# Pantheon Report

Generated at 2019-10-13 19:38:32 (UTC).
Tested in mahimahi: `mm-delay 50 mm-link 50mbps.trace 50mbps.trace`
Repeated the test of 3 congestion control schemes once.
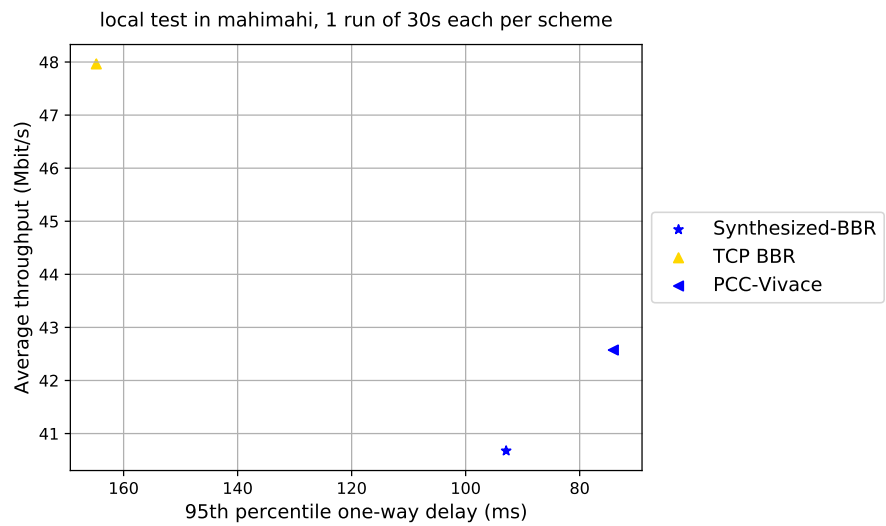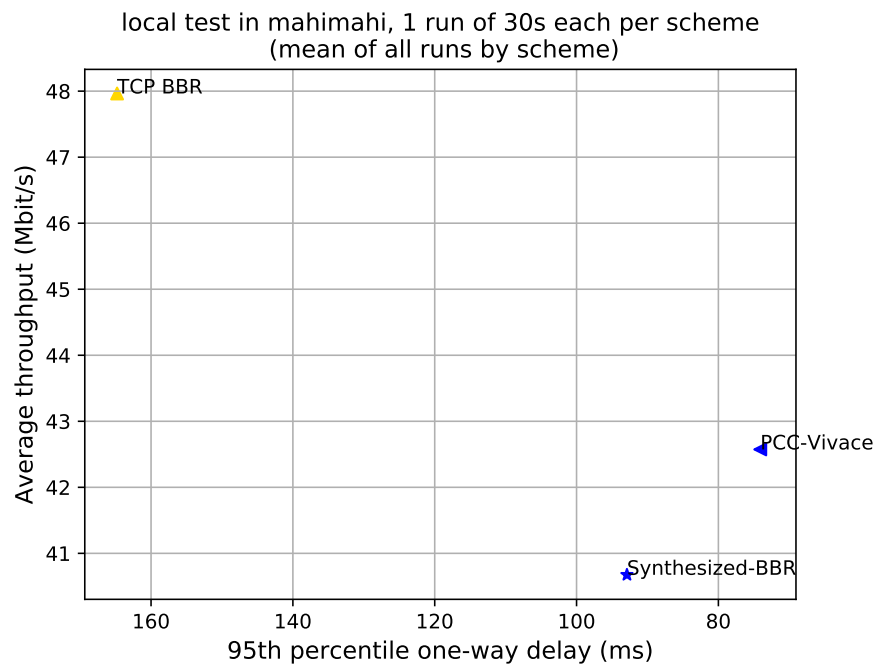Each test lasted for 30 seconds running 1 flow.

```
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 @ 524e5475bff4cf6d4eb08ee41ad5b6a04f0870b3
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 @ 27045f2c9e7b63716dab4980f0a45a660dff3d51
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 |
|---|---|---|---|---|
| TCP BBR | 1 | 47.96 | 164.79 | 0.47 |
| Synthesized-BBR | 1 | 40.67 | 92.89 | 0.16 |
| PCC-Vivace | 1 | 42.57 | 74.10 | 0.21 |

```
Run 1: Statistics of TCP BBR

Start at: 2019-10-13 19:36:17
End at: 2019-10-13 19:36:47


# Below is generated by plot.py at 2019-10-13 19:38:31
# Datalink statistics
-- Total of 1 flow:
Average capacity: 50.00 Mbit/s
Average throughput: 47.96 Mbit/s (95.9% utilization)
95th percentile per-packet one-way delay: 164.787 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 47.96 Mbit/s
95th percentile per-packet one-way delay: 164.787 ms
Loss rate: 0.47%
```
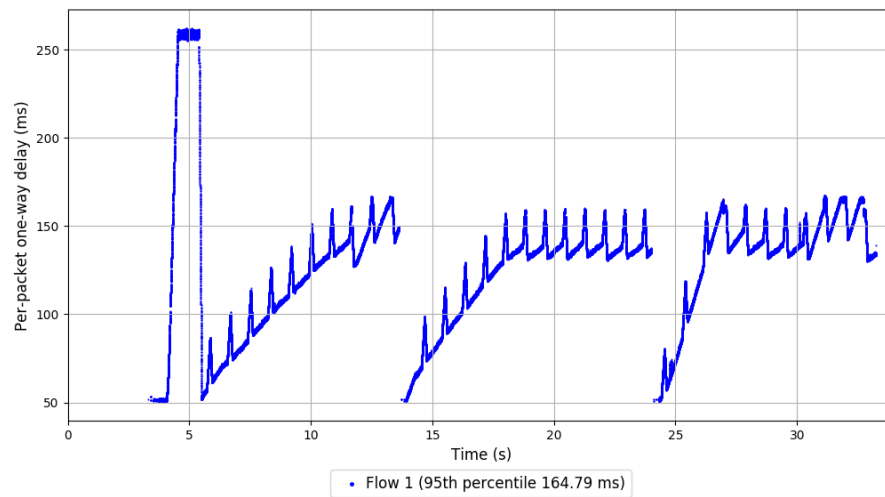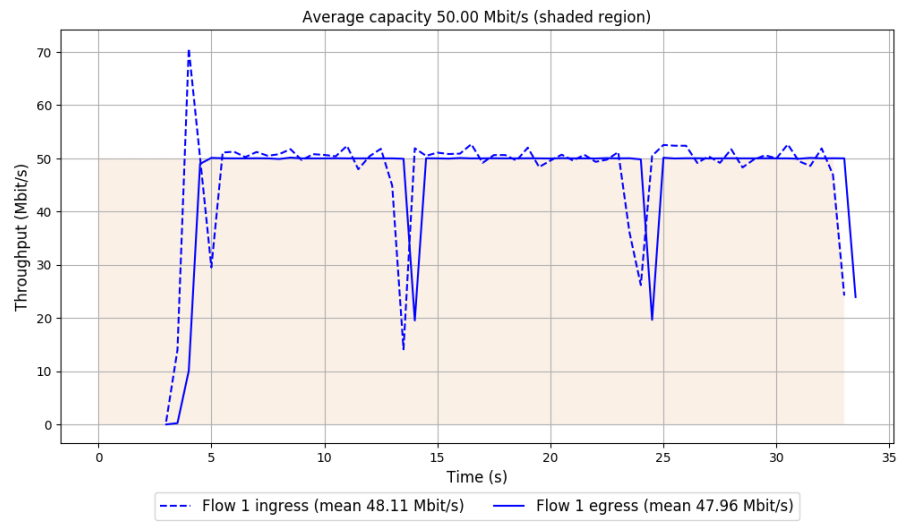
# Run 1: Report of TCP BBR — Data Link



Average capacity 50.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 48.11 Mbit/s) —— Flow 1 egress (mean 47.96 Mbit/s)



• Flow 1 (95th percentile 164.79 ms)

6

```
Run 1: Statistics of Synthesized-BBR

Start at: 2019-10-13 19:36:53
End at: 2019-10-13 19:37:23

# Below is generated by plot.py at 2019-10-13 19:38:31
# Datalink statistics
-- Total of 1 flow:
Average capacity: 50.00 Mbit/s
Average throughput: 40.67 Mbit/s (81.3% utilization)
95th percentile per-packet one-way delay: 92.895 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 40.67 Mbit/s
95th percentile per-packet one-way delay: 92.895 ms
Loss rate: 0.16%
```
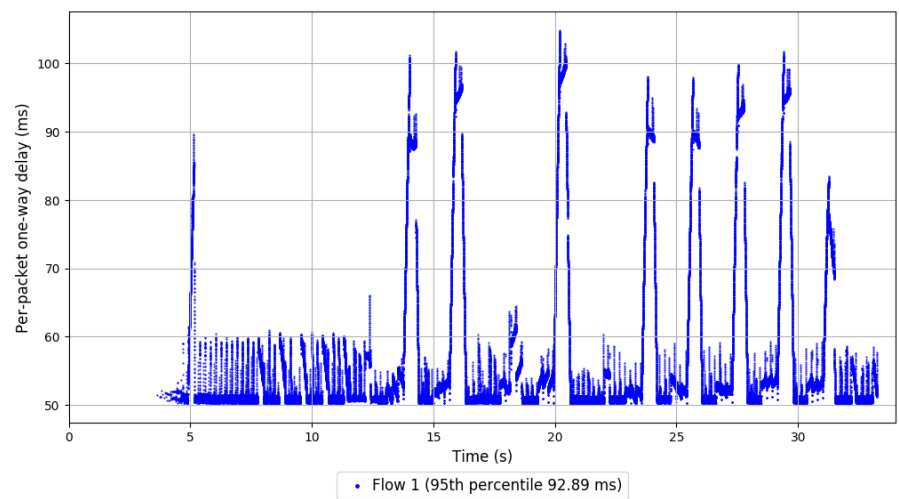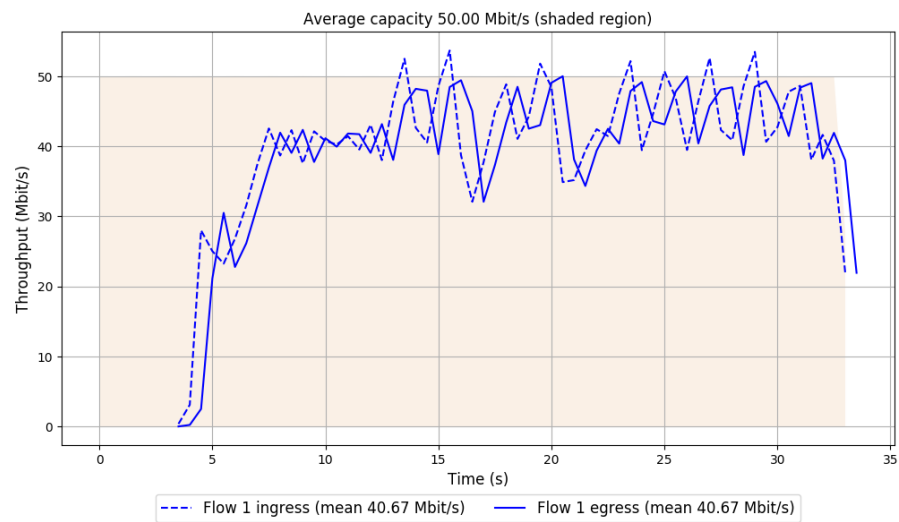
# Run 1: Report of Synthesized-BBR — Data Link

Average capacity 50.00 Mbit/s (shaded region)



Flow 1 ingress (mean 40.67 Mbit/s)    Flow 1 egress (mean 40.67 Mbit/s)



Flow 1 (95th percentile 92.89 ms)

8

```
Run 1: Statistics of PCC-Vivace

Start at: 2019-10-13 19:37:30
End at: 2019-10-13 19:38:00

# Below is generated by plot.py at 2019-10-13 19:38:31
# Datalink statistics
-- Total of 1 flow:
Average capacity: 50.00 Mbit/s
Average throughput: 42.57 Mbit/s (85.1% utilization)
95th percentile per-packet one-way delay: 74.097 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 42.57 Mbit/s
95th percentile per-packet one-way delay: 74.097 ms
Loss rate: 0.21%
```

Run 1: Report of PCC-Vivace — Data Link

Average capacity 50.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 42.57 Mbit/s) —— Flow 1 egress (mean 42.57 Mbit/s)

• Flow 1 (95th percentile 74.10 ms)