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 51.585 ms
Loss rate: 0.13%
```
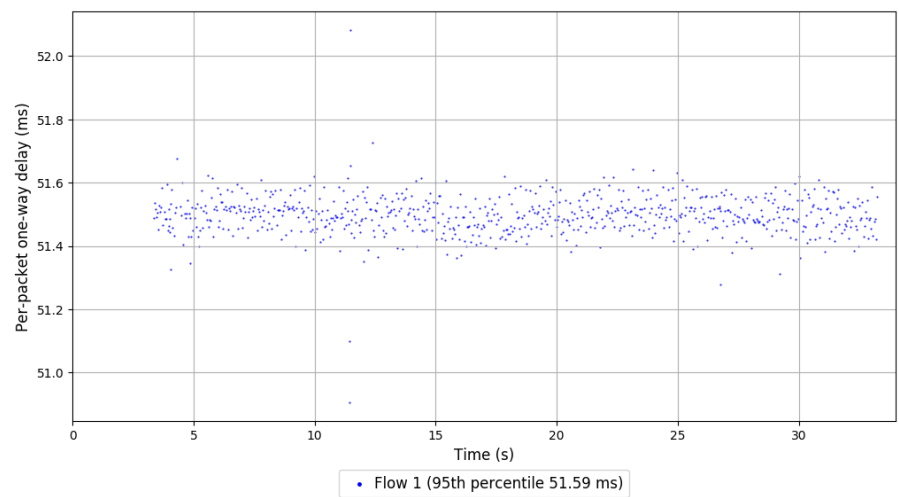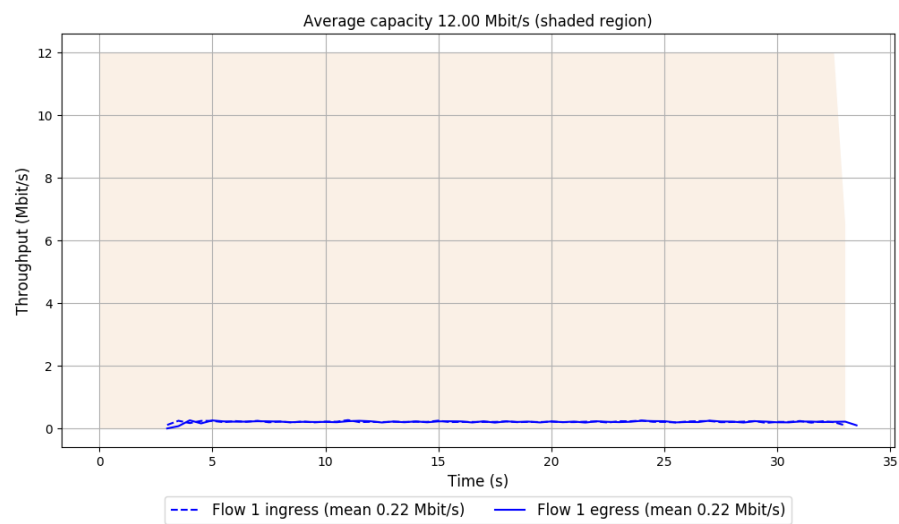
Run 1: Report of SCReAM — Data Link

Average capacity 12.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 0.22 Mbit/s) ——— Flow 1 egress (mean 0.22 Mbit/s)

• Flow 1 (95th percentile 51.59 ms)

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```
Run 1: Statistics of TCP Vegas

Start at: 2022-03-11 09:33:37
End at: 2022-03-11 09:34:07

# Below is generated by plot.py at 2022-03-11 09:37:41
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.85 Mbit/s (98.8% utilization)
95th percentile per-packet one-way delay: 255.441 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 11.85 Mbit/s
95th percentile per-packet one-way delay: 255.441 ms
Loss rate: 0.49%
```
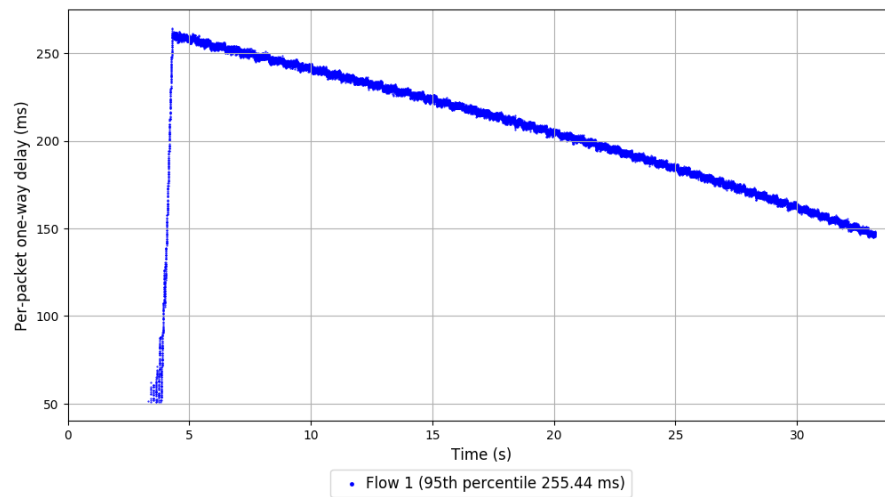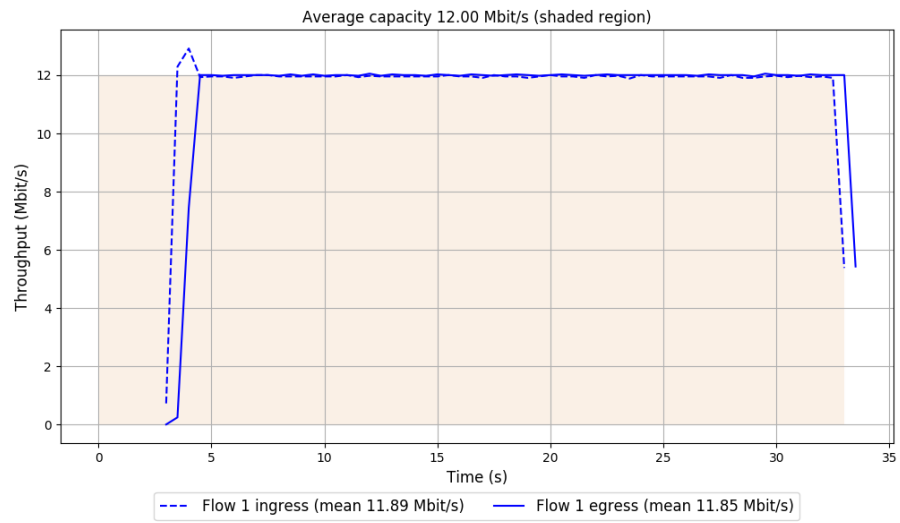
Run 1: Report of TCP Vegas — Data Link

Average capacity 12.00 Mbit/s (shaded region)

```
Run 1: Statistics of PCC-Vivace

Start at: 2022-03-11 09:35:56
End at: 2022-03-11 09:36:26

# Below is generated by plot.py at 2022-03-11 09:37:41
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 10.84 Mbit/s (90.4% utilization)
95th percentile per-packet one-way delay: 84.103 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 10.84 Mbit/s
95th percentile per-packet one-way delay: 84.103 ms
Loss rate: 0.19%
```

Run 1: Report of PCC-Vivace — Data Link

Average capacity 12.00 Mbit/s (shaded region)

Flow 1 ingress (mean 10.85 Mbit/s)   Flow 1 egress (mean 10.84 Mbit/s)

• Flow 1 (95th percentile 84.10 ms)