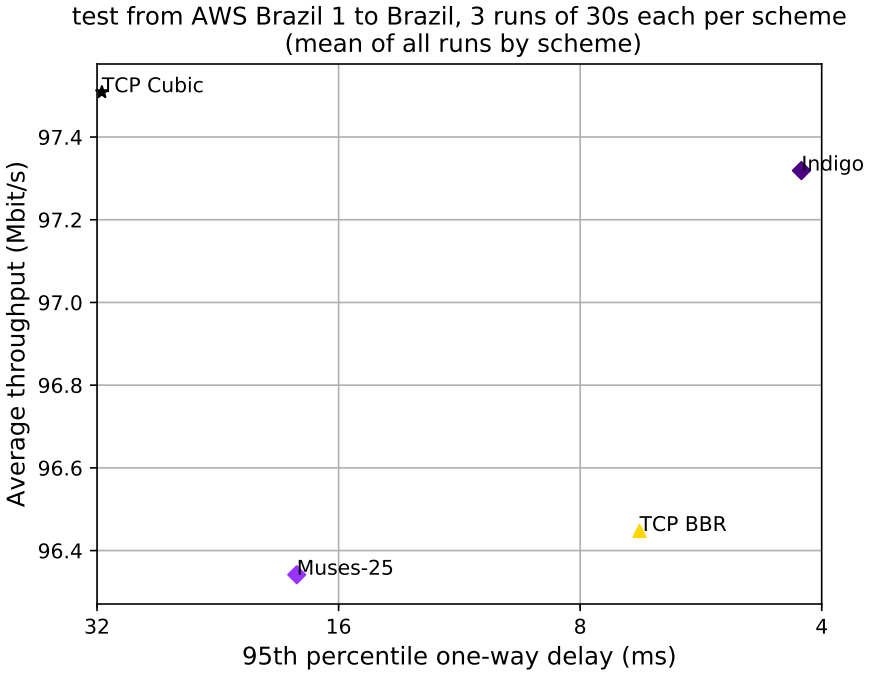
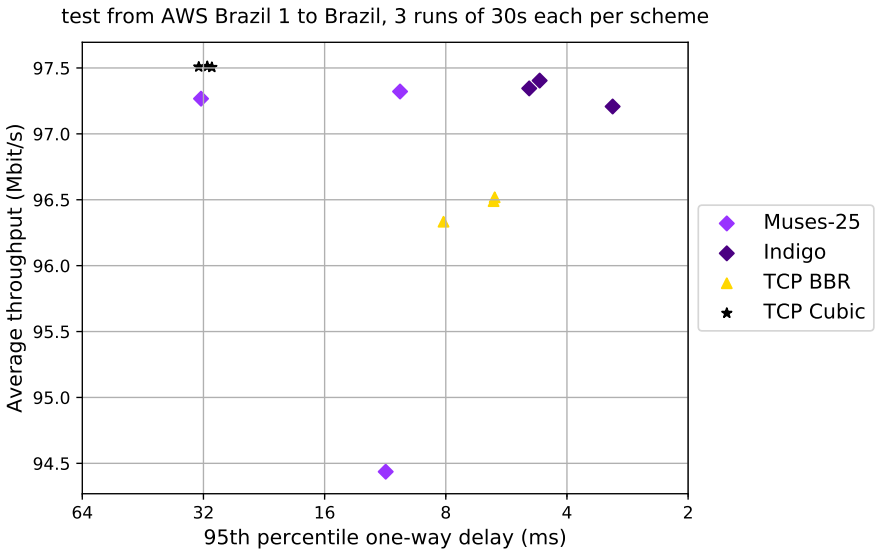
Pantheon Report

Generated at 2018-09-05 02:20:54 (UTC).
Data path: AWS Brazil 1 on `ens5` (*local*) →Brazil on `p4p1` (*remote*).
Repeated the test of 4 congestion control schemes 3 times.
Each test lasted for 30 seconds running 1 flow.
NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

```
System info:
Linux 4.15.0-1020-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
net.ipv4.tcp_mem = 536870912 536870912 536870912

Git summary:
branch: muses @ 71e71e9a55b945431a7dea72180c1c9381097db9
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 96fbc95fb38373d71fbc80c5a105e62e7636623b
third_party/pantheon-tunnel @ cbfce6db5ff5740dafe1771f813cd646339e1952
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
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```


test from AWS Brazil 1 to Brazil, 3 runs of 30s each per scheme
(mean of all runs by scheme)
TCP Cubic
Indigo
TCP BBR
Muses-25
Average throughput (Mbit/s)
97.4
97.2
97.0
96.8
96.6
96.4
32
16
8
4
95th percentile one-way delay (ms)


test from AWS Brazil 1 to Brazil, 3 runs of 30s each per scheme
Average throughput (Mbit/s)
97.5
97.0
96.5
96.0
95.5
95.0
94.5
64
32
16
8
4
2
95th percentile one-way delay (ms)
Muses-25
Indigo
TCP BBR
TCP Cubic

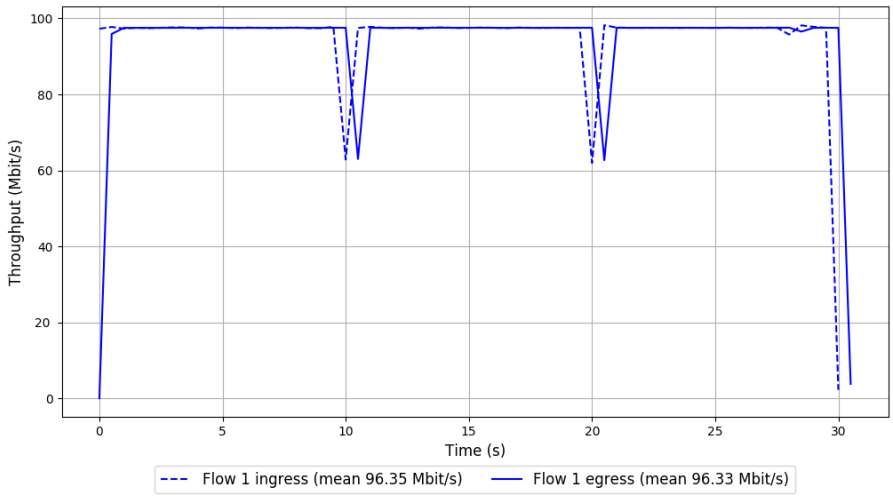
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	96.45	6.75	0.00
TCP Cubic	3	97.51	31.56	0.01
Indigo	3	97.32	4.24	0.00
Muses-25	3	96.34	18.04	3.66

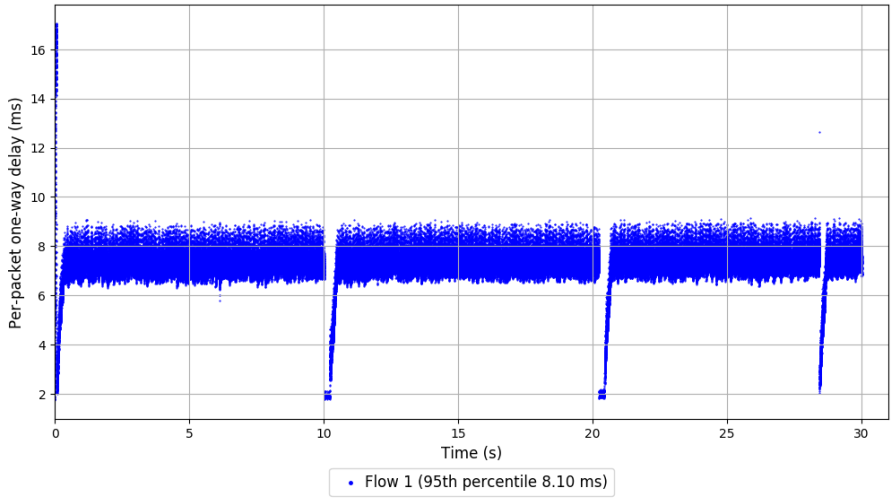
```
Run 1: Statistics of TCP BBR

Start at: 2018-09-05 02:06:54
End at: 2018-09-05 02:07:24
Local clock offset: 2.79 ms
Remote clock offset: -0.057 ms

# Below is generated by plot.py at 2018-09-05 02:20:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.33 Mbit/s
95th percentile per-packet one-way delay: 8.104 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.33 Mbit/s
95th percentile per-packet one-way delay: 8.104 ms
Loss rate: 0.00%
```

Run 1: Report of TCP BBR — Data Link



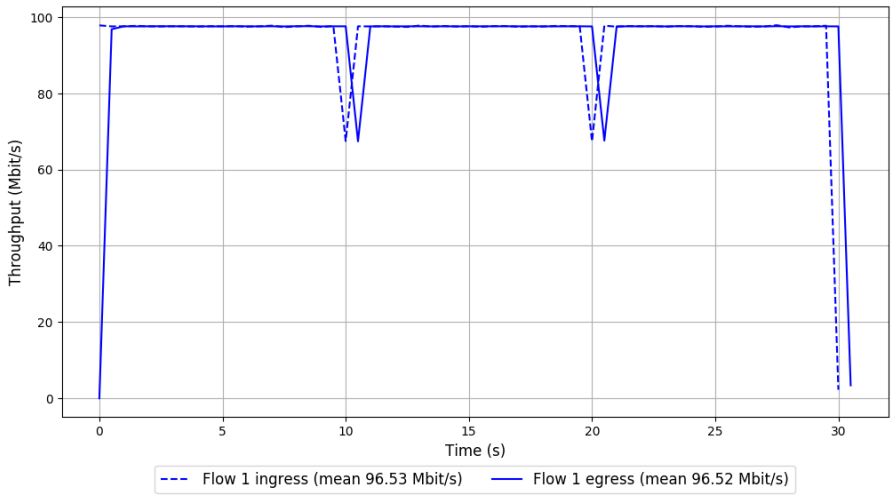


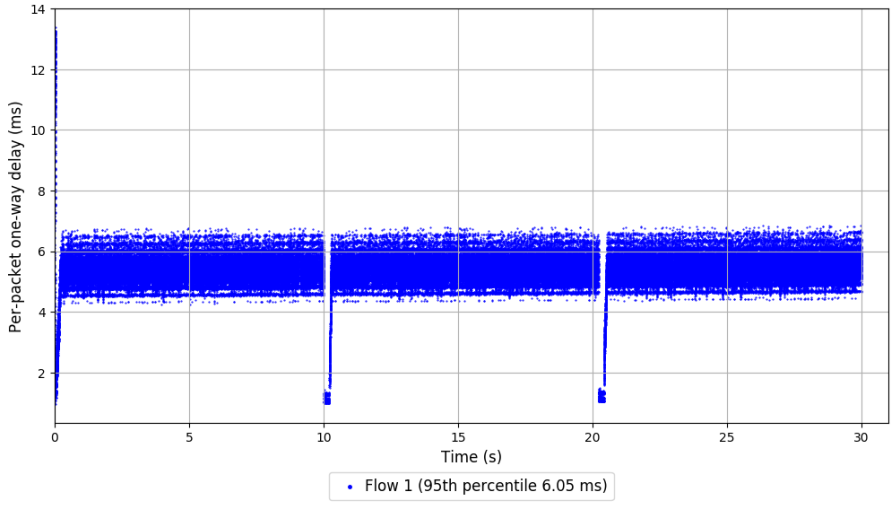
```
Run 2: Statistics of TCP BBR

Start at: 2018-09-05 02:11:27
End at: 2018-09-05 02:11:57
Local clock offset: 3.307 ms
Remote clock offset: -0.112 ms

# Below is generated by plot.py at 2018-09-05 02:20:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.52 Mbit/s
95th percentile per-packet one-way delay: 6.048 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.52 Mbit/s
95th percentile per-packet one-way delay: 6.048 ms
Loss rate: 0.00%
```

Run 2: Report of TCP BBR — Data Link



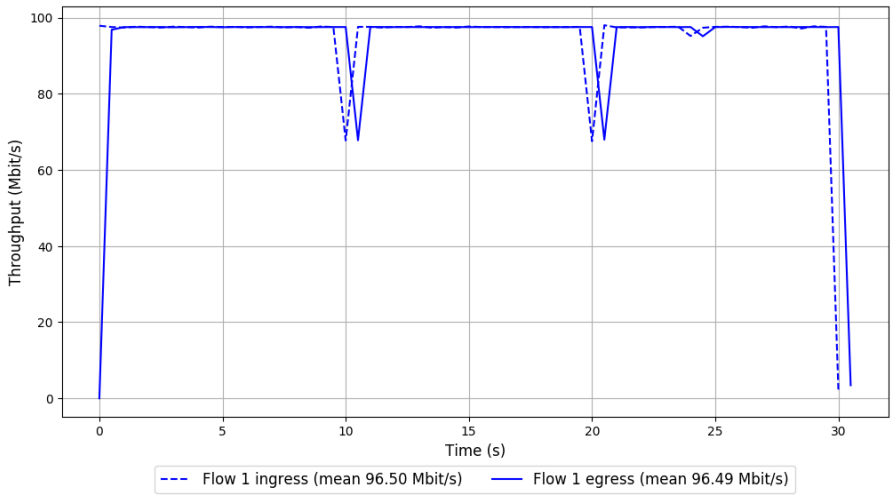


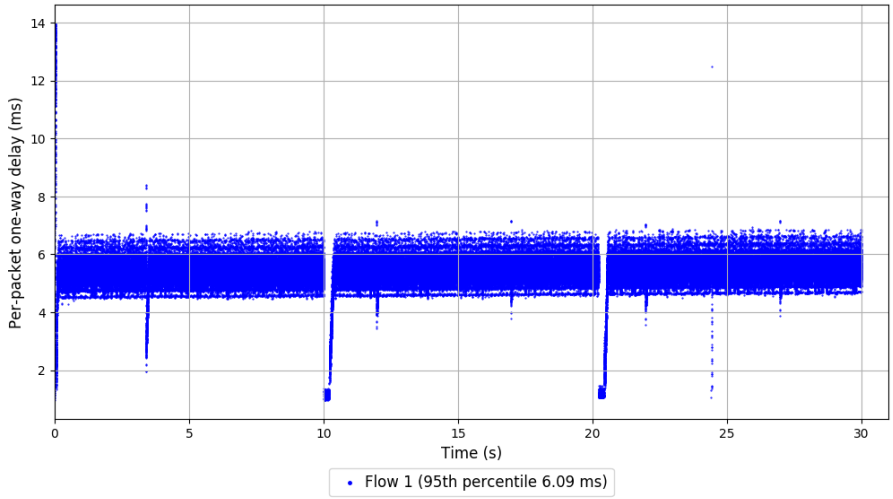
```
Run 3: Statistics of TCP BBR

Start at: 2018-09-05 02:16:01
End at: 2018-09-05 02:16:31
Local clock offset: 4.724 ms
Remote clock offset: -0.118 ms

# Below is generated by plot.py at 2018-09-05 02:20:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.49 Mbit/s
95th percentile per-packet one-way delay: 6.086 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.49 Mbit/s
95th percentile per-packet one-way delay: 6.086 ms
Loss rate: 0.00%
```

Run 3: Report of TCP BBR — Data Link



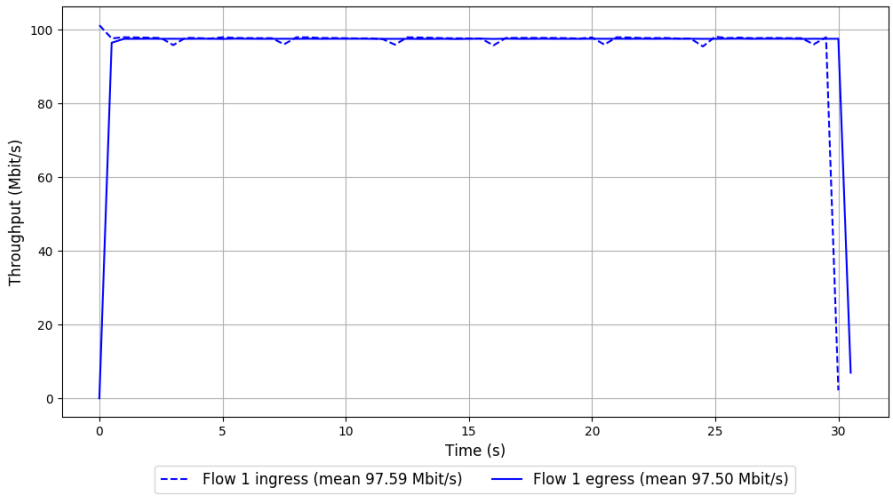


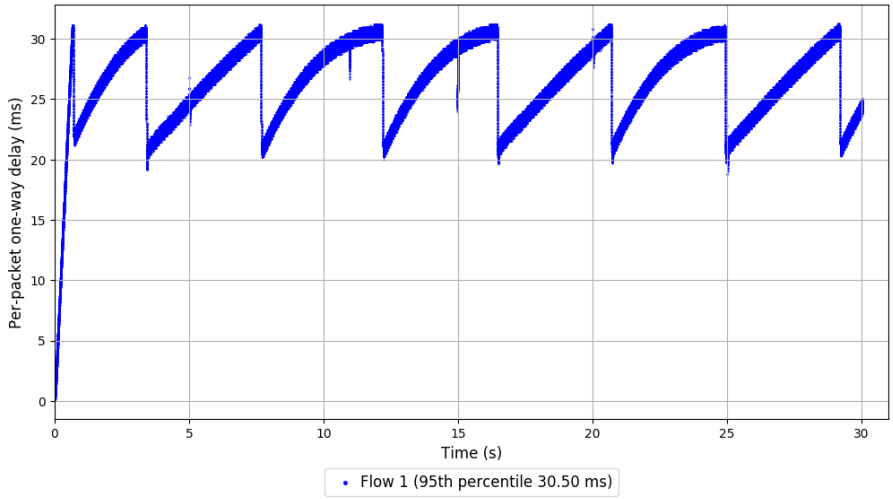
```
Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 02:05:45
End at: 2018-09-05 02:06:15
Local clock offset: 2.518 ms
Remote clock offset: -0.179 ms

# Below is generated by plot.py at 2018-09-05 02:20:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.50 Mbit/s
95th percentile per-packet one-way delay: 30.501 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 97.50 Mbit/s
95th percentile per-packet one-way delay: 30.501 ms
Loss rate: 0.01%
```

Run 1: Report of TCP Cubic — Data Link



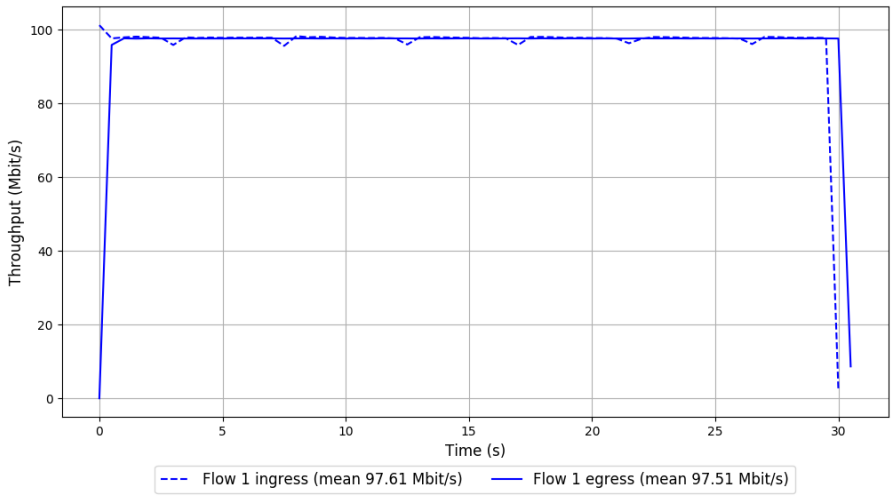


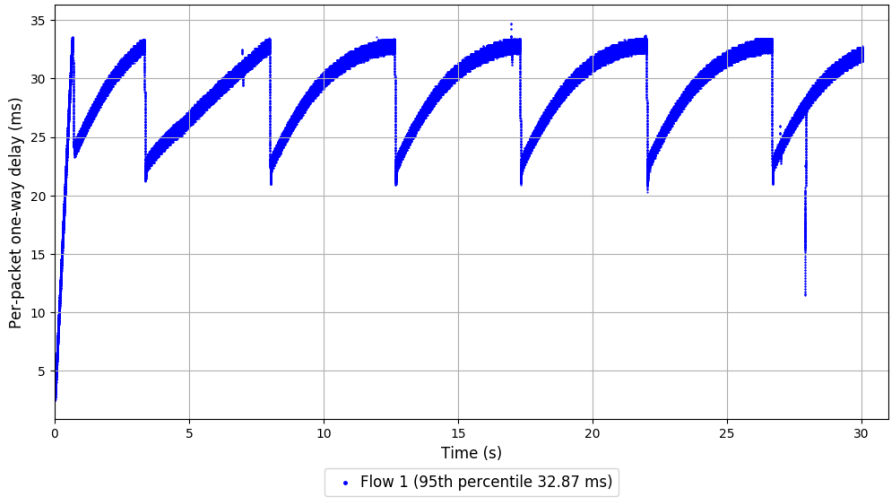
```
Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 02:10:19
End at: 2018-09-05 02:10:49
Local clock offset: 3.052 ms
Remote clock offset: -0.007 ms

# Below is generated by plot.py at 2018-09-05 02:20:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.51 Mbit/s
95th percentile per-packet one-way delay: 32.873 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 97.51 Mbit/s
95th percentile per-packet one-way delay: 32.873 ms
Loss rate: 0.01%
```

Run 2: Report of TCP Cubic — Data Link



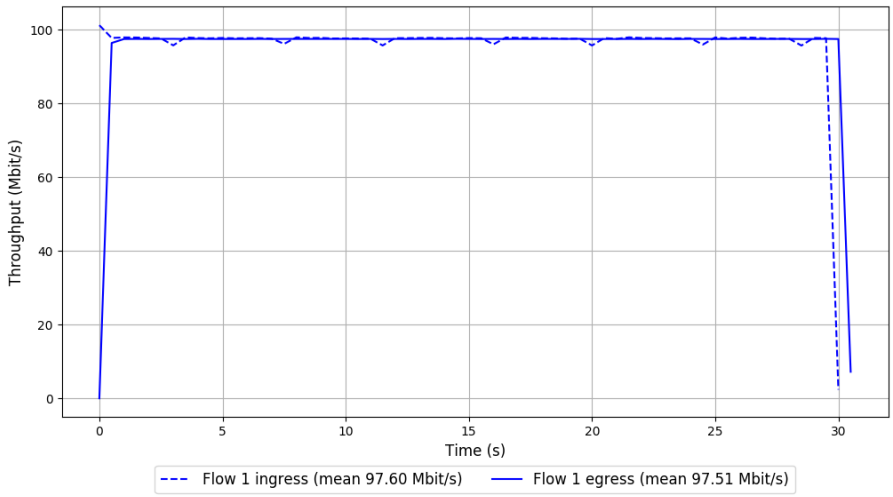


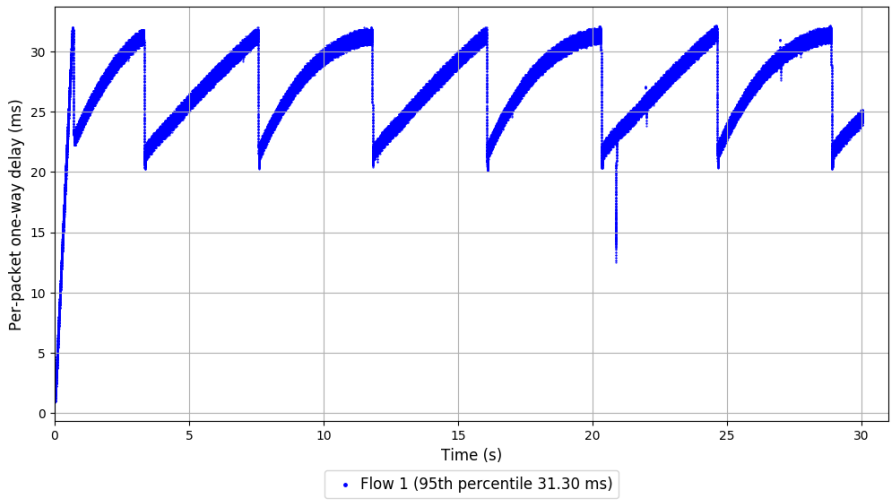
```
Run 3: Statistics of TCP Cubic

Start at: 2018-09-05 02:14:53
End at: 2018-09-05 02:15:23
Local clock offset: 4.373 ms
Remote clock offset: -0.099 ms

# Below is generated by plot.py at 2018-09-05 02:20:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.51 Mbit/s
95th percentile per-packet one-way delay: 31.303 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 97.51 Mbit/s
95th percentile per-packet one-way delay: 31.303 ms
Loss rate: 0.01%
```

Run 3: Report of TCP Cubic — Data Link



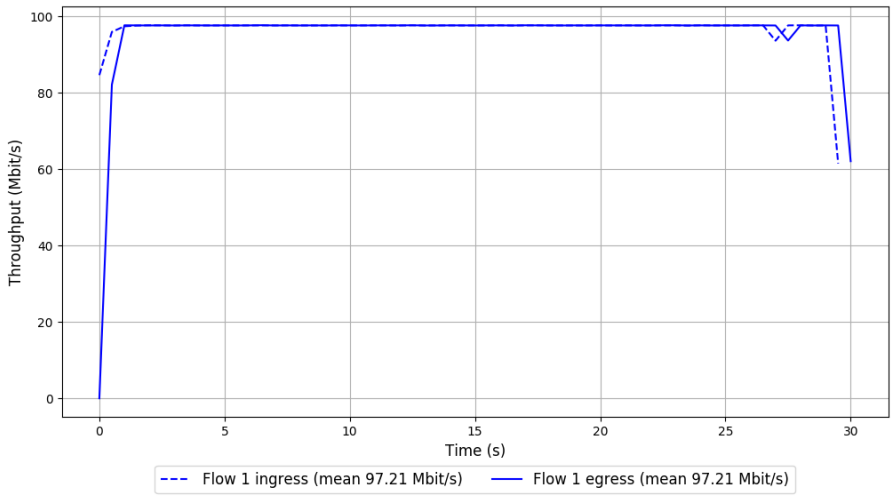


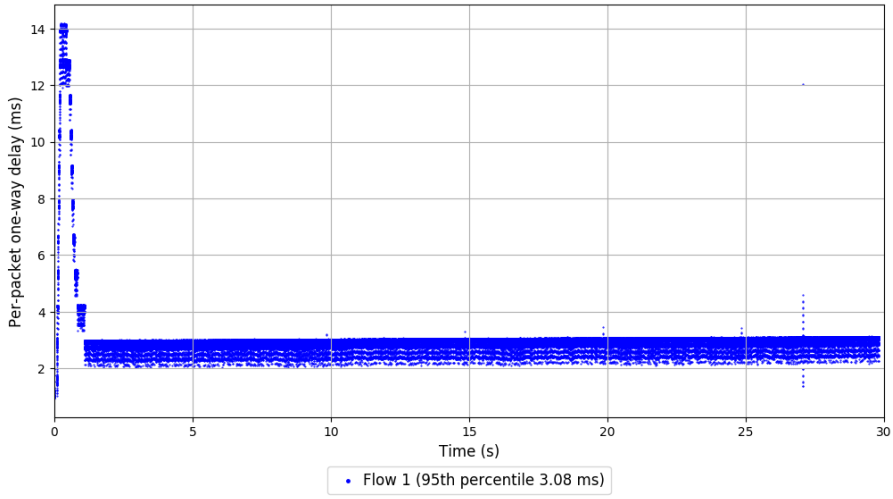
```
Run 1: Statistics of Indigo

Start at: 2018-09-05 02:08:02
End at: 2018-09-05 02:08:32
Local clock offset: 2.388 ms
Remote clock offset: -0.057 ms

# Below is generated by plot.py at 2018-09-05 02:20:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.21 Mbit/s
95th percentile per-packet one-way delay: 3.080 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 97.21 Mbit/s
95th percentile per-packet one-way delay: 3.080 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



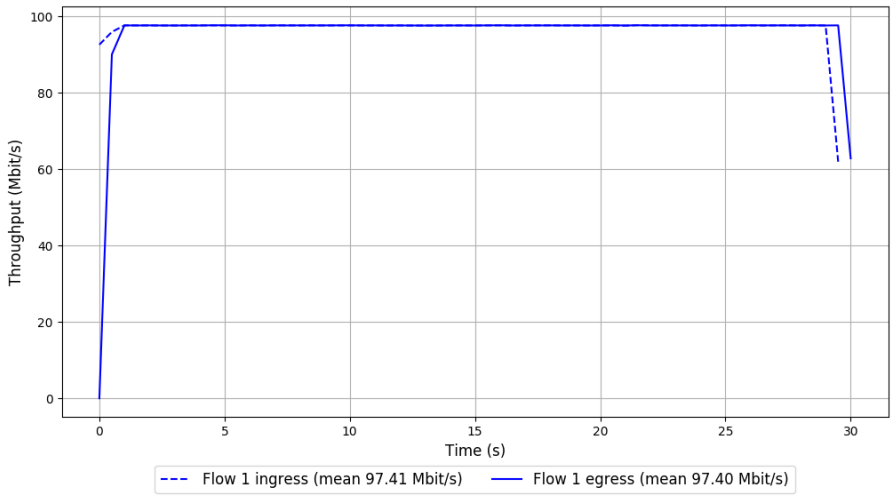


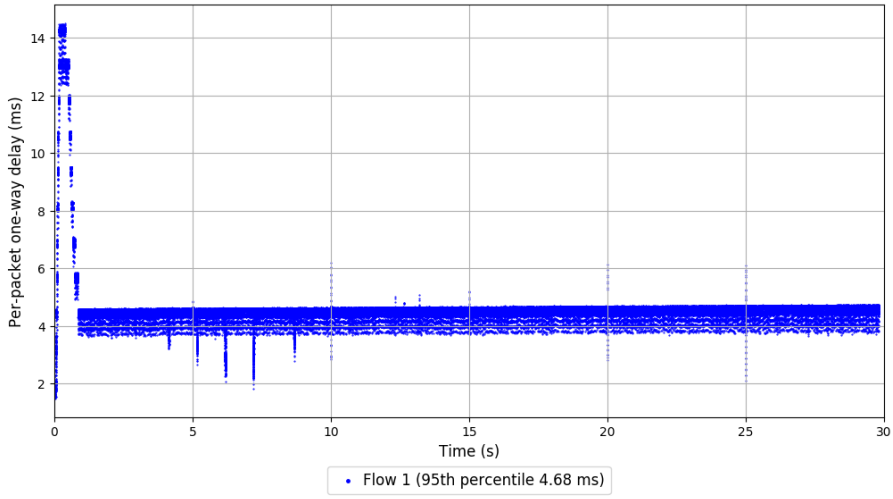
```
Run 2: Statistics of Indigo

Start at: 2018-09-05 02:12:35
End at: 2018-09-05 02:13:05
Local clock offset: 4.462 ms
Remote clock offset: -0.16 ms

# Below is generated by plot.py at 2018-09-05 02:20:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.40 Mbit/s
95th percentile per-packet one-way delay: 4.676 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 97.40 Mbit/s
95th percentile per-packet one-way delay: 4.676 ms
Loss rate: 0.00%
```

Run 2: Report of Indigo — Data Link



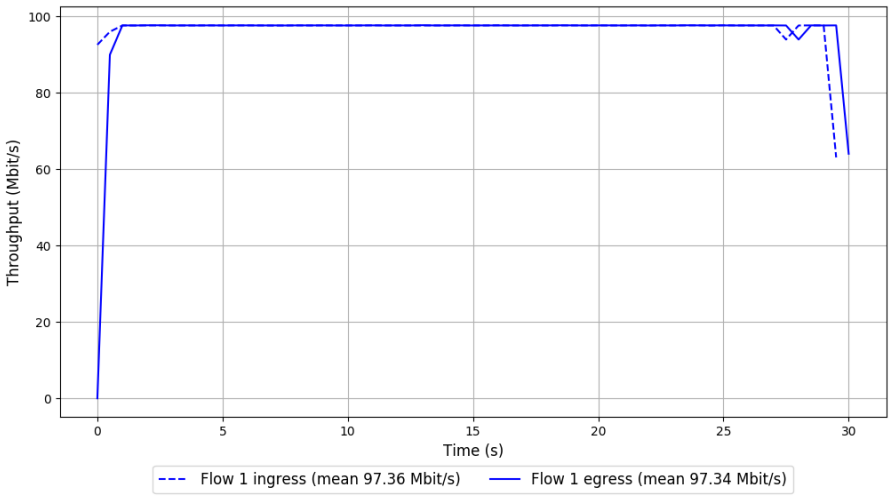


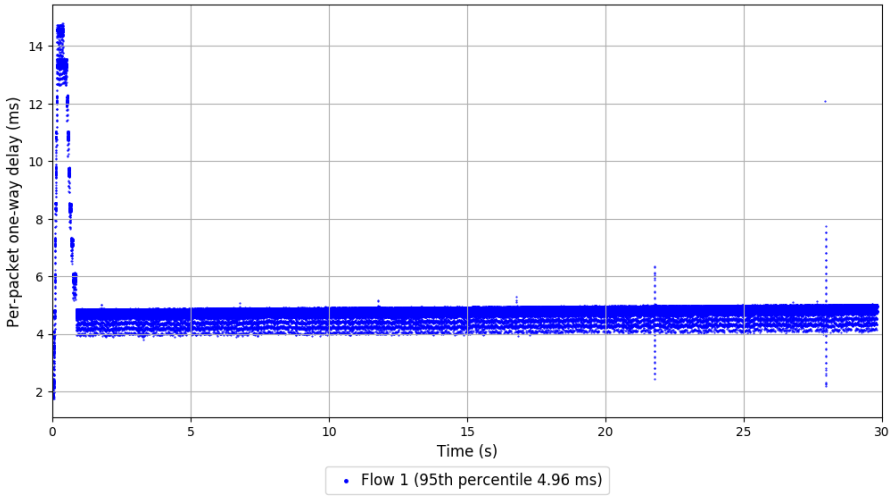
```
Run 3: Statistics of Indigo

Start at: 2018-09-05 02:17:09
End at: 2018-09-05 02:17:39
Local clock offset: 5.804 ms
Remote clock offset: -0.002 ms

# Below is generated by plot.py at 2018-09-05 02:20:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.34 Mbit/s
95th percentile per-packet one-way delay: 4.964 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 97.34 Mbit/s
95th percentile per-packet one-way delay: 4.964 ms
Loss rate: 0.00%
```

Run 3: Report of Indigo — Data Link



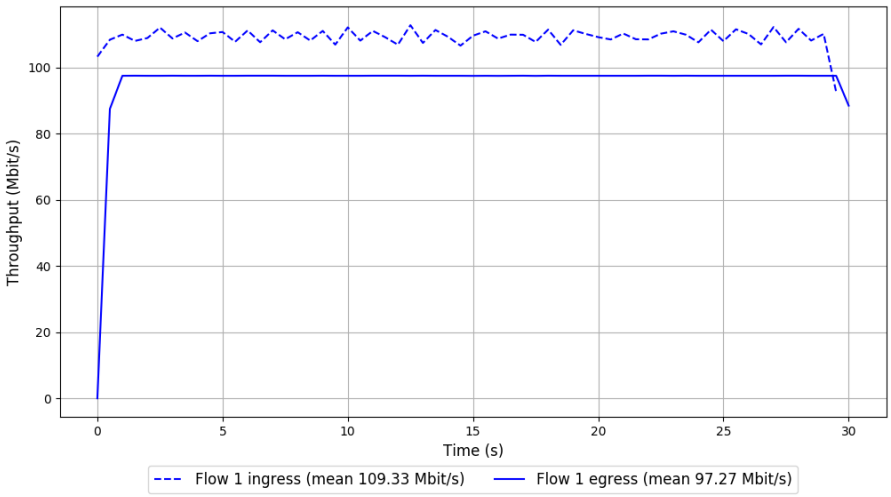


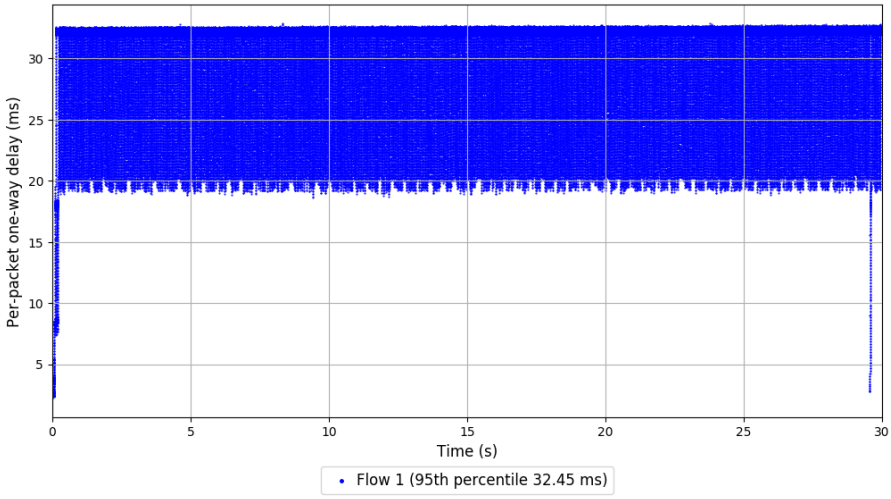
```
Run 1: Statistics of Muses-25

Start at: 2018-09-05 02:09:11
End at: 2018-09-05 02:09:41
Local clock offset: 2.717 ms
Remote clock offset: -0.095 ms

# Below is generated by plot.py at 2018-09-05 02:20:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.27 Mbit/s
95th percentile per-packet one-way delay: 32.450 ms
Loss rate: 10.94%
-- Flow 1:
Average throughput: 97.27 Mbit/s
95th percentile per-packet one-way delay: 32.450 ms
Loss rate: 10.94%
```

Run 1: Report of Muses-25 — Data Link



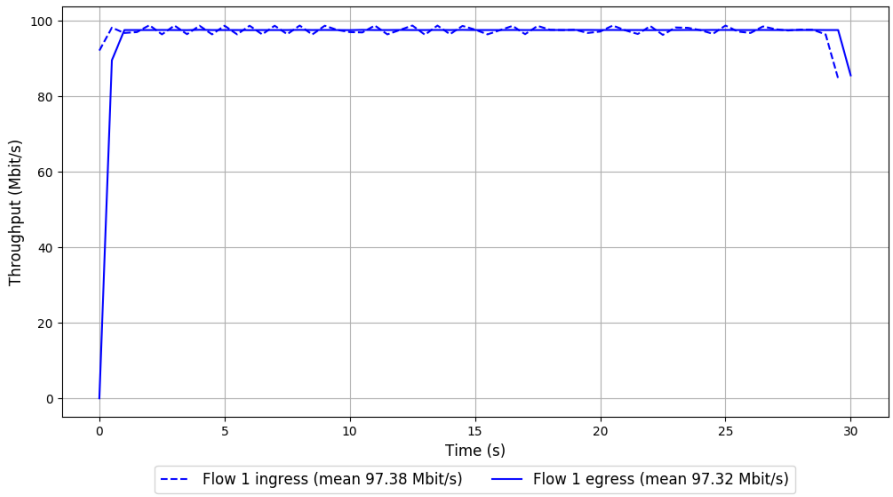


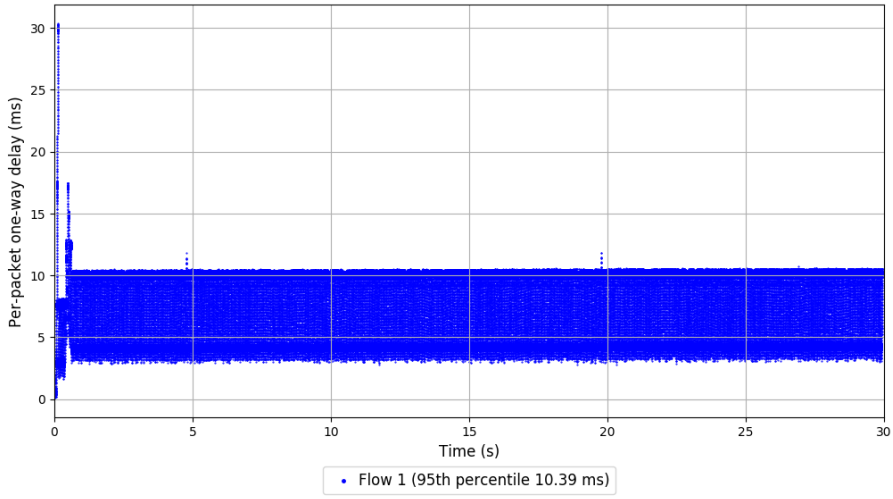
```
Run 2: Statistics of Muses-25

Start at: 2018-09-05 02:13:45
End at: 2018-09-05 02:14:15
Local clock offset: 4.737 ms
Remote clock offset: -0.155 ms

# Below is generated by plot.py at 2018-09-05 02:20:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.32 Mbit/s
95th percentile per-packet one-way delay: 10.392 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 97.32 Mbit/s
95th percentile per-packet one-way delay: 10.392 ms
Loss rate: 0.02%
```

Run 2: Report of Muses-25 — Data Link





```
Run 3: Statistics of Muses-25

Start at: 2018-09-05 02:18:18
End at: 2018-09-05 02:18:48
Local clock offset: 5.432 ms
Remote clock offset: -0.056 ms

# Below is generated by plot.py at 2018-09-05 02:20:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.44 Mbit/s
95th percentile per-packet one-way delay: 11.281 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 94.44 Mbit/s
95th percentile per-packet one-way delay: 11.281 ms
Loss rate: 0.02%
```

Run 3: Report of Muses-25 — Data Link