Pantheon Report

Generated at 2019-01-03 06:50:18 (UTC).

Data path: Colombia on p4p1 (*remote*) →AWS Brazil 2 on ens5 (*local*).

Repeated the test of 19 congestion control schemes 5 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.
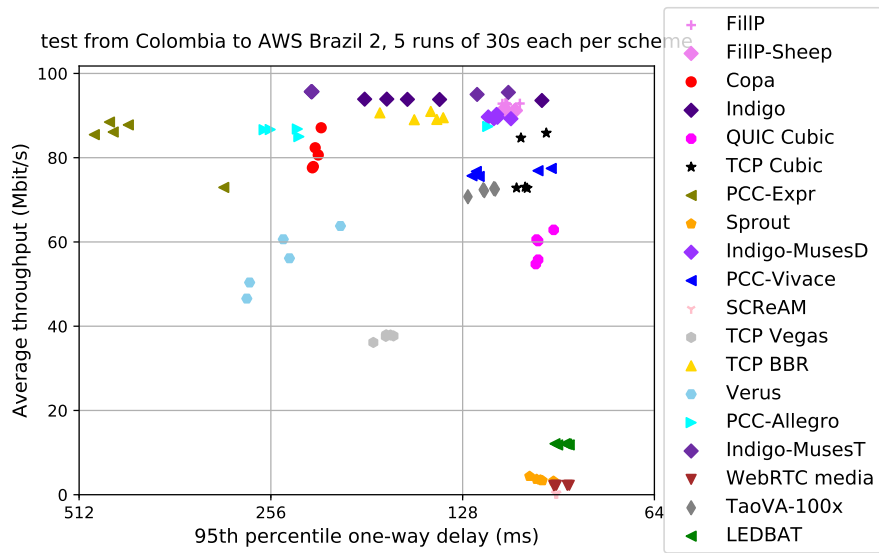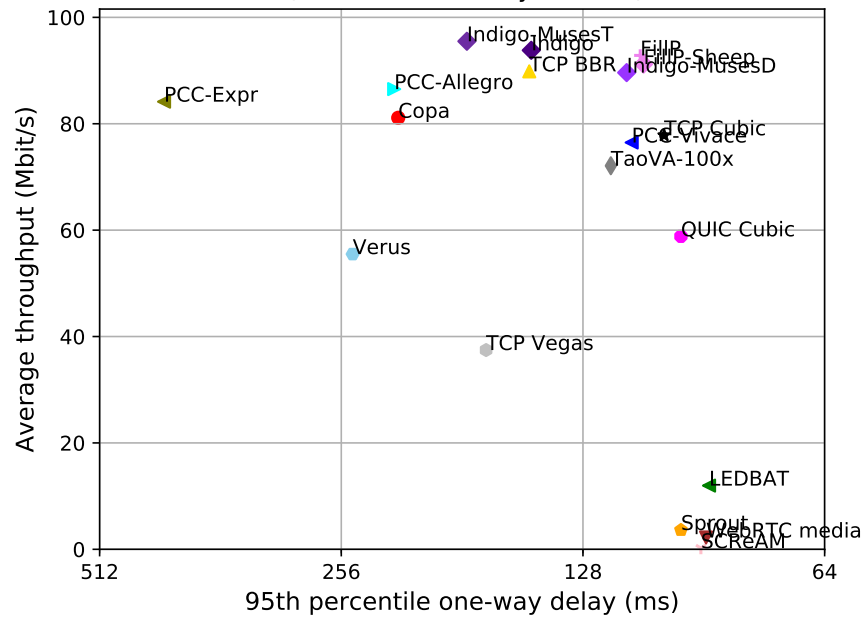
```
System info:
Linux 4.15.0-1029-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ c654af0b7d59d4ef4b914cfac404e1fc2e96dc68
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/muses-refactored @ 31f8f0ba8ef8b1da76c2bc0cd0a7850c33ff64fb
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/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
```

```
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from Colombia to AWS Brazil 2, 5 runs of 30s each per scheme
(mean of all runs by scheme)

test from Colombia to AWS Brazil 2, 5 runs 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	5	89.85	149.30	0.97
Copa	5	81.12	217.43	0.93
TCP Cubic	5	77.83	101.42	0.61
FillP	5	92.85	108.61	0.63
FillP-Sheep	5	91.21	107.58	0.63
Indigo	5	93.81	148.46	1.83
Indigo-MusesD	5	89.61	112.92	0.80
Indigo-MusesT	5	95.50	178.57	8.29
LEDBAT	5	11.98	89.16	1.15
PCC-Allegro	5	86.51	219.96	0.85
PCC-Expr	5	84.15	425.63	1.49
QUIC Cubic	5	58.84	96.65	0.90
SCReAM	5	0.22	91.27	0.64
Sprout	5	3.64	96.64	0.57
TaoVA-100x	5	72.10	118.17	0.57
TCP Vegas	5	37.46	168.98	0.65
Verus	5	55.50	247.78	1.08
PCC-Vivace	5	76.47	111.32	0.75
WebRTC media	5	2.21	89.93	0.32

```
Run 1: Statistics of TCP BBR

Start at: 2019-01-03 05:01:50
End at: 2019-01-03 05:02:20
Local clock offset: -2.643 ms
Remote clock offset: -2.855 ms

# Below is generated by plot.py at 2019-01-03 06:40:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.02 Mbit/s
95th percentile per-packet one-way delay: 152.442 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 89.02 Mbit/s
95th percentile per-packet one-way delay: 152.442 ms
Loss rate: 1.06%
```
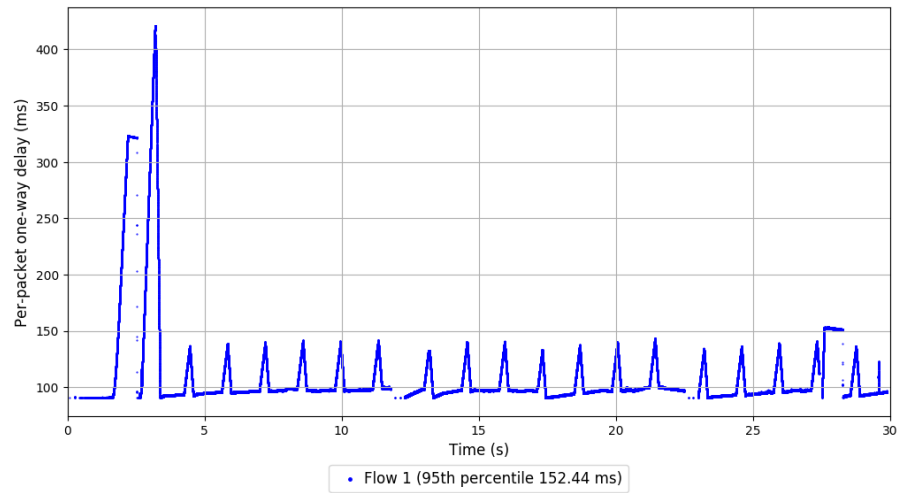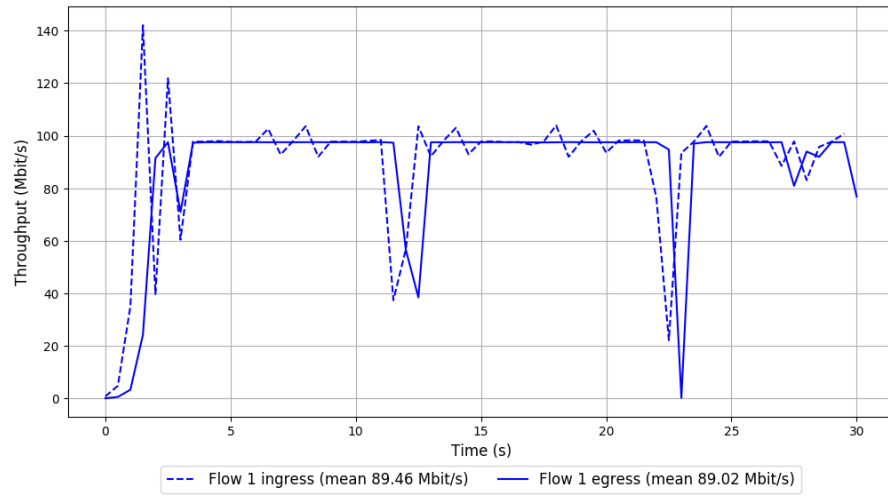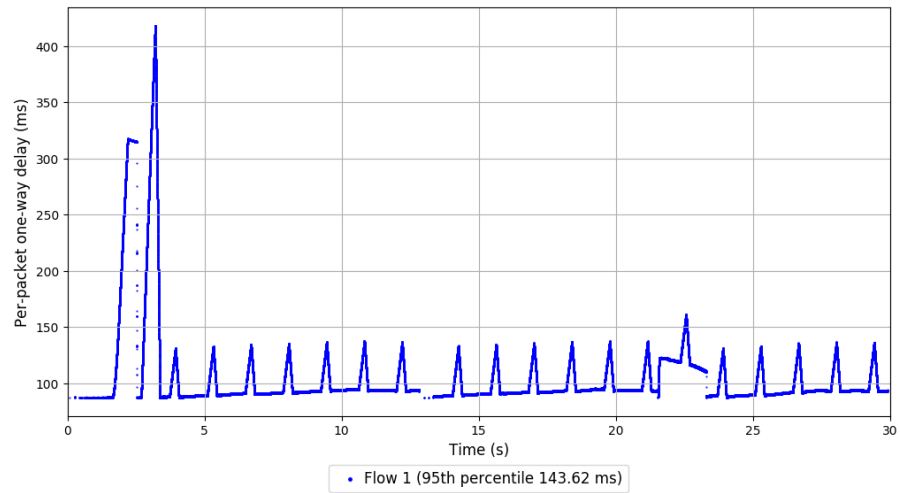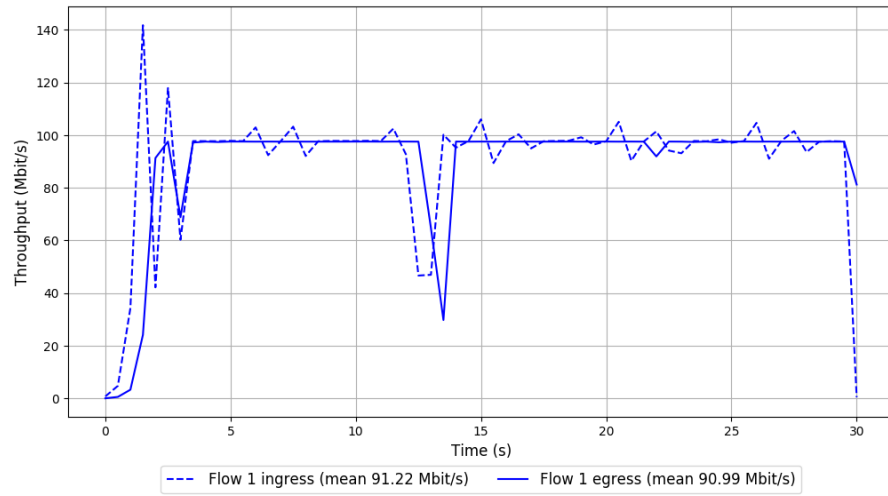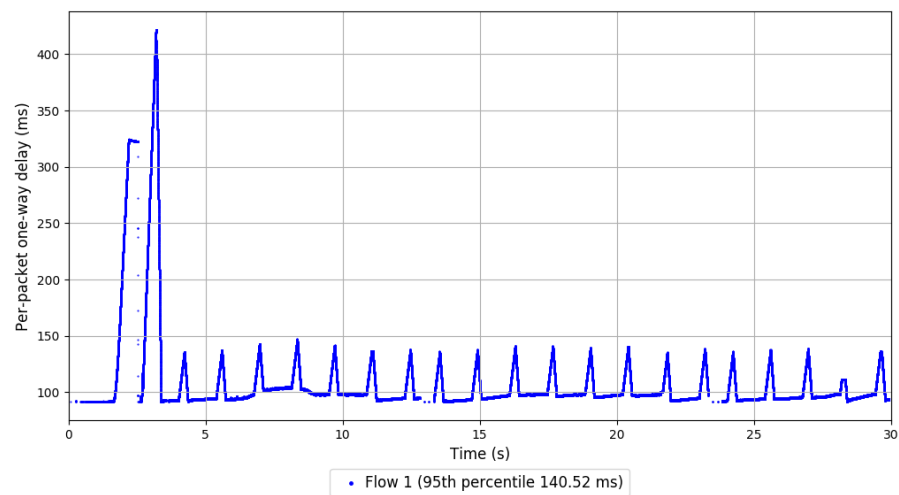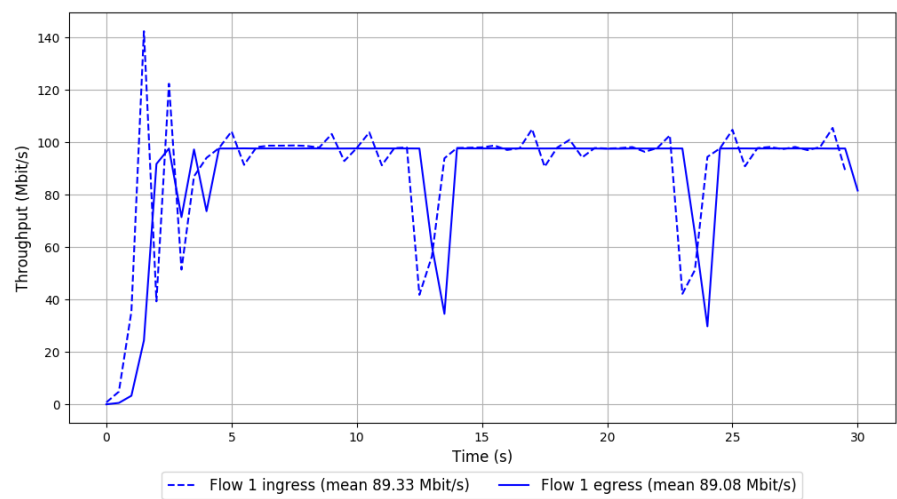
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2019-01-03 05:24:21
End at: 2019-01-03 05:24:51
Local clock offset: -2.071 ms
Remote clock offset: 16.819 ms


# Below is generated by plot.py at 2019-01-03 06:40:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.99 Mbit/s
95th percentile per-packet one-way delay: 143.621 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 90.99 Mbit/s
95th percentile per-packet one-way delay: 143.621 ms
Loss rate: 0.83%
```
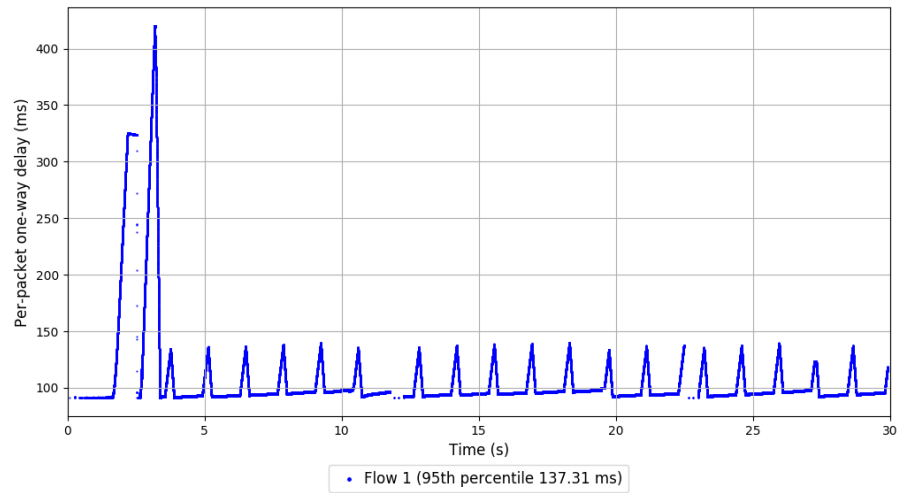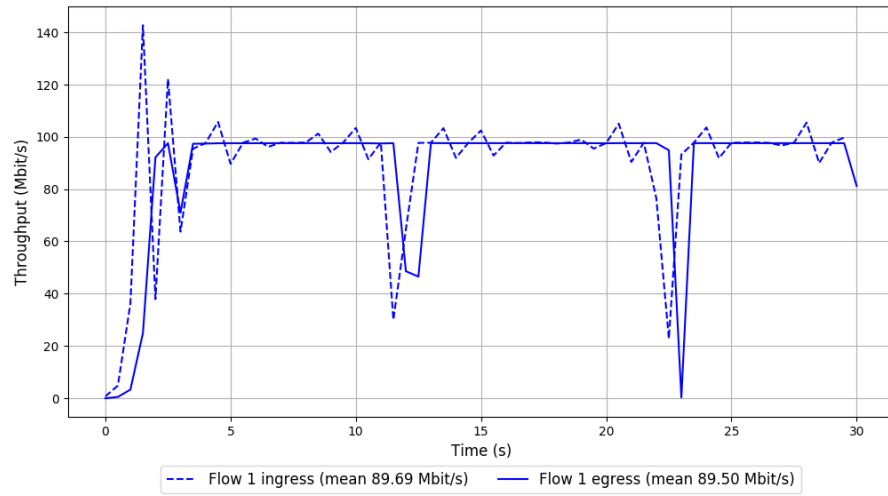
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2019-01-03 05:46:53
End at: 2019-01-03 05:47:23
Local clock offset: -2.666 ms
Remote clock offset: 13.045 ms


# Below is generated by plot.py at 2019-01-03 06:40:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.08 Mbit/s
95th percentile per-packet one-way delay: 140.521 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 89.08 Mbit/s
95th percentile per-packet one-way delay: 140.521 ms
Loss rate: 0.85%
```
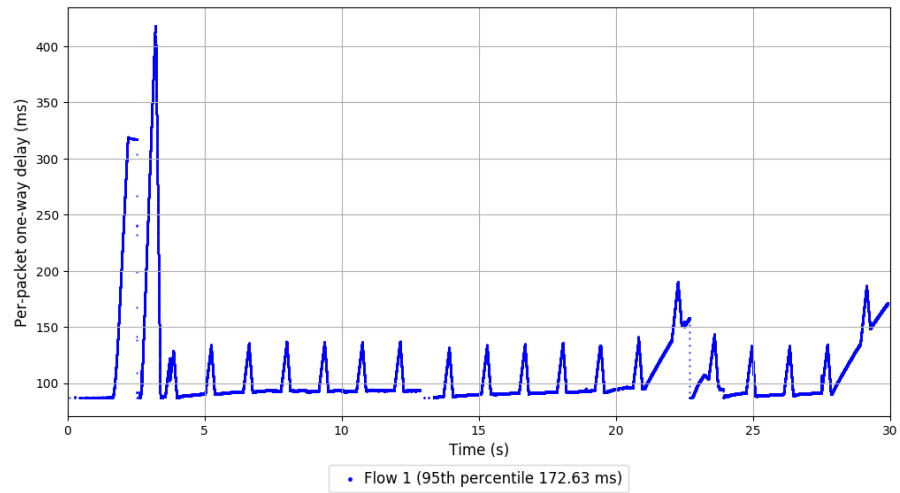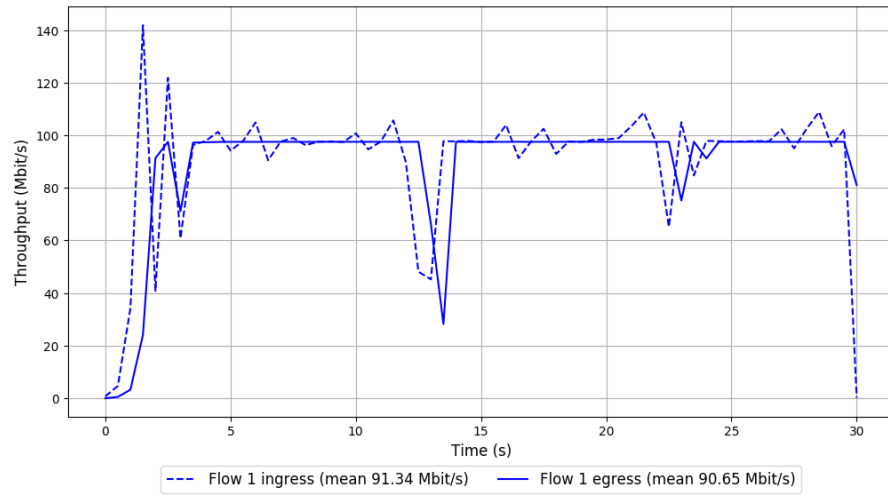
Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2019-01-03 06:09:26
End at: 2019-01-03 06:09:56
Local clock offset: -5.927 ms
Remote clock offset: 11.347 ms


# Below is generated by plot.py at 2019-01-03 06:40:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.50 Mbit/s
95th percentile per-packet one-way delay: 137.305 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 89.50 Mbit/s
95th percentile per-packet one-way delay: 137.305 ms
Loss rate: 0.78%
```
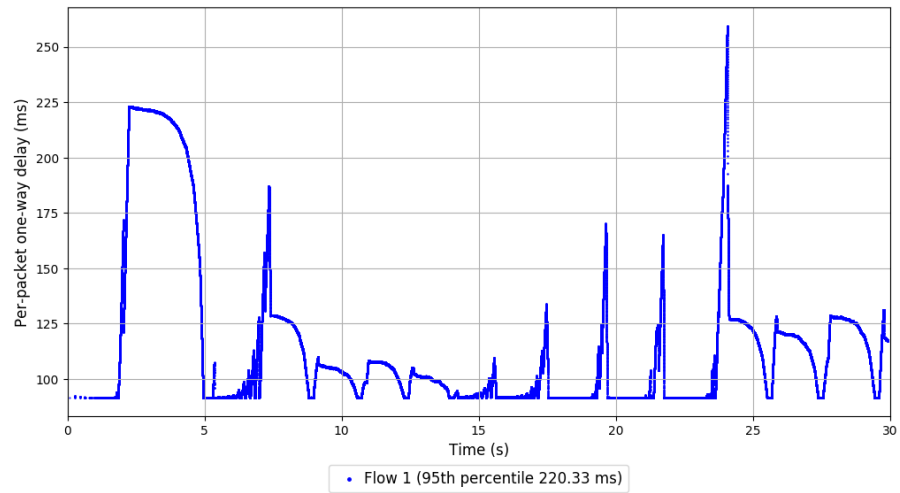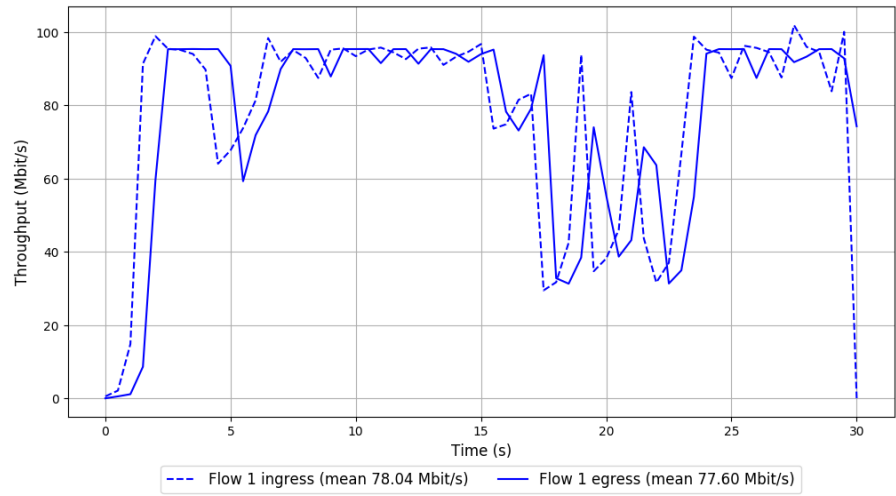
Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 89.69 Mbit/s)   Flow 1 egress (mean 89.50 Mbit/s)

• Flow 1 (95th percentile 137.31 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2019-01-03 06:31:56
End at: 2019-01-03 06:32:26
Local clock offset: -7.119 ms
Remote clock offset: 16.369 ms


# Below is generated by plot.py at 2019-01-03 06:40:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.65 Mbit/s
95th percentile per-packet one-way delay: 172.629 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 90.65 Mbit/s
95th percentile per-packet one-way delay: 172.629 ms
Loss rate: 1.33%
```
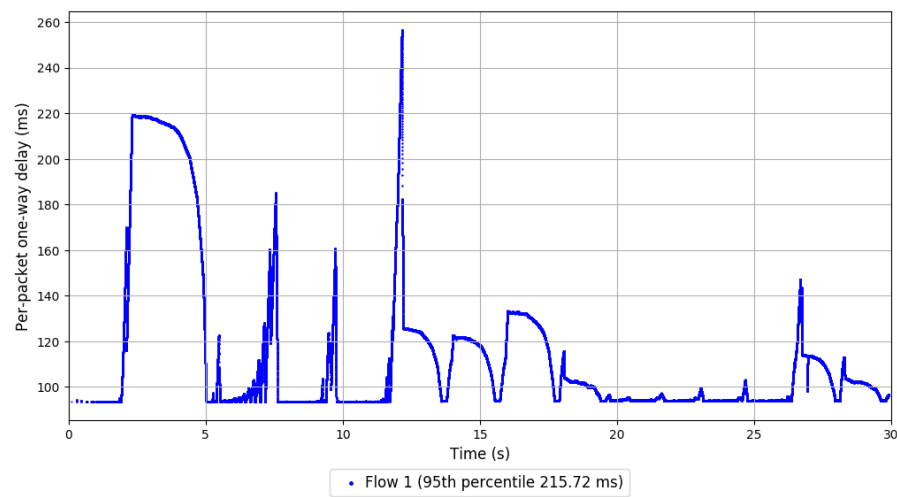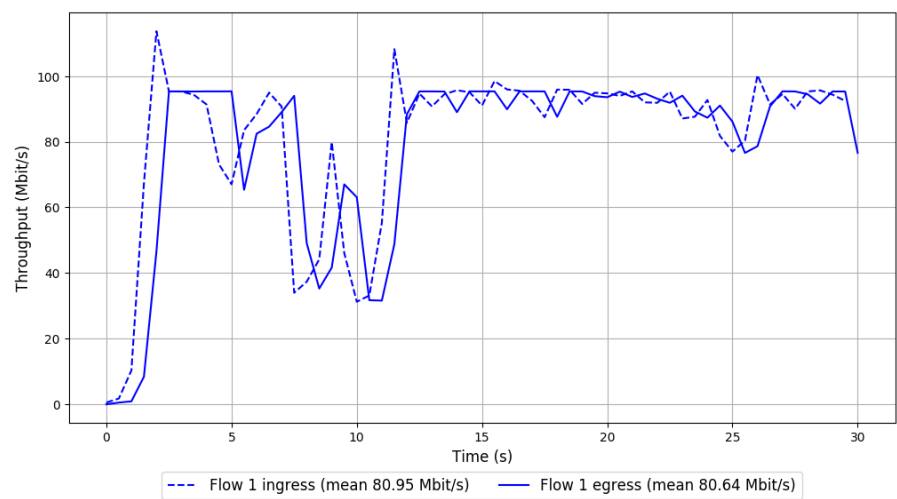
Run 5: Report of TCP BBR — Data Link

```
Run 1: Statistics of Copa

Start at: 2019-01-03 04:47:33
End at: 2019-01-03 04:48:03
Local clock offset: -2.167 ms
Remote clock offset: -2.066 ms

# Below is generated by plot.py at 2019-01-03 06:41:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 77.60 Mbit/s
95th percentile per-packet one-way delay: 220.331 ms
Loss rate: 1.14%
-- Flow 1:
Average throughput: 77.60 Mbit/s
95th percentile per-packet one-way delay: 220.331 ms
Loss rate: 1.14%
```

Run 1: Report of Copa — Data Link

Flow 1 ingress (mean 78.04 Mbit/s) --- Flow 1 egress (mean 77.60 Mbit/s)

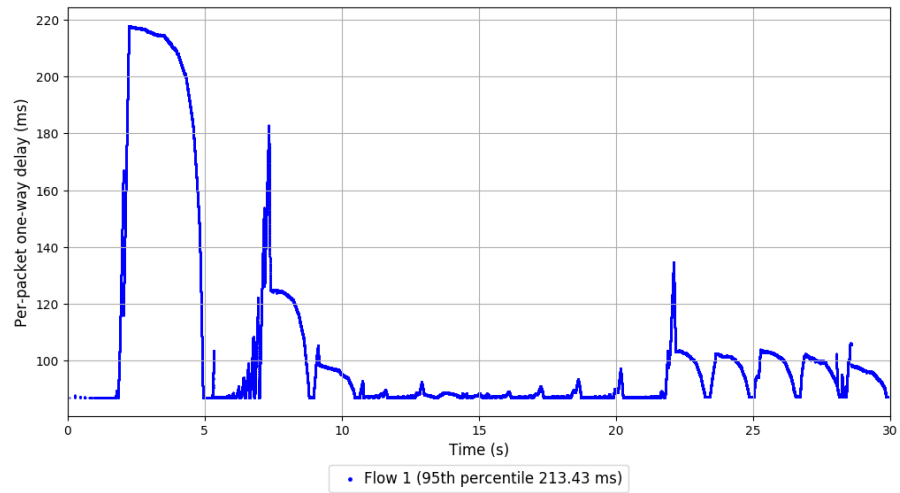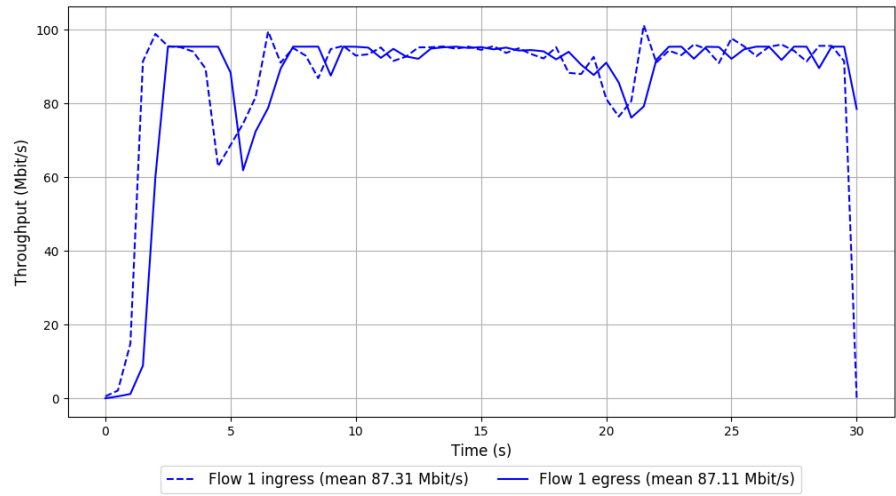• Flow 1 (95th percentile 220.33 ms)

16

```
Run 2: Statistics of Copa

Start at: 2019-01-03 05:10:05
End at: 2019-01-03 05:10:35
Local clock offset: -1.641 ms
Remote clock offset: 9.247 ms


# Below is generated by plot.py at 2019-01-03 06:41:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.64 Mbit/s
95th percentile per-packet one-way delay: 215.719 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 80.64 Mbit/s
95th percentile per-packet one-way delay: 215.719 ms
Loss rate: 0.96%
```

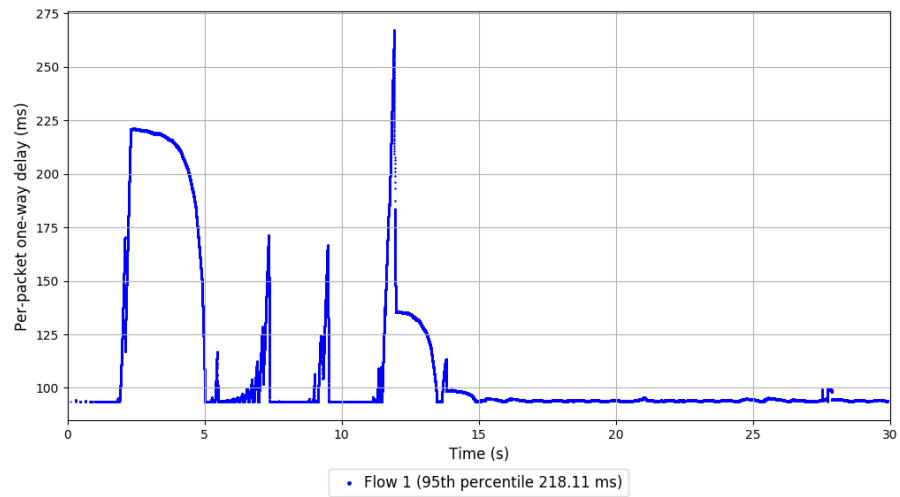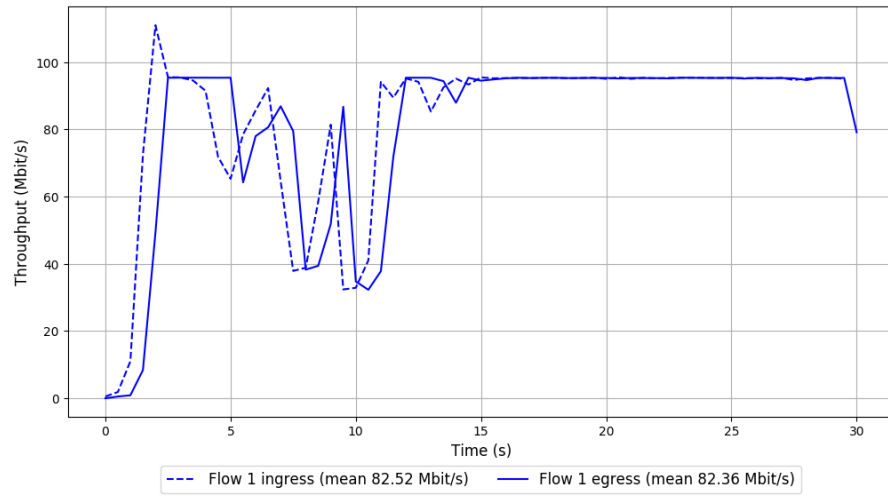Run 2: Report of Copa — Data Link

Flow 1 ingress (mean 80.95 Mbit/s)   Flow 1 egress (mean 80.64 Mbit/s)

• Flow 1 (95th percentile 215.72 ms)

```
Run 3: Statistics of Copa

Start at: 2019-01-03 05:32:36
End at: 2019-01-03 05:33:06
Local clock offset: -3.01 ms
Remote clock offset: 19.429 ms


# Below is generated by plot.py at 2019-01-03 06:41:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.11 Mbit/s
95th percentile per-packet one-way delay: 213.428 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 87.11 Mbit/s
95th percentile per-packet one-way delay: 213.428 ms
Loss rate: 0.80%
```
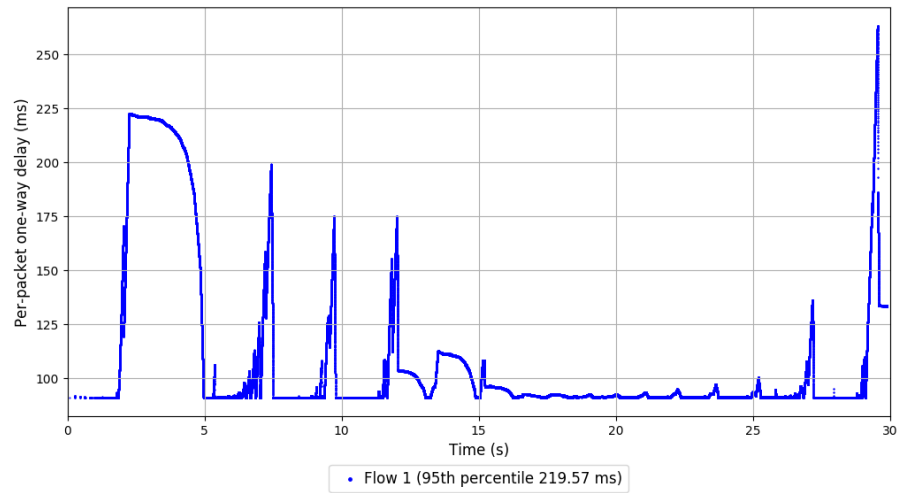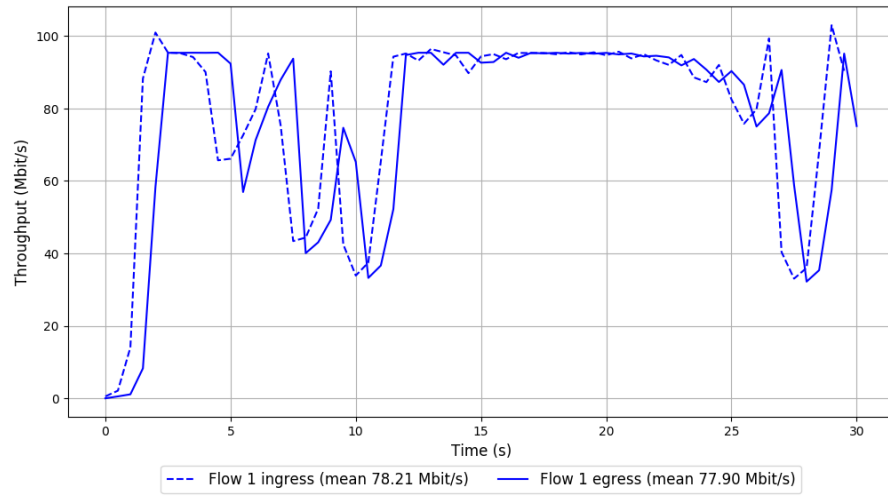
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 87.31 Mbit/s)   Flow 1 egress (mean 87.11 Mbit/s)

Flow 1 (95th percentile 213.43 ms)

```
Run 4: Statistics of Copa

Start at: 2019-01-03 05:55:08
End at: 2019-01-03 05:55:38
Local clock offset: -3.105 ms
Remote clock offset: 15.381 ms


# Below is generated by plot.py at 2019-01-03 06:42:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.36 Mbit/s
95th percentile per-packet one-way delay: 218.106 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 82.36 Mbit/s
95th percentile per-packet one-way delay: 218.106 ms
Loss rate: 0.78%
```

Run 4: Report of Copa — Data Link

Run 5: Statistics of Copa

Start at: 2019-01-03 06:17:40
End at: 2019-01-03 06:18:10
Local clock offset: -6.617 ms
Remote clock offset: 11.847 ms

Below is generated by plot.py at 2019-01-03 06:42:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 77.90 Mbit/s
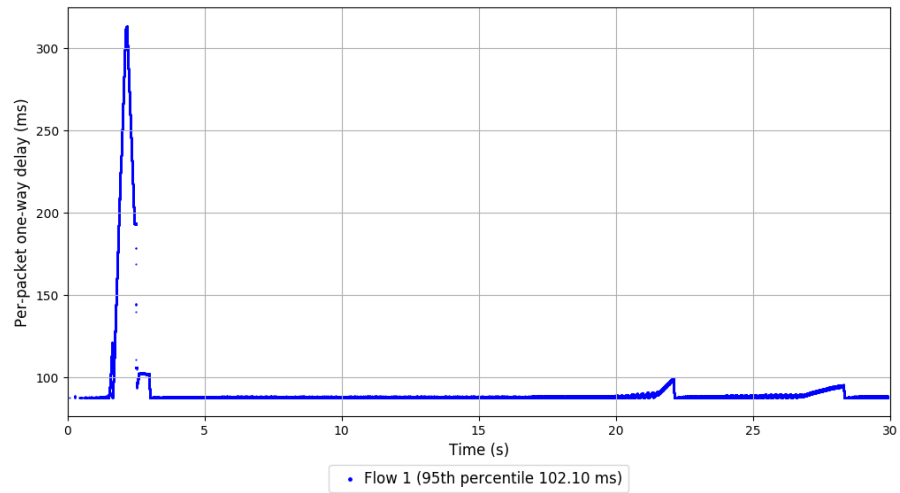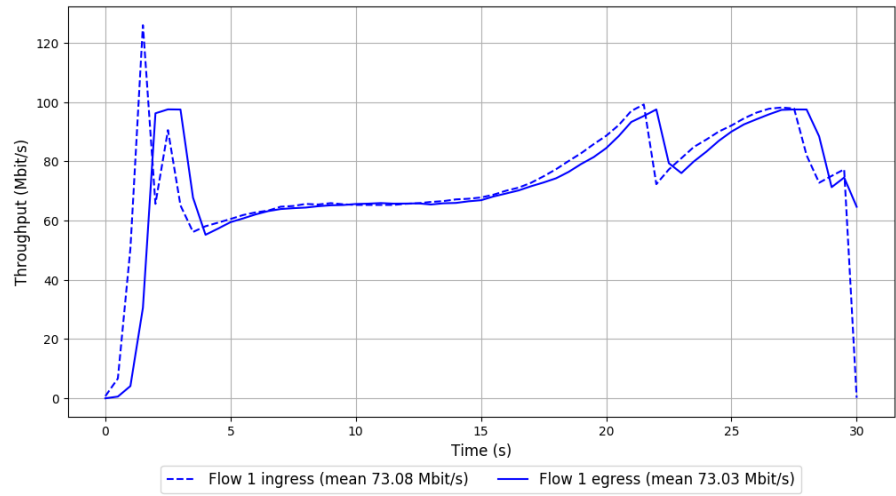95th percentile per-packet one-way delay: 219.572 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 77.90 Mbit/s
95th percentile per-packet one-way delay: 219.572 ms
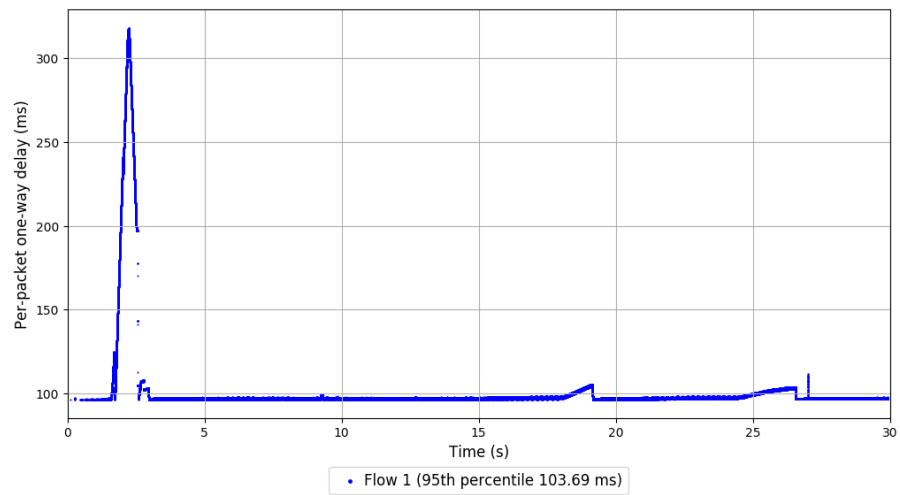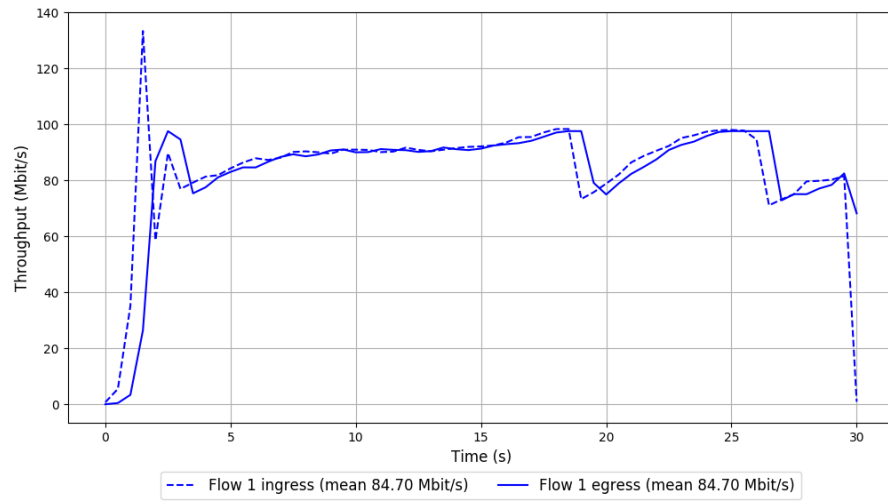Loss rate: 0.97%

Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 78.21 Mbit/s)   Flow 1 egress (mean 77.90 Mbit/s)

• Flow 1 (95th percentile 219.57 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2019-01-03 04:57:08
End at: 2019-01-03 04:57:38
Local clock offset: -1.909 ms
Remote clock offset: 1.208 ms


# Below is generated by plot.py at 2019-01-03 06:42:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 73.03 Mbit/s
95th percentile per-packet one-way delay: 102.098 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 73.03 Mbit/s
95th percentile per-packet one-way delay: 102.098 ms
Loss rate: 0.64%
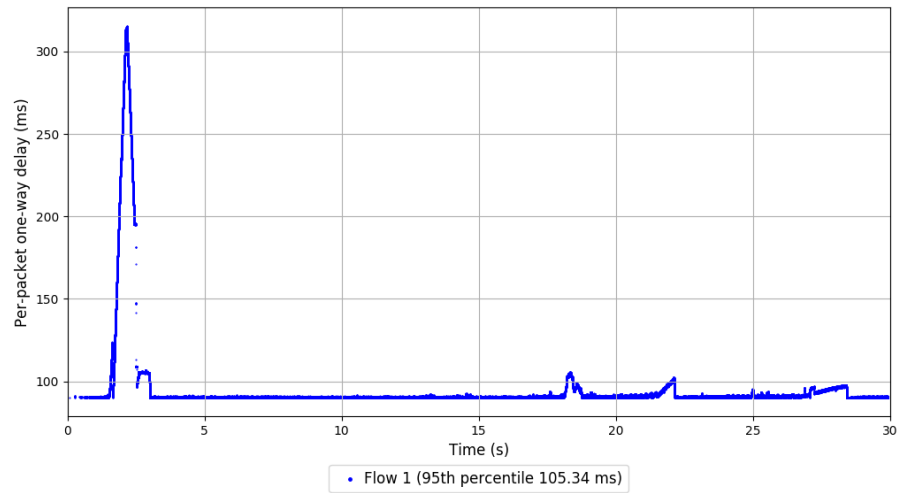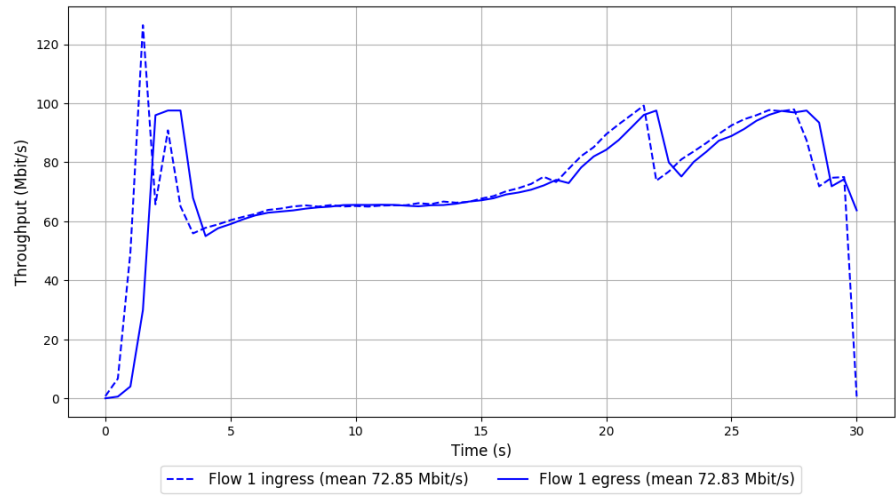```

Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2019-01-03 05:19:38
End at: 2019-01-03 05:20:08
Local clock offset: -2.174 ms
Remote clock offset: 11.382 ms

Below is generated by plot.py at 2019-01-03 06:42:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 84.70 Mbit/s
95th percentile per-packet one-way delay: 103.685 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 84.70 Mbit/s
95th percentile per-packet one-way delay: 103.685 ms
Loss rate: 0.59%
```
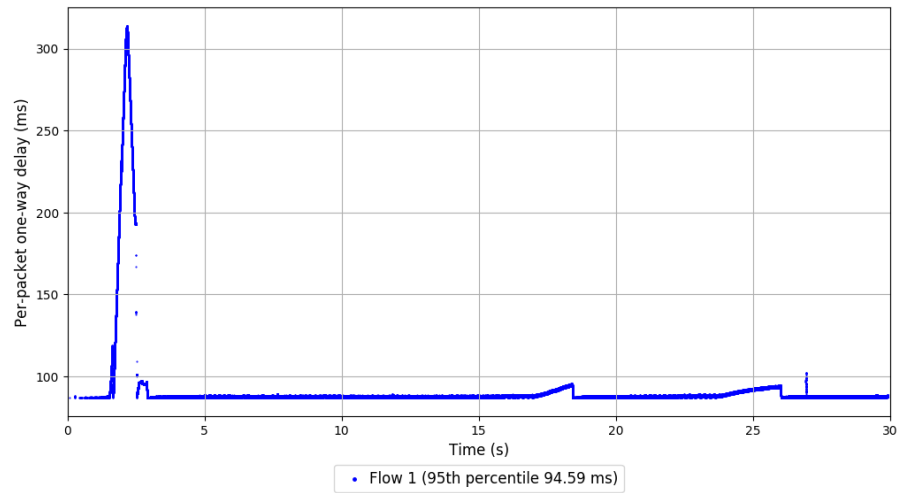
Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2019-01-03 05:42:10
End at: 2019-01-03 05:42:40
Local clock offset: -3.37 ms
Remote clock offset: 14.986 ms

Below is generated by plot.py at 2019-01-03 06:42:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 72.83 Mbit/s
95th percentile per-packet one-way delay: 105.342 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 72.83 Mbit/s
95th percentile per-packet one-way delay: 105.342 ms
Loss rate: 0.60%
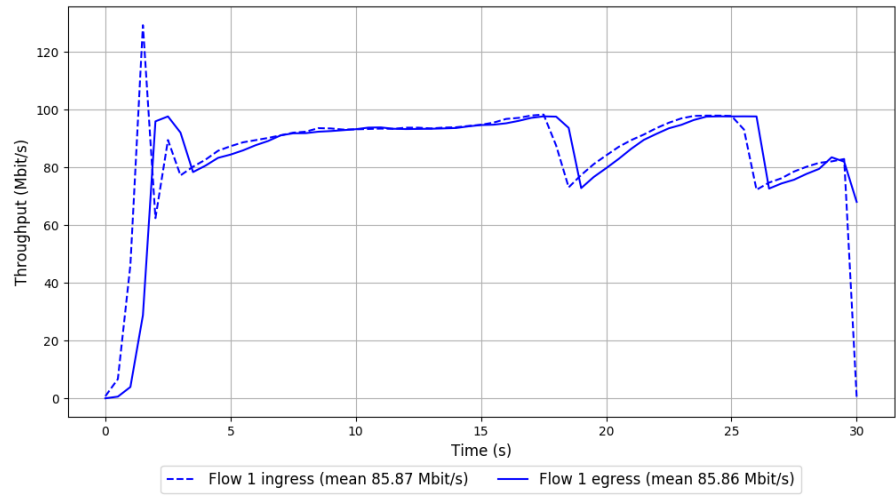```
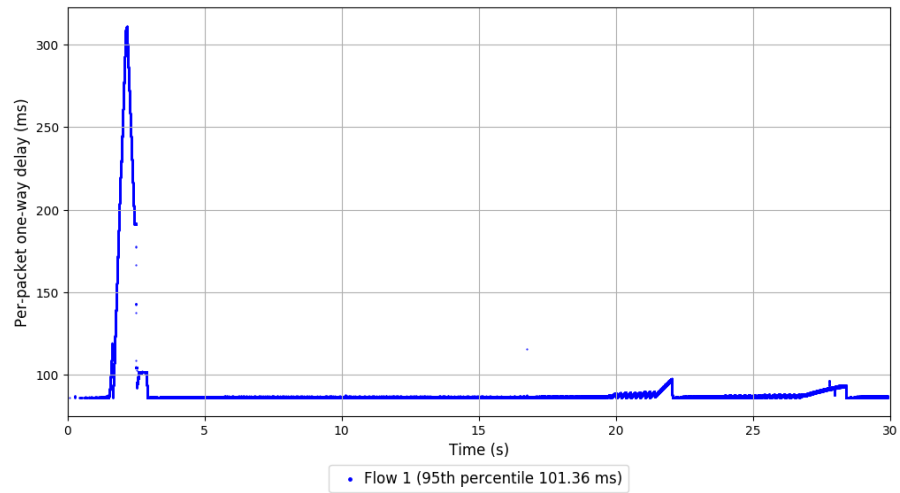
Run 3: Report of TCP Cubic — Data Link

```
Run 4: Statistics of TCP Cubic

Start at: 2019-01-03 06:04:43
End at: 2019-01-03 06:05:13
Local clock offset: -6.105 ms
Remote clock offset: 15.183 ms


# Below is generated by plot.py at 2019-01-03 06:42:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.86 Mbit/s
95th percentile per-packet one-way delay: 94.594 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 85.86 Mbit/s
95th percentile per-packet one-way delay: 94.594 ms
Loss rate: 0.58%
```

Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 85.87 Mbit/s)   Flow 1 egress (mean 85.86 Mbit/s)

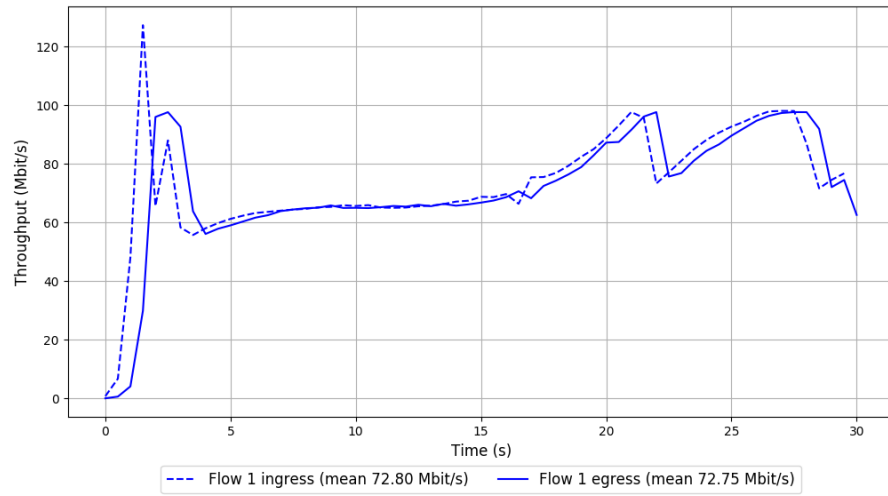

Flow 1 (95th percentile 94.59 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2019-01-03 06:27:14
End at: 2019-01-03 06:27:44
Local clock offset: -7.45 ms
Remote clock offset: 16.352 ms


# Below is generated by plot.py at 2019-01-03 06:42:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.75 Mbit/s
95th percentile per-packet one-way delay: 101.360 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 72.75 Mbit/s
95th percentile per-packet one-way delay: 101.360 ms
Loss rate: 0.63%
```

Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2019-01-03 05:05:21
End at: 2019-01-03 05:05:51
Local clock offset: -1.746 ms
Remote clock offset: 0.068 ms

# Below is generated by plot.py at 2019-01-03 06:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.94 Mbit/s
95th percentile per-packet one-way delay: 109.622 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 92.94 Mbit/s
95th percentile per-packet one-way delay: 109.622 ms
Loss rate: 0.61%
```
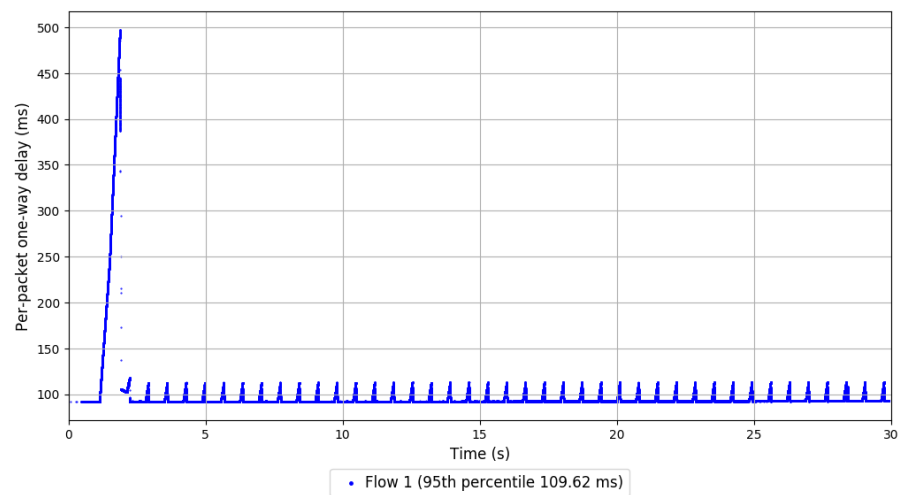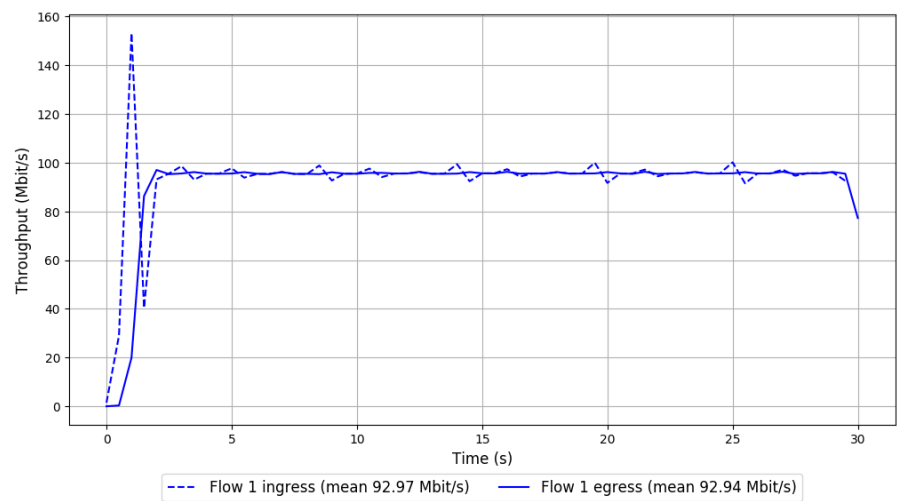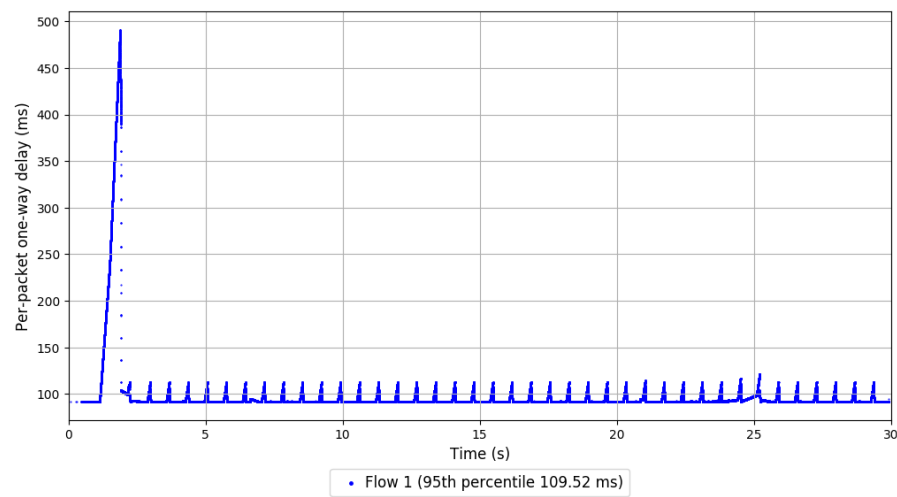
Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 92.97 Mbit/s)   Flow 1 egress (mean 92.94 Mbit/s)

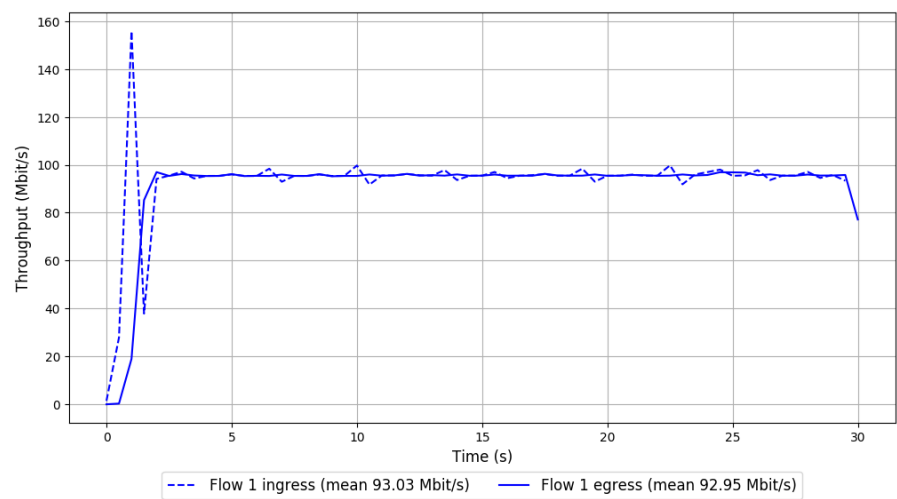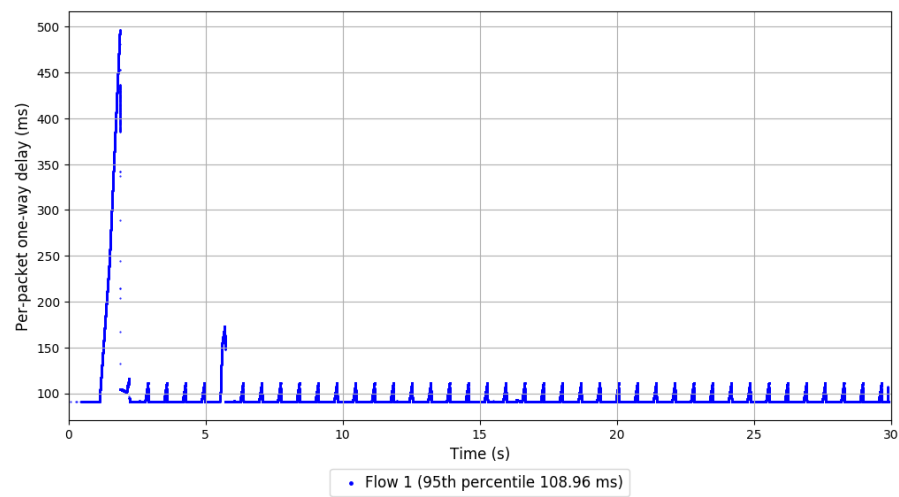Flow 1 (95th percentile 109.62 ms)

```
Run 2: Statistics of FillP

Start at: 2019-01-03 05:27:52
End at: 2019-01-03 05:28:22
Local clock offset: -1.828 ms
Remote clock offset: 14.176 ms


# Below is generated by plot.py at 2019-01-03 06:42:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.95 Mbit/s
95th percentile per-packet one-way delay: 109.516 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 92.95 Mbit/s
95th percentile per-packet one-way delay: 109.516 ms
Loss rate: 0.65%
```

Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 93.03 Mbit/s)   Flow 1 egress (mean 92.95 Mbit/s)

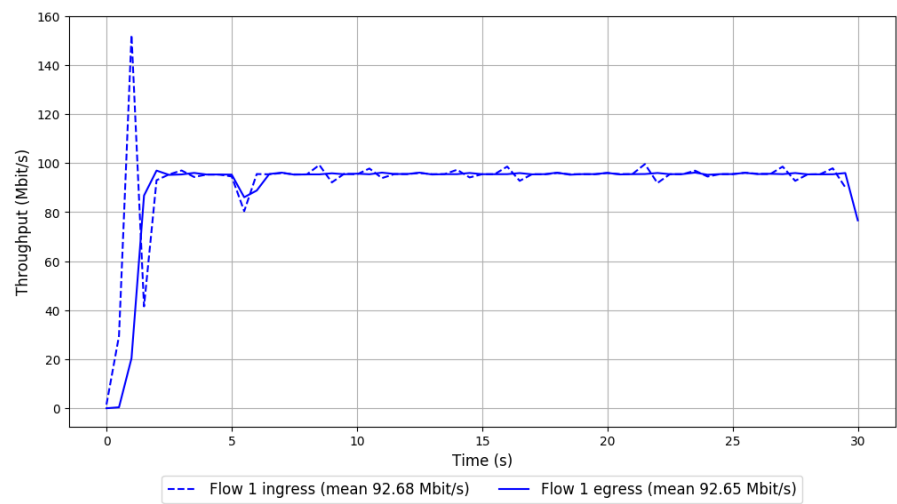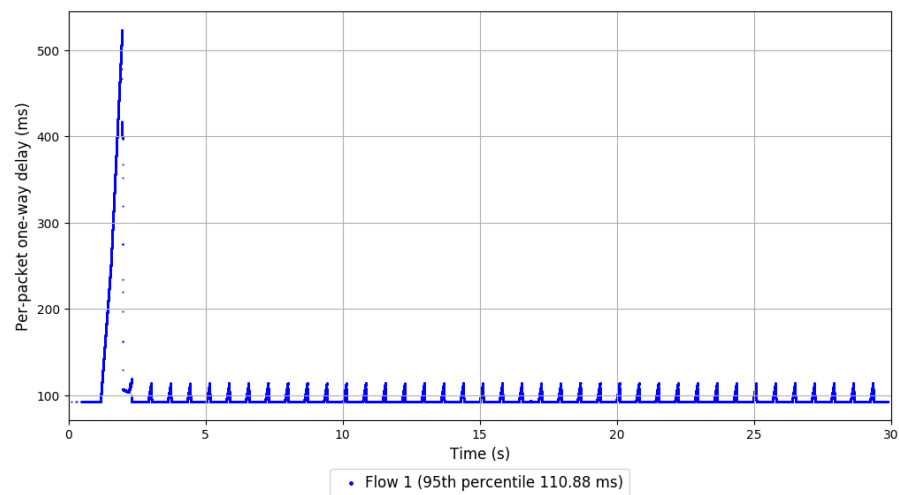Flow 1 (95th percentile 109.52 ms)

```
Run 3: Statistics of FillP

Start at: 2019-01-03 05:50:24
End at: 2019-01-03 05:50:54
Local clock offset: -2.758 ms
Remote clock offset: 12.196 ms


# Below is generated by plot.py at 2019-01-03 06:42:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.65 Mbit/s
95th percentile per-packet one-way delay: 108.962 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 92.65 Mbit/s
95th percentile per-packet one-way delay: 108.962 ms
Loss rate: 0.60%
```

Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 92.68 Mbit/s) --- Flow 1 egress (mean 92.65 Mbit/s)

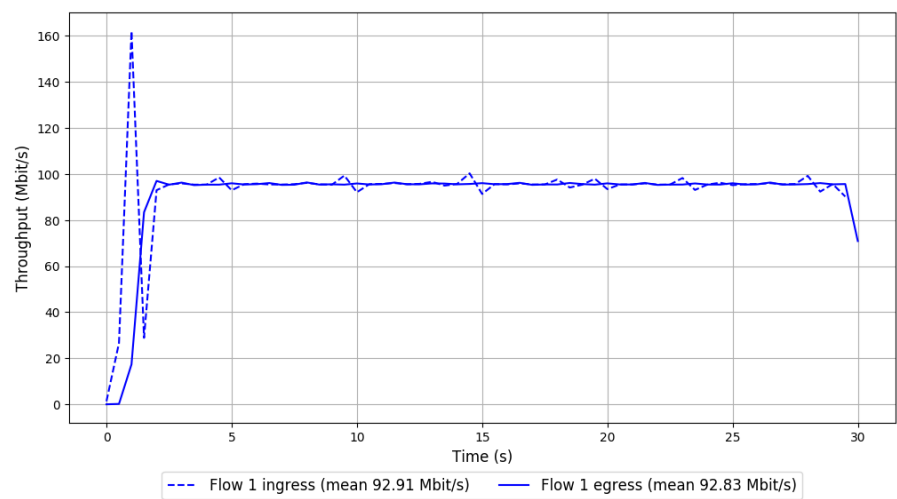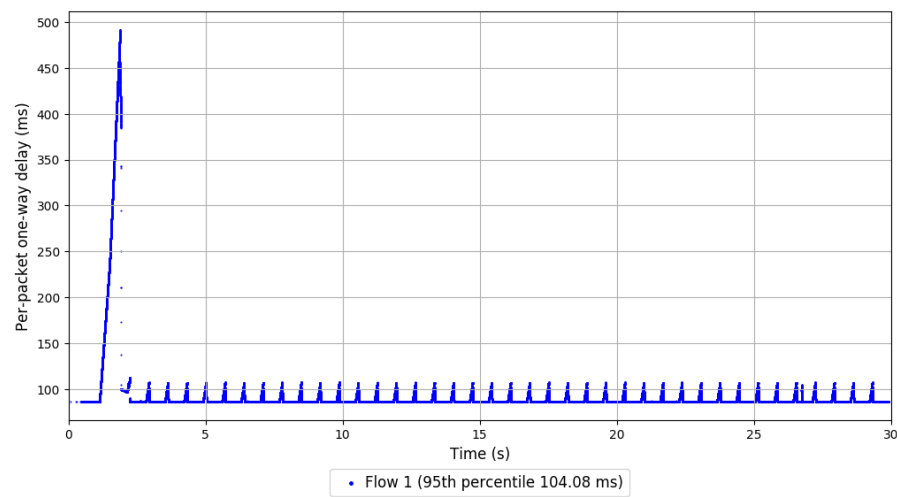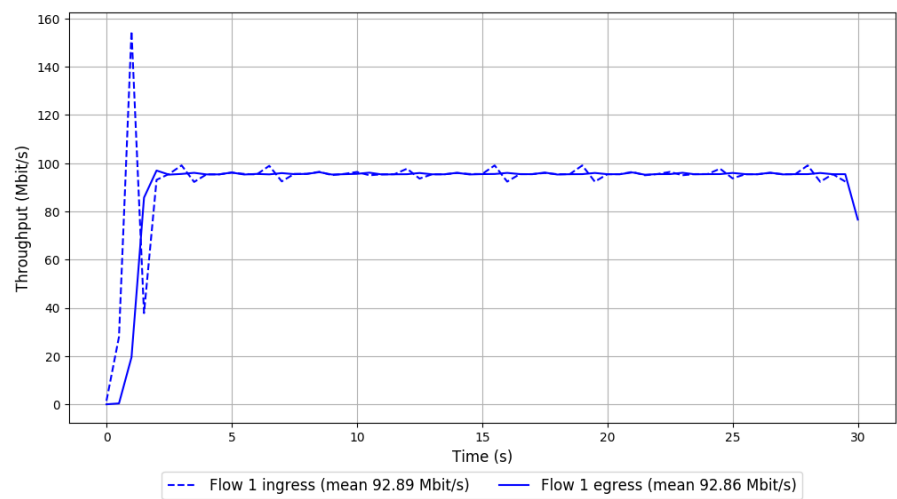Flow 1 (95th percentile 108.96 ms)

```
Run 4: Statistics of FillP

Start at: 2019-01-03 06:12:56
End at: 2019-01-03 06:13:26
Local clock offset: -7.037 ms
Remote clock offset: 15.486 ms


# Below is generated by plot.py at 2019-01-03 06:43:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.83 Mbit/s
95th percentile per-packet one-way delay: 110.879 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 92.83 Mbit/s
95th percentile per-packet one-way delay: 110.879 ms
Loss rate: 0.68%
```
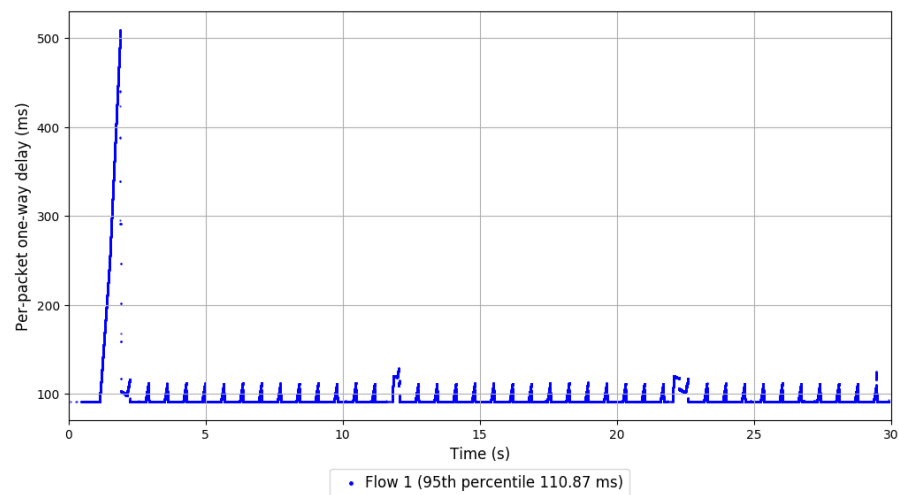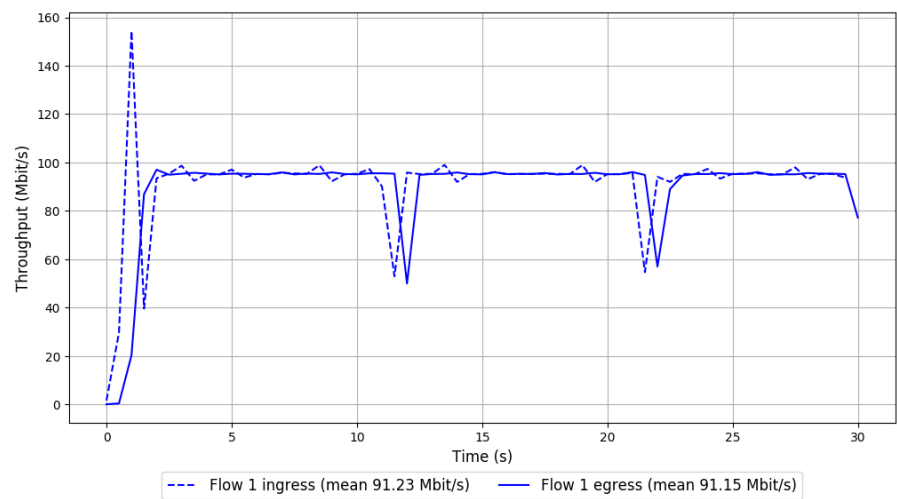
Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 92.91 Mbit/s)   Flow 1 egress (mean 92.83 Mbit/s)

Flow 1 (95th percentile 110.88 ms)

42

```
Run 5: Statistics of FillP

Start at: 2019-01-03 06:35:27
End at: 2019-01-03 06:35:57
Local clock offset: -7.071 ms
Remote clock offset: 16.604 ms


# Below is generated by plot.py at 2019-01-03 06:43:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.86 Mbit/s
95th percentile per-packet one-way delay: 104.083 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 92.86 Mbit/s
95th percentile per-packet one-way delay: 104.083 ms
Loss rate: 0.59%
```
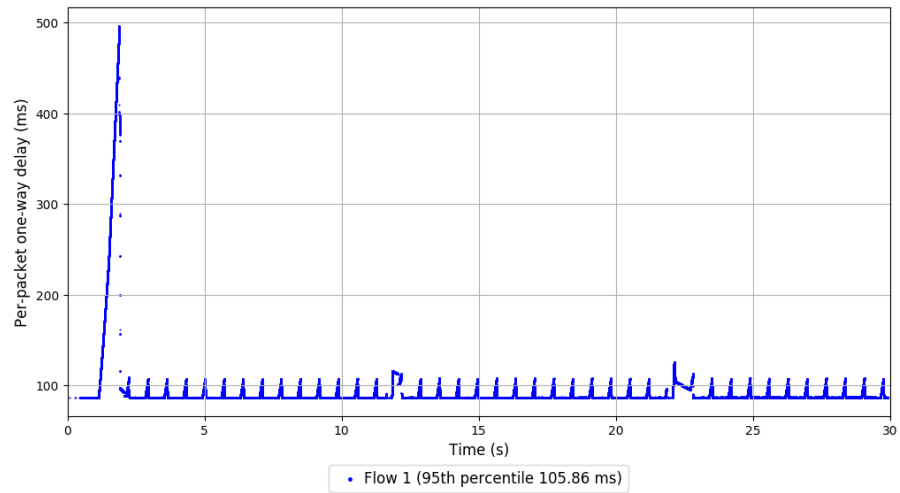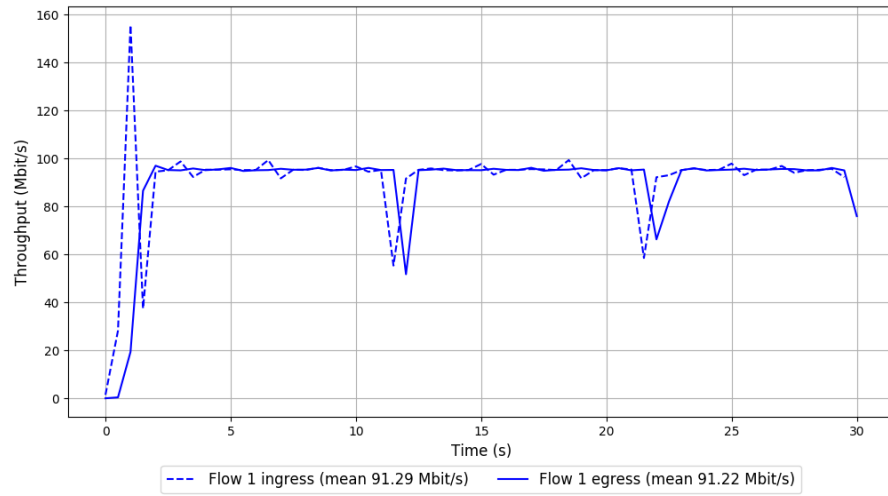
Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 92.89 Mbit/s) — — — Flow 1 egress (mean 92.86 Mbit/s)

• Flow 1 (95th percentile 104.08 ms)

44

```
Run 1: Statistics of FillP-Sheep

Start at: 2019-01-03 04:52:22
End at: 2019-01-03 04:52:52
Local clock offset: -1.983 ms
Remote clock offset: -2.298 ms


# Below is generated by plot.py at 2019-01-03 06:43:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.15 Mbit/s
95th percentile per-packet one-way delay: 110.869 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 91.15 Mbit/s
95th percentile per-packet one-way delay: 110.869 ms
Loss rate: 0.65%
```
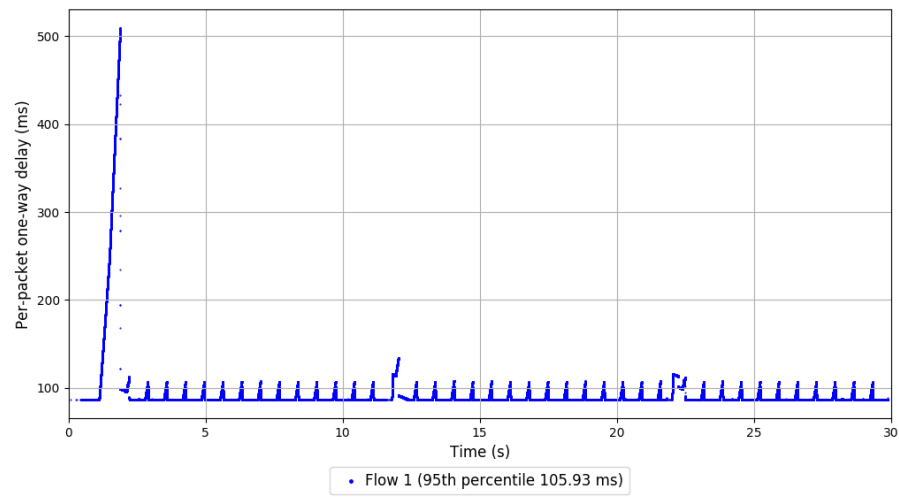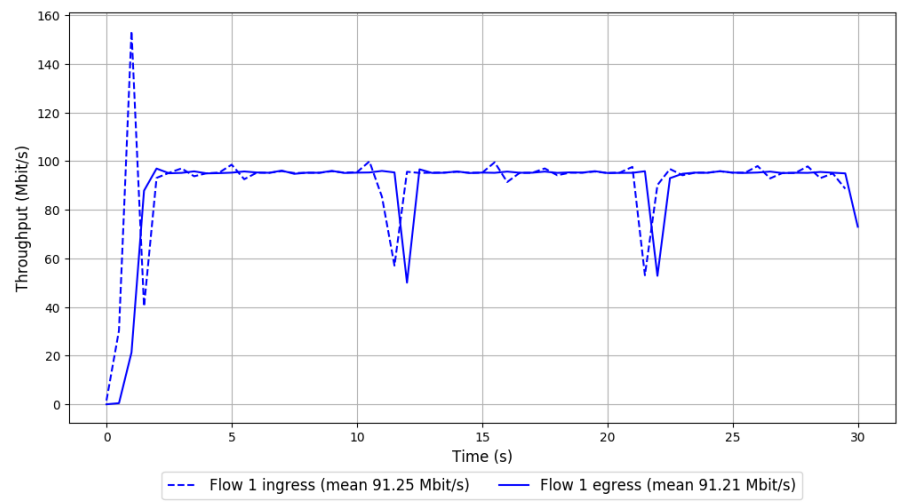
Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 91.23 Mbit/s) ----   Flow 1 egress (mean 91.15 Mbit/s) ——

• Flow 1 (95th percentile 110.87 ms)

```
Run 2: Statistics of FillP-Sheep

Start at: 2019-01-03 05:14:53
End at: 2019-01-03 05:15:23
Local clock offset: -2.298 ms
Remote clock offset: 12.564 ms


# Below is generated by plot.py at 2019-01-03 06:43:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.22 Mbit/s
95th percentile per-packet one-way delay: 105.863 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 91.22 Mbit/s
95th percentile per-packet one-way delay: 105.863 ms
Loss rate: 0.65%
```
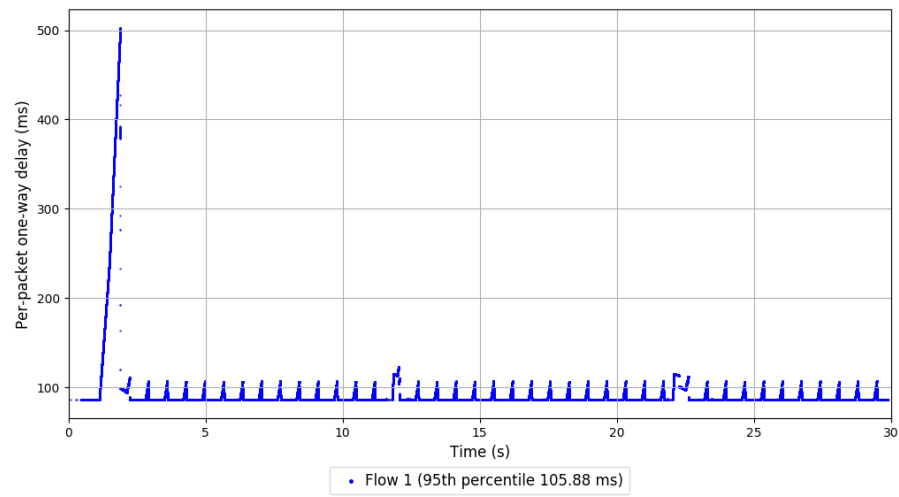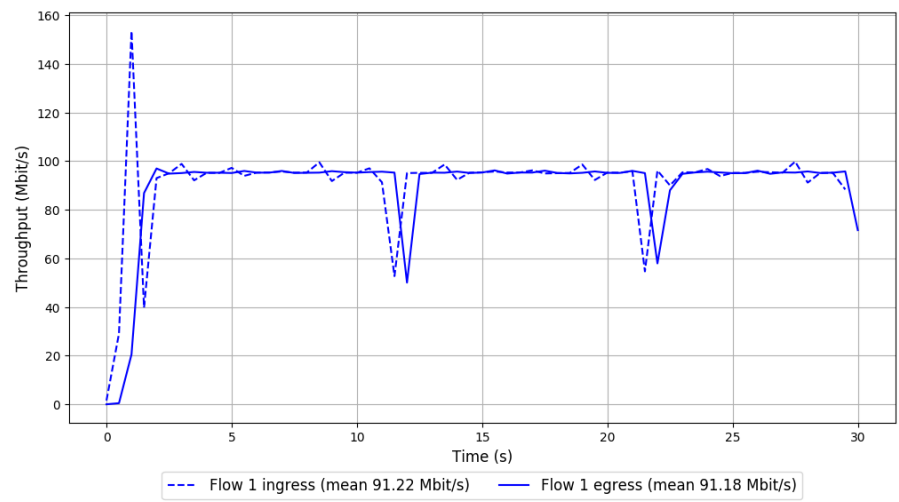
Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 91.29 Mbit/s)   Flow 1 egress (mean 91.22 Mbit/s)

Flow 1 (95th percentile 105.86 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2019-01-03 05:37:24
End at: 2019-01-03 05:37:54
Local clock offset: -3.243 ms
Remote clock offset: 20.571 ms


# Below is generated by plot.py at 2019-01-03 06:43:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.21 Mbit/s
95th percentile per-packet one-way delay: 105.929 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 91.21 Mbit/s
95th percentile per-packet one-way delay: 105.929 ms
Loss rate: 0.60%
```
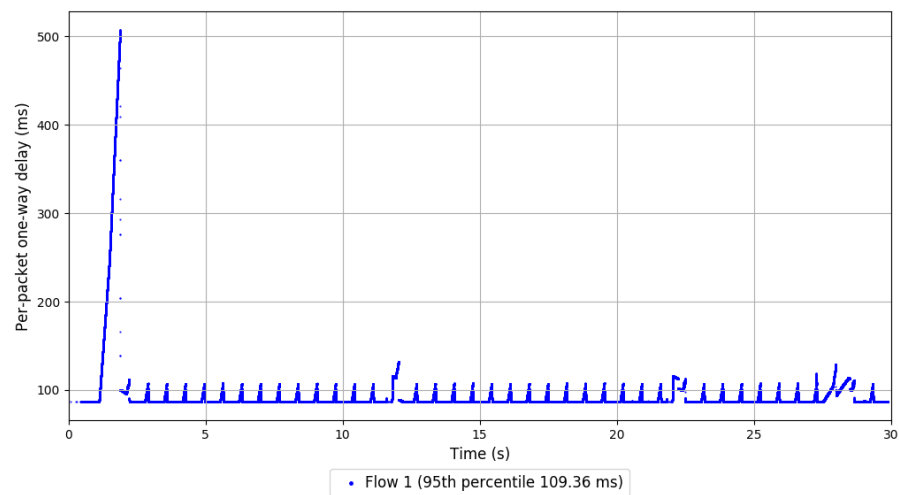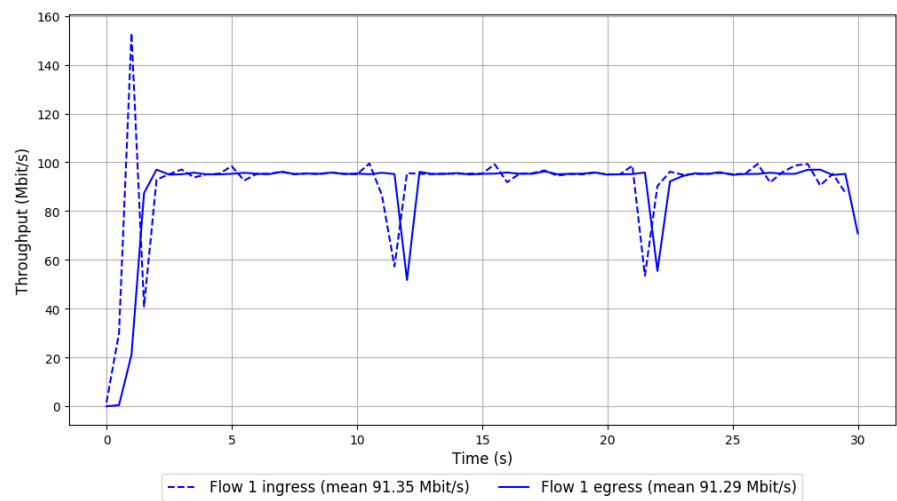
Run 3: Report of FillP-Sheep — Data Link

```
Run 4: Statistics of FillP-Sheep

Start at: 2019-01-03 05:59:56
End at: 2019-01-03 06:00:26
Local clock offset: -5.226 ms
Remote clock offset: 15.429 ms


# Below is generated by plot.py at 2019-01-03 06:44:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.18 Mbit/s
95th percentile per-packet one-way delay: 105.875 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 91.18 Mbit/s
95th percentile per-packet one-way delay: 105.875 ms
Loss rate: 0.62%
```
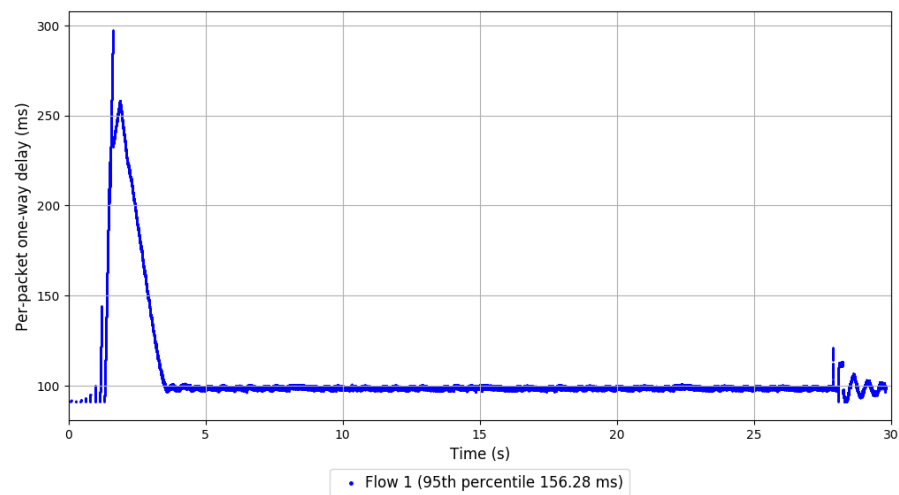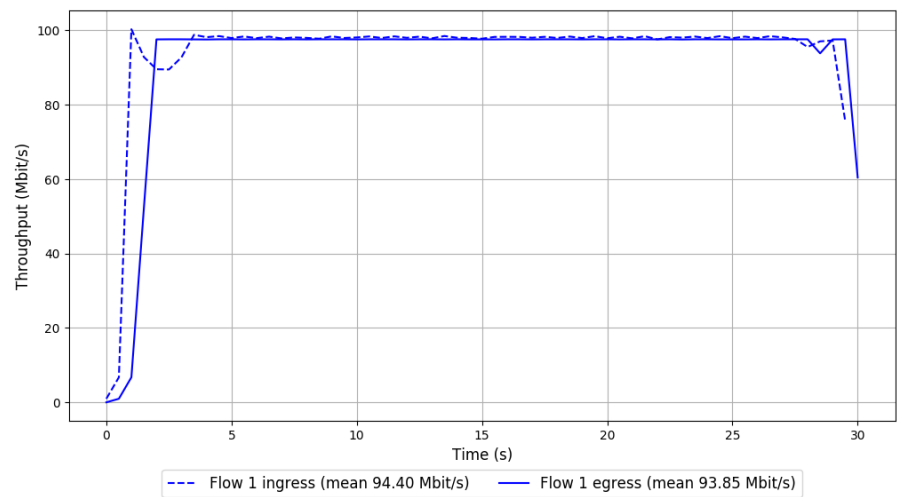
Run 4: Report of FillP-Sheep — Data Link

```
Run 5: Statistics of FillP-Sheep

Start at: 2019-01-03 06:22:28
End at: 2019-01-03 06:22:58
Local clock offset: -7.657 ms
Remote clock offset: 15.937 ms


# Below is generated by plot.py at 2019-01-03 06:44:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.29 Mbit/s
95th percentile per-packet one-way delay: 109.365 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 91.29 Mbit/s
95th percentile per-packet one-way delay: 109.365 ms
Loss rate: 0.64%
```

Run 5: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 91.35 Mbit/s)   Flow 1 egress (mean 91.29 Mbit/s)
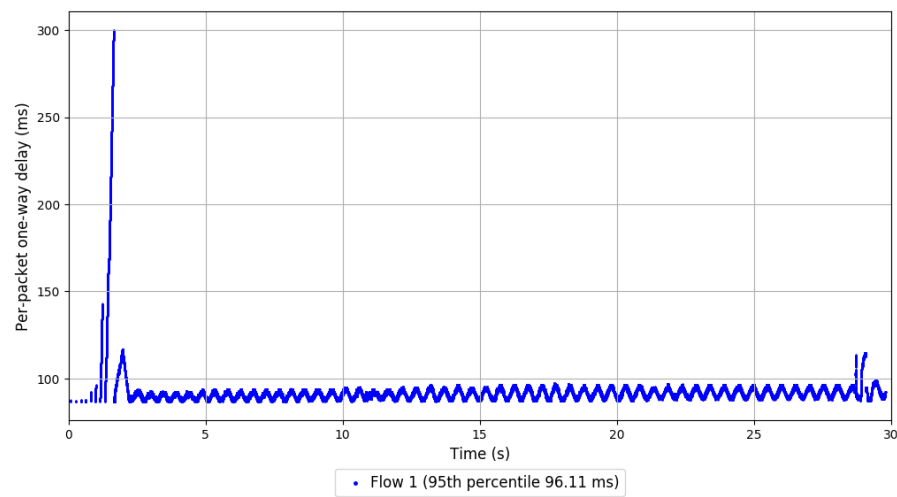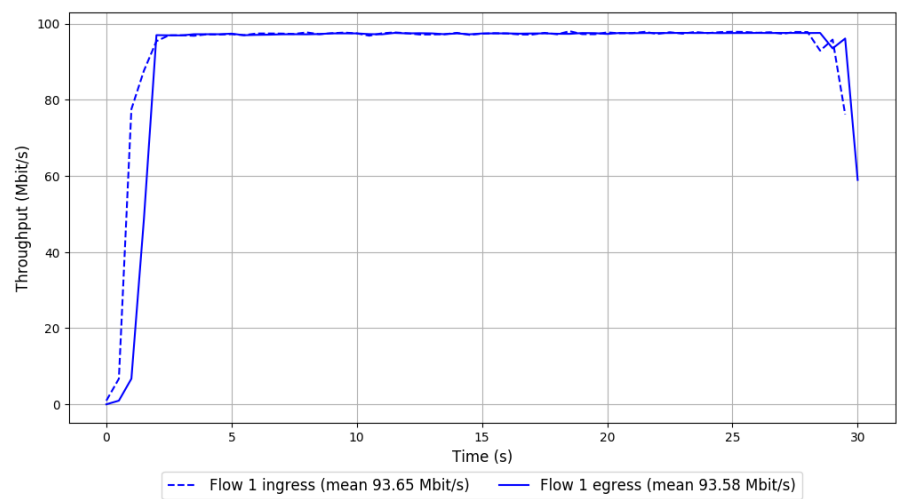

Flow 1 (95th percentile 109.36 ms)

```
Run 1: Statistics of Indigo

Start at: 2019-01-03 04:49:59
End at: 2019-01-03 04:50:30
Local clock offset: -2.044 ms
Remote clock offset: -2.206 ms


# Below is generated by plot.py at 2019-01-03 06:44:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.85 Mbit/s
95th percentile per-packet one-way delay: 156.281 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 93.85 Mbit/s
95th percentile per-packet one-way delay: 156.281 ms
Loss rate: 1.15%
```
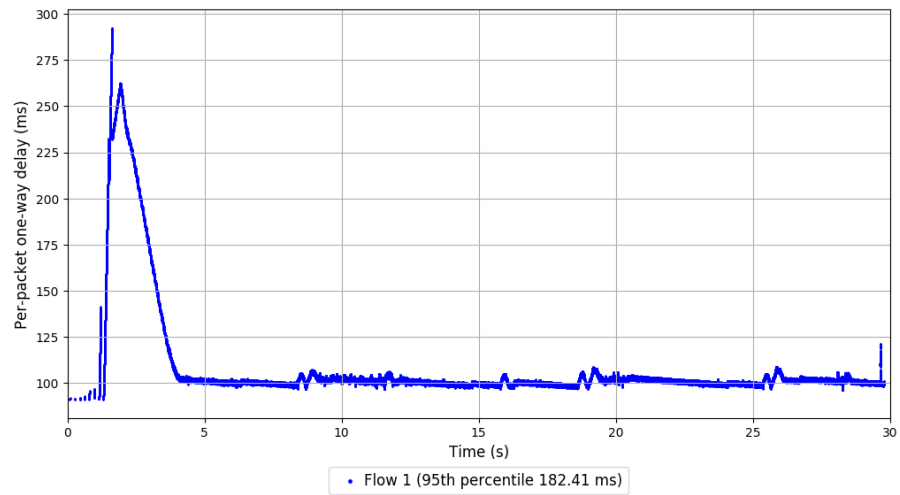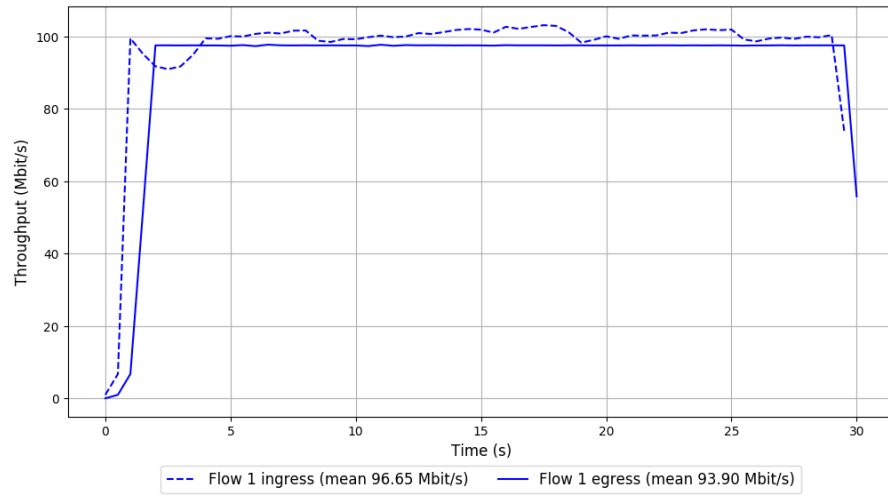
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2019-01-03 05:12:32
End at: 2019-01-03 05:13:02
Local clock offset: -2.364 ms
Remote clock offset: 11.009 ms


# Below is generated by plot.py at 2019-01-03 06:44:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.58 Mbit/s
95th percentile per-packet one-way delay: 96.113 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 93.58 Mbit/s
95th percentile per-packet one-way delay: 96.113 ms
Loss rate: 0.64%
```

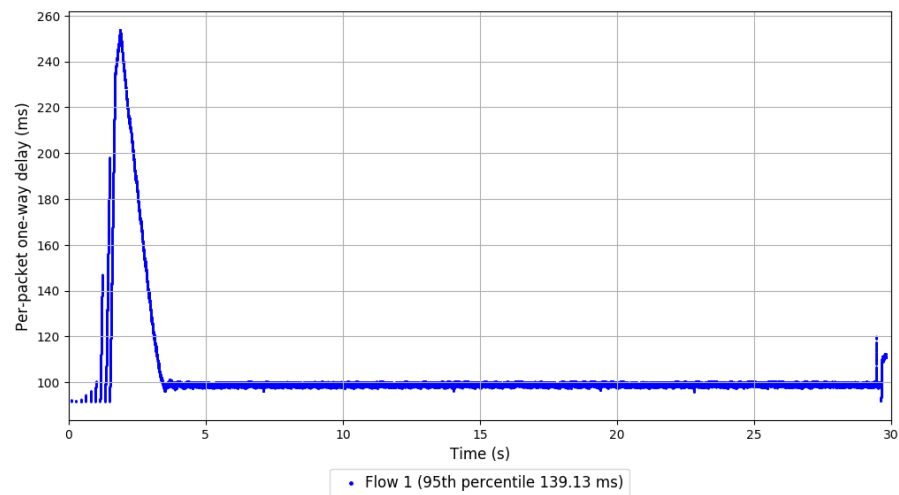Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2019-01-03 05:35:03
End at: 2019-01-03 05:35:33
Local clock offset: -3.231 ms
Remote clock offset: 16.068 ms


# Below is generated by plot.py at 2019-01-03 06:44:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.90 Mbit/s
95th percentile per-packet one-way delay: 182.406 ms
Loss rate: 3.41%
-- Flow 1:
Average throughput: 93.90 Mbit/s
95th percentile per-packet one-way delay: 182.406 ms
Loss rate: 3.41%
```
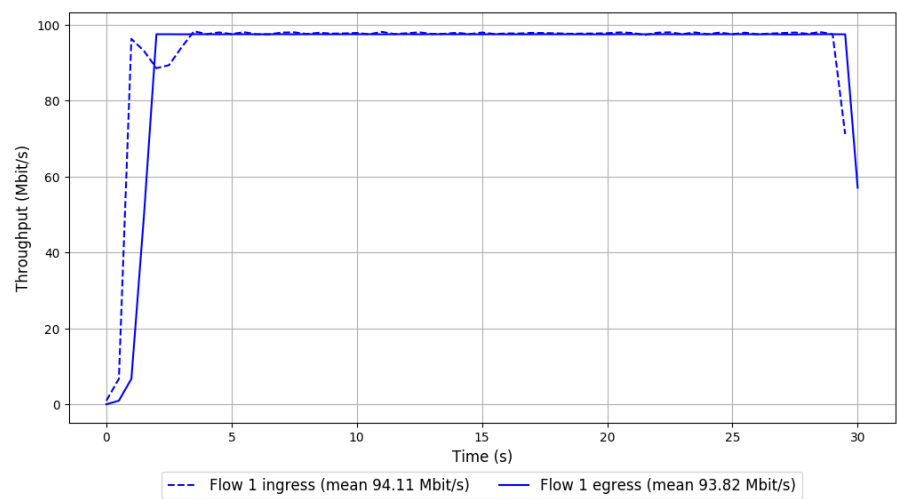
Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2019-01-03 05:57:34
End at: 2019-01-03 05:58:05
Local clock offset: -3.878 ms
Remote clock offset: 11.496 ms


# Below is generated by plot.py at 2019-01-03 06:44:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.82 Mbit/s
95th percentile per-packet one-way delay: 139.129 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 93.82 Mbit/s
95th percentile per-packet one-way delay: 139.129 ms
Loss rate: 0.88%
```
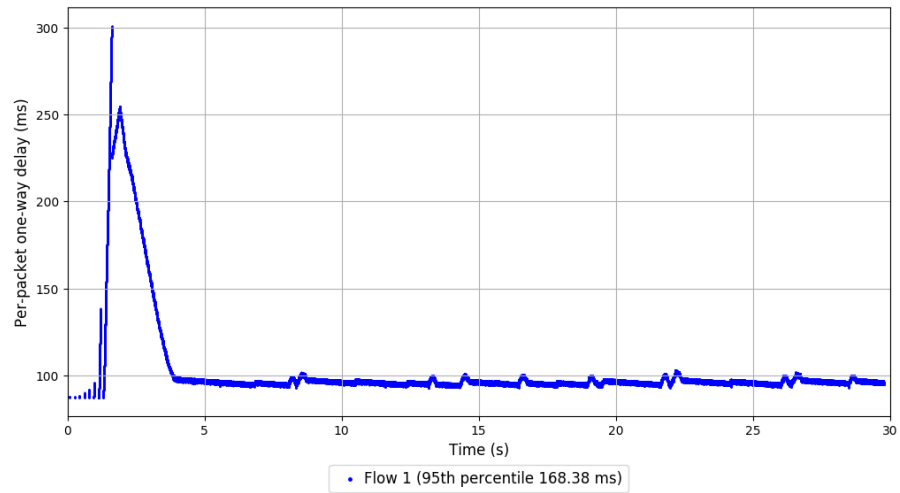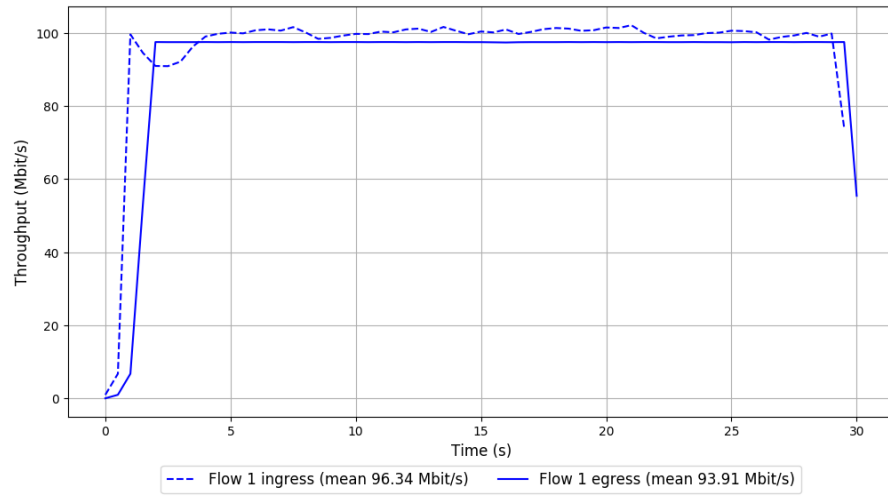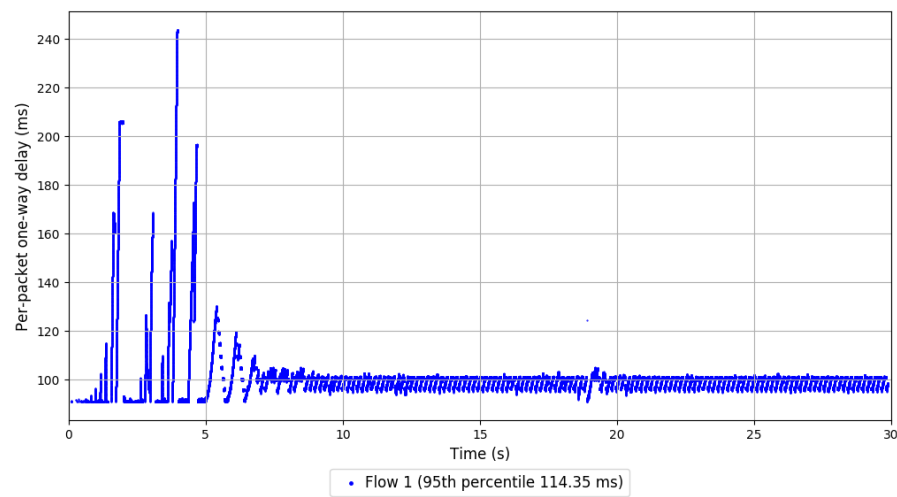
Run 4: Report of Indigo — Data Link

Flow 1 ingress (mean 94.11 Mbit/s) —— Flow 1 egress (mean 93.82 Mbit/s)

• Flow 1 (95th percentile 139.13 ms)

```
Run 5: Statistics of Indigo

Start at: 2019-01-03 06:20:06
End at: 2019-01-03 06:20:36
Local clock offset: -6.79 ms
Remote clock offset: 15.794 ms


# Below is generated by plot.py at 2019-01-03 06:44:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.91 Mbit/s
95th percentile per-packet one-way delay: 168.383 ms
Loss rate: 3.09%
-- Flow 1:
Average throughput: 93.91 Mbit/s
95th percentile per-packet one-way delay: 168.383 ms
Loss rate: 3.09%
```
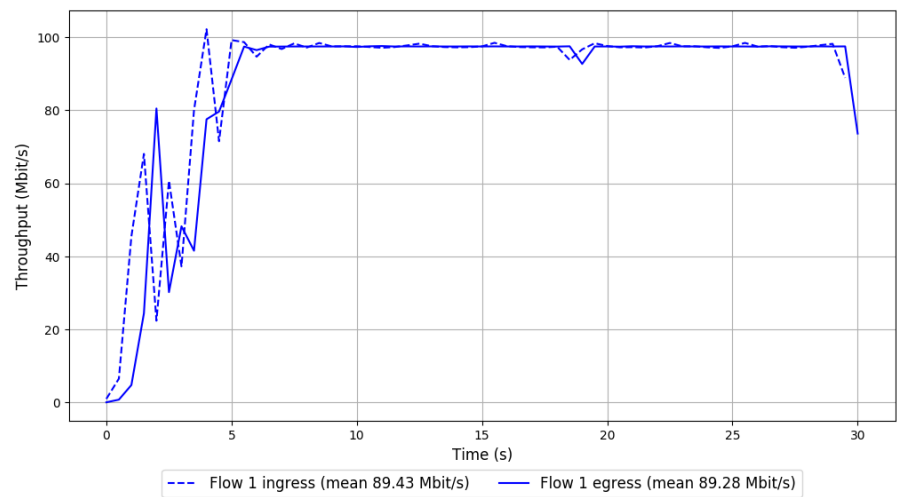
Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-MusesD

Start at: 2019-01-03 04:46:22
End at: 2019-01-03 04:46:52
Local clock offset: -2.251 ms
Remote clock offset: -1.866 ms


# Below is generated by plot.py at 2019-01-03 06:44:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.28 Mbit/s
95th percentile per-packet one-way delay: 114.349 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 89.28 Mbit/s
95th percentile per-packet one-way delay: 114.349 ms
Loss rate: 0.74%
```

Run 1: Report of Indigo-MusesD — Data Link

```
Run 2: Statistics of Indigo-MusesD

Start at: 2019-01-03 05:08:53
End at: 2019-01-03 05:09:23
Local clock offset: -1.666 ms
Remote clock offset: 7.896 ms


# Below is generated by plot.py at 2019-01-03 06:45:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.25 Mbit/s
95th percentile per-packet one-way delay: 107.498 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 89.25 Mbit/s
95th percentile per-packet one-way delay: 107.498 ms
Loss rate: 0.73%
```
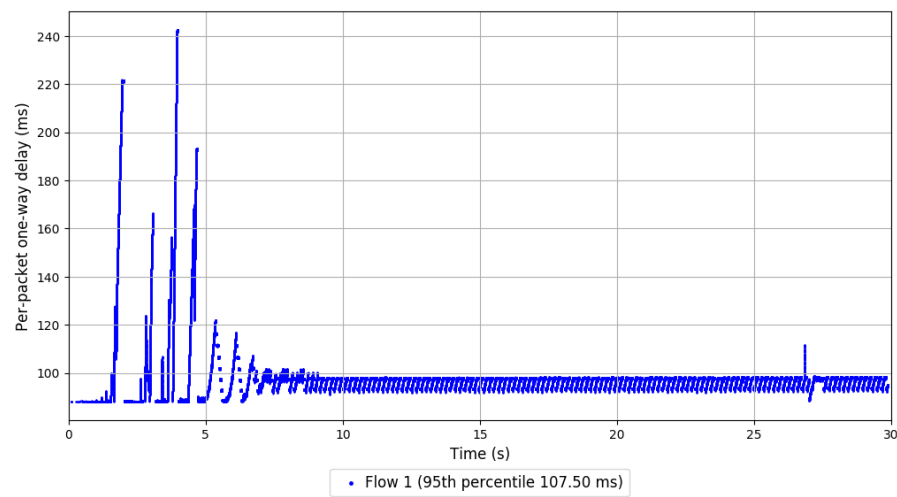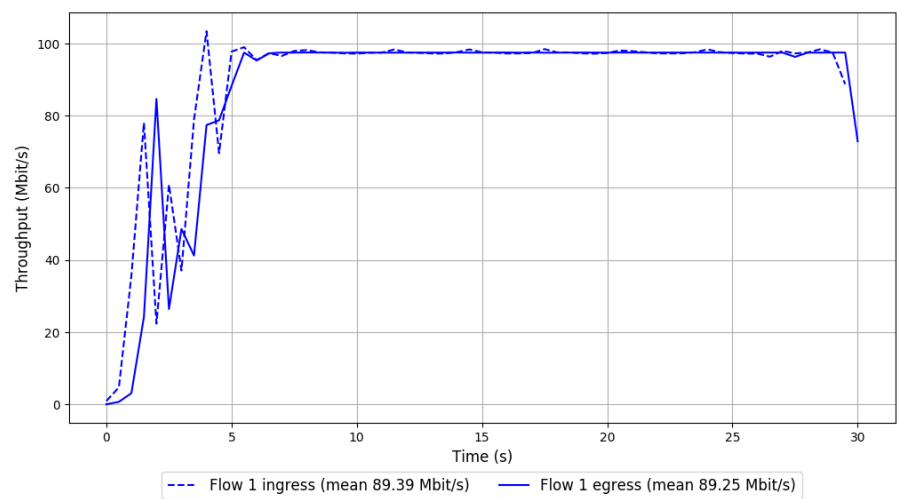
Run 2: Report of Indigo-MusesD — Data Link

```
Run 3: Statistics of Indigo-MusesD

Start at: 2019-01-03 05:31:24
End at: 2019-01-03 05:31:54
Local clock offset: -2.143 ms
Remote clock offset: 19.04 ms


# Below is generated by plot.py at 2019-01-03 06:45:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.27 Mbit/s
95th percentile per-packet one-way delay: 113.221 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 90.27 Mbit/s
95th percentile per-packet one-way delay: 113.221 ms
Loss rate: 0.74%
```
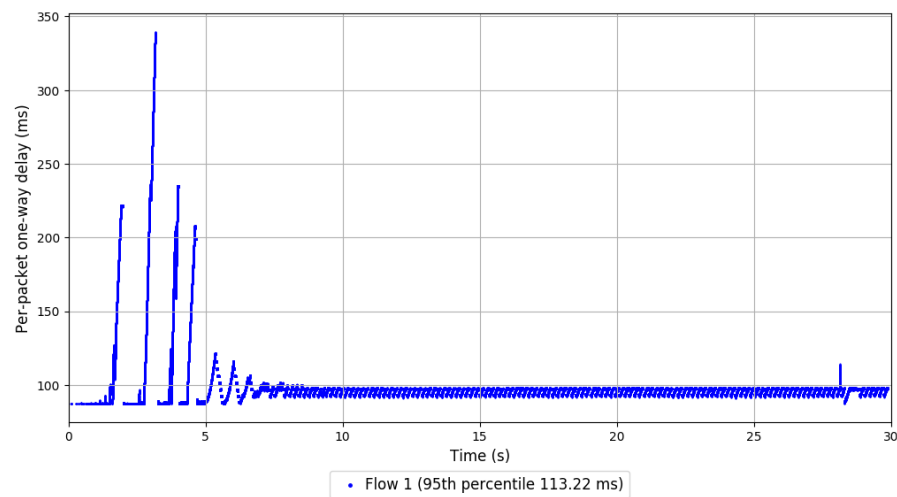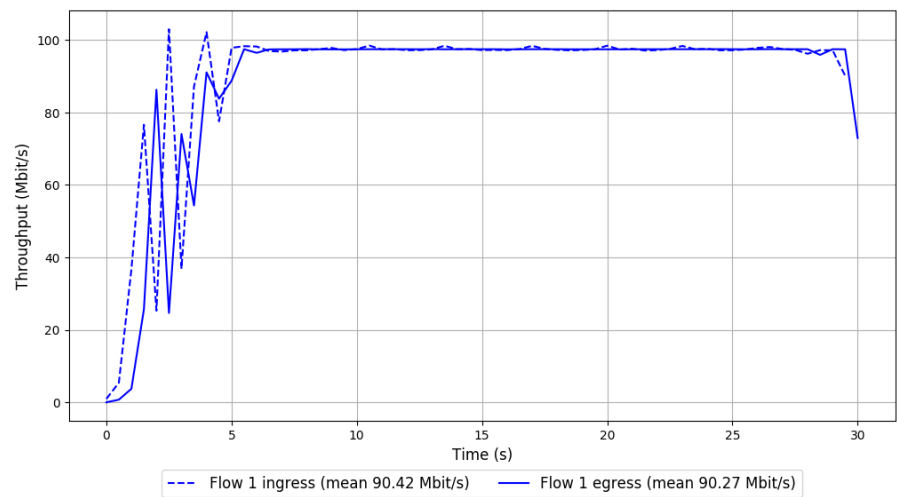
Run 3: Report of Indigo-MusesD — Data Link

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```
Run 4: Statistics of Indigo-MusesD

Start at: 2019-01-03 05:53:56
End at: 2019-01-03 05:54:26
Local clock offset: -2.686 ms
Remote clock offset: 15.53 ms


# Below is generated by plot.py at 2019-01-03 06:45:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.67 Mbit/s
95th percentile per-packet one-way delay: 116.671 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 89.67 Mbit/s
95th percentile per-packet one-way delay: 116.671 ms
Loss rate: 0.89%
```
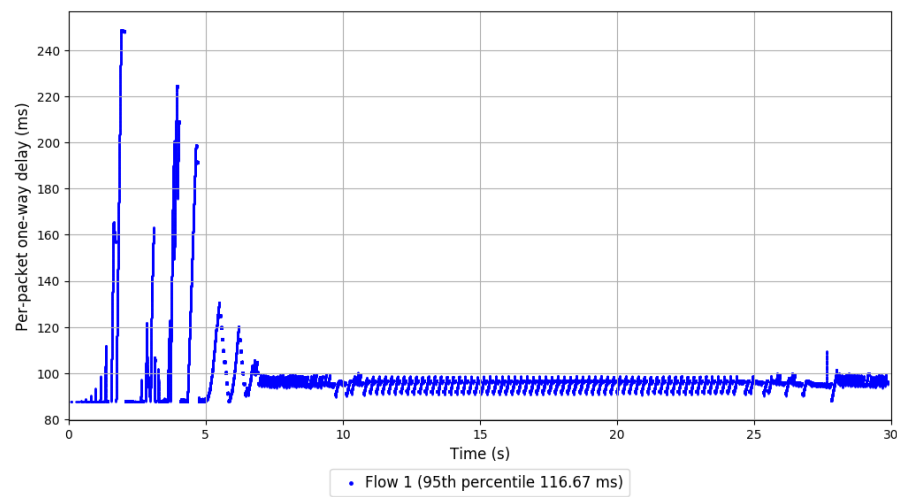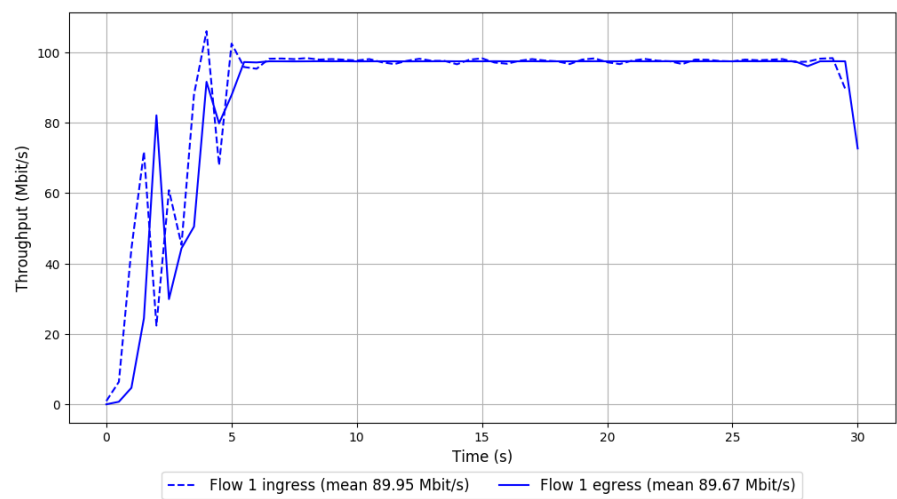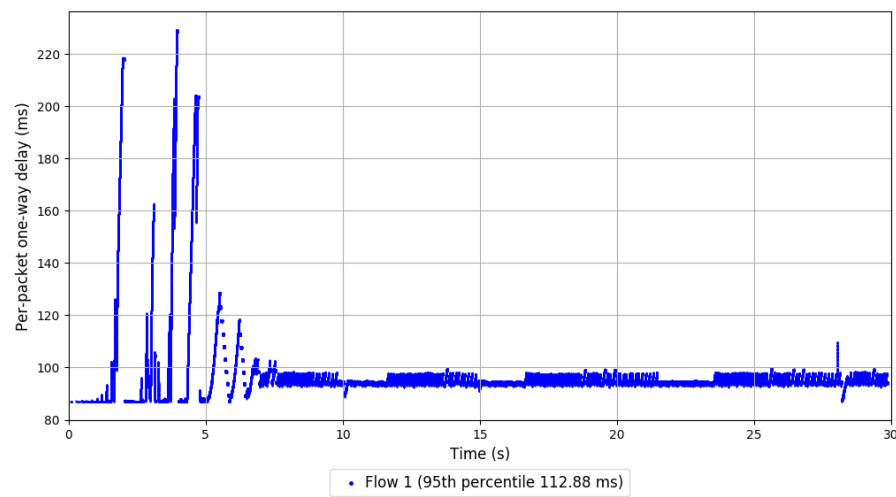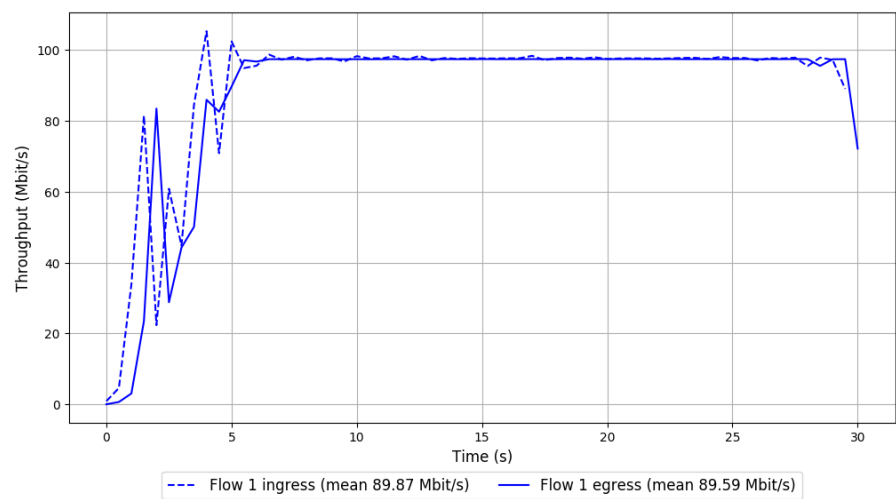
Run 4: Report of Indigo-MusesD — Data Link

```
Run 5: Statistics of Indigo-MusesD

Start at: 2019-01-03 06:16:28
End at: 2019-01-03 06:16:58
Local clock offset: -7.298 ms
Remote clock offset: 15.665 ms


# Below is generated by plot.py at 2019-01-03 06:45:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.59 Mbit/s
95th percentile per-packet one-way delay: 112.882 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 89.59 Mbit/s
95th percentile per-packet one-way delay: 112.882 ms
Loss rate: 0.88%
```

Run 5: Report of Indigo-MusesD — Data Link

```
Run 1: Statistics of Indigo-MusesT

Start at: 2019-01-03 04:48:47
End at: 2019-01-03 04:49:17
Local clock offset: -2.127 ms
Remote clock offset: 1.94 ms


# Below is generated by plot.py at 2019-01-03 06:45:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.02 Mbit/s
95th percentile per-packet one-way delay: 121.479 ms
Loss rate: 7.43%
-- Flow 1:
Average throughput: 95.02 Mbit/s
95th percentile per-packet one-way delay: 121.479 ms
Loss rate: 7.43%
```
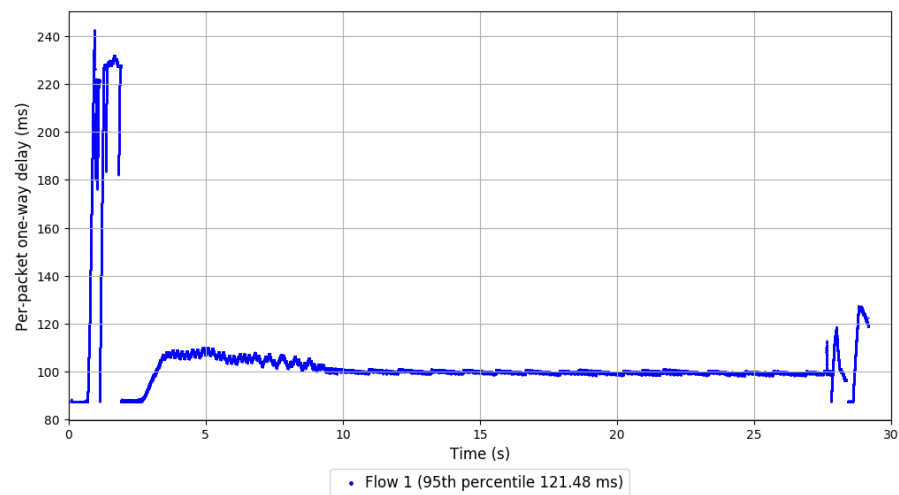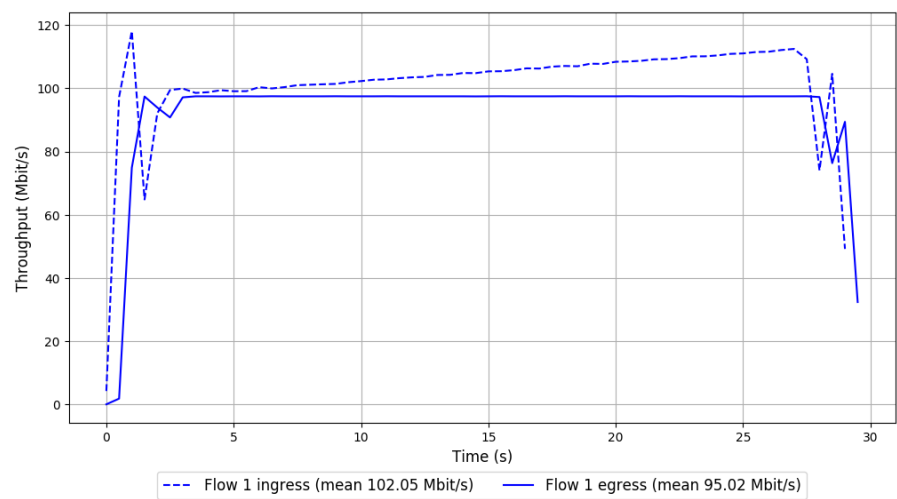
Run 1: Report of Indigo-MusesT — Data Link

```
Run 2: Statistics of Indigo-MusesT

Start at: 2019-01-03 05:11:19
End at: 2019-01-03 05:11:49
Local clock offset: -2.383 ms
Remote clock offset: 10.09 ms


# Below is generated by plot.py at 2019-01-03 06:45:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.62 Mbit/s
95th percentile per-packet one-way delay: 221.035 ms
Loss rate: 8.64%
-- Flow 1:
Average throughput: 95.62 Mbit/s
95th percentile per-packet one-way delay: 221.035 ms
Loss rate: 8.64%
```
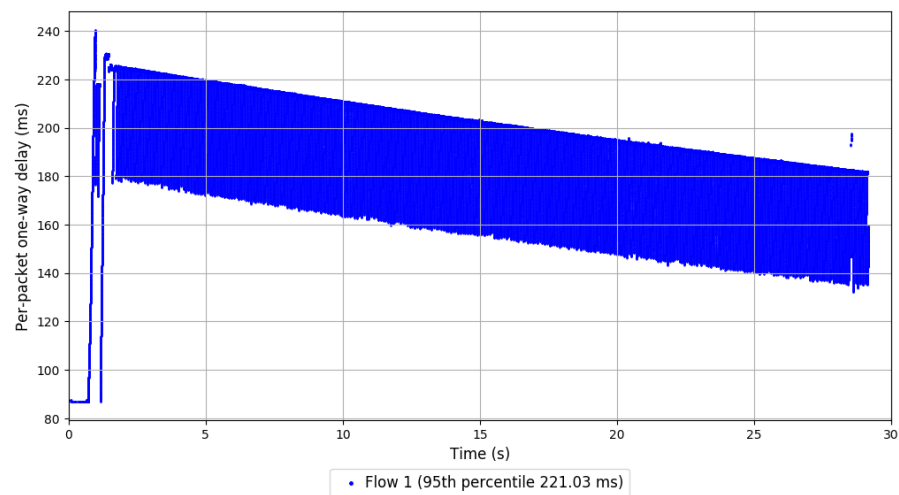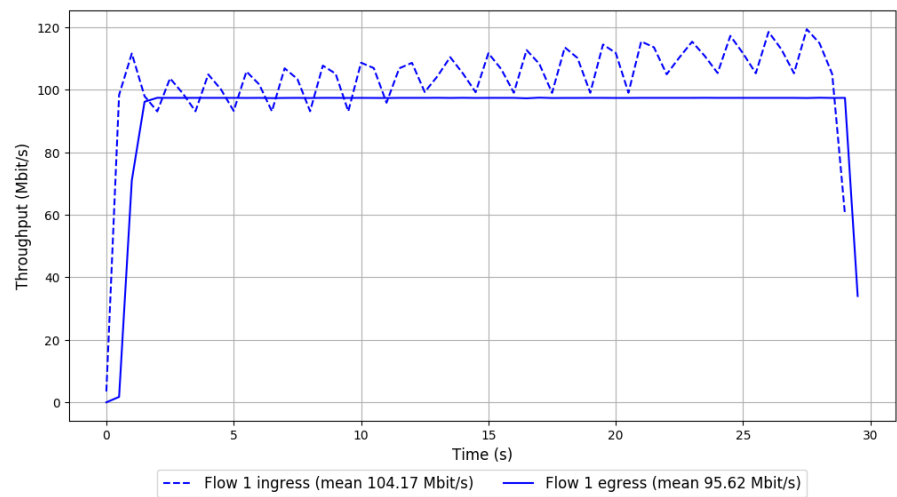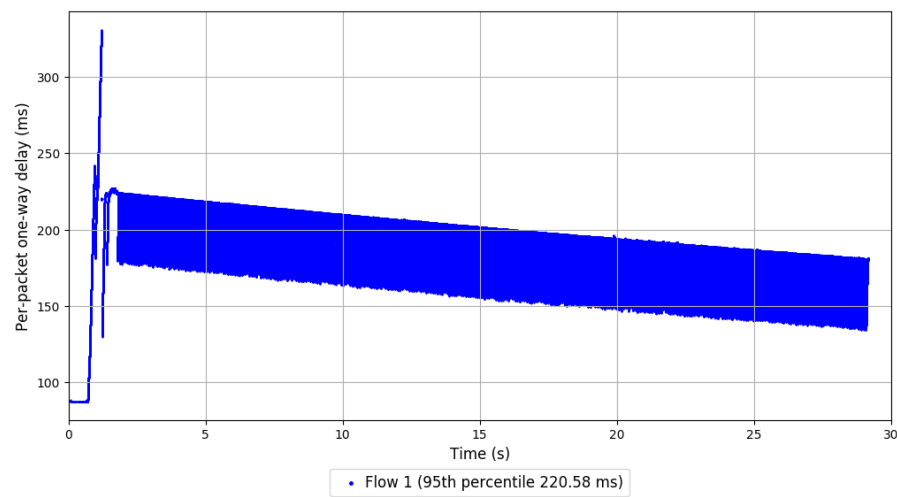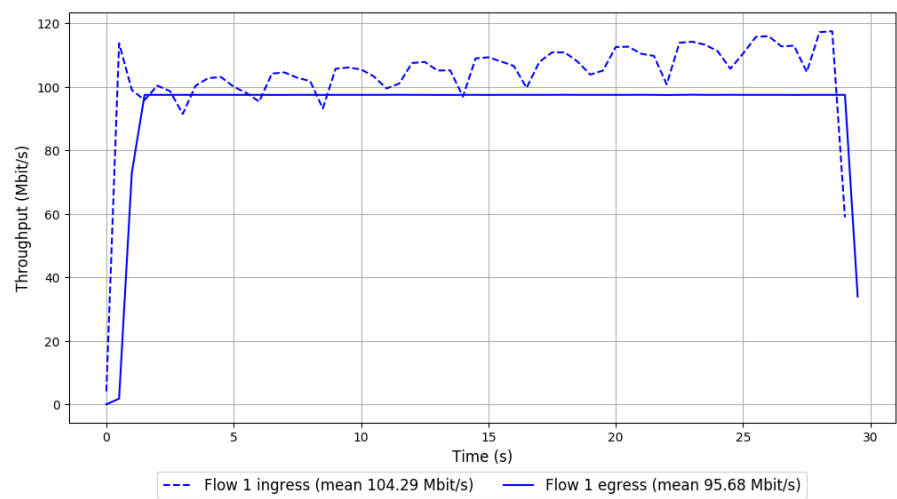
Run 2: Report of Indigo-MusesT — Data Link

```
Run 3: Statistics of Indigo-MusesT

Start at: 2019-01-03 05:33:51
End at: 2019-01-03 05:34:21
Local clock offset: -2.314 ms
Remote clock offset: 19.667 ms


# Below is generated by plot.py at 2019-01-03 06:45:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.68 Mbit/s
95th percentile per-packet one-way delay: 220.584 ms
Loss rate: 8.77%
-- Flow 1:
Average throughput: 95.68 Mbit/s
95th percentile per-packet one-way delay: 220.584 ms
Loss rate: 8.77%
```

Run 3: Report of Indigo-MusesT — Data Link

Flow 1 ingress (mean 104.29 Mbit/s)   Flow 1 egress (mean 95.68 Mbit/s)
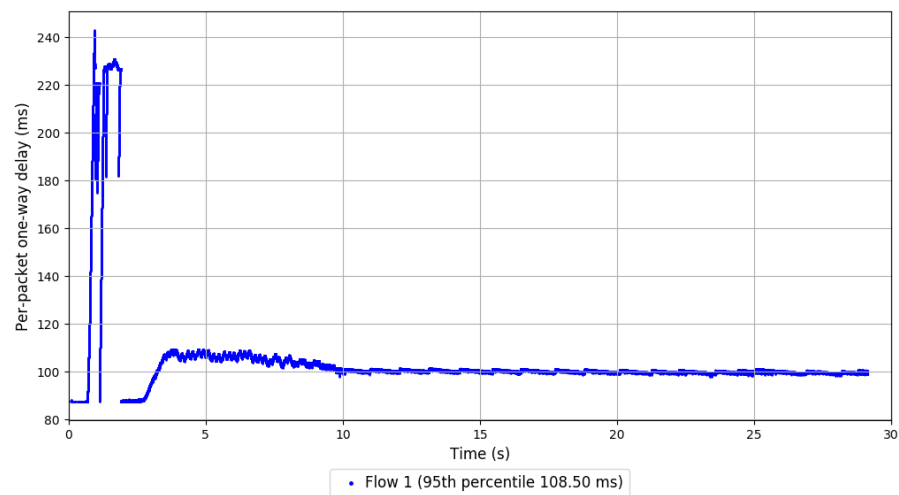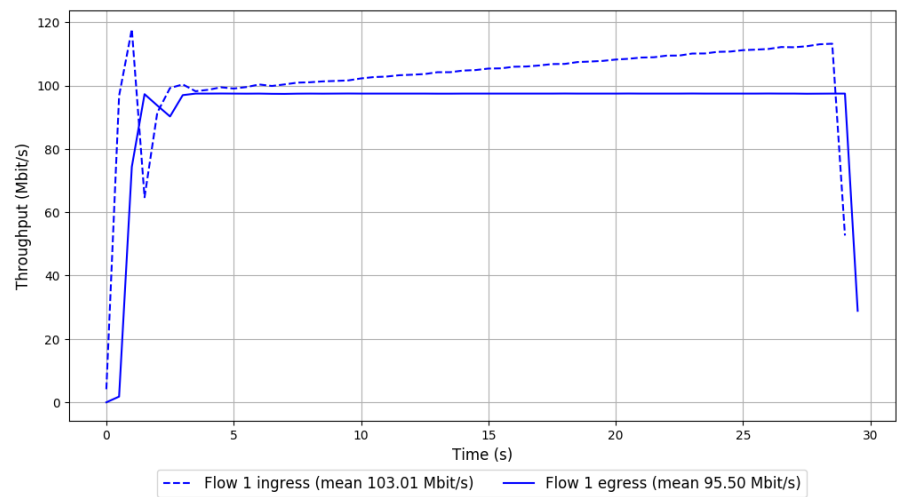

Flow 1 (95th percentile 220.58 ms)

```
Run 4: Statistics of Indigo-MusesT

Start at: 2019-01-03 05:56:22
End at: 2019-01-03 05:56:52
Local clock offset: -3.551 ms
Remote clock offset: 15.156 ms


# Below is generated by plot.py at 2019-01-03 06:45:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.50 Mbit/s
95th percentile per-packet one-way delay: 108.500 ms
Loss rate: 7.83%
-- Flow 1:
Average throughput: 95.50 Mbit/s
95th percentile per-packet one-way delay: 108.500 ms
Loss rate: 7.83%
```

Run 4: Report of Indigo-MusesT — Data Link

Flow 1 ingress (mean 103.01 Mbit/s) --- Flow 1 egress (mean 95.50 Mbit/s)

Flow 1 (95th percentile 108.50 ms)

```
Run 5: Statistics of Indigo-MusesT

Start at: 2019-01-03 06:18:54
End at: 2019-01-03 06:19:24
Local clock offset: -7.458 ms
Remote clock offset: 15.744 ms


# Below is generated by plot.py at 2019-01-03 06:46:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.69 Mbit/s
95th percentile per-packet one-way delay: 221.240 ms
Loss rate: 8.79%
-- Flow 1:
Average throughput: 95.69 Mbit/s
95th percentile per-packet one-way delay: 221.240 ms
Loss rate: 8.79%
```
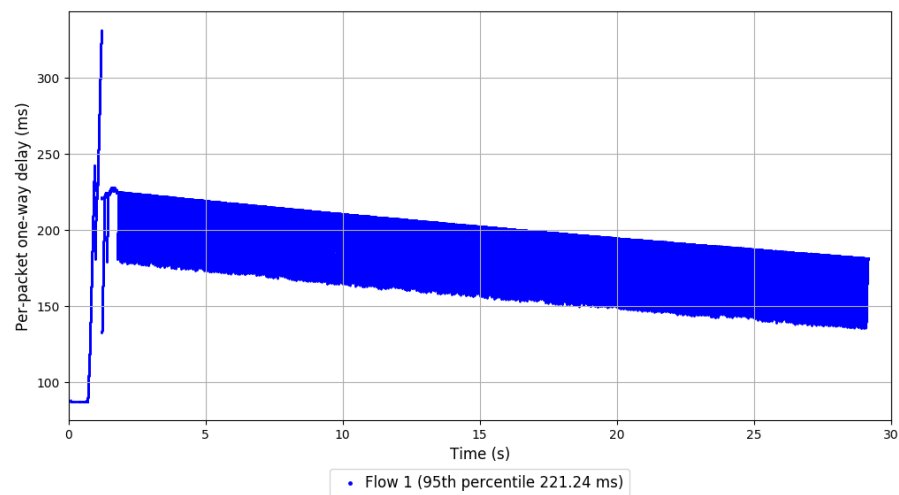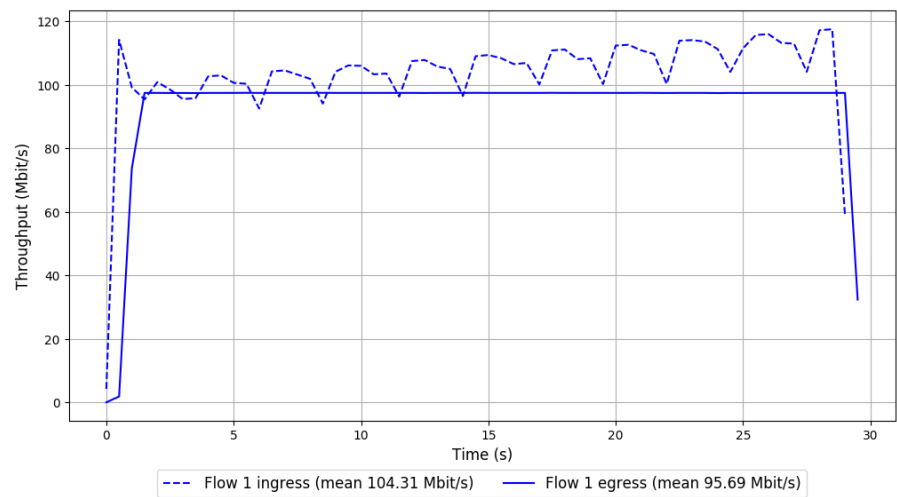
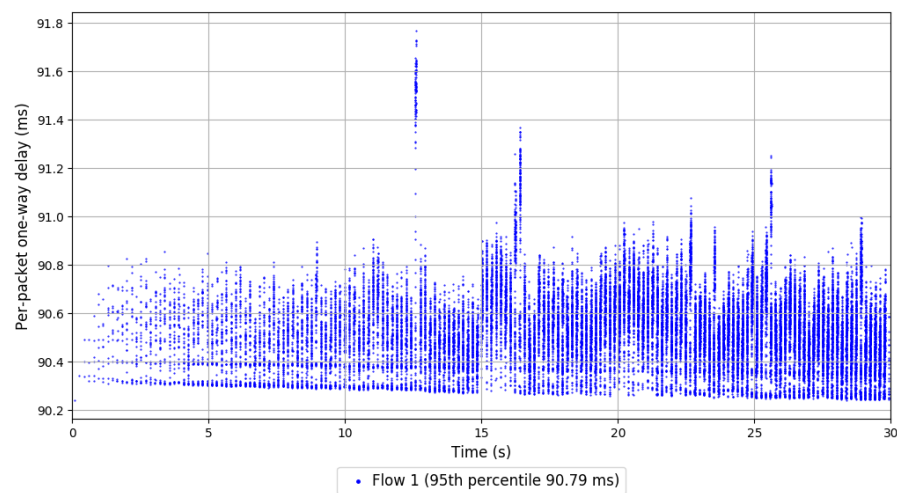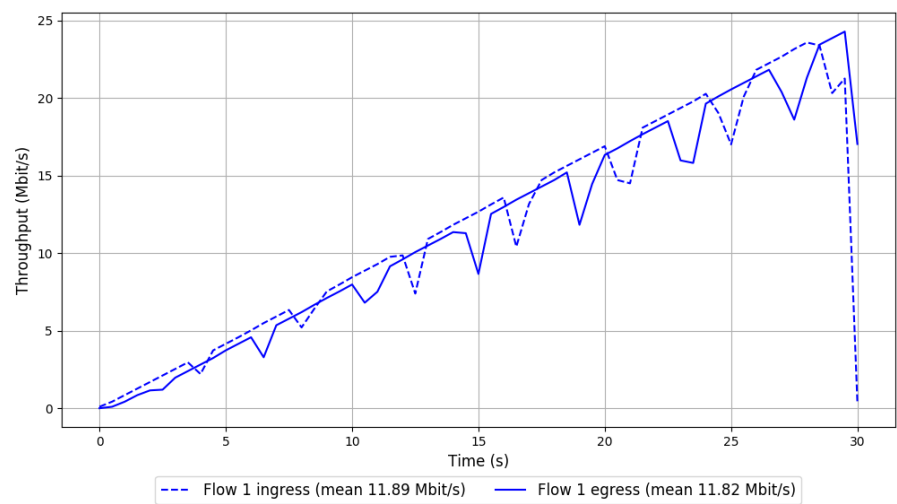Run 5: Report of Indigo-MusesT — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2019-01-03 04:51:13
End at: 2019-01-03 04:51:43
Local clock offset: -2.759 ms
Remote clock offset: -2.275 ms


# Below is generated by plot.py at 2019-01-03 06:46:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.82 Mbit/s
95th percentile per-packet one-way delay: 90.787 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 11.82 Mbit/s
95th percentile per-packet one-way delay: 90.787 ms
Loss rate: 1.13%
```

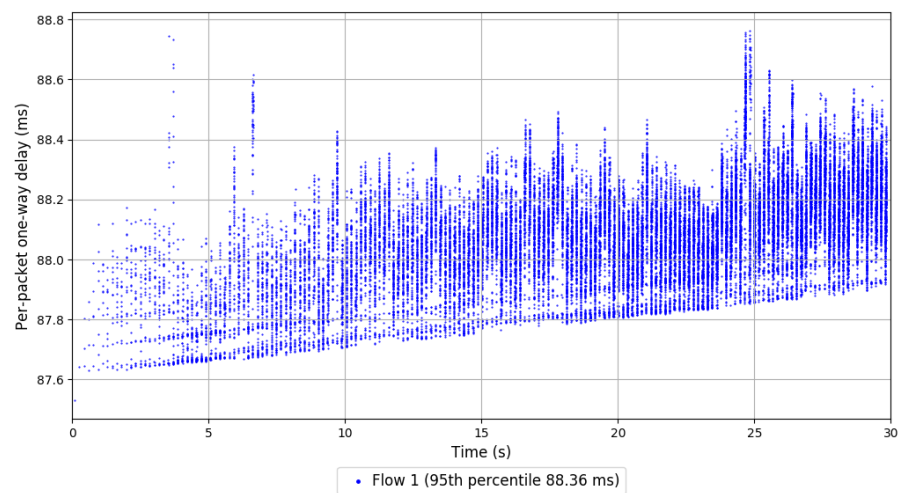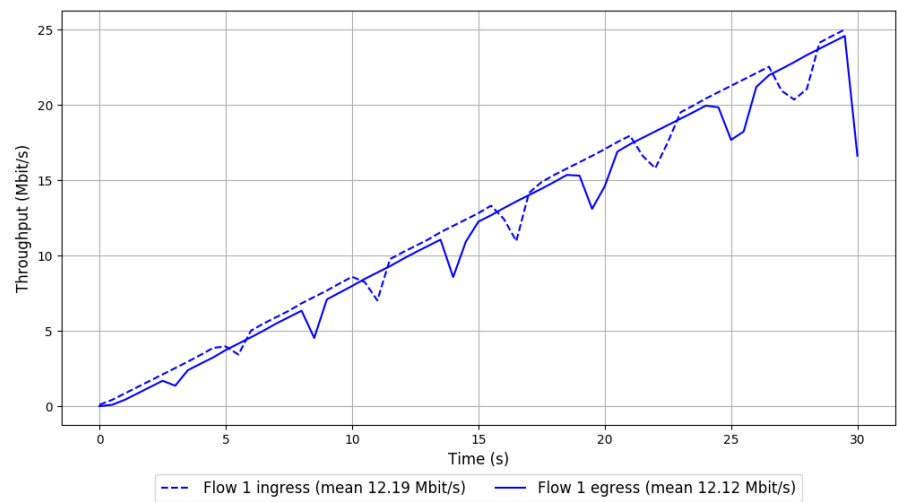# Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2019-01-03 05:13:45
End at: 2019-01-03 05:14:15
Local clock offset: -1.584 ms
Remote clock offset: 12.176 ms


# Below is generated by plot.py at 2019-01-03 06:46:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.12 Mbit/s
95th percentile per-packet one-way delay: 88.357 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 12.12 Mbit/s
95th percentile per-packet one-way delay: 88.357 ms
Loss rate: 1.15%
```

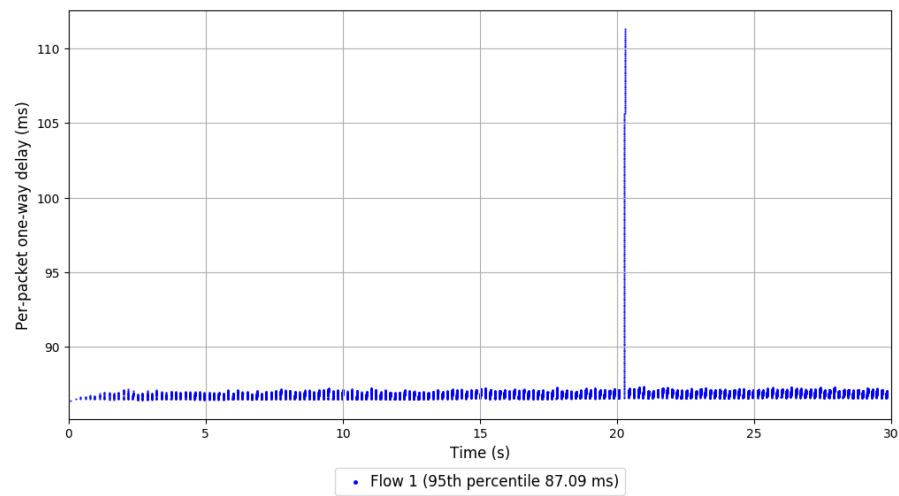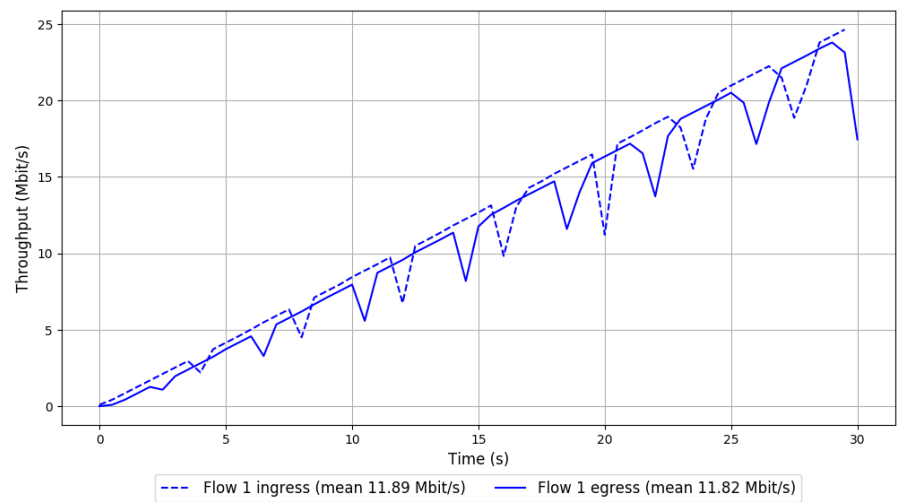Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2019-01-03 05:36:16
End at: 2019-01-03 05:36:46
Local clock offset: -3.255 ms
Remote clock offset: 20.289 ms


# Below is generated by plot.py at 2019-01-03 06:46:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.82 Mbit/s
95th percentile per-packet one-way delay: 87.089 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 11.82 Mbit/s
95th percentile per-packet one-way delay: 87.089 ms
Loss rate: 1.16%
```

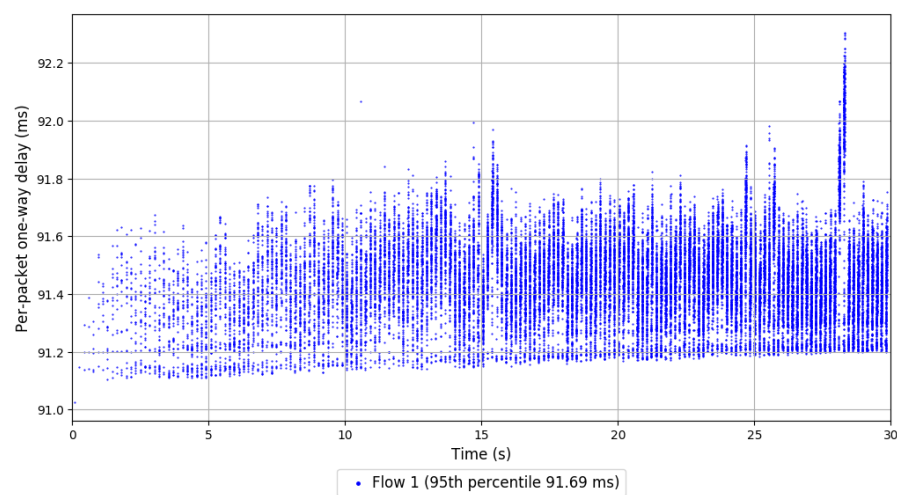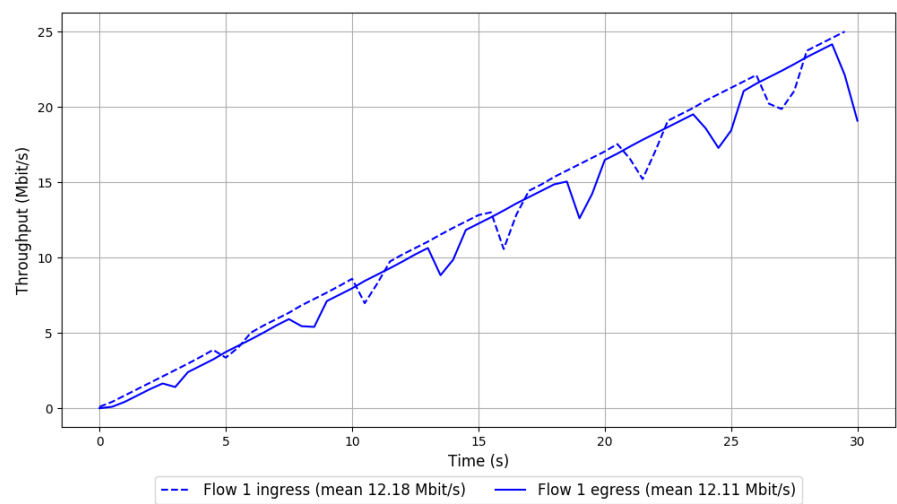## Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2019-01-03 05:58:48
End at: 2019-01-03 05:59:18
Local clock offset: -4.924 ms
Remote clock offset: 11.374 ms


# Below is generated by plot.py at 2019-01-03 06:46:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.11 Mbit/s
95th percentile per-packet one-way delay: 91.689 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 12.11 Mbit/s
95th percentile per-packet one-way delay: 91.689 ms
Loss rate: 1.15%
```

Run 4: Report of LEDBAT — Data Link

Flow 1 ingress (mean 12.18 Mbit/s) --- Flow 1 egress (mean 12.11 Mbit/s)

Flow 1 (95th percentile 91.69 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2019-01-03 06:21:19
End at: 2019-01-03 06:21:49
Local clock offset: -6.847 ms
Remote clock offset: 15.9 ms

# Below is generated by plot.py at 2019-01-03 06:46:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.01 Mbit/s
95th percentile per-packet one-way delay: 87.883 ms
Loss rate: 1.14%
-- Flow 1:
Average throughput: 12.01 Mbit/s
95th percentile per-packet one-way delay: 87.883 ms
Loss rate: 1.14%
```
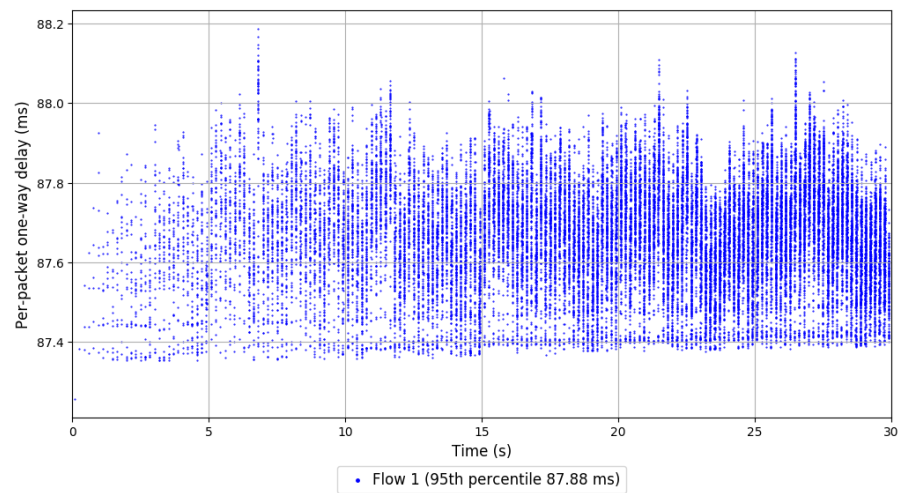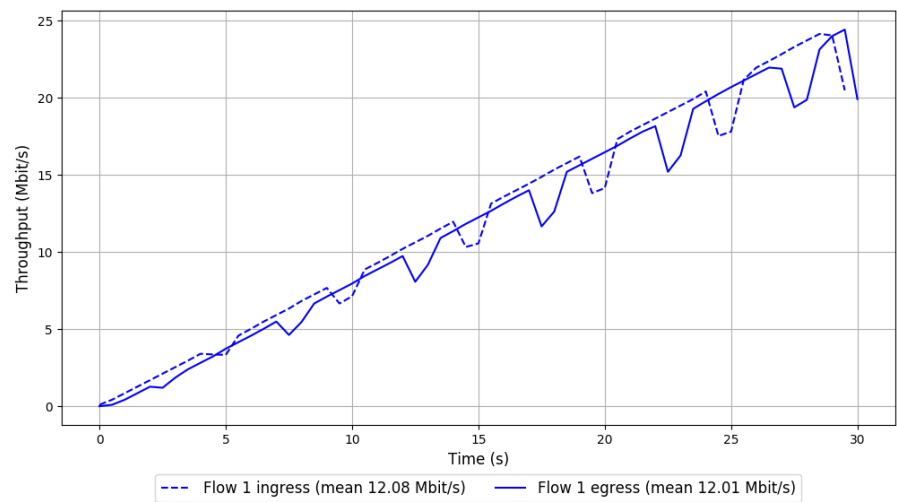
Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 12.08 Mbit/s)　　Flow 1 egress (mean 12.01 Mbit/s)
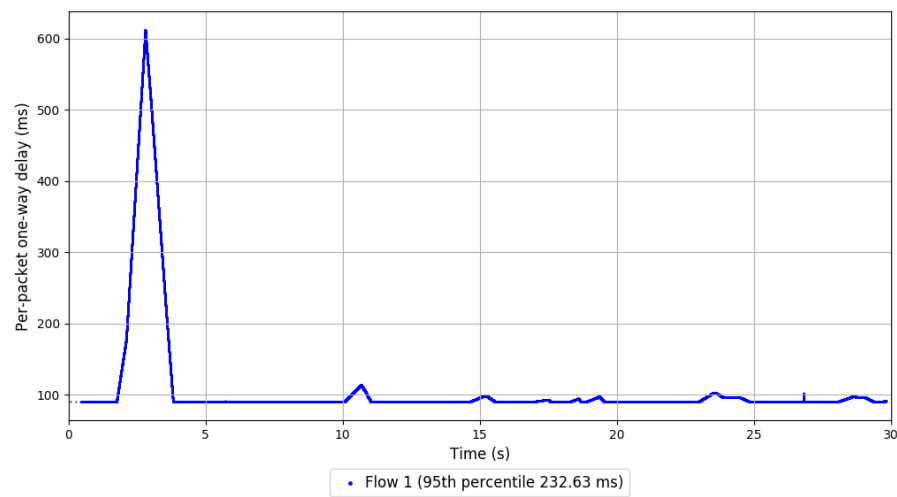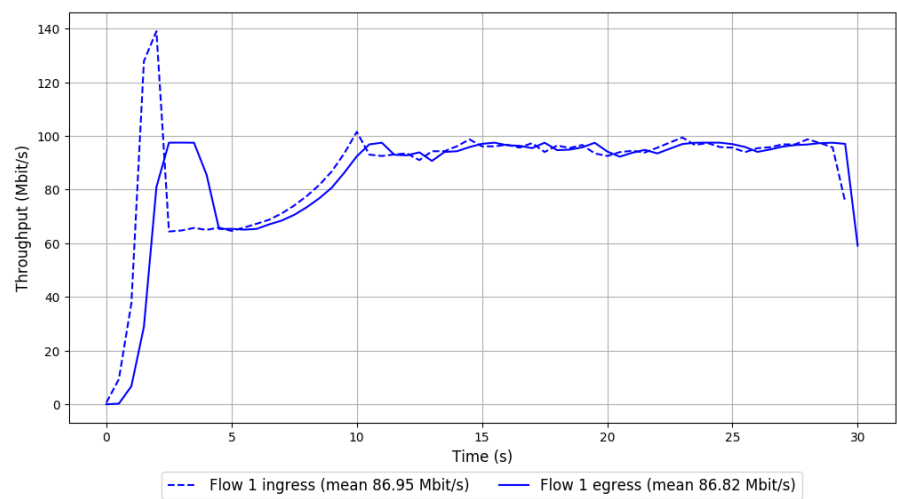

Flow 1 (95th percentile 87.88 ms)

```
Run 1: Statistics of PCC-Allegro

Start at: 2019-01-03 04:54:42
End at: 2019-01-03 04:55:12
Local clock offset: -2.596 ms
Remote clock offset: -2.556 ms


# Below is generated by plot.py at 2019-01-03 06:46:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.82 Mbit/s
95th percentile per-packet one-way delay: 232.633 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 86.82 Mbit/s
95th percentile per-packet one-way delay: 232.633 ms
Loss rate: 0.72%
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2019-01-03 05:17:14
End at: 2019-01-03 05:17:44
Local clock offset: -1.494 ms
Remote clock offset: 10.101 ms


# Below is generated by plot.py at 2019-01-03 06:46:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.00 Mbit/s
95th percentile per-packet one-way delay: 231.340 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 85.00 Mbit/s
95th percentile per-packet one-way delay: 231.340 ms
Loss rate: 0.73%
```
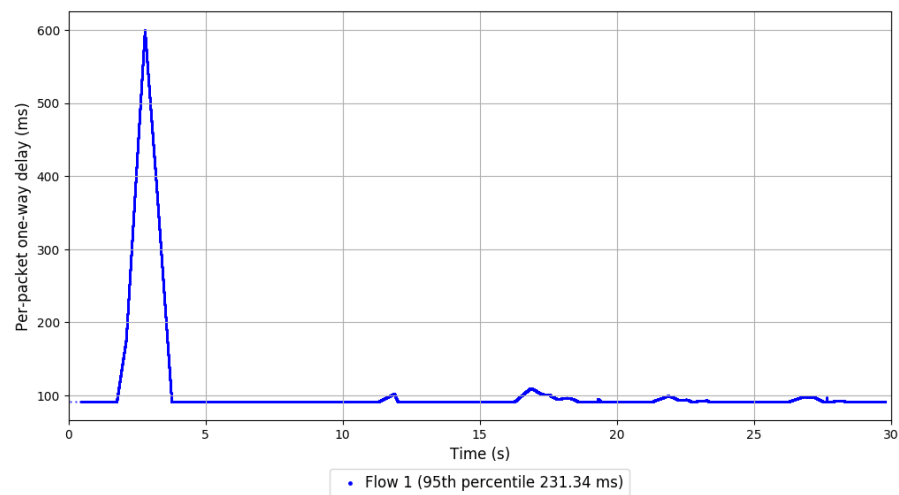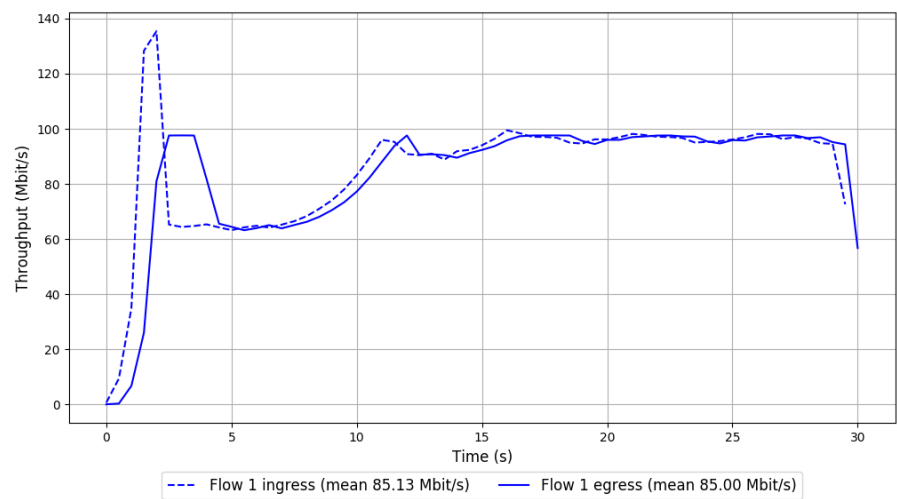
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 85.13 Mbit/s)   Flow 1 egress (mean 85.00 Mbit/s)

• Flow 1 (95th percentile 231.34 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2019-01-03 05:39:45
End at: 2019-01-03 05:40:15
Local clock offset: -2.531 ms
Remote clock offset: 16.664 ms


# Below is generated by plot.py at 2019-01-03 06:46:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.64 Mbit/s
95th percentile per-packet one-way delay: 262.320 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 86.64 Mbit/s
95th percentile per-packet one-way delay: 262.320 ms
Loss rate: 0.74%
```
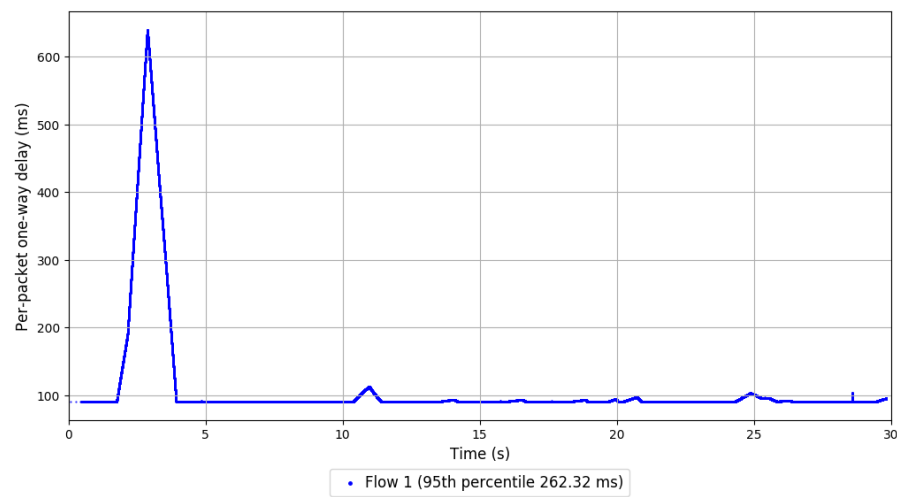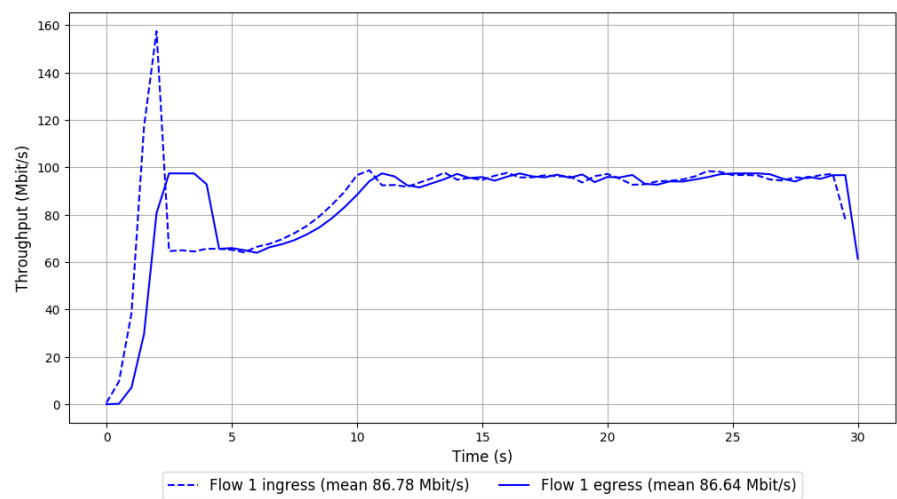
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 86.78 Mbit/s)   Flow 1 egress (mean 86.64 Mbit/s)

Flow 1 (95th percentile 262.32 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2019-01-03 06:02:17
End at: 2019-01-03 06:02:47
Local clock offset: -5.001 ms
Remote clock offset: 15.356 ms


# Below is generated by plot.py at 2019-01-03 06:46:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.69 Mbit/s
95th percentile per-packet one-way delay: 256.607 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 86.69 Mbit/s
95th percentile per-packet one-way delay: 256.607 ms
Loss rate: 0.71%
```
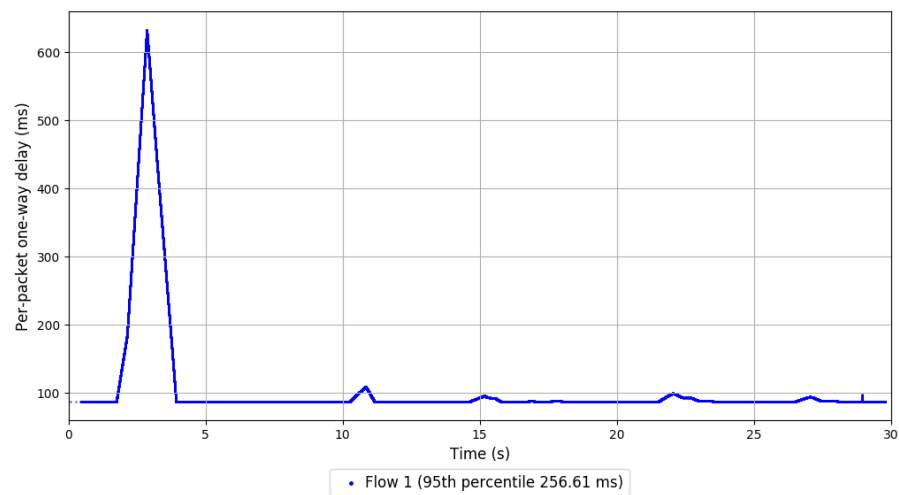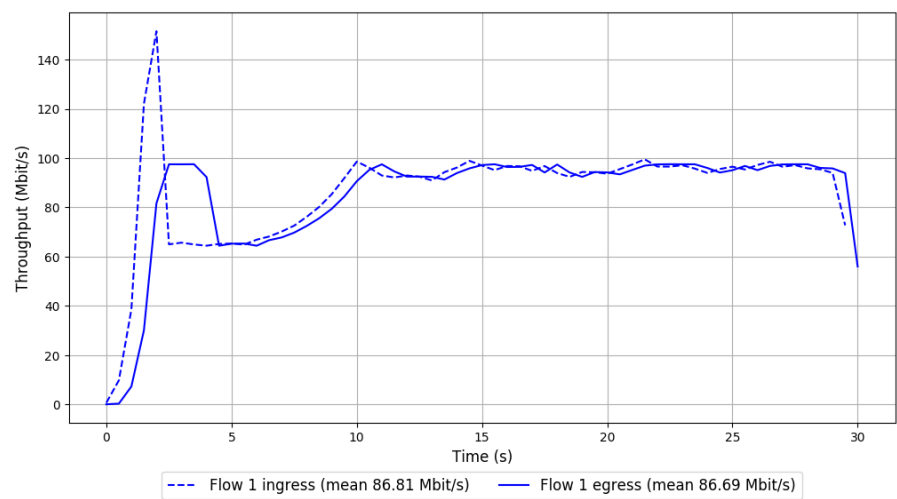
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 86.81 Mbit/s)   Flow 1 egress (mean 86.69 Mbit/s)

Flow 1 (95th percentile 256.61 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2019-01-03 06:24:48
End at: 2019-01-03 06:25:18
Local clock offset: -7.01 ms
Remote clock offset: 16.034 ms


# Below is generated by plot.py at 2019-01-03 06:46:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.42 Mbit/s
95th percentile per-packet one-way delay: 116.889 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 87.42 Mbit/s
95th percentile per-packet one-way delay: 116.889 ms
Loss rate: 1.33%
```
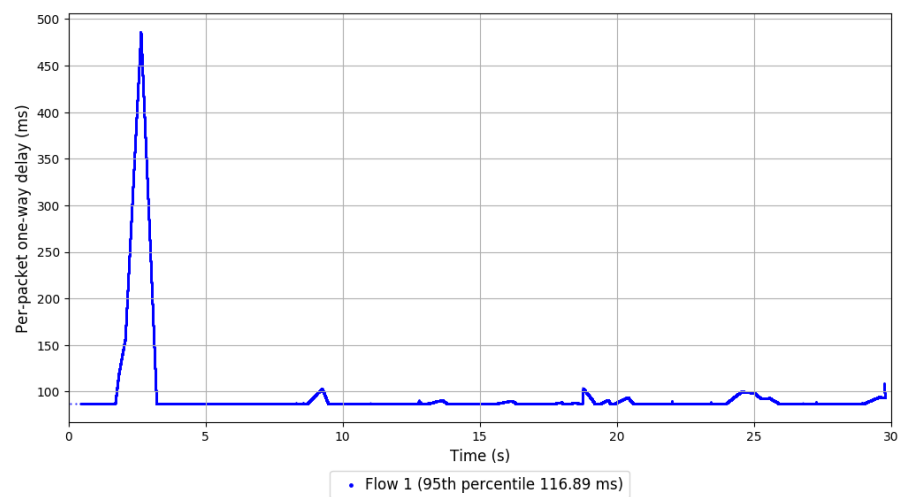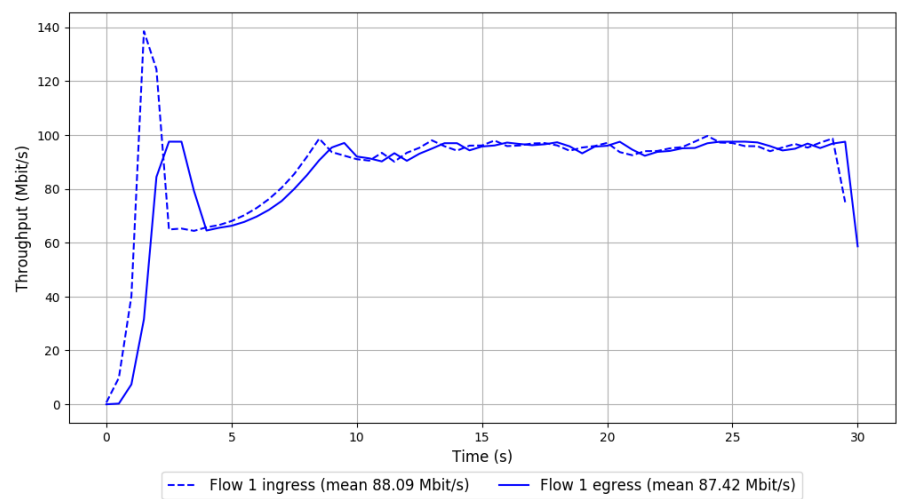
Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 88.09 Mbit/s) —— Flow 1 egress (mean 87.42 Mbit/s)
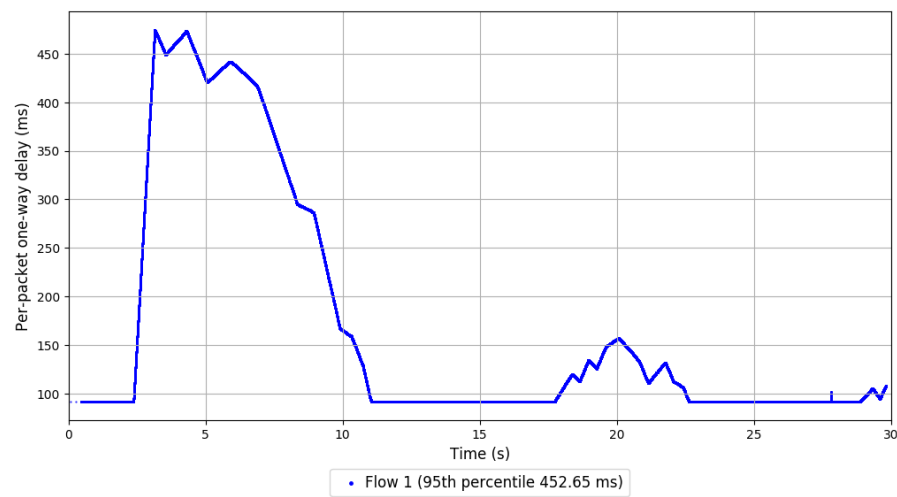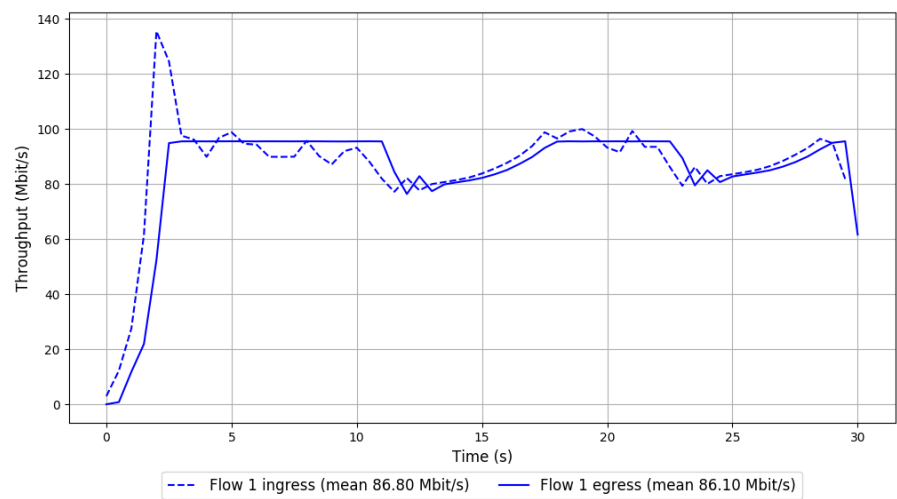

• Flow 1 (95th percentile 116.89 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2019-01-03 04:55:53
End at: 2019-01-03 04:56:23
Local clock offset: -1.909 ms
Remote clock offset: -2.617 ms


# Below is generated by plot.py at 2019-01-03 06:47:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.10 Mbit/s
95th percentile per-packet one-way delay: 452.649 ms
Loss rate: 1.38%
-- Flow 1:
Average throughput: 86.10 Mbit/s
95th percentile per-packet one-way delay: 452.649 ms
Loss rate: 1.38%
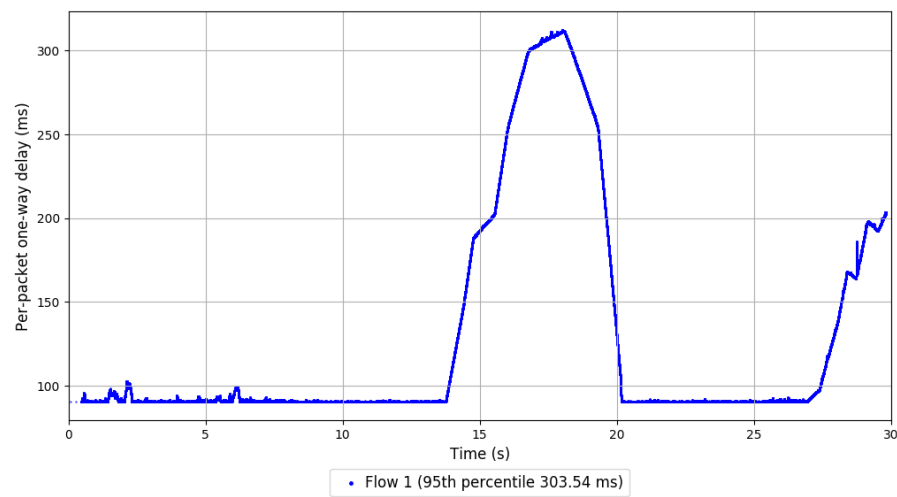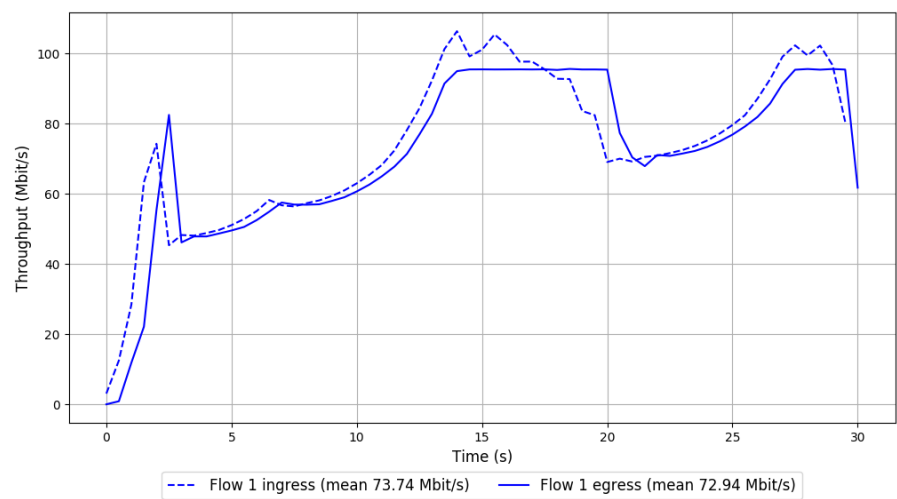```

Run 1: Report of PCC-Expr — Data Link

```
Run 2: Statistics of PCC-Expr

Start at: 2019-01-03 05:18:25
End at: 2019-01-03 05:18:55
Local clock offset: -2.214 ms
Remote clock offset: 10.723 ms


# Below is generated by plot.py at 2019-01-03 06:47:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.94 Mbit/s
95th percentile per-packet one-way delay: 303.542 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 72.94 Mbit/s
95th percentile per-packet one-way delay: 303.542 ms
Loss rate: 1.65%
```

Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 73.74 Mbit/s) --- Flow 1 egress (mean 72.94 Mbit/s)

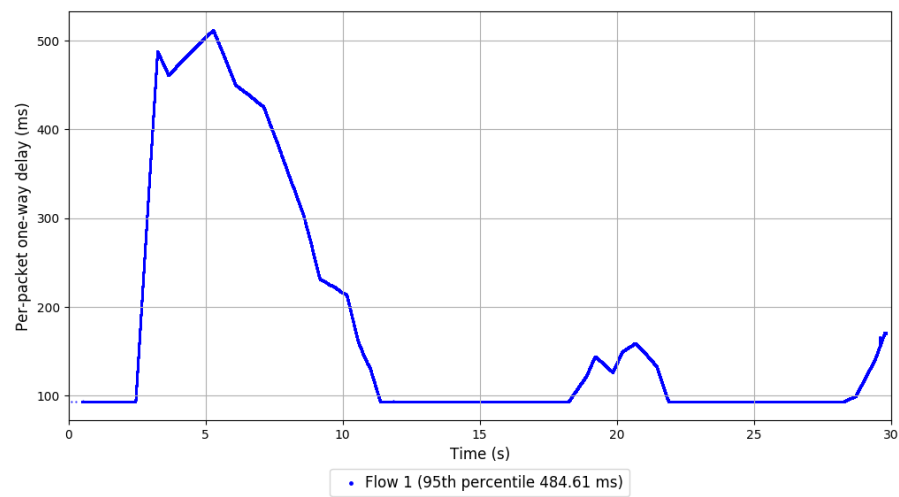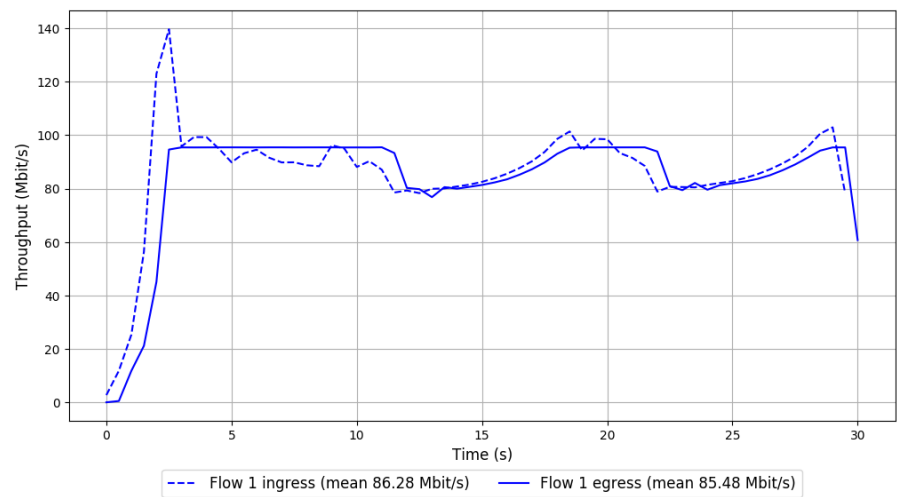
• Flow 1 (95th percentile 303.54 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2019-01-03 05:40:56
End at: 2019-01-03 05:41:26
Local clock offset: -2.572 ms
Remote clock offset: 19.553 ms


# Below is generated by plot.py at 2019-01-03 06:48:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.48 Mbit/s
95th percentile per-packet one-way delay: 484.614 ms
Loss rate: 1.53%
-- Flow 1:
Average throughput: 85.48 Mbit/s
95th percentile per-packet one-way delay: 484.614 ms
Loss rate: 1.53%
```

Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 86.28 Mbit/s) --- Flow 1 egress (mean 85.48 Mbit/s)
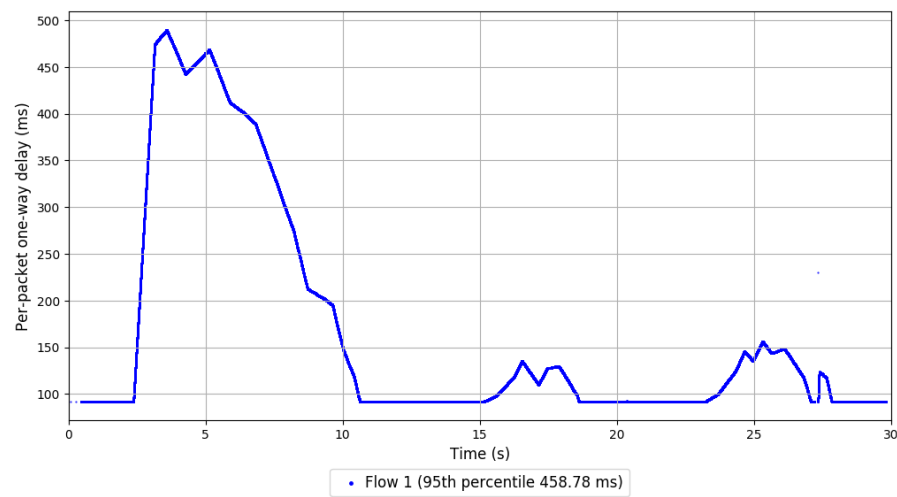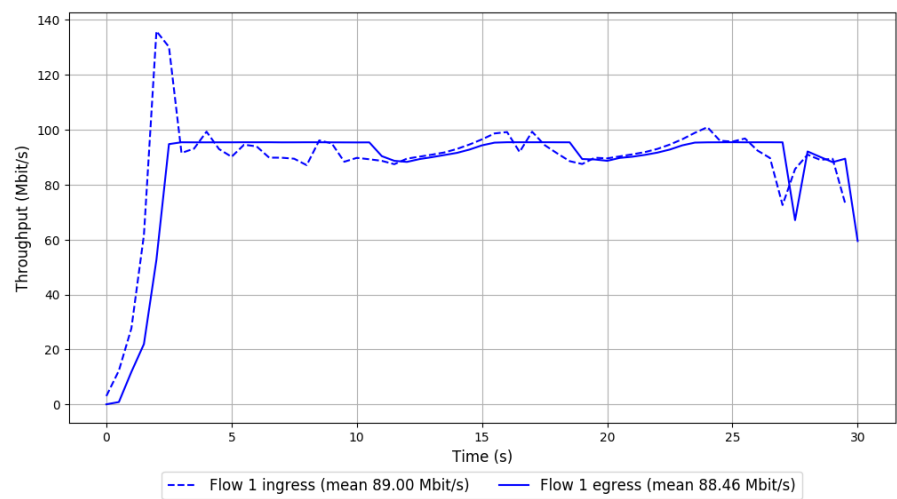

Flow 1 (95th percentile 484.61 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2019-01-03 06:03:28
End at: 2019-01-03 06:03:58
Local clock offset: -5.205 ms
Remote clock offset: 11.243 ms


# Below is generated by plot.py at 2019-01-03 06:48:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 88.46 Mbit/s
95th percentile per-packet one-way delay: 458.784 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 88.46 Mbit/s
95th percentile per-packet one-way delay: 458.784 ms
Loss rate: 1.19%
```

Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 89.00 Mbit/s)   Flow 1 egress (mean 88.46 Mbit/s)

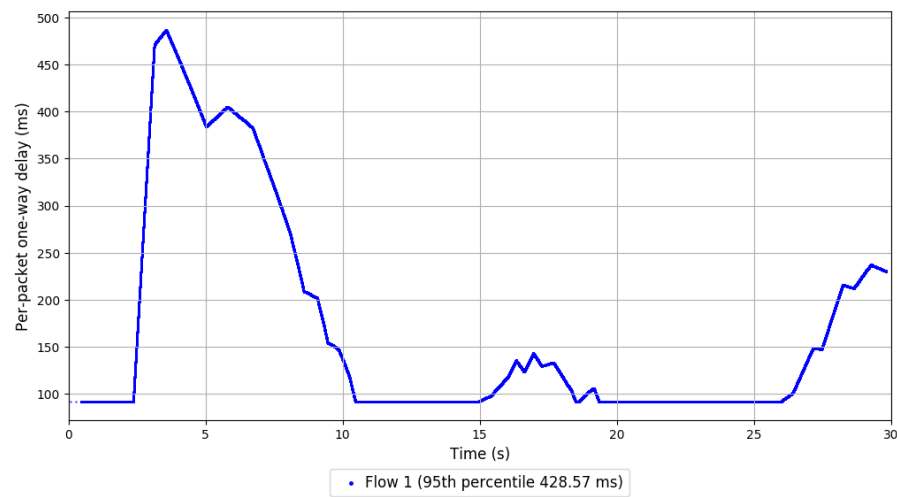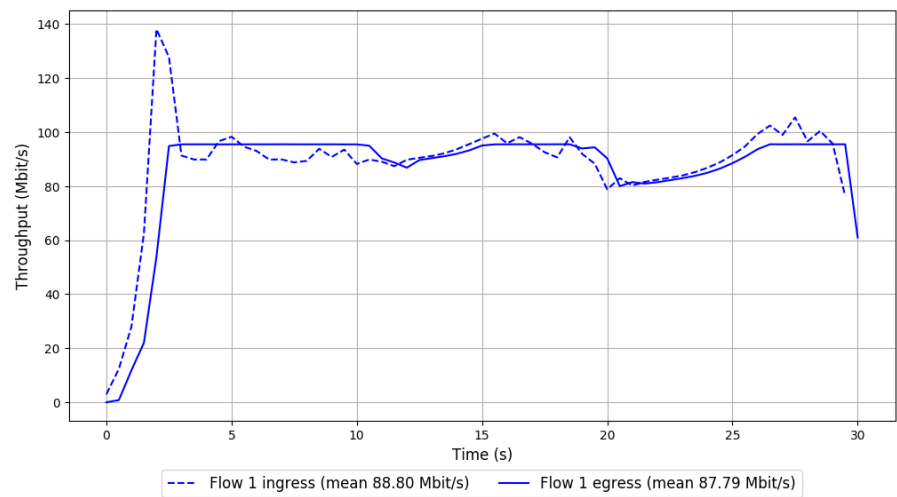

Flow 1 (95th percentile 458.78 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2019-01-03 06:25:59
End at: 2019-01-03 06:26:29
Local clock offset: -6.799 ms
Remote clock offset: 12.376 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.79 Mbit/s
95th percentile per-packet one-way delay: 428.570 ms
Loss rate: 1.71%
-- Flow 1:
Average throughput: 87.79 Mbit/s
95th percentile per-packet one-way delay: 428.570 ms
Loss rate: 1.71%
```

Run 5: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 88.80 Mbit/s)　　Flow 1 egress (mean 87.79 Mbit/s)

Flow 1 (95th percentile 428.57 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2019-01-03 05:04:11
End at: 2019-01-03 05:04:41
Local clock offset: -2.521 ms
Remote clock offset: 2.247 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 62.87 Mbit/s
95th percentile per-packet one-way delay: 92.112 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 62.87 Mbit/s
95th percentile per-packet one-way delay: 92.112 ms
Loss rate: 0.85%
```
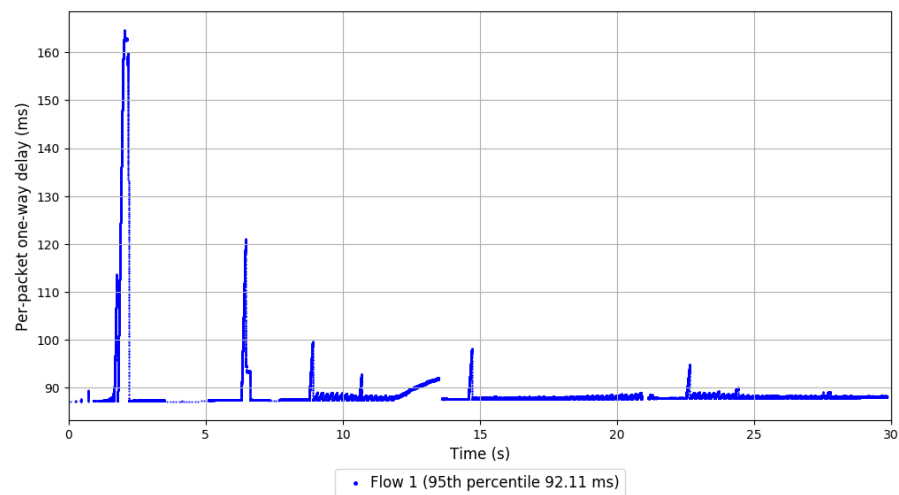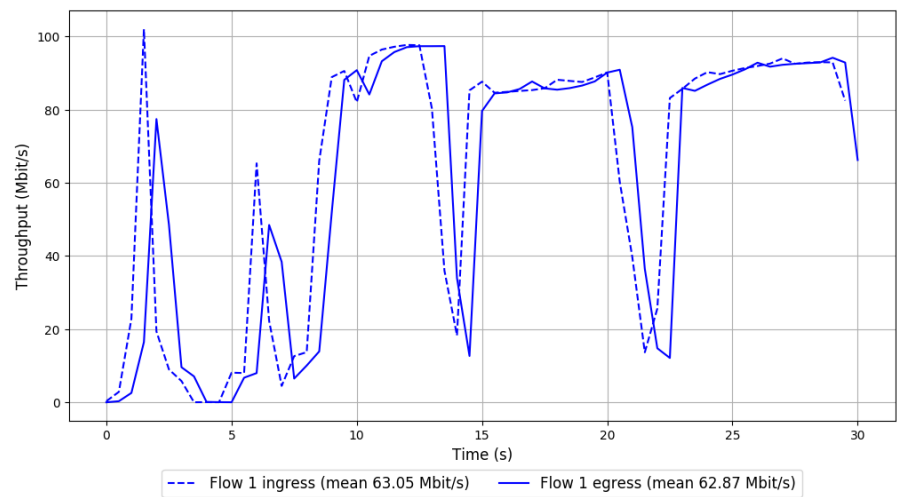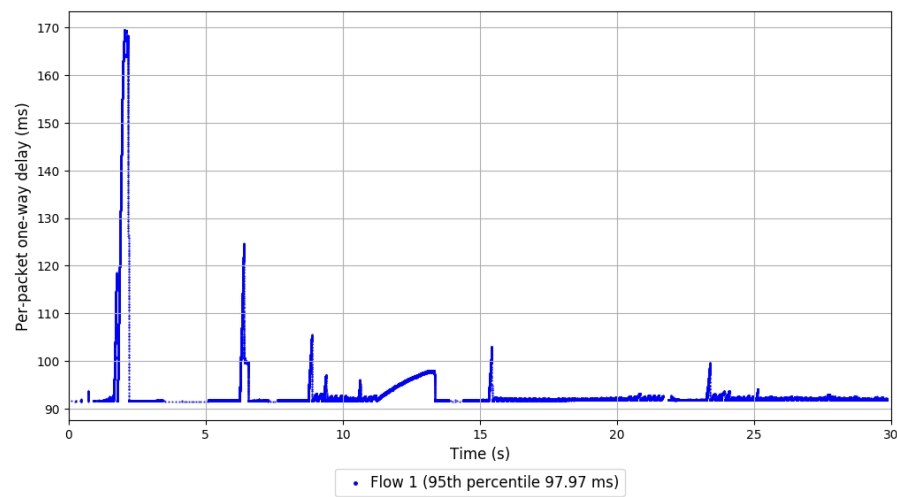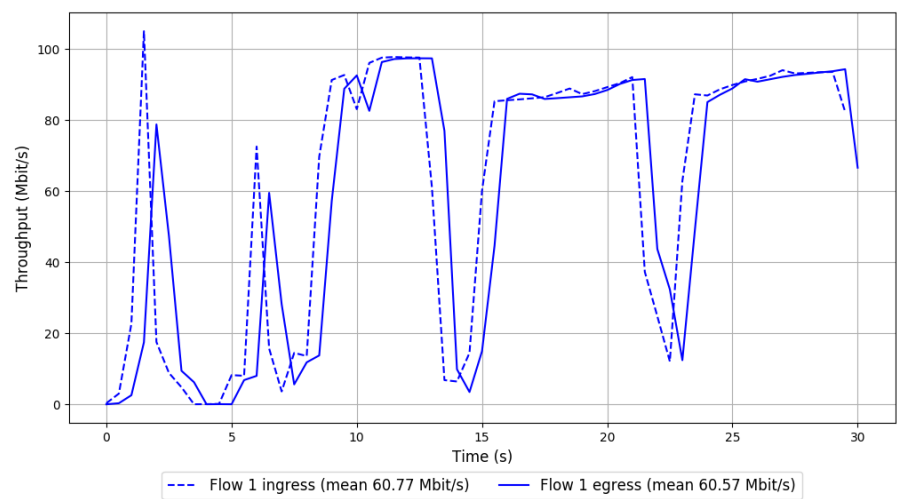
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2019-01-03 05:26:41
End at: 2019-01-03 05:27:11
Local clock offset: -1.664 ms
Remote clock offset: 13.818 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.57 Mbit/s
95th percentile per-packet one-way delay: 97.965 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 60.57 Mbit/s
95th percentile per-packet one-way delay: 97.965 ms
Loss rate: 0.90%
```

Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2019-01-03 05:49:14
End at: 2019-01-03 05:49:44
Local clock offset: -3.447 ms
Remote clock offset: 12.479 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.79 Mbit/s
95th percentile per-packet one-way delay: 97.444 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 55.79 Mbit/s
95th percentile per-packet one-way delay: 97.444 ms
Loss rate: 0.90%
```
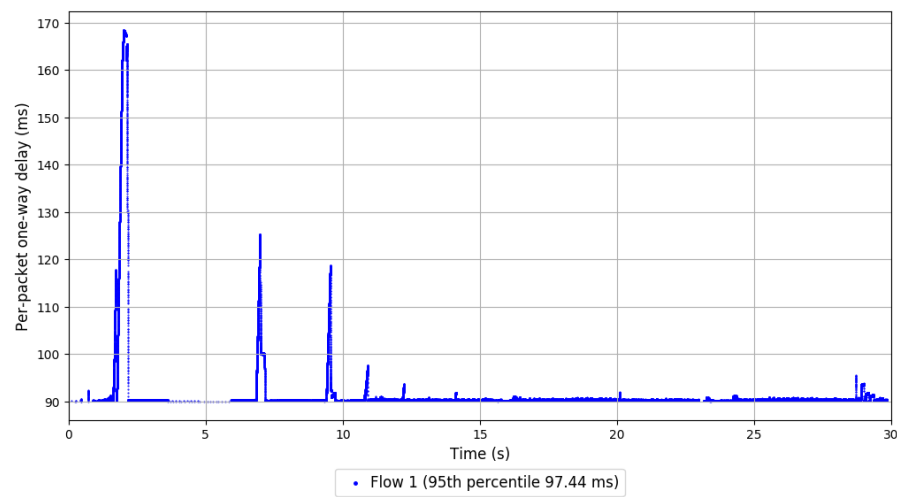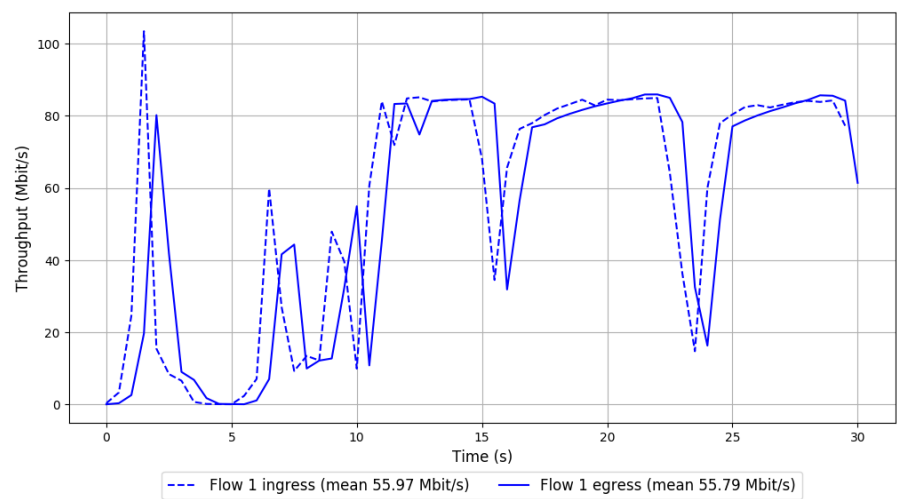
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 55.97 Mbit/s) --- Flow 1 egress (mean 55.79 Mbit/s)
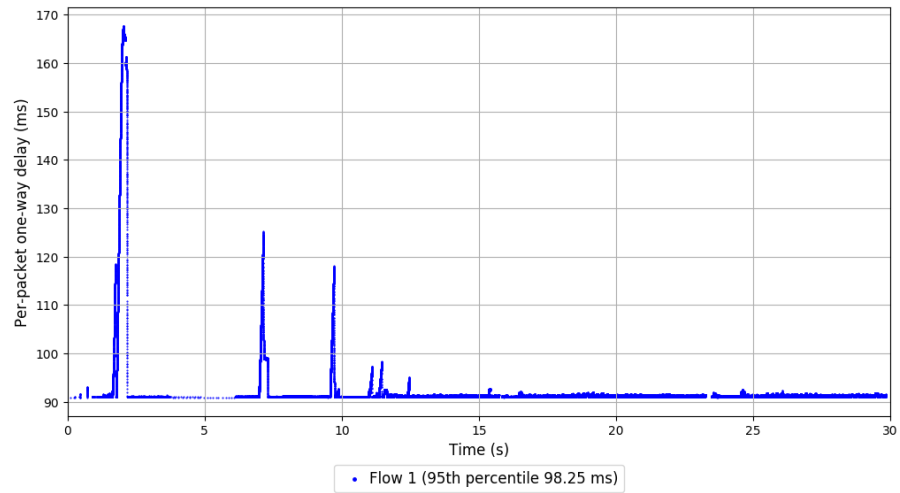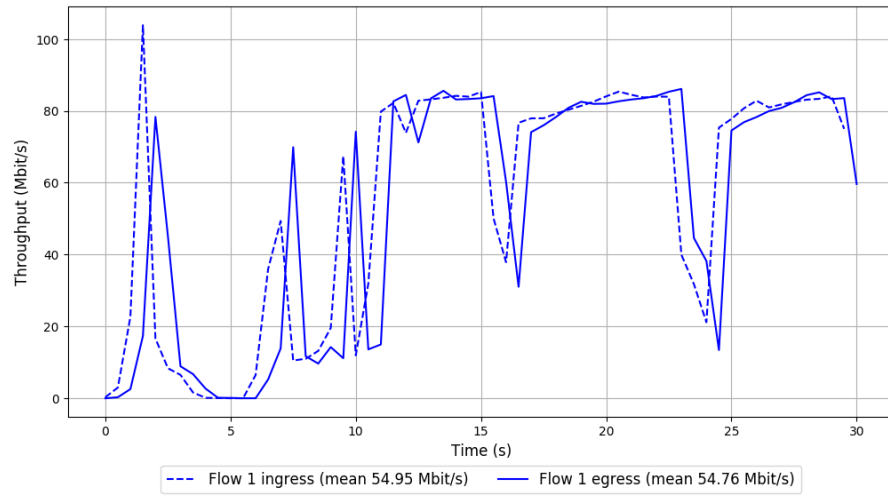

Flow 1 (95th percentile 97.44 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2019-01-03 06:11:45
End at: 2019-01-03 06:12:15
Local clock offset: -6.934 ms
Remote clock offset: 11.475 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 54.76 Mbit/s
95th percentile per-packet one-way delay: 98.255 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 54.76 Mbit/s
95th percentile per-packet one-way delay: 98.255 ms
Loss rate: 0.92%
```

Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2019-01-03 06:34:16
End at: 2019-01-03 06:34:46
Local clock offset: -7.09 ms
Remote clock offset: 12.648 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.22 Mbit/s
95th percentile per-packet one-way delay: 97.457 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 60.22 Mbit/s
95th percentile per-packet one-way delay: 97.457 ms
Loss rate: 0.91%
```
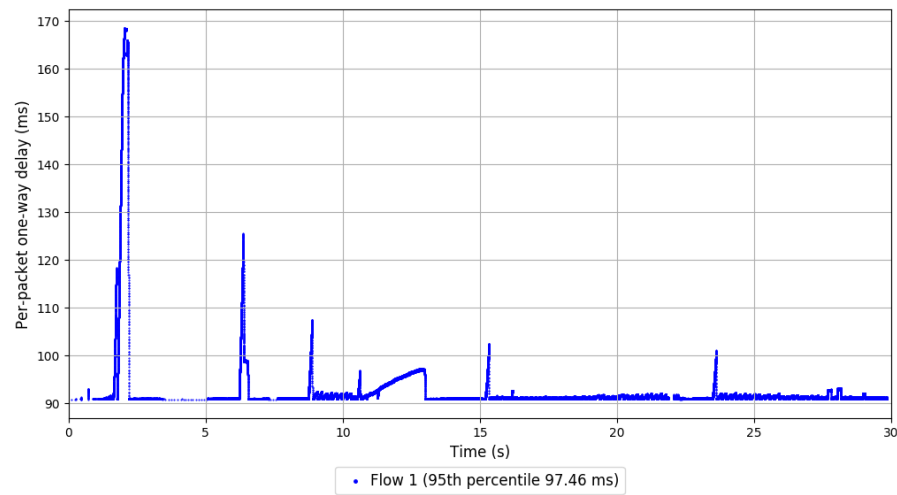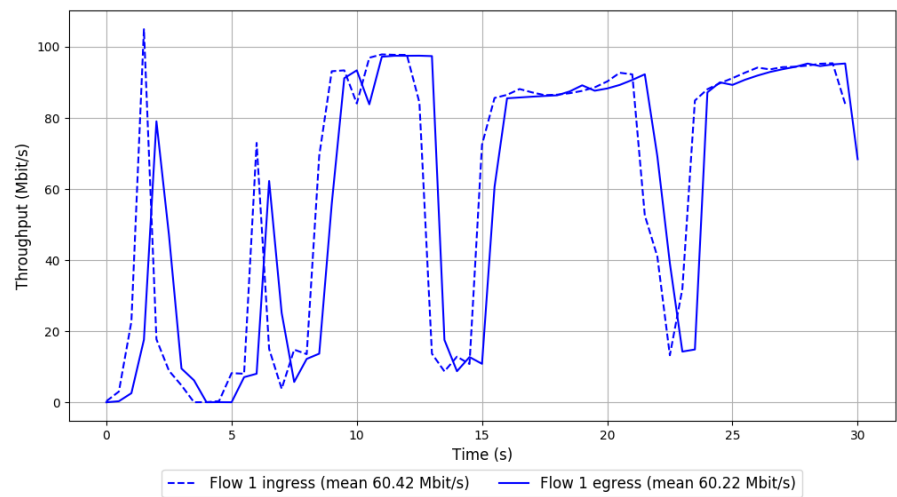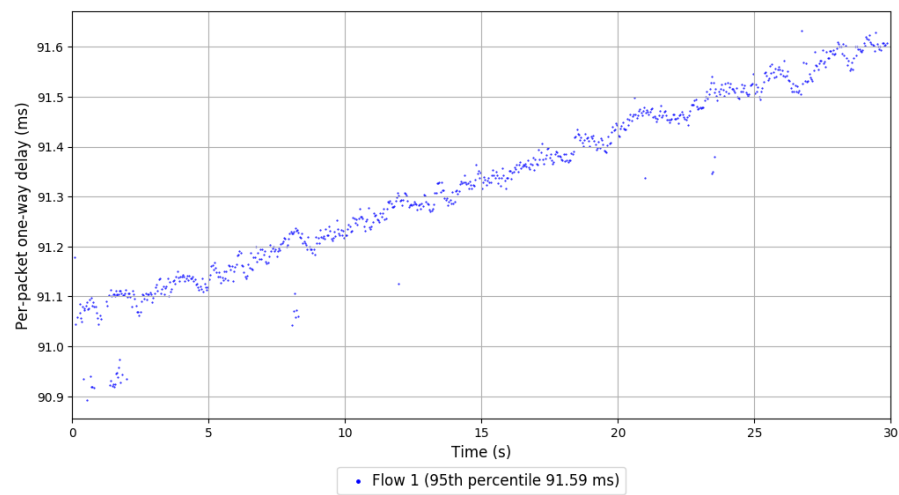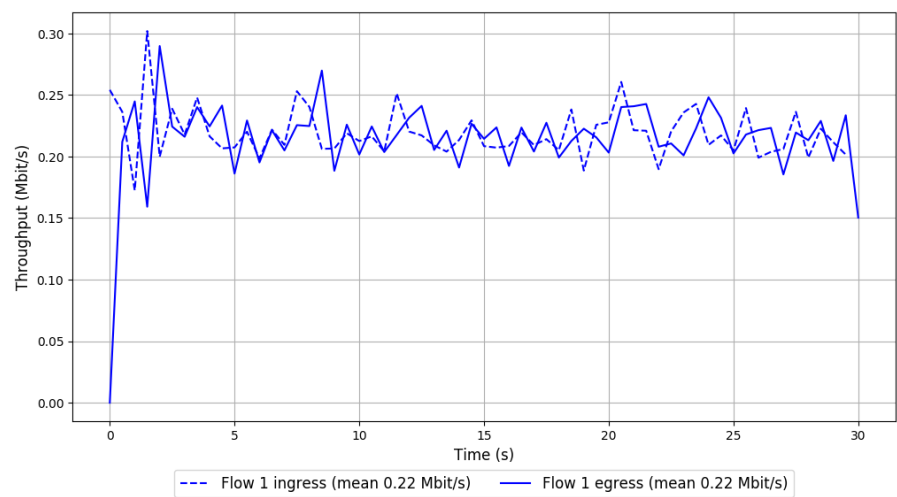
Run 5: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2019-01-03 05:06:33
End at: 2019-01-03 05:07:03
Local clock offset: -2.485 ms
Remote clock offset: 1.637 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 91.591 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 91.591 ms
Loss rate: 0.64%
```

Run 1: Report of SCReAM — Data Link

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

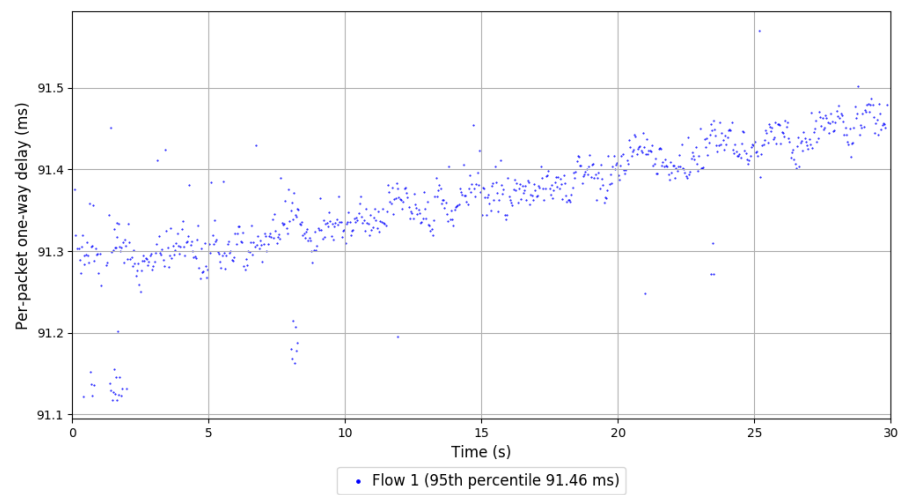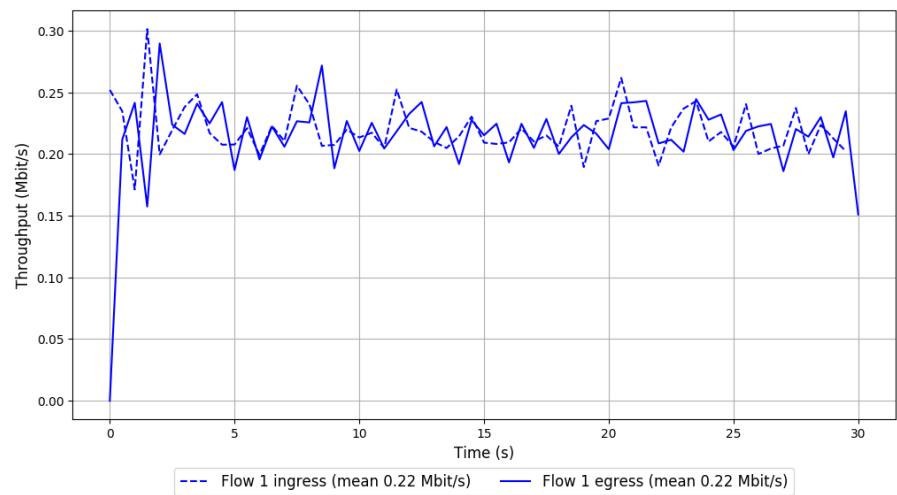Flow 1 (95th percentile 91.59 ms)

```
Run 2: Statistics of SCReAM

Start at: 2019-01-03 05:29:03
End at: 2019-01-03 05:29:33
Local clock offset: -1.946 ms
Remote clock offset: 14.505 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 91.457 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 91.457 ms
Loss rate: 0.64%
```

Run 2: Report of SCReAM — Data Link

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

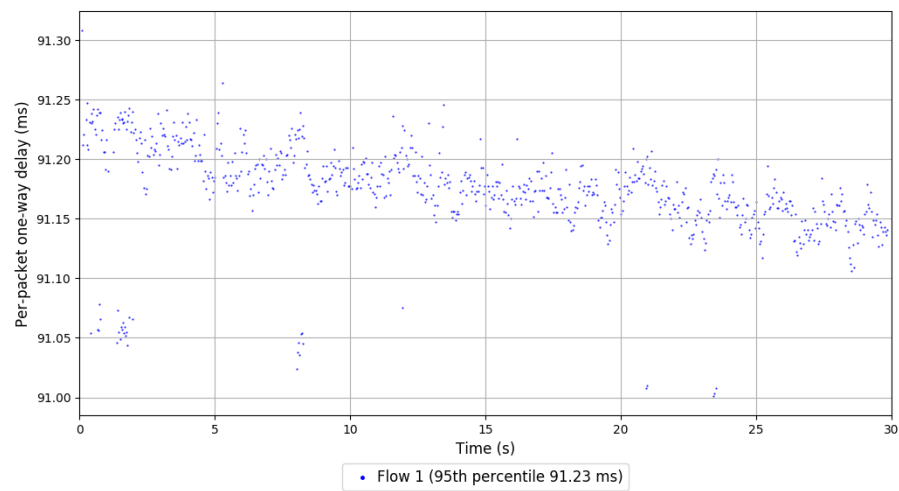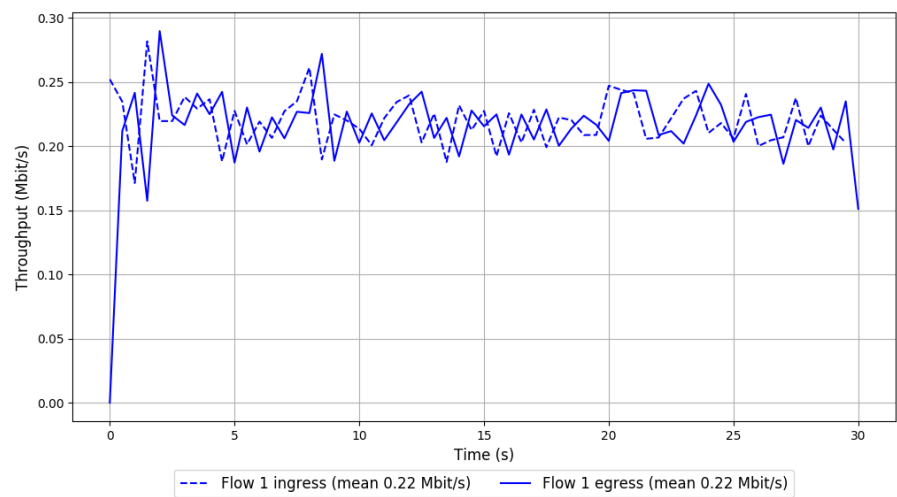Flow 1 (95th percentile 91.46 ms)

```
Run 3: Statistics of SCReAM

Start at: 2019-01-03 05:51:35
End at: 2019-01-03 05:52:05
Local clock offset: -2.744 ms
Remote clock offset: 11.831 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 91.230 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 91.230 ms
Loss rate: 0.64%
```

Run 3: Report of SCReAM — Data Link

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

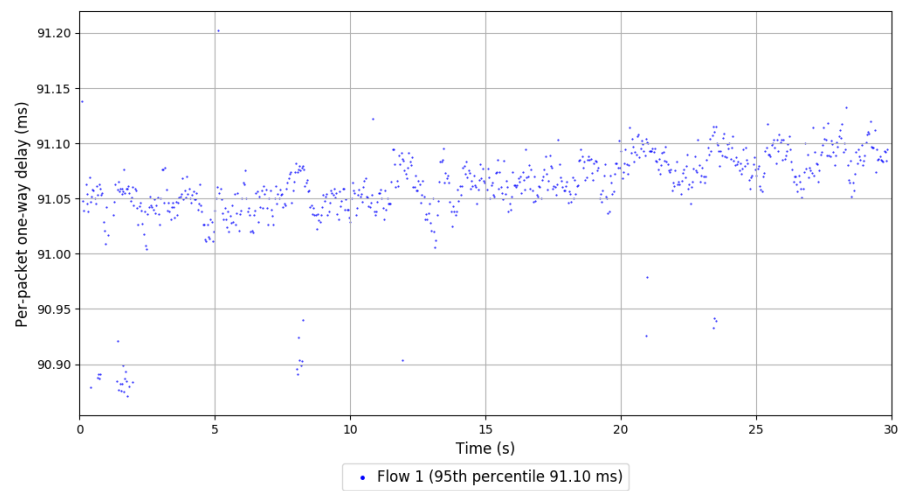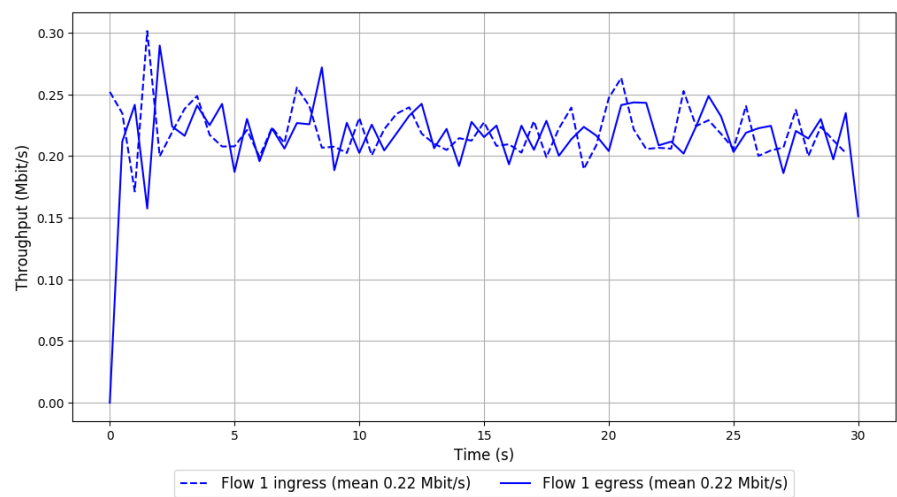• Flow 1 (95th percentile 91.23 ms)

```
Run 4: Statistics of SCReAM

Start at: 2019-01-03 06:14:07
End at: 2019-01-03 06:14:37
Local clock offset: -6.345 ms
Remote clock offset: 11.679 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 91.103 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 91.103 ms
Loss rate: 0.64%
```

Run 4: Report of SCReAM — Data Link

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

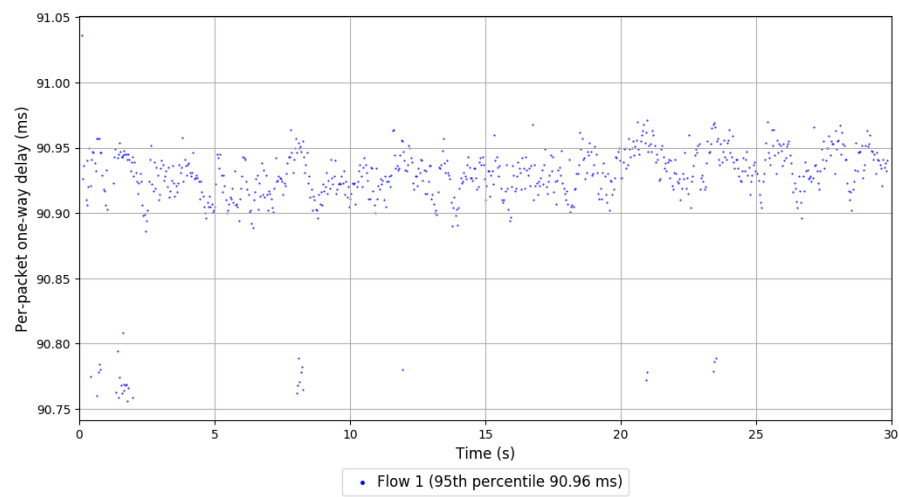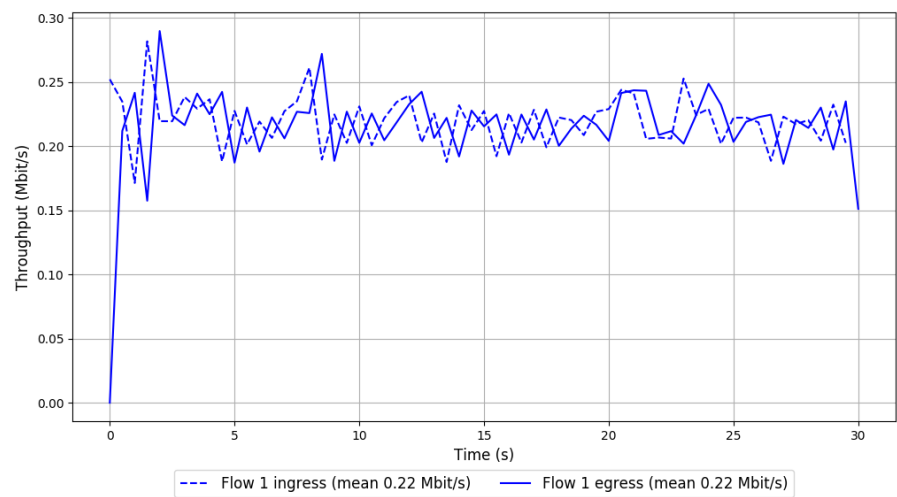Flow 1 (95th percentile 91.10 ms)

```
Run 5: Statistics of SCReAM

Start at: 2019-01-03 06:36:38
End at: 2019-01-03 06:37:08
Local clock offset: -6.209 ms
Remote clock offset: 12.995 ms

# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 90.957 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 90.957 ms
Loss rate: 0.64%
```

Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2019-01-03 04:58:19
End at: 2019-01-03 04:58:49
Local clock offset: -2.658 ms
Remote clock offset: 1.098 ms

# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.24 Mbit/s
95th percentile per-packet one-way delay: 92.164 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 3.24 Mbit/s
95th percentile per-packet one-way delay: 92.164 ms
Loss rate: 0.74%
```
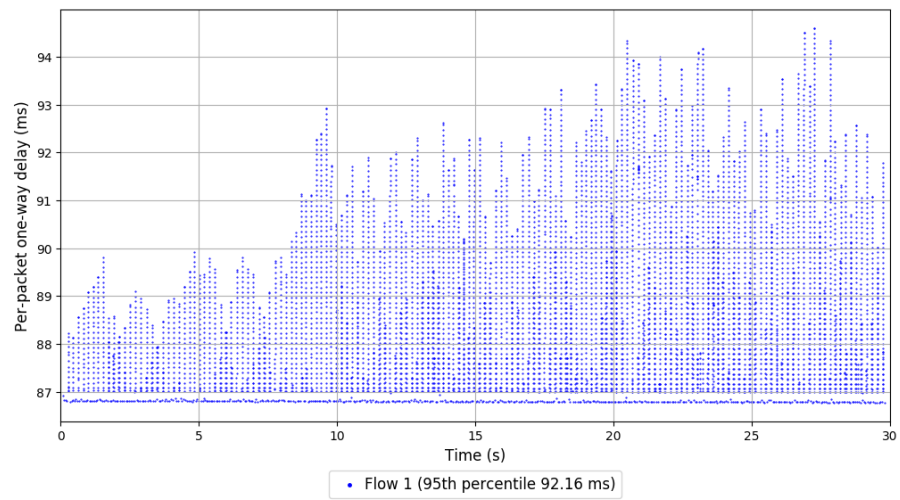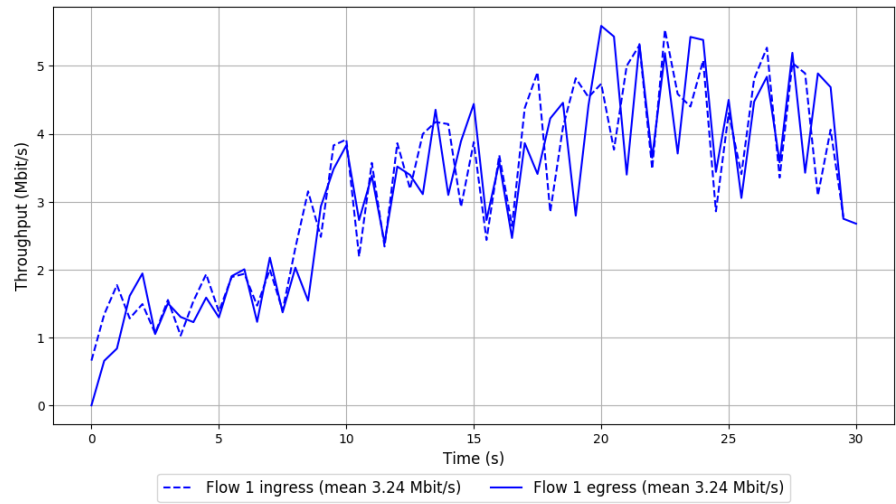
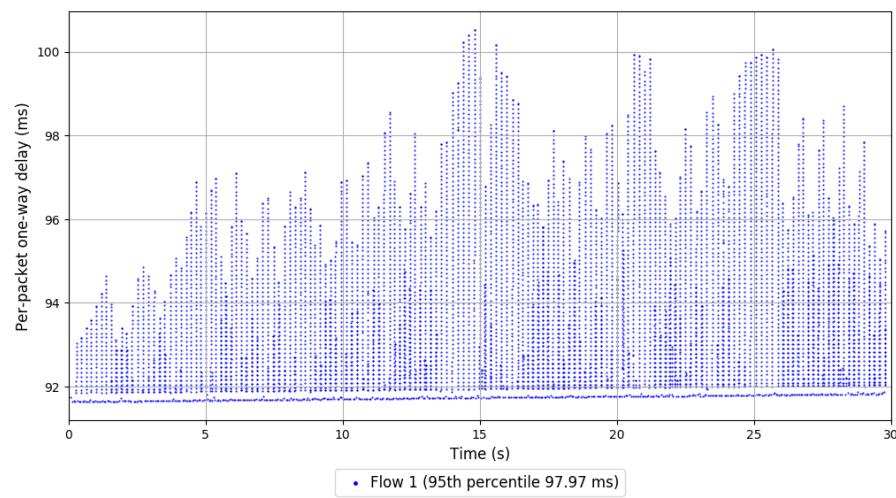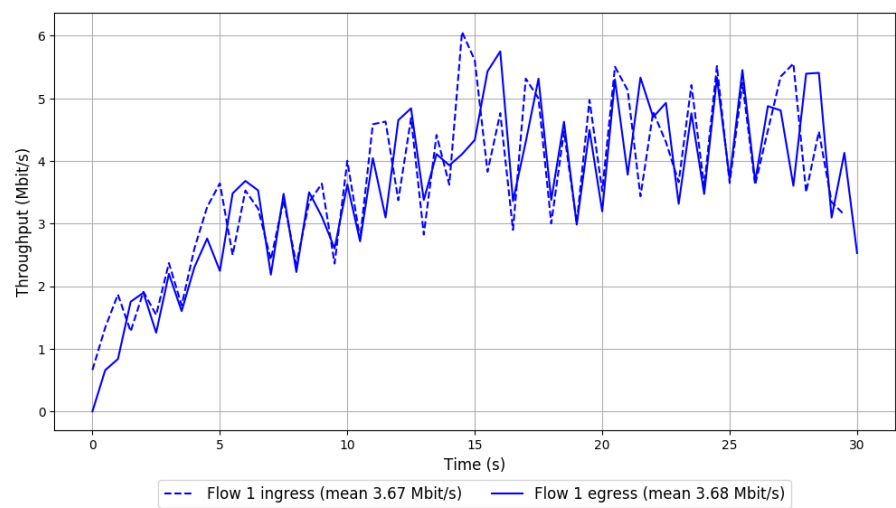Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2019-01-03 05:20:50
End at: 2019-01-03 05:21:20
Local clock offset: -1.403 ms
Remote clock offset: 11.569 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.68 Mbit/s
95th percentile per-packet one-way delay: 97.967 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 3.68 Mbit/s
95th percentile per-packet one-way delay: 97.967 ms
Loss rate: 0.55%
```

Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 3.67 Mbit/s) --- Flow 1 egress (mean 3.68 Mbit/s)

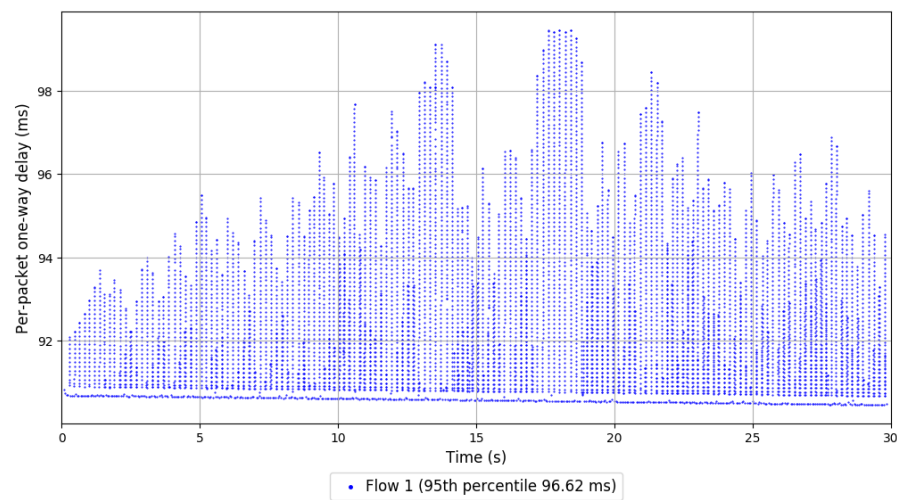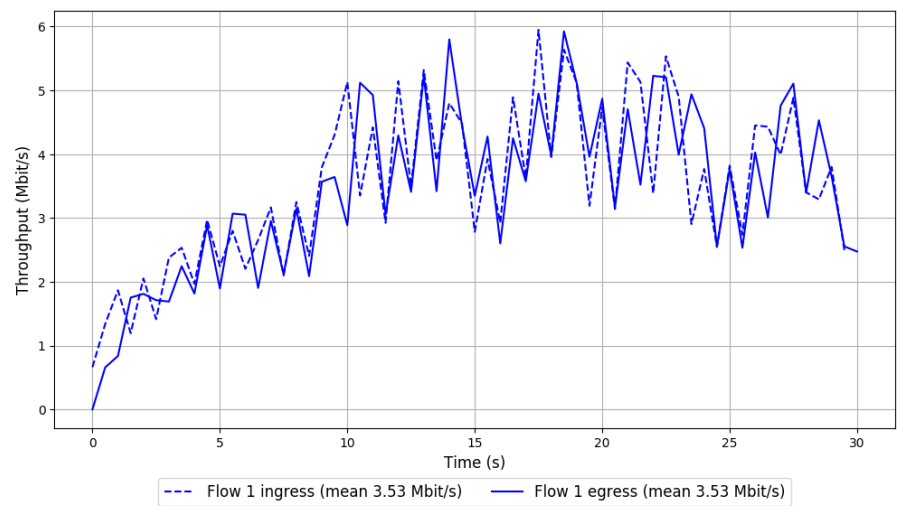Flow 1 (95th percentile 97.97 ms)

```
Run 3: Statistics of Sprout

Start at: 2019-01-03 05:43:22
End at: 2019-01-03 05:43:52
Local clock offset: -2.626 ms
Remote clock offset: 14.483 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.53 Mbit/s
95th percentile per-packet one-way delay: 96.617 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 3.53 Mbit/s
95th percentile per-packet one-way delay: 96.617 ms
Loss rate: 0.60%
```

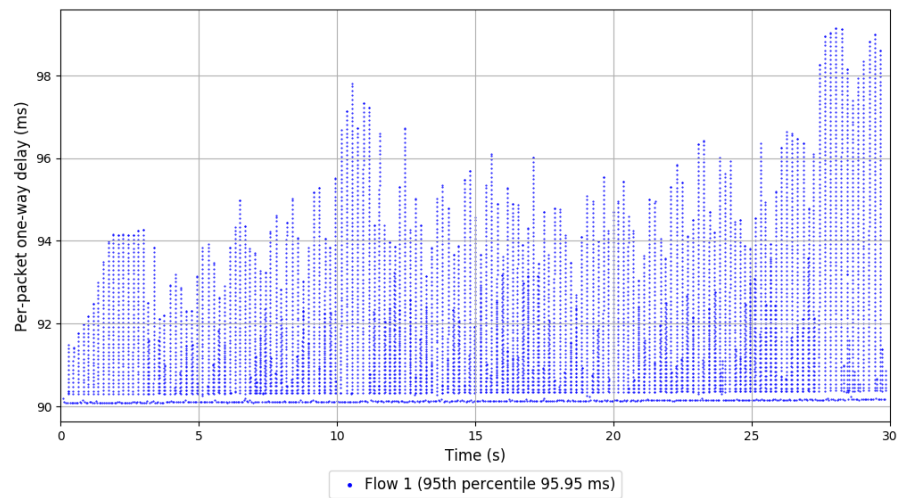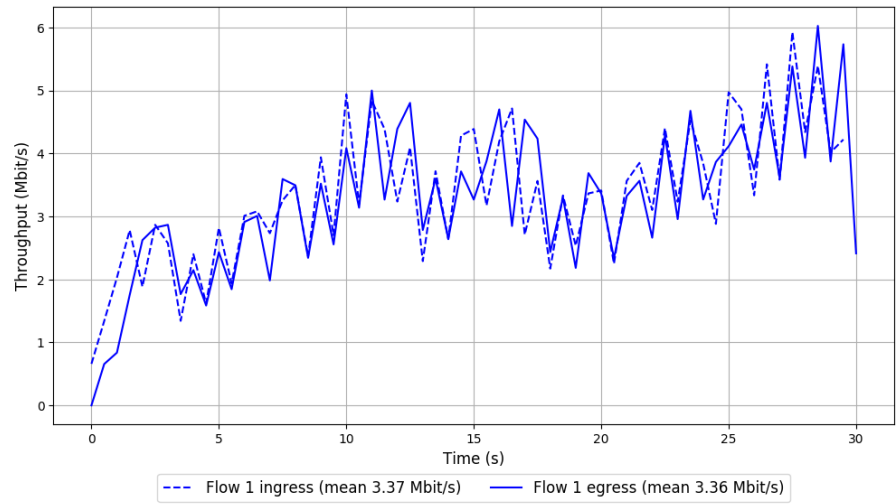Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2019-01-03 06:05:54
End at: 2019-01-03 06:06:24
Local clock offset: -6.275 ms
Remote clock offset: 11.401 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.36 Mbit/s
95th percentile per-packet one-way delay: 95.955 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 3.36 Mbit/s
95th percentile per-packet one-way delay: 95.955 ms
Loss rate: 0.95%
```

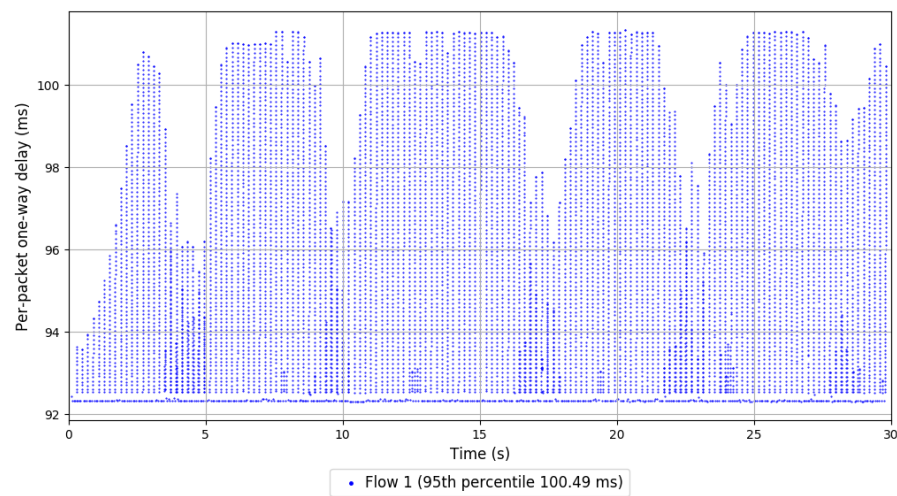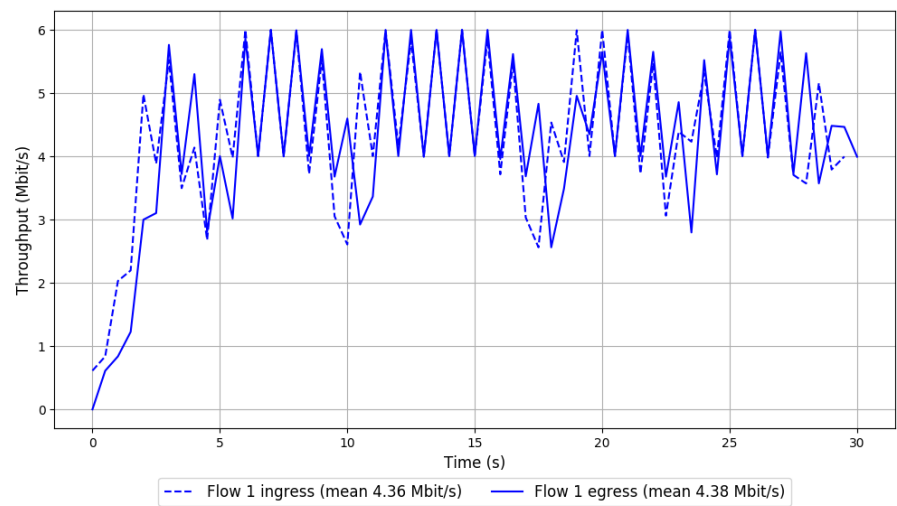Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2019-01-03 06:28:25
End at: 2019-01-03 06:28:55
Local clock offset: -7.401 ms
Remote clock offset: 16.443 ms


# Below is generated by plot.py at 2019-01-03 06:48:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.38 Mbit/s
95th percentile per-packet one-way delay: 100.490 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 4.38 Mbit/s
95th percentile per-packet one-way delay: 100.490 ms
Loss rate: 0.00%
```

Run 5: Report of Sprout — Data Link

Flow 1 ingress (mean 4.36 Mbit/s)   Flow 1 egress (mean 4.38 Mbit/s)

Flow 1 (95th percentile 100.49 ms)

```
Run 1: Statistics of TaoVA-100x

Start at: 2019-01-03 05:07:40
End at: 2019-01-03 05:08:10
Local clock offset: -1.707 ms
Remote clock offset: 2.978 ms


# Below is generated by plot.py at 2019-01-03 06:49:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.73 Mbit/s
95th percentile per-packet one-way delay: 125.589 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 70.73 Mbit/s
95th percentile per-packet one-way delay: 125.589 ms
Loss rate: 0.55%
```
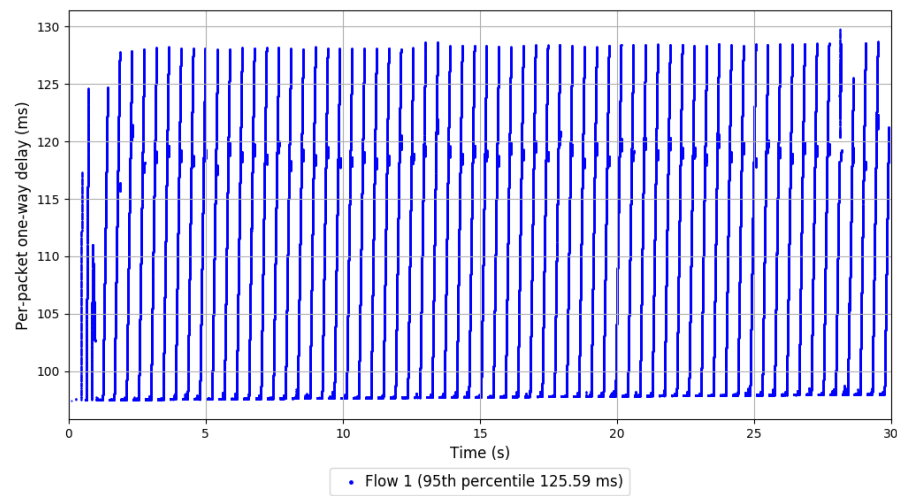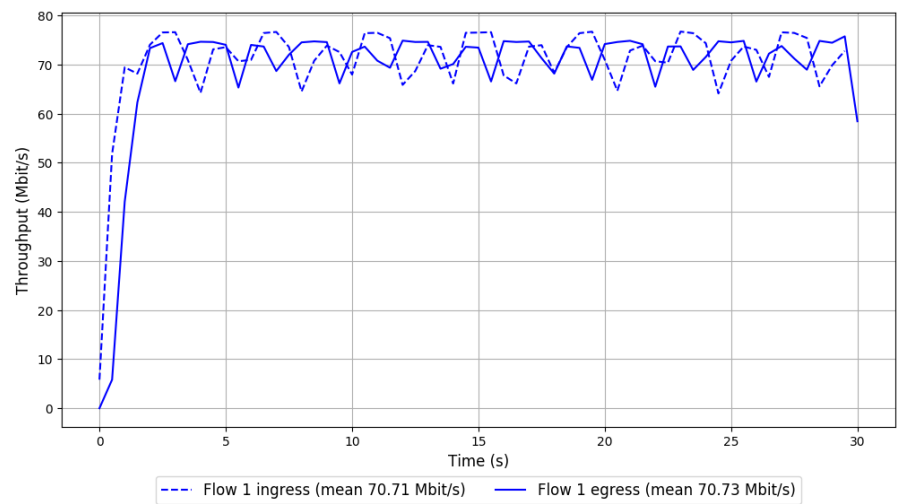
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 70.71 Mbit/s) --- Flow 1 egress (mean 70.73 Mbit/s)
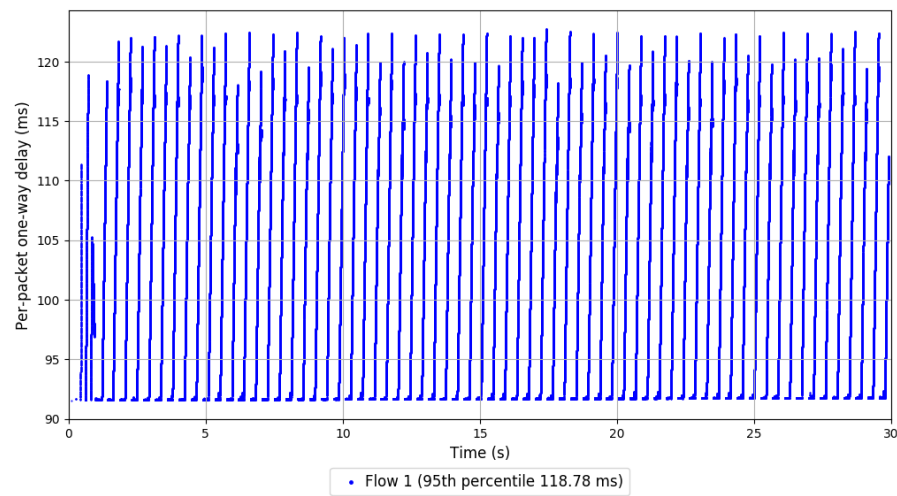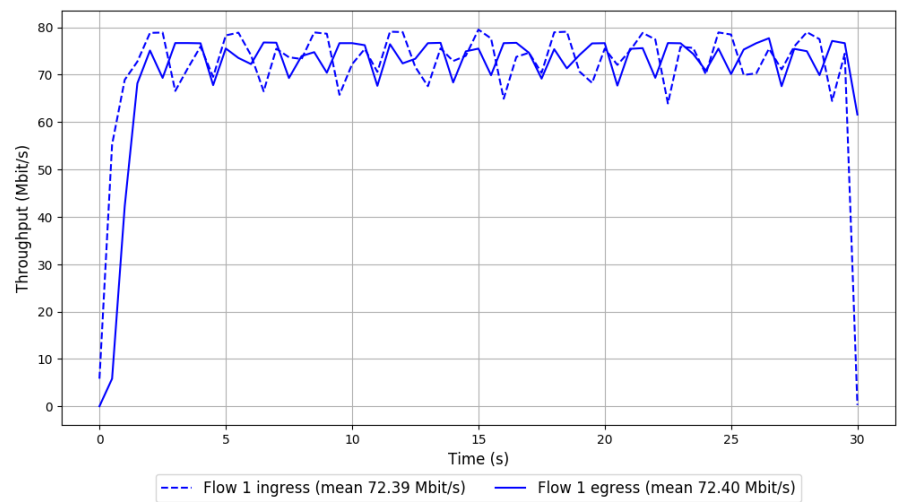

• Flow 1 (95th percentile 125.59 ms)

```
Run 2: Statistics of TaoVA-100x

Start at: 2019-01-03 05:30:11
End at: 2019-01-03 05:30:41
Local clock offset: -2.054 ms
Remote clock offset: 14.981 ms


# Below is generated by plot.py at 2019-01-03 06:49:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.40 Mbit/s
95th percentile per-packet one-way delay: 118.779 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 72.40 Mbit/s
95th percentile per-packet one-way delay: 118.779 ms
Loss rate: 0.55%
```

Run 2: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 72.39 Mbit/s)   Flow 1 egress (mean 72.40 Mbit/s)
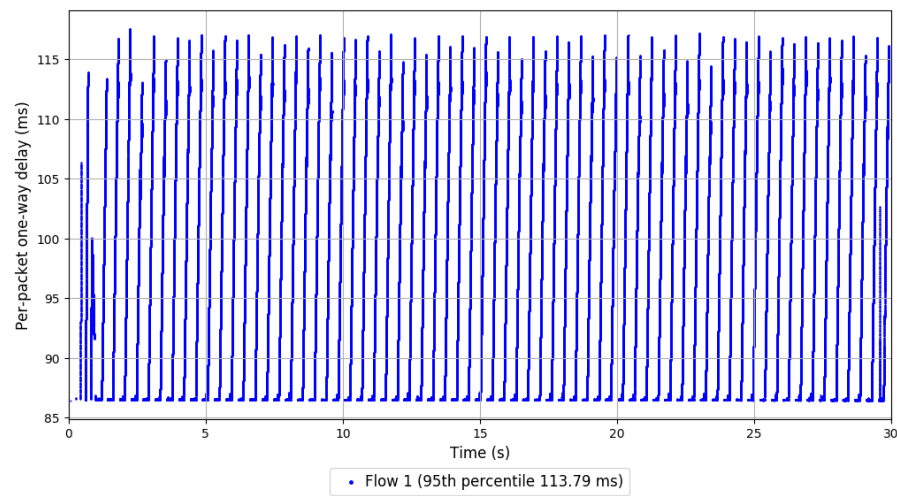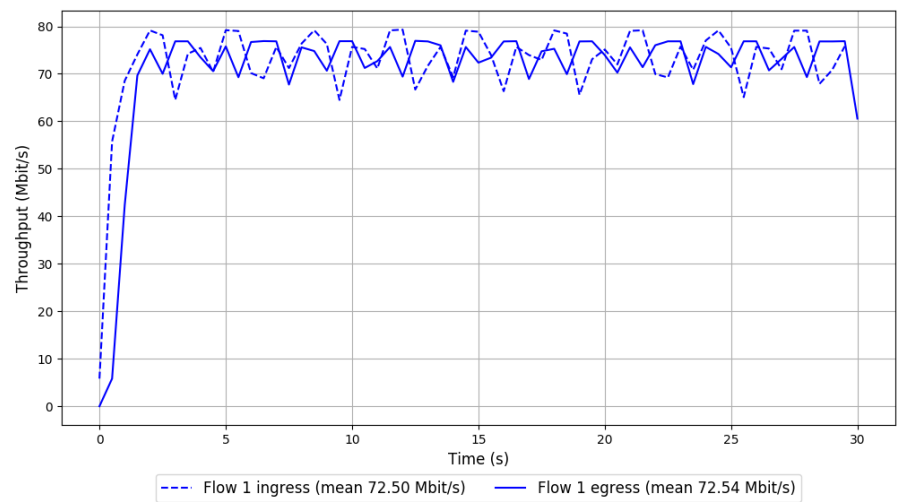

• Flow 1 (95th percentile 118.78 ms)

```
Run 3: Statistics of TaoVA-100x

Start at: 2019-01-03 05:52:43
End at: 2019-01-03 05:53:13
Local clock offset: -3.456 ms
Remote clock offset: 15.657 ms


# Below is generated by plot.py at 2019-01-03 06:49:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.54 Mbit/s
95th percentile per-packet one-way delay: 113.787 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 72.54 Mbit/s
95th percentile per-packet one-way delay: 113.787 ms
Loss rate: 0.53%
```

Run 3: Report of TaoVA-100x — Data Link
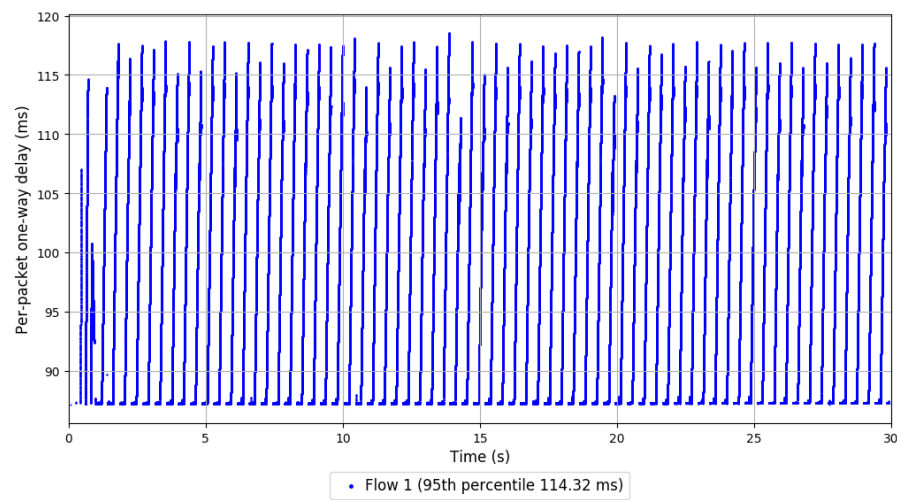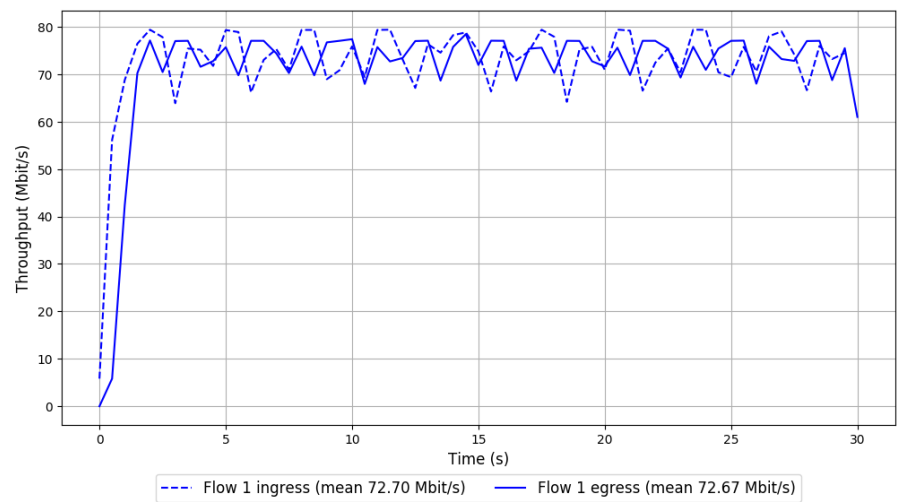

150

```
Run 4: Statistics of TaoVA-100x

Start at: 2019-01-03 06:15:14
End at: 2019-01-03 06:15:44
Local clock offset: -7.227 ms
Remote clock offset: 15.463 ms


# Below is generated by plot.py at 2019-01-03 06:49:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.67 Mbit/s
95th percentile per-packet one-way delay: 114.320 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 72.67 Mbit/s
95th percentile per-packet one-way delay: 114.320 ms
Loss rate: 0.62%
```

Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 72.70 Mbit/s) --- Flow 1 egress (mean 72.67 Mbit/s)
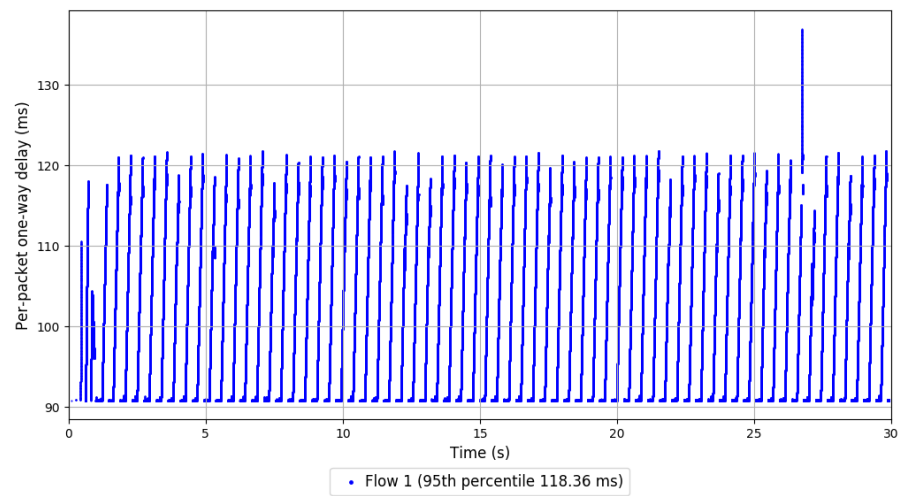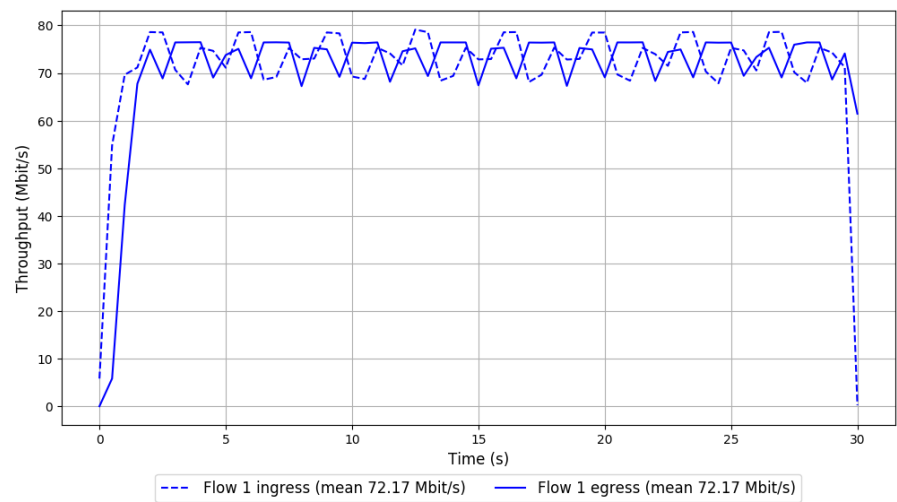

• Flow 1 (95th percentile 114.32 ms)

```
Run 5: Statistics of TaoVA-100x

Start at: 2019-01-03 06:37:45
End at: 2019-01-03 06:38:16
Local clock offset: -6.952 ms
Remote clock offset: 13.127 ms


# Below is generated by plot.py at 2019-01-03 06:49:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.17 Mbit/s
95th percentile per-packet one-way delay: 118.355 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 72.17 Mbit/s
95th percentile per-packet one-way delay: 118.355 ms
Loss rate: 0.58%
```
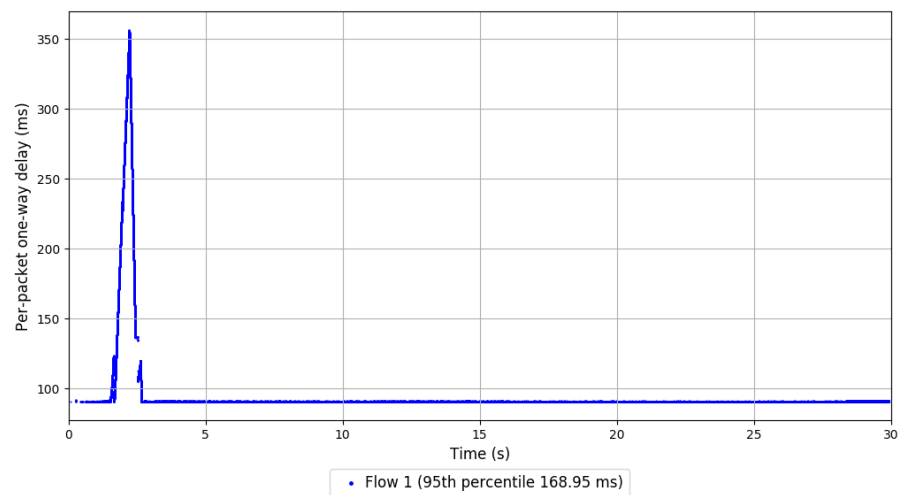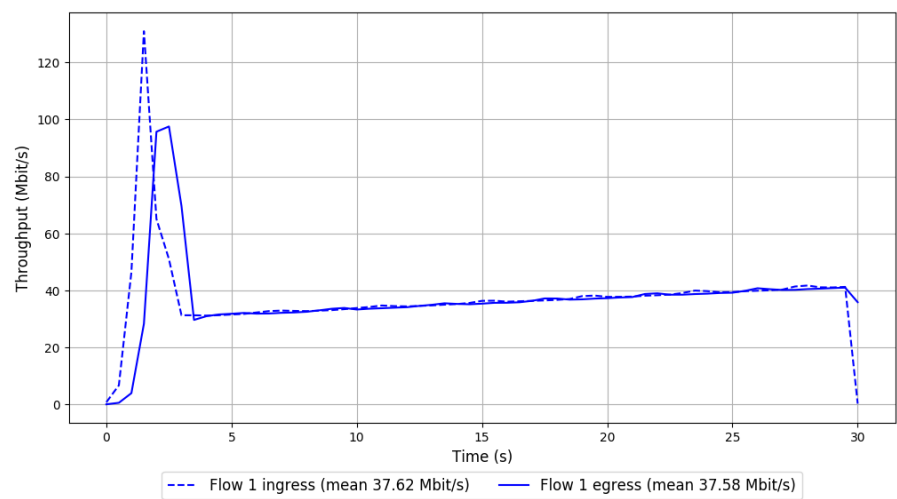
Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2019-01-03 04:53:33
End at: 2019-01-03 04:54:03
Local clock offset: -2.641 ms
Remote clock offset: -2.358 ms


# Below is generated by plot.py at 2019-01-03 06:49:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.58 Mbit/s
95th percentile per-packet one-way delay: 168.951 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 37.58 Mbit/s
95th percentile per-packet one-way delay: 168.951 ms
Loss rate: 0.66%
```
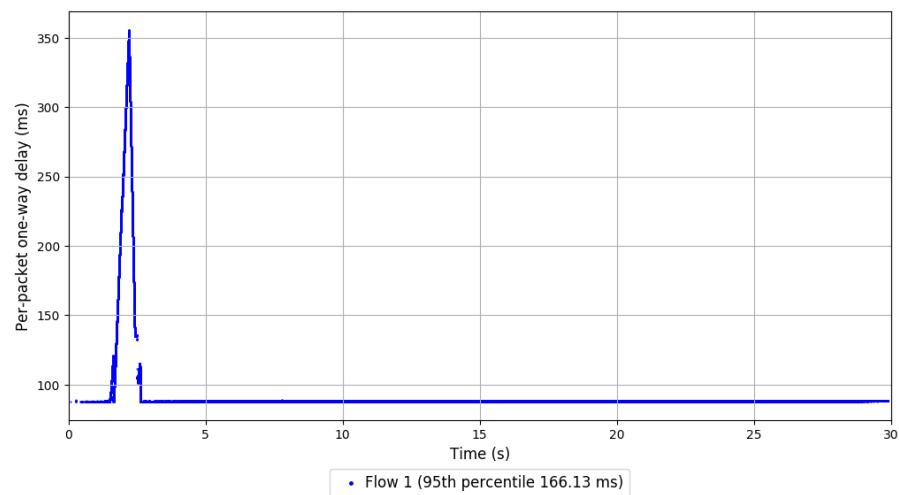
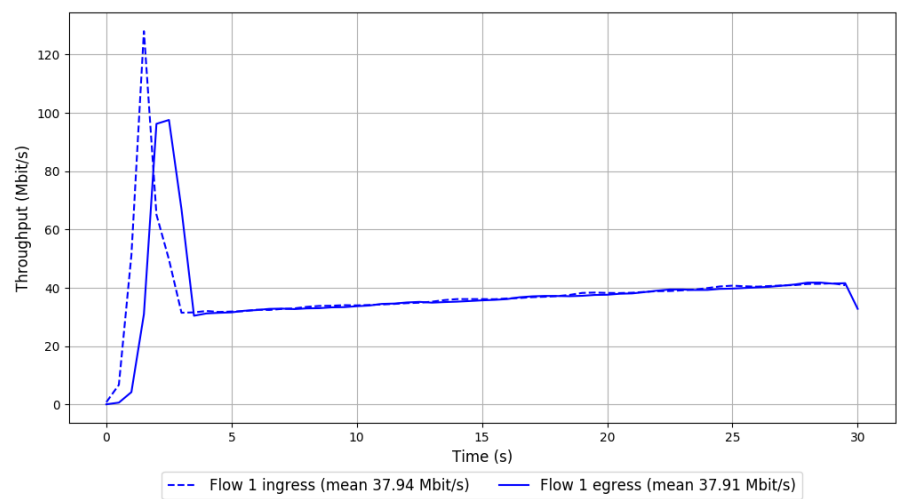## Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2019-01-03 05:16:05
End at: 2019-01-03 05:16:35
Local clock offset: -1.512 ms
Remote clock offset: 13.468 ms


# Below is generated by plot.py at 2019-01-03 06:49:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.91 Mbit/s
95th percentile per-packet one-way delay: 166.133 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 37.91 Mbit/s
95th percentile per-packet one-way delay: 166.133 ms
Loss rate: 0.66%
```

Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 37.94 Mbit/s)   Flow 1 egress (mean 37.91 Mbit/s)
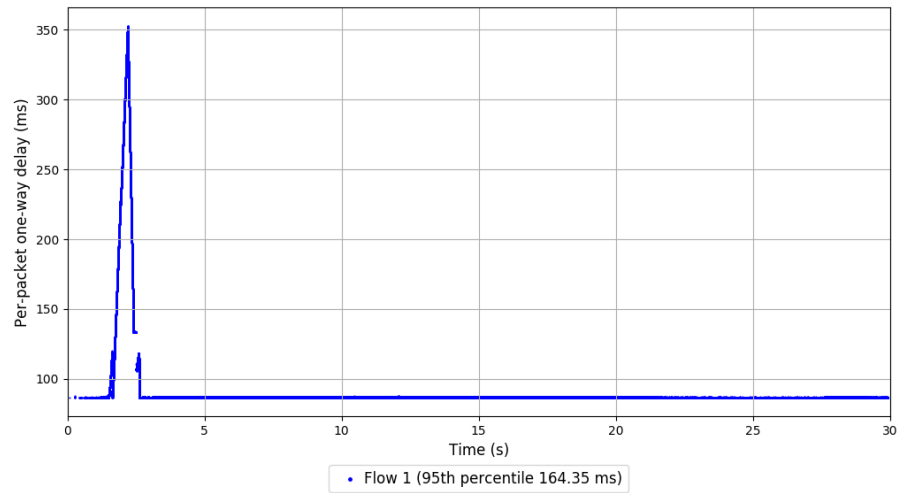

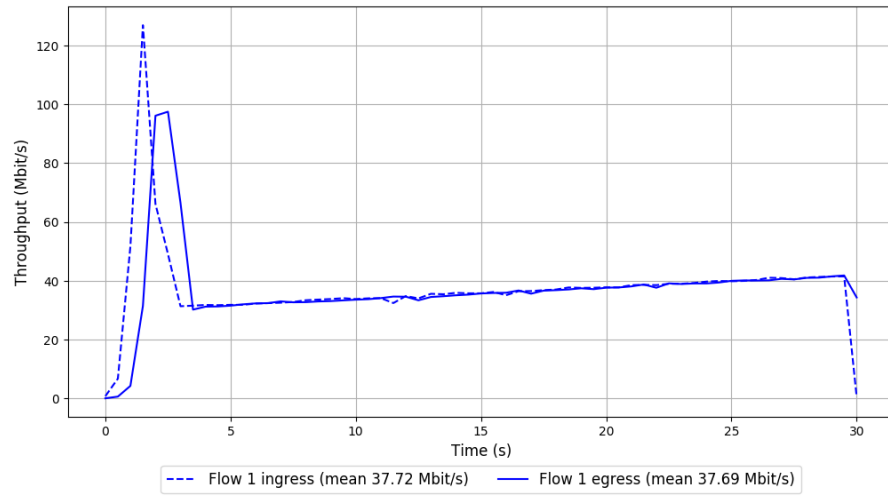
• Flow 1 (95th percentile 166.13 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2019-01-03 05:38:36
End at: 2019-01-03 05:39:06
Local clock offset: -3.26 ms
Remote clock offset: 20.955 ms


# Below is generated by plot.py at 2019-01-03 06:49:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.69 Mbit/s
95th percentile per-packet one-way delay: 164.353 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 37.69 Mbit/s
95th percentile per-packet one-way delay: 164.353 ms
Loss rate: 0.65%
```

Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 37.72 Mbit/s)   Flow 1 egress (mean 37.69 Mbit/s)
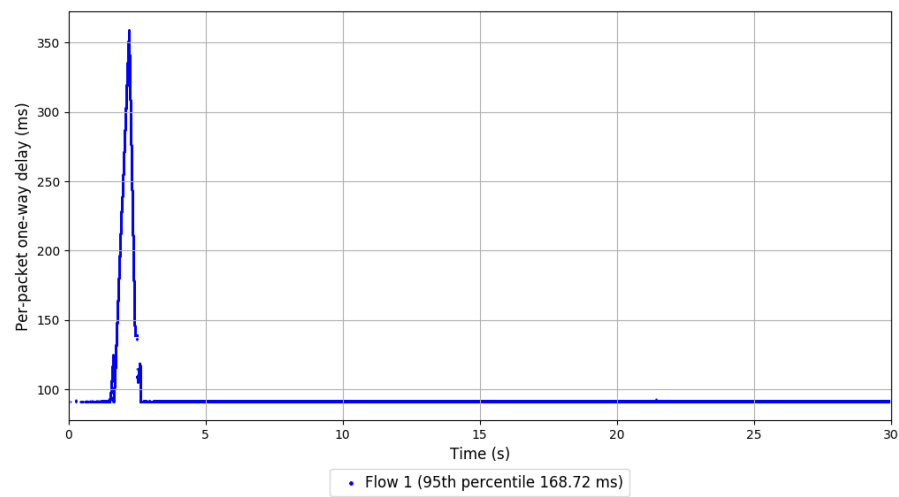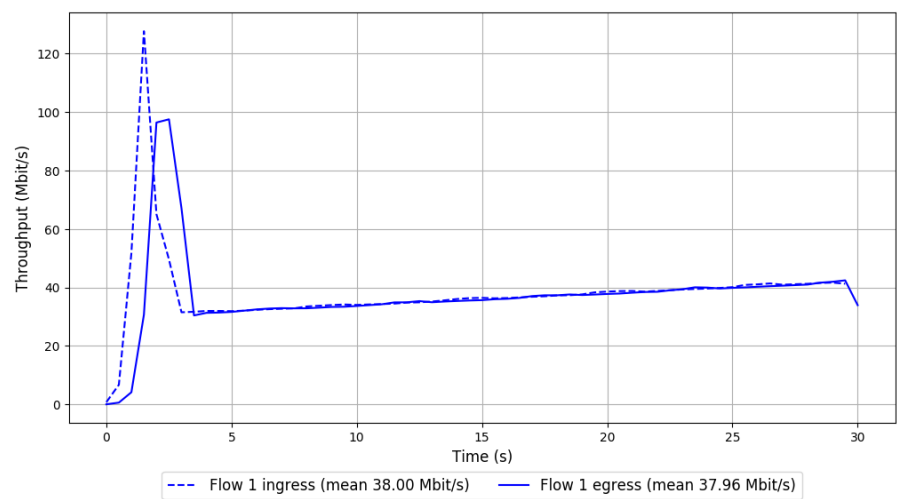

Flow 1 (95th percentile 164.35 ms)

```
Run 4: Statistics of TCP Vegas

Start at: 2019-01-03 06:01:07
End at: 2019-01-03 06:01:37
Local clock offset: -4.711 ms
Remote clock offset: 11.487 ms


# Below is generated by plot.py at 2019-01-03 06:49:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.96 Mbit/s
95th percentile per-packet one-way delay: 168.717 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 37.96 Mbit/s
95th percentile per-packet one-way delay: 168.717 ms
Loss rate: 0.66%
```

Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 38.00 Mbit/s) ----   Flow 1 egress (mean 37.96 Mbit/s) ——
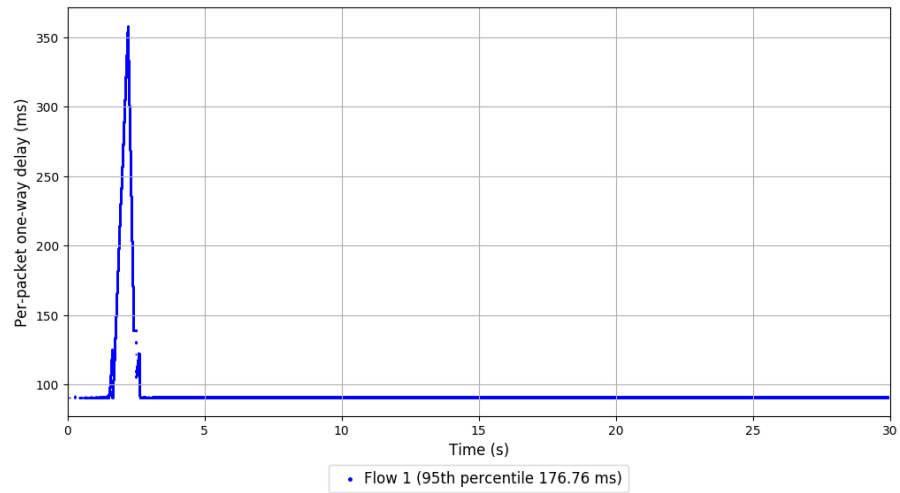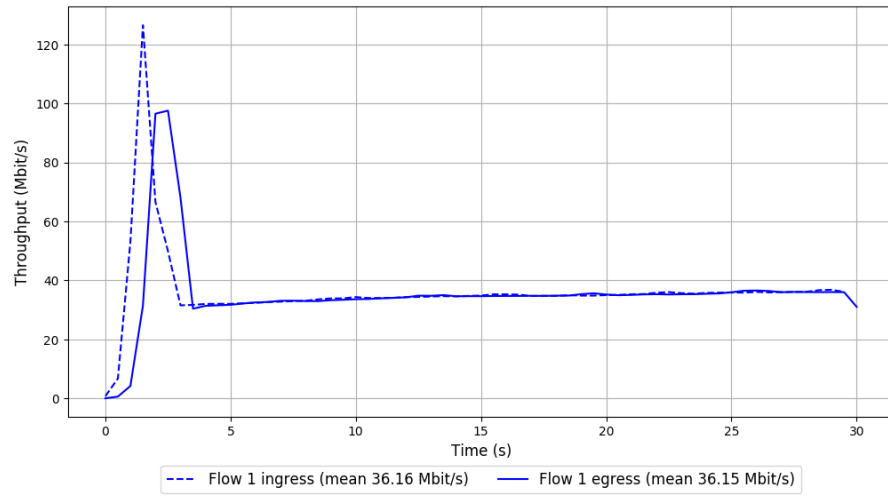

Flow 1 (95th percentile 168.72 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2019-01-03 06:23:39
End at: 2019-01-03 06:24:09
Local clock offset: -7.042 ms
Remote clock offset: 12.257 ms


# Below is generated by plot.py at 2019-01-03 06:49:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.15 Mbit/s
95th percentile per-packet one-way delay: 176.763 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 36.15 Mbit/s
95th percentile per-packet one-way delay: 176.763 ms
Loss rate: 0.61%
```

Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 36.16 Mbit/s)   Flow 1 egress (mean 36.15 Mbit/s)
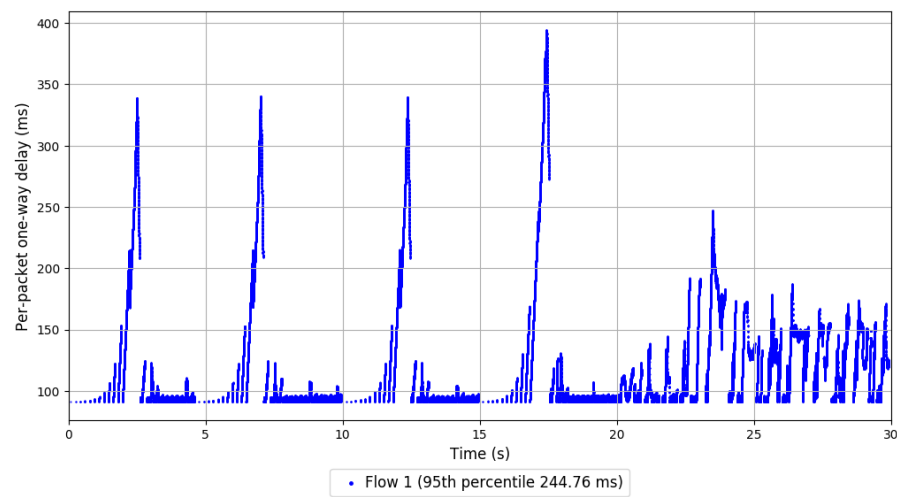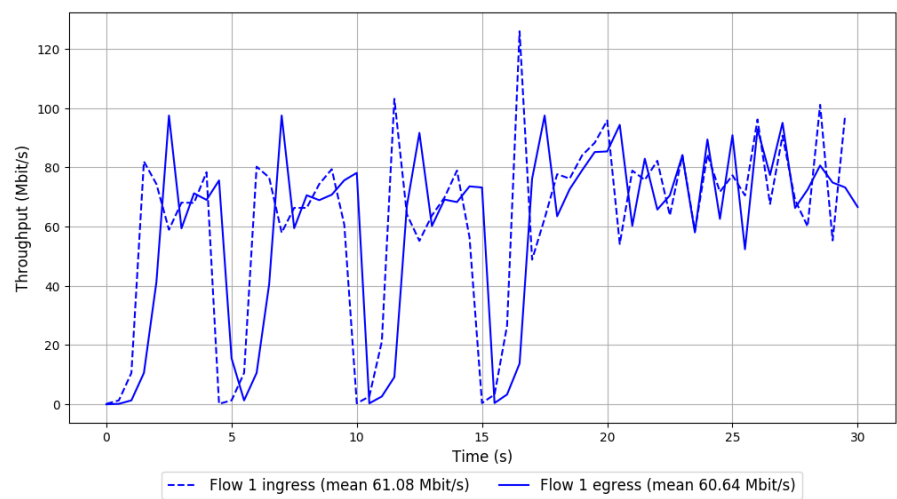

• Flow 1 (95th percentile 176.76 ms)

```
Run 1: Statistics of Verus

Start at: 2019-01-03 05:00:39
End at: 2019-01-03 05:01:09
Local clock offset: -1.808 ms
Remote clock offset: -2.907 ms


# Below is generated by plot.py at 2019-01-03 06:49:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.64 Mbit/s
95th percentile per-packet one-way delay: 244.764 ms
Loss rate: 1.17%
-- Flow 1:
Average throughput: 60.64 Mbit/s
95th percentile per-packet one-way delay: 244.764 ms
Loss rate: 1.17%
```
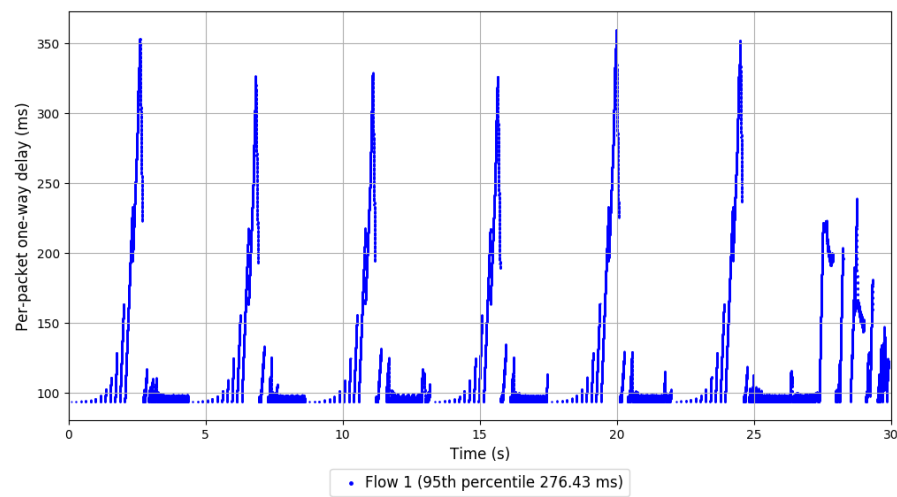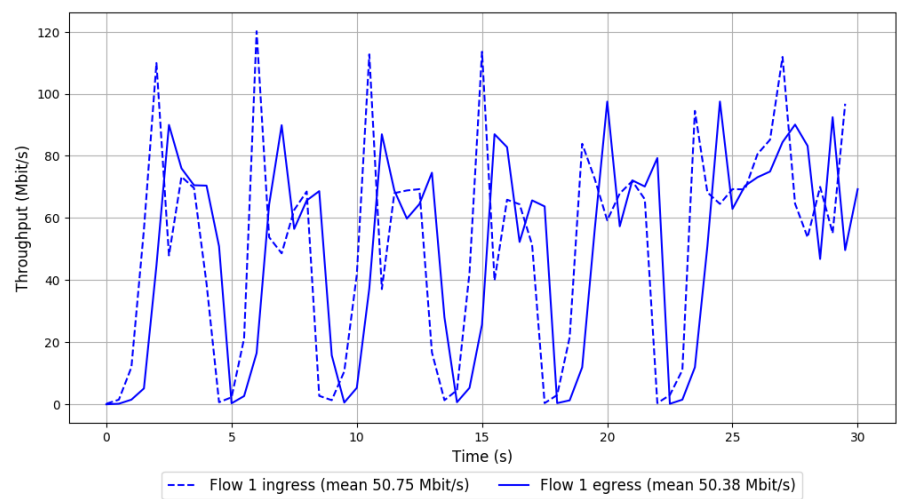
Run 1: Report of Verus — Data Link

Run 2: Statistics of Verus

Start at: 2019-01-03 05:23:10
End at: 2019-01-03 05:23:40
Local clock offset: -1.343 ms
Remote clock offset: 16.552 ms

Below is generated by plot.py at 2019-01-03 06:49:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 50.38 Mbit/s
95th percentile per-packet one-way delay: 276.433 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 50.38 Mbit/s
95th percentile per-packet one-way delay: 276.433 ms
Loss rate: 1.32%

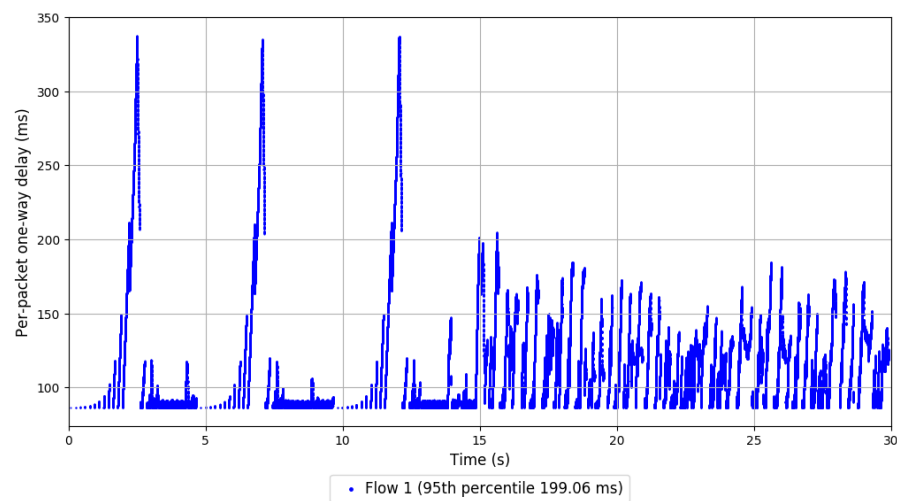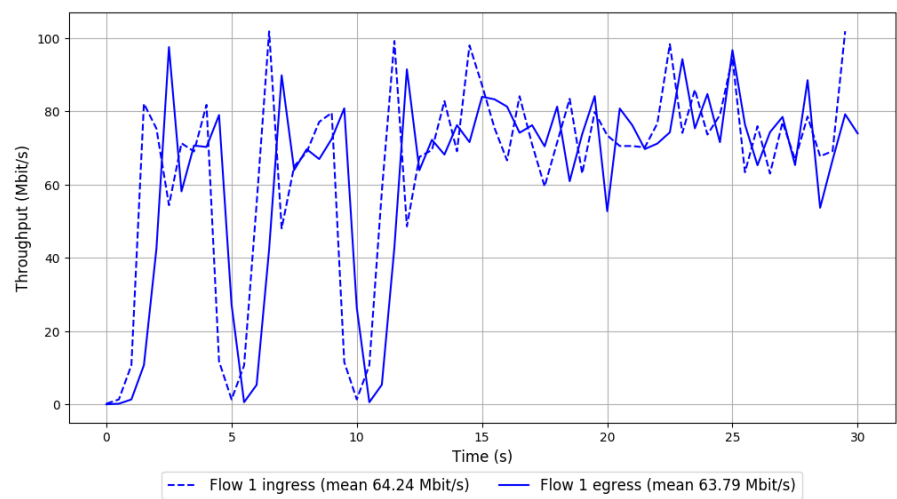Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2019-01-03 05:45:42
End at: 2019-01-03 05:46:12
Local clock offset: -3.406 ms
Remote clock offset: 17.104 ms


# Below is generated by plot.py at 2019-01-03 06:49:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 63.79 Mbit/s
95th percentile per-packet one-way delay: 199.059 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 63.79 Mbit/s
95th percentile per-packet one-way delay: 199.059 ms
Loss rate: 1.20%
```

Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 64.24 Mbit/s)   Flow 1 egress (mean 63.79 Mbit/s)

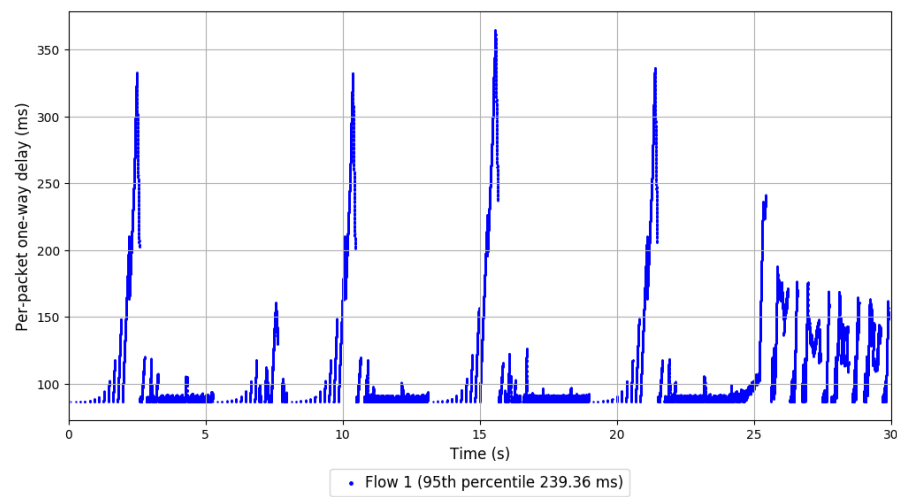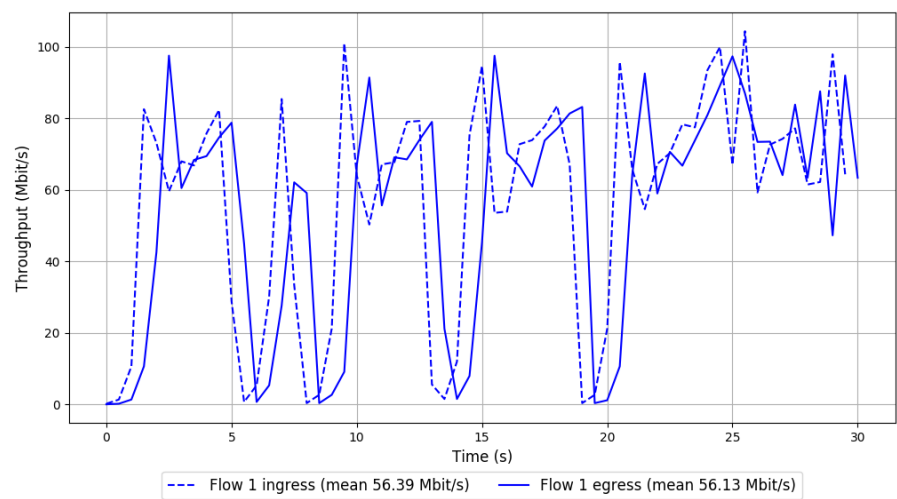

Flow 1 (95th percentile 199.06 ms)

```
Run 4: Statistics of Verus

Start at: 2019-01-03 06:08:14
End at: 2019-01-03 06:08:44
Local clock offset: -6.578 ms
Remote clock offset: 15.328 ms


# Below is generated by plot.py at 2019-01-03 06:49:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 56.13 Mbit/s
95th percentile per-packet one-way delay: 239.362 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 56.13 Mbit/s
95th percentile per-packet one-way delay: 239.362 ms
Loss rate: 0.79%
```

Run 4: Report of Verus — Data Link

Flow 1 ingress (mean 56.39 Mbit/s)   Flow 1 egress (mean 56.13 Mbit/s)

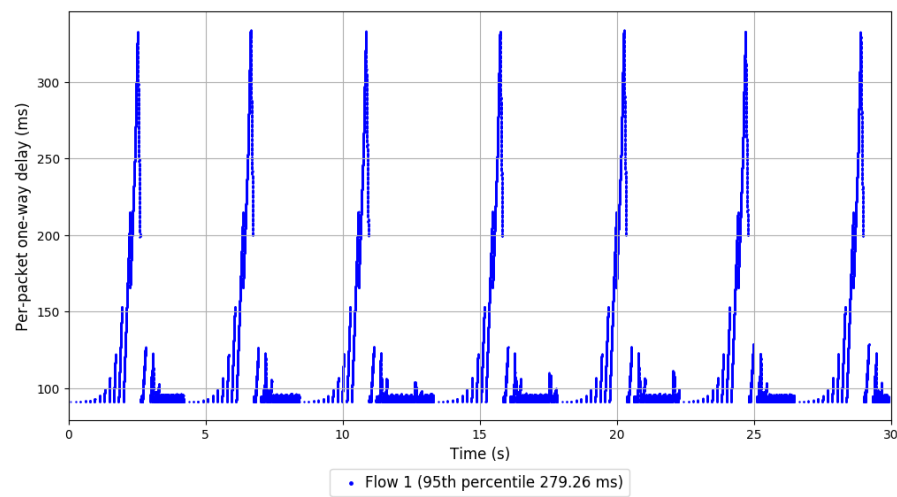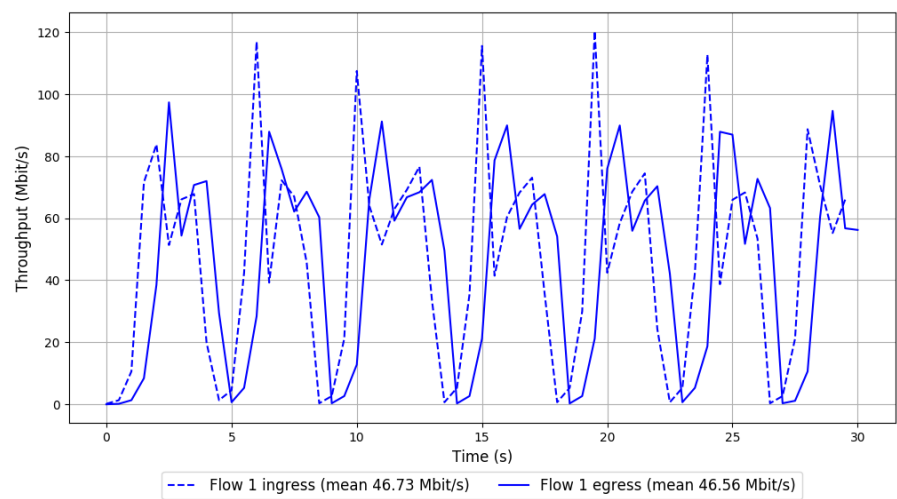Flow 1 (95th percentile 239.36 ms)

```
Run 5: Statistics of Verus

Start at: 2019-01-03 06:30:45
End at: 2019-01-03 06:31:16
Local clock offset: -7.183 ms
Remote clock offset: 12.373 ms


# Below is generated by plot.py at 2019-01-03 06:49:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 46.56 Mbit/s
95th percentile per-packet one-way delay: 279.265 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 46.56 Mbit/s
95th percentile per-packet one-way delay: 279.265 ms
Loss rate: 0.94%
```

Run 5: Report of Verus — Data Link

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```
Run 1: Statistics of PCC-Vivace

Start at: 2019-01-03 04:59:26
End at: 2019-01-03 04:59:57
Local clock offset: -2.587 ms
Remote clock offset: 0.926 ms


# Below is generated by plot.py at 2019-01-03 06:50:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 77.46 Mbit/s
95th percentile per-packet one-way delay: 92.933 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 77.46 Mbit/s
95th percentile per-packet one-way delay: 92.933 ms
Loss rate: 0.73%
```
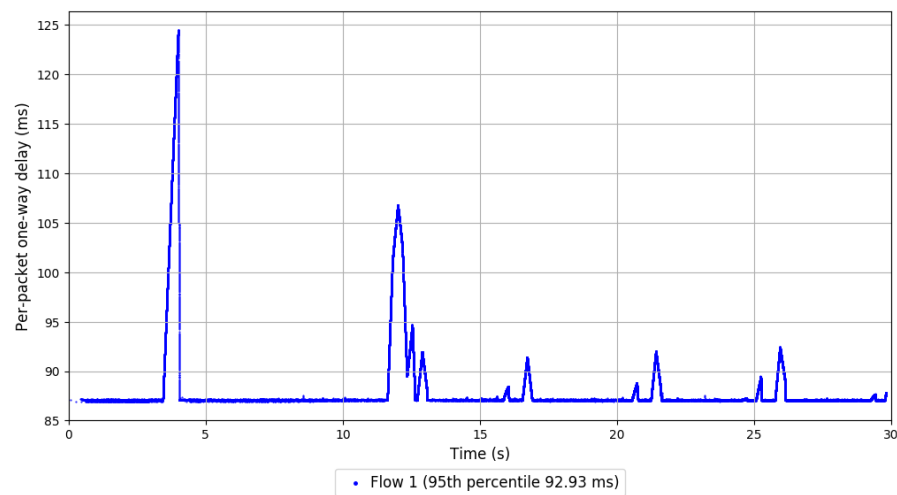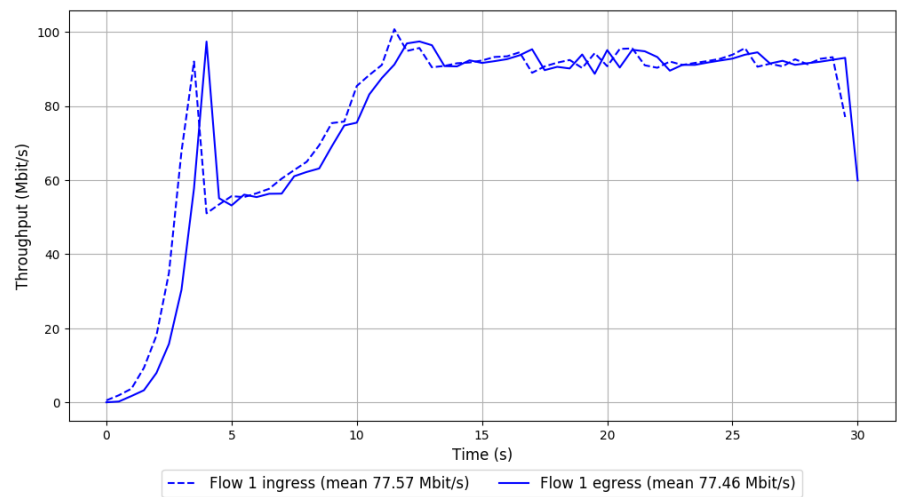
Run 1: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 77.57 Mbit/s)   Flow 1 egress (mean 77.46 Mbit/s)
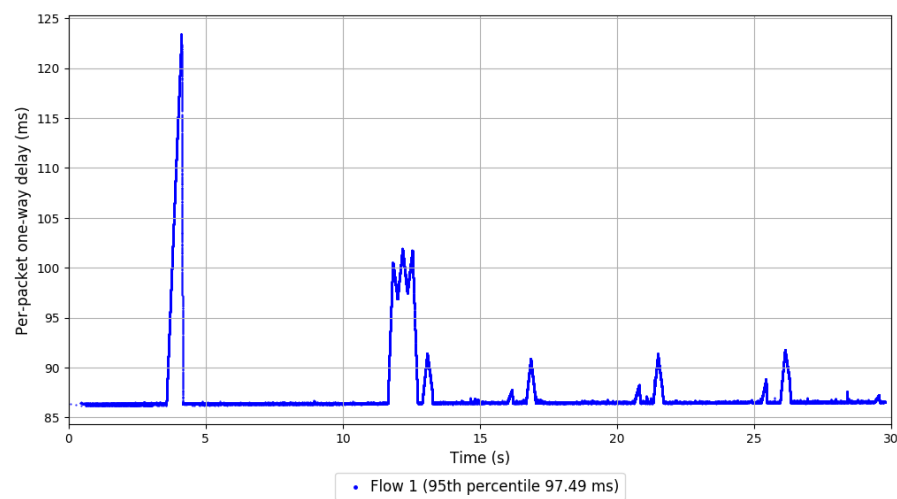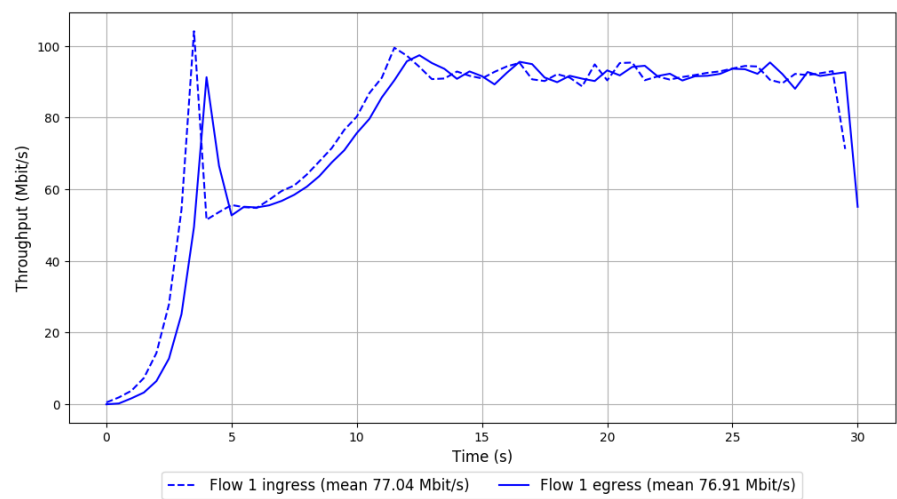

Flow 1 (95th percentile 92.93 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2019-01-03 05:21:58
End at: 2019-01-03 05:22:28
Local clock offset: -2.149 ms
Remote clock offset: 16.208 ms


# Below is generated by plot.py at 2019-01-03 06:50:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.91 Mbit/s
95th percentile per-packet one-way delay: 97.486 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 76.91 Mbit/s
95th percentile per-packet one-way delay: 97.486 ms
Loss rate: 0.73%
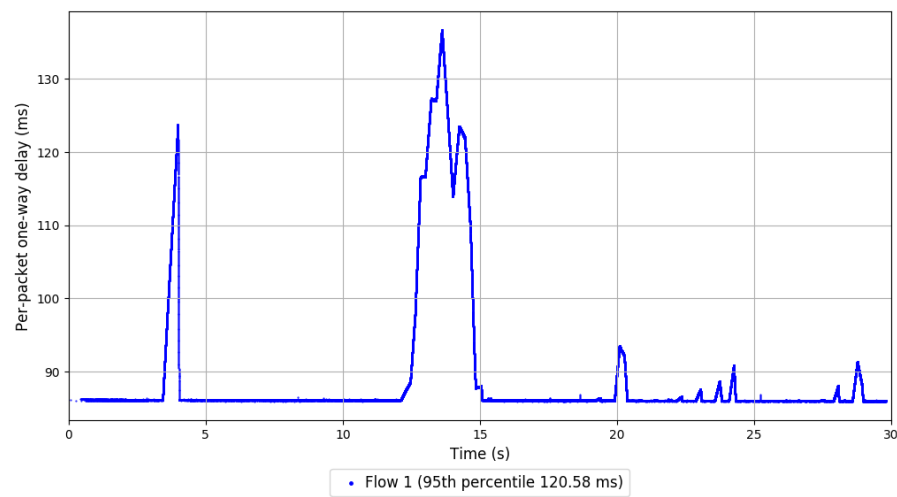```

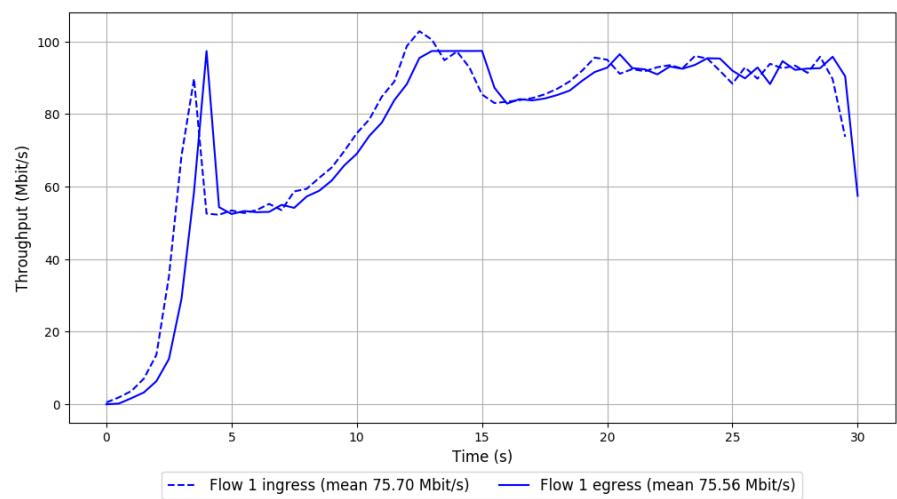Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2019-01-03 05:44:29
End at: 2019-01-03 05:45:00
Local clock offset: -3.455 ms
Remote clock offset: 17.804 ms

Below is generated by plot.py at 2019-01-03 06:50:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 75.56 Mbit/s
95th percentile per-packet one-way delay: 120.584 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 75.56 Mbit/s
95th percentile per-packet one-way delay: 120.584 ms
Loss rate: 0.76%
```
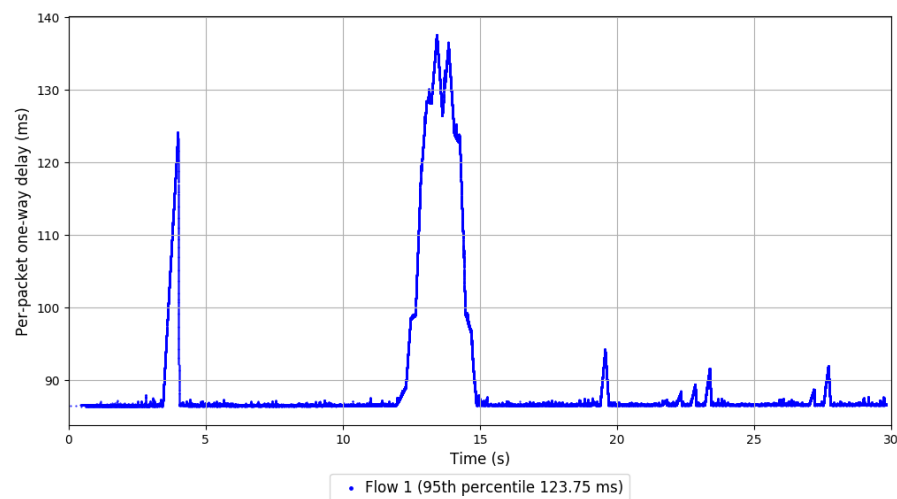
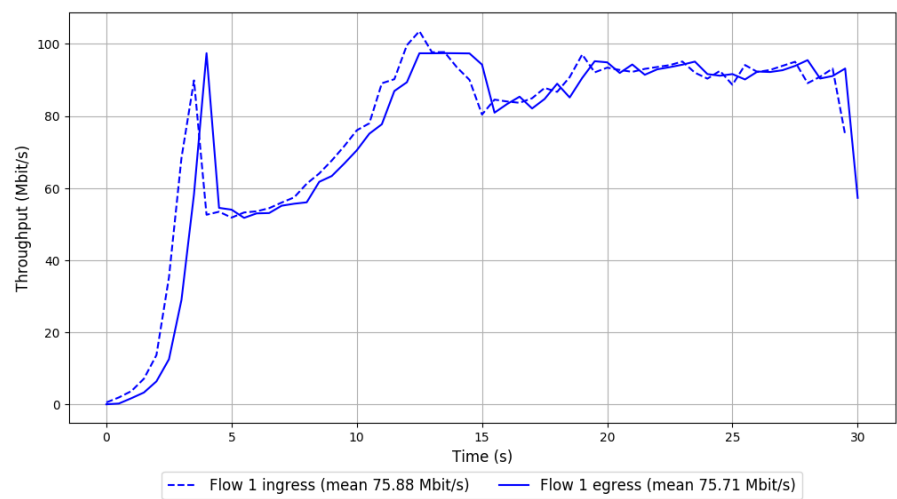Run 3: Report of PCC-Vivace — Data Link

```
Run 4: Statistics of PCC-Vivace

Start at: 2019-01-03 06:07:02
End at: 2019-01-03 06:07:32
Local clock offset: -6.439 ms
Remote clock offset: 15.327 ms


# Below is generated by plot.py at 2019-01-03 06:50:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 75.71 Mbit/s
95th percentile per-packet one-way delay: 123.753 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 75.71 Mbit/s
95th percentile per-packet one-way delay: 123.753 ms
Loss rate: 0.80%
```

Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2019-01-03 06:29:33
End at: 2019-01-03 06:30:03
Local clock offset: -7.237 ms
Remote clock offset: 16.37 ms


# Below is generated by plot.py at 2019-01-03 06:50:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.73 Mbit/s
95th percentile per-packet one-way delay: 121.839 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 76.73 Mbit/s
95th percentile per-packet one-way delay: 121.839 ms
Loss rate: 0.73%
```
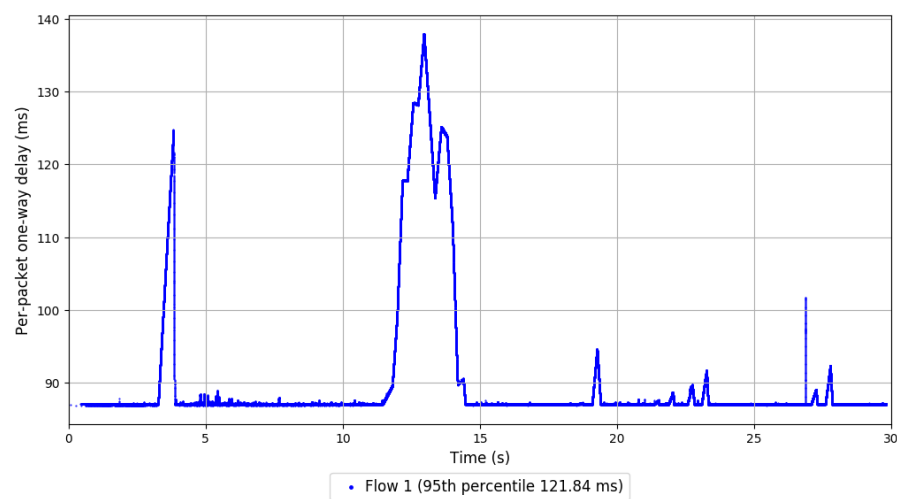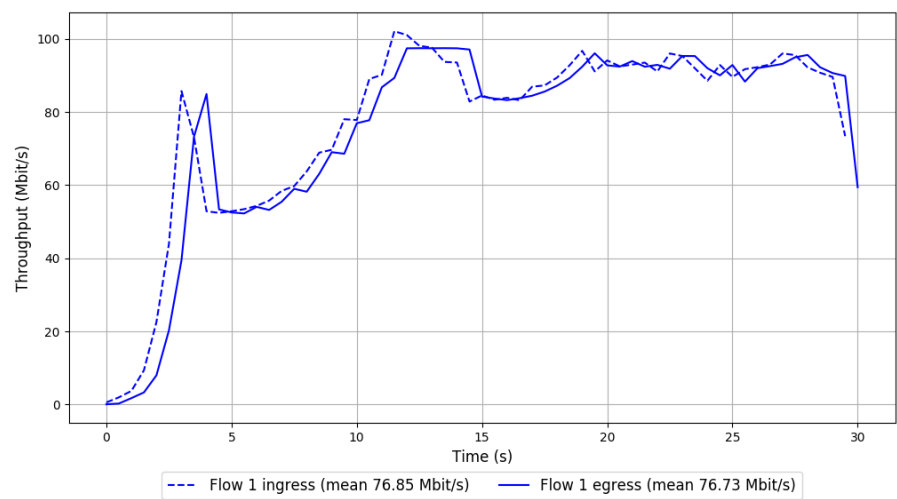
Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 76.85 Mbit/s)   Flow 1 egress (mean 76.73 Mbit/s)
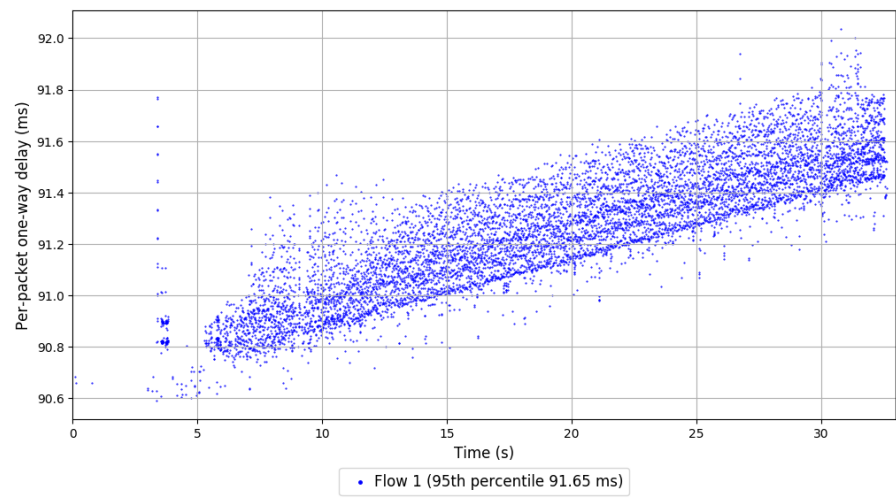

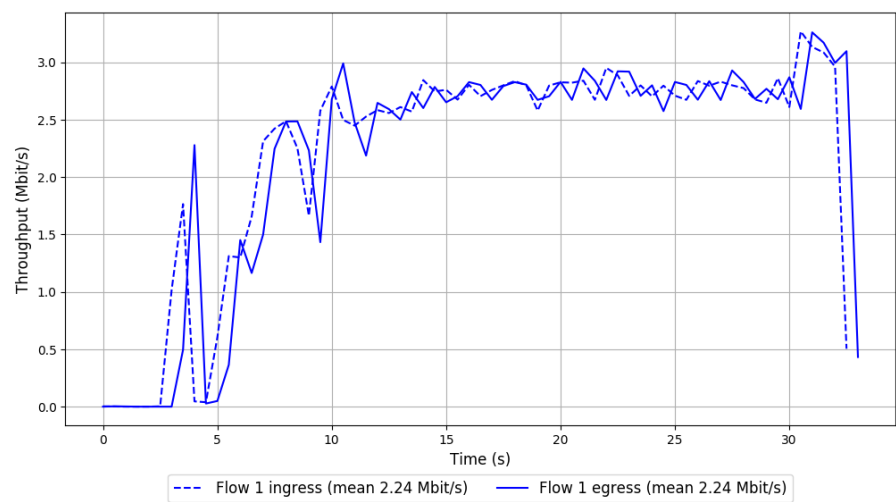
• Flow 1 (95th percentile 121.84 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2019-01-03 05:03:03
End at: 2019-01-03 05:03:33
Local clock offset: -2.564 ms
Remote clock offset: -2.936 ms


# Below is generated by plot.py at 2019-01-03 06:50:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 91.649 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 91.649 ms
Loss rate: 0.31%
```

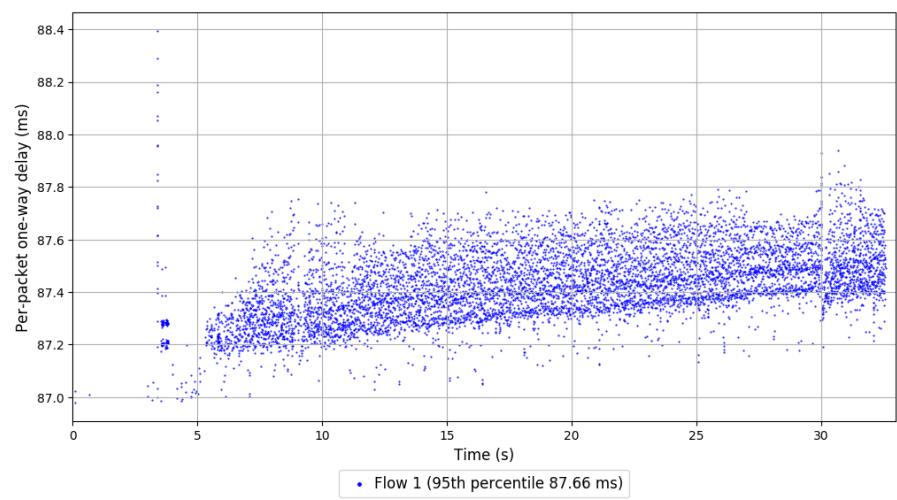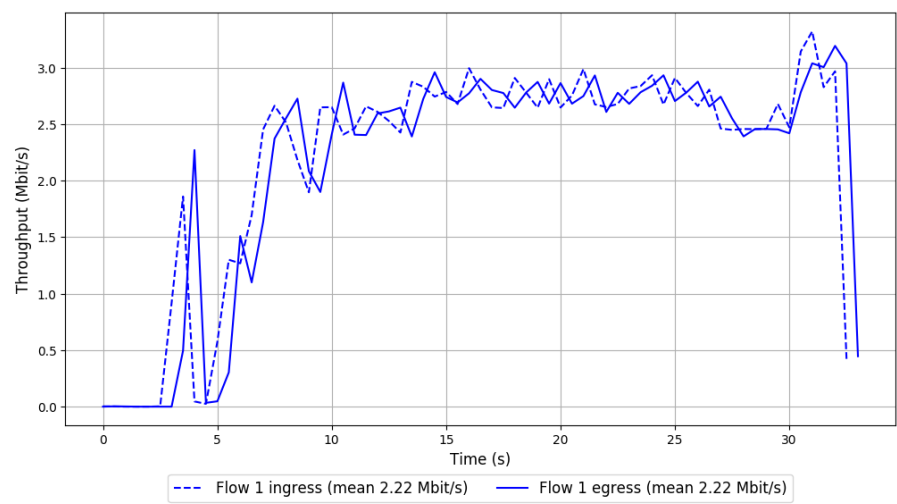Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2019-01-03 05:25:33
End at: 2019-01-03 05:26:03
Local clock offset: -2.282 ms
Remote clock offset: 17.285 ms


# Below is generated by plot.py at 2019-01-03 06:50:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 87.656 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 87.656 ms
Loss rate: 0.28%
```

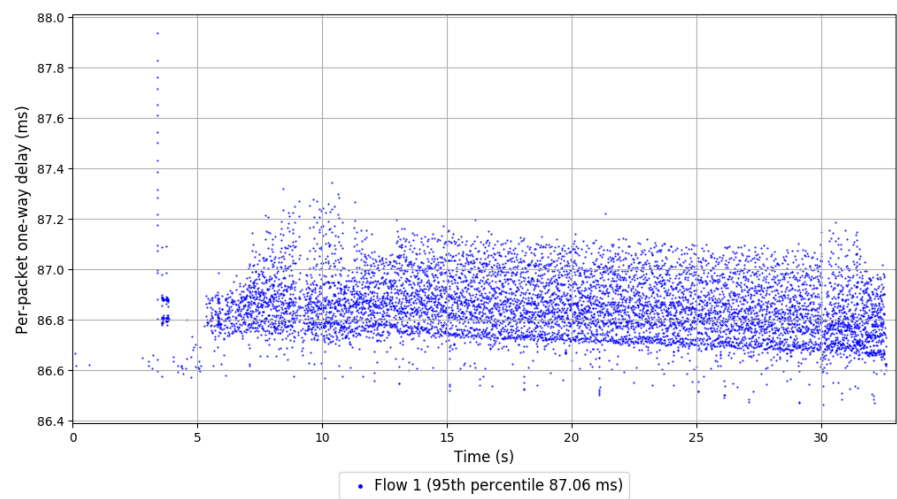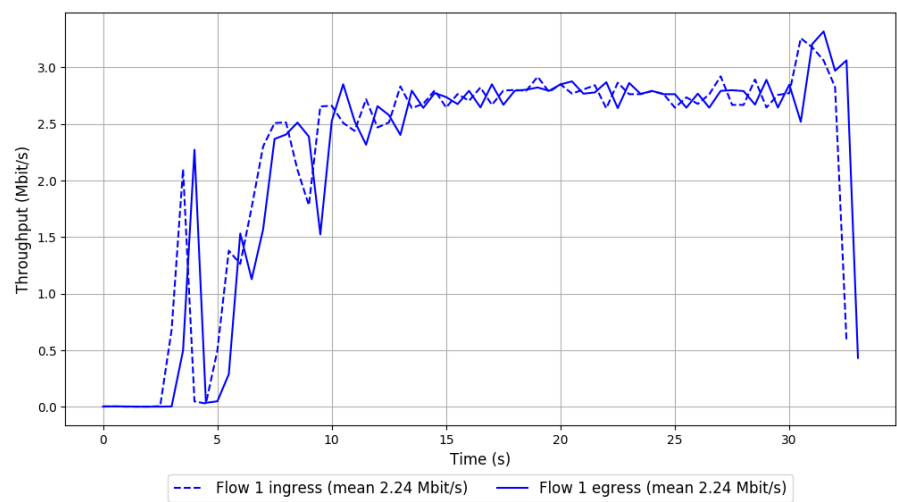Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2019-01-03 05:48:06
End at: 2019-01-03 05:48:36
Local clock offset: -3.427 ms
Remote clock offset: 16.703 ms


# Below is generated by plot.py at 2019-01-03 06:50:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 87.065 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 87.065 ms
Loss rate: 0.36%
```

Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 2.24 Mbit/s)   Flow 1 egress (mean 2.24 Mbit/s)
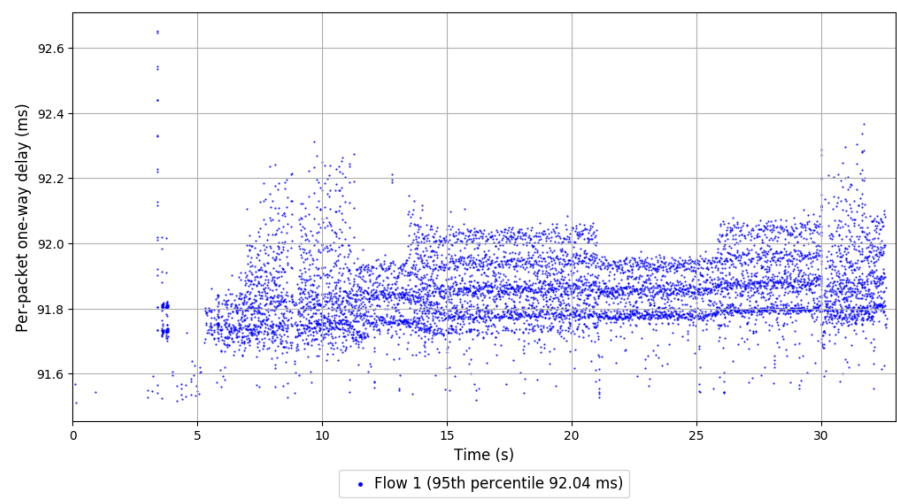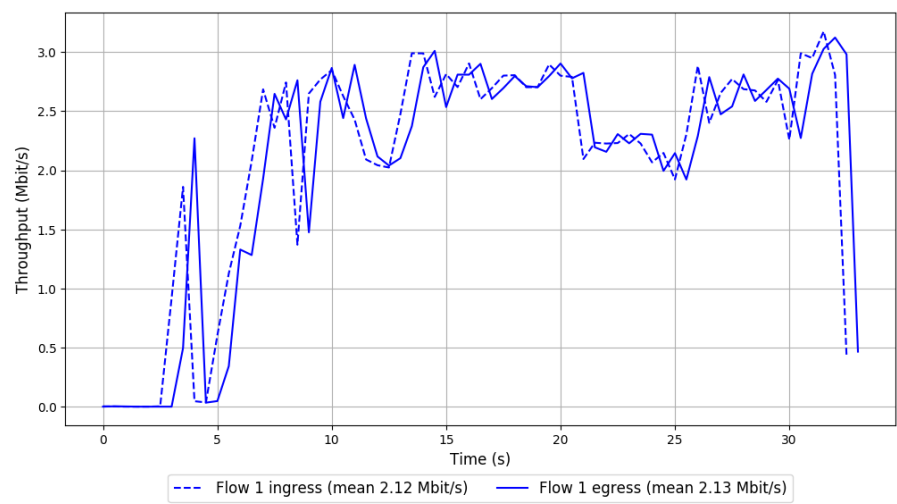

Flow 1 (95th percentile 87.06 ms)

```
Run 4: Statistics of WebRTC media

Start at: 2019-01-03 06:10:38
End at: 2019-01-03 06:11:08
Local clock offset: -6.052 ms
Remote clock offset: 11.515 ms


# Below is generated by plot.py at 2019-01-03 06:50:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.13 Mbit/s
95th percentile per-packet one-way delay: 92.044 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 2.13 Mbit/s
95th percentile per-packet one-way delay: 92.044 ms
Loss rate: 0.28%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2019-01-03 06:33:09
End at: 2019-01-03 06:33:39
Local clock offset: -7.063 ms
Remote clock offset: 12.722 ms


# Below is generated by plot.py at 2019-01-03 06:50:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 91.221 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 91.221 ms
Loss rate: 0.36%
```

Run 5: Report of WebRTC media — Data Link