Pantheon Report

Generated at 2018-11-30 00:09:45 (UTC).

Data path: GCE Iowa on ens4 (*remote*) →GCE Sydney on ens4 (*local*).

Repeated the test of 18 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `time.google.com` and have been applied to correct the timestamps in logs.
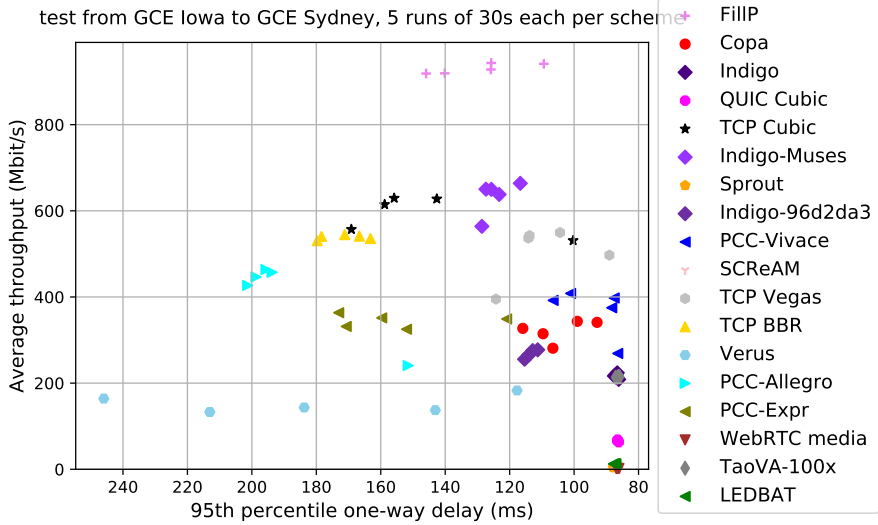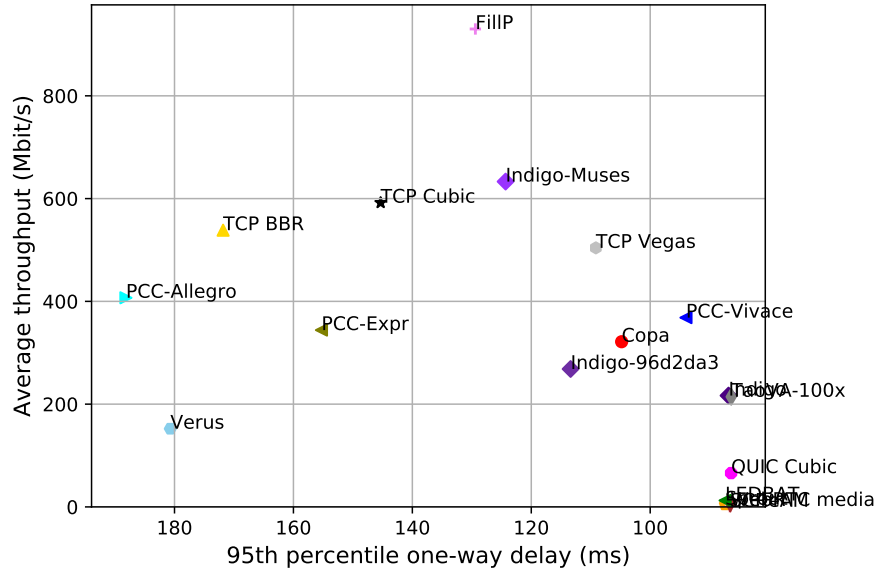
```
System info:
Linux 4.15.0-1024-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 794ca3866981572cb73700a276691acf79c60f2b
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
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 GCE Iowa to GCE Sydney, 5 runs of 30s each per scheme
(mean of all runs by scheme)

test from GCE Iowa to GCE Sydney, 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	538.53	171.83	1.08
Copa	5	321.47	104.80	0.63
TCP Cubic	5	591.97	145.34	0.68
FillP	5	930.08	129.40	1.42
Indigo	5	216.68	86.83	0.60
Indigo-96d2da3	4	268.41	113.39	0.96
LEDBAT	5	12.50	87.41	1.15
Indigo-Muses	5	633.13	124.32	0.83
PCC-Allegro	5	407.00	188.17	3.45
PCC-Expr	5	344.10	155.29	1.50
QUIC Cubic	4	65.81	86.39	0.88
SCReAM	5	0.22	86.60	0.59
Sprout	4	4.32	87.40	0.69
TaoVA-100x	5	214.33	86.38	0.60
TCP Vegas	5	504.11	109.14	0.45
Verus	5	152.18	180.71	4.62
PCC-Vivace	5	368.37	93.99	0.78
WebRTC media	5	1.90	86.53	0.71

```
Run 1: Statistics of TCP BBR

Start at: 2018-11-29 20:40:28
End at: 2018-11-29 20:40:58
Local clock offset: 9.781 ms
Remote clock offset: 11.418 ms

# Below is generated by plot.py at 2018-11-29 22:49:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 540.40 Mbit/s
95th percentile per-packet one-way delay: 178.382 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 540.40 Mbit/s
95th percentile per-packet one-way delay: 178.382 ms
Loss rate: 1.19%
```
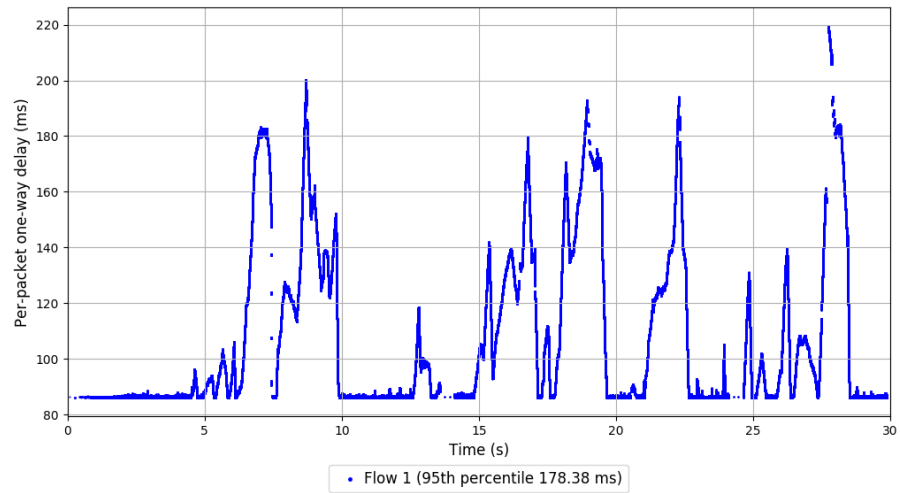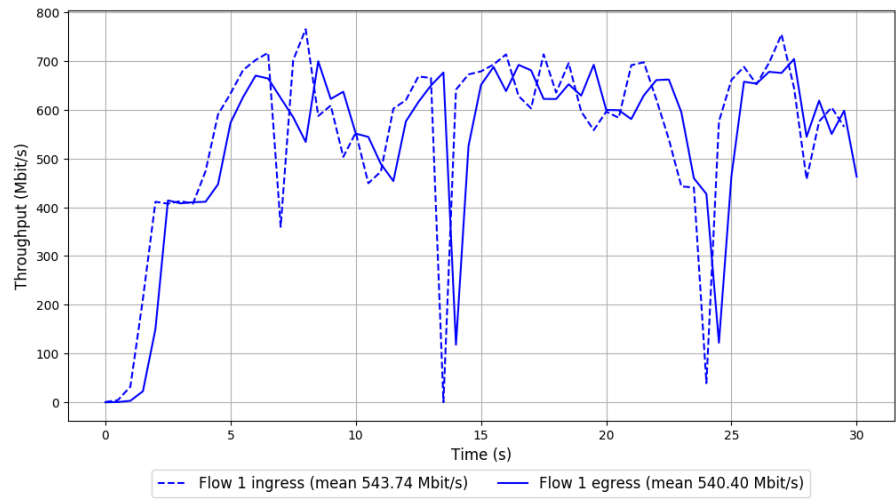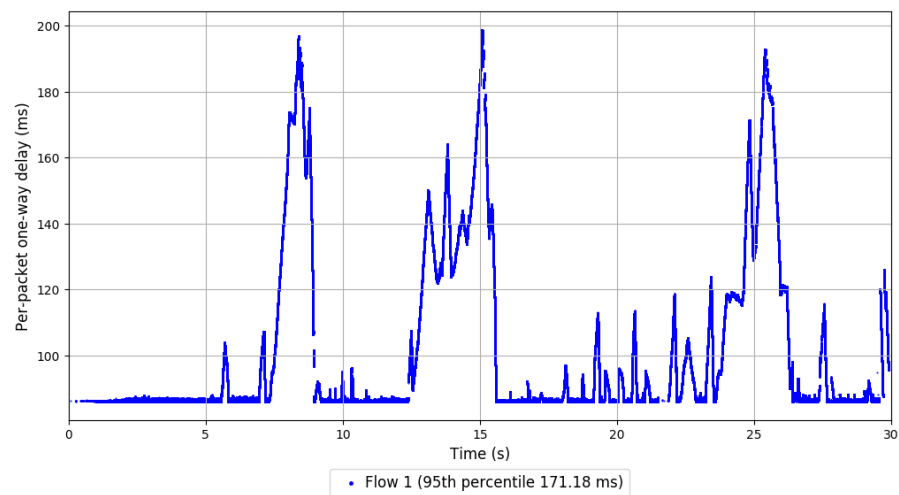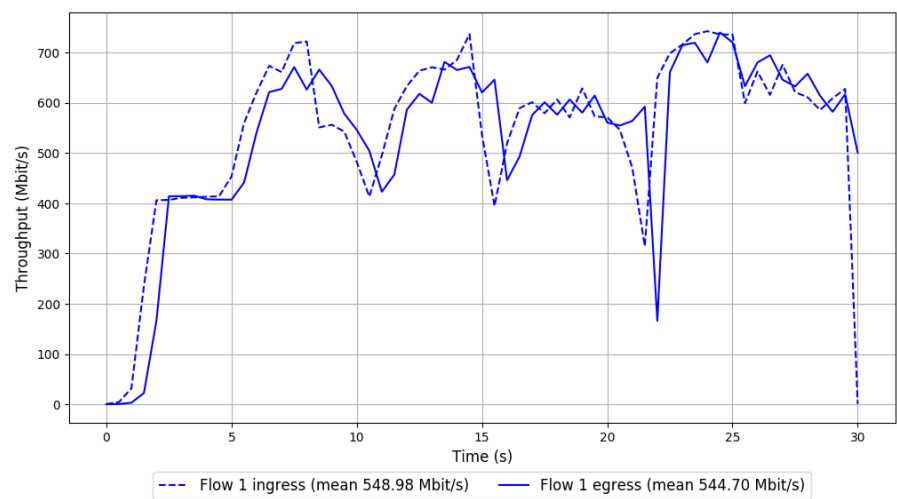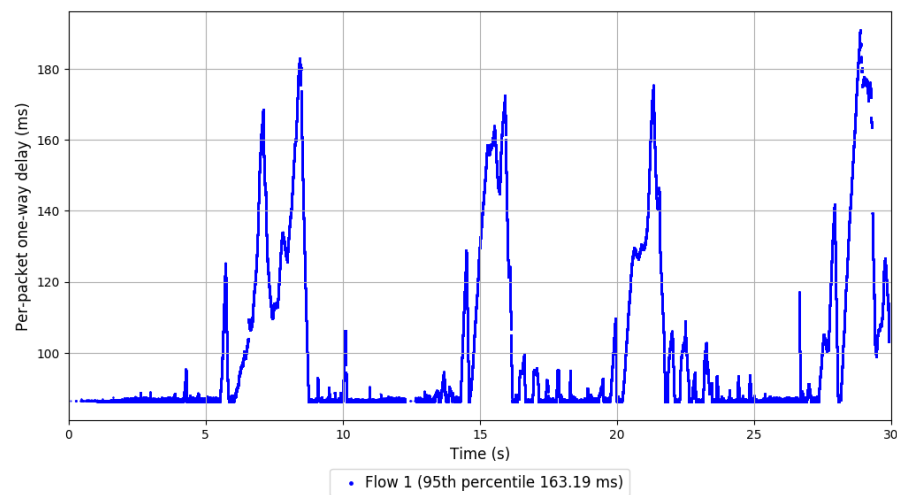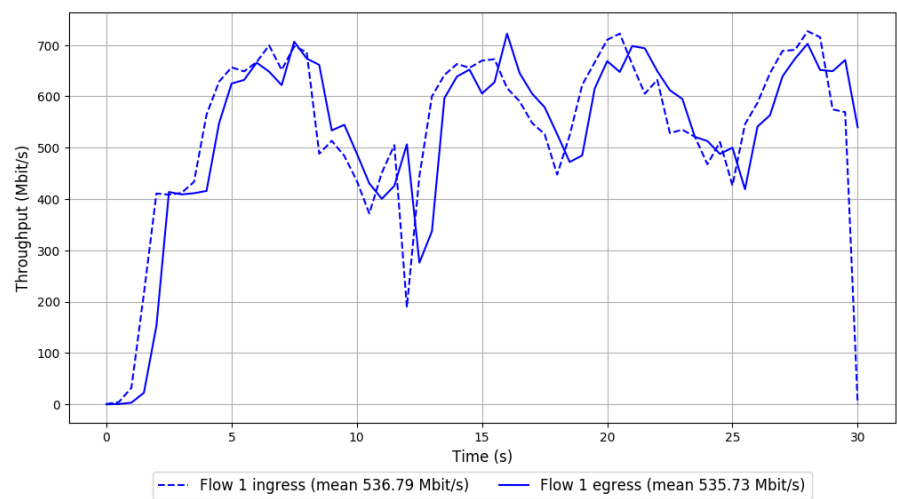
Run 1: Report of TCP BBR — Data Link

Flow 1 ingress (mean 543.74 Mbit/s)   Flow 1 egress (mean 540.40 Mbit/s)

Flow 1 (95th percentile 178.38 ms)

```
Run 2: Statistics of TCP BBR

Start at: 2018-11-29 21:07:20
End at: 2018-11-29 21:07:50
Local clock offset: 15.472 ms
Remote clock offset: 17.931 ms


# Below is generated by plot.py at 2018-11-29 22:49:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 544.70 Mbit/s
95th percentile per-packet one-way delay: 171.184 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 544.70 Mbit/s
95th percentile per-packet one-way delay: 171.184 ms
Loss rate: 1.35%
```
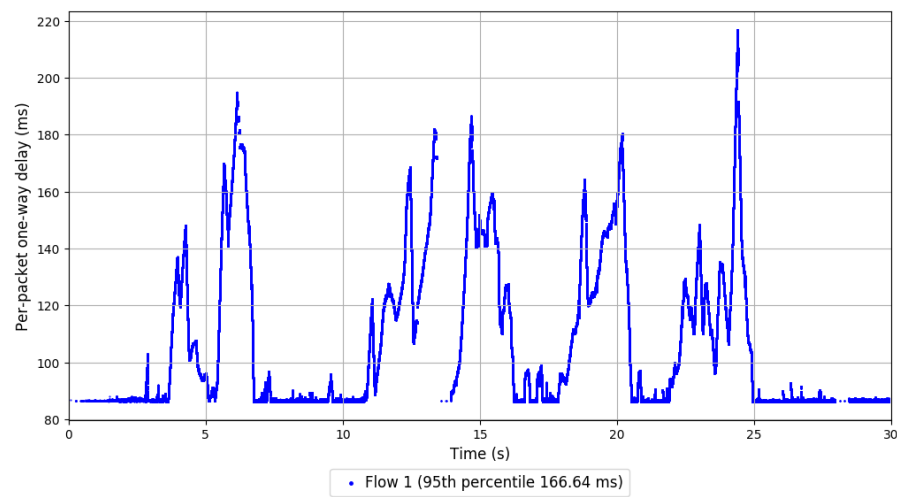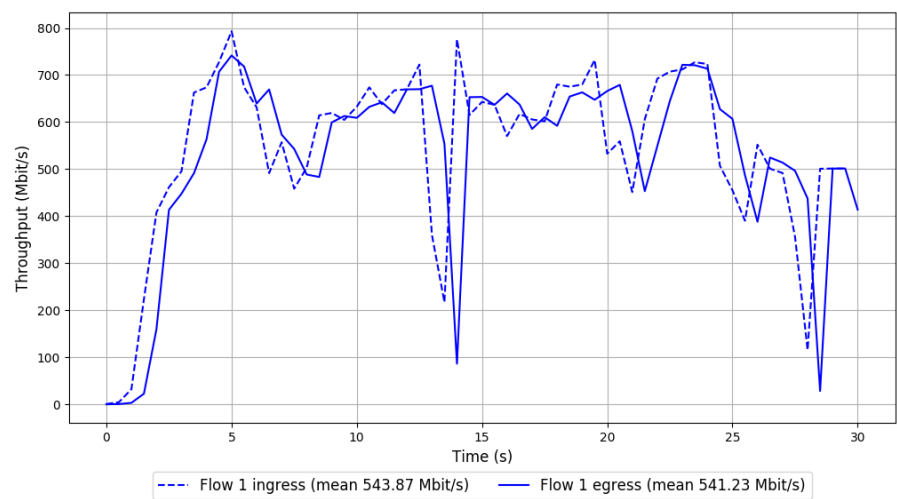
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-11-29 21:33:50
End at: 2018-11-29 21:34:20
Local clock offset: 11.42 ms
Remote clock offset: 13.274 ms


# Below is generated by plot.py at 2018-11-29 22:49:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 535.73 Mbit/s
95th percentile per-packet one-way delay: 163.192 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 535.73 Mbit/s
95th percentile per-packet one-way delay: 163.192 ms
Loss rate: 0.77%
```
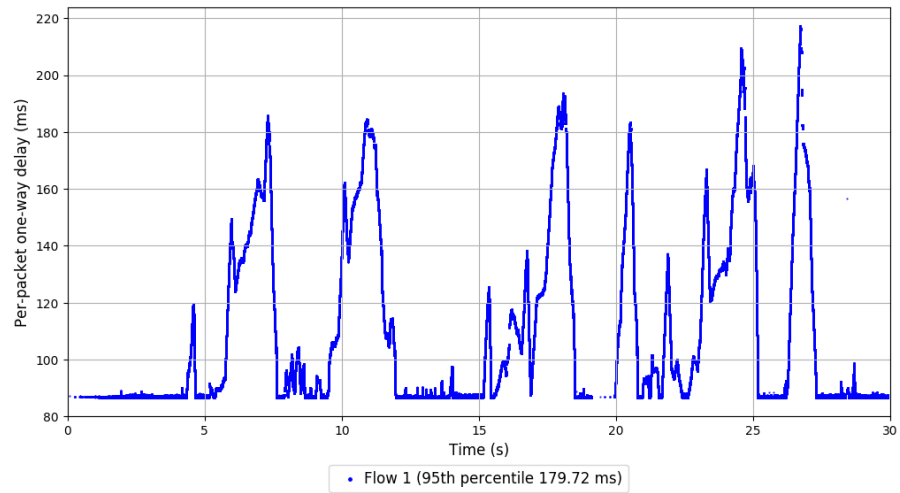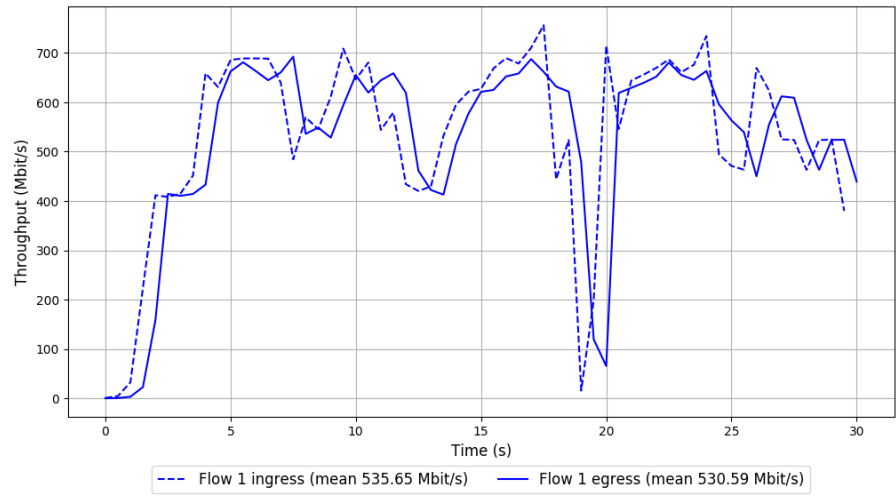
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 536.79 Mbit/s) --- Flow 1 egress (mean 535.73 Mbit/s)

• Flow 1 (95th percentile 163.19 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-11-29 22:00:28
End at: 2018-11-29 22:00:58
Local clock offset: 9.738 ms
Remote clock offset: 11.124 ms


# Below is generated by plot.py at 2018-11-29 22:49:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 541.23 Mbit/s
95th percentile per-packet one-way delay: 166.644 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 541.23 Mbit/s
95th percentile per-packet one-way delay: 166.644 ms
Loss rate: 1.06%
```
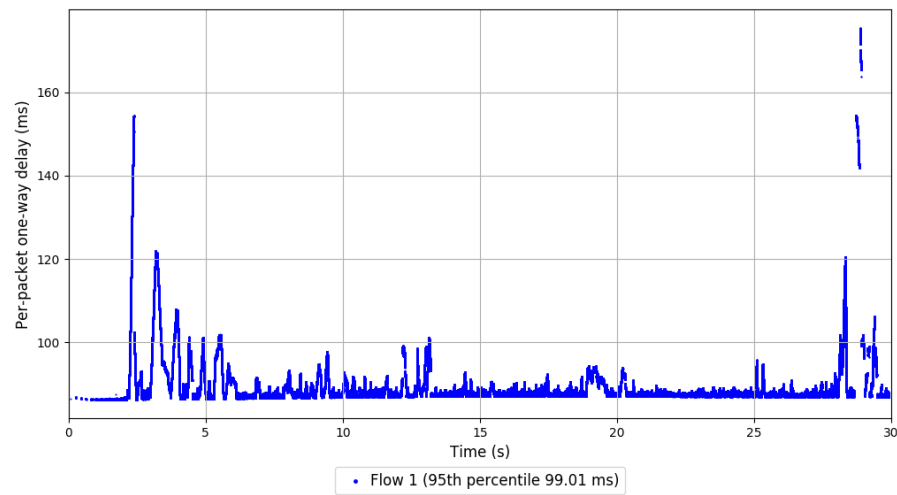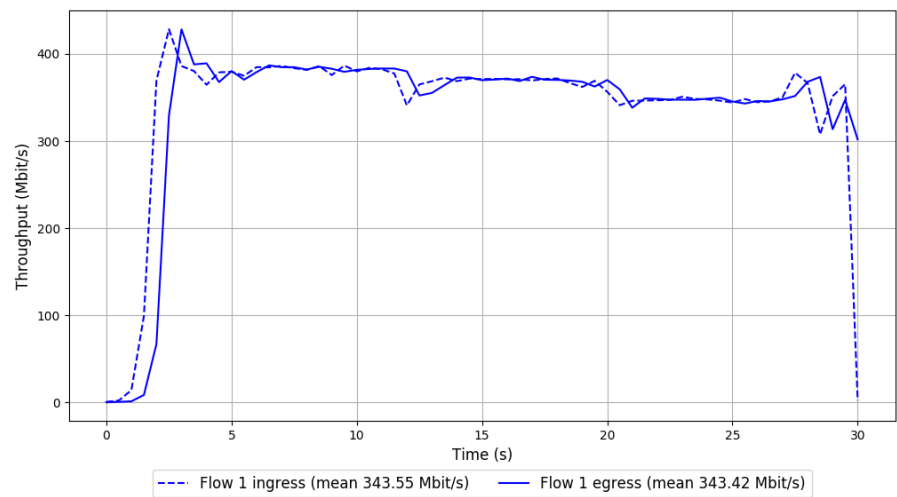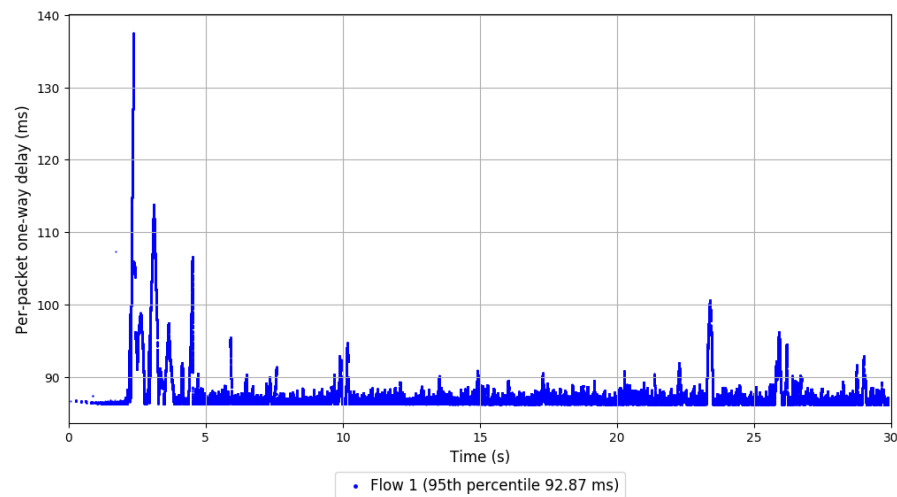
Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2018-11-29 22:27:33
End at: 2018-11-29 22:28:03
Local clock offset: 5.967 ms
Remote clock offset: 3.196 ms


# Below is generated by plot.py at 2018-11-29 22:49:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 530.59 Mbit/s
95th percentile per-packet one-way delay: 179.724 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 530.59 Mbit/s
95th percentile per-packet one-way delay: 179.724 ms
Loss rate: 1.05%
```
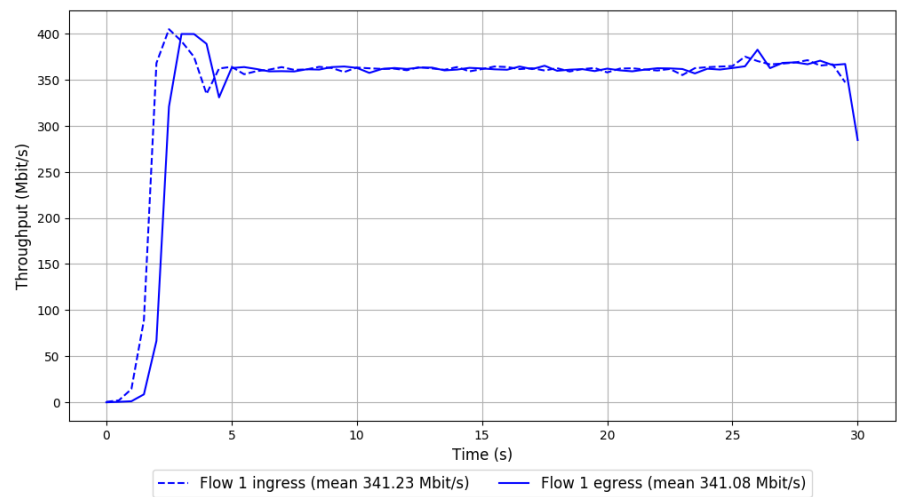
Run 5: Report of TCP BBR — Data Link

```
Run 1: Statistics of Copa

Start at: 2018-11-29 20:23:24
End at: 2018-11-29 20:23:54
Local clock offset: 7.066 ms
Remote clock offset: 7.994 ms


# Below is generated by plot.py at 2018-11-29 22:50:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 343.42 Mbit/s
95th percentile per-packet one-way delay: 99.007 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 343.42 Mbit/s
95th percentile per-packet one-way delay: 99.007 ms
Loss rate: 0.61%
```
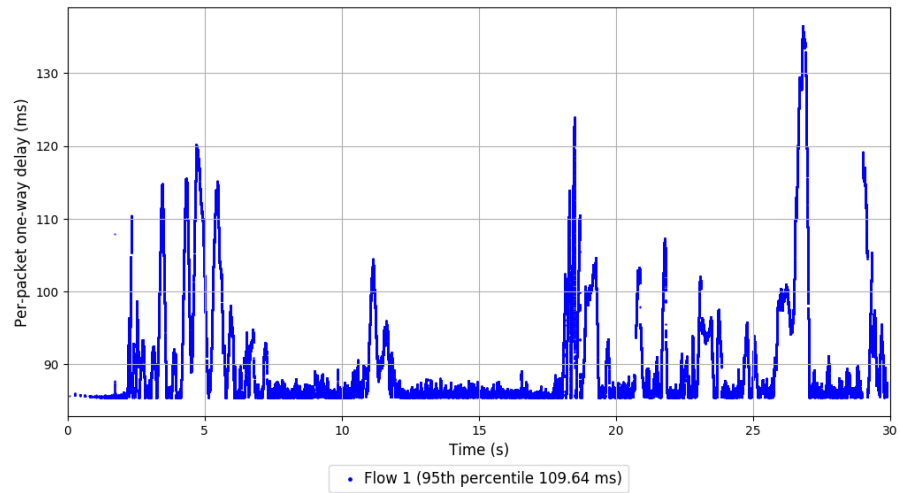
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-11-29 20:49:50
End at: 2018-11-29 20:50:20
Local clock offset: 16.884 ms
Remote clock offset: 19.381 ms

# Below is generated by plot.py at 2018-11-29 22:50:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 341.08 Mbit/s
95th percentile per-packet one-way delay: 92.869 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 341.08 Mbit/s
95th percentile per-packet one-way delay: 92.869 ms
Loss rate: 0.62%
```
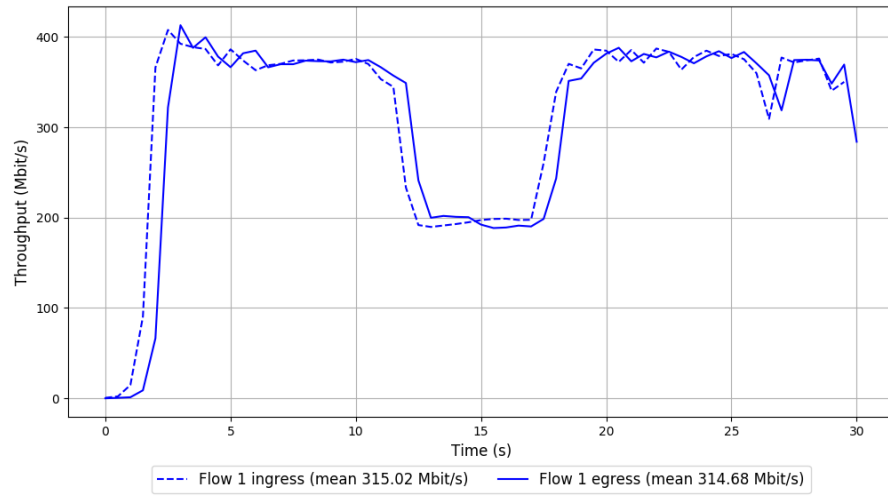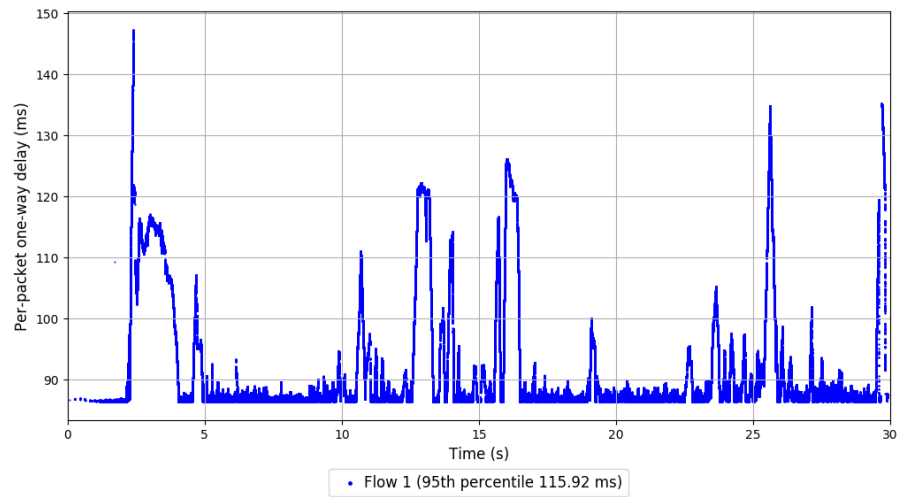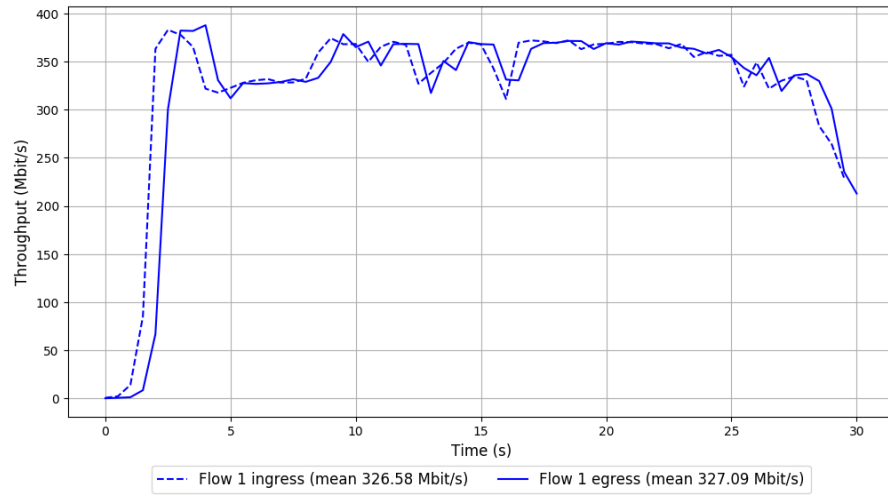
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-11-29 21:16:35
End at: 2018-11-29 21:17:05
Local clock offset: 20.936 ms
Remote clock offset: 24.33 ms

# Below is generated by plot.py at 2018-11-29 22:50:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 314.68 Mbit/s
95th percentile per-packet one-way delay: 109.638 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 314.68 Mbit/s
95th percentile per-packet one-way delay: 109.638 ms
Loss rate: 0.68%
```

Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-11-29 21:43:03
End at: 2018-11-29 21:43:33
Local clock offset: 9.645 ms
Remote clock offset: 11.274 ms

# Below is generated by plot.py at 2018-11-29 23:00:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 327.09 Mbit/s
95th percentile per-packet one-way delay: 115.919 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 327.09 Mbit/s
95th percentile per-packet one-way delay: 115.919 ms
Loss rate: 0.42%
```
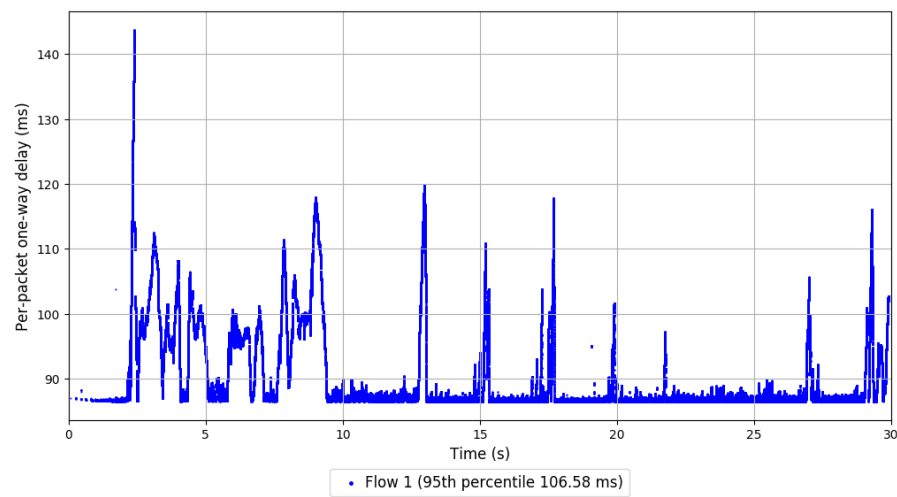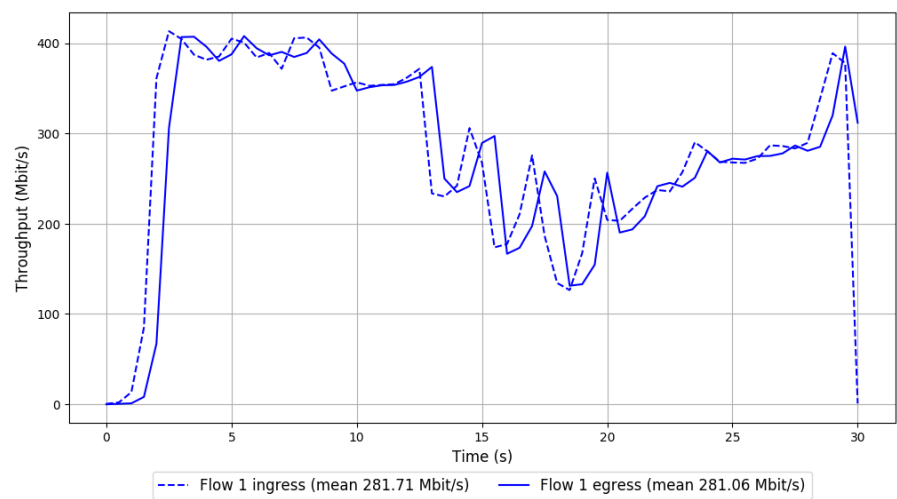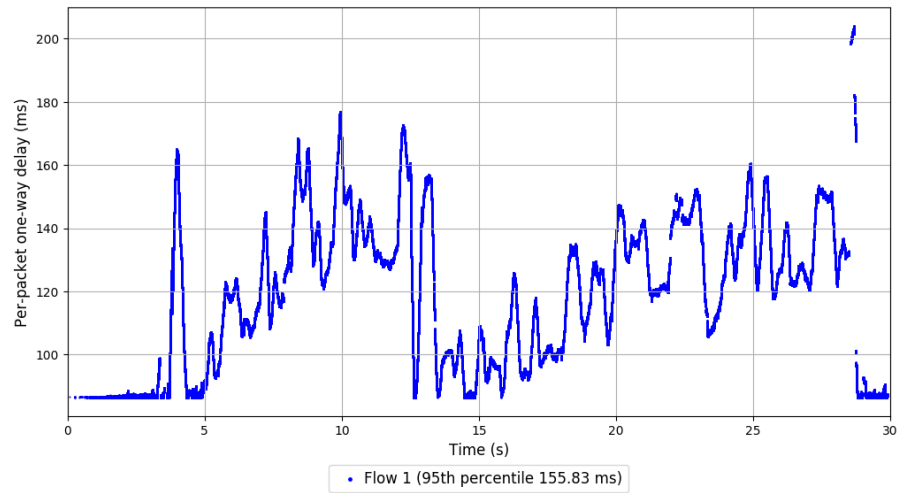
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 326.58 Mbit/s) ----   Flow 1 egress (mean 327.09 Mbit/s) ———

• Flow 1 (95th percentile 115.92 ms)

```
Run 5: Statistics of Copa

Start at: 2018-11-29 22:09:52
End at: 2018-11-29 22:10:22
Local clock offset: 5.109 ms
Remote clock offset: 4.669 ms

# Below is generated by plot.py at 2018-11-29 23:00:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 281.06 Mbit/s
95th percentile per-packet one-way delay: 106.581 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 281.06 Mbit/s
95th percentile per-packet one-way delay: 106.581 ms
Loss rate: 0.81%
```
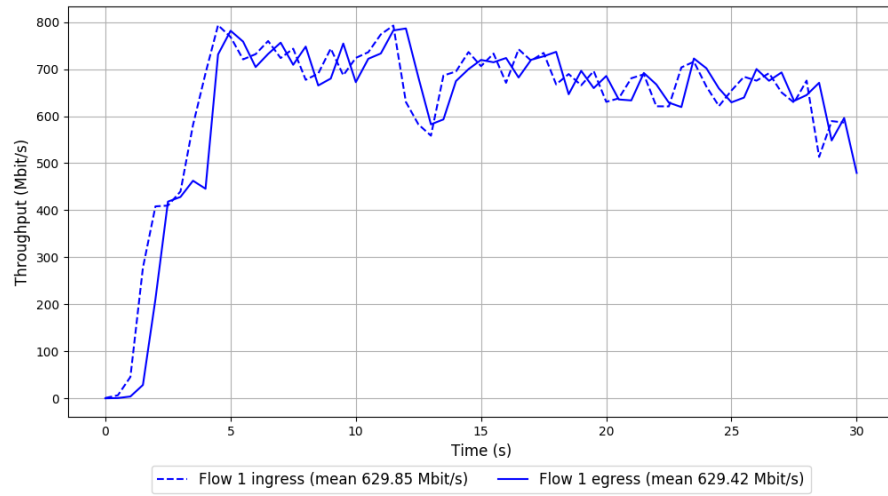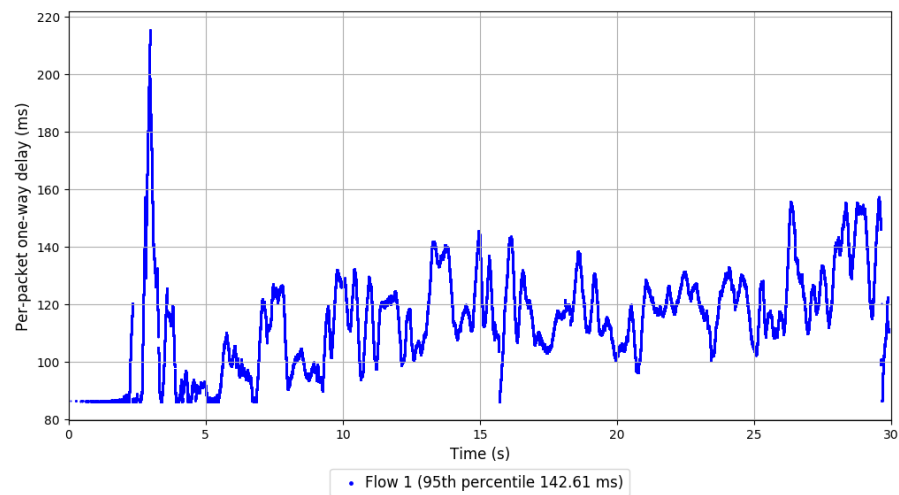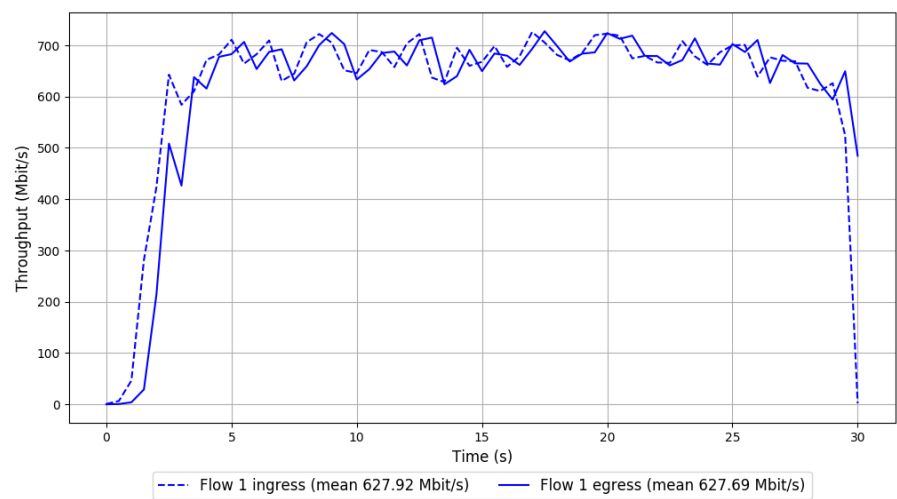
Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-11-29 20:29:21
End at: 2018-11-29 20:29:51
Local clock offset: 8.052 ms
Remote clock offset: 9.161 ms

# Below is generated by plot.py at 2018-11-29 23:01:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 629.42 Mbit/s
95th percentile per-packet one-way delay: 155.833 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 629.42 Mbit/s
95th percentile per-packet one-way delay: 155.833 ms
Loss rate: 0.64%
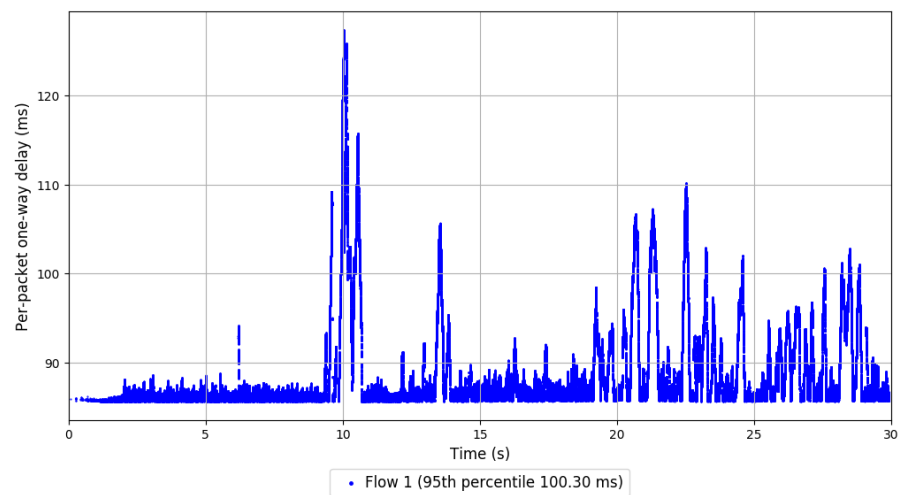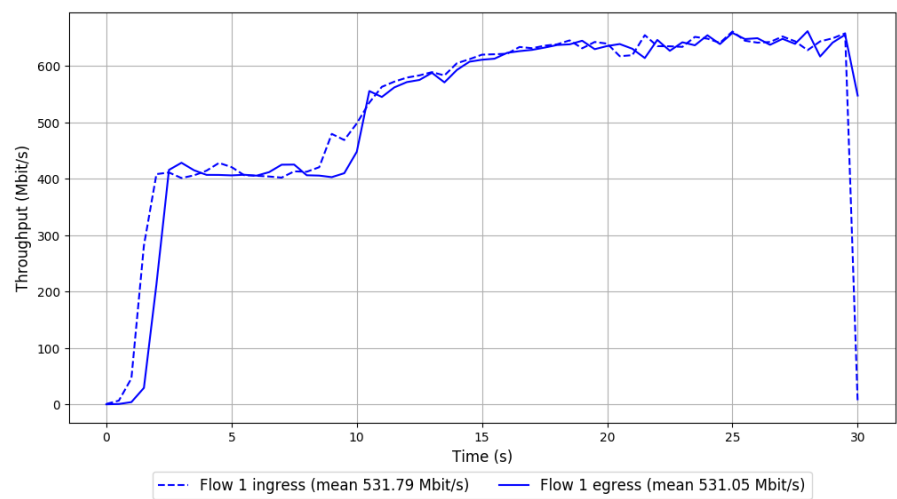```

Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-11-29 20:55:54
End at: 2018-11-29 20:56:24
Local clock offset: 12.458 ms
Remote clock offset: 14.904 ms


# Below is generated by plot.py at 2018-11-29 23:01:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 627.69 Mbit/s
95th percentile per-packet one-way delay: 142.612 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 627.69 Mbit/s
95th percentile per-packet one-way delay: 142.612 ms
Loss rate: 0.61%
```

Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 627.92 Mbit/s)   Flow 1 egress (mean 627.69 Mbit/s)

Flow 1 (95th percentile 142.61 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2018-11-29 21:22:30
End at: 2018-11-29 21:23:00
Local clock offset: 25.078 ms
Remote clock offset: 28.919 ms


# Below is generated by plot.py at 2018-11-29 23:01:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 531.05 Mbit/s
95th percentile per-packet one-way delay: 100.304 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 531.05 Mbit/s
95th percentile per-packet one-way delay: 100.304 ms
Loss rate: 0.71%
```
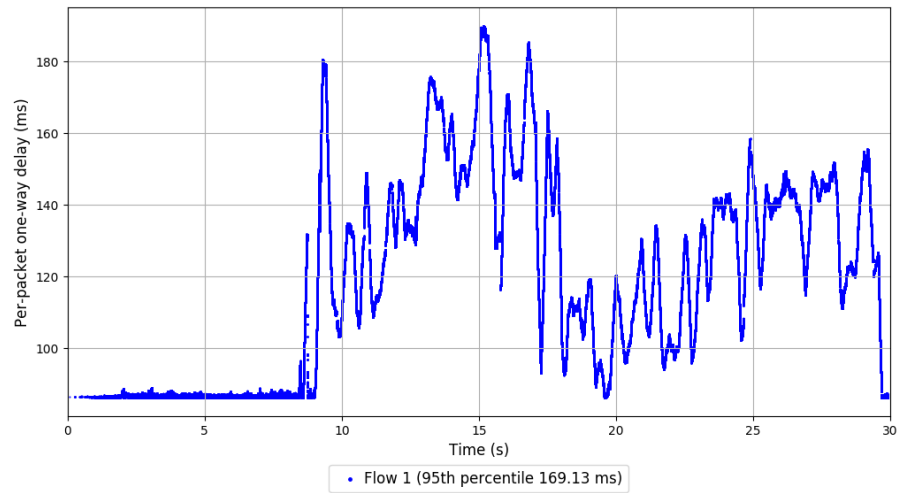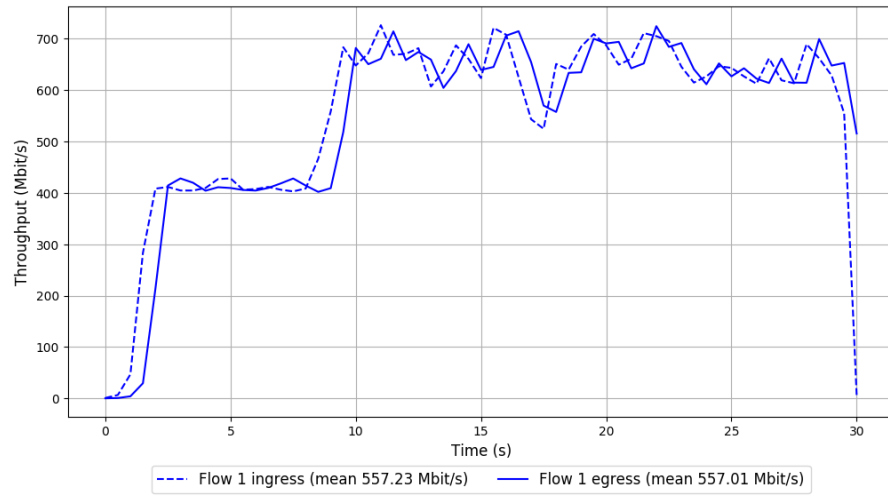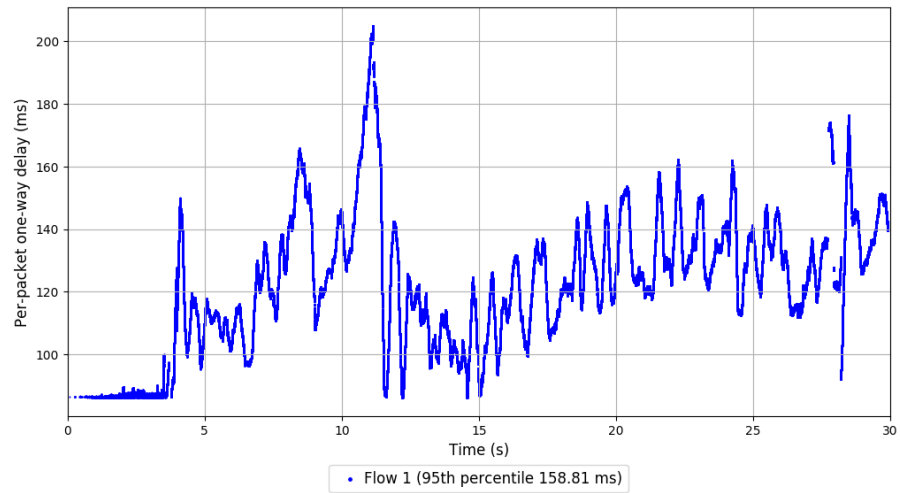
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 531.79 Mbit/s) ——— Flow 1 egress (mean 531.05 Mbit/s)

• Flow 1 (95th percentile 100.30 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-11-29 21:49:04
End at: 2018-11-29 21:49:34
Local clock offset: 10.672 ms
Remote clock offset: 12.32 ms


# Below is generated by plot.py at 2018-11-29 23:01:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 557.01 Mbit/s
95th percentile per-packet one-way delay: 169.126 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 557.01 Mbit/s
95th percentile per-packet one-way delay: 169.126 ms
Loss rate: 0.61%
```
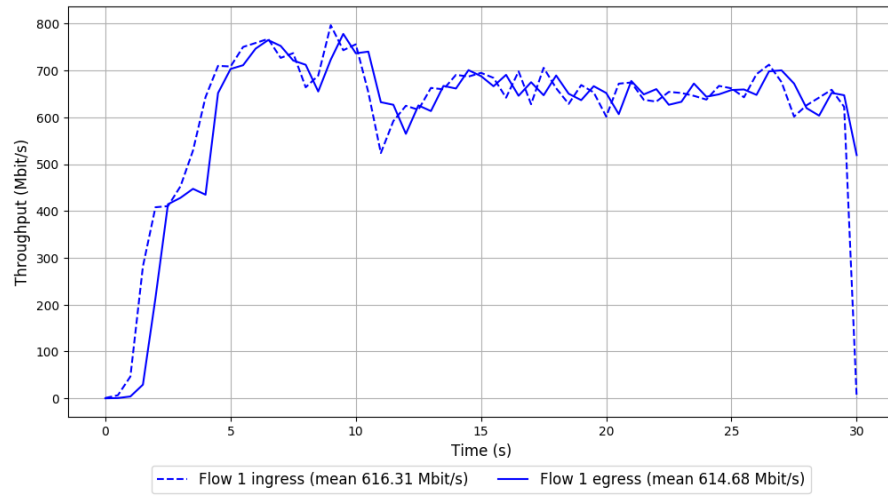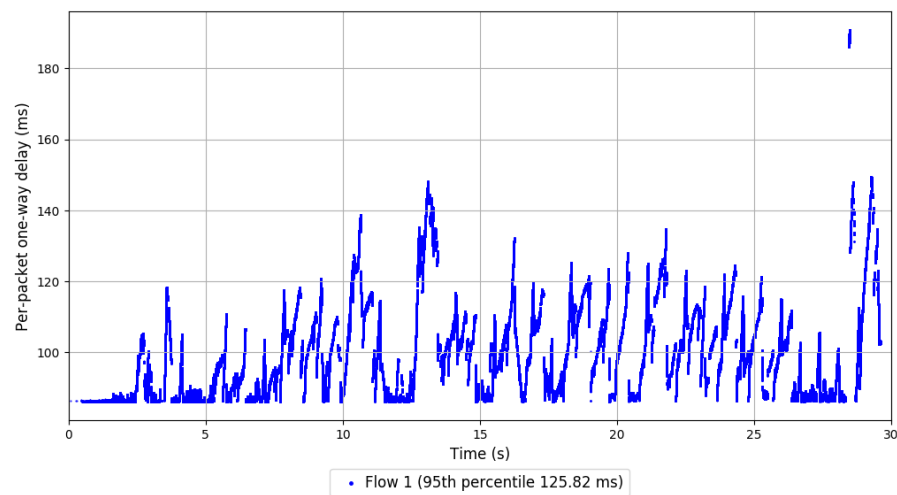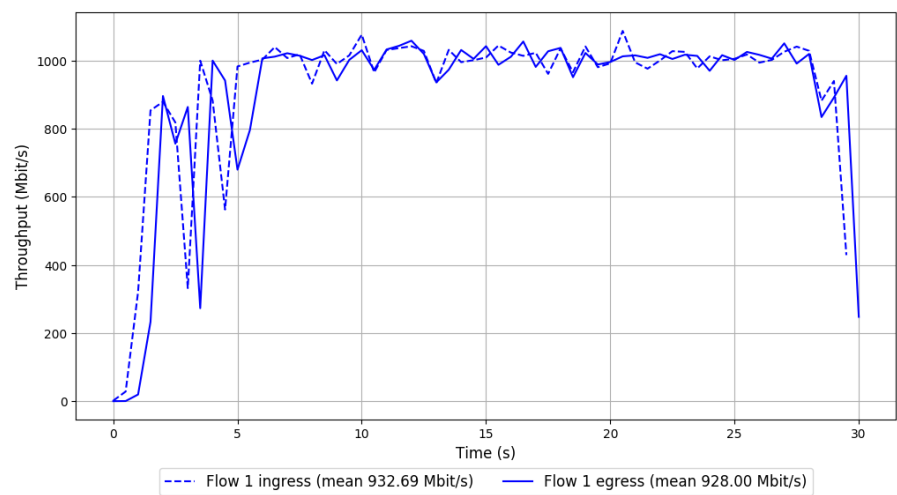
Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 557.23 Mbit/s)   Flow 1 egress (mean 557.01 Mbit/s)

Flow 1 (95th percentile 169.13 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-11-29 22:16:02
End at: 2018-11-29 22:16:32
Local clock offset: 4.566 ms
Remote clock offset: 3.431 ms


# Below is generated by plot.py at 2018-11-29 23:02:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 614.68 Mbit/s
95th percentile per-packet one-way delay: 158.805 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 614.68 Mbit/s
95th percentile per-packet one-way delay: 158.805 ms
Loss rate: 0.84%
```
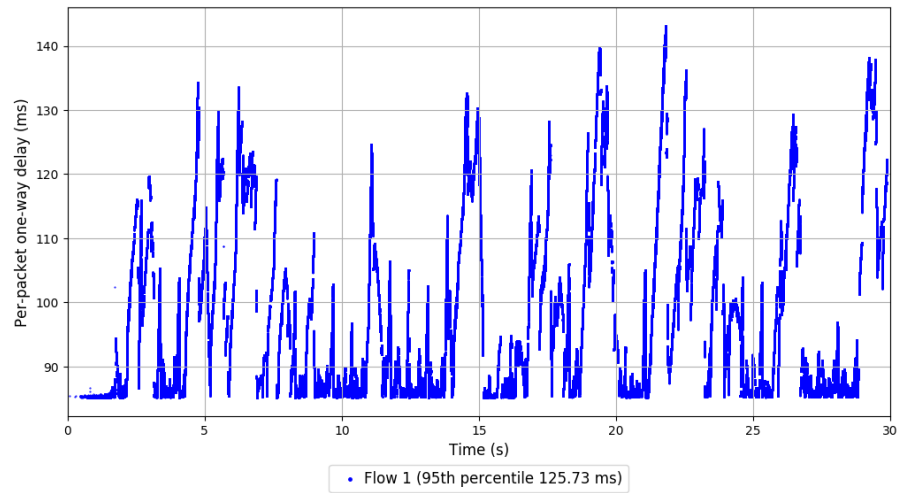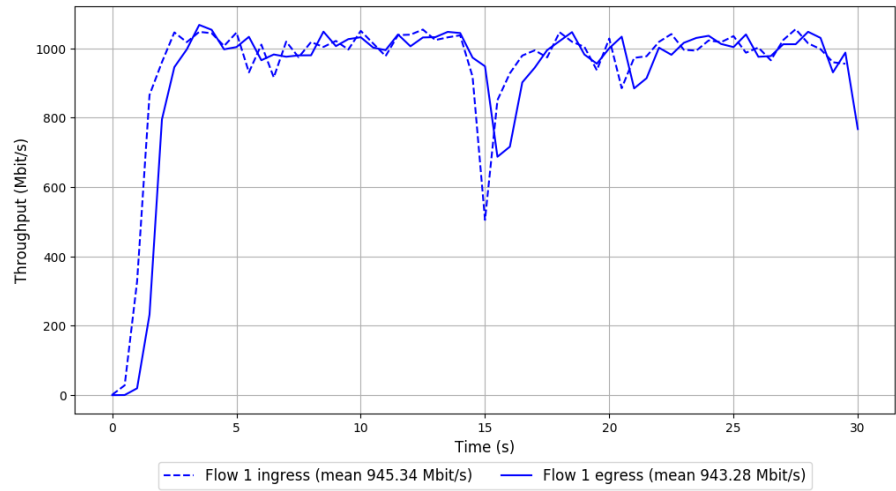
Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-11-29 20:18:33
End at: 2018-11-29 20:19:03
Local clock offset: 3.553 ms
Remote clock offset: 3.502 ms


# Below is generated by plot.py at 2018-11-29 23:11:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 928.00 Mbit/s
95th percentile per-packet one-way delay: 125.822 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 928.00 Mbit/s
95th percentile per-packet one-way delay: 125.822 ms
Loss rate: 1.08%
```
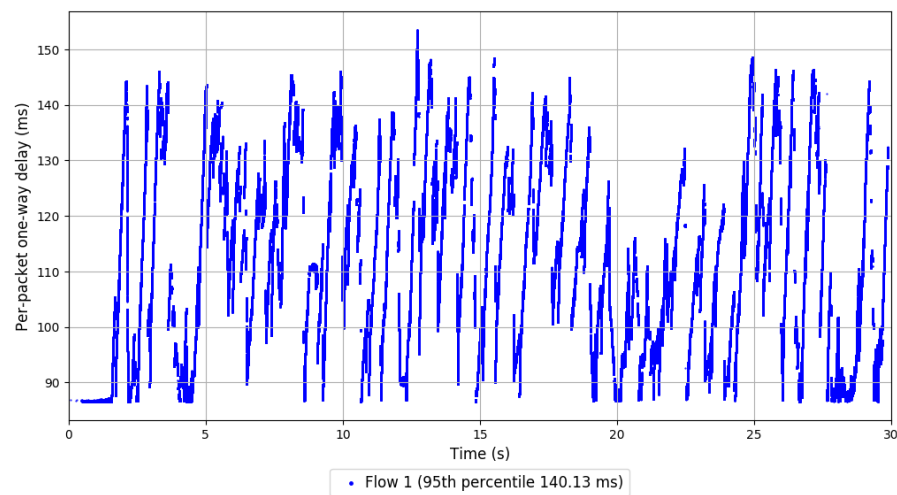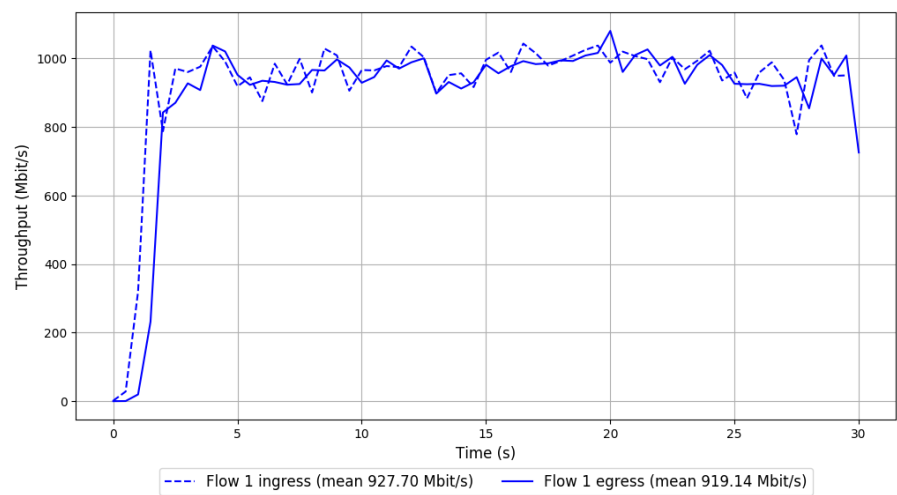
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-11-29 20:44:55
End at: 2018-11-29 20:45:25
Local clock offset: 12.634 ms
Remote clock offset: 15.17 ms


# Below is generated by plot.py at 2018-11-29 23:22:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 943.28 Mbit/s
95th percentile per-packet one-way delay: 125.729 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 943.28 Mbit/s
95th percentile per-packet one-way delay: 125.729 ms
Loss rate: 0.79%
```
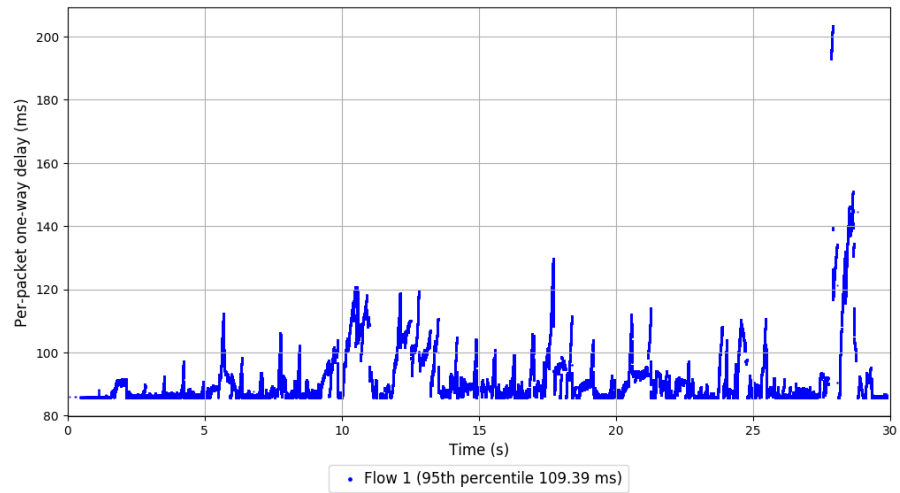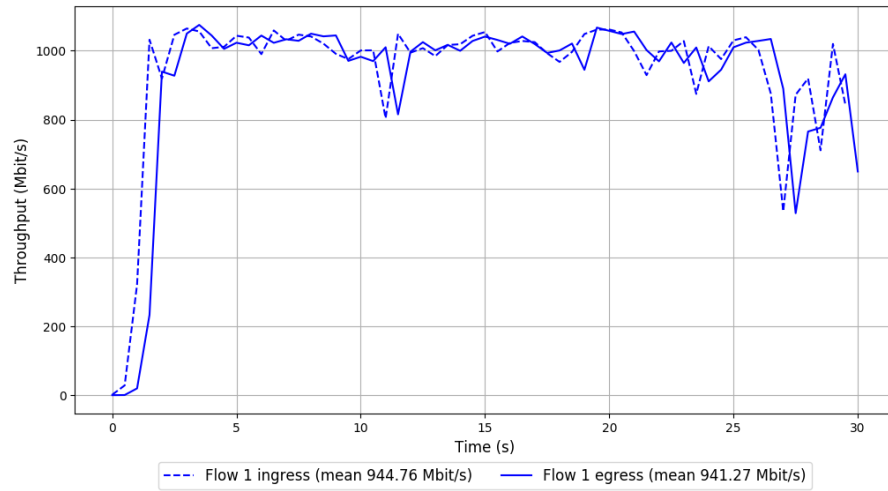
Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-11-29 21:11:48
End at: 2018-11-29 21:12:18
Local clock offset: 18.199 ms
Remote clock offset: 20.775 ms


# Below is generated by plot.py at 2018-11-29 23:22:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 919.14 Mbit/s
95th percentile per-packet one-way delay: 140.126 ms
Loss rate: 1.46%
-- Flow 1:
Average throughput: 919.14 Mbit/s
95th percentile per-packet one-way delay: 140.126 ms
Loss rate: 1.46%
```
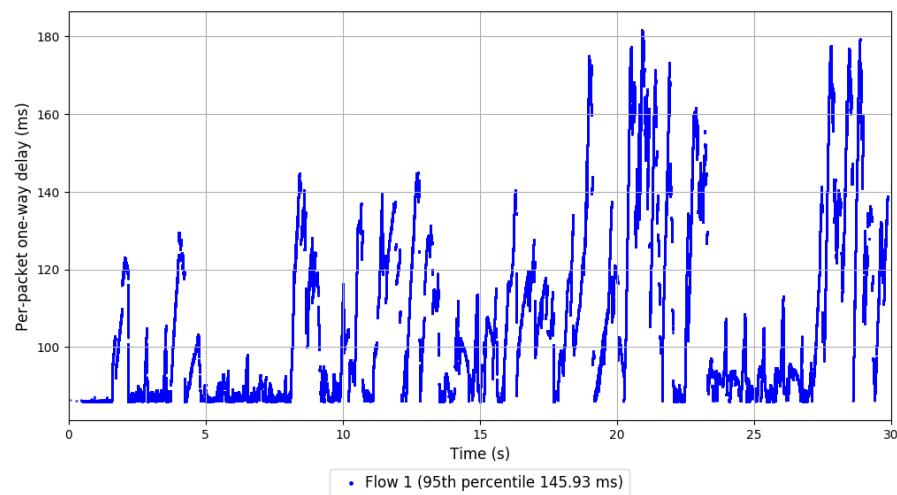
Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2018-11-29 21:38:08
End at: 2018-11-29 21:38:38
Local clock offset: 9.925 ms
Remote clock offset: 11.628 ms


# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 941.27 Mbit/s
95th percentile per-packet one-way delay: 109.395 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 941.27 Mbit/s
95th percentile per-packet one-way delay: 109.395 ms
Loss rate: 0.94%
```
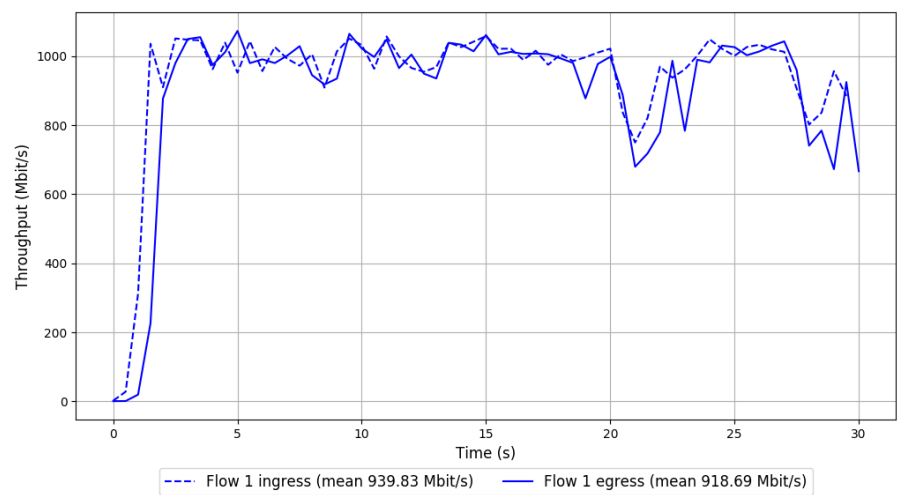
Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2018-11-29 22:04:56
End at: 2018-11-29 22:05:26
Local clock offset: 6.401 ms
Remote clock offset: 7.038 ms


# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 918.69 Mbit/s
95th percentile per-packet one-way delay: 145.932 ms
Loss rate: 2.82%
-- Flow 1:
Average throughput: 918.69 Mbit/s
95th percentile per-packet one-way delay: 145.932 ms
Loss rate: 2.82%
```
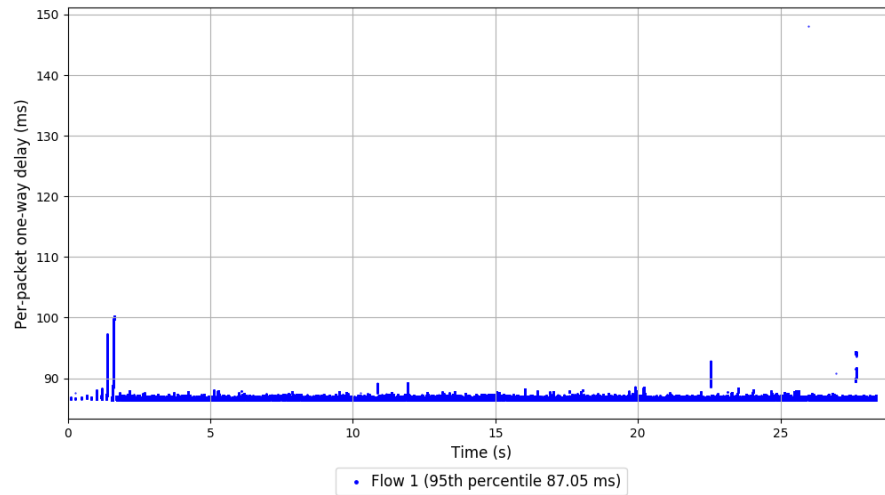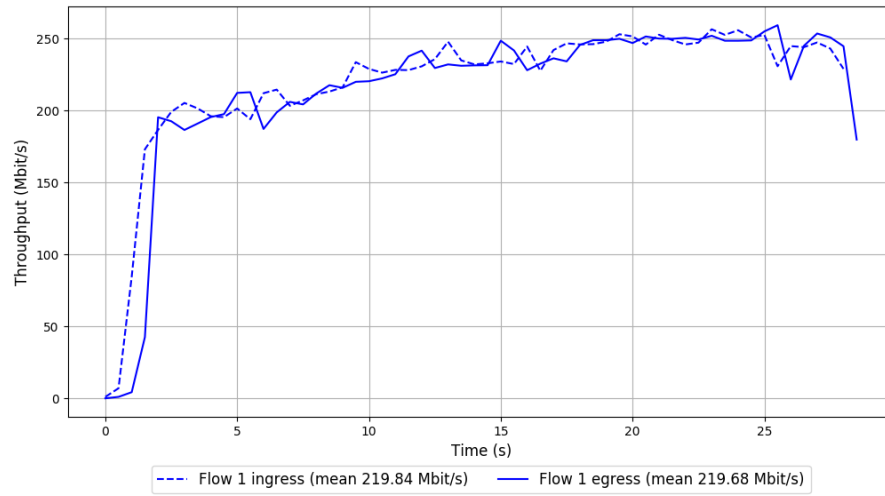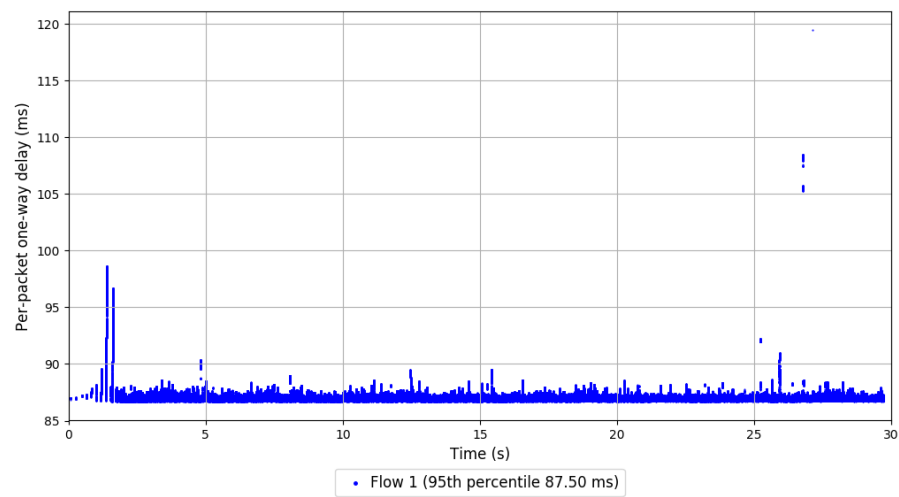
Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 939.83 Mbit/s)   Flow 1 egress (mean 918.69 Mbit/s)
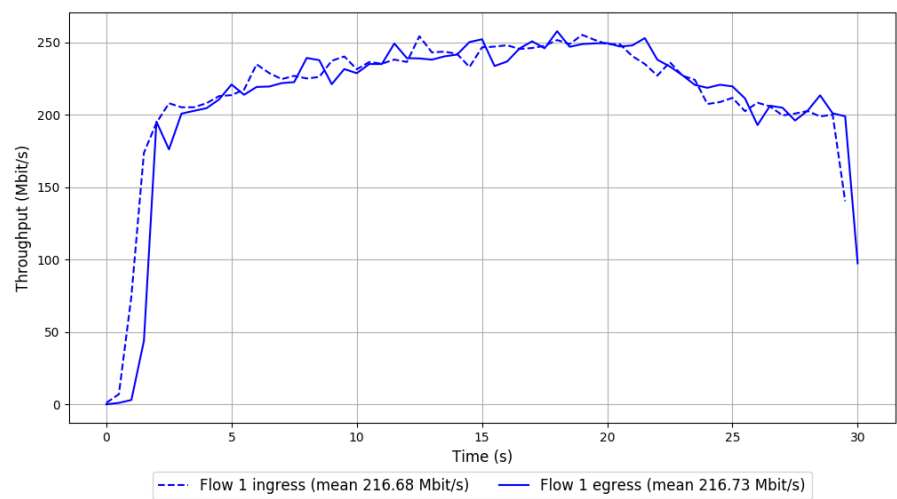

Flow 1 (95th percentile 145.93 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-11-29 20:38:58
End at: 2018-11-29 20:39:28
Local clock offset: 9.367 ms
Remote clock offset: 10.482 ms


# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 219.68 Mbit/s
95th percentile per-packet one-way delay: 87.046 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 219.68 Mbit/s
95th percentile per-packet one-way delay: 87.046 ms
Loss rate: 0.69%
```
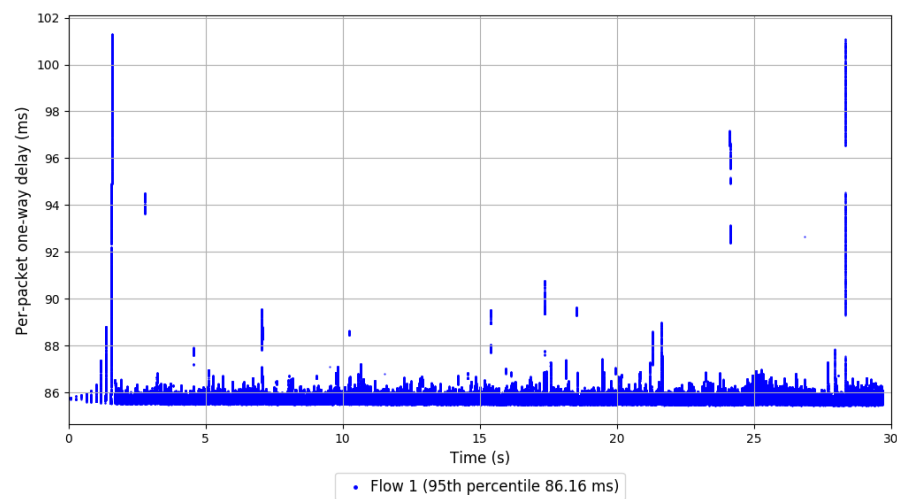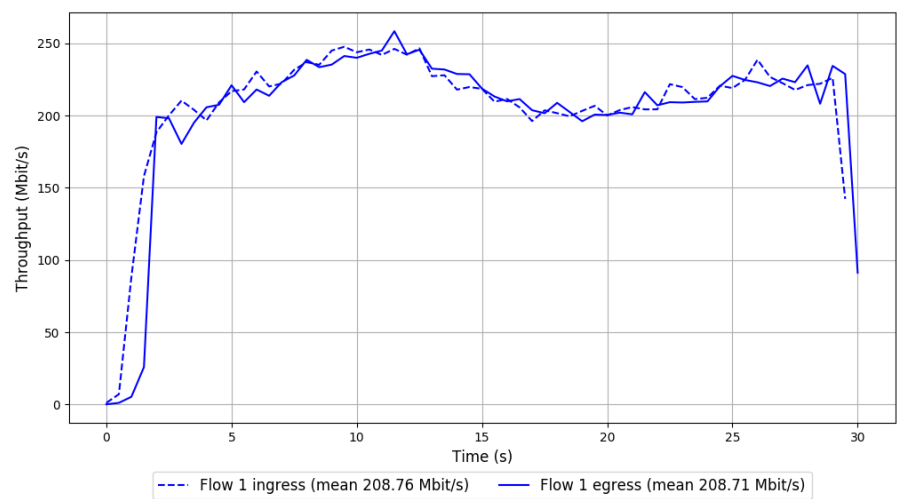
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-11-29 21:05:49
End at: 2018-11-29 21:06:19
Local clock offset: 15.018 ms
Remote clock offset: 16.993 ms


# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 216.73 Mbit/s
95th percentile per-packet one-way delay: 87.501 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 216.73 Mbit/s
95th percentile per-packet one-way delay: 87.501 ms
Loss rate: 0.55%
```
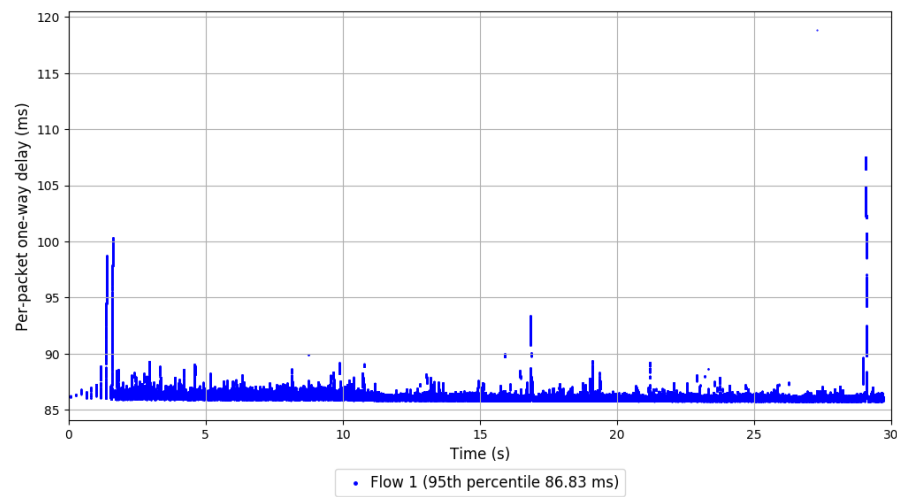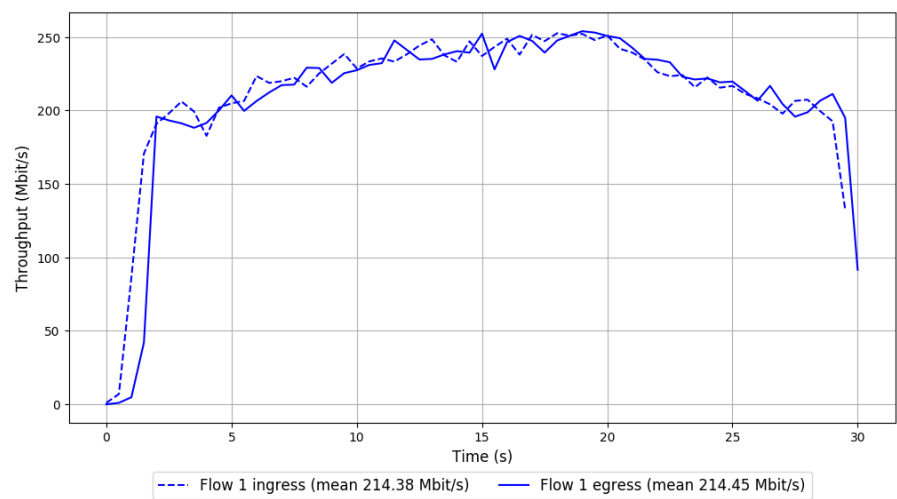
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-11-29 21:32:20
End at: 2018-11-29 21:32:50
Local clock offset: 12.048 ms
Remote clock offset: 14.375 ms


# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 208.71 Mbit/s
95th percentile per-packet one-way delay: 86.164 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 208.71 Mbit/s
95th percentile per-packet one-way delay: 86.164 ms
Loss rate: 0.64%
```

Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-11-29 21:58:59
End at: 2018-11-29 21:59:29
Local clock offset: 10.896 ms
Remote clock offset: 13.166 ms

# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 214.45 Mbit/s
95th percentile per-packet one-way delay: 86.829 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 214.45 Mbit/s
95th percentile per-packet one-way delay: 86.829 ms
Loss rate: 0.56%
```
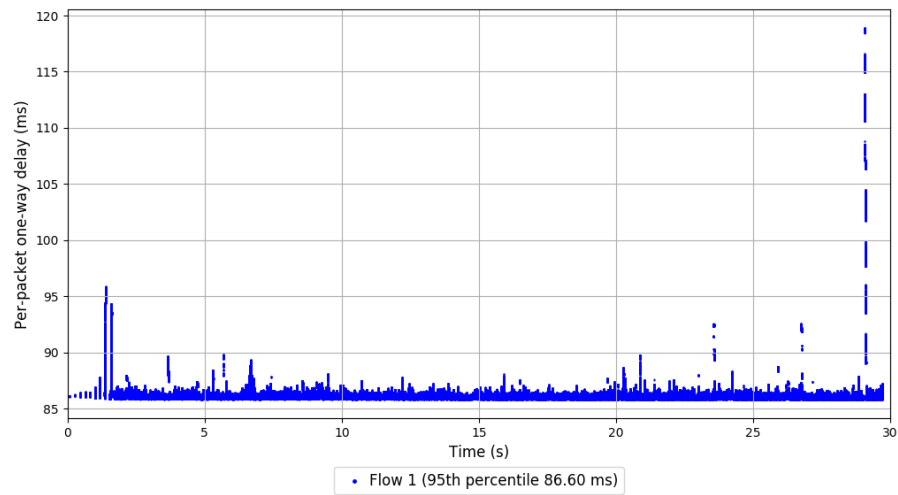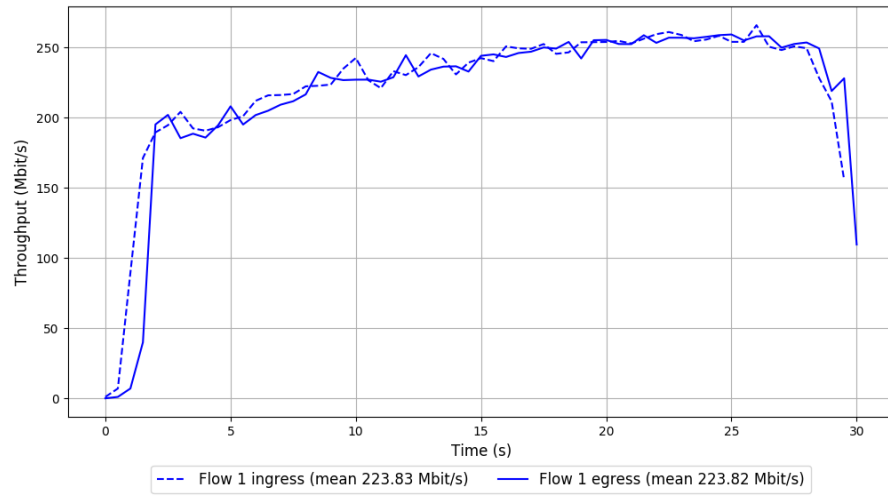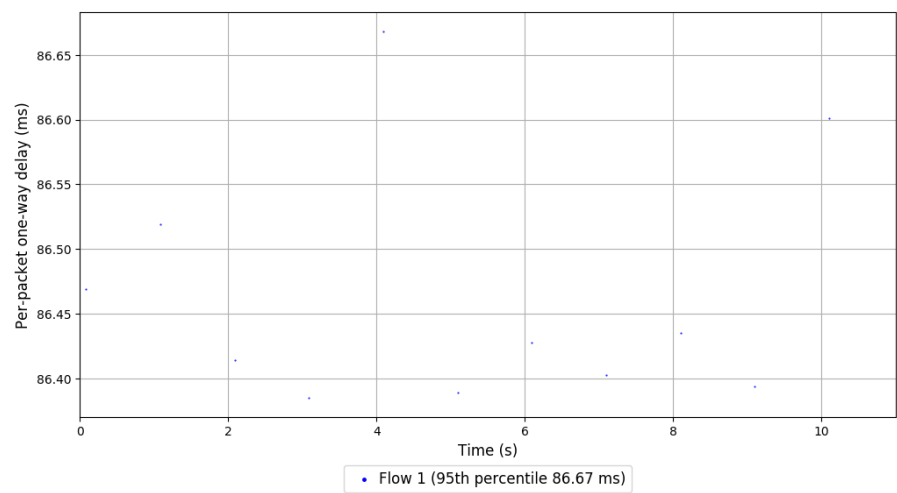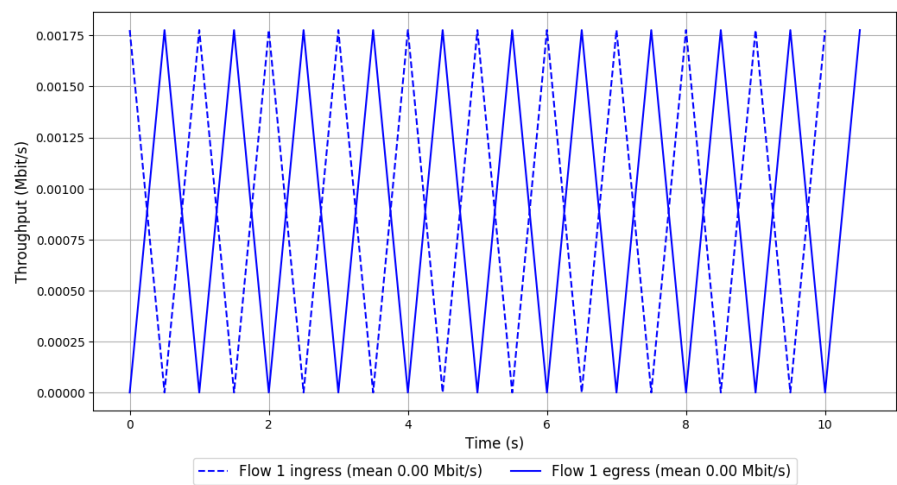
Run 4: Report of Indigo — Data Link

Flow 1 ingress (mean 214.38 Mbit/s)   Flow 1 egress (mean 214.45 Mbit/s)

Flow 1 (95th percentile 86.83 ms)

```
Run 5: Statistics of Indigo

Start at: 2018-11-29 22:26:00
End at: 2018-11-29 22:26:30
Local clock offset: 5.136 ms
Remote clock offset: 3.242 ms

# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 223.82 Mbit/s
95th percentile per-packet one-way delay: 86.601 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 223.82 Mbit/s
95th percentile per-packet one-way delay: 86.601 ms
Loss rate: 0.58%
```

Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-96d2da3

Start at: 2018-11-29 20:33:51
End at: 2018-11-29 20:34:21
Local clock offset: 9.521 ms
Remote clock offset: 11.228 ms
```

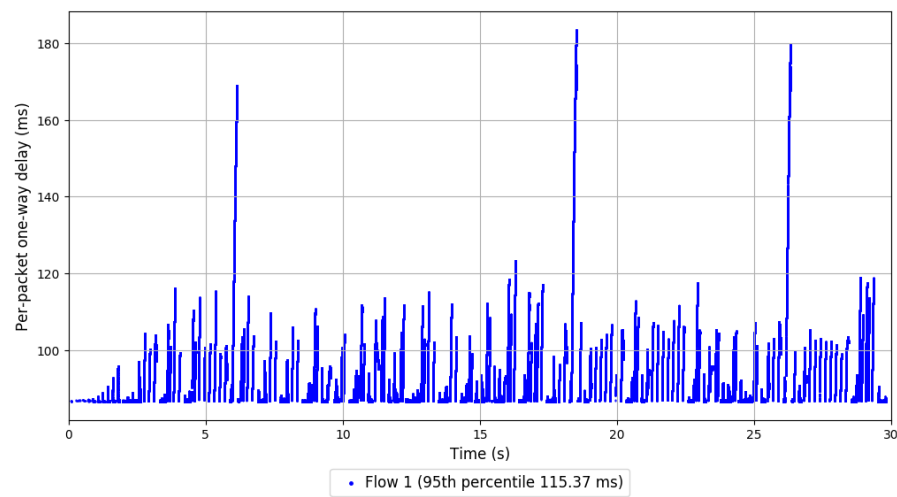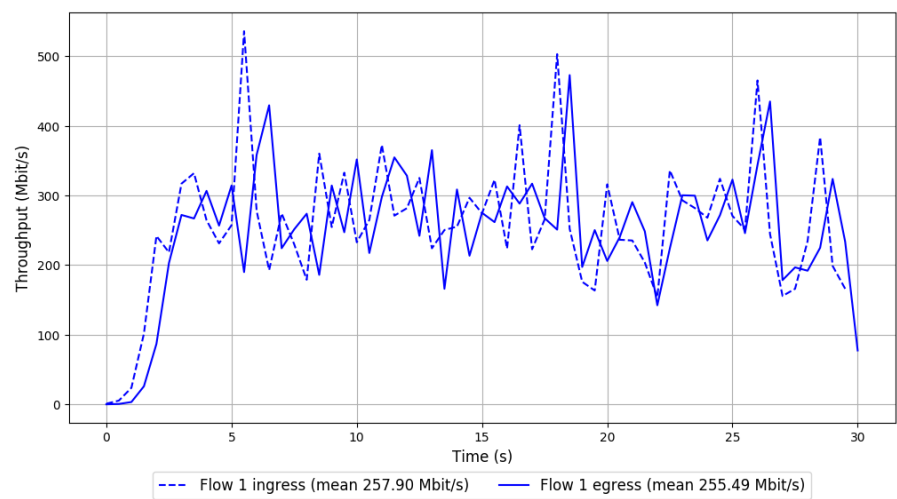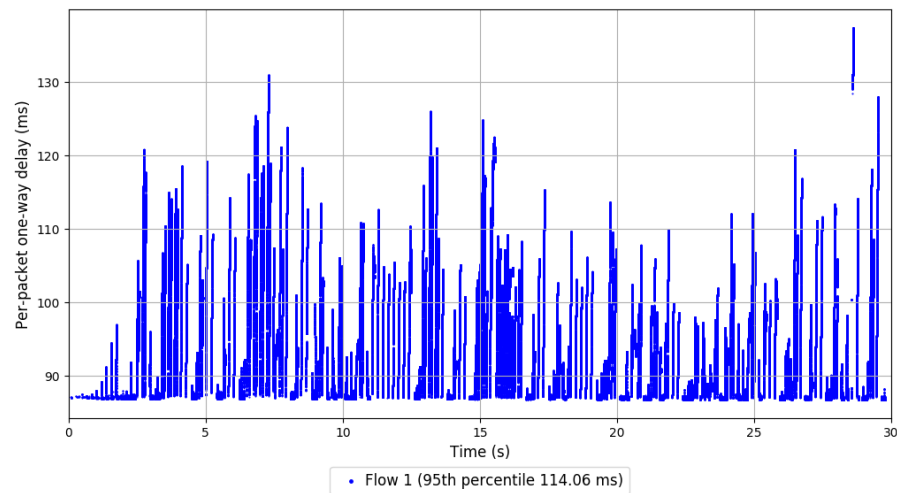# Run 1: Report of Indigo-96d2da3 — Data Link

```
Run 2: Statistics of Indigo-96d2da3

Start at: 2018-11-29 21:00:25
End at: 2018-11-29 21:00:55
Local clock offset: 13.058 ms
Remote clock offset: 14.948 ms


# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 255.49 Mbit/s
95th percentile per-packet one-way delay: 115.366 ms
Loss rate: 1.38%
-- Flow 1:
Average throughput: 255.49 Mbit/s
95th percentile per-packet one-way delay: 115.366 ms
Loss rate: 1.38%
```
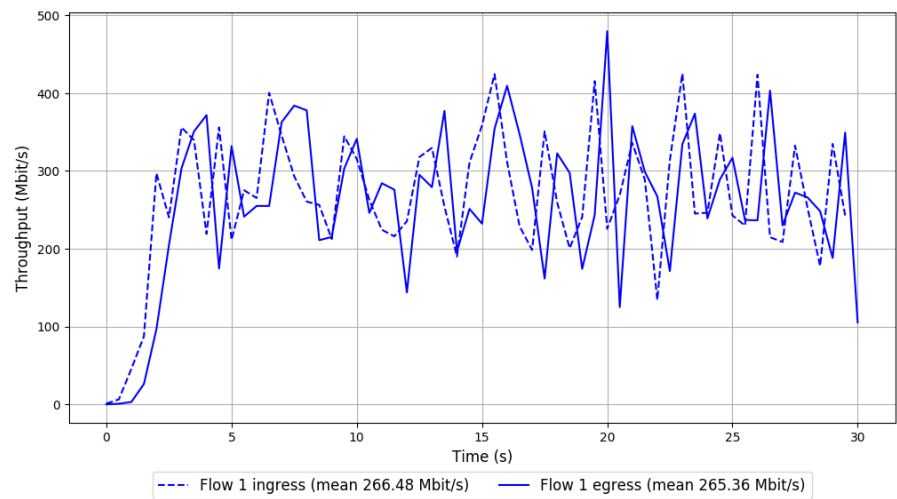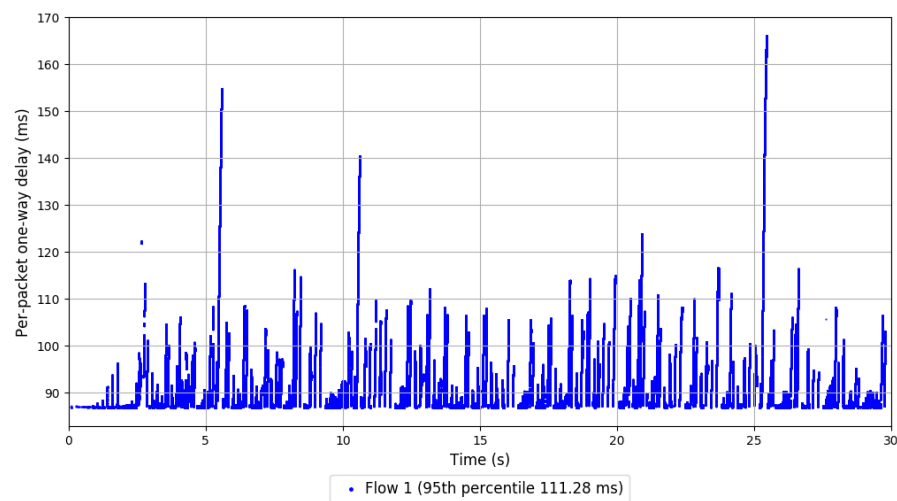
Run 2: Report of Indigo-96d2da3 — Data Link

```
Run 3: Statistics of Indigo-96d2da3

Start at: 2018-11-29 21:26:56
End at: 2018-11-29 21:27:26
Local clock offset: 18.623 ms
Remote clock offset: 21.278 ms


# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 265.36 Mbit/s
95th percentile per-packet one-way delay: 114.061 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 265.36 Mbit/s
95th percentile per-packet one-way delay: 114.061 ms
Loss rate: 1.15%
```

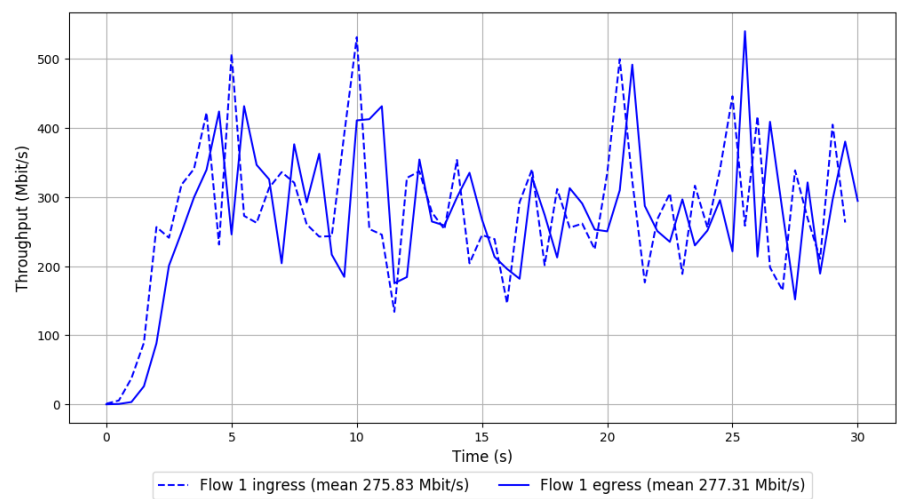Run 3: Report of Indigo-96d2da3 — Data Link

```
Run 4: Statistics of Indigo-96d2da3

Start at: 2018-11-29 21:53:33
End at: 2018-11-29 21:54:03
Local clock offset: 12.039 ms
Remote clock offset: 13.656 ms


# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 277.31 Mbit/s
95th percentile per-packet one-way delay: 111.283 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 277.31 Mbit/s
95th percentile per-packet one-way delay: 111.283 ms
Loss rate: 0.24%
```

Run 4: Report of Indigo-96d2da3 — Data Link

```
Run 5: Statistics of Indigo-96d2da3

Start at: 2018-11-29 22:20:25
End at: 2018-11-29 22:20:55
Local clock offset: 4.948 ms
Remote clock offset: 3.192 ms


# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 275.47 Mbit/s
95th percentile per-packet one-way delay: 112.840 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 275.47 Mbit/s
95th percentile per-packet one-way delay: 112.840 ms
Loss rate: 1.07%
```
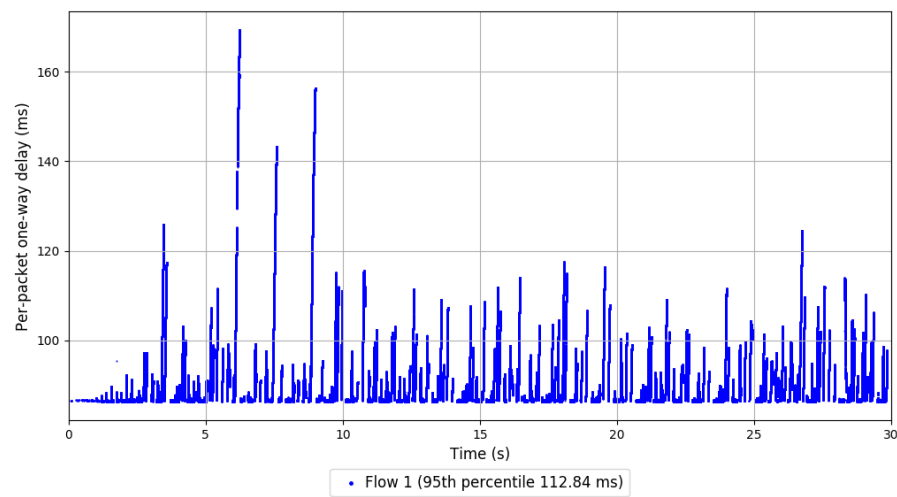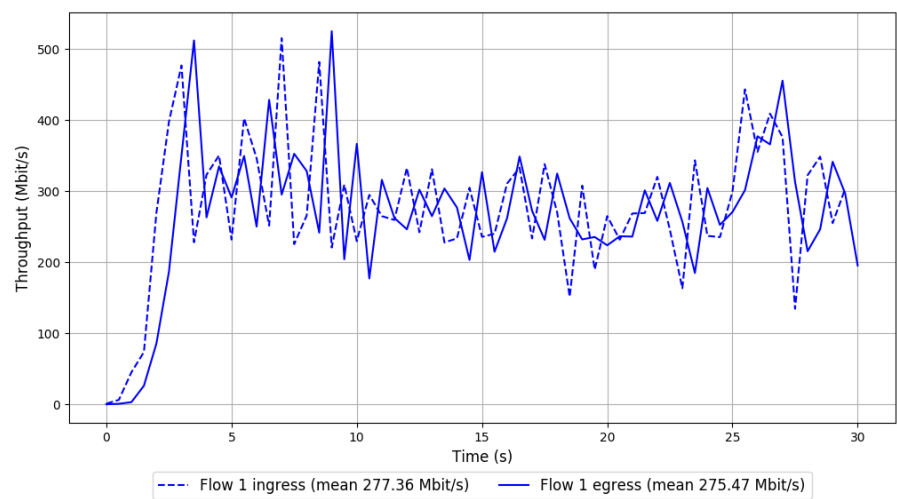
Run 5: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 277.36 Mbit/s)   Flow 1 egress (mean 275.47 Mbit/s)
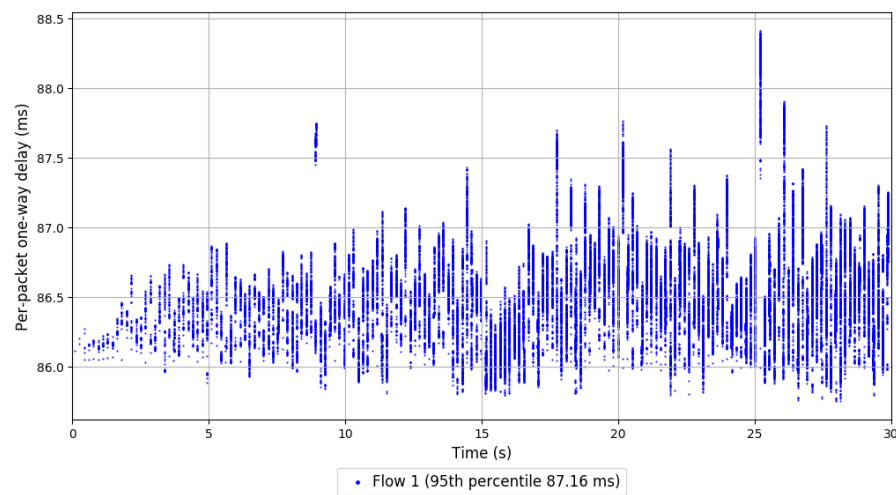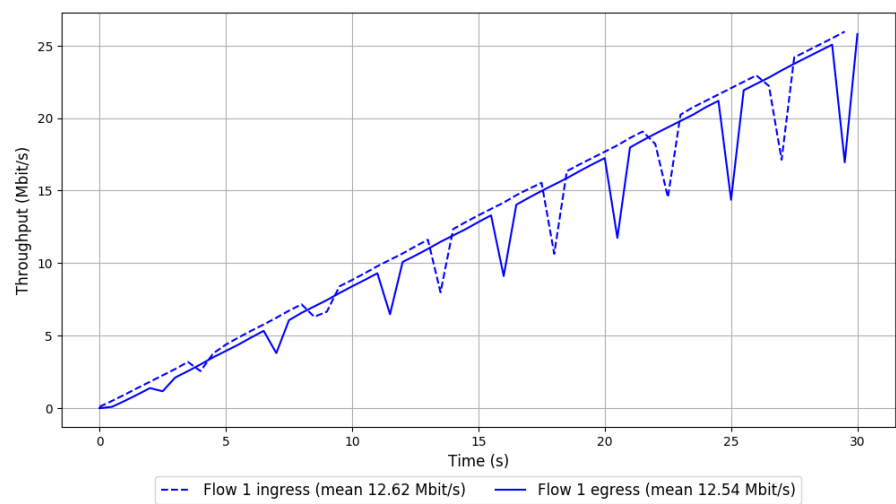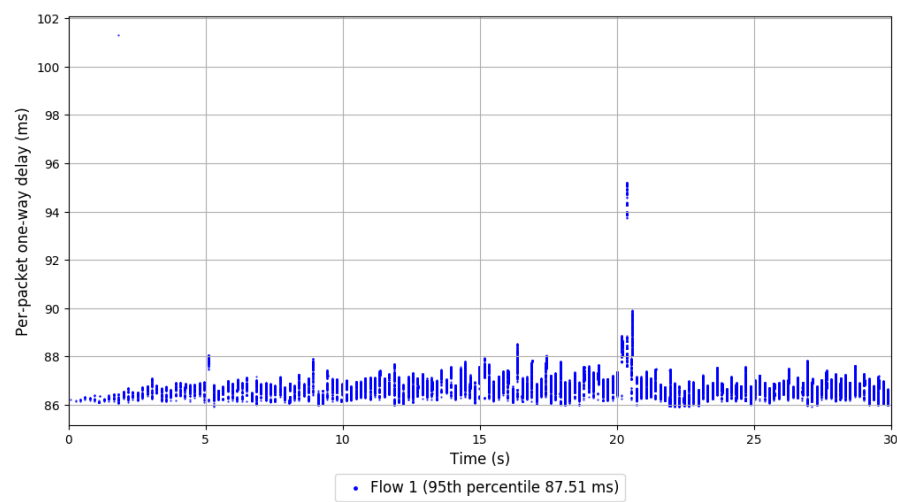

• Flow 1 (95th percentile 112.84 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2018-11-29 20:35:00
End at: 2018-11-29 20:35:30
Local clock offset: 8.801 ms
Remote clock offset: 10.235 ms


# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.54 Mbit/s
95th percentile per-packet one-way delay: 87.158 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 12.54 Mbit/s
95th percentile per-packet one-way delay: 87.158 ms
Loss rate: 1.15%
```

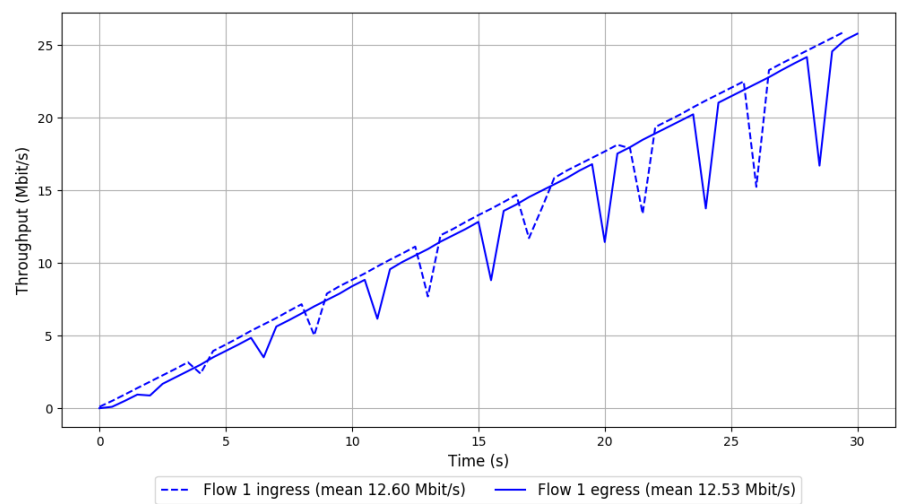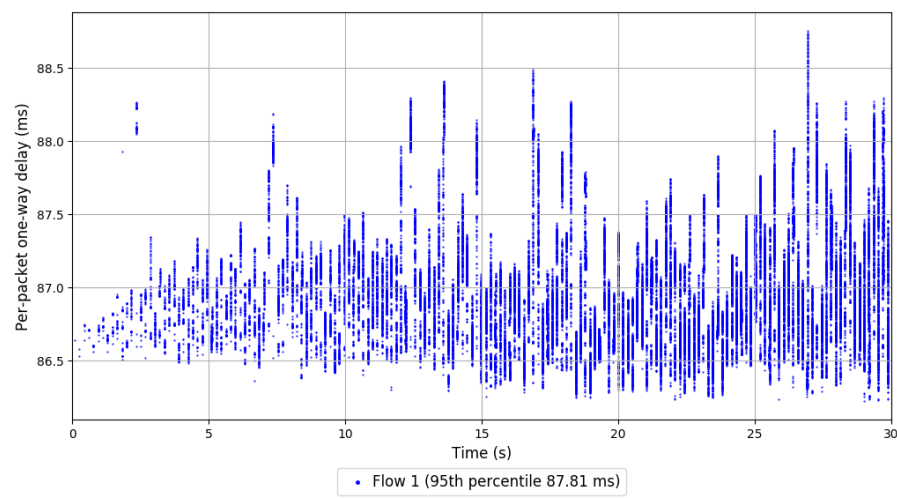# Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-11-29 21:01:47
End at: 2018-11-29 21:02:17
Local clock offset: 13.502 ms
Remote clock offset: 15.329 ms


# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.53 Mbit/s
95th percentile per-packet one-way delay: 87.509 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 12.53 Mbit/s
95th percentile per-packet one-way delay: 87.509 ms
Loss rate: 1.15%
```

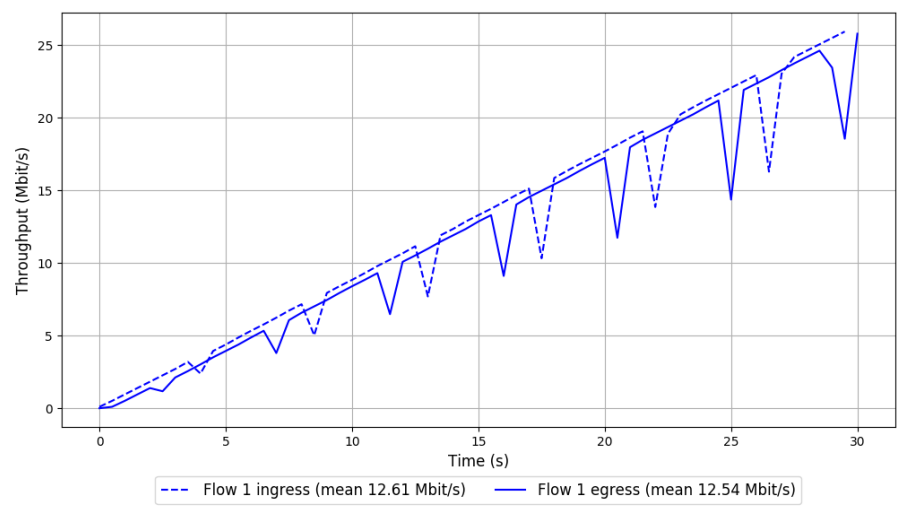Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-11-29 21:28:18
End at: 2018-11-29 21:28:48
Local clock offset: 16.641 ms
Remote clock offset: 18.937 ms

# Below is generated by plot.py at 2018-11-29 23:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.54 Mbit/s
95th percentile per-packet one-way delay: 87.808 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 12.54 Mbit/s
95th percentile per-packet one-way delay: 87.808 ms
Loss rate: 1.15%
```

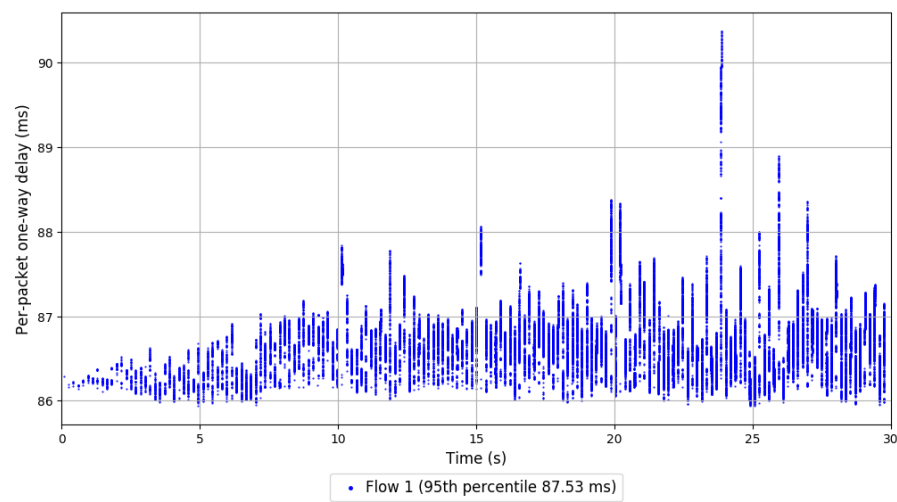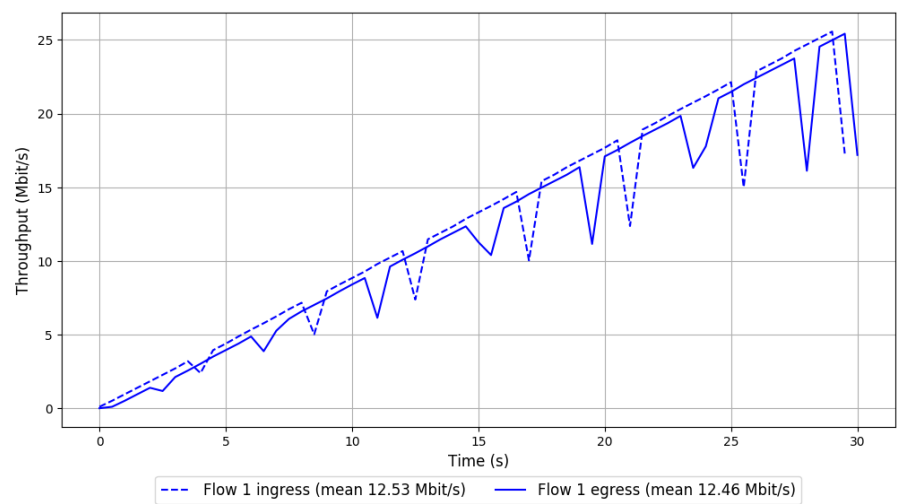Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-11-29 21:54:56
End at: 2018-11-29 21:55:26
Local clock offset: 11.596 ms
Remote clock offset: 14.075 ms


# Below is generated by plot.py at 2018-11-29 23:24:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.46 Mbit/s
95th percentile per-packet one-way delay: 87.533 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 12.46 Mbit/s
95th percentile per-packet one-way delay: 87.533 ms
Loss rate: 1.16%
```
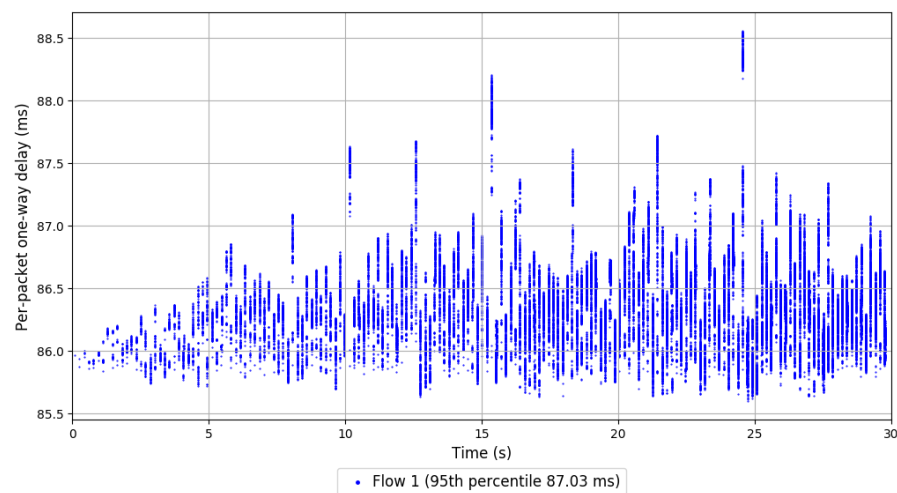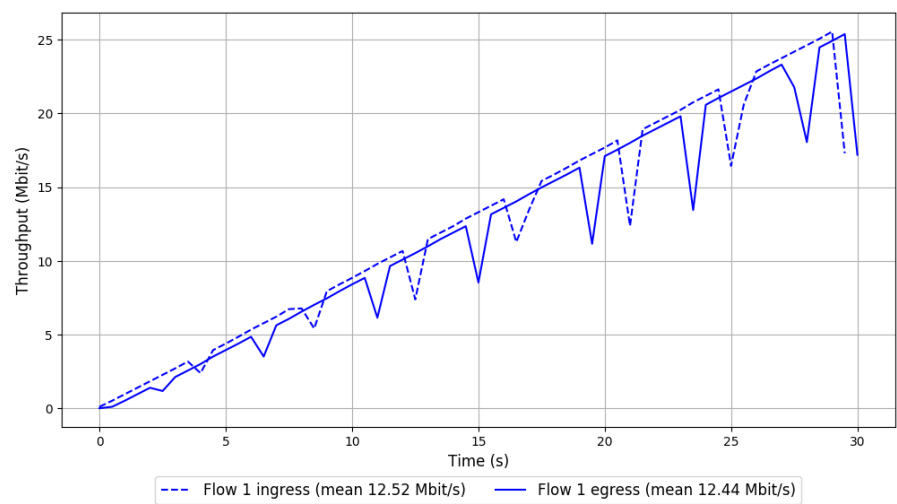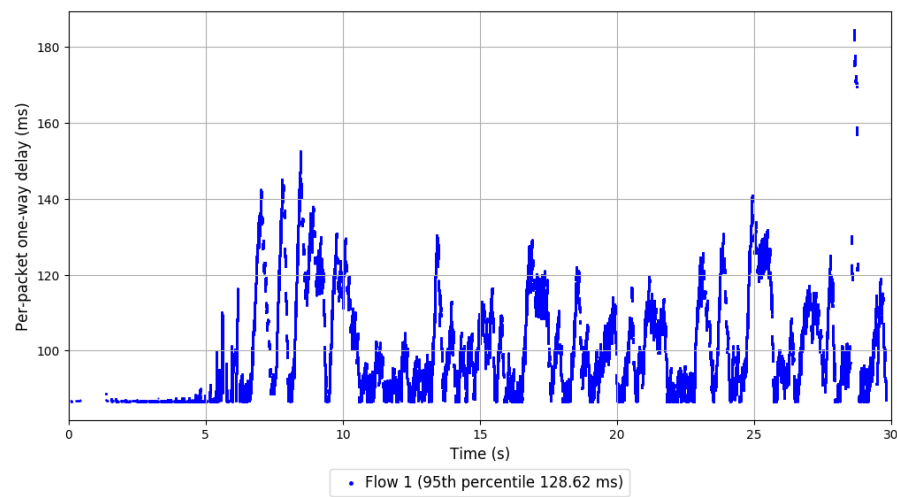
Run 4: Report of LEDBAT — Data Link

Flow 1 ingress (mean 12.53 Mbit/s)   Flow 1 egress (mean 12.46 Mbit/s)

Flow 1 (95th percentile 87.53 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2018-11-29 22:21:50
End at: 2018-11-29 22:22:20
Local clock offset: 4.463 ms
Remote clock offset: 3.137 ms


# Below is generated by plot.py at 2018-11-29 23:24:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.44 Mbit/s
95th percentile per-packet one-way delay: 87.033 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 12.44 Mbit/s
95th percentile per-packet one-way delay: 87.033 ms
Loss rate: 1.16%
```

Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 12.52 Mbit/s)   Flow 1 egress (mean 12.44 Mbit/s)
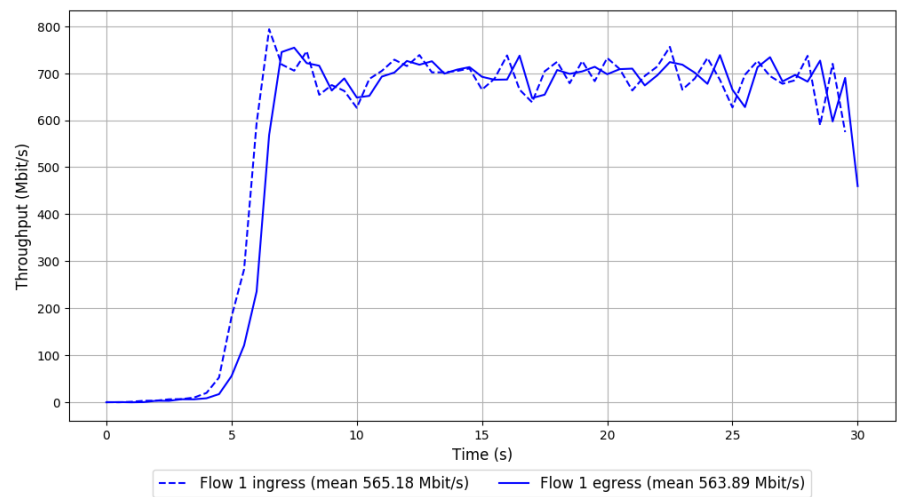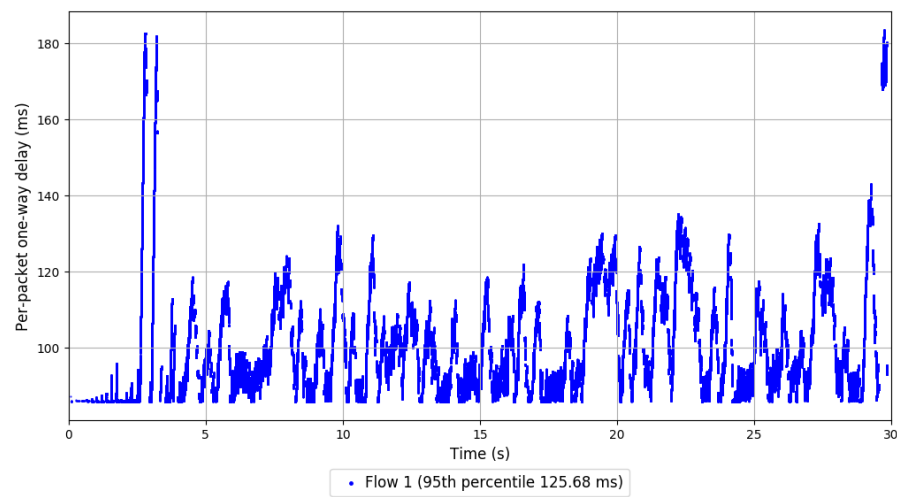

Flow 1 (95th percentile 87.03 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-11-29 20:37:20
End at: 2018-11-29 20:37:50
Local clock offset: 8.906 ms
Remote clock offset: 9.919 ms

# Below is generated by plot.py at 2018-11-29 23:30:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 563.89 Mbit/s
95th percentile per-packet one-way delay: 128.616 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 563.89 Mbit/s
95th percentile per-packet one-way delay: 128.616 ms
Loss rate: 0.81%
```
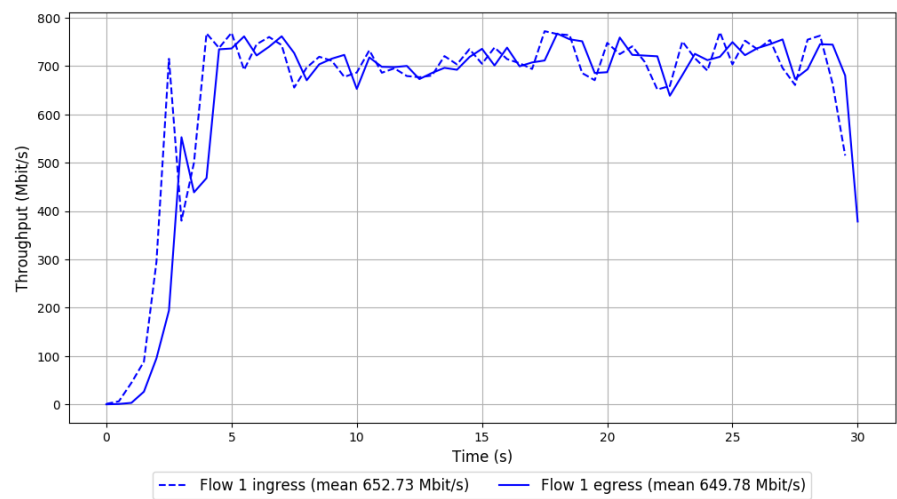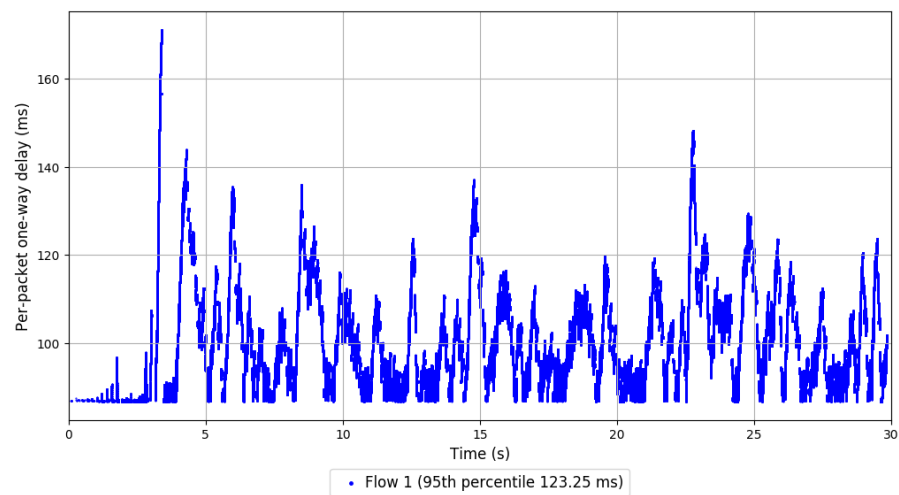
Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-11-29 21:04:07
End at: 2018-11-29 21:04:37
Local clock offset: 14.249 ms
Remote clock offset: 16.216 ms


# Below is generated by plot.py at 2018-11-29 23:33:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 649.78 Mbit/s
95th percentile per-packet one-way delay: 125.677 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 649.78 Mbit/s
95th percentile per-packet one-way delay: 125.677 ms
Loss rate: 1.03%
```
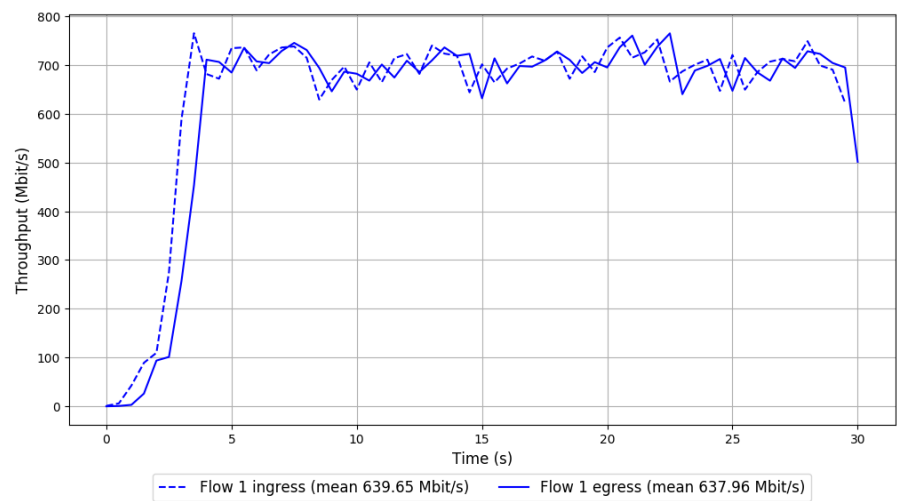
Run 2: Report of Indigo-Muses — Data Link

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-11-29 21:30:39
End at: 2018-11-29 21:31:09
Local clock offset: 13.745 ms
Remote clock offset: 15.948 ms


# Below is generated by plot.py at 2018-11-29 23:34:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 637.96 Mbit/s
95th percentile per-packet one-way delay: 123.254 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 637.96 Mbit/s
95th percentile per-packet one-way delay: 123.254 ms
Loss rate: 0.85%
```

Run 3: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 639.65 Mbit/s)   Flow 1 egress (mean 637.96 Mbit/s)
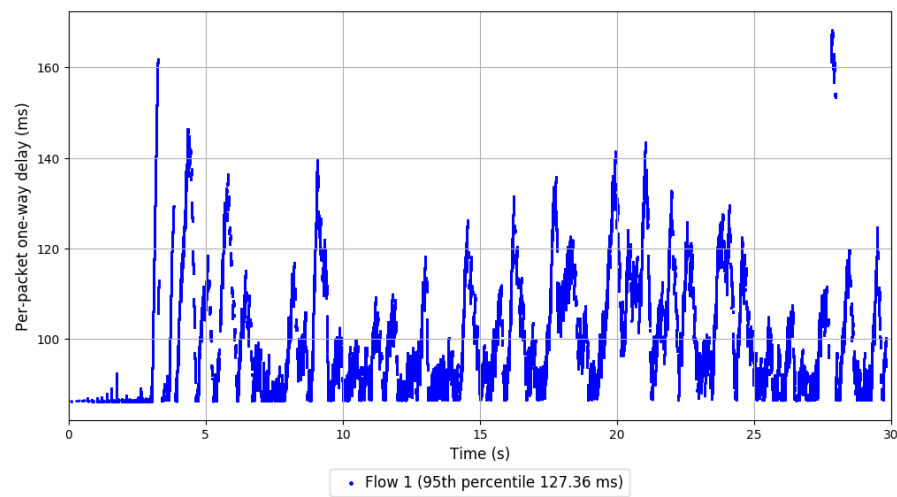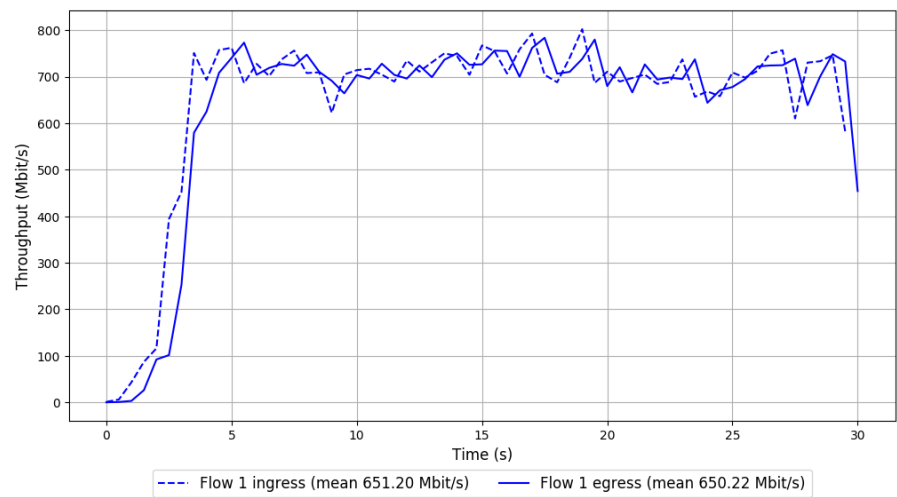

Flow 1 (95th percentile 123.25 ms)

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-11-29 21:57:16
End at: 2018-11-29 21:57:46
Local clock offset: 12.394 ms
Remote clock offset: 14.933 ms


# Below is generated by plot.py at 2018-11-29 23:35:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 650.22 Mbit/s
95th percentile per-packet one-way delay: 127.357 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 650.22 Mbit/s
95th percentile per-packet one-way delay: 127.357 ms
Loss rate: 0.73%
```

Run 4: Report of Indigo-Muses — Data Link

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-11-29 22:24:11
End at: 2018-11-29 22:24:41
Local clock offset: 4.752 ms
Remote clock offset: 3.147 ms


# Below is generated by plot.py at 2018-11-29 23:35:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 663.78 Mbit/s
95th percentile per-packet one-way delay: 116.695 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 663.78 Mbit/s
95th percentile per-packet one-way delay: 116.695 ms
Loss rate: 0.75%
```
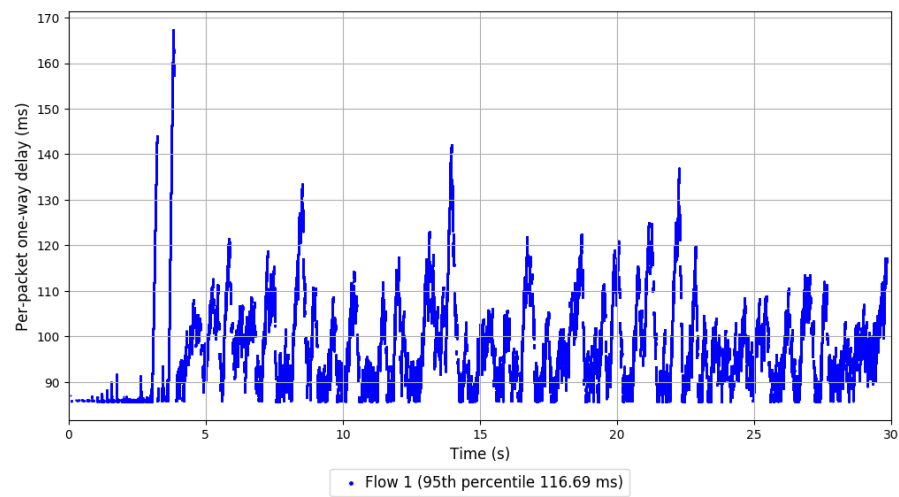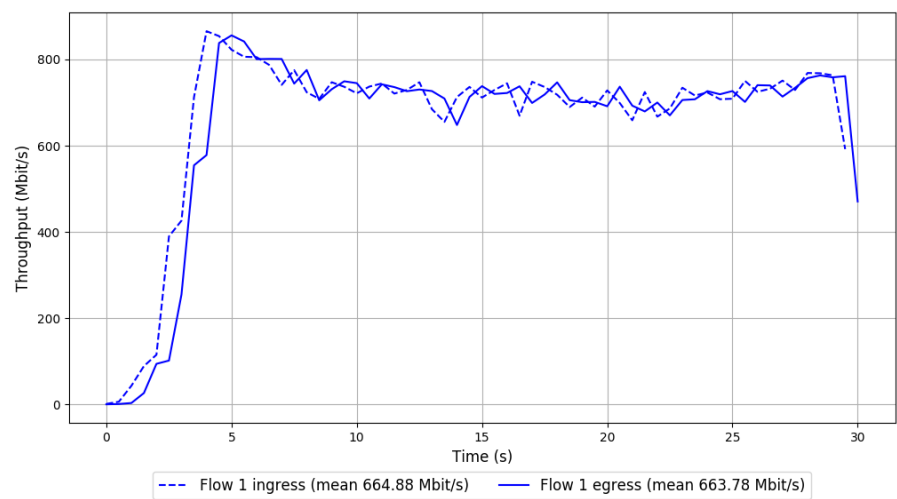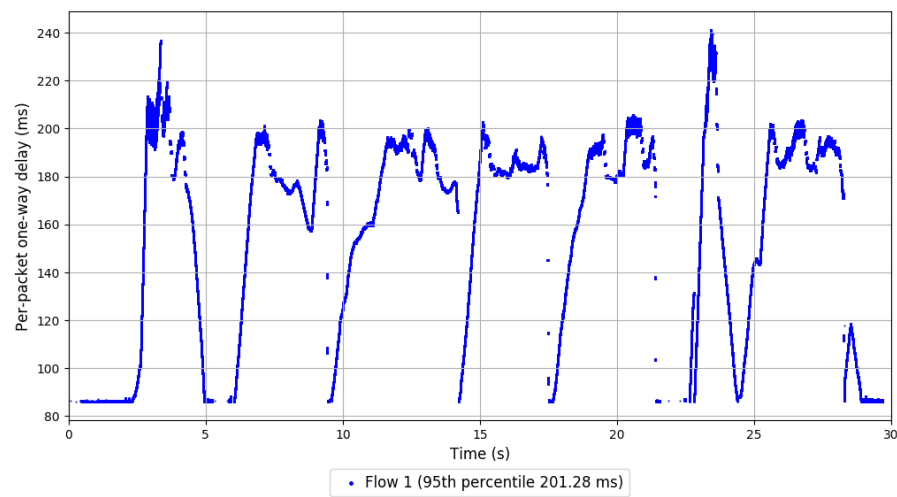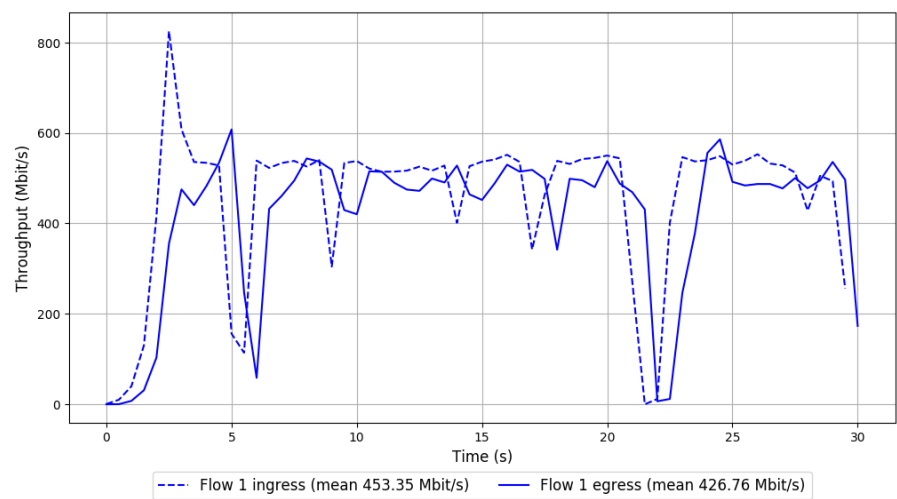
Run 5: Report of Indigo-Muses — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-29 20:31:02
End at: 2018-11-29 20:31:33
Local clock offset: 10.27 ms
Remote clock offset: 11.418 ms

# Below is generated by plot.py at 2018-11-29 23:40:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 426.76 Mbit/s
95th percentile per-packet one-way delay: 201.285 ms
Loss rate: 6.41%
-- Flow 1:
Average throughput: 426.76 Mbit/s
95th percentile per-packet one-way delay: 201.285 ms
Loss rate: 6.41%
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-11-29 20:57:36
End at: 2018-11-29 20:58:06
Local clock offset: 13.071 ms
Remote clock offset: 14.713 ms


# Below is generated by plot.py at 2018-11-29 23:40:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 446.55 Mbit/s
95th percentile per-packet one-way delay: 198.740 ms
Loss rate: 3.16%
-- Flow 1:
Average throughput: 446.55 Mbit/s
95th percentile per-packet one-way delay: 198.740 ms
Loss rate: 3.16%
```
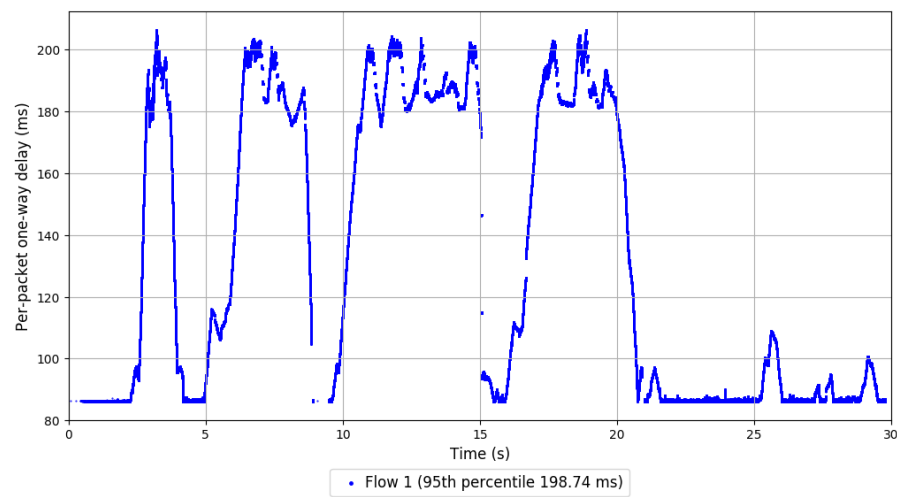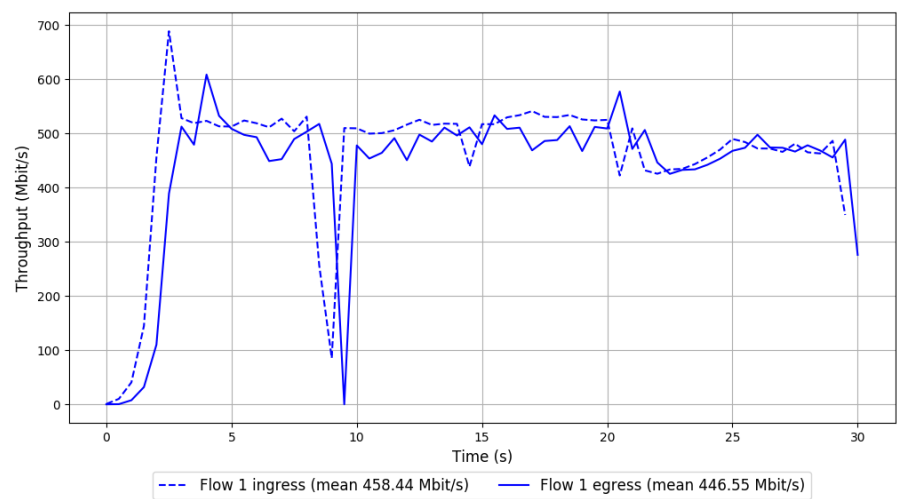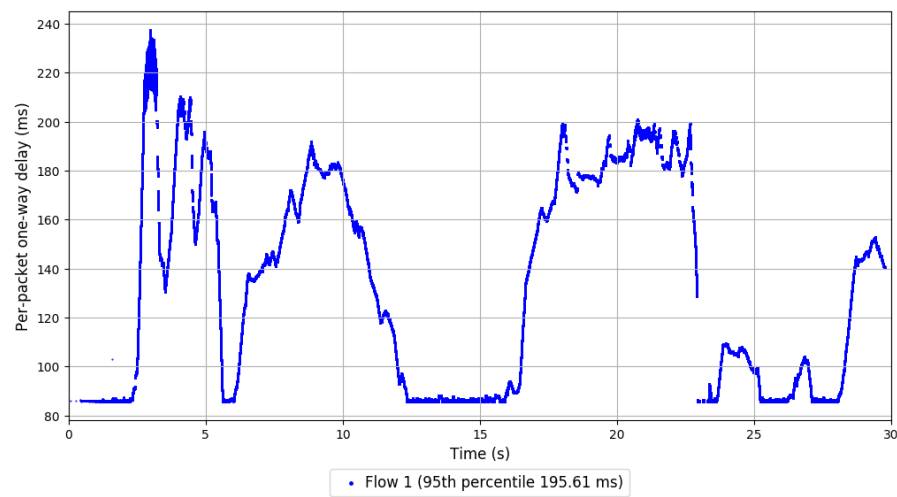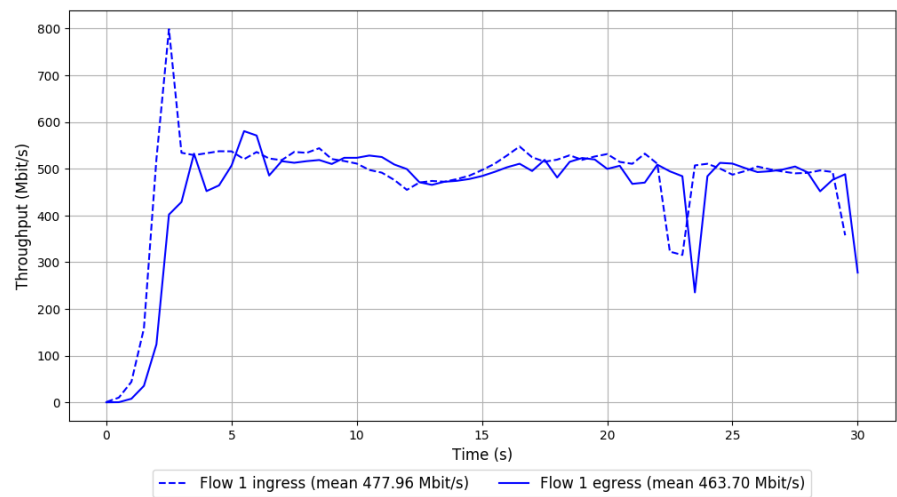
Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-11-29 21:24:05
End at: 2018-11-29 21:24:35
Local clock offset: 24.099 ms
Remote clock offset: 28.407 ms


# Below is generated by plot.py at 2018-11-29 23:41:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 463.70 Mbit/s
95th percentile per-packet one-way delay: 195.610 ms
Loss rate: 3.54%
-- Flow 1:
Average throughput: 463.70 Mbit/s
95th percentile per-packet one-way delay: 195.610 ms
Loss rate: 3.54%
```
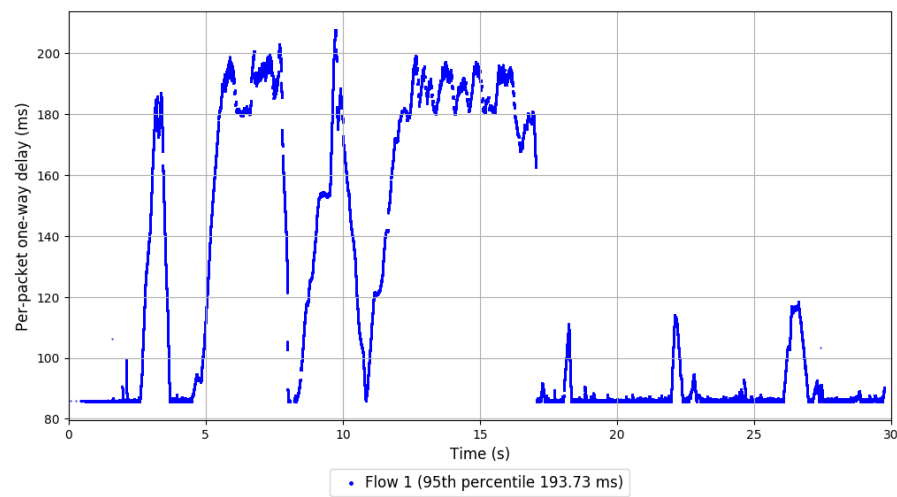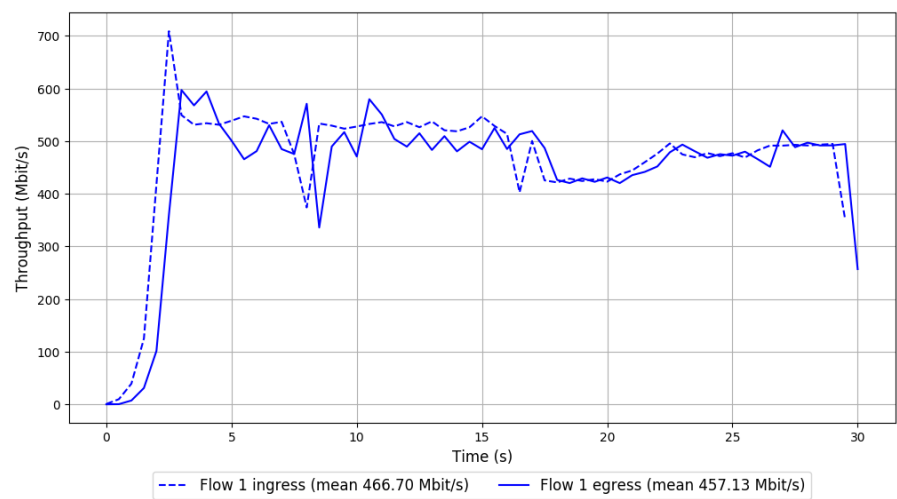
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 477.96 Mbit/s) ——— Flow 1 egress (mean 463.70 Mbit/s)

• Flow 1 (95th percentile 195.61 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-11-29 21:50:43
End at: 2018-11-29 21:51:13
Local clock offset: 10.572 ms
Remote clock offset: 12.807 ms


# Below is generated by plot.py at 2018-11-29 23:49:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 457.13 Mbit/s
95th percentile per-packet one-way delay: 193.726 ms
Loss rate: 2.62%
-- Flow 1:
Average throughput: 457.13 Mbit/s
95th percentile per-packet one-way delay: 193.726 ms
Loss rate: 2.62%
```

Run 4: Report of PCC-Allegro — Data Link

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-11-29 22:17:48
End at: 2018-11-29 22:18:18
Local clock offset: 4.828 ms
Remote clock offset: 3.32 ms


# Below is generated by plot.py at 2018-11-29 23:49:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 240.87 Mbit/s
95th percentile per-packet one-way delay: 151.477 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 240.87 Mbit/s
95th percentile per-packet one-way delay: 151.477 ms
Loss rate: 1.52%
```
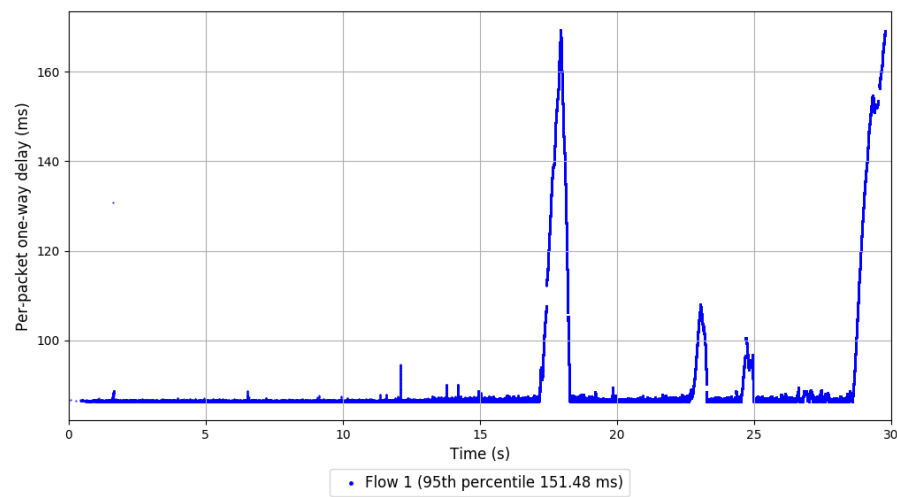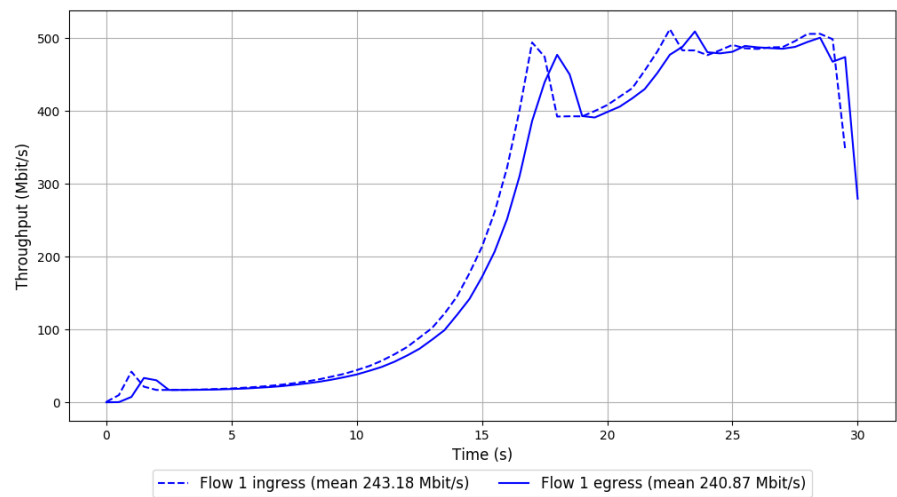
Run 5: Report of PCC-Allegro — Data Link

```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-29 20:26:30
End at: 2018-11-29 20:27:01
Local clock offset: 5.594 ms
Remote clock offset: 6.679 ms

# Below is generated by plot.py at 2018-11-29 23:49:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 351.49 Mbit/s
95th percentile per-packet one-way delay: 159.712 ms
Loss rate: 1.34%
-- Flow 1:
Average throughput: 351.49 Mbit/s
95th percentile per-packet one-way delay: 159.712 ms
Loss rate: 1.34%
```
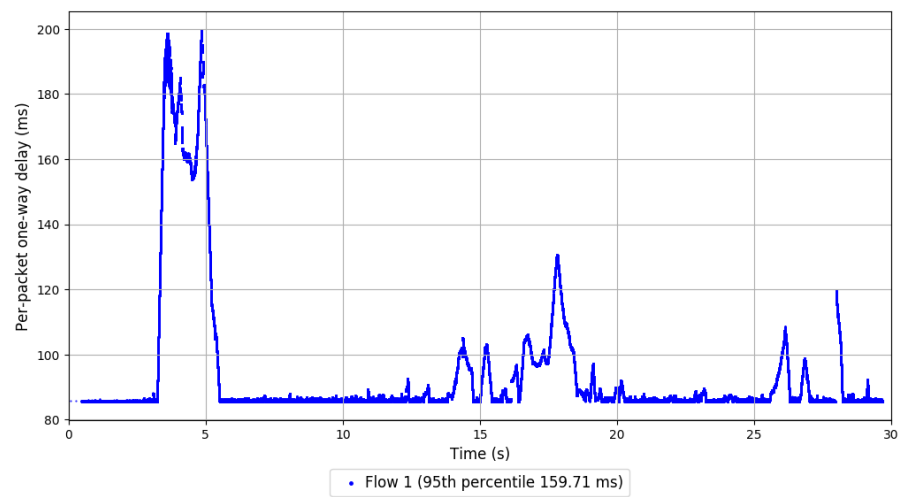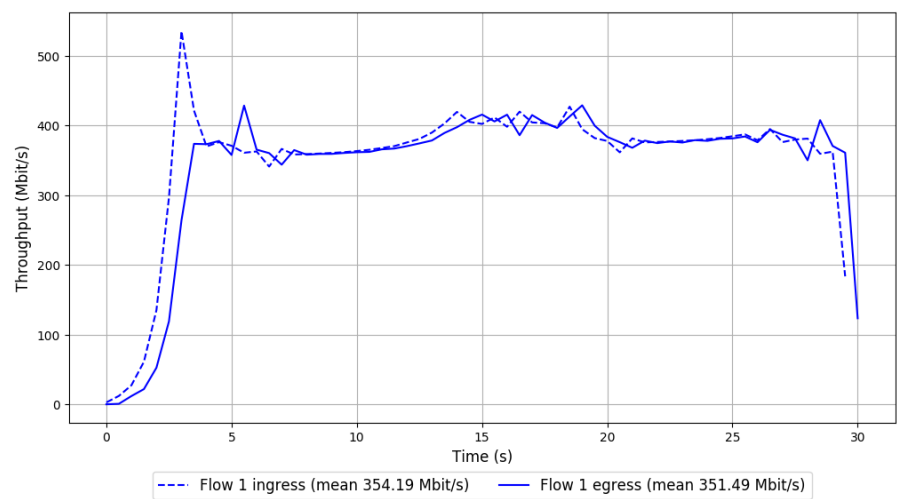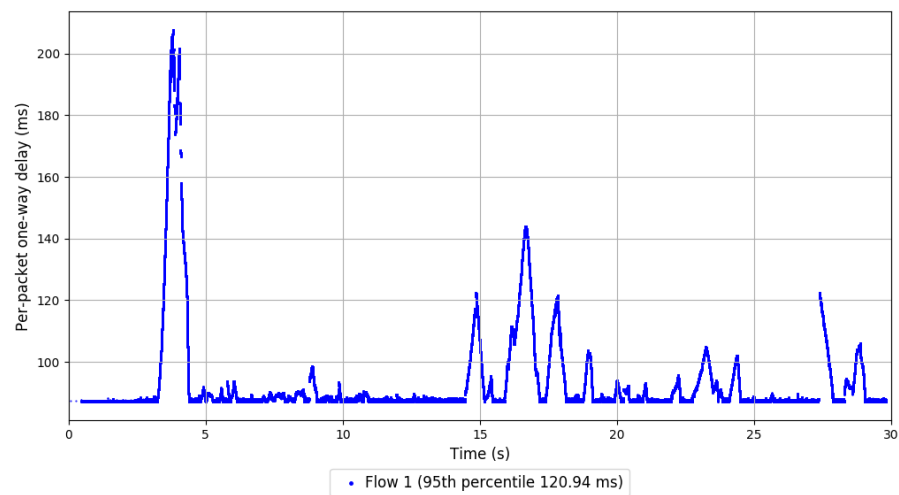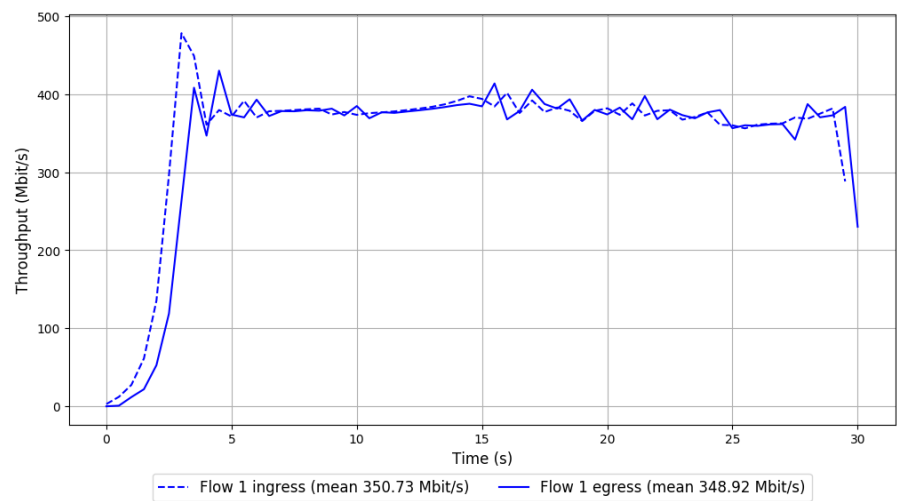
Run 1: Report of PCC-Expr — Data Link

```
Run 2: Statistics of PCC-Expr

Start at: 2018-11-29 20:52:59
End at: 2018-11-29 20:53:29
Local clock offset: 14.368 ms
Remote clock offset: 16.199 ms


# Below is generated by plot.py at 2018-11-29 23:49:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 348.92 Mbit/s
95th percentile per-packet one-way delay: 120.939 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 348.92 Mbit/s
95th percentile per-packet one-way delay: 120.939 ms
Loss rate: 1.09%
```
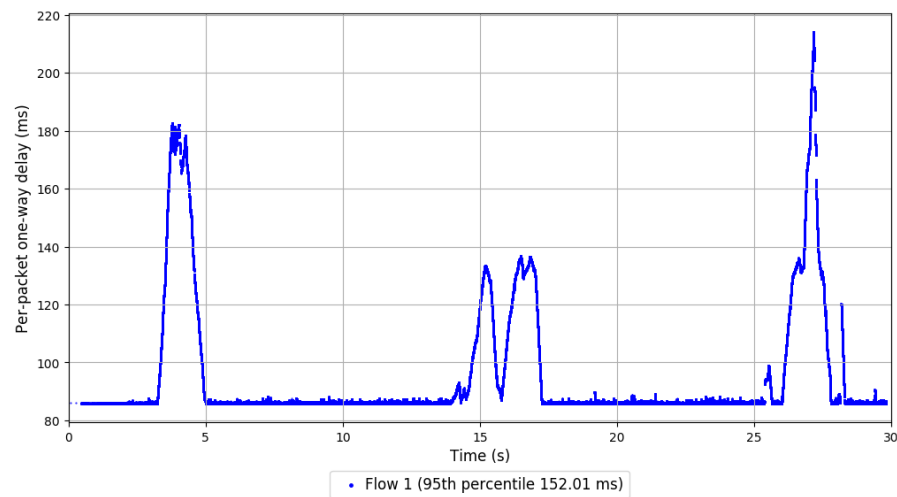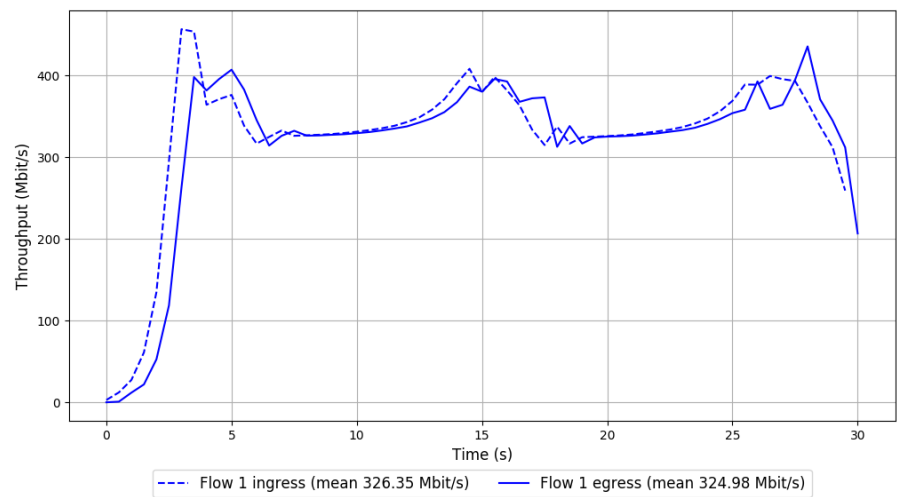
Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2018-11-29 21:19:37
End at: 2018-11-29 21:20:07
Local clock offset: 22.87 ms
Remote clock offset: 26.693 ms


# Below is generated by plot.py at 2018-11-29 23:49:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 324.98 Mbit/s
95th percentile per-packet one-way delay: 152.013 ms
Loss rate: 0.99%
-- Flow 1:
Average throughput: 324.98 Mbit/s
95th percentile per-packet one-way delay: 152.013 ms
Loss rate: 0.99%
```

Run 3: Report of PCC-Expr — Data Link

```
Run 4: Statistics of PCC-Expr

Start at: 2018-11-29 21:46:06
End at: 2018-11-29 21:46:36
Local clock offset: 10.434 ms
Remote clock offset: 11.68 ms

# Below is generated by plot.py at 2018-11-29 23:53:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 363.52 Mbit/s
95th percentile per-packet one-way delay: 173.061 ms
Loss rate: 2.41%
-- Flow 1:
Average throughput: 363.52 Mbit/s
95th percentile per-packet one-way delay: 173.061 ms
Loss rate: 2.41%
```
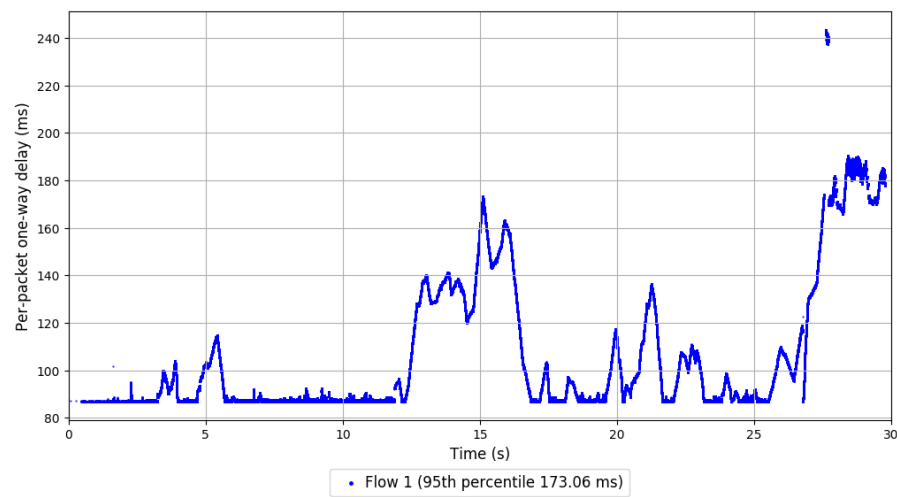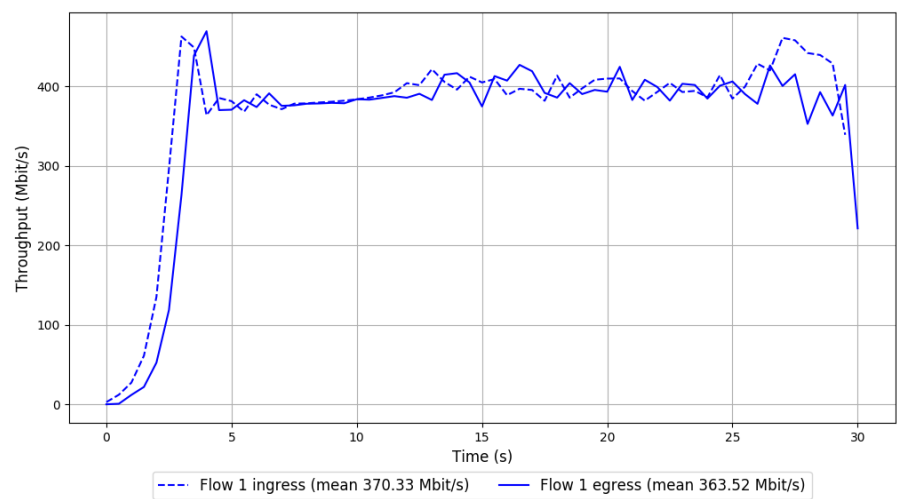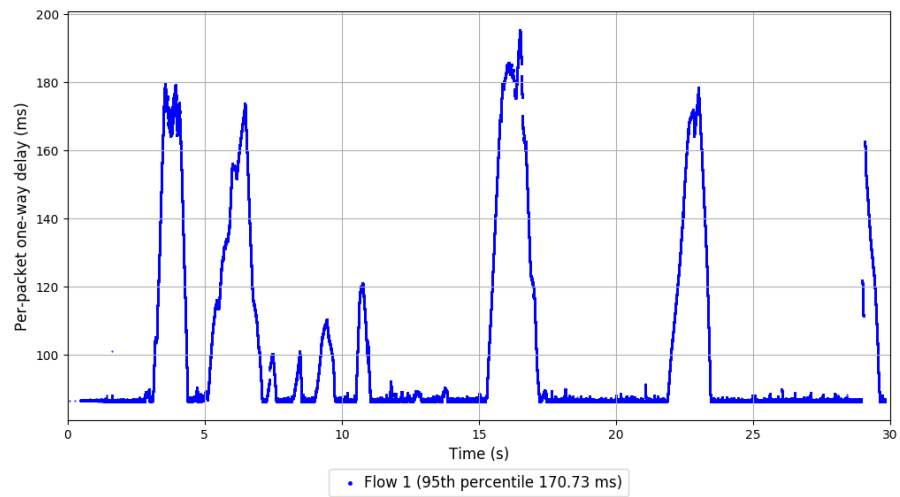
Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 370.33 Mbit/s)   Flow 1 egress (mean 363.52 Mbit/s)

Flow 1 (95th percentile 173.06 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-11-29 22:12:55
End at: 2018-11-29 22:13:25
Local clock offset: 4.699 ms
Remote clock offset: 3.866 ms


# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 331.60 Mbit/s
95th percentile per-packet one-way delay: 170.726 ms
Loss rate: 1.66%
-- Flow 1:
Average throughput: 331.60 Mbit/s
95th percentile per-packet one-way delay: 170.726 ms
Loss rate: 1.66%
```
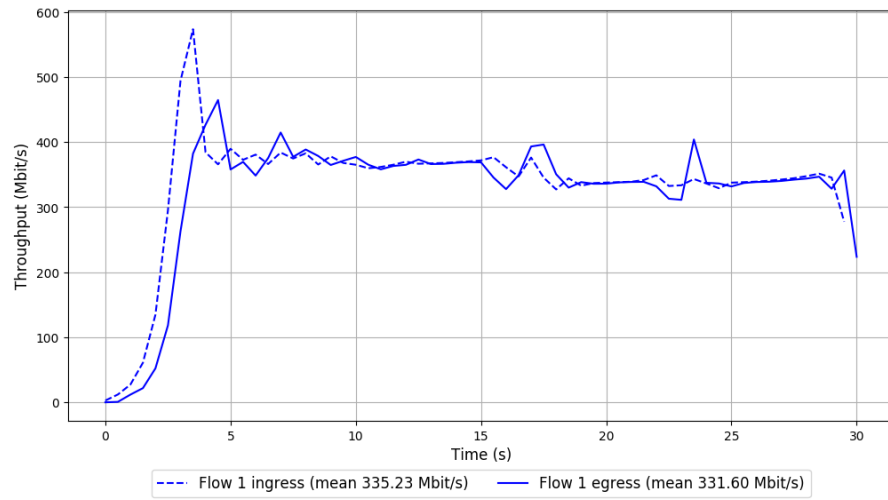
Run 5: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 335.23 Mbit/s) — — —   Flow 1 egress (mean 331.60 Mbit/s) ———

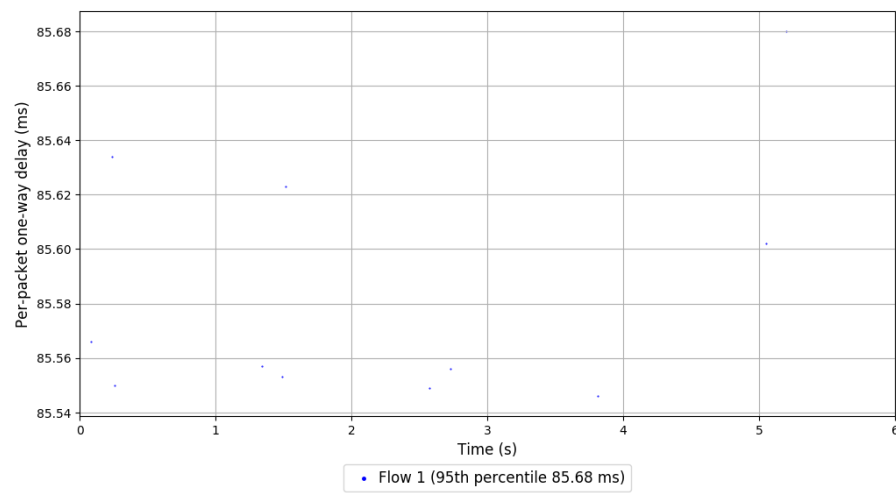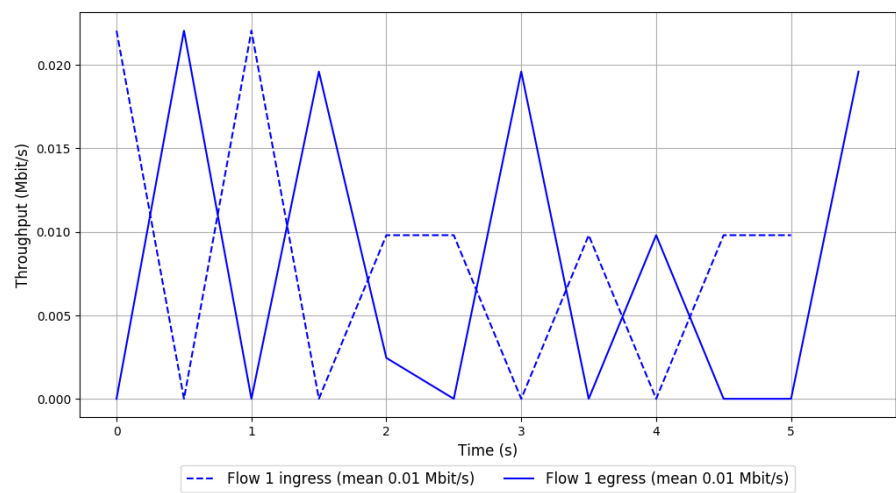• Flow 1 (95th percentile 170.73 ms)

Run 1: Statistics of QUIC Cubic

Start at: 2018-11-29 20:28:12
End at: 2018-11-29 20:28:42
Local clock offset: 6.407 ms
Remote clock offset: 8.019 ms

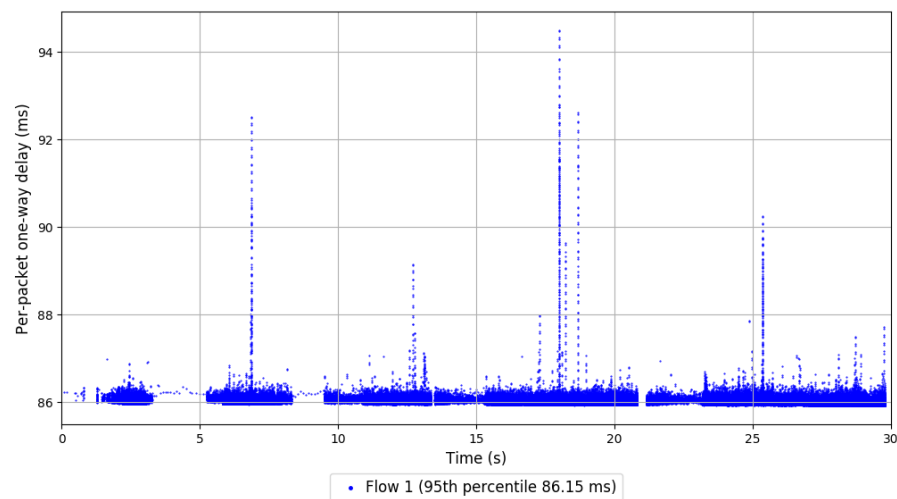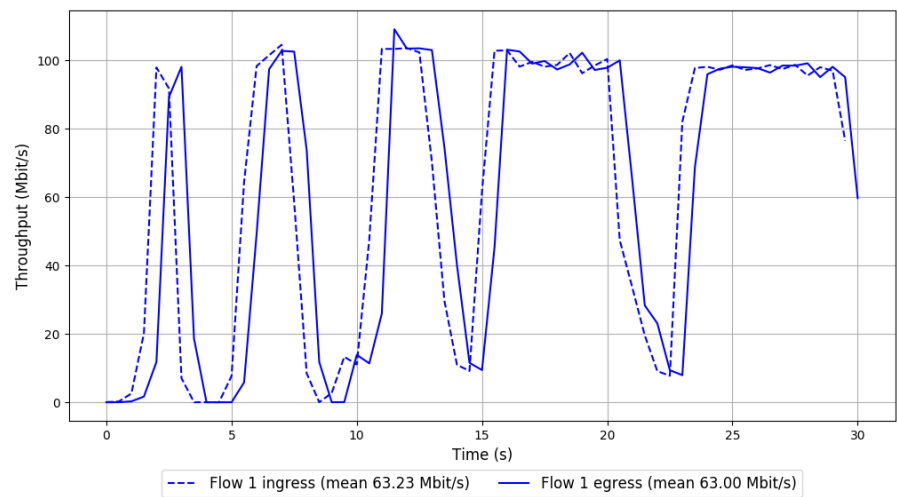Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-11-29 20:54:41
End at: 2018-11-29 20:55:11
Local clock offset: 12.917 ms
Remote clock offset: 15.289 ms


# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 63.00 Mbit/s
95th percentile per-packet one-way delay: 86.153 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 63.00 Mbit/s
95th percentile per-packet one-way delay: 86.153 ms
Loss rate: 0.93%
```

Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 63.23 Mbit/s)   Flow 1 egress (mean 63.00 Mbit/s)

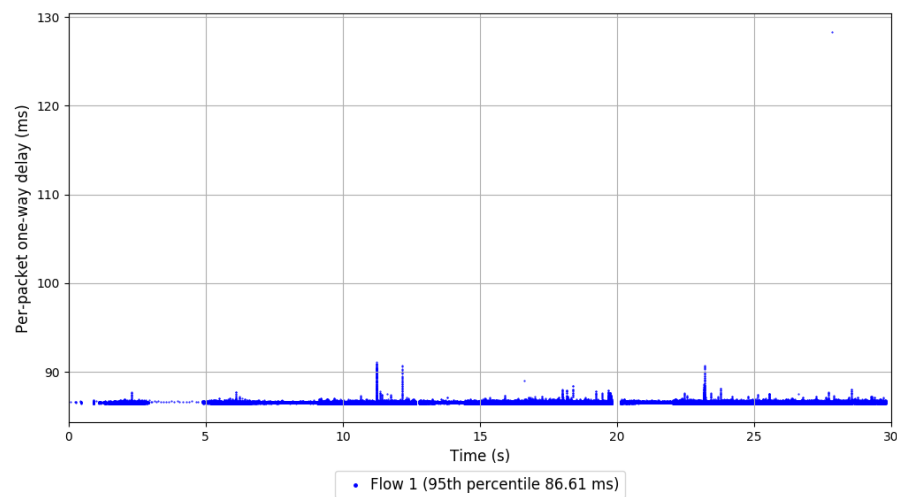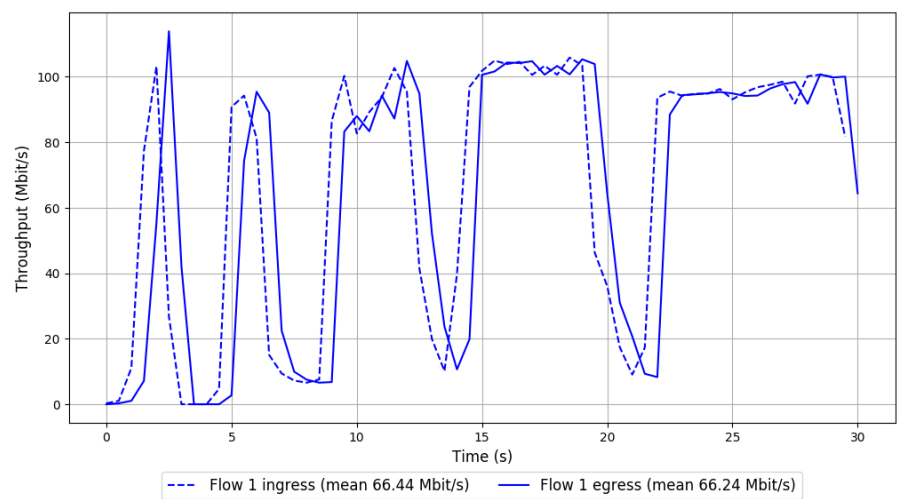

Flow 1 (95th percentile 86.15 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-11-29 21:21:17
End at: 2018-11-29 21:21:47
Local clock offset: 24.459 ms
Remote clock offset: 27.904 ms


# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 66.24 Mbit/s
95th percentile per-packet one-way delay: 86.605 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 66.24 Mbit/s
95th percentile per-packet one-way delay: 86.605 ms
Loss rate: 0.87%
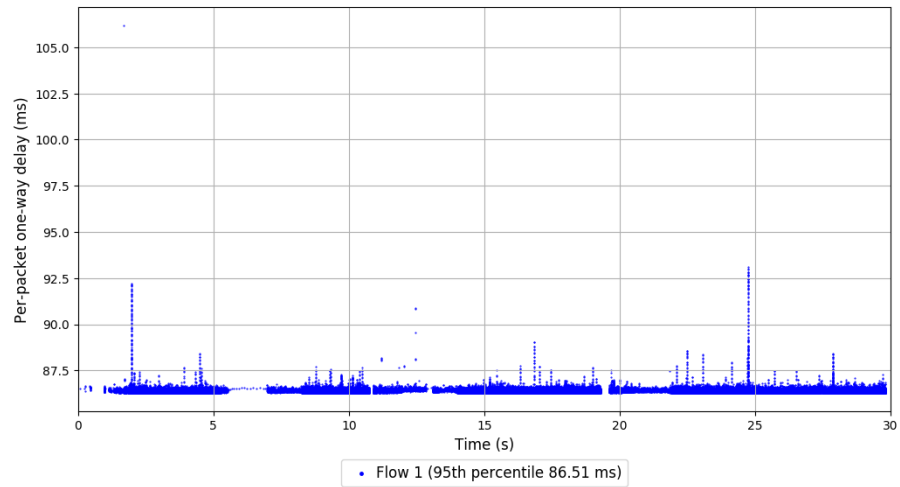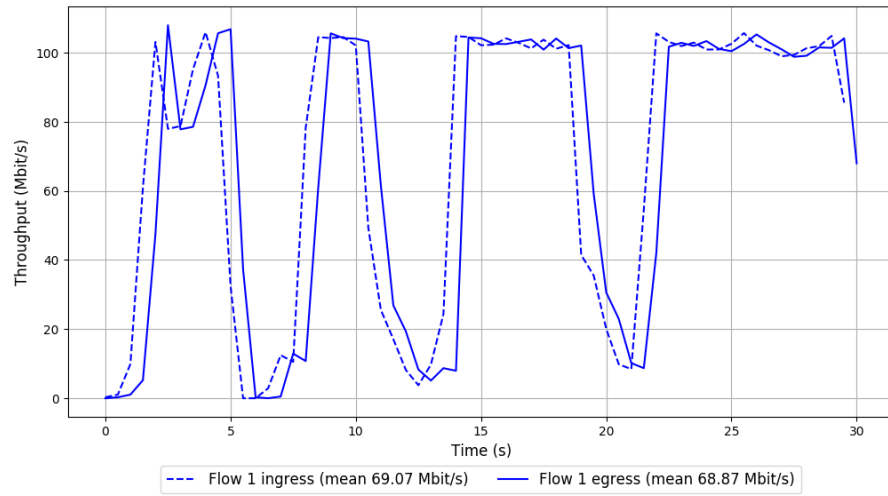```

Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-11-29 21:47:51
End at: 2018-11-29 21:48:21
Local clock offset: 10.483 ms
Remote clock offset: 11.992 ms

Below is generated by plot.py at 2018-11-29 23:53:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 68.87 Mbit/s
95th percentile per-packet one-way delay: 86.509 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 68.87 Mbit/s
95th percentile per-packet one-way delay: 86.509 ms
Loss rate: 0.87%
```
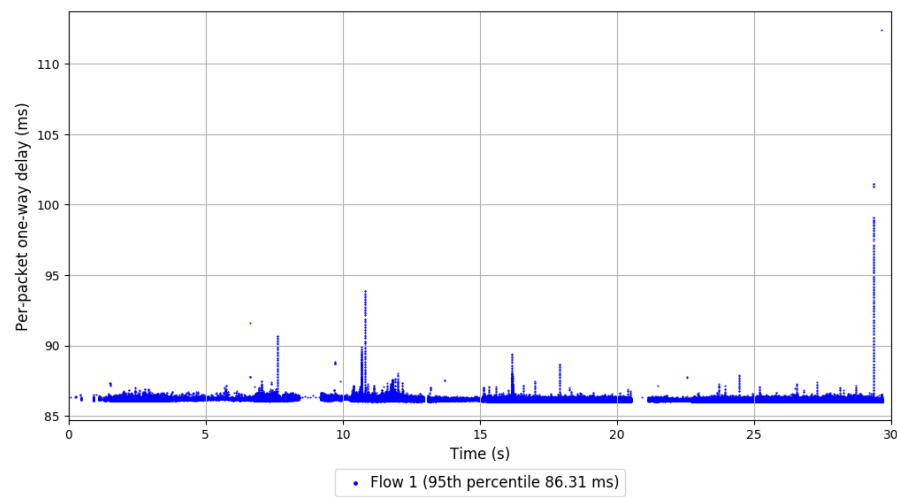
# Run 4: Report of QUIC Cubic — Data Link



Flow 1 ingress (mean 69.07 Mbit/s)     Flow 1 egress (mean 68.87 Mbit/s)



Flow 1 (95th percentile 86.51 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-11-29 22:14:49
End at: 2018-11-29 22:15:19
Local clock offset: 4.589 ms
Remote clock offset: 3.615 ms

Below is generated by plot.py at 2018-11-29 23:53:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 65.14 Mbit/s
95th percentile per-packet one-way delay: 86.311 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 65.14 Mbit/s
95th percentile per-packet one-way delay: 86.311 ms
Loss rate: 0.84%
```
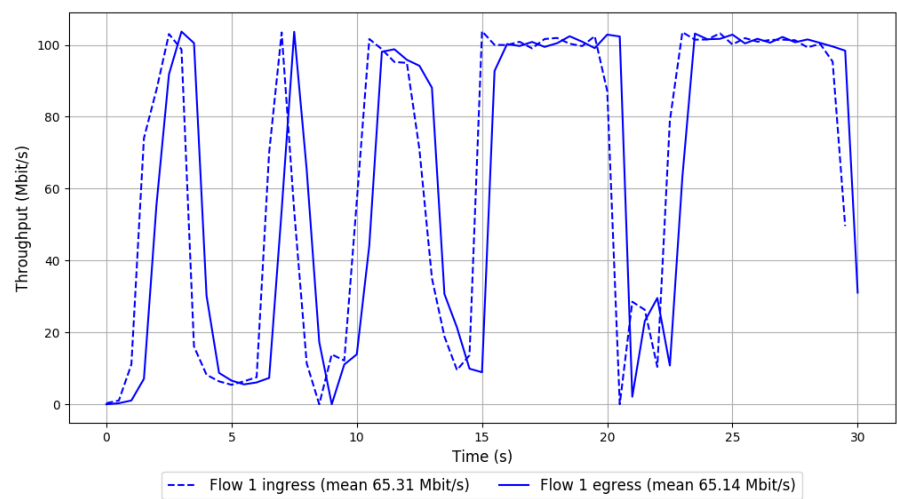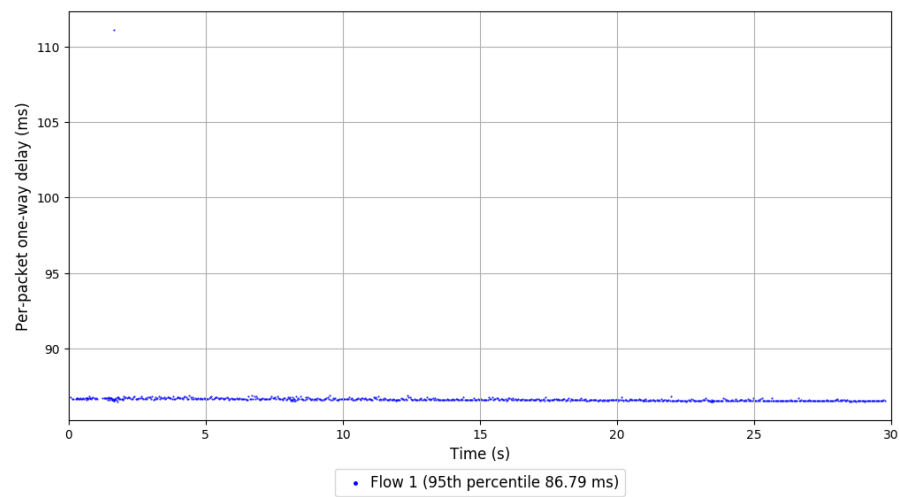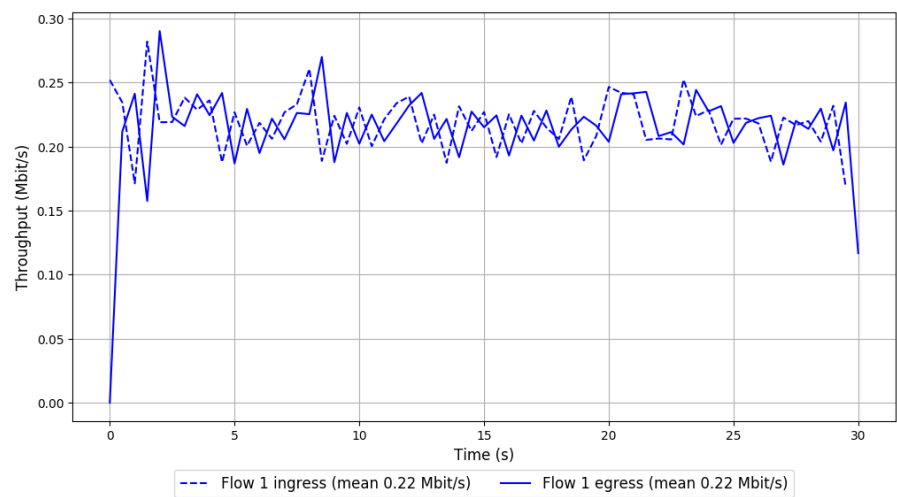
Run 5: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2018-11-29 20:32:42
End at: 2018-11-29 20:33:12
Local clock offset: 10.749 ms
Remote clock offset: 12.907 ms


# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.789 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.789 ms
Loss rate: 0.64%
```

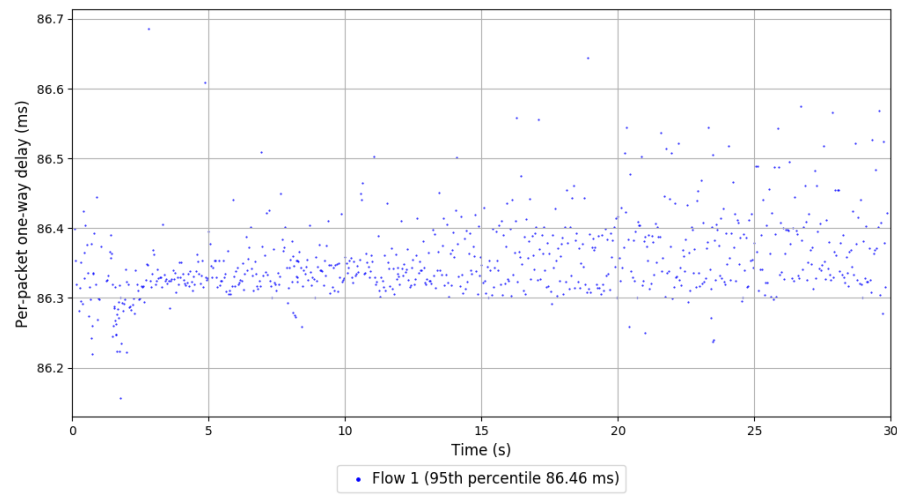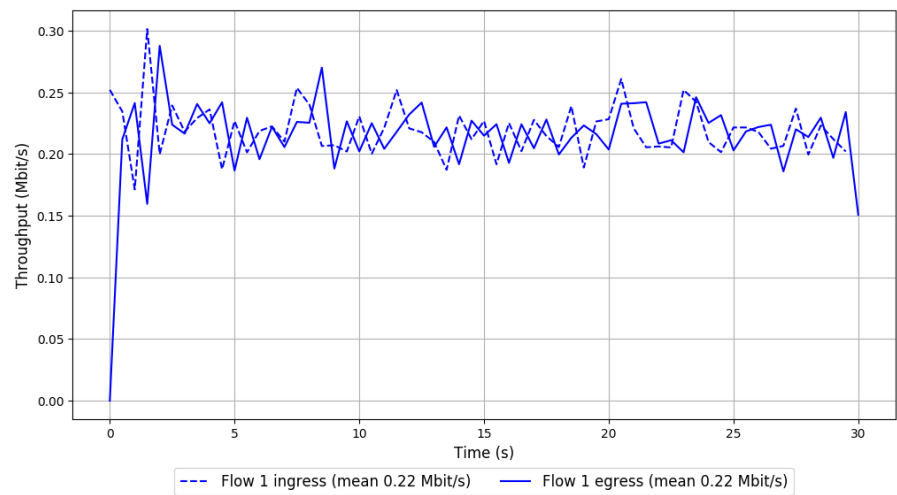# Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-11-29 20:59:16
End at: 2018-11-29 20:59:46
Local clock offset: 12.746 ms
Remote clock offset: 14.782 ms


# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.461 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.461 ms
Loss rate: 0.64%
```
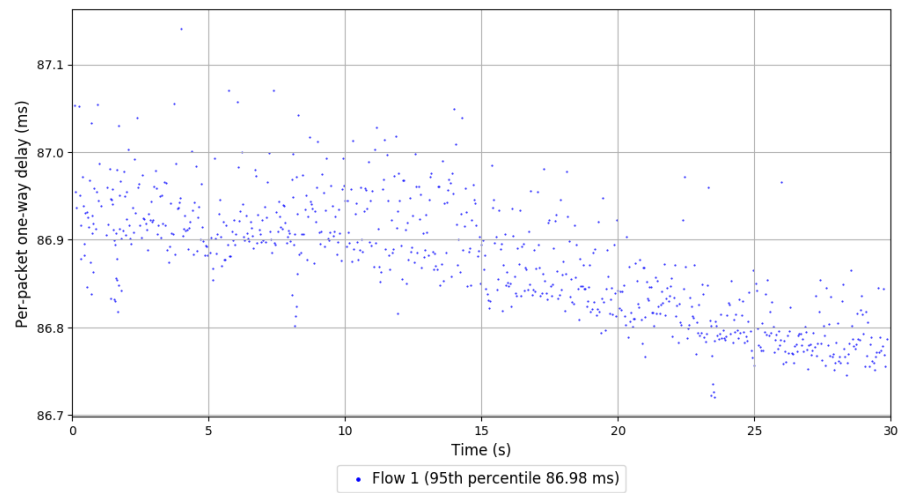
Run 2: Report of SCReAM — Data Link

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

• Flow 1 (95th percentile 86.46 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-11-29 21:25:47
End at: 2018-11-29 21:26:17
Local clock offset: 20.565 ms
Remote clock offset: 23.85 ms

# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.984 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.984 ms
Loss rate: 0.51%
```
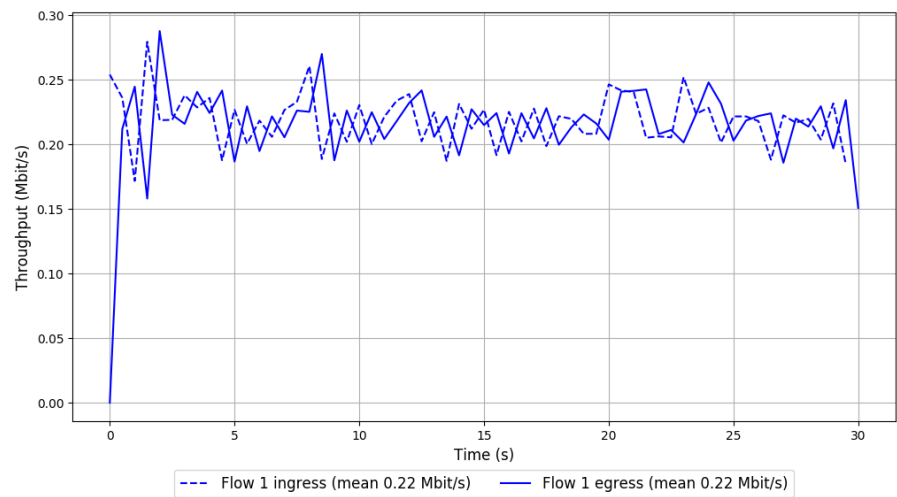
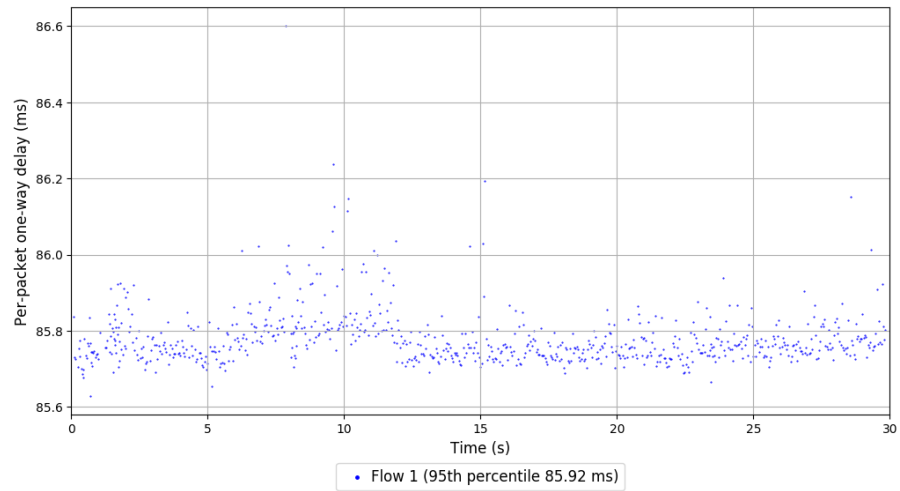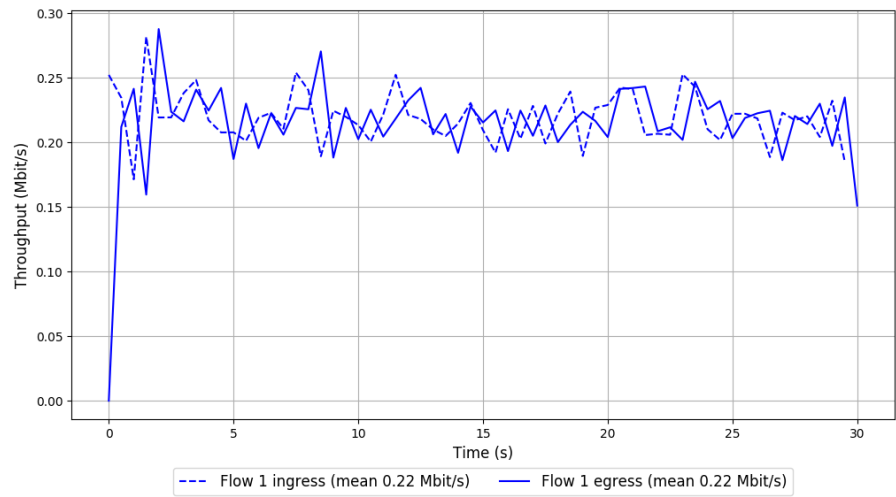Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-11-29 21:52:24
End at: 2018-11-29 21:52:54
Local clock offset: 11.305 ms
Remote clock offset: 13.303 ms

# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.920 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.920 ms
Loss rate: 0.51%
```
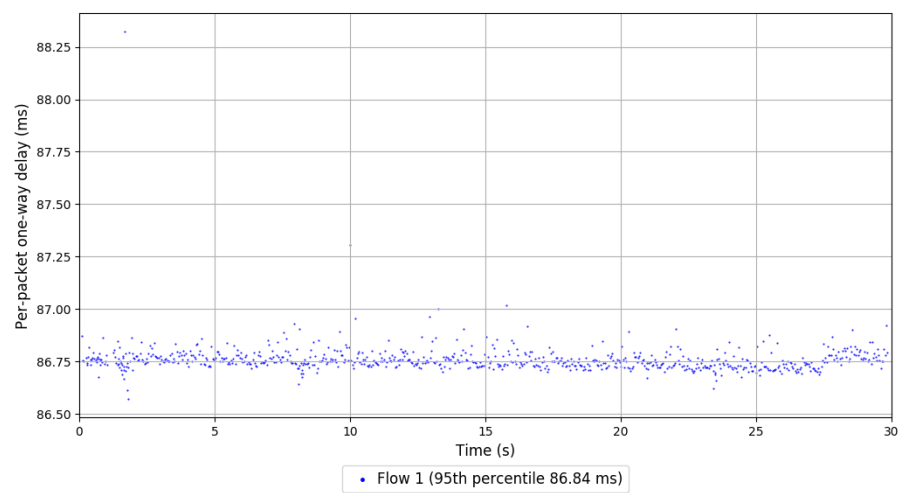
Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-11-29 22:19:16
End at: 2018-11-29 22:19:46
Local clock offset: 5.175 ms
Remote clock offset: 3.223 ms


# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.842 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.842 ms
Loss rate: 0.64%
```
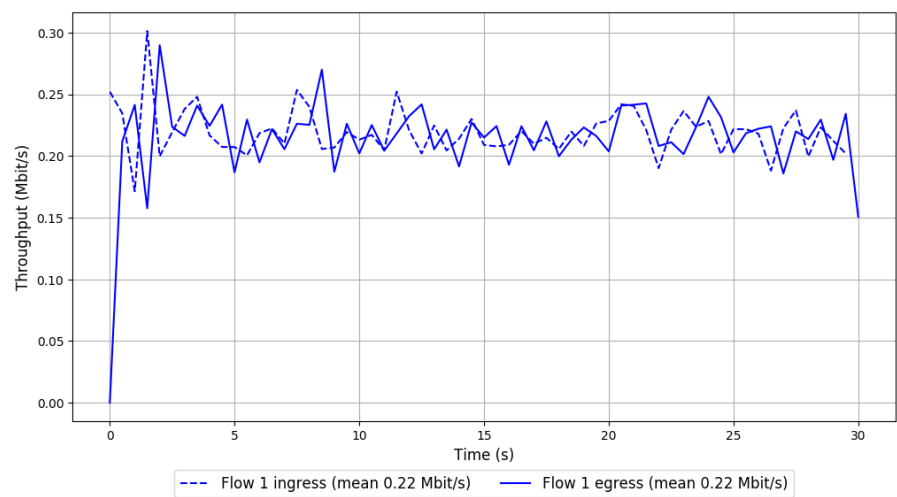
Run 5: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 86.84 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-11-29 20:15:48
End at: 2018-11-29 20:16:18
Local clock offset: 3.215 ms
Remote clock offset: 4.721 ms
```
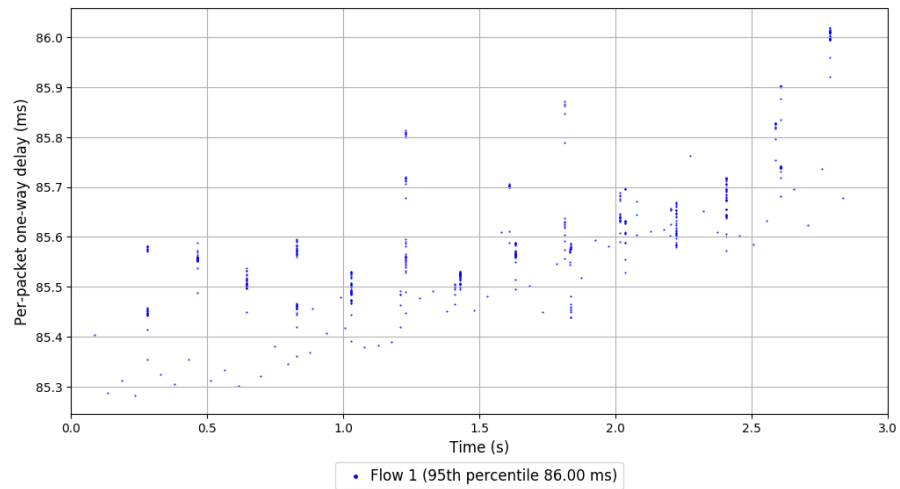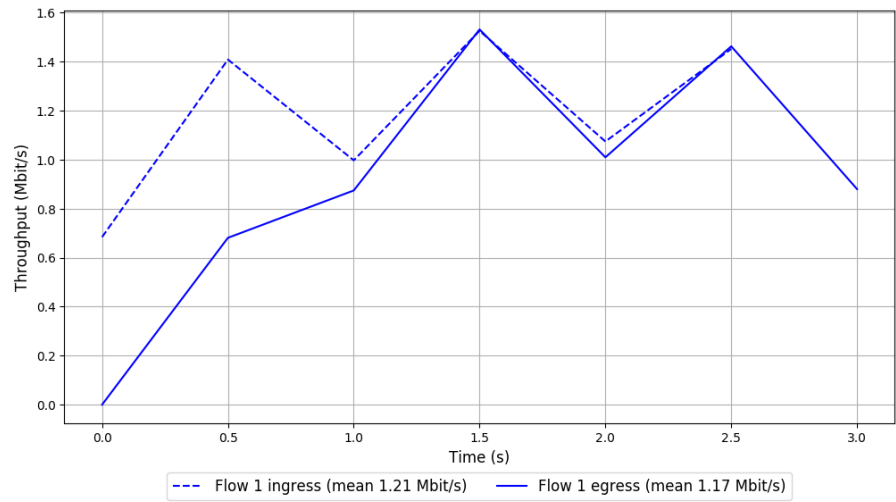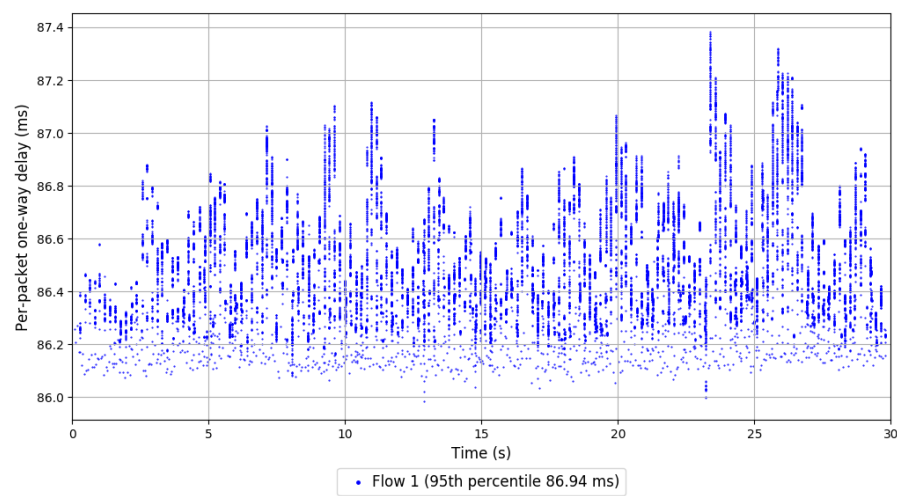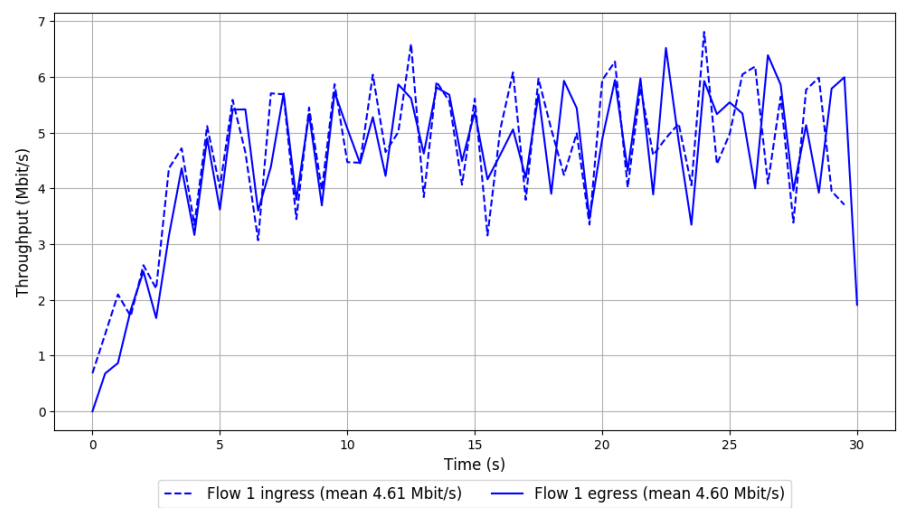
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-11-29 20:42:08
End at: 2018-11-29 20:42:38
Local clock offset: 10.805 ms
Remote clock offset: 12.737 ms


# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.60 Mbit/s
95th percentile per-packet one-way delay: 86.944 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 4.60 Mbit/s
95th percentile per-packet one-way delay: 86.944 ms
Loss rate: 0.65%
```

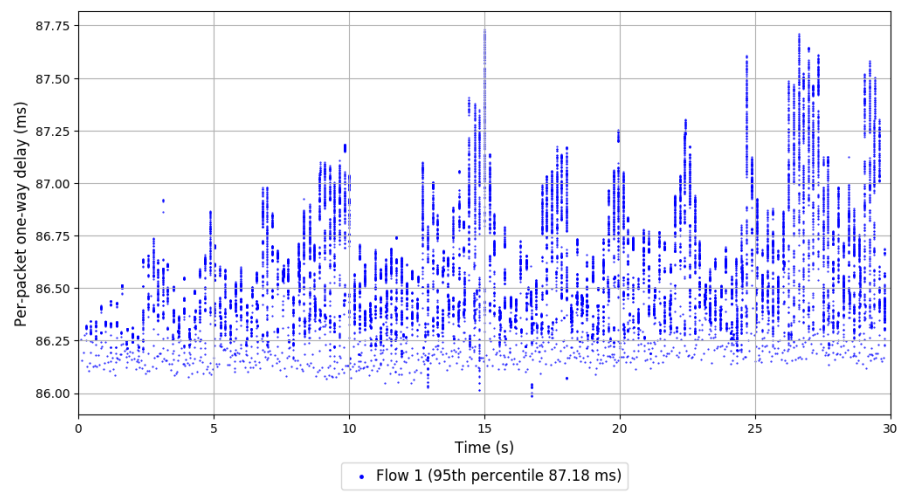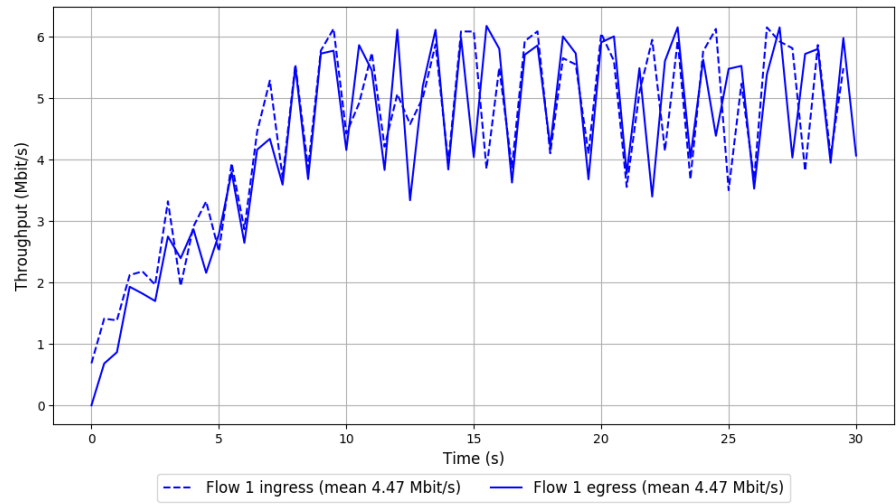## Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-11-29 21:09:00
End at: 2018-11-29 21:09:30
Local clock offset: 16.336 ms
Remote clock offset: 18.962 ms


# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.47 Mbit/s
95th percentile per-packet one-way delay: 87.182 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 4.47 Mbit/s
95th percentile per-packet one-way delay: 87.182 ms
Loss rate: 0.53%
```

Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-11-29 21:35:29
End at: 2018-11-29 21:35:59
Local clock offset: 10.655 ms
Remote clock offset: 12.35 ms

# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.02 Mbit/s
95th percentile per-packet one-way delay: 87.558 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 4.02 Mbit/s
95th percentile per-packet one-way delay: 87.558 ms
Loss rate: 0.82%
```
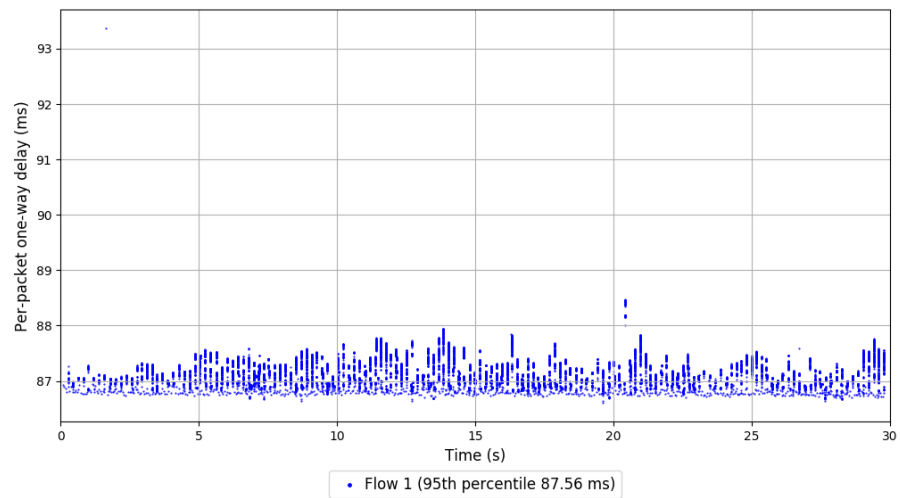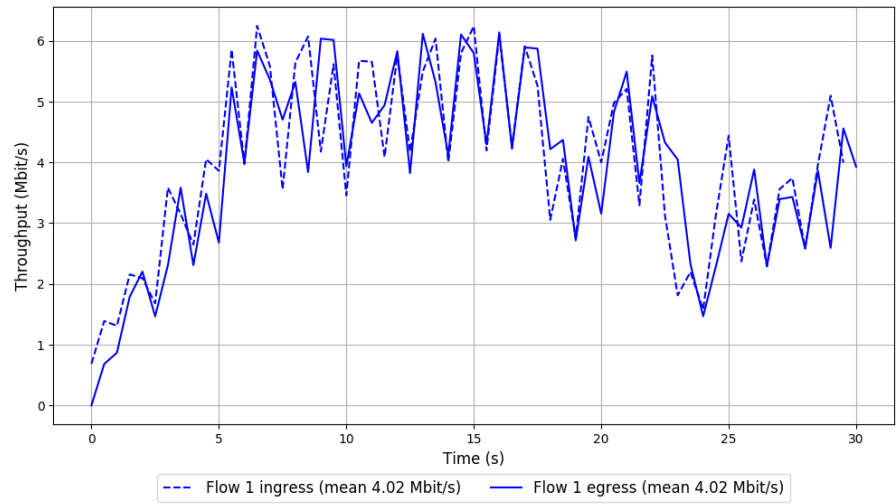
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-11-29 22:02:09
End at: 2018-11-29 22:02:39
Local clock offset: 8.628 ms
Remote clock offset: 9.314 ms


# Below is generated by plot.py at 2018-11-29 23:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.19 Mbit/s
95th percentile per-packet one-way delay: 87.906 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 4.19 Mbit/s
95th percentile per-packet one-way delay: 87.906 ms
Loss rate: 0.75%
```
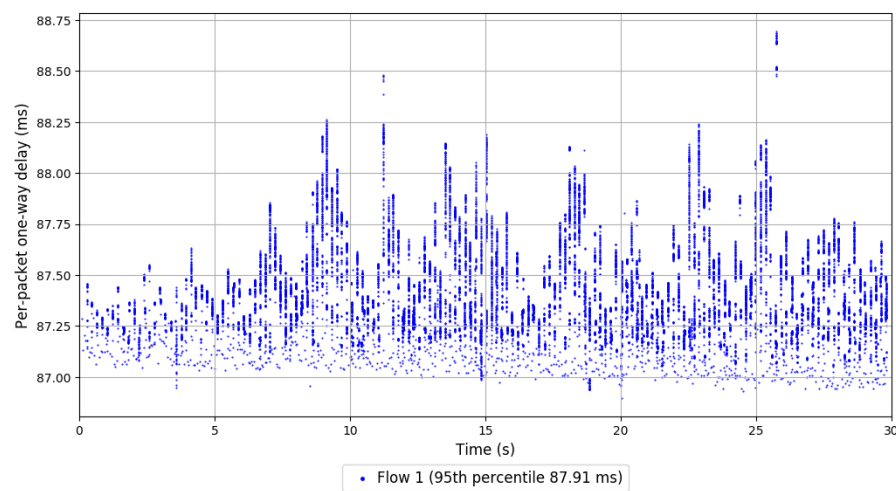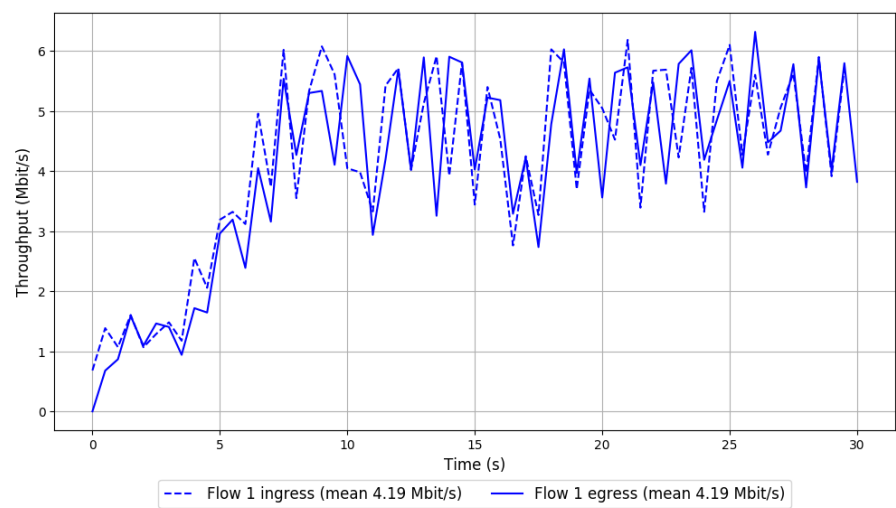
Run 5: Report of Sprout — Data Link

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

Start at: 2018-11-29 20:21:54
End at: 2018-11-29 20:22:24
Local clock offset: 4.914 ms
Remote clock offset: 5.433 ms


# Below is generated by plot.py at 2018-11-29 23:54:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 215.63 Mbit/s
95th percentile per-packet one-way delay: 86.279 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 215.63 Mbit/s
95th percentile per-packet one-way delay: 86.279 ms
Loss rate: 0.59%
```
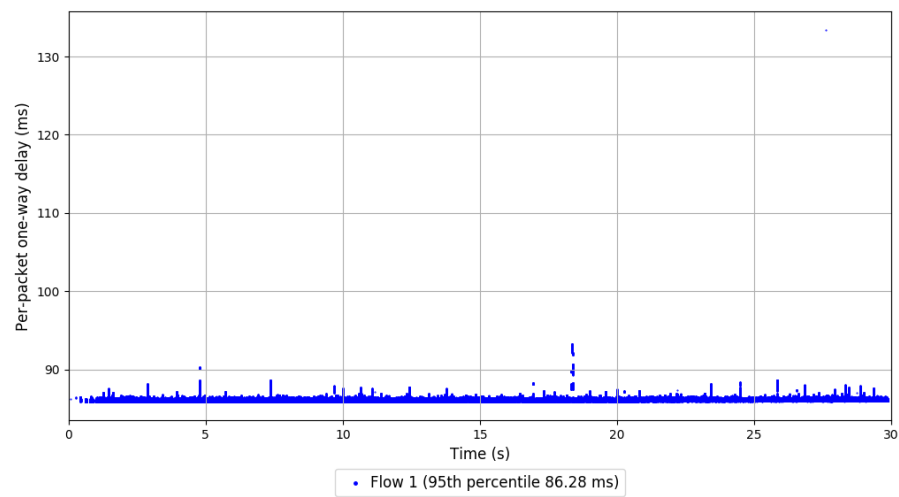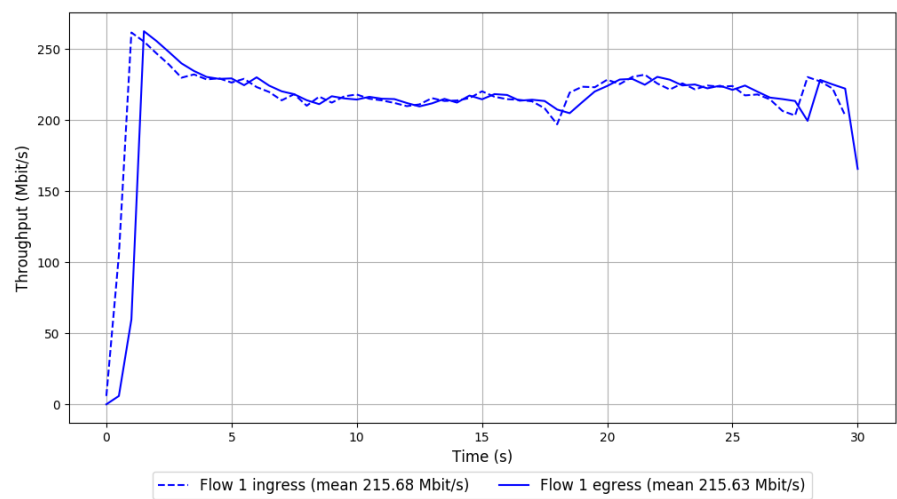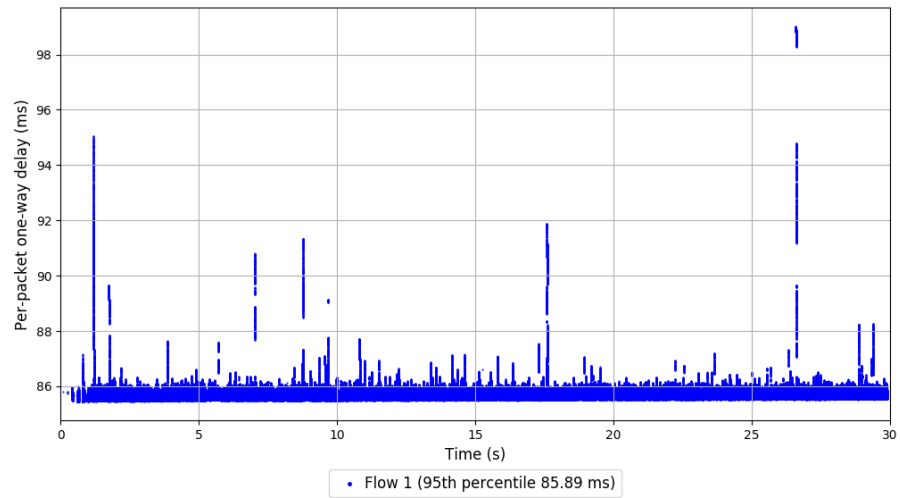
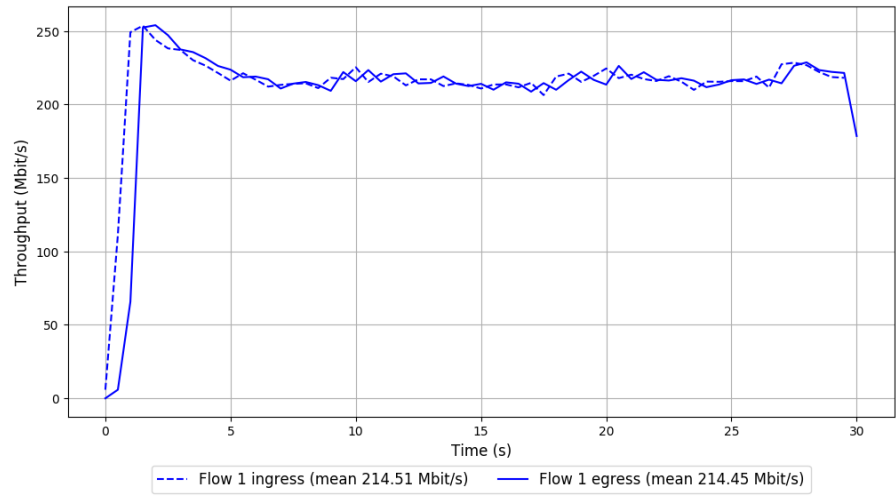# Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2018-11-29 20:48:20
End at: 2018-11-29 20:48:50
Local clock offset: 16.261 ms
Remote clock offset: 18.952 ms

# Below is generated by plot.py at 2018-11-29 23:54:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 214.45 Mbit/s
95th percentile per-packet one-way delay: 85.885 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 214.45 Mbit/s
95th percentile per-packet one-way delay: 85.885 ms
Loss rate: 0.60%
```

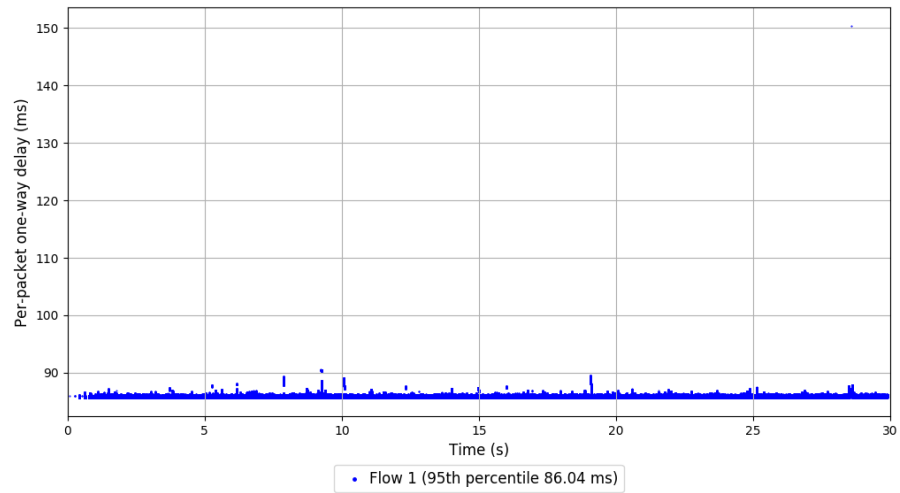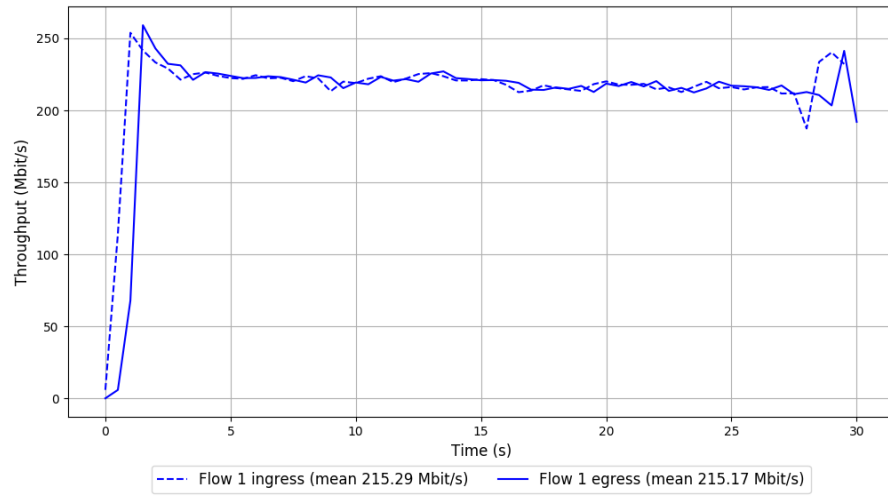Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2018-11-29 21:15:06
End at: 2018-11-29 21:15:36
Local clock offset: 19.755 ms
Remote clock offset: 23.221 ms


# Below is generated by plot.py at 2018-11-29 23:56:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 215.17 Mbit/s
95th percentile per-packet one-way delay: 86.036 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 215.17 Mbit/s
95th percentile per-packet one-way delay: 86.036 ms
Loss rate: 0.63%
```

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

Flow 1 ingress (mean 215.29 Mbit/s)   Flow 1 egress (mean 215.17 Mbit/s)

Flow 1 (95th percentile 86.04 ms)

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

Start at: 2018-11-29 21:41:33
End at: 2018-11-29 21:42:03
Local clock offset: 9.853 ms
Remote clock offset: 11.19 ms


# Below is generated by plot.py at 2018-11-29 23:56:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 213.51 Mbit/s
95th percentile per-packet one-way delay: 87.116 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 213.51 Mbit/s
95th percentile per-packet one-way delay: 87.116 ms
Loss rate: 0.61%
```
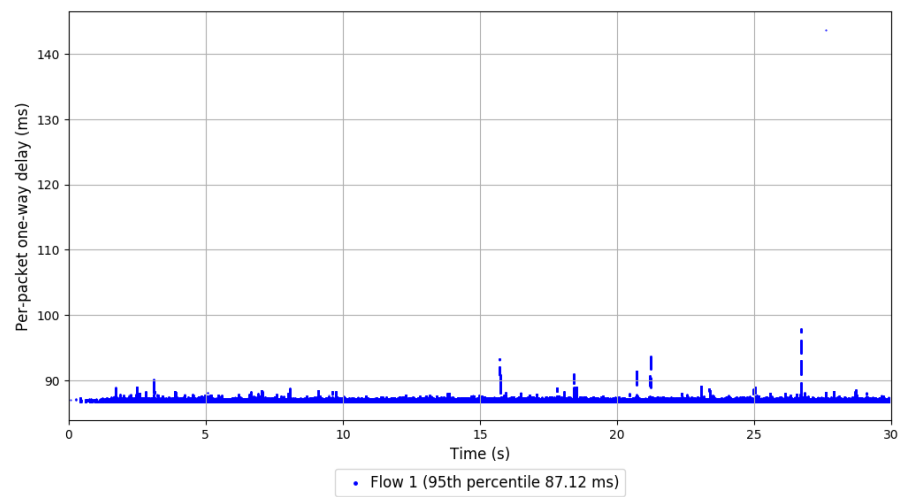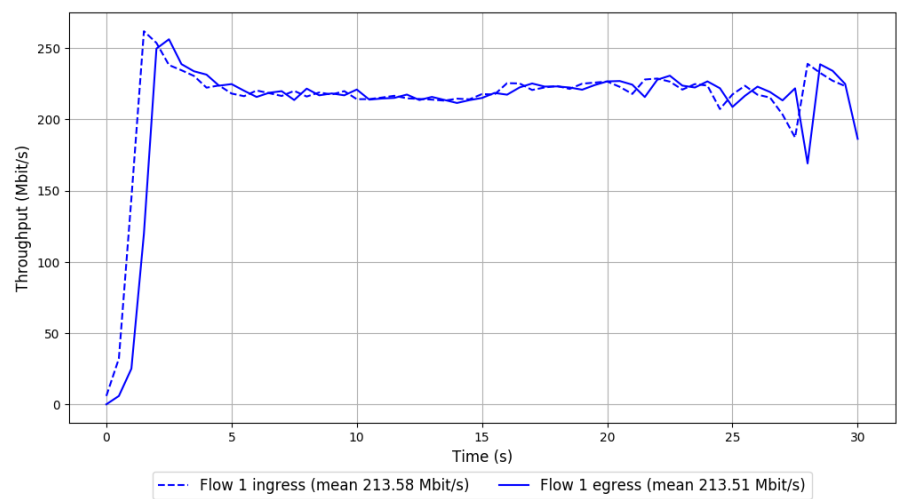
Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 213.58 Mbit/s)   Flow 1 egress (mean 213.51 Mbit/s)

Flow 1 (95th percentile 87.12 ms)

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

Start at: 2018-11-29 22:08:22
End at: 2018-11-29 22:08:52
Local clock offset: 5.175 ms
Remote clock offset: 5.247 ms


# Below is generated by plot.py at 2018-11-29 23:57:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 212.87 Mbit/s
95th percentile per-packet one-way delay: 86.563 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 212.87 Mbit/s
95th percentile per-packet one-way delay: 86.563 ms
Loss rate: 0.59%
```
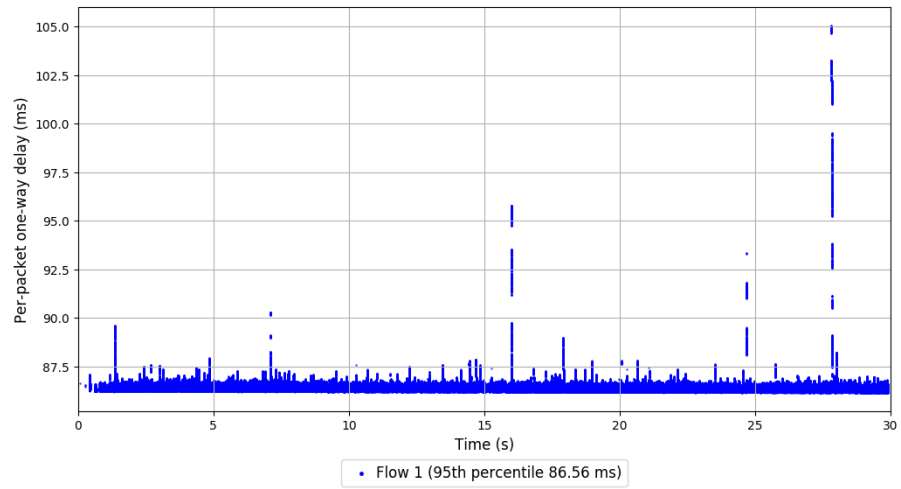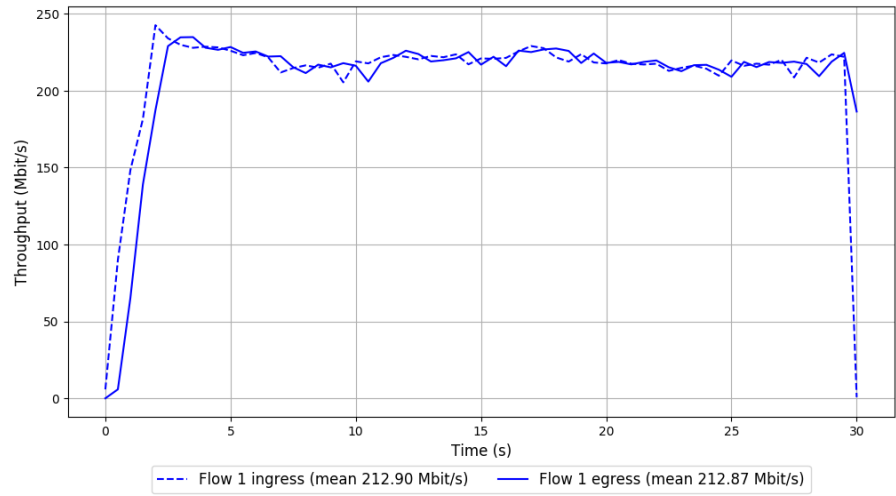
Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-11-29 20:20:21
End at: 2018-11-29 20:20:51
Local clock offset: 4.026 ms
Remote clock offset: 4.41 ms


# Below is generated by plot.py at 2018-11-29 23:59:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 497.03 Mbit/s
95th percentile per-packet one-way delay: 89.044 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 497.03 Mbit/s
95th percentile per-packet one-way delay: 89.044 ms
Loss rate: 0.62%
```
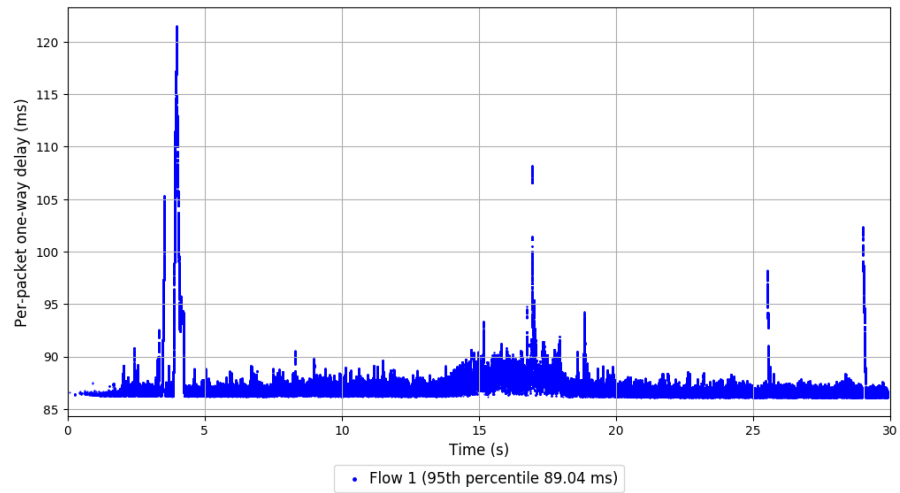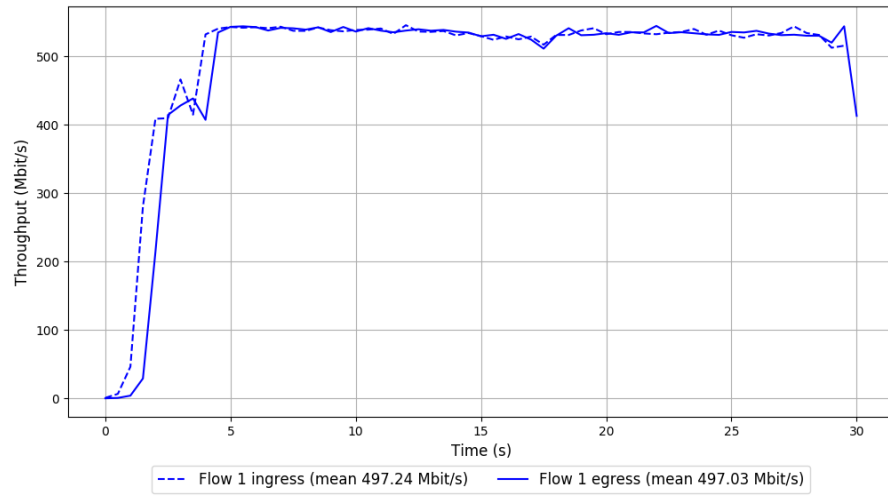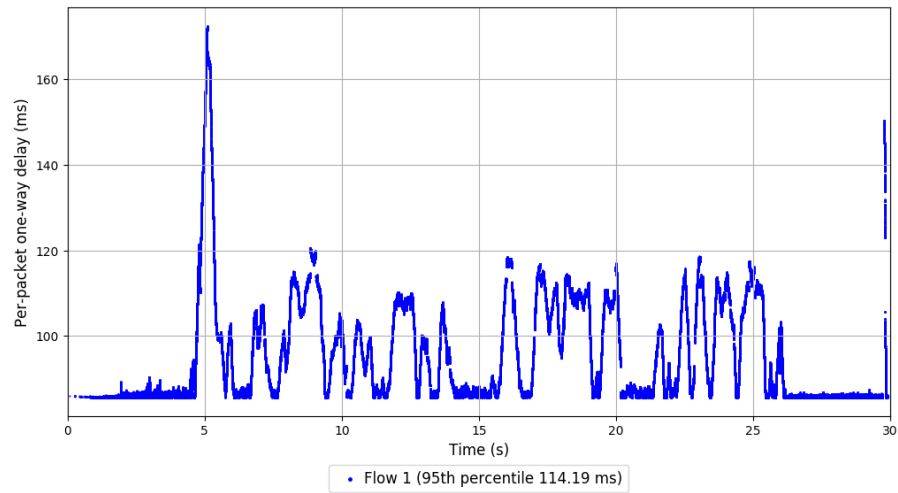
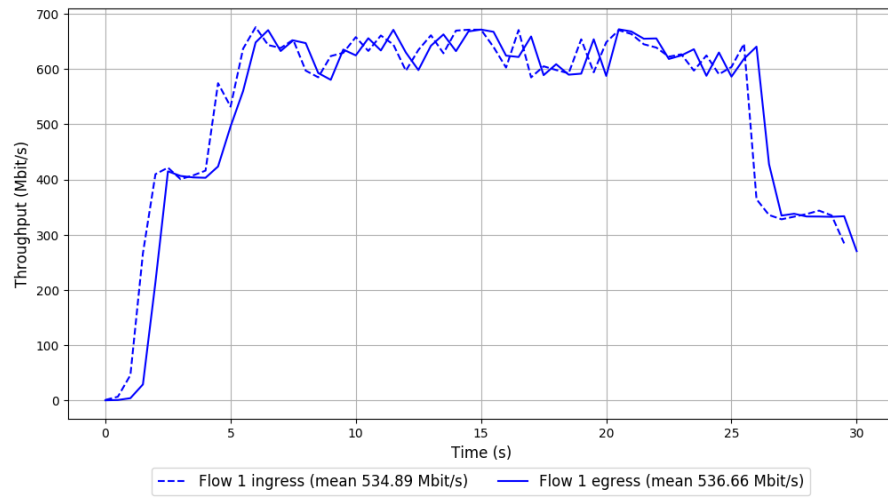Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-11-29 20:46:44
End at: 2018-11-29 20:47:14
Local clock offset: 14.399 ms
Remote clock offset: 17.165 ms


# Below is generated by plot.py at 2018-11-30 00:05:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 536.66 Mbit/s
95th percentile per-packet one-way delay: 114.189 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 536.66 Mbit/s
95th percentile per-packet one-way delay: 114.189 ms
Loss rate: 0.25%
```
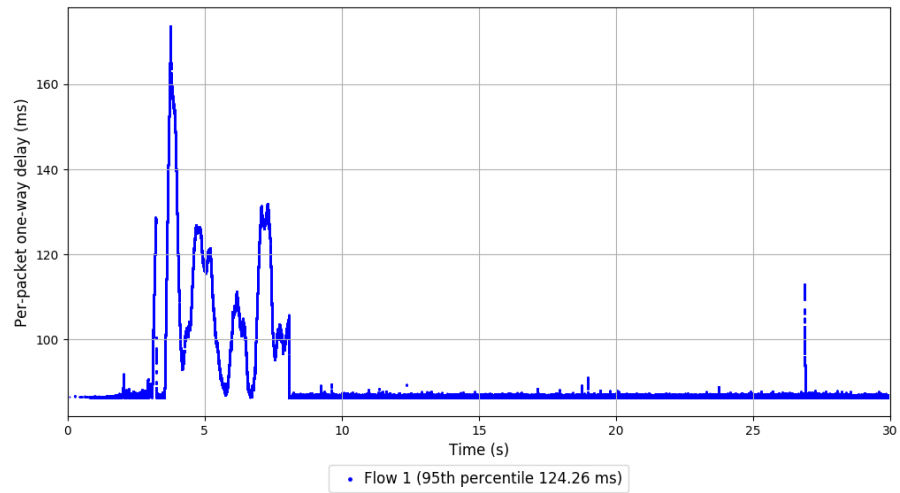
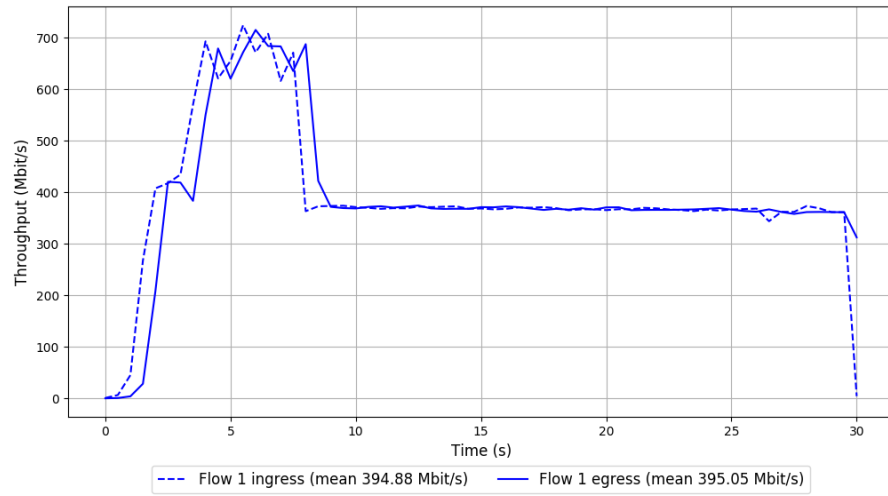Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-11-29 21:13:37
End at: 2018-11-29 21:14:07
Local clock offset: 19.138 ms
Remote clock offset: 22.077 ms


# Below is generated by plot.py at 2018-11-30 00:05:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 395.05 Mbit/s
95th percentile per-packet one-way delay: 124.258 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 395.05 Mbit/s
95th percentile per-packet one-way delay: 124.258 ms
Loss rate: 0.53%
```

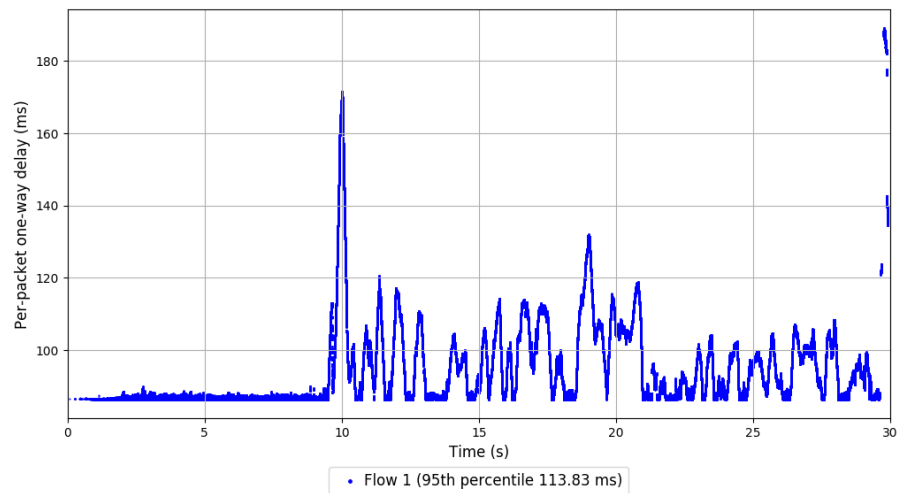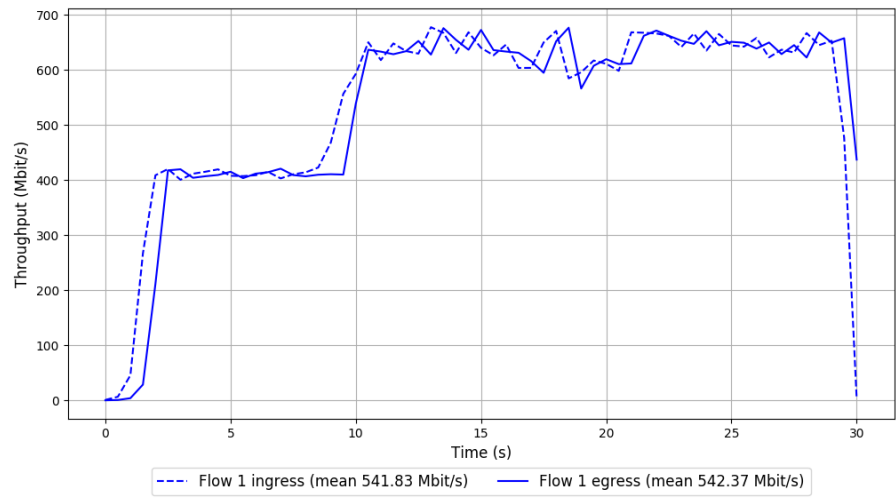# Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-11-29 21:39:56
End at: 2018-11-29 21:40:26
Local clock offset: 9.84 ms
Remote clock offset: 11.236 ms


# Below is generated by plot.py at 2018-11-30 00:05:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 542.37 Mbit/s
95th percentile per-packet one-way delay: 113.827 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 542.37 Mbit/s
95th percentile per-packet one-way delay: 113.827 ms
Loss rate: 0.48%
```

Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2018-11-29 22:06:45
End at: 2018-11-29 22:07:15
Local clock offset: 5.974 ms
Remote clock offset: 6.055 ms


# Below is generated by plot.py at 2018-11-30 00:05:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 549.46 Mbit/s
95th percentile per-packet one-way delay: 104.370 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 549.46 Mbit/s
95th percentile per-packet one-way delay: 104.370 ms
Loss rate: 0.35%
```
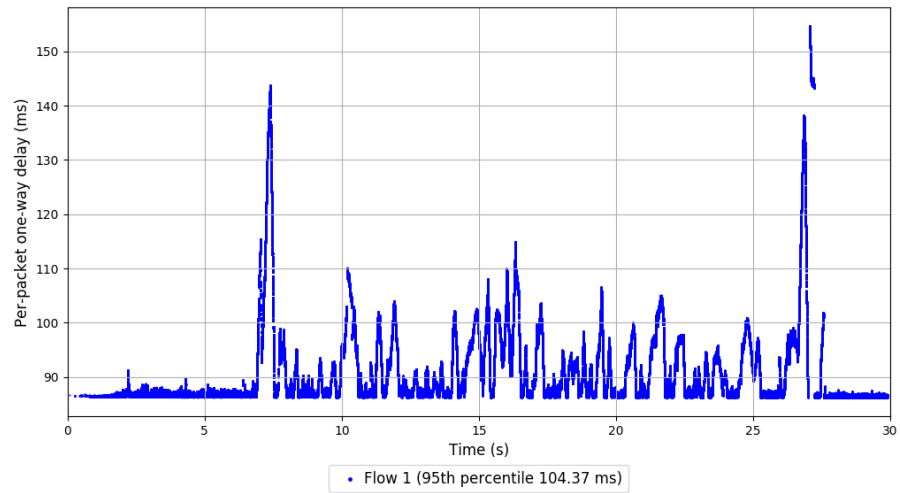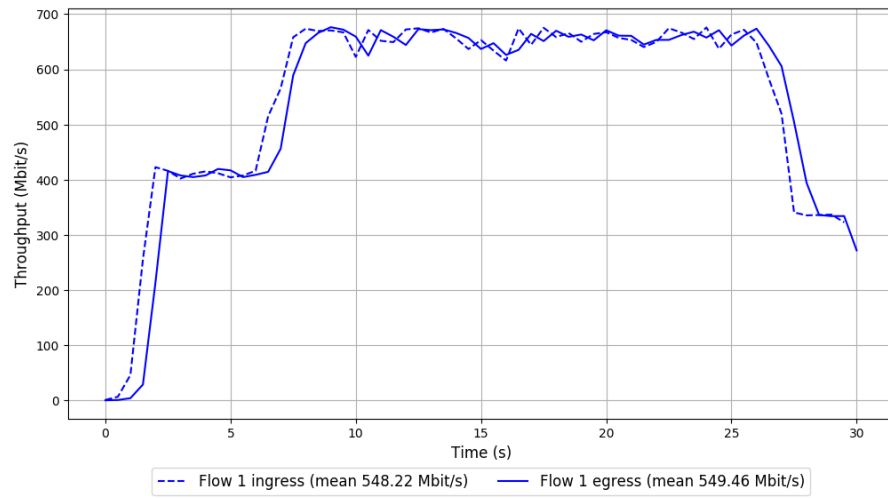
Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-11-29 20:25:06
End at: 2018-11-29 20:25:36
Local clock offset: 6.326 ms
Remote clock offset: 6.854 ms


# Below is generated by plot.py at 2018-11-30 00:05:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 143.48 Mbit/s
95th percentile per-packet one-way delay: 183.758 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 143.48 Mbit/s
95th percentile per-packet one-way delay: 183.758 ms
Loss rate: 0.42%
```
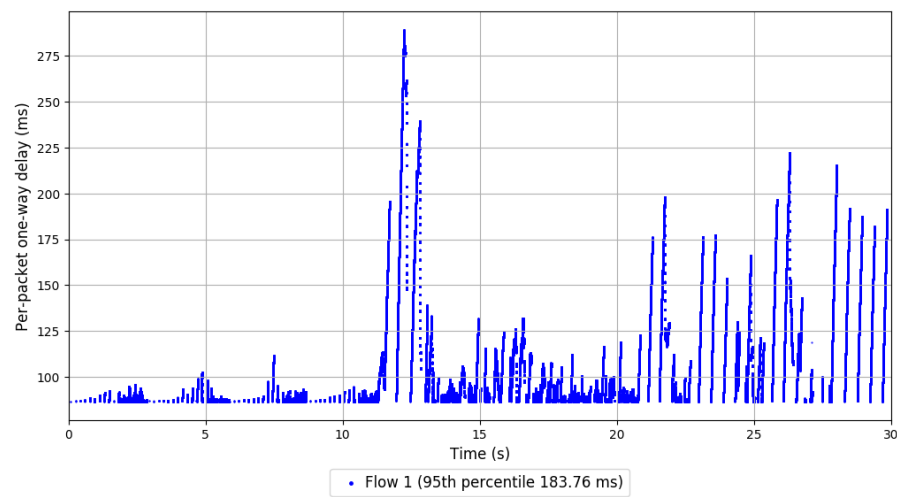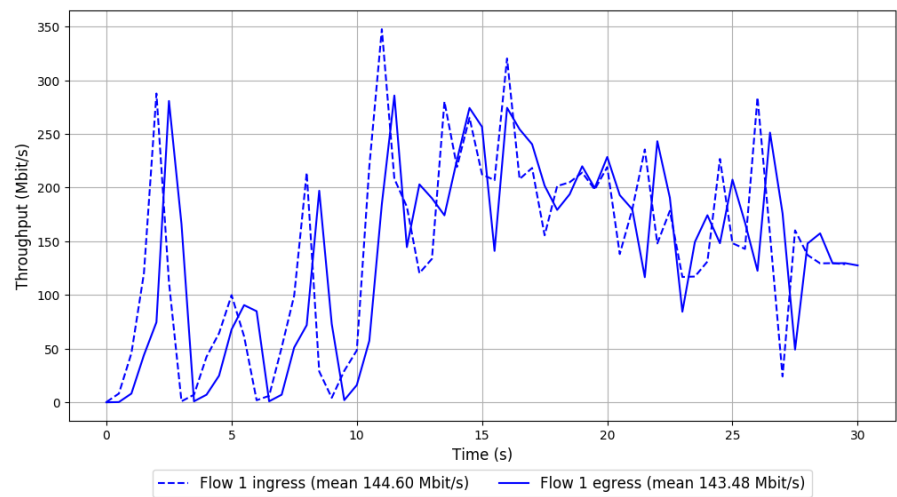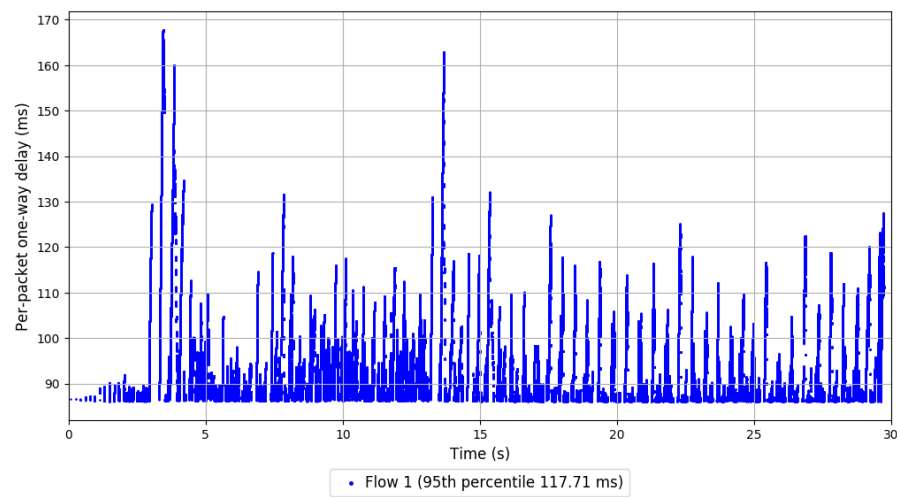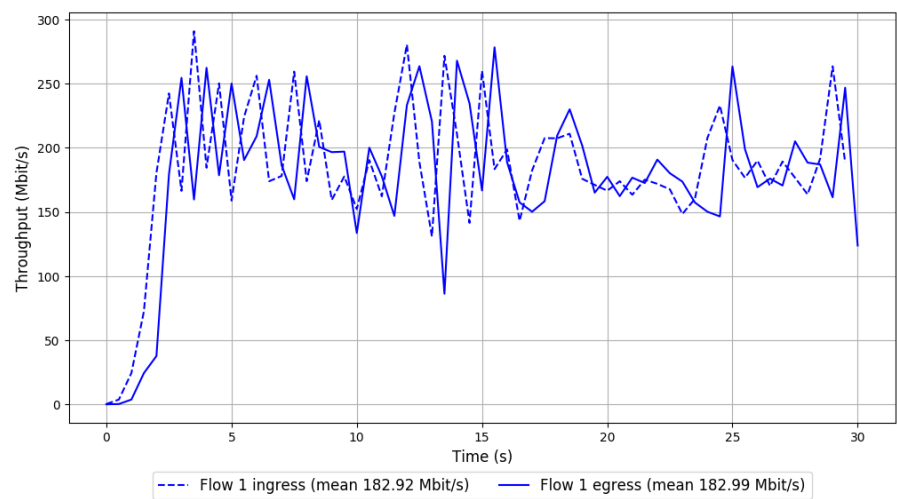
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-11-29 20:51:32
End at: 2018-11-29 20:52:02
Local clock offset: 14.718 ms
Remote clock offset: 17.394 ms


# Below is generated by plot.py at 2018-11-30 00:05:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 182.99 Mbit/s
95th percentile per-packet one-way delay: 117.706 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 182.99 Mbit/s
95th percentile per-packet one-way delay: 117.706 ms
Loss rate: 1.05%
```
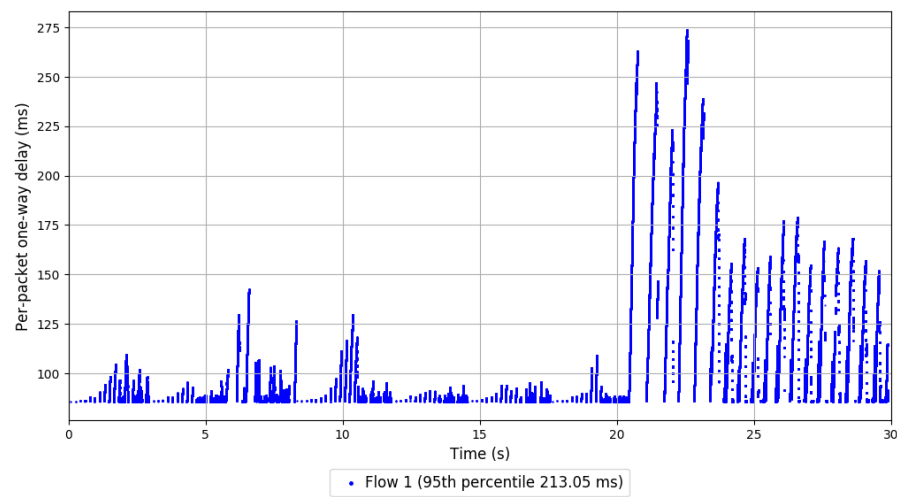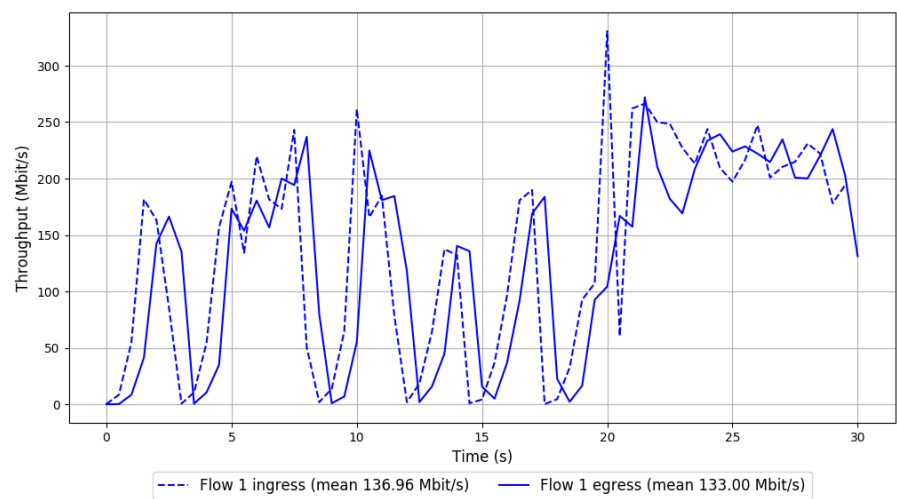
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-11-29 21:18:15
End at: 2018-11-29 21:18:45
Local clock offset: 21.952 ms
Remote clock offset: 25.632 ms


# Below is generated by plot.py at 2018-11-30 00:05:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 133.00 Mbit/s
95th percentile per-packet one-way delay: 213.053 ms
Loss rate: 3.45%
-- Flow 1:
Average throughput: 133.00 Mbit/s
95th percentile per-packet one-way delay: 213.053 ms
Loss rate: 3.45%
```
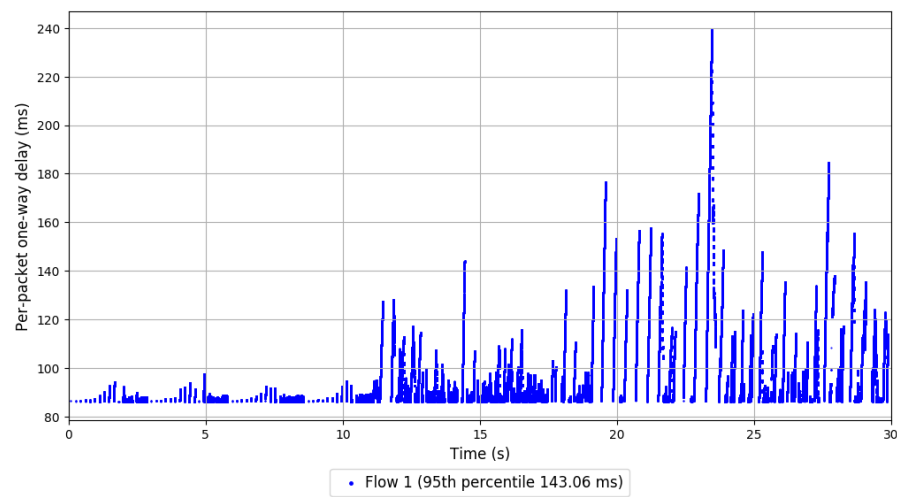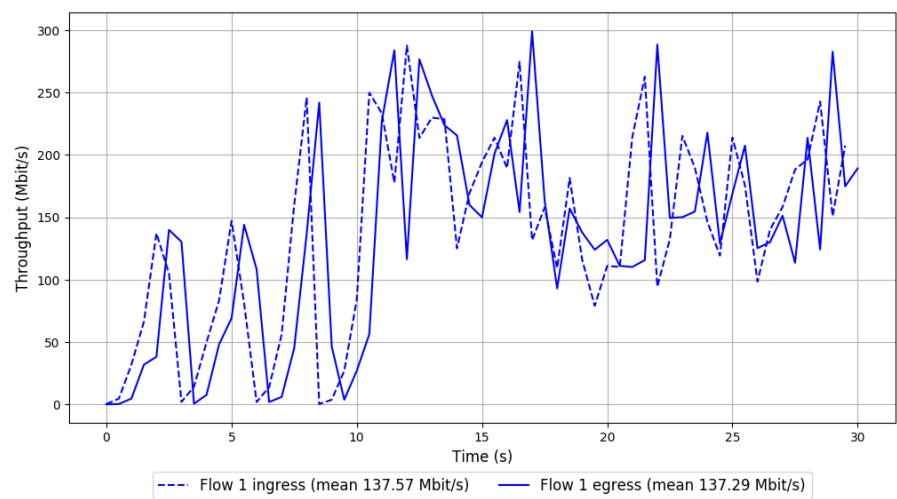
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-11-29 21:44:43
End at: 2018-11-29 21:45:13
Local clock offset: 10.232 ms
Remote clock offset: 11.453 ms


# Below is generated by plot.py at 2018-11-30 00:05:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 137.29 Mbit/s
95th percentile per-packet one-way delay: 143.060 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 137.29 Mbit/s
95th percentile per-packet one-way delay: 143.060 ms
Loss rate: 0.73%
```

Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-11-29 22:11:28
End at: 2018-11-29 22:11:58
Local clock offset: 4.86 ms
Remote clock offset: 4.231 ms

# Below is generated by plot.py at 2018-11-30 00:08:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 164.14 Mbit/s
95th percentile per-packet one-way delay: 245.959 ms
Loss rate: 17.44%
-- Flow 1:
Average throughput: 164.14 Mbit/s
95th percentile per-packet one-way delay: 245.959 ms
Loss rate: 17.44%
```
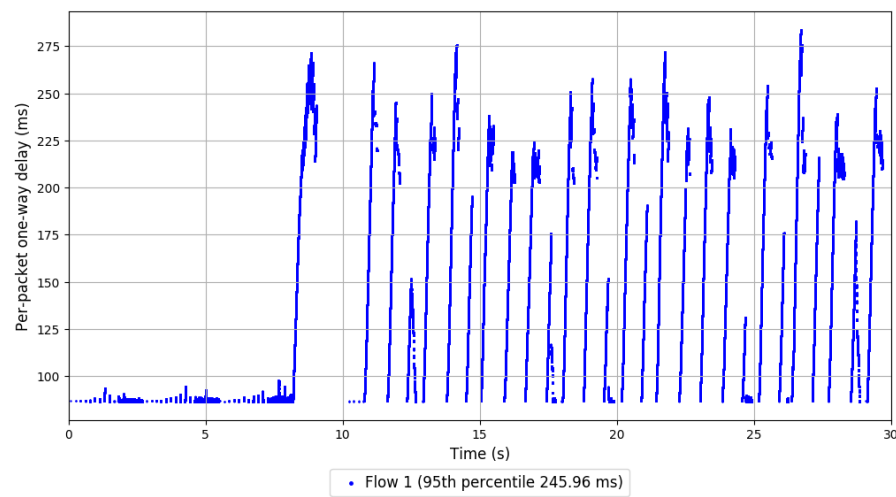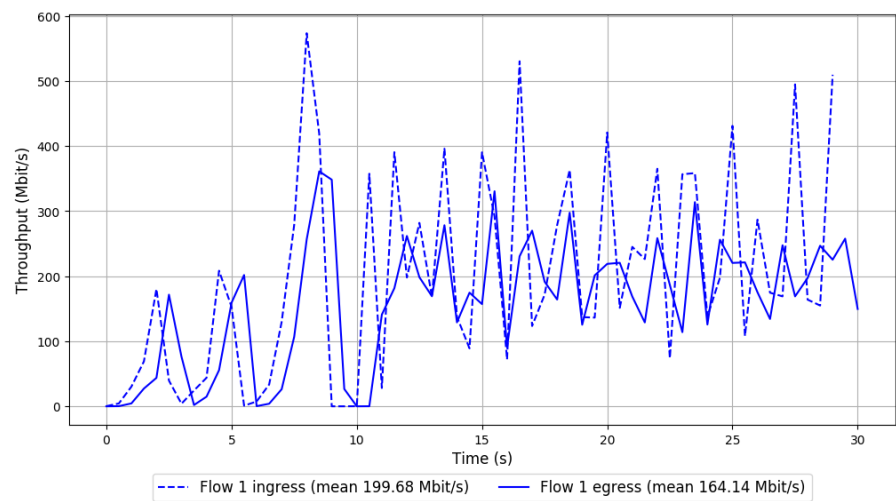
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-11-29 20:16:58
End at: 2018-11-29 20:17:28
Local clock offset: 2.19 ms
Remote clock offset: 2.579 ms


# Below is generated by plot.py at 2018-11-30 00:09:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 375.00 Mbit/s
95th percentile per-packet one-way delay: 88.324 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 375.00 Mbit/s
95th percentile per-packet one-way delay: 88.324 ms
Loss rate: 0.72%
```
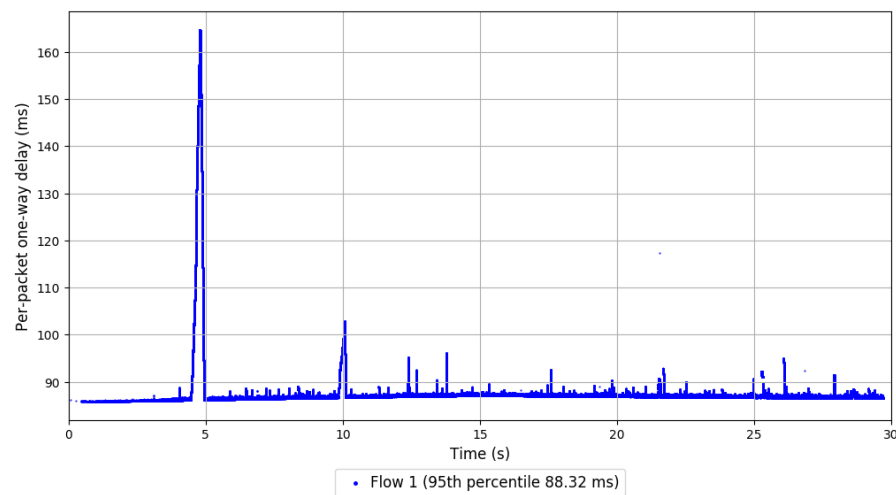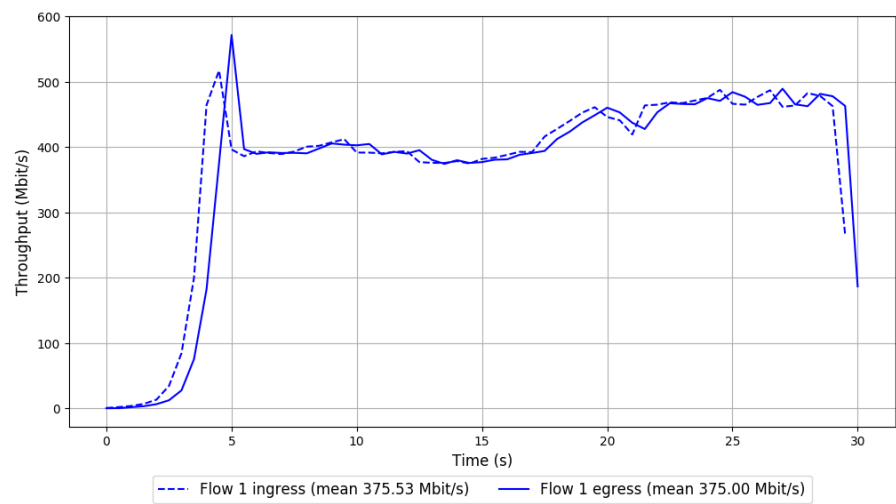
Run 1: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 375.53 Mbit/s)   Flow 1 egress (mean 375.00 Mbit/s)
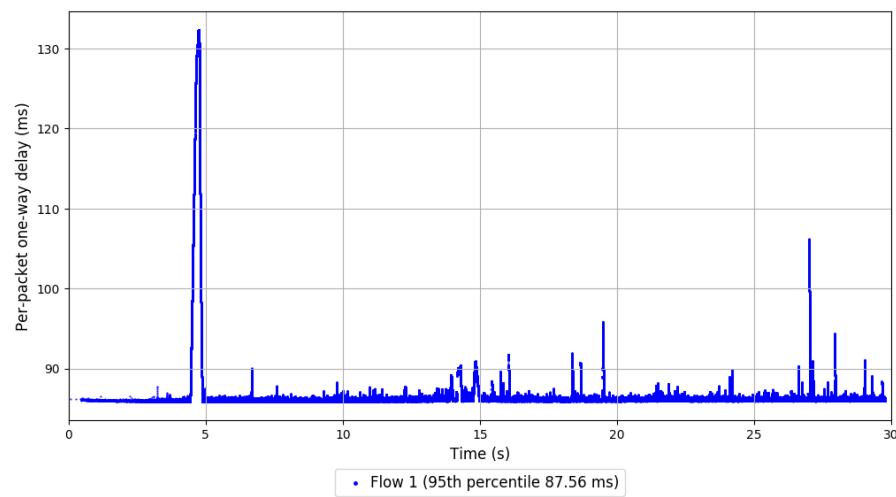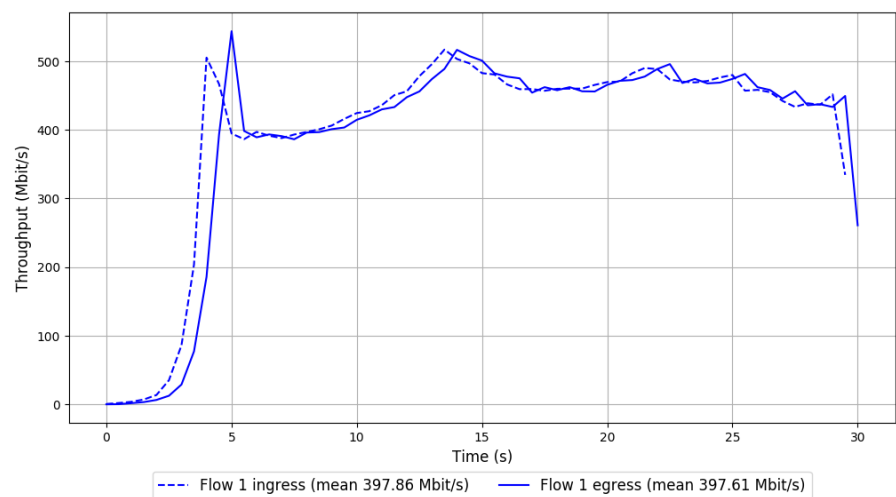

Flow 1 (95th percentile 88.32 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-11-29 20:43:18
End at: 2018-11-29 20:43:48
Local clock offset: 11.509 ms
Remote clock offset: 13.615 ms


# Below is generated by plot.py at 2018-11-30 00:09:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 397.61 Mbit/s
95th percentile per-packet one-way delay: 87.560 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 397.61 Mbit/s
95th percentile per-packet one-way delay: 87.560 ms
Loss rate: 0.64%
```

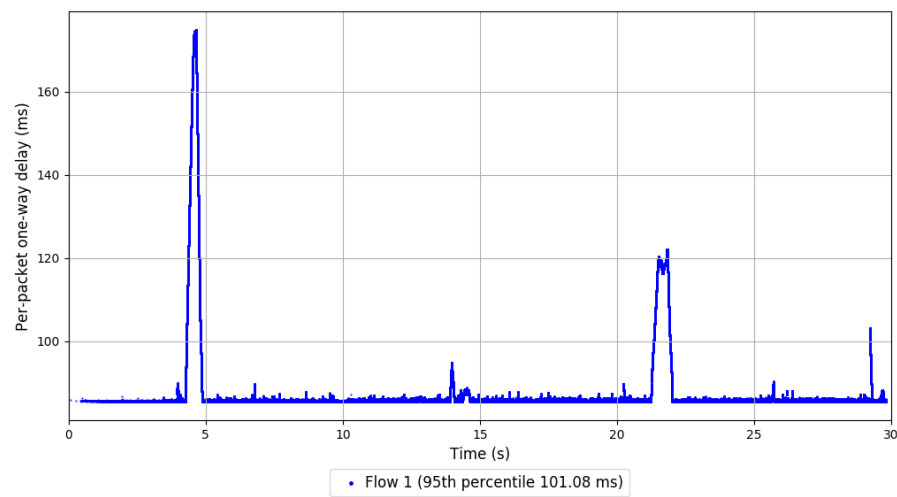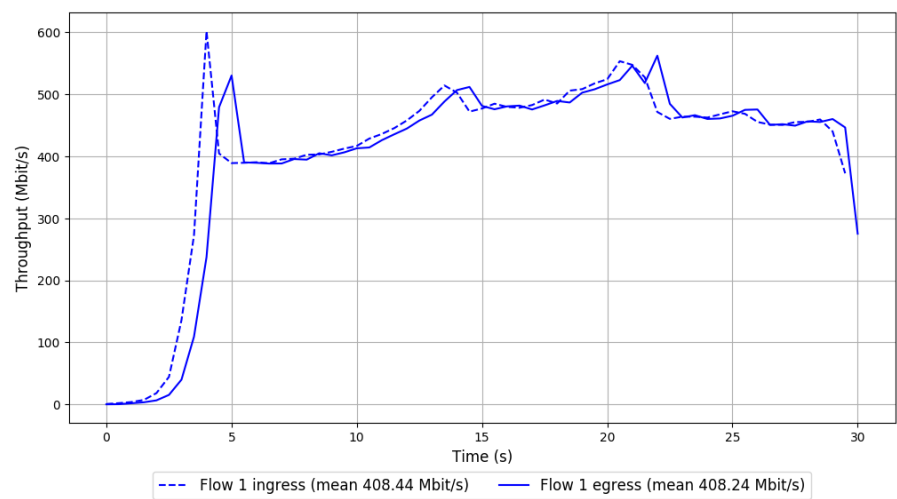Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-11-29 21:10:10
End at: 2018-11-29 21:10:40
Local clock offset: 16.87 ms
Remote clock offset: 19.683 ms


# Below is generated by plot.py at 2018-11-30 00:09:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 408.24 Mbit/s
95th percentile per-packet one-way delay: 101.084 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 408.24 Mbit/s
95th percentile per-packet one-way delay: 101.084 ms
Loss rate: 0.69%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 408.44 Mbit/s)   Flow 1 egress (mean 408.24 Mbit/s)
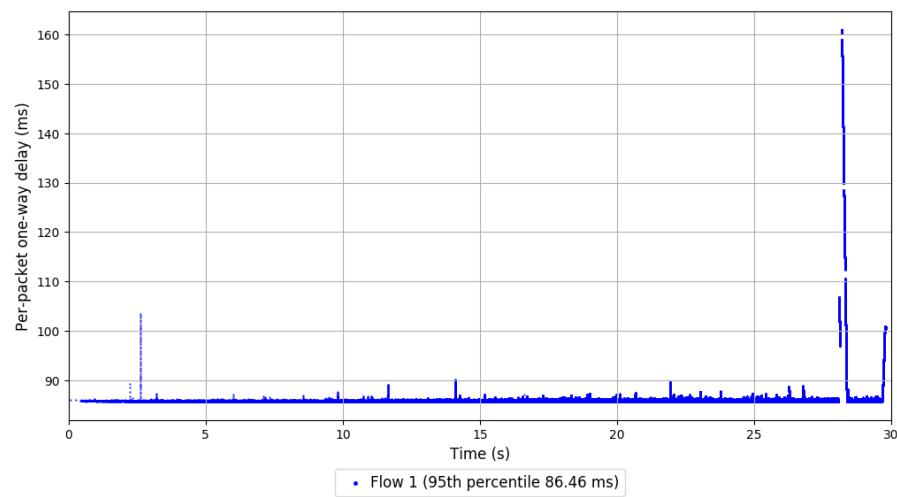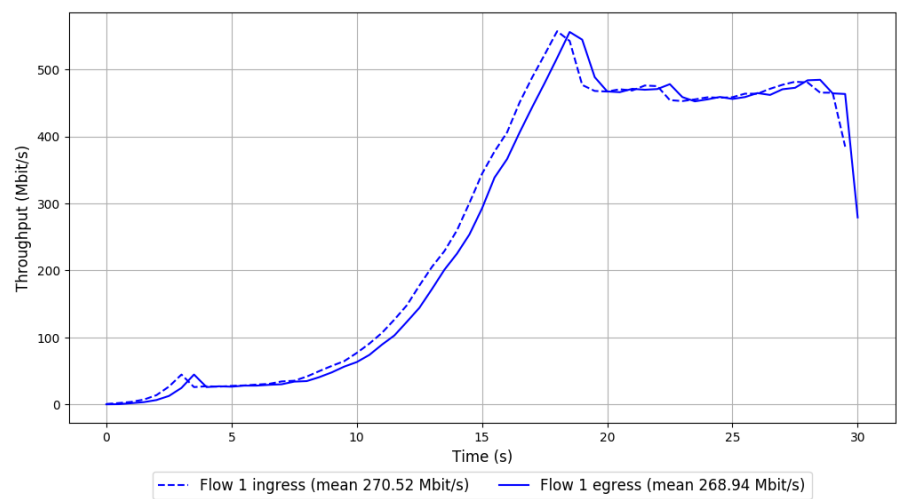

Flow 1 (95th percentile 101.08 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-11-29 21:36:39
End at: 2018-11-29 21:37:09
Local clock offset: 10.256 ms
Remote clock offset: 11.966 ms


# Below is generated by plot.py at 2018-11-30 00:09:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 268.94 Mbit/s
95th percentile per-packet one-way delay: 86.460 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 268.94 Mbit/s
95th percentile per-packet one-way delay: 86.460 ms
Loss rate: 1.16%
```

Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 270.52 Mbit/s) --- Flow 1 egress (mean 268.94 Mbit/s)

Flow 1 (95th percentile 86.46 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-11-29 22:03:18
End at: 2018-11-29 22:03:48
Local clock offset: 7.733 ms
Remote clock offset: 8.291 ms


# Below is generated by plot.py at 2018-11-30 00:09:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 392.05 Mbit/s
95th percentile per-packet one-way delay: 106.508 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 392.05 Mbit/s
95th percentile per-packet one-way delay: 106.508 ms
Loss rate: 0.70%
```
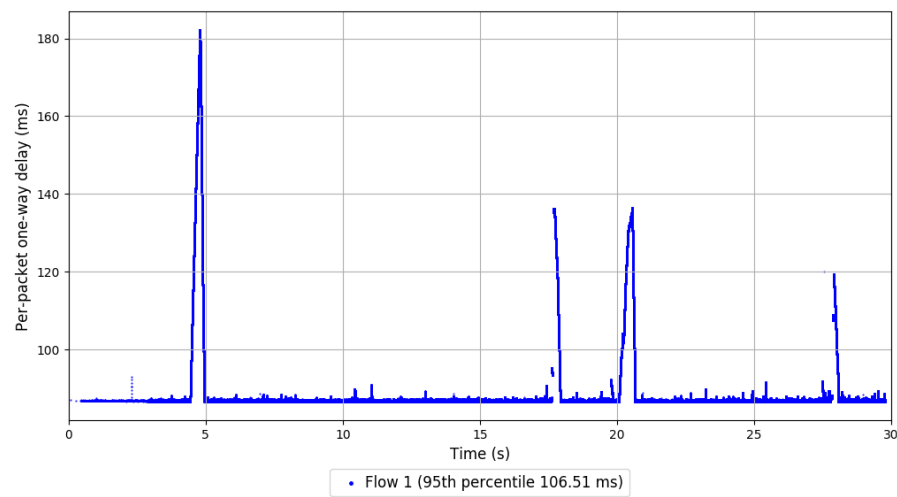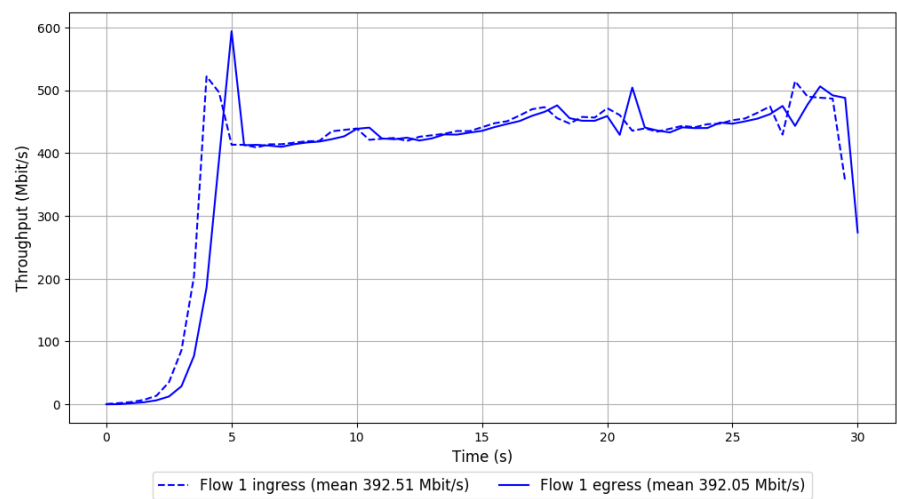
Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 392.51 Mbit/s)   Flow 1 egress (mean 392.05 Mbit/s)

Flow 1 (95th percentile 106.51 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-11-29 20:36:11
End at: 2018-11-29 20:36:41
Local clock offset: 8.461 ms
Remote clock offset: 9.903 ms


# Below is generated by plot.py at 2018-11-30 00:09:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.86 Mbit/s
95th percentile per-packet one-way delay: 86.554 ms
Loss rate: 1.00%
-- Flow 1:
Average throughput: 1.86 Mbit/s
95th percentile per-packet one-way delay: 86.554 ms
Loss rate: 1.00%
```
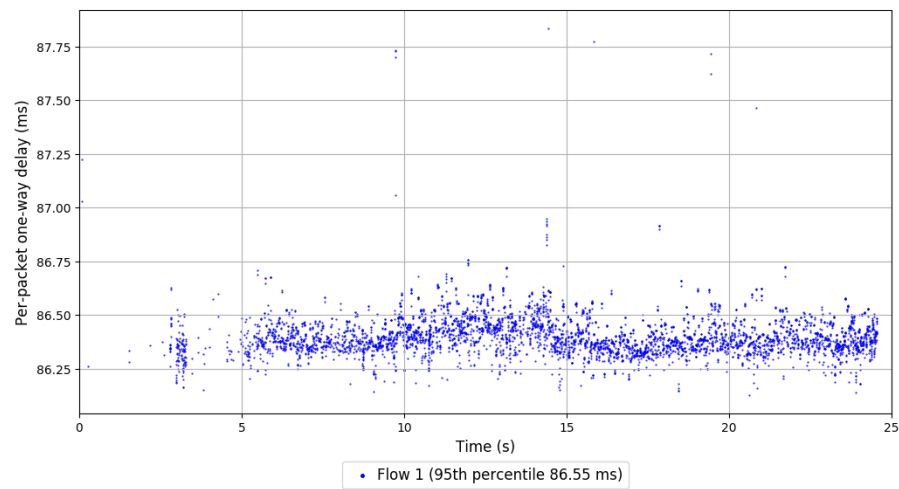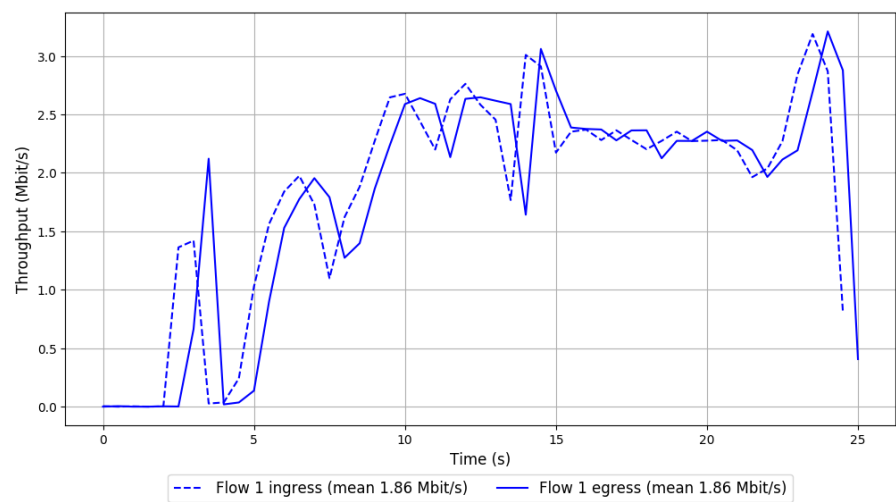
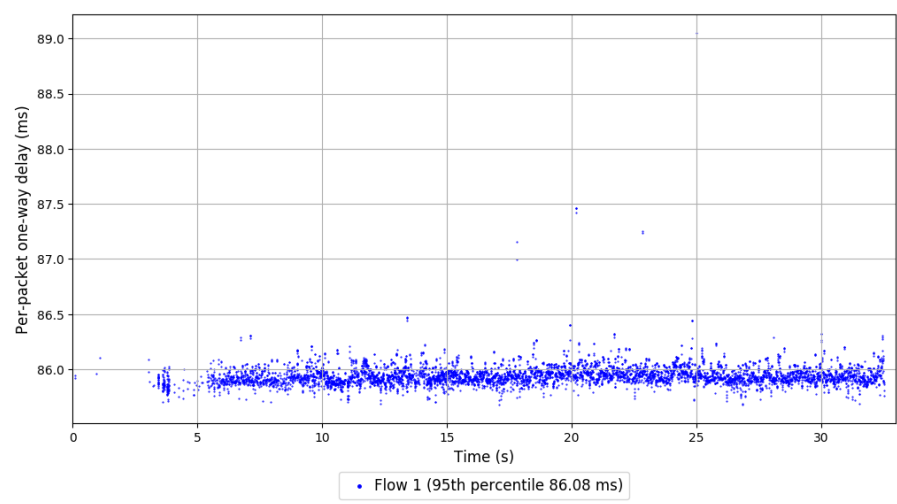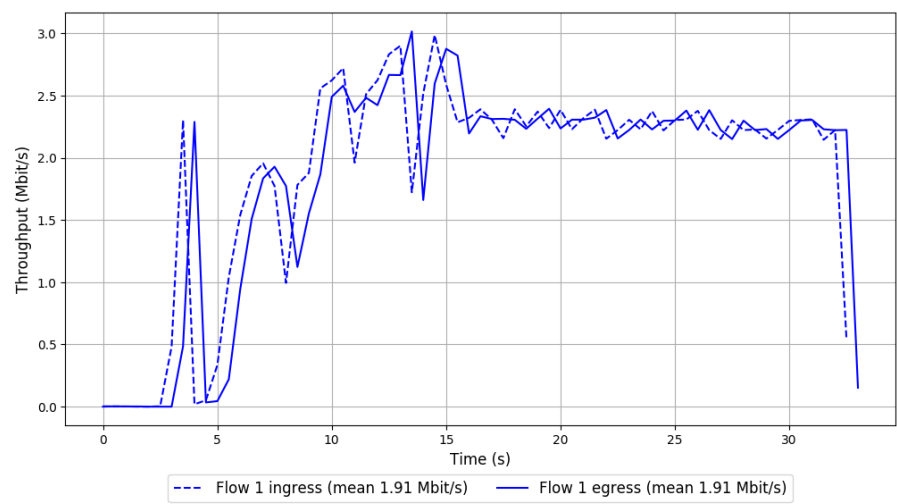Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-11-29 21:02:57
End at: 2018-11-29 21:03:27
Local clock offset: 13.596 ms
Remote clock offset: 15.716 ms


# Below is generated by plot.py at 2018-11-30 00:09:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 86.079 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 86.079 ms
Loss rate: 0.62%
```

Run 2: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.91 Mbit/s)   Flow 1 egress (mean 1.91 Mbit/s)
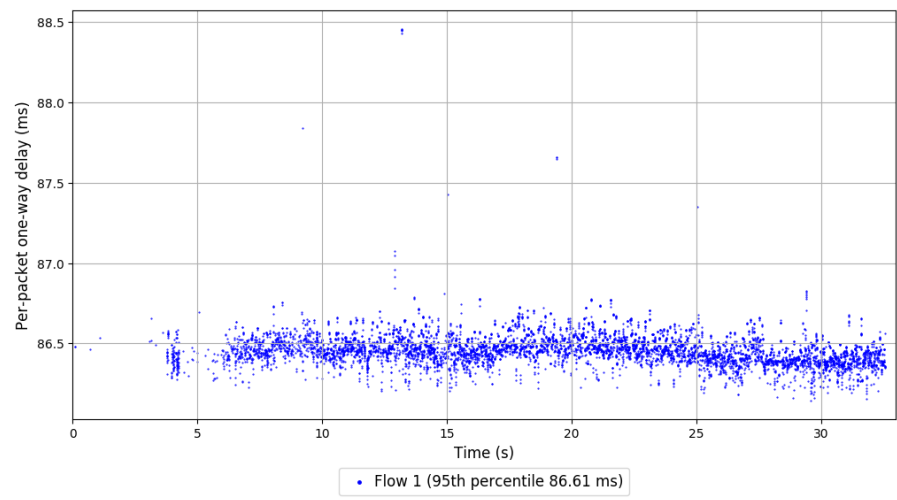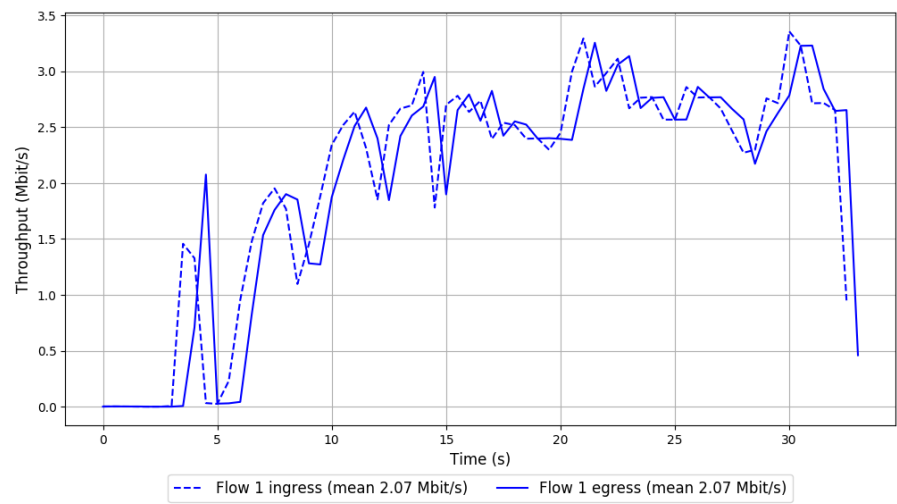

Flow 1 (95th percentile 86.08 ms)

```
Run 3: Statistics of WebRTC media

Start at: 2018-11-29 21:29:29
End at: 2018-11-29 21:29:59
Local clock offset: 14.815 ms
Remote clock offset: 17.403 ms


# Below is generated by plot.py at 2018-11-30 00:09:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 86.612 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 86.612 ms
Loss rate: 0.70%
```

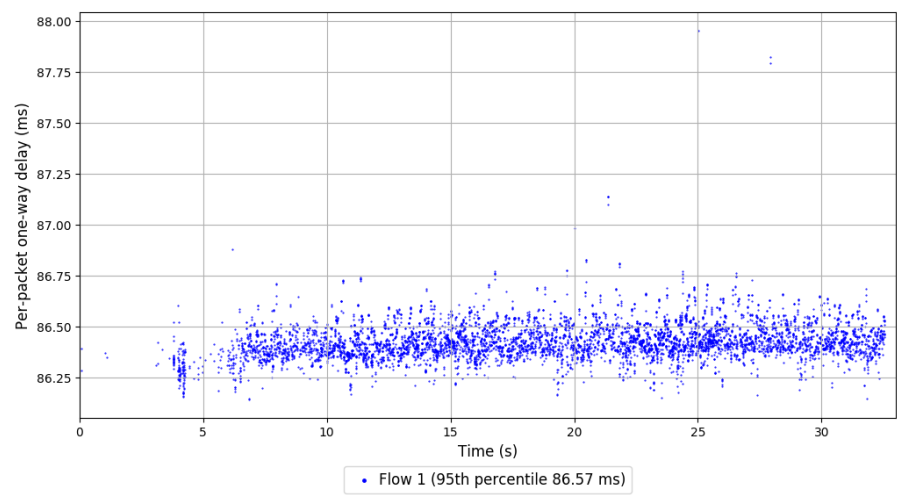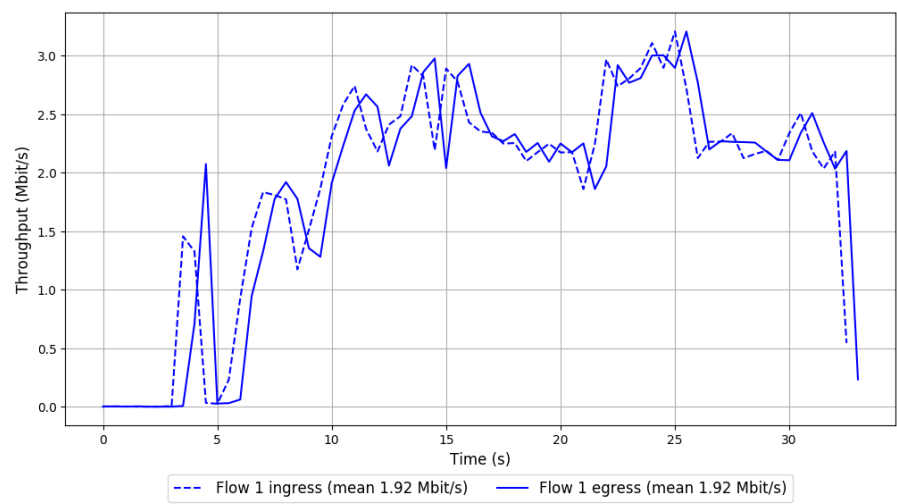Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-11-29 21:56:07
End at: 2018-11-29 21:56:37
Local clock offset: 12.42 ms
Remote clock offset: 14.515 ms


# Below is generated by plot.py at 2018-11-30 00:09:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 86.573 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 86.573 ms
Loss rate: 0.50%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-11-29 22:23:01
End at: 2018-11-29 22:23:31
Local clock offset: 5.219 ms
Remote clock offset: 3.164 ms


# Below is generated by plot.py at 2018-11-30 00:09:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 86.847 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 86.847 ms
Loss rate: 0.73%
```

Run 5: Report of WebRTC media — Data Link