Pantheon Report

Generated at 2025-04-18 02:15:03 (UTC).
Tested in mahimahi: `mm-delay 100 mm-link 1mbps.trace 1mbps.trace`
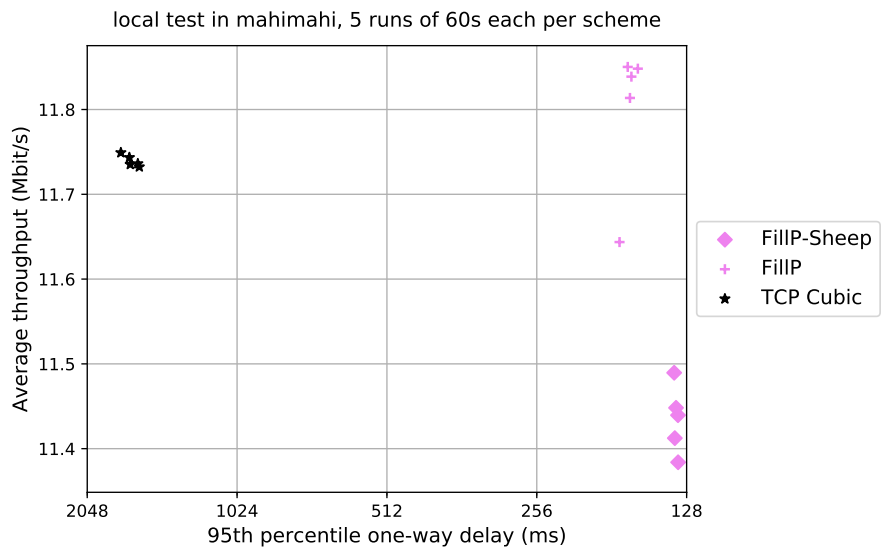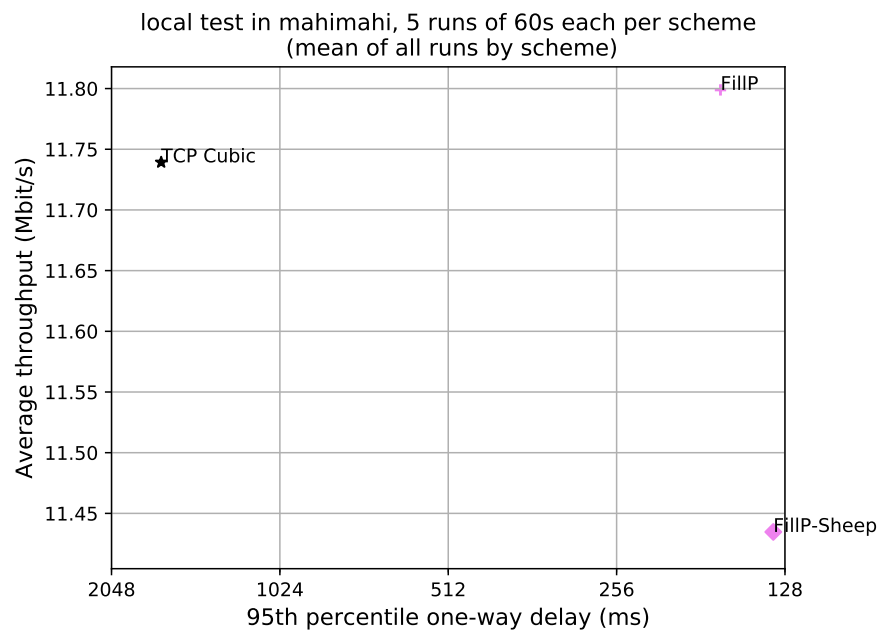Repeated the test of 3 congestion control schemes 5 times.
Each test lasted for 60 seconds running 1 flow.

```
System info:
Linux 5.4.0-150-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 @ 23e738ce5acae1d36e321886cd613b0b9401ac11
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, 5 runs of 60s each per scheme
(mean of all runs by scheme)

local test in mahimahi, 5 runs of 60s 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 Cubic	5	11.74	1669.32	1.70
FillP	5	11.80	166.93	0.26
FillP-Sheep	5	11.43	134.31	0.20

```
Run 1: Statistics of TCP Cubic

Start at: 2025-04-18 01:44:49
End at: 2025-04-18 01:45:49

# Below is generated by plot.py at 2025-04-18 02:14:41
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.73 Mbit/s (97.8% utilization)
95th percentile per-packet one-way delay: 1609.596 ms
Loss rate: 1.36%
-- Flow 1:
Average throughput: 11.73 Mbit/s
95th percentile per-packet one-way delay: 1609.596 ms
Loss rate: 1.36%
```
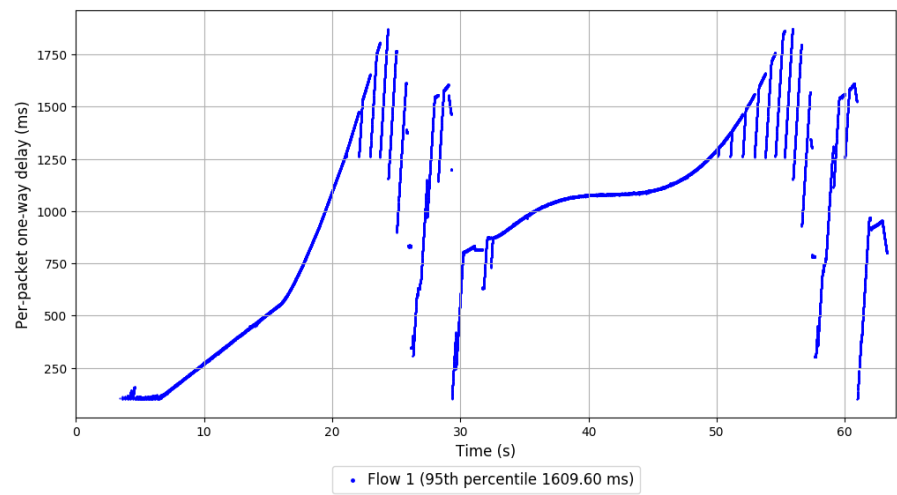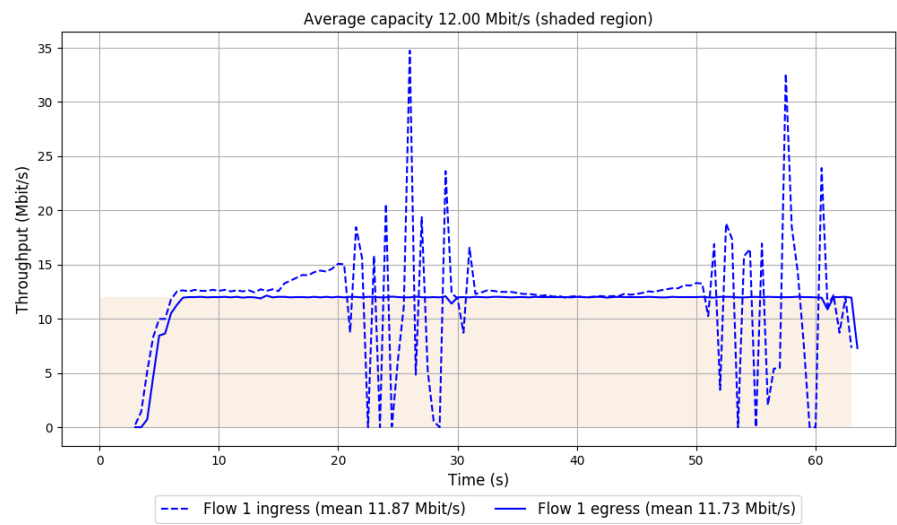
Run 1: Report of TCP Cubic — Data Link

Average capacity 12.00 Mbit/s (shaded region)

Flow 1 ingress (mean 11.87 Mbit/s) Flow 1 egress (mean 11.73 Mbit/s)

Flow 1 (95th percentile 1609.60 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2025-04-18 01:48:02
End at: 2025-04-18 01:49:02

# Below is generated by plot.py at 2025-04-18 02:14:42
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.74 Mbit/s (97.8% utilization)
95th percentile per-packet one-way delay: 1678.444 ms
Loss rate: 1.31%
-- Flow 1:
Average throughput: 11.74 Mbit/s
95th percentile per-packet one-way delay: 1678.444 ms
Loss rate: 1.31%
```
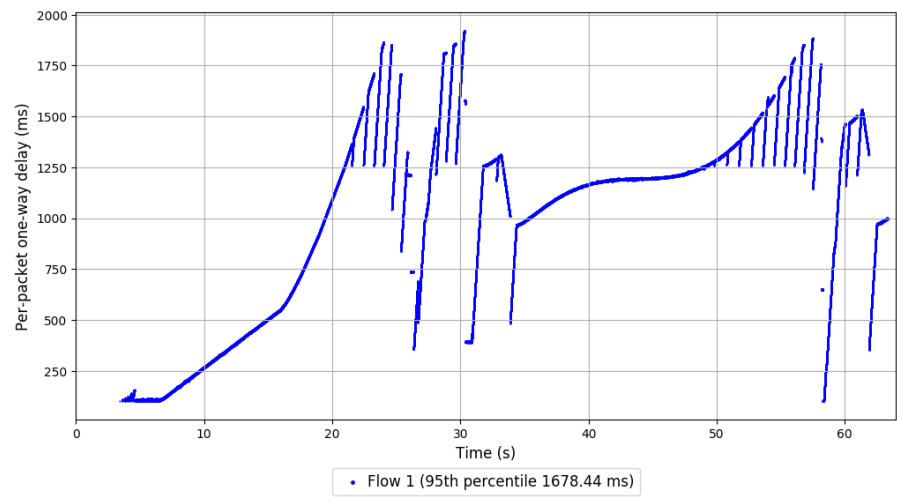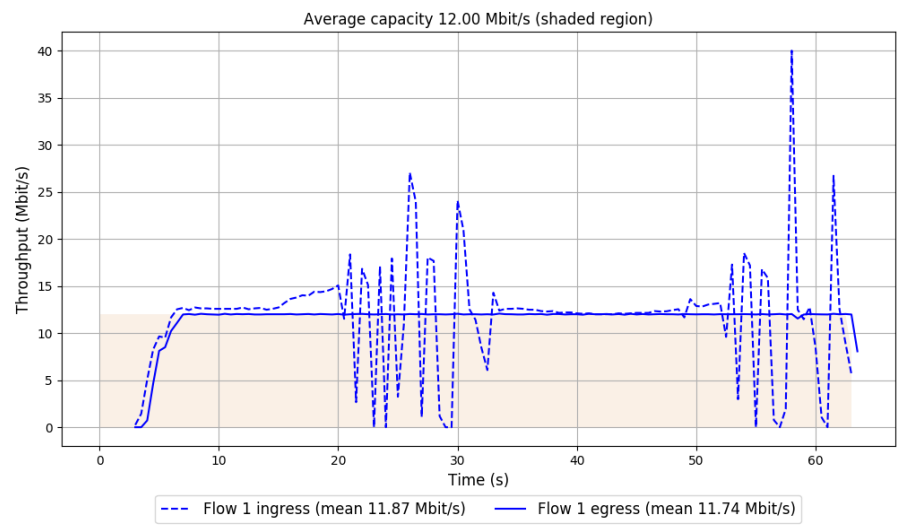
Run 2: Report of TCP Cubic — Data Link

Average capacity 12.00 Mbit/s (shaded region)

Flow 1 ingress (mean 11.87 Mbit/s)   Flow 1 egress (mean 11.74 Mbit/s)

Flow 1 (95th percentile 1678.44 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2025-04-18 01:51:15
End at: 2025-04-18 01:52:15

# Below is generated by plot.py at 2025-04-18 02:14:42
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.74 Mbit/s (97.8% utilization)
95th percentile per-packet one-way delay: 1620.616 ms
Loss rate: 2.06%
-- Flow 1:
Average throughput: 11.74 Mbit/s
95th percentile per-packet one-way delay: 1620.616 ms
Loss rate: 2.06%
```
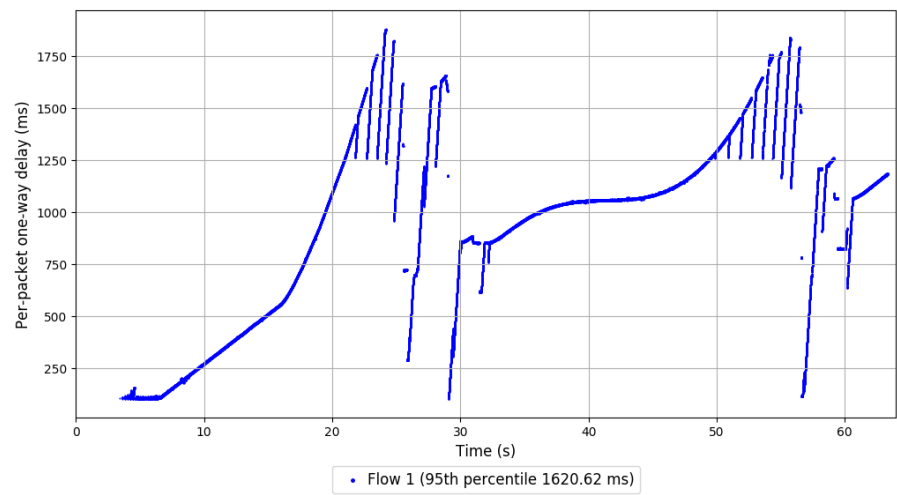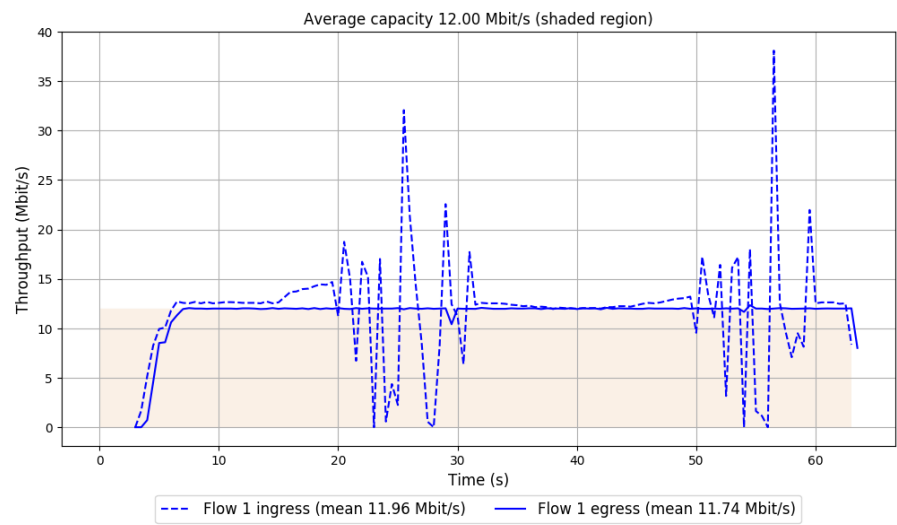
Run 3: Report of TCP Cubic — Data Link

Average capacity 12.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 11.96 Mbit/s)   —— Flow 1 egress (mean 11.74 Mbit/s)

• Flow 1 (95th percentile 1620.62 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2025-04-18 01:54:27
End at: 2025-04-18 01:55:28

# Below is generated by plot.py at 2025-04-18 02:14:42
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.74 Mbit/s (97.9% utilization)
95th percentile per-packet one-way delay: 1685.048 ms
Loss rate: 1.95%
-- Flow 1:
Average throughput: 11.74 Mbit/s
95th percentile per-packet one-way delay: 1685.048 ms
Loss rate: 1.95%
```
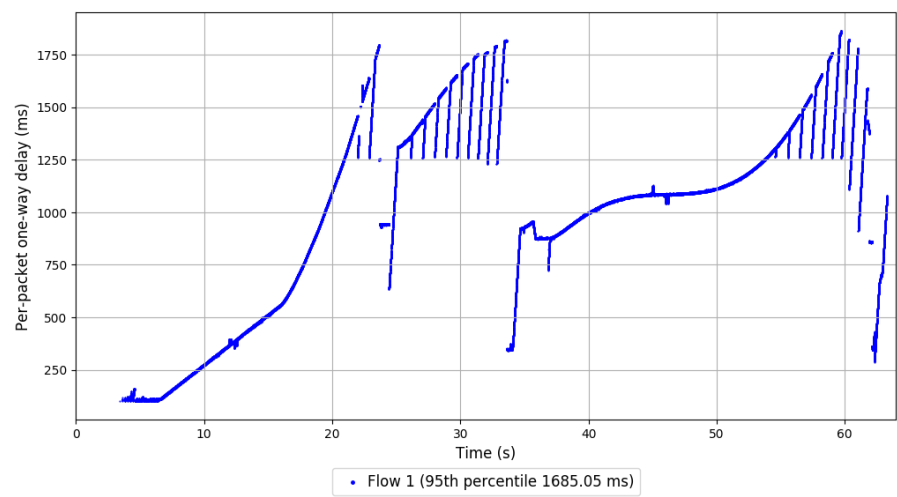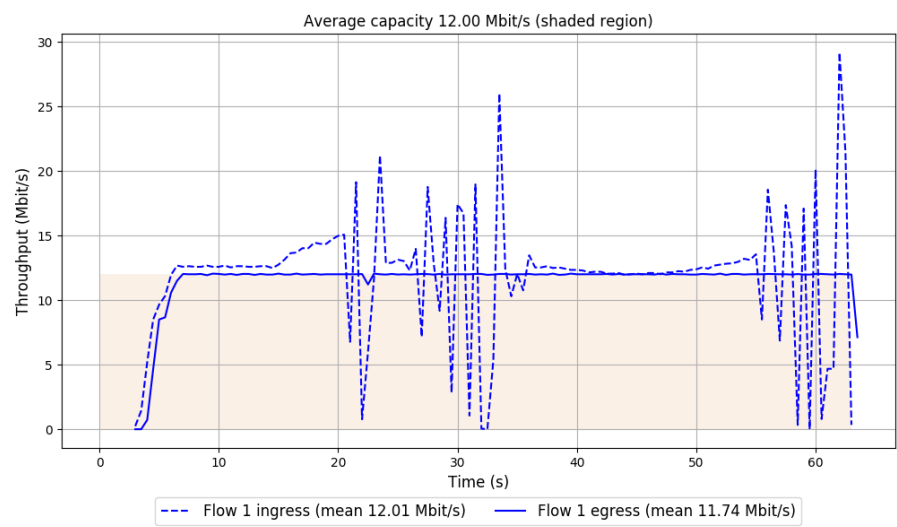
Run 4: Report of TCP Cubic — Data Link

Average capacity 12.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 12.01 Mbit/s) —— Flow 1 egress (mean 11.74 Mbit/s)

• Flow 1 (95th percentile 1685.05 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2025-04-18 01:57:40
End at: 2025-04-18 01:58:41

# Below is generated by plot.py at 2025-04-18 02:14:47
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.75 Mbit/s (97.9% utilization)
95th percentile per-packet one-way delay: 1752.889 ms
Loss rate: 1.82%
-- Flow 1:
Average throughput: 11.75 Mbit/s
95th percentile per-packet one-way delay: 1752.889 ms
Loss rate: 1.82%
```
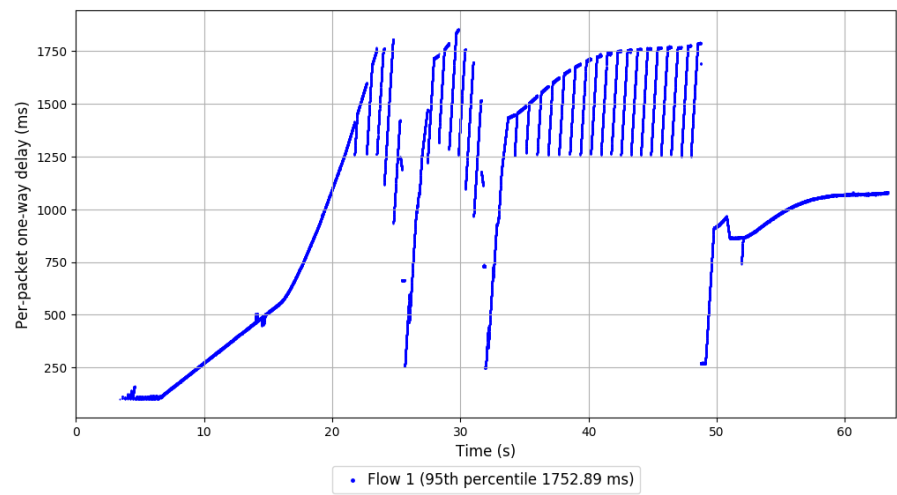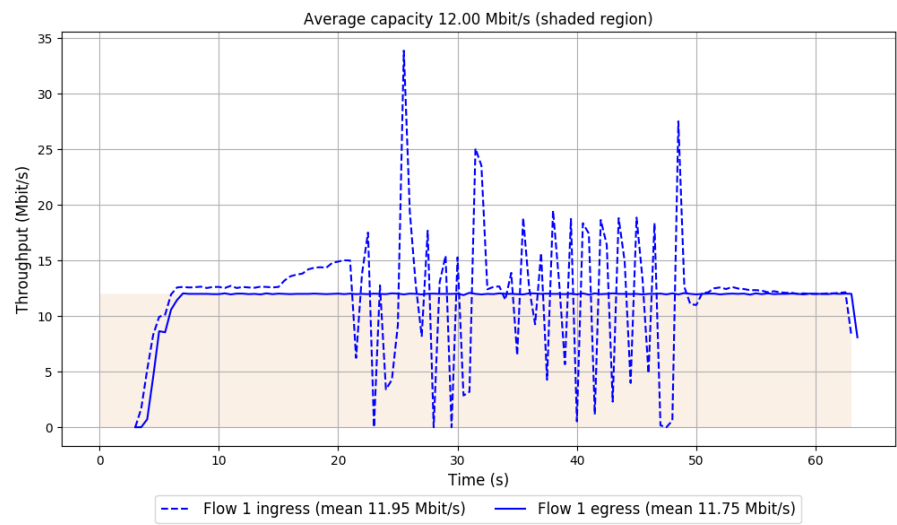
Run 5: Report of TCP Cubic — Data Link

Average capacity 12.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 11.95 Mbit/s) ——— Flow 1 egress (mean 11.75 Mbit/s)

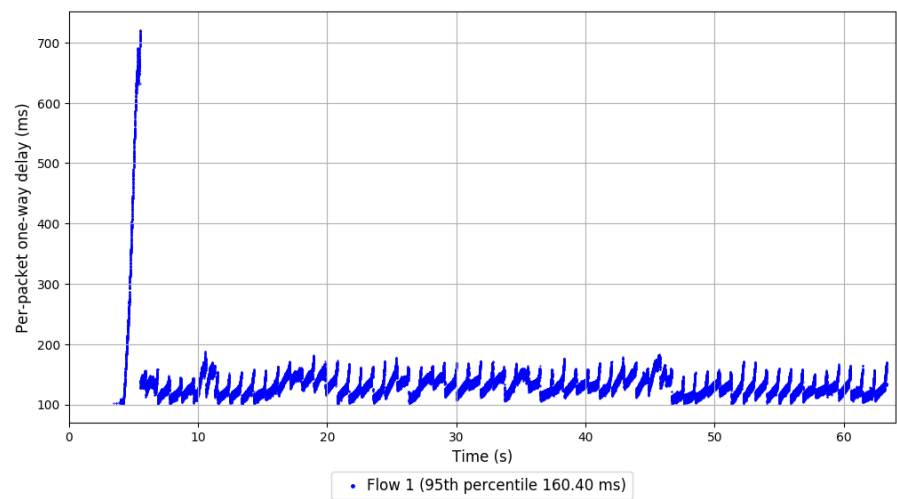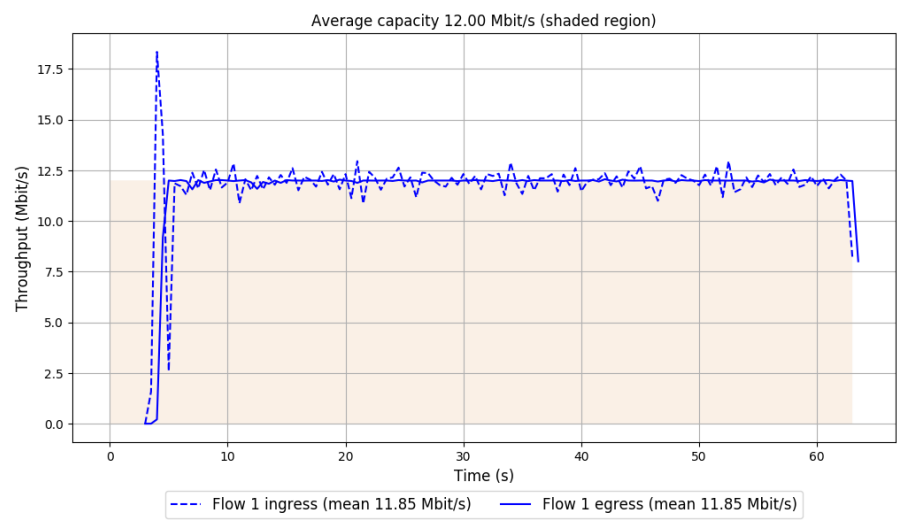• Flow 1 (95th percentile 1752.89 ms)

```
Run 1: Statistics of FillP

Start at: 2025-04-18 01:45:53
End at: 2025-04-18 01:46:53

# Below is generated by plot.py at 2025-04-18 02:14:49
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.85 Mbit/s (98.7% utilization)
95th percentile per-packet one-way delay: 160.401 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 11.85 Mbit/s
95th percentile per-packet one-way delay: 160.401 ms
Loss rate: 0.23%
```

Run 1: Report of FillP — Data Link

Average capacity 12.00 Mbit/s (shaded region)

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

• Flow 1 (95th percentile 160.40 ms)

```
Run 2: Statistics of FillP

Start at: 2025-04-18 01:49:06
End at: 2025-04-18 01:50:06

# Below is generated by plot.py at 2025-04-18 02:14:50
# 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: 168.080 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 11.85 Mbit/s
95th percentile per-packet one-way delay: 168.080 ms
Loss rate: 0.24%
```
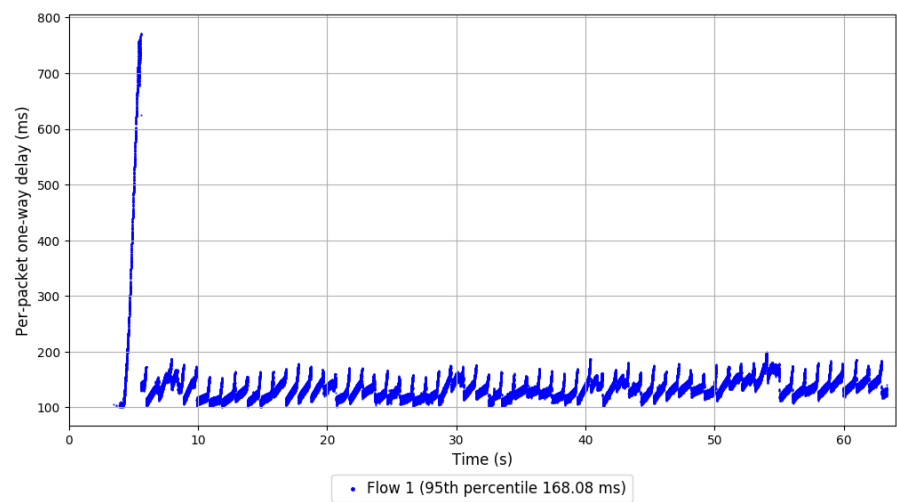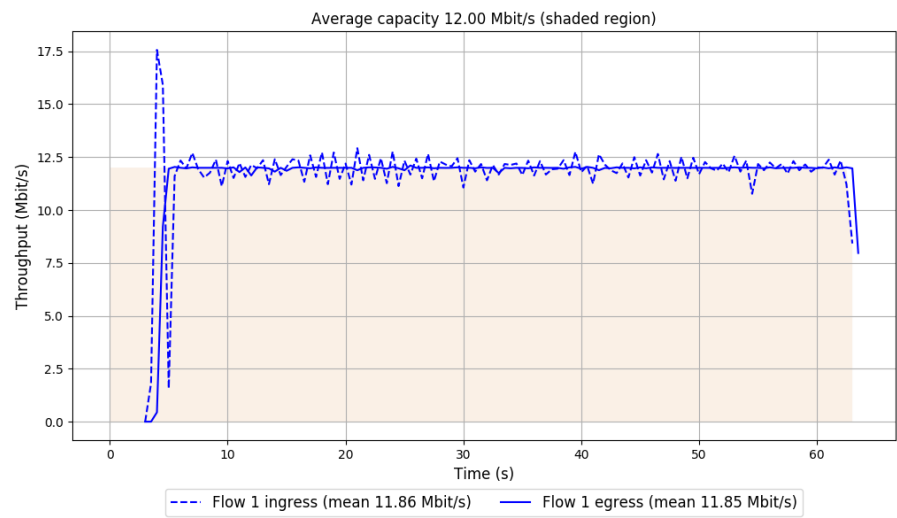
Run 2: Report of FillP — Data Link

Average capacity 12.00 Mbit/s (shaded region)

--- Flow 1 ingress (mean 11.86 Mbit/s) —— Flow 1 egress (mean 11.85 Mbit/s)

• Flow 1 (95th percentile 168.08 ms)

```
Run 3: Statistics of FillP

Start at: 2025-04-18 01:52:19
End at: 2025-04-18 01:53:19


# Below is generated by plot.py at 2025-04-18 02:14:50
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.81 Mbit/s (98.4% utilization)
95th percentile per-packet one-way delay: 166.359 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 11.81 Mbit/s
95th percentile per-packet one-way delay: 166.359 ms
Loss rate: 0.26%
```
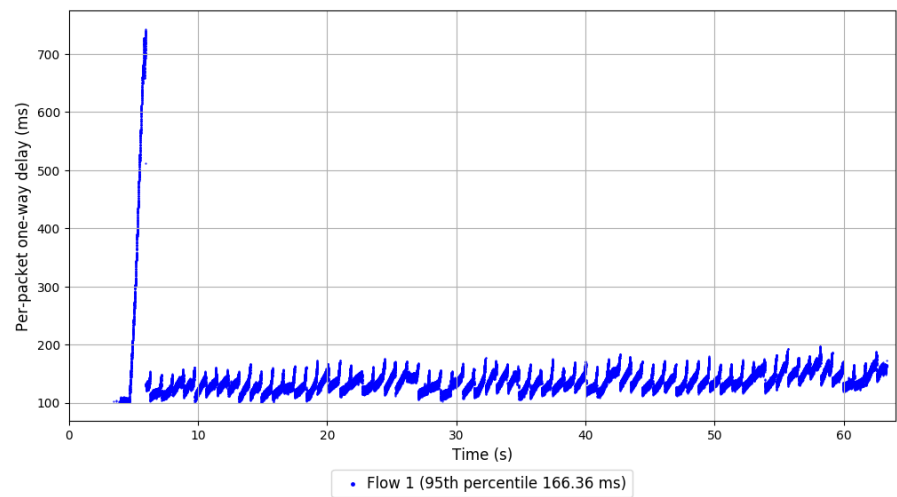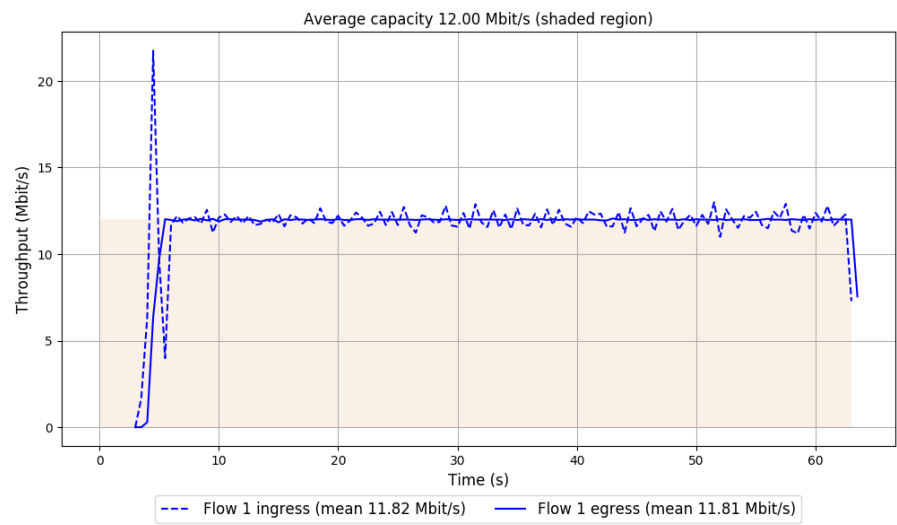
Run 3: Report of FillP — Data Link

Average capacity 12.00 Mbit/s (shaded region)

Flow 1 ingress (mean 11.82 Mbit/s) —— Flow 1 egress (mean 11.81 Mbit/s)

Flow 1 (95th percentile 166.36 ms)

```
Run 4: Statistics of FillP

Start at: 2025-04-18 01:55:32
End at: 2025-04-18 01:56:32

# Below is generated by plot.py at 2025-04-18 02:14:55
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.84 Mbit/s (98.7% utilization)
95th percentile per-packet one-way delay: 165.254 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 165.254 ms
Loss rate: 0.26%
```
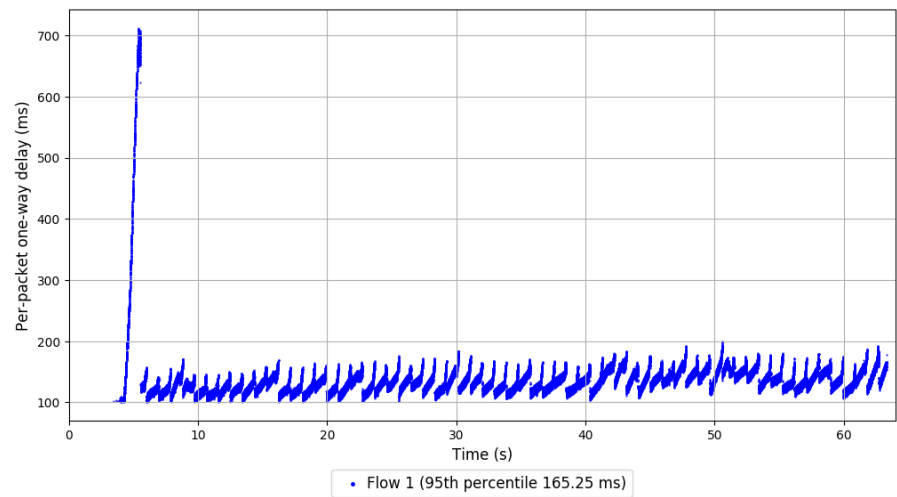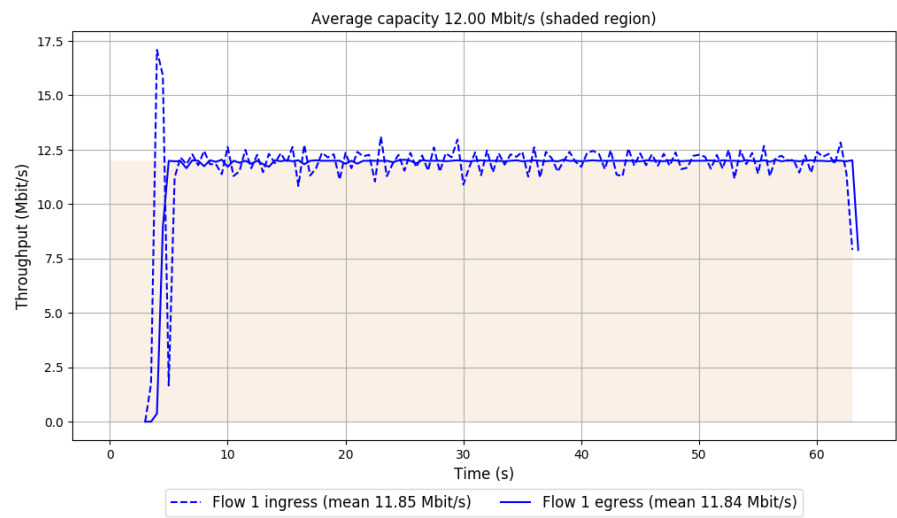
Run 4: Report of FillP — Data Link

Average capacity 12.00 Mbit/s (shaded region)

Flow 1 ingress (mean 11.85 Mbit/s) — Flow 1 egress (mean 11.84 Mbit/s)

Flow 1 (95th percentile 165.25 ms)

```
Run 5: Statistics of FillP

Start at: 2025-04-18 01:58:45
End at: 2025-04-18 01:59:45

# Below is generated by plot.py at 2025-04-18 02:14:57
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.64 Mbit/s (97.0% utilization)
95th percentile per-packet one-way delay: 174.576 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 11.64 Mbit/s
95th percentile per-packet one-way delay: 174.576 ms
Loss rate: 0.29%
```
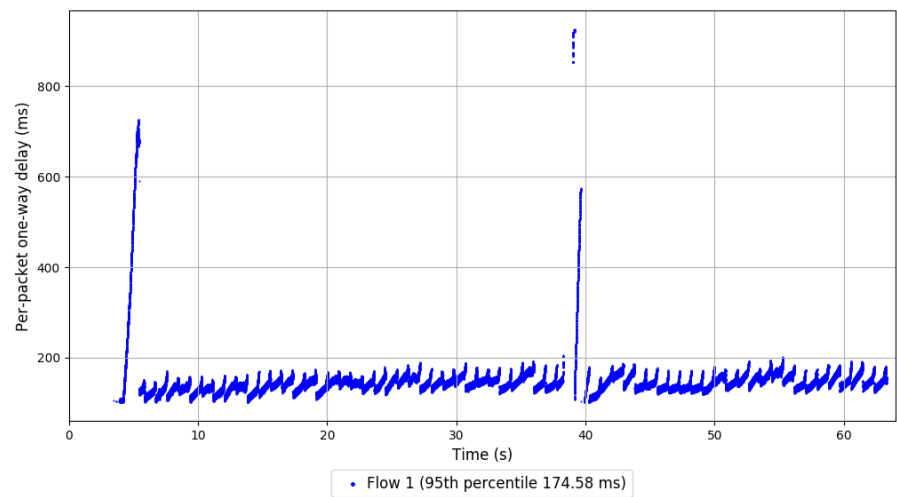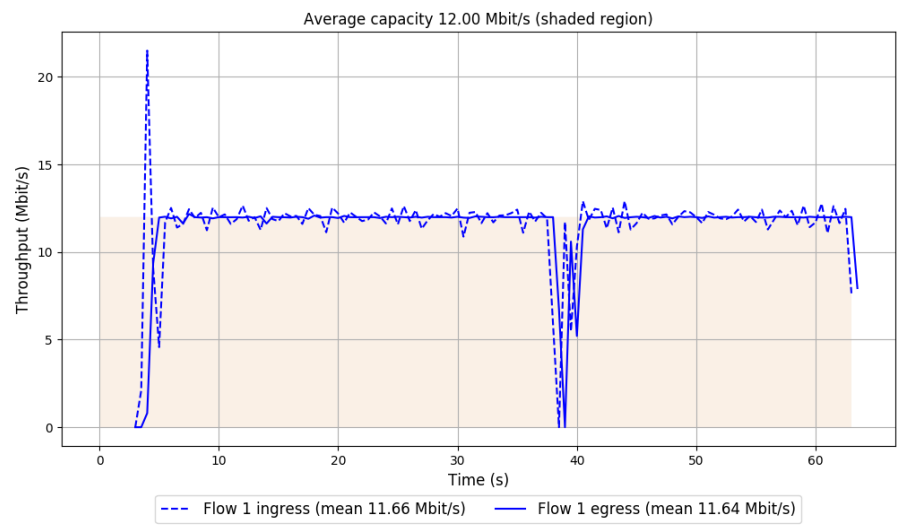
Run 5: Report of FillP — Data Link

Average capacity 12.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 11.66 Mbit/s) —— Flow 1 egress (mean 11.64 Mbit/s)

• Flow 1 (95th percentile 174.58 ms)

```
Run 1: Statistics of FillP-Sheep

Start at: 2025-04-18 01:46:57
End at: 2025-04-18 01:47:57

# Below is generated by plot.py at 2025-04-18 02:14:58
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.41 Mbit/s (95.1% utilization)
95th percentile per-packet one-way delay: 135.185 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 11.41 Mbit/s
95th percentile per-packet one-way delay: 135.185 ms
Loss rate: 0.22%
```
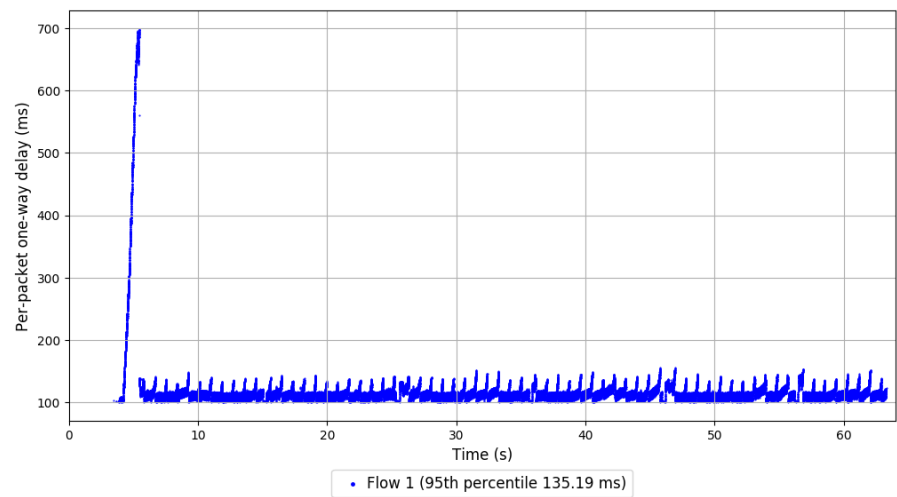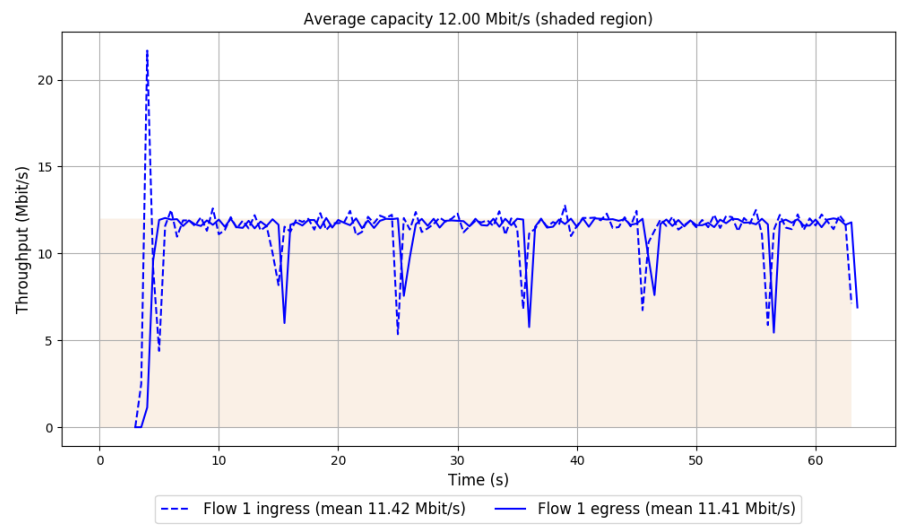
Run 1: Report of FillP-Sheep — Data Link

Average capacity 12.00 Mbit/s (shaded region)

Flow 1 ingress (mean 11.42 Mbit/s)   Flow 1 egress (mean 11.41 Mbit/s)

Flow 1 (95th percentile 135.19 ms)

```
Run 2: Statistics of FillP-Sheep

Start at: 2025-04-18 01:50:10
End at: 2025-04-18 01:51:10

# Below is generated by plot.py at 2025-04-18 02:14:58
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.49 Mbit/s (95.7% utilization)
95th percentile per-packet one-way delay: 135.590 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 11.49 Mbit/s
95th percentile per-packet one-way delay: 135.590 ms
Loss rate: 0.20%
```
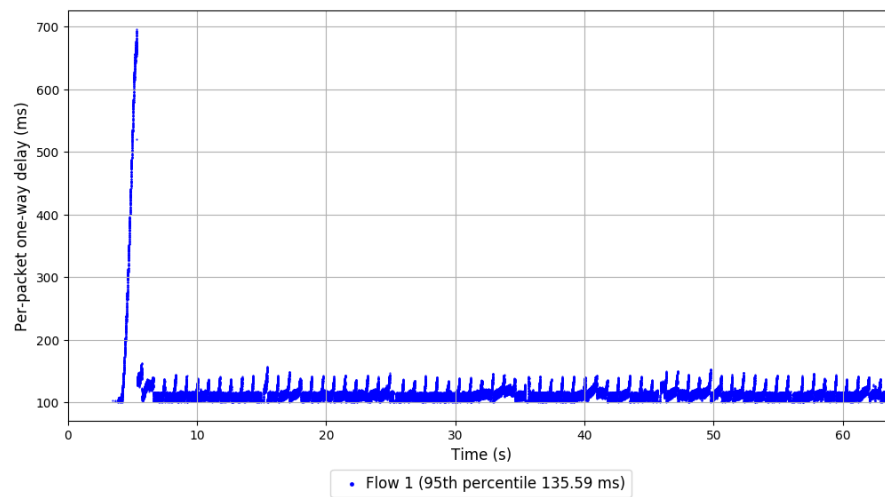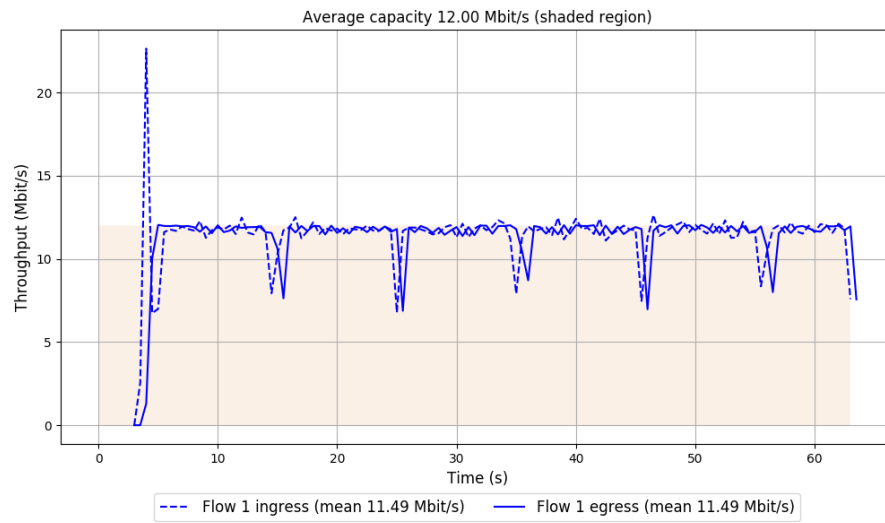
Run 2: Report of FillP-Sheep — Data Link

Average capacity 12.00 Mbit/s (shaded region)

--- Flow 1 ingress (mean 11.49 Mbit/s)   — Flow 1 egress (mean 11.49 Mbit/s)

• Flow 1 (95th percentile 135.59 ms)

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```
Run 3: Statistics of FillP-Sheep

Start at: 2025-04-18 01:53:23
End at: 2025-04-18 01:54:23

# Below is generated by plot.py at 2025-04-18 02:15:00
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.45 Mbit/s (95.4% utilization)
95th percentile per-packet one-way delay: 134.428 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 11.45 Mbit/s
95th percentile per-packet one-way delay: 134.428 ms
Loss rate: 0.20%
```
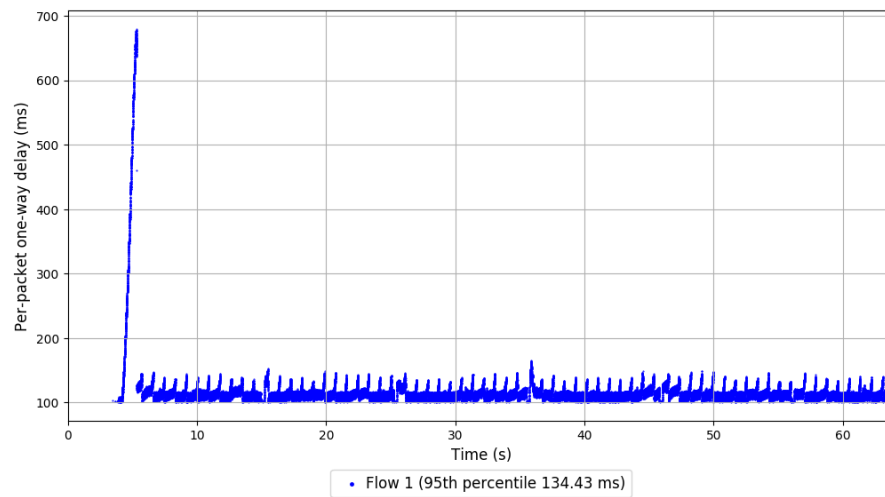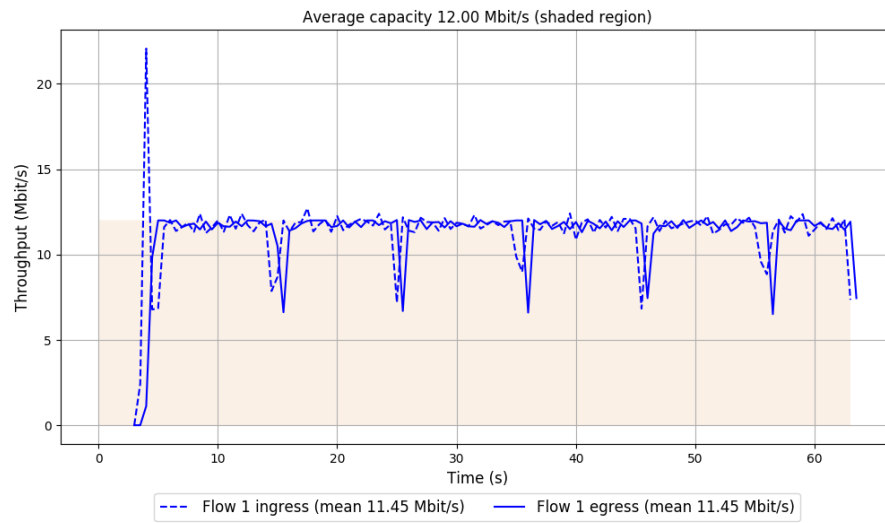
Run 3: Report of FillP-Sheep — Data Link

Average capacity 12.00 Mbit/s (shaded region)

- - - Flow 1 ingress (mean 11.45 Mbit/s) —— Flow 1 egress (mean 11.45 Mbit/s)

· Flow 1 (95th percentile 134.43 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2025-04-18 01:56:36
End at: 2025-04-18 01:57:36


# Below is generated by plot.py at 2025-04-18 02:15:02
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.38 Mbit/s (94.9% utilization)
95th percentile per-packet one-way delay: 133.143 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 11.38 Mbit/s
95th percentile per-packet one-way delay: 133.143 ms
Loss rate: 0.20%
```
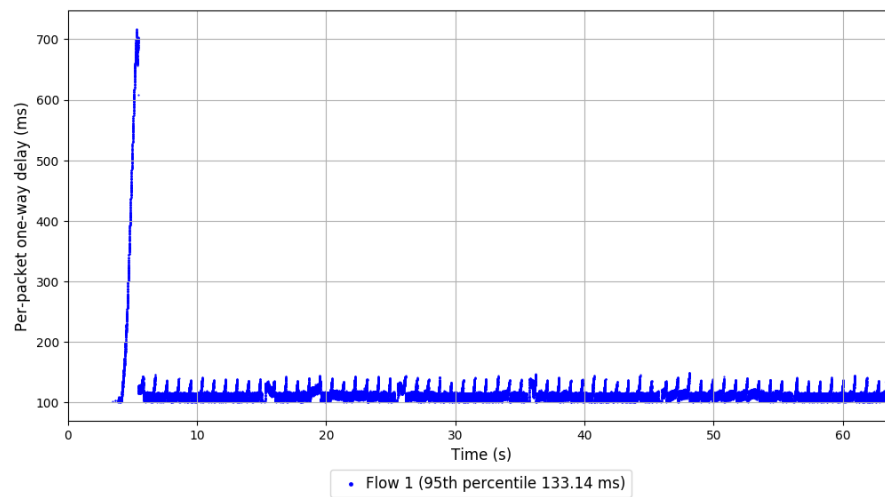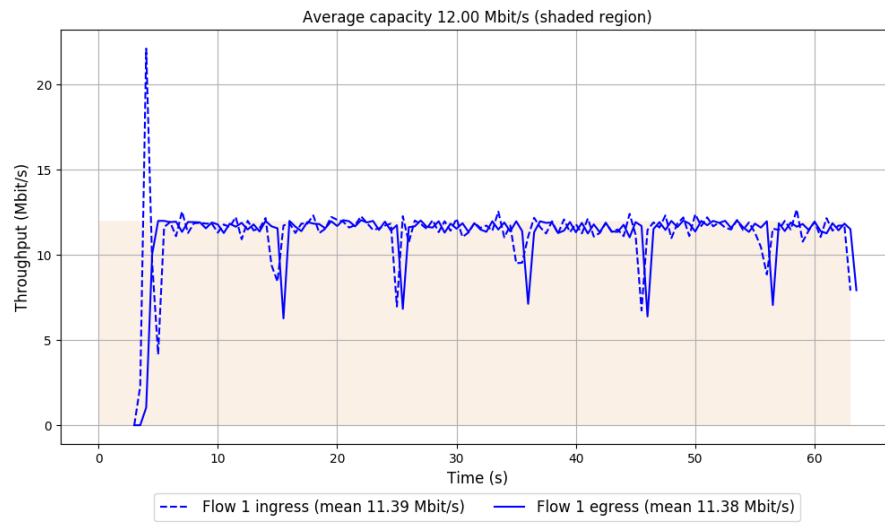
Run 4: Report of FillP-Sheep — Data Link

Average capacity 12.00 Mbit/s (shaded region)

--- Flow 1 ingress (mean 11.39 Mbit/s) —— Flow 1 egress (mean 11.38 Mbit/s)

• Flow 1 (95th percentile 133.14 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2025-04-18 01:59:49
End at: 2025-04-18 02:00:49

# Below is generated by plot.py at 2025-04-18 02:15:02
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.44 Mbit/s (95.3% utilization)
95th percentile per-packet one-way delay: 133.219 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 11.44 Mbit/s
95th percentile per-packet one-way delay: 133.219 ms
Loss rate: 0.20%
```

Run 5: Report of FillP-Sheep — Data Link

Average capacity 12.00 Mbit/s (shaded region)

Flow 1 ingress (mean 11.44 Mbit/s) — Flow 1 egress (mean 11.44 Mbit/s)

Flow 1 (95th percentile 133.22 ms)