Pantheon Report

Generated at 2019-10-08 22:10:17 (UTC).
Tested in mahimahi: `mm-delay 30 mm-link 10mbps.trace 10mbps.trace`
Repeated the test of 7 congestion control schemes once.
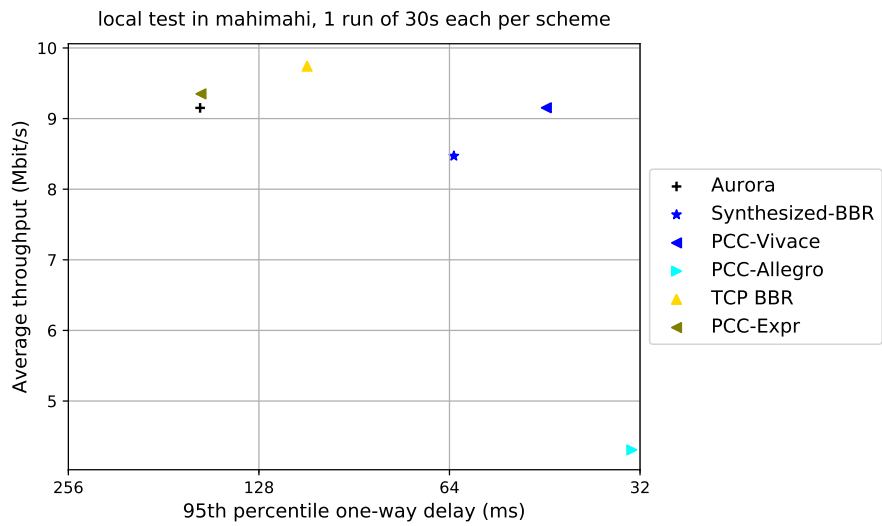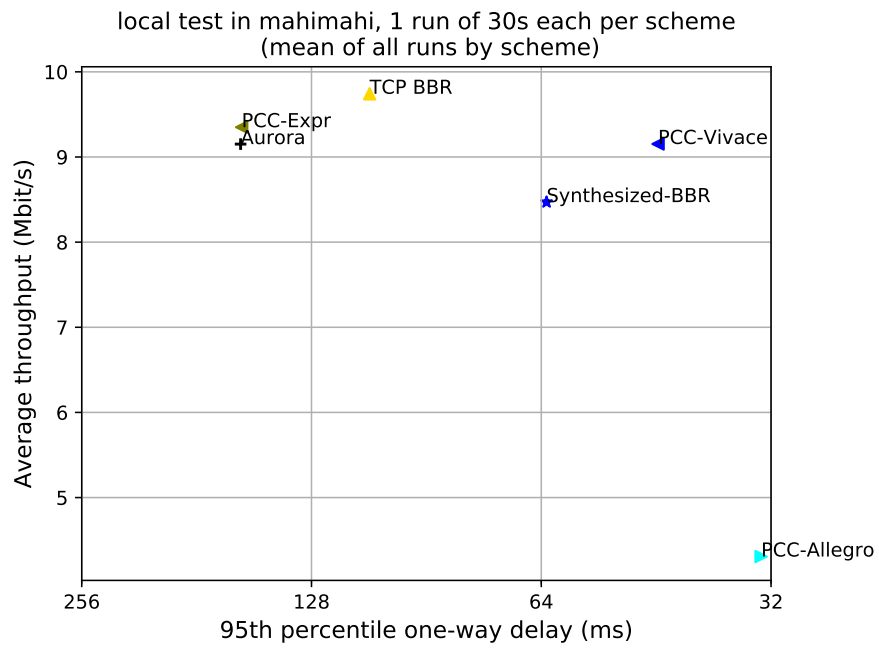Each test lasted for 30 seconds running 1 flow.

```
System info:
Linux 4.15.0-58-generic
net.core.default_qdisc = fq
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 87380 6291456
net.ipv4.tcp_wmem = 4096 16384 4194304

Git summary:
branch: master @ 0f6ddb30690da1c1ac293e70028e11839e5f58f6
third_party/aurora @ f3e943d61015b39960854ba6391797e0c7984d74
third_party/aurora-model @ e292c316c23fb837255c4e142e40590d154bbe95
third_party/eagle-v1 @ c68d985e042be5c30704c0aee48c363861951a95
third_party/eagle-v2 @ c8a1737b3c84d7d49eada5b8785045d272a70120
third_party/eagle-v3 @ 27045f2c9e7b63716dab4980f0a45a660dff3d51
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/synthesizedBBR @ e89367b557705ca6292a3157b3458919ae63d0a1
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
```

```
 M src/verus.hpp
 M tools/plot.py
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

scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
Aurora	1	9.15	158.52	0.11
TCP BBR	1	9.74	107.42	0.34
Eagle-v2	0	N/A	N/A	N/A
PCC-Allegro	1	4.31	32.97	0.14
PCC-Expr	1	9.35	158.03	0.38
Synthesized-BBR	1	8.47	62.99	0.15
PCC-Vivace	1	9.15	45.00	0.11

```
Run 1: Statistics of Aurora

Start at: 2019-10-08 21:57:32
End at: 2019-10-08 21:58:02

# Below is generated by plot.py at 2019-10-08 22:10:14
# Datalink statistics
-- Total of 1 flow:
Average capacity: 10.00 Mbit/s
Average throughput: 9.15 Mbit/s (91.5% utilization)
95th percentile per-packet one-way delay: 158.520 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 9.15 Mbit/s
95th percentile per-packet one-way delay: 158.520 ms
Loss rate: 0.11%
```
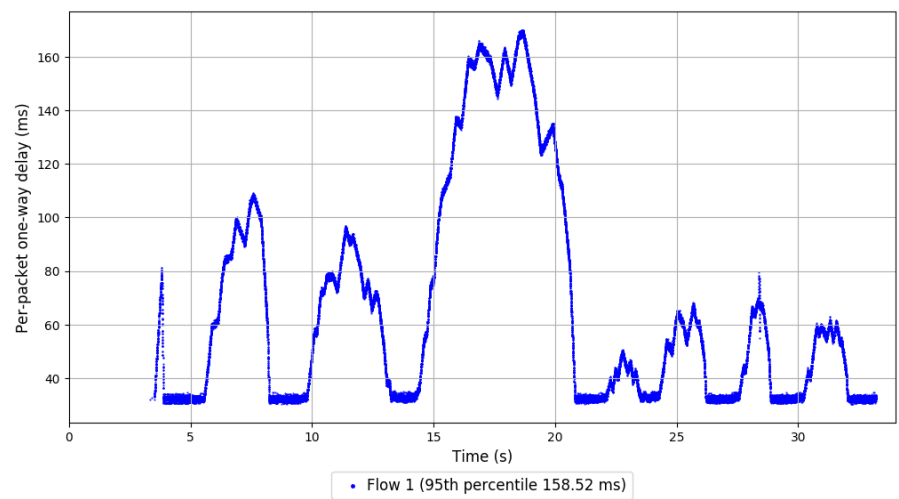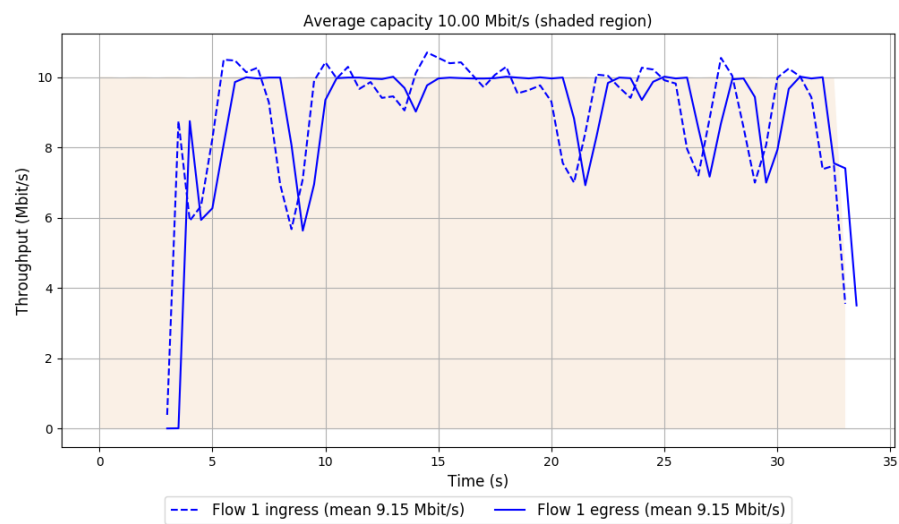
Run 1: Report of Aurora — Data Link

Average capacity 10.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 9.15 Mbit/s) —— Flow 1 egress (mean 9.15 Mbit/s)

• Flow 1 (95th percentile 158.52 ms)

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```
Run 1: Statistics of TCP BBR

Start at: 2019-10-08 21:55:15
End at: 2019-10-08 21:55:45

# Below is generated by plot.py at 2019-10-08 22:10:14
# Datalink statistics
-- Total of 1 flow:
Average capacity: 10.00 Mbit/s
Average throughput: 9.74 Mbit/s (97.4% utilization)
95th percentile per-packet one-way delay: 107.416 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 9.74 Mbit/s
95th percentile per-packet one-way delay: 107.416 ms
Loss rate: 0.34%
```
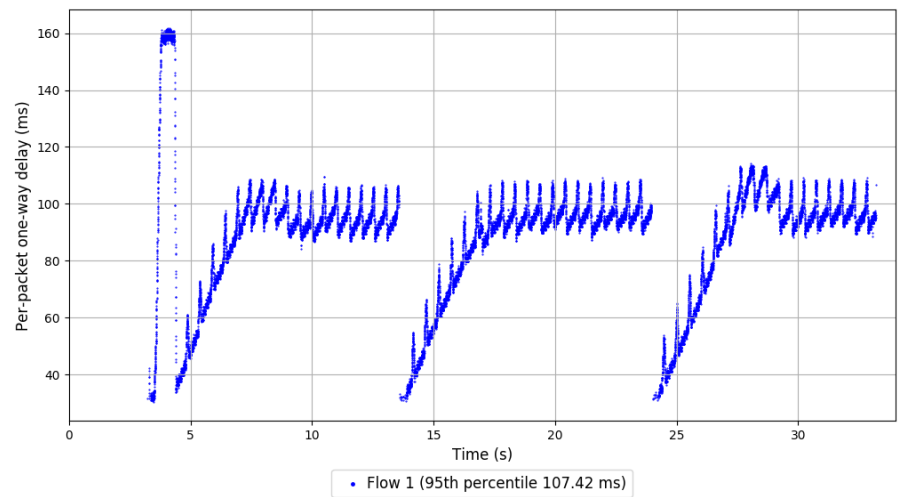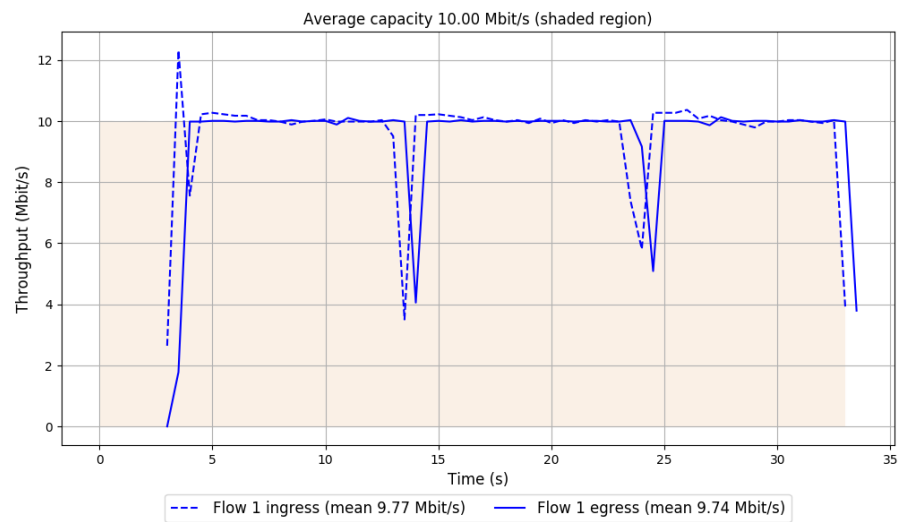
Run 1: Report of TCP BBR — Data Link

Average capacity 10.00 Mbit/s (shaded region)

--- Flow 1 ingress (mean 9.77 Mbit/s) ——— Flow 1 egress (mean 9.74 Mbit/s)

· Flow 1 (95th percentile 107.42 ms)

Run 1: Statistics of Eagle-v2

Start at: 2019-10-08 21:56:58
End at: 2019-10-08 21:57:28

Run 1: Report of Eagle-v2 — Data Link

Figure is missing

Figure is missing

```
Run 1: Statistics of PCC-Allegro

Start at: 2019-10-08 21:56:24
End at: 2019-10-08 21:56:54

# Below is generated by plot.py at 2019-10-08 22:10:14
# Datalink statistics
-- Total of 1 flow:
Average capacity: 10.00 Mbit/s
Average throughput: 4.31 Mbit/s (43.1% utilization)
95th percentile per-packet one-way delay: 32.972 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 4.31 Mbit/s
95th percentile per-packet one-way delay: 32.972 ms
Loss rate: 0.14%
```
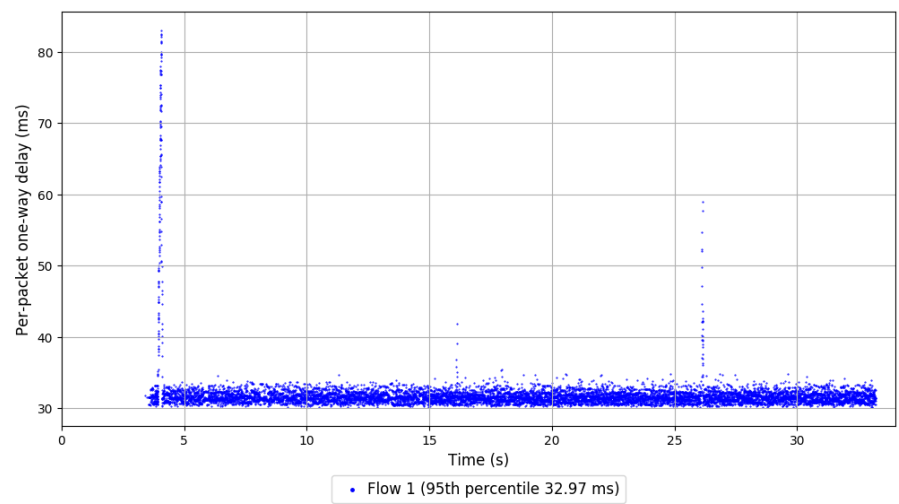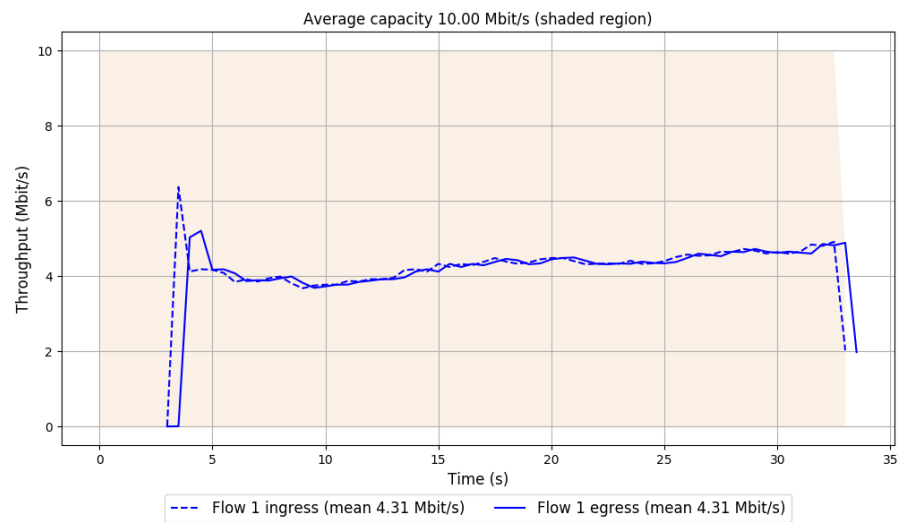
Run 1: Report of PCC-Allegro — Data Link

Average capacity 10.00 Mbit/s (shaded region)

Flow 1 ingress (mean 4.31 Mbit/s) ---- Flow 1 egress (mean 4.31 Mbit/s) ——

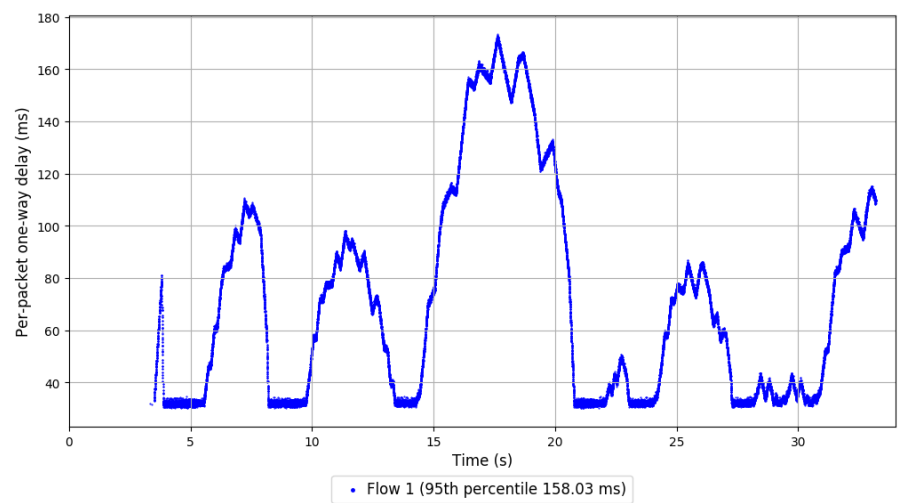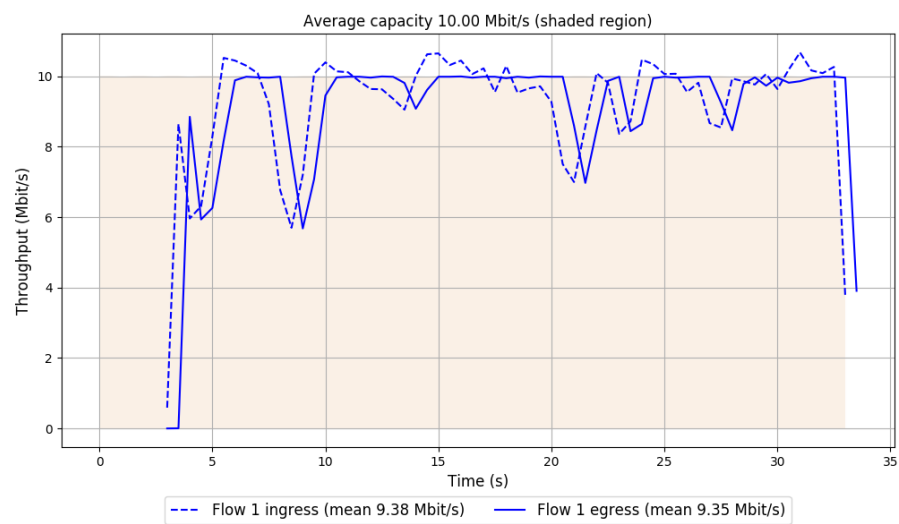

• Flow 1 (95th percentile 32.97 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2019-10-08 21:55:49
End at: 2019-10-08 21:56:19

# Below is generated by plot.py at 2019-10-08 22:10:14
# Datalink statistics
-- Total of 1 flow:
Average capacity: 10.00 Mbit/s
Average throughput: 9.35 Mbit/s (93.5% utilization)
95th percentile per-packet one-way delay: 158.033 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 9.35 Mbit/s
95th percentile per-packet one-way delay: 158.033 ms
Loss rate: 0.38%
```

Run 1: Report of PCC-Expr — Data Link

Average capacity 10.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 9.38 Mbit/s)   —— Flow 1 egress (mean 9.35 Mbit/s)

• Flow 1 (95th percentile 158.03 ms)

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```
Run 1: Statistics of Synthesized-BBR

Start at: 2019-10-08 21:58:40
End at: 2019-10-08 21:59:10

# Below is generated by plot.py at 2019-10-08 22:10:14
# Datalink statistics
-- Total of 1 flow:
Average capacity: 10.00 Mbit/s
Average throughput: 8.47 Mbit/s (84.7% utilization)
95th percentile per-packet one-way delay: 62.989 ms
Loss rate: 0.15%
-- Flow 1:
Average throughput: 8.47 Mbit/s
95th percentile per-packet one-way delay: 62.989 ms
Loss rate: 0.15%
```
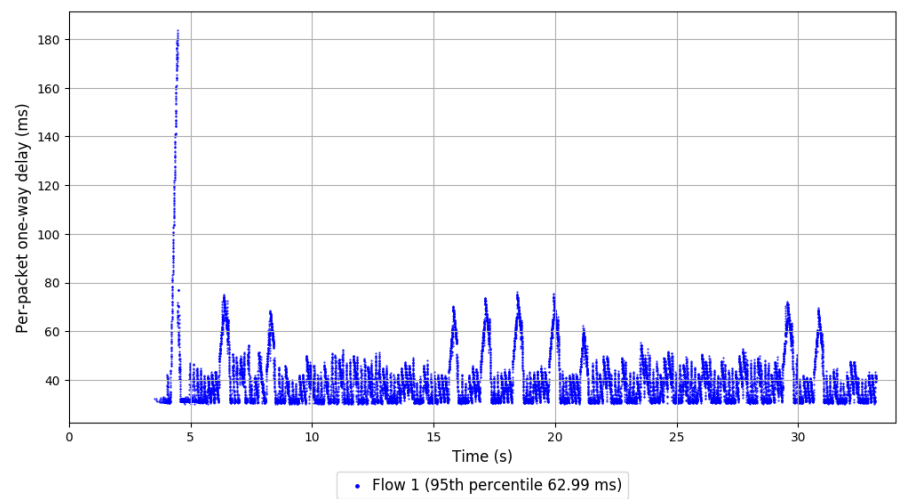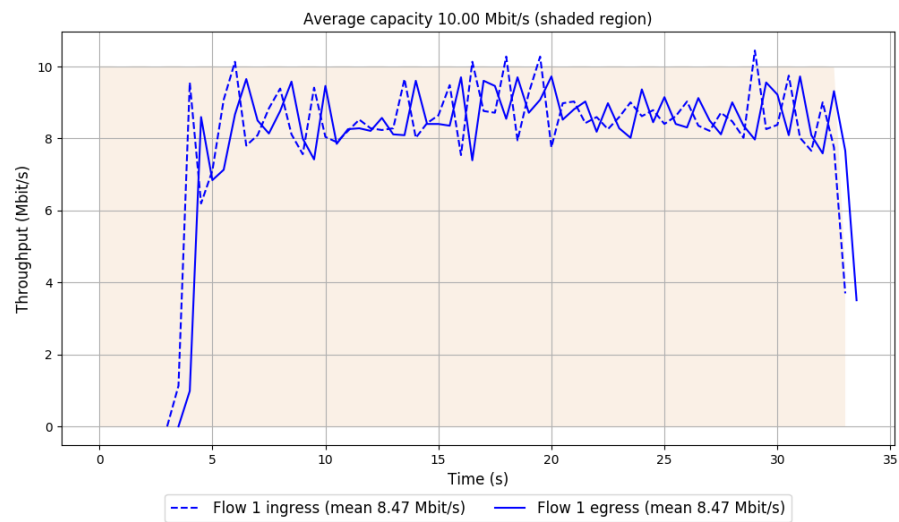
Run 1: Report of Synthesized-BBR — Data Link

Average capacity 10.00 Mbit/s (shaded region)

--- Flow 1 ingress (mean 8.47 Mbit/s) —— Flow 1 egress (mean 8.47 Mbit/s)

• Flow 1 (95th percentile 62.99 ms)

```
Run 1: Statistics of PCC-Vivace

Start at: 2019-10-08 21:58:06
End at: 2019-10-08 21:58:36

# Below is generated by plot.py at 2019-10-08 22:10:15
# Datalink statistics
-- Total of 1 flow:
Average capacity: 10.00 Mbit/s
Average throughput: 9.15 Mbit/s (91.5% utilization)
95th percentile per-packet one-way delay: 44.999 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 9.15 Mbit/s
95th percentile per-packet one-way delay: 44.999 ms
Loss rate: 0.11%
```

Run 1: Report of PCC-Vivace — Data Link

Average capacity 10.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 9.15 Mbit/s) —— Flow 1 egress (mean 9.15 Mbit/s)

• Flow 1 (95th percentile 45.00 ms)