Pantheon Report

Generated at 2017-09-22 13:26:50 (UTC).

Data path: China ppp0 (*remote*) →AWS Korea Ethernet (*local*).

Repeated the test of 14 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

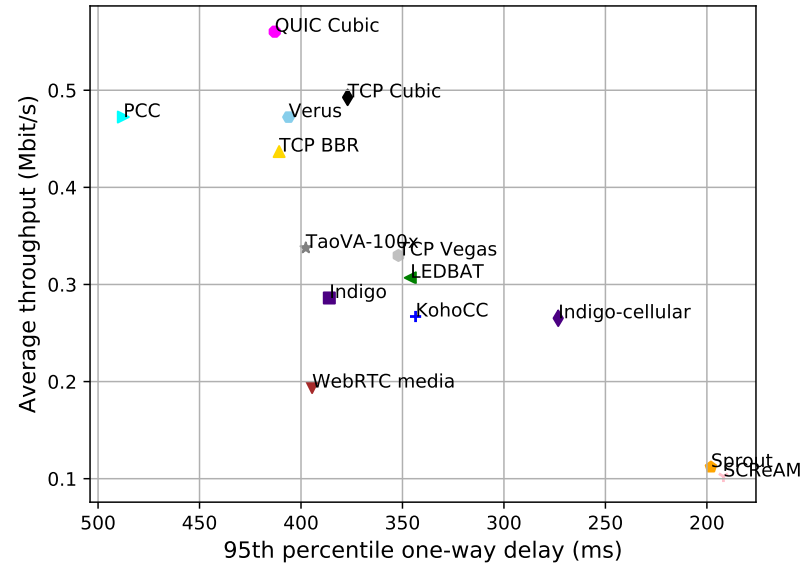Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

Tested BBR with qdisc of Fair Queuing (`fq`), and other schemes with the default Linux qdisc (`pfifo_fast`).

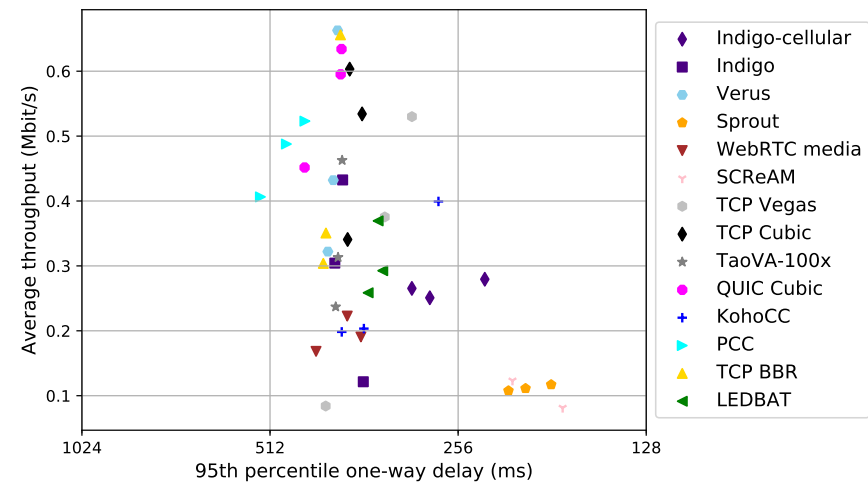NTP offsets were measured against `ntp.nict.jp` and have been applied to correct the timestamps in logs.

```
Git summary:
branch: indigos @ 46c7c812d4acb71eea4f5fb0b03b3657cea3062f
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/genericCC @ f7ca42f251bf49b432bb71de6d13fa903515c366
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-cellular @ aee99e8eb842cb053f8c9a80e28cd256a930bbc2
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/indigo-no-cwnd @ 3e58442c04028a11d7b02456e137604633ba2d6c
third_party/indigo-no-delivery-rate @ 57caa40858b964906edff4876d5a7e5bfff666c5
third_party/indigo-no-queuing-delay @ 03455460fd1a8ffbdad86fabb936fdca204b80db
third_party/indigo-no-send-rate @ b39dfa6b2c5f19cb7cd89626cb4f5bb81f9fecda
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
 M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ baf443516dea3eeddeccaf9b916cc313273ca4f4
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/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
 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/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from China ppp0 to AWS Korea Ethernet, 3 runs of 30s each per scheme
(mean of all runs by scheme)

test from China ppp0 to AWS Korea Ethernet, 3 runs of 30s each per scheme
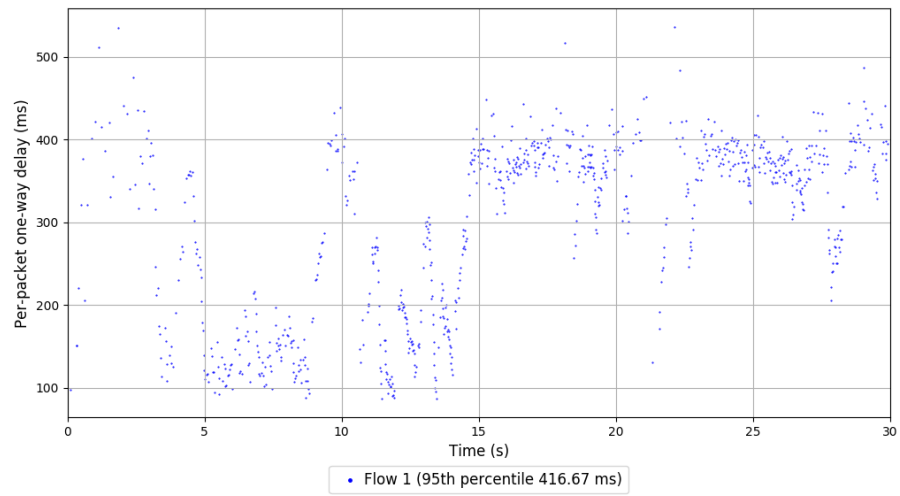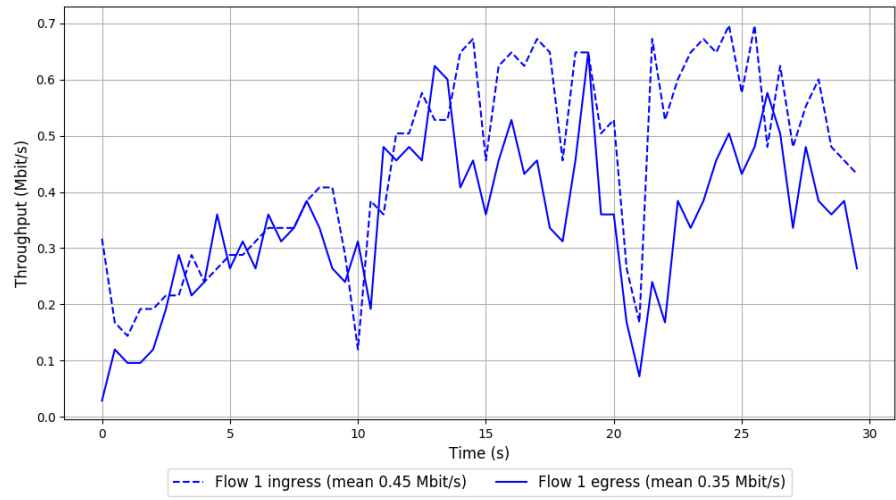
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	0.44	410.77	19.68
TCP Cubic	3	0.49	377.03	5.85
LEDBAT	3	0.31	346.15	3.27
PCC	3	0.47	487.55	96.97
QUIC Cubic	3	0.56	412.94	13.17
SCReAM	2	0.10	191.85	1.33
WebRTC media	3	0.19	394.53	12.13
Sprout	3	0.11	198.01	2.85
TaoVA-100x	3	0.34	397.64	63.14
TCP Vegas	3	0.33	351.99	5.48
Verus	3	0.47	406.12	61.34
Indigo	3	0.28	386.05	48.19
Indigo-cellular	3	0.27	273.25	6.64
KohoCC	3	0.27	343.55	6.59

```
Run 1: Statistics of TCP BBR

Start at: 2017-09-22 09:42:12
End at: 2017-09-22 09:42:42
Local clock offset: -1.163 ms
Remote clock offset: -0.832 ms

# Below is generated by plot.py at 2017-09-22 13:26:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 416.673 ms
Loss rate: 23.05%
-- Flow 1:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 416.673 ms
Loss rate: 23.05%
```
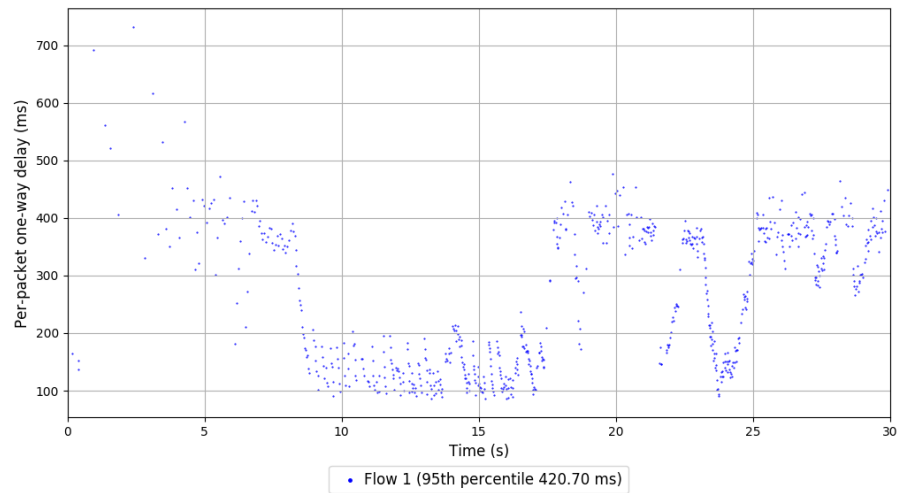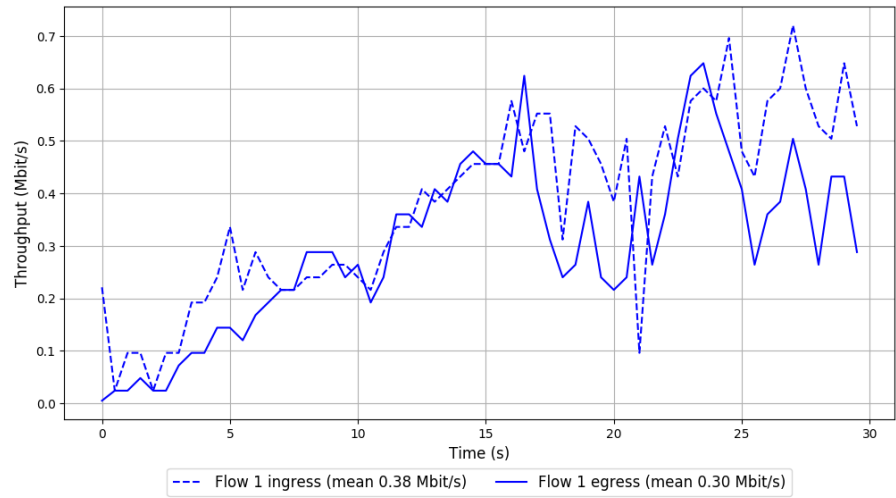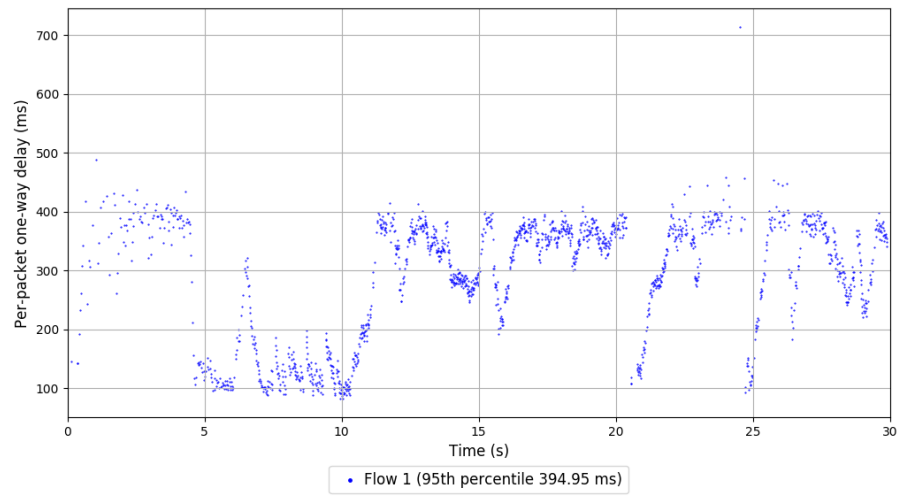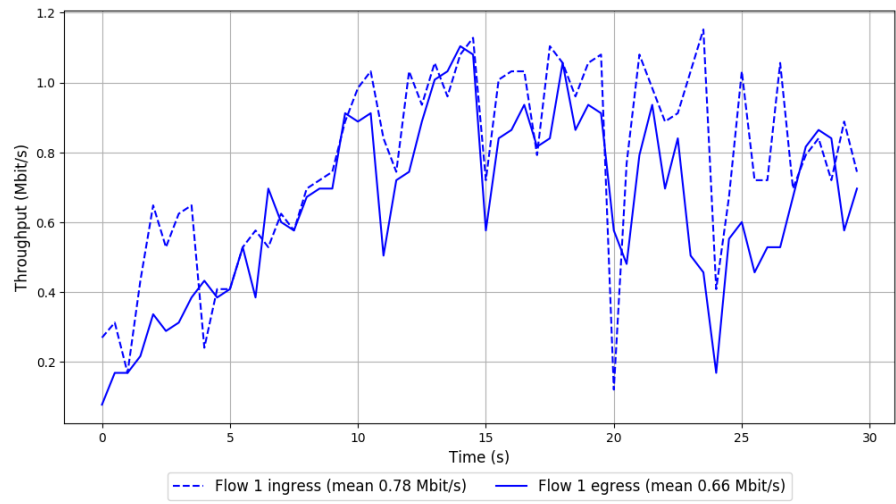
Run 1: Report of TCP BBR — Data Link

Flow 1 ingress (mean 0.45 Mbit/s)   Flow 1 egress (mean 0.35 Mbit/s)

Flow 1 (95th percentile 416.67 ms)

```
Run 2: Statistics of TCP BBR

Start at: 2017-09-22 09:58:41
End at: 2017-09-22 09:59:11
Local clock offset: -2.106 ms
Remote clock offset: -1.26 ms


# Below is generated by plot.py at 2017-09-22 13:26:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 420.702 ms
Loss rate: 20.06%
-- Flow 1:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 420.702 ms
Loss rate: 20.06%
```
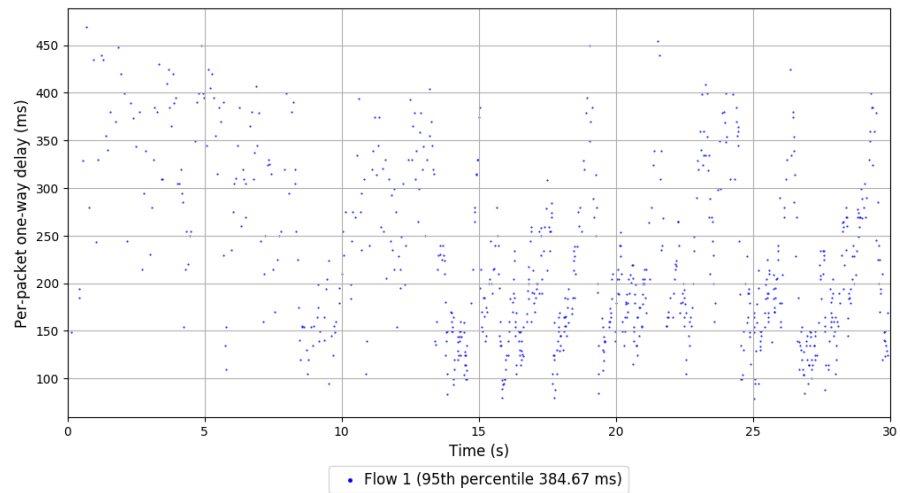
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2017-09-22 10:15:02
End at: 2017-09-22 10:15:32
Local clock offset: -1.907 ms
Remote clock offset: -1.351 ms


# Below is generated by plot.py at 2017-09-22 13:26:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 394.947 ms
Loss rate: 15.92%
-- Flow 1:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 394.947 ms
Loss rate: 15.92%
```
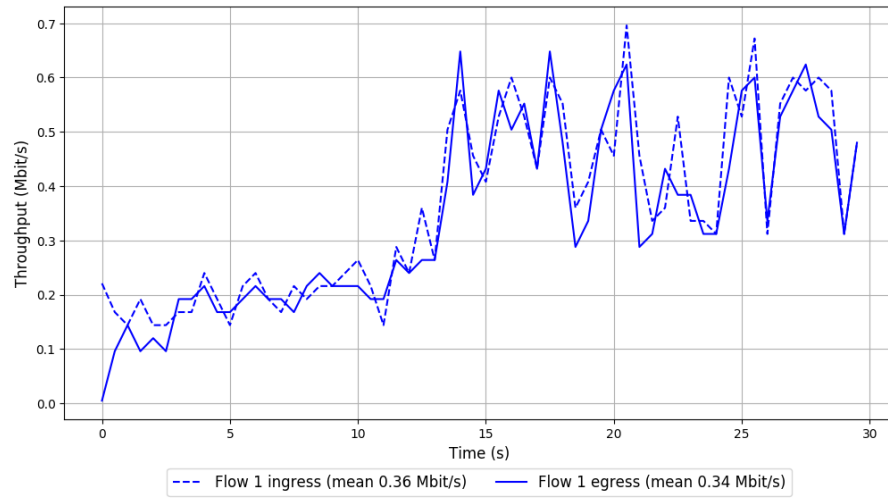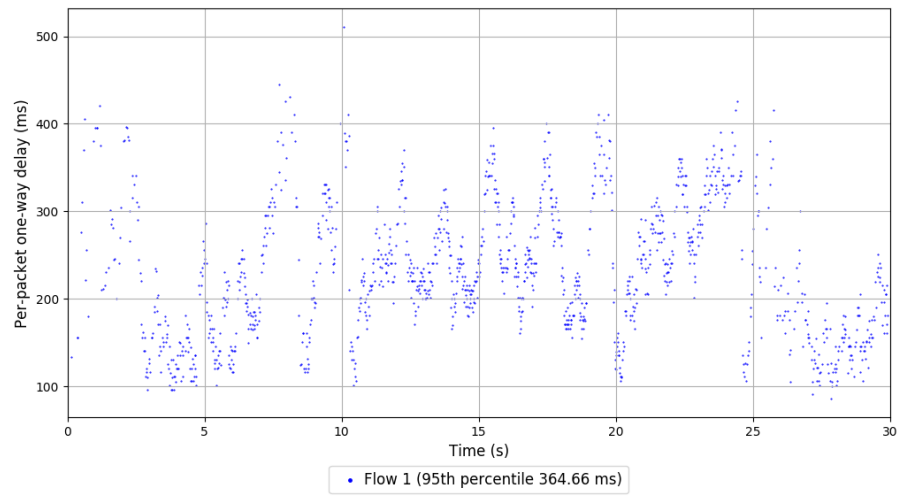
Run 3: Report of TCP BBR — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2017-09-22 09:43:25
End at: 2017-09-22 09:43:55
Local clock offset: -2.162 ms
Remote clock offset: -0.953 ms

# Below is generated by plot.py at 2017-09-22 13:26:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 384.674 ms
Loss rate: 6.42%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 384.674 ms
Loss rate: 6.42%
```
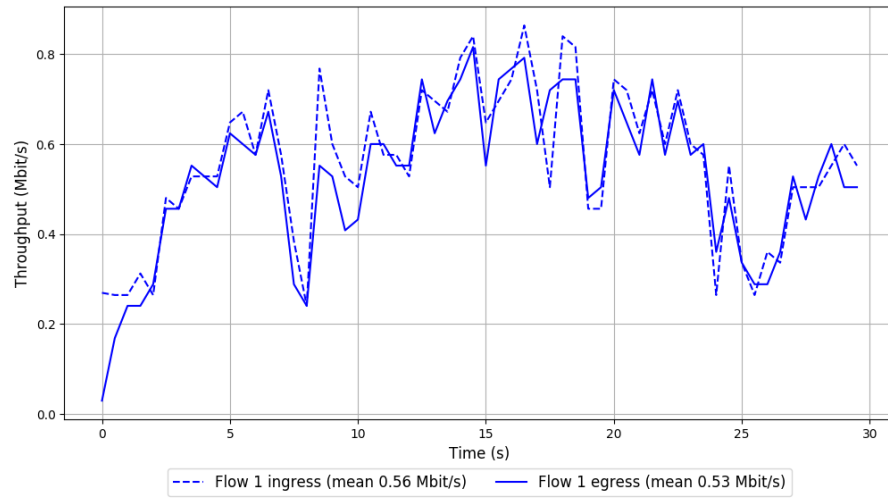
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2017-09-22 09:59:50
End at: 2017-09-22 10:00:20
Local clock offset: -2.122 ms
Remote clock offset: -1.366 ms


# Below is generated by plot.py at 2017-09-22 13:26:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 364.661 ms
Loss rate: 5.15%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 364.661 ms
Loss rate: 5.15%
```

Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 0.56 Mbit/s) --- Flow 1 egress (mean 0.53 Mbit/s)

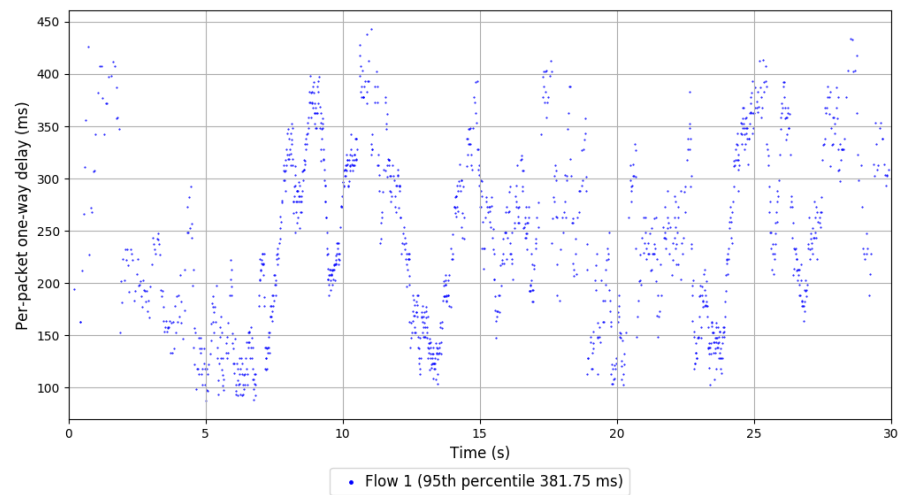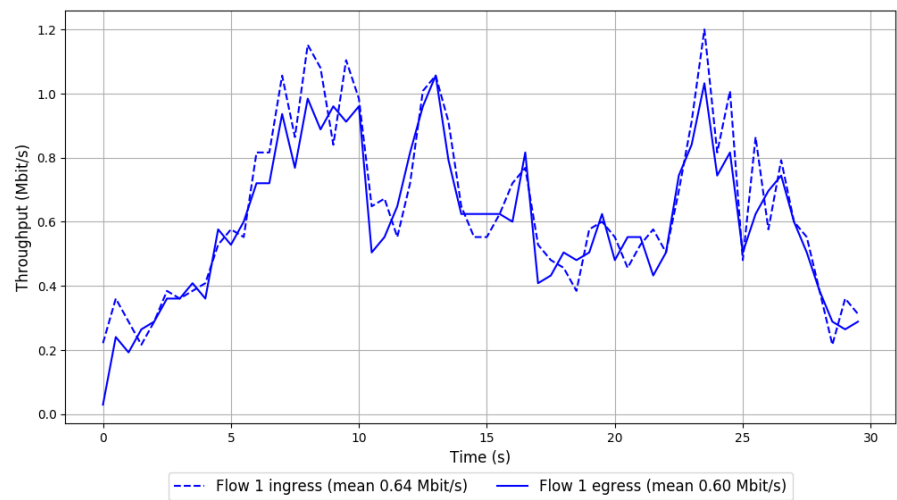• Flow 1 (95th percentile 364.66 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2017-09-22 10:16:11
End at: 2017-09-22 10:16:41
Local clock offset: -0.948 ms
Remote clock offset: -1.401 ms


# Below is generated by plot.py at 2017-09-22 13:26:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 381.754 ms
Loss rate: 5.98%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 381.754 ms
Loss rate: 5.98%
```
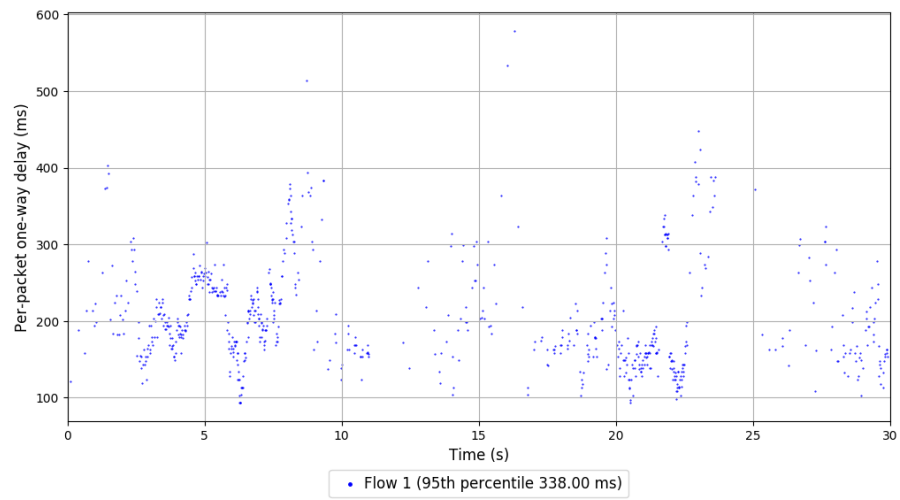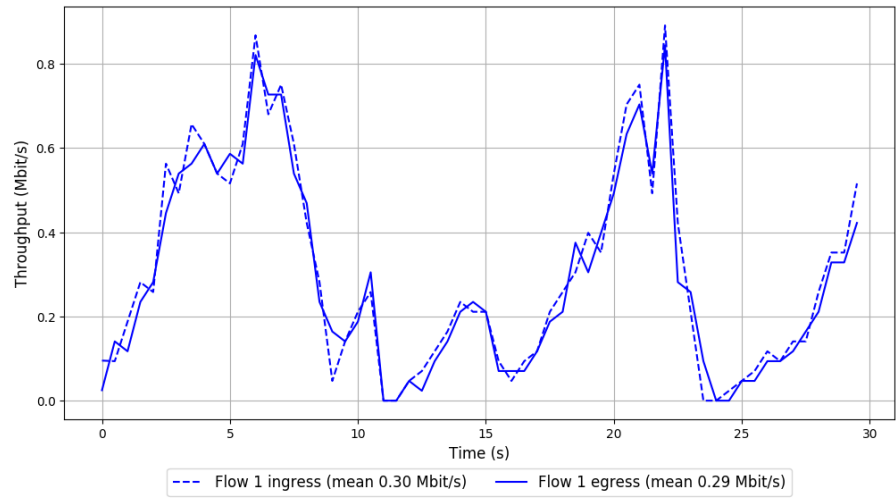
Run 3: Report of TCP Cubic — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2017-09-22 09:46:56
End at: 2017-09-22 09:47:26
Local clock offset: -2.15 ms
Remote clock offset: -1.046 ms

# Below is generated by plot.py at 2017-09-22 13:26:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 337.997 ms
Loss rate: 4.38%
-- Flow 1:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 337.997 ms
Loss rate: 4.38%
```

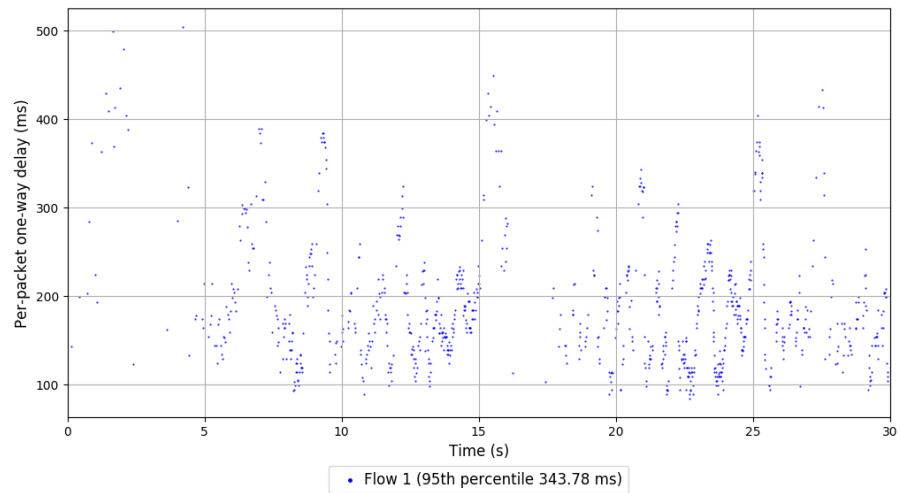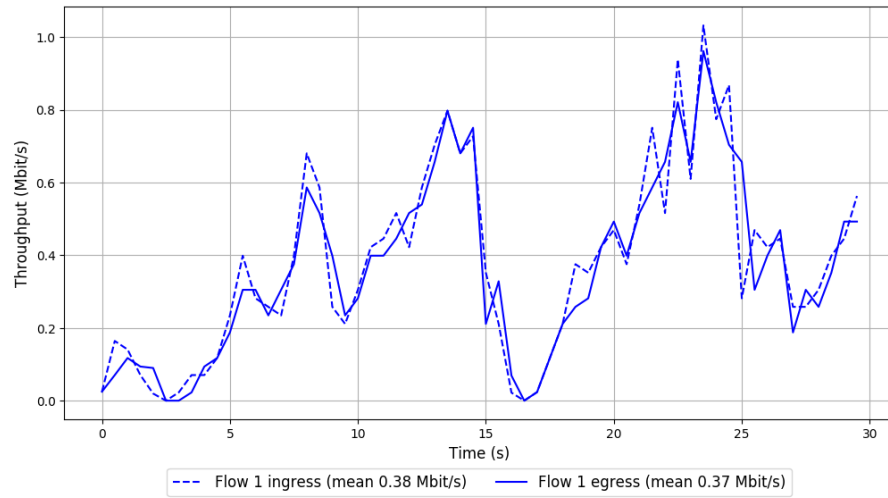Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2017-09-22 10:03:19
End at: 2017-09-22 10:03:49
Local clock offset: -1.911 ms
Remote clock offset: -1.322 ms


# Below is generated by plot.py at 2017-09-22 13:26:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 343.778 ms
Loss rate: 2.90%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 343.778 ms
Loss rate: 2.90%
```

Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 0.38 Mbit/s)   Flow 1 egress (mean 0.37 Mbit/s)

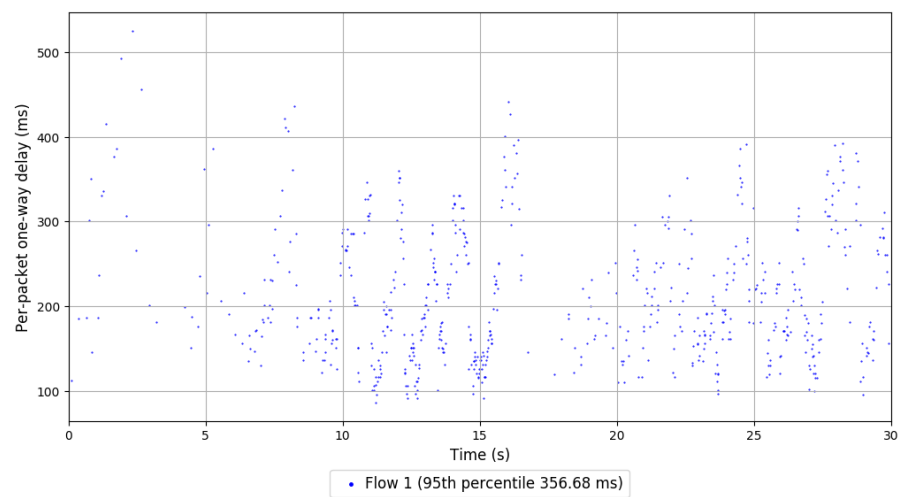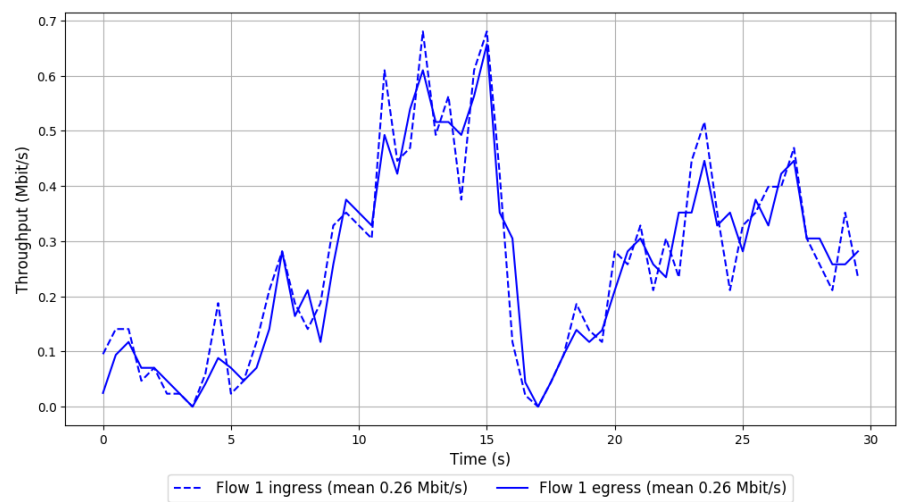Flow 1 (95th percentile 343.78 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2017-09-22 10:19:37
End at: 2017-09-22 10:20:07
Local clock offset: -1.951 ms
Remote clock offset: -1.331 ms

# Below is generated by plot.py at 2017-09-22 13:26:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 356.678 ms
Loss rate: 2.52%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 356.678 ms
Loss rate: 2.52%
```

Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 0.26 Mbit/s)   Flow 1 egress (mean 0.26 Mbit/s)

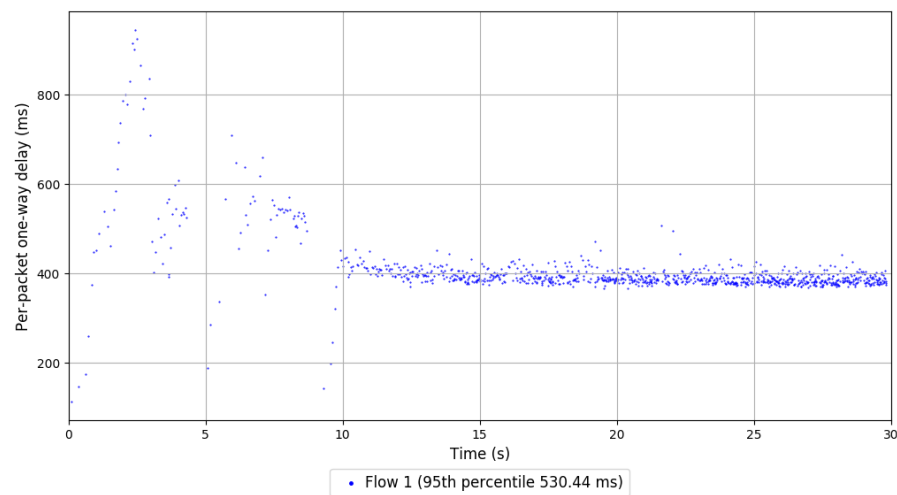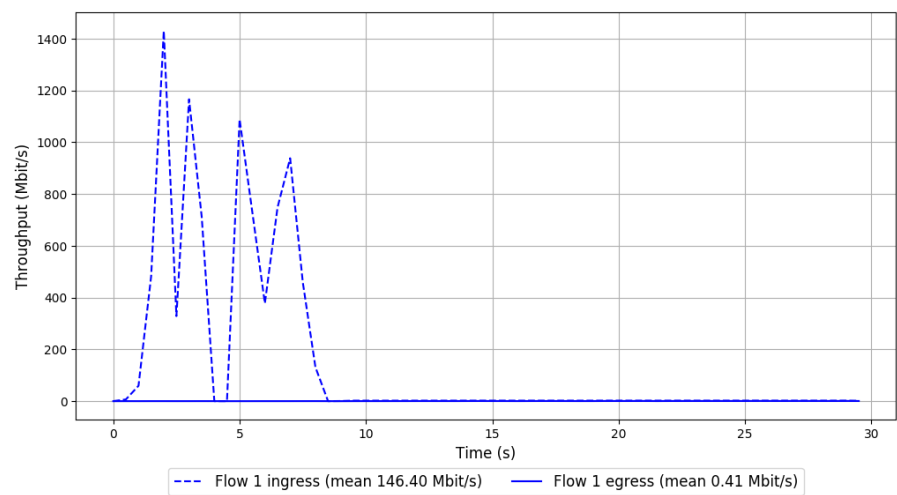Flow 1 (95th percentile 356.68 ms)

```
Run 1: Statistics of PCC

Start at: 2017-09-22 09:56:12
End at: 2017-09-22 09:56:42
Local clock offset: -1.976 ms
Remote clock offset: -1.253 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 530.437 ms
Loss rate: 99.72%
-- Flow 1:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 530.437 ms
Loss rate: 99.72%
```
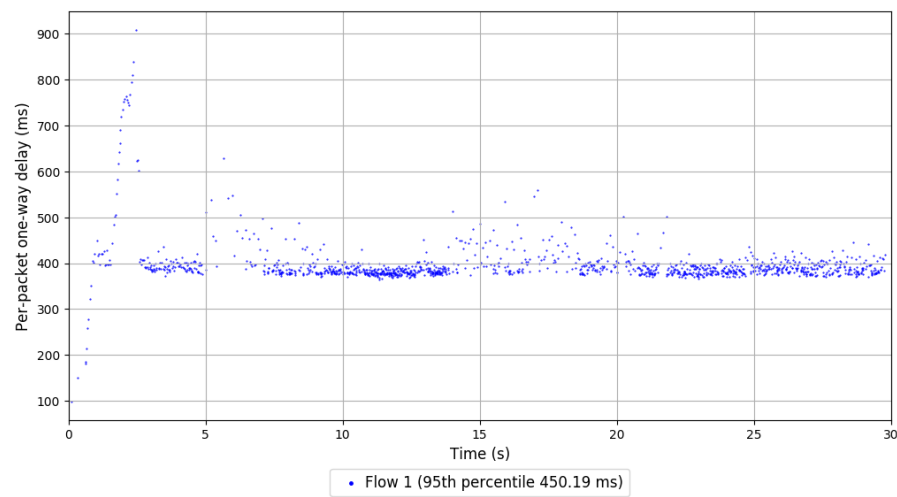
Run 1: Report of PCC — Data Link

Flow 1 ingress (mean 146.40 Mbit/s) — — — Flow 1 egress (mean 0.41 Mbit/s)

• Flow 1 (95th percentile 530.44 ms)

```
Run 2: Statistics of PCC

Start at: 2017-09-22 10:12:39
End at: 2017-09-22 10:13:09
Local clock offset: -1.885 ms
Remote clock offset: -1.39 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 450.188 ms
Loss rate: 92.58%
-- Flow 1:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 450.188 ms
Loss rate: 92.58%
```
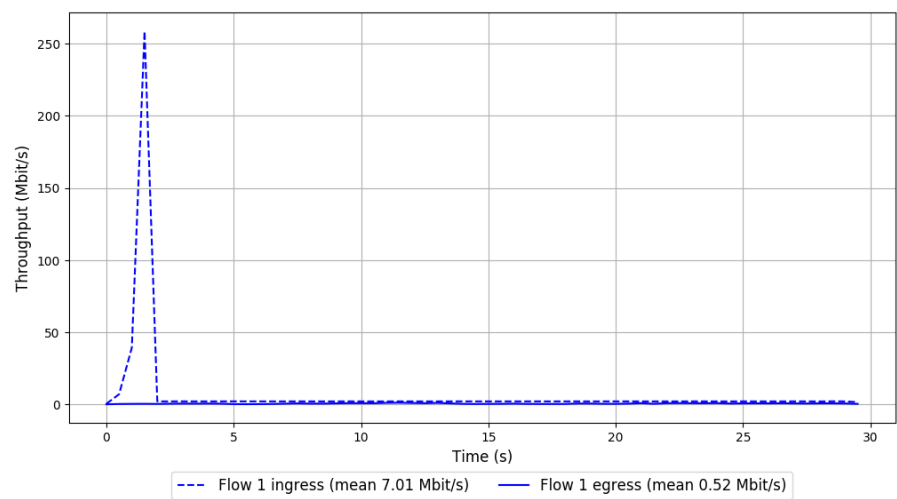
Run 2: Report of PCC — Data Link

Flow 1 ingress (mean 7.01 Mbit/s)   Flow 1 egress (mean 0.52 Mbit/s)
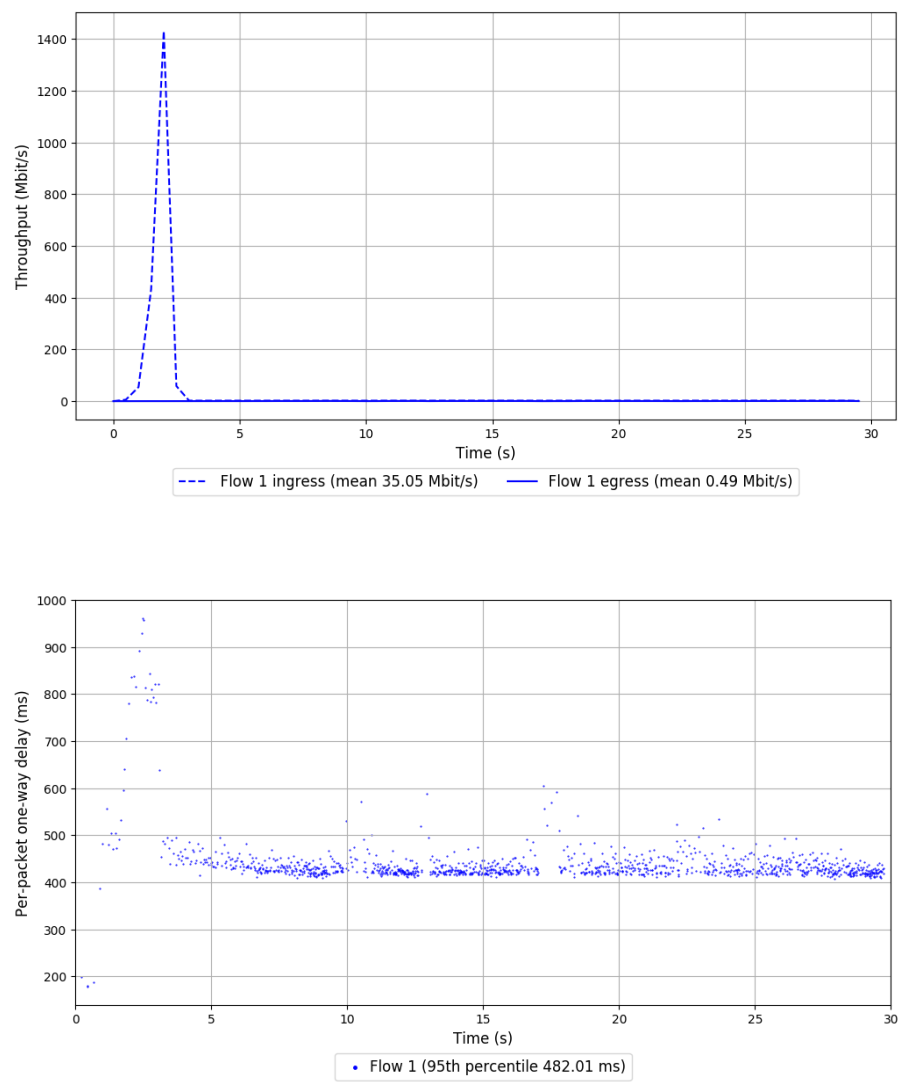

Flow 1 (95th percentile 450.19 ms)

```
Run 3: Statistics of PCC

Start at: 2017-09-22 12:31:08
End at: 2017-09-22 12:31:38
Local clock offset: -2.622 ms
Remote clock offset: -43.625 ms

# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 482.010 ms
Loss rate: 98.62%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 482.010 ms
Loss rate: 98.62%
```
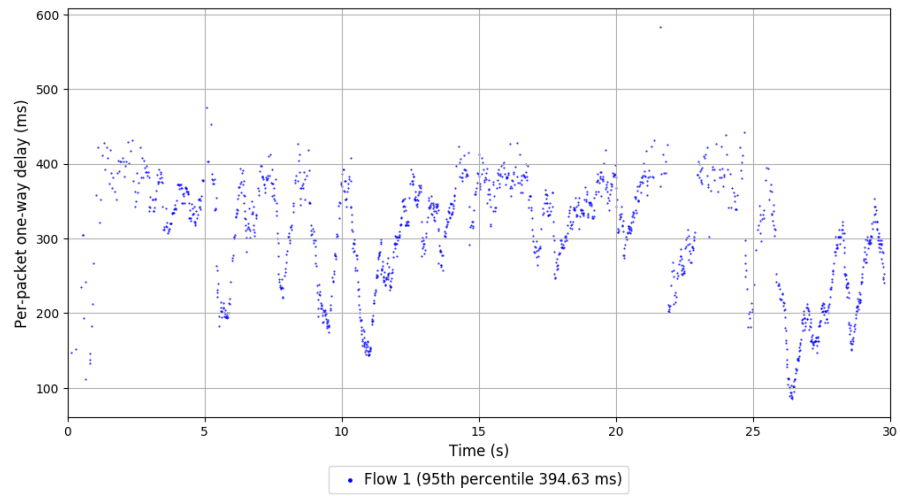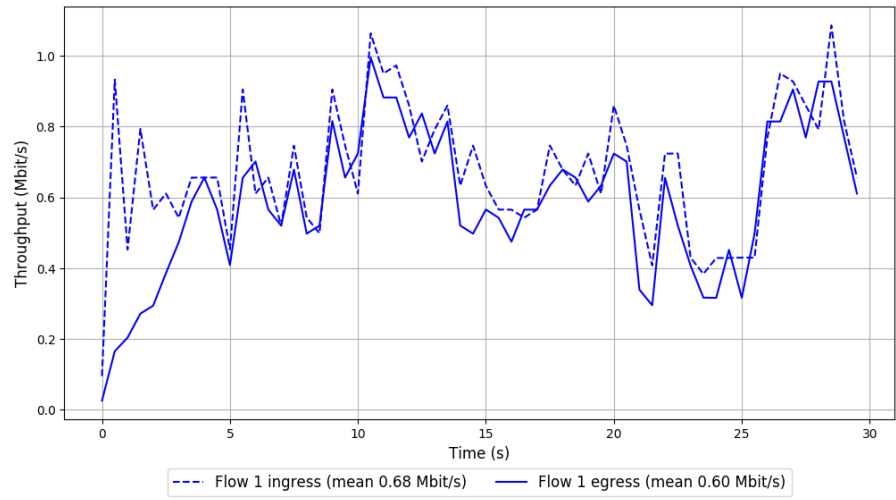
Run 3: Report of PCC — Data Link

Flow 1 ingress (mean 35.05 Mbit/s)   Flow 1 egress (mean 0.49 Mbit/s)

• Flow 1 (95th percentile 482.01 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2017-09-22 09:54:59
End at: 2017-09-22 09:55:29
Local clock offset: -2.181 ms
Remote clock offset: -1.179 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 394.628 ms
Loss rate: 12.71%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 394.628 ms
Loss rate: 12.71%
```
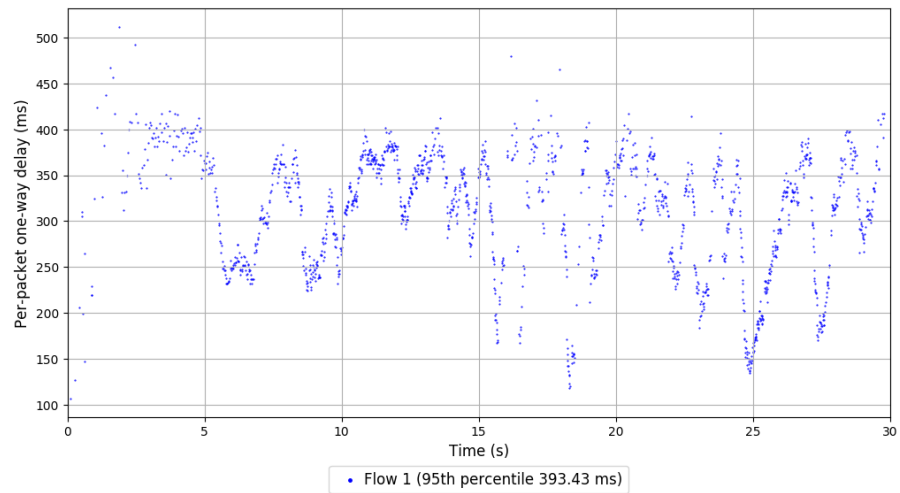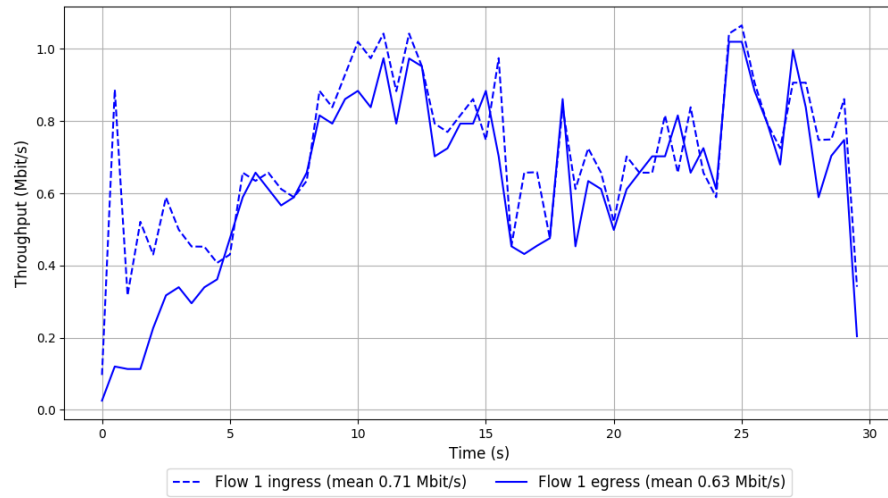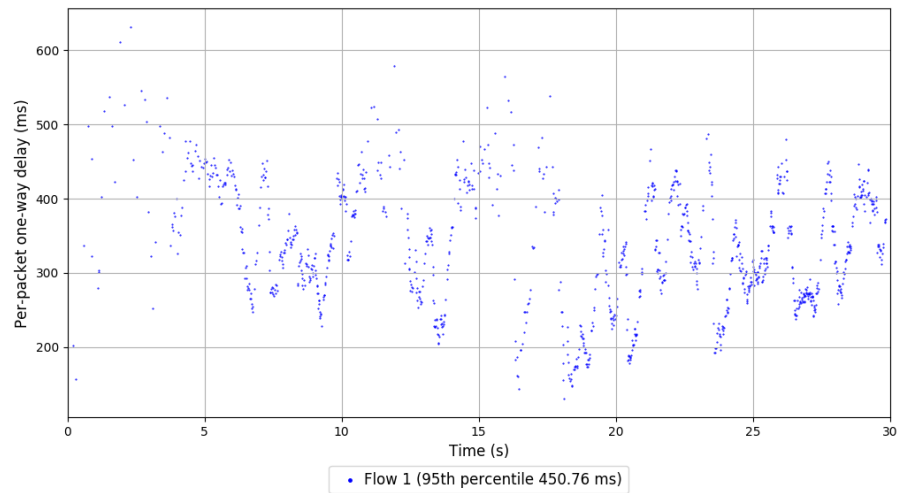
Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.68 Mbit/s)   Flow 1 egress (mean 0.60 Mbit/s)

Flow 1 (95th percentile 394.63 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2017-09-22 10:11:30
End at: 2017-09-22 10:12:00
Local clock offset: -1.996 ms
Remote clock offset: -1.371 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 393.428 ms
Loss rate: 11.49%
-- Flow 1:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 393.428 ms
Loss rate: 11.49%
```

Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.71 Mbit/s)   Flow 1 egress (mean 0.63 Mbit/s)

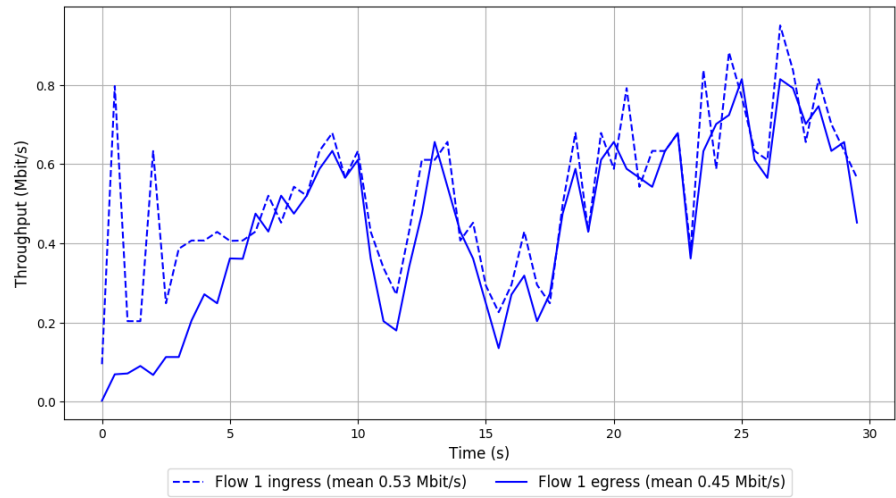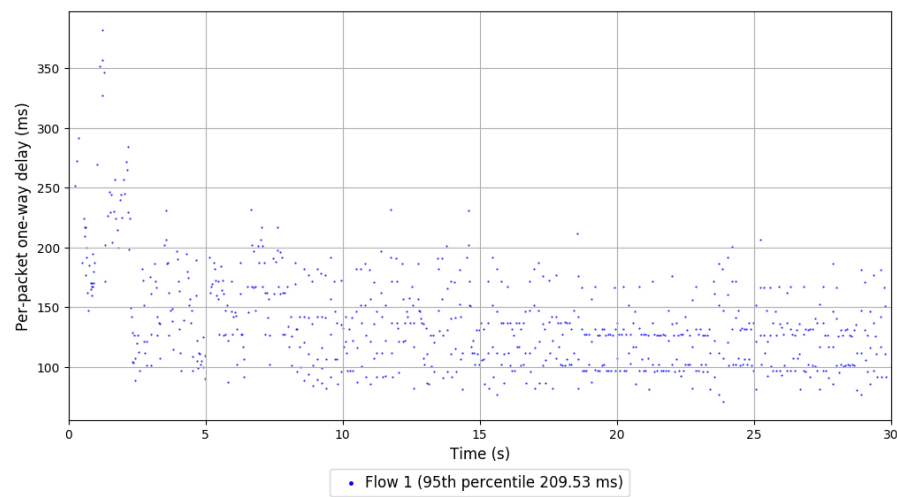

Flow 1 (95th percentile 393.43 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2017-09-22 12:29:56
End at: 2017-09-22 12:30:26
Local clock offset: -2.483 ms
Remote clock offset: -49.634 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 450.758 ms
Loss rate: 15.31%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 450.758 ms
Loss rate: 15.31%
```

Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.53 Mbit/s) --- Flow 1 egress (mean 0.45 Mbit/s)
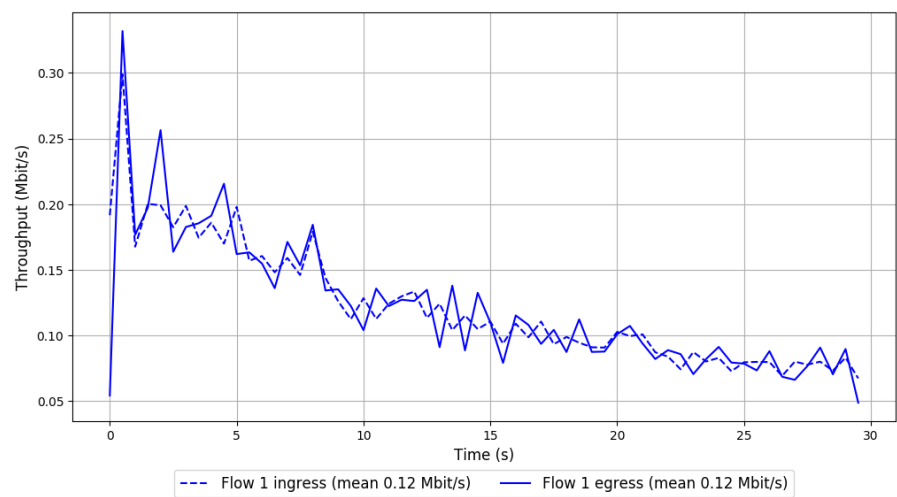

Flow 1 (95th percentile 450.76 ms)

```
Run 1: Statistics of SCReAM

Start at: 2017-09-22 09:49:14
End at: 2017-09-22 09:49:44
Local clock offset: -0.904 ms
Remote clock offset: -1.062 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 209.535 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 209.535 ms
Loss rate: 0.42%
```

Run 1: Report of SCReAM — Data Link
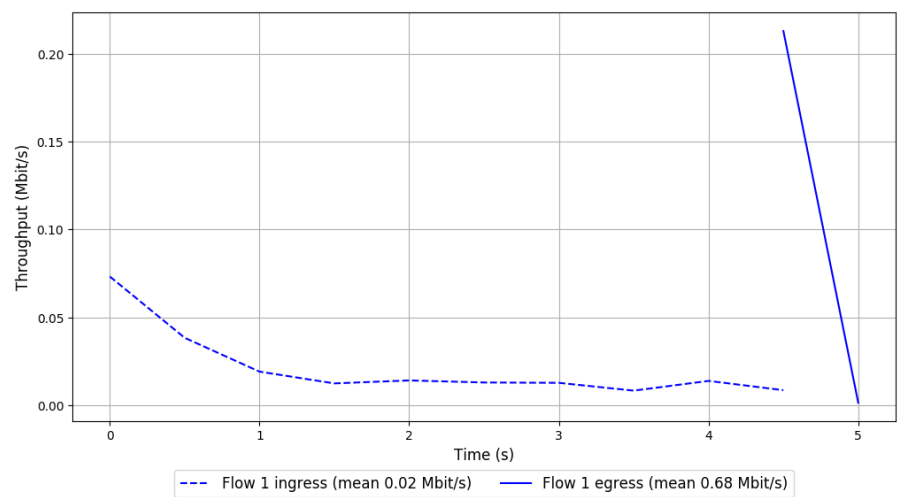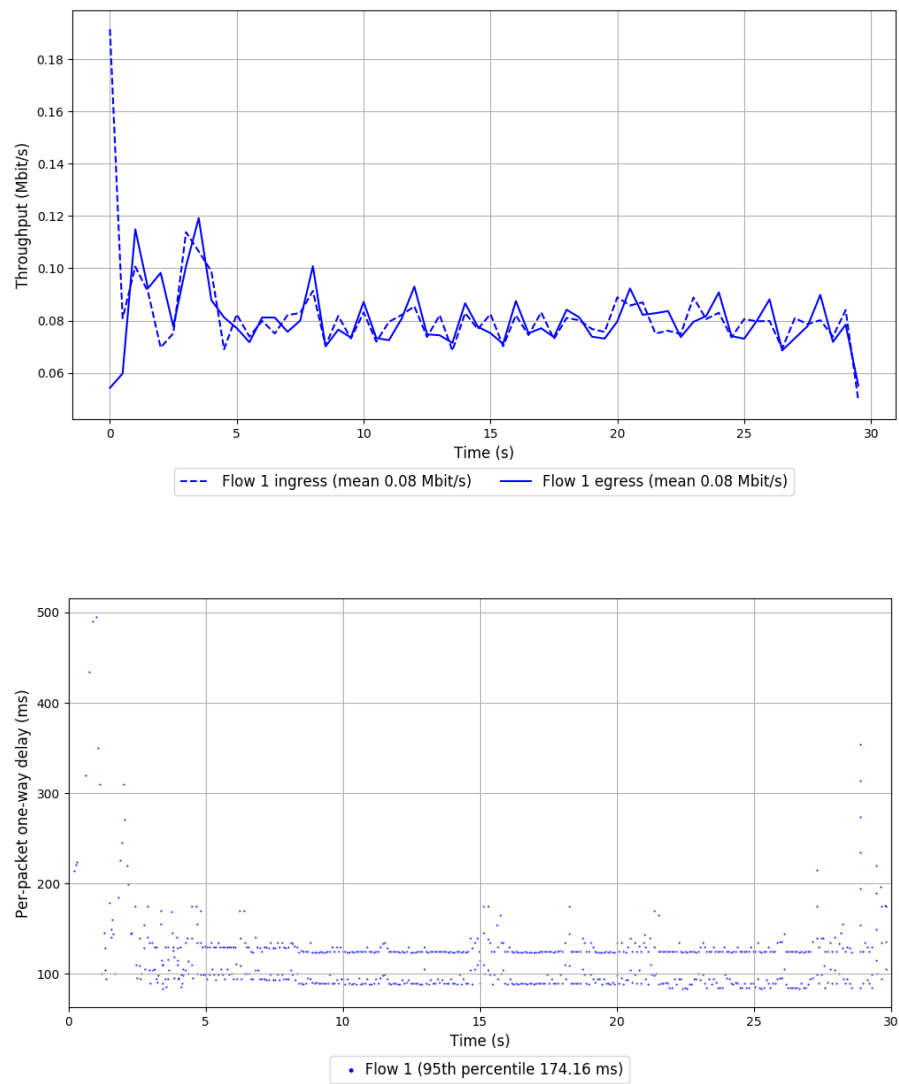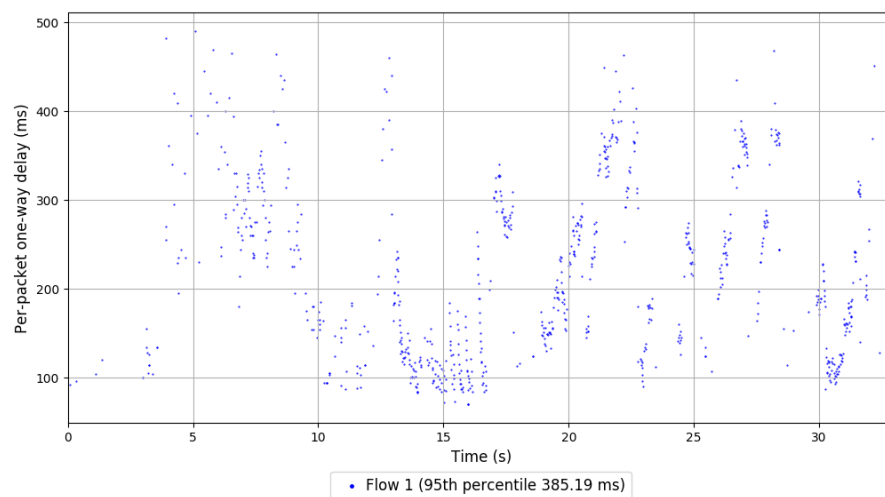
```
Run 2: Statistics of SCReAM

Start at: 2017-09-22 10:05:36
End at: 2017-09-22 10:06:06
Local clock offset: -1.989 ms
Remote clock offset: -1.26 ms
```

Run 2: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.02 Mbit/s)   Flow 1 egress (mean 0.68 Mbit/s)

Flow 1 (95th percentile 4875.69 ms)

```
Run 3: Statistics of SCReAM

Start at: 2017-09-22 10:21:54
End at: 2017-09-22 10:22:24
Local clock offset: -0.99 ms
Remote clock offset: -1.49 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 174.161 ms
Loss rate: 2.25%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 174.161 ms
Loss rate: 2.25%
```

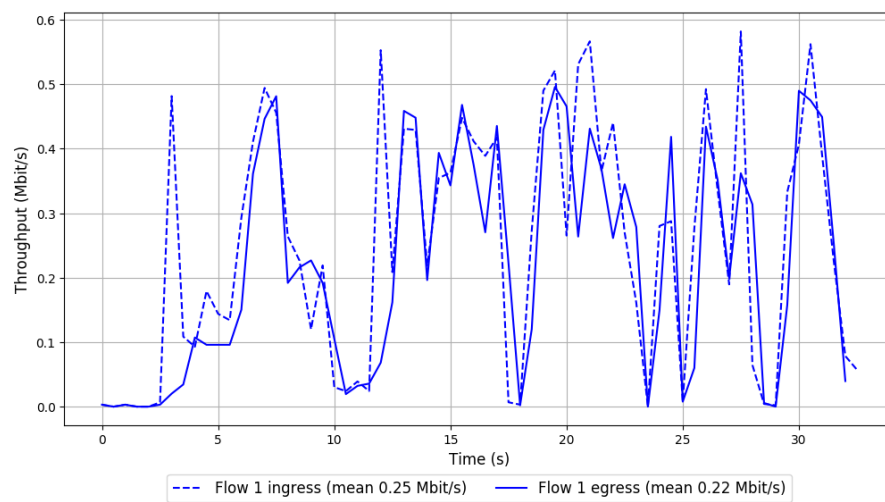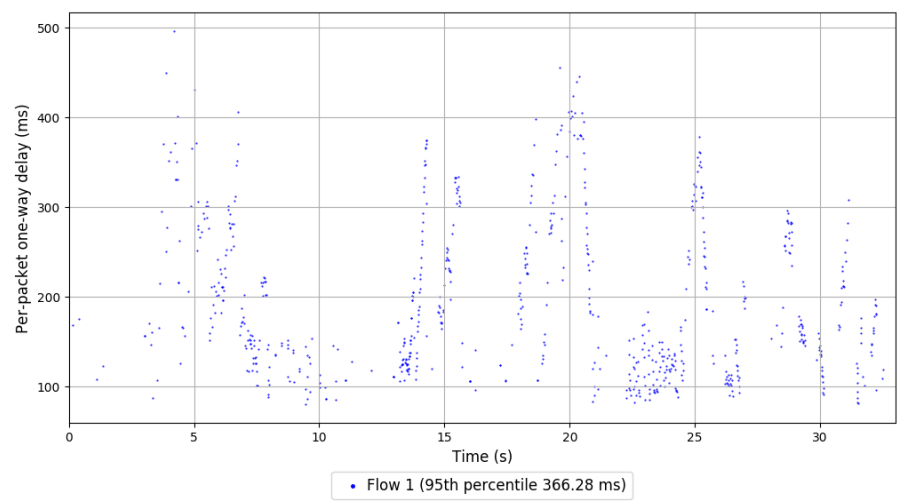# Run 3: Report of SCReAM — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2017-09-22 09:57:32
End at: 2017-09-22 09:58:02
Local clock offset: -1.963 ms
Remote clock offset: -1.214 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 385.194 ms
Loss rate: 12.53%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 385.194 ms
Loss rate: 12.53%
```
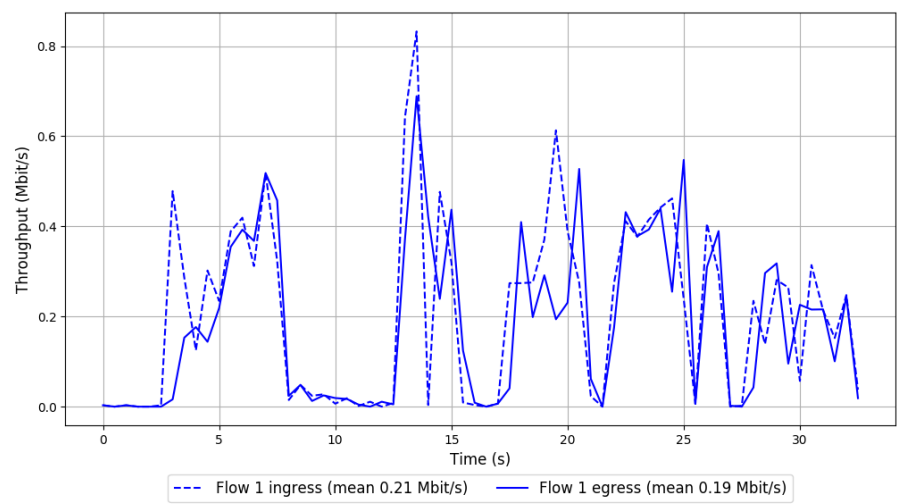
Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2017-09-22 10:13:49
End at: 2017-09-22 10:14:19
Local clock offset: -1.931 ms
Remote clock offset: -1.417 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 366.279 ms
Loss rate: 9.49%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 366.279 ms
Loss rate: 9.49%
```

Run 2: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.21 Mbit/s)   Flow 1 egress (mean 0.19 Mbit/s)
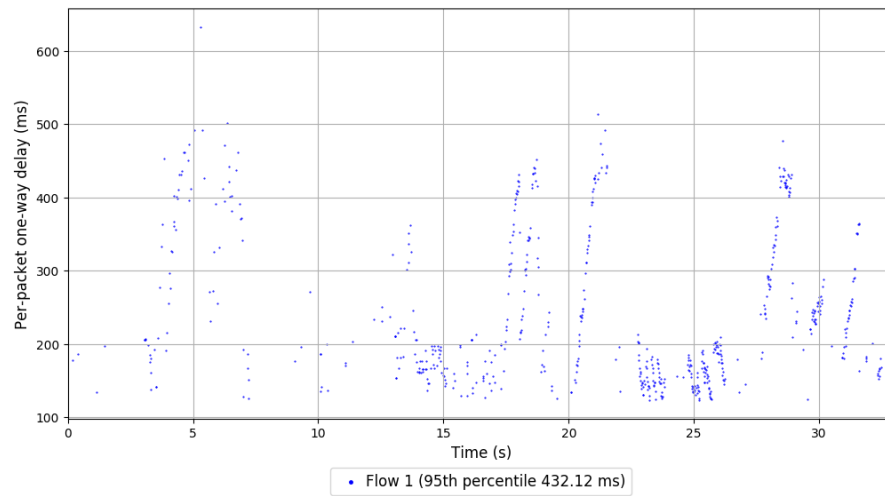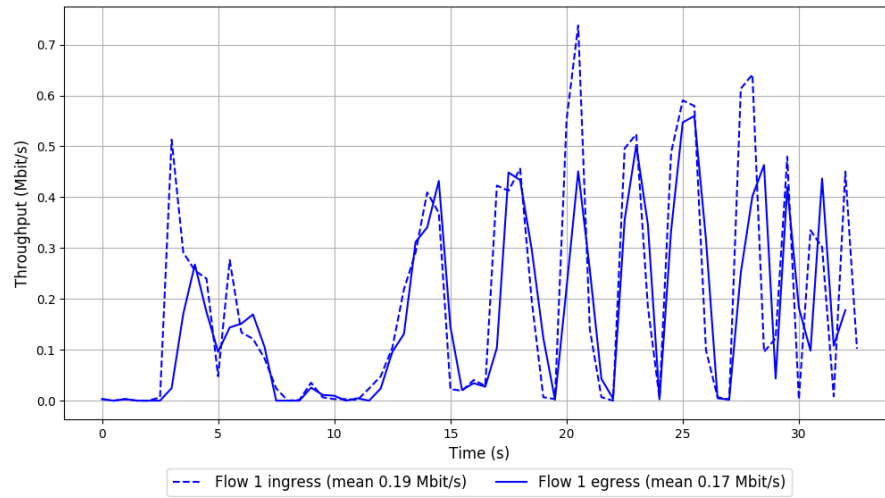

Flow 1 (95th percentile 366.28 ms)

```
Run 3: Statistics of WebRTC media

Start at: 2017-09-22 12:32:36
End at: 2017-09-22 12:33:06
Local clock offset: -2.538 ms
Remote clock offset: -42.898 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 432.123 ms
Loss rate: 14.37%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 432.123 ms
Loss rate: 14.37%
```

Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.19 Mbit/s)   Flow 1 egress (mean 0.17 Mbit/s)
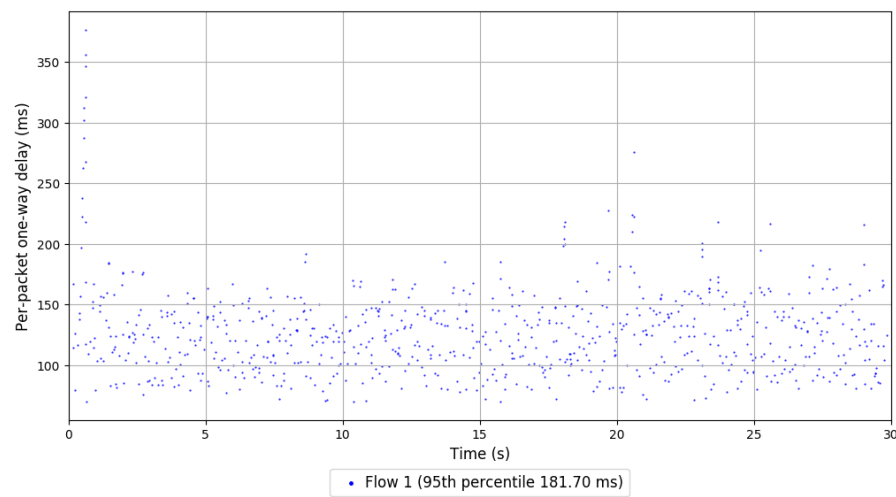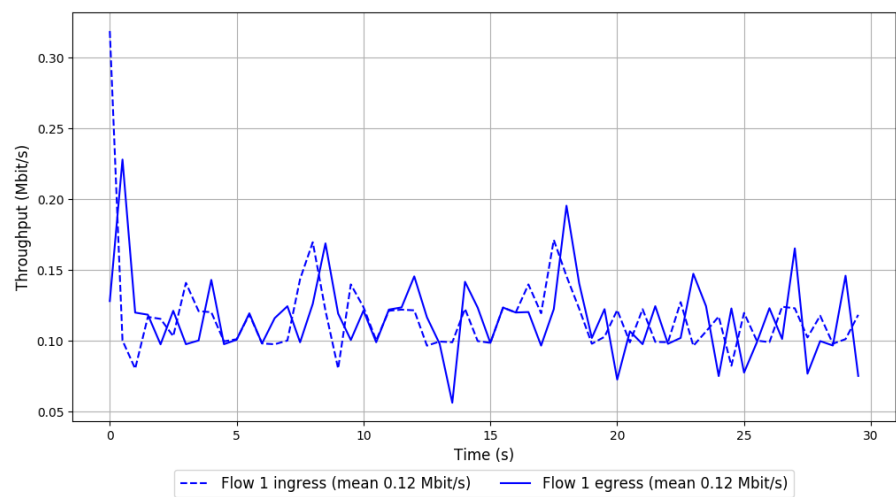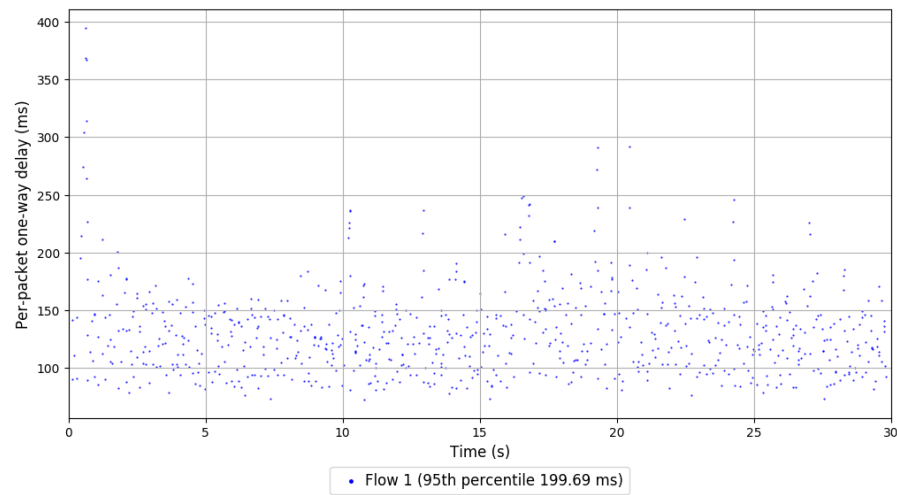

Flow 1 (95th percentile 432.12 ms)

```
Run 1: Statistics of Sprout

Start at: 2017-09-22 09:51:32
End at: 2017-09-22 09:52:02
Local clock offset: -1.156 ms
Remote clock offset: -1.124 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 181.696 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 181.696 ms
Loss rate: 0.93%
```

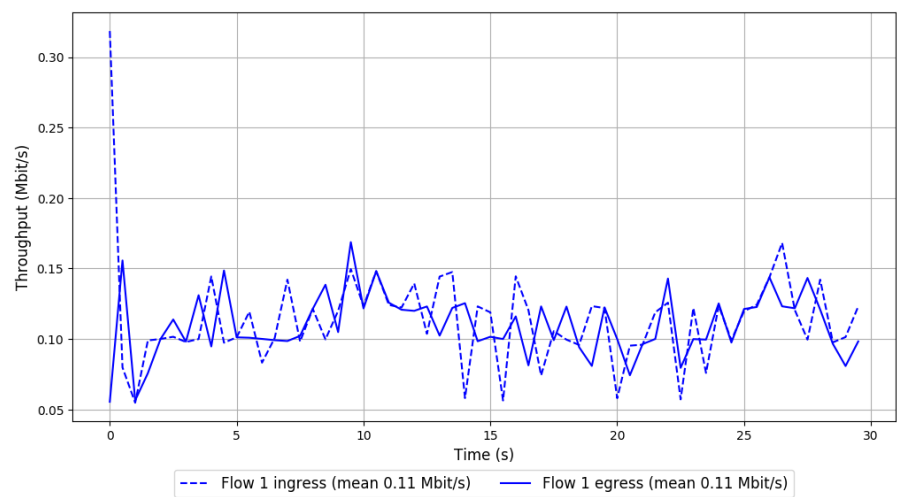Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2017-09-22 10:07:55
End at: 2017-09-22 10:08:25
Local clock offset: -1.859 ms
Remote clock offset: -1.361 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 199.685 ms
Loss rate: 3.41%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 199.685 ms
Loss rate: 3.41%
```

Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 0.11 Mbit/s) — — — Flow 1 egress (mean 0.11 Mbit/s)

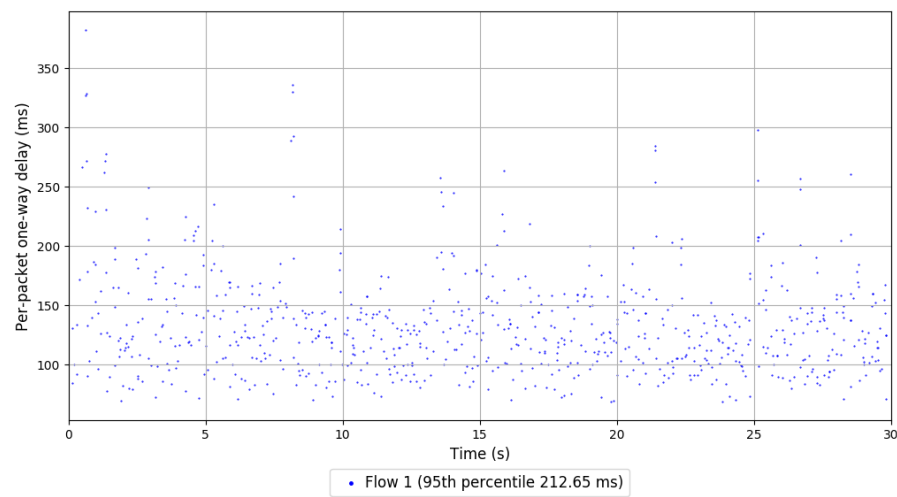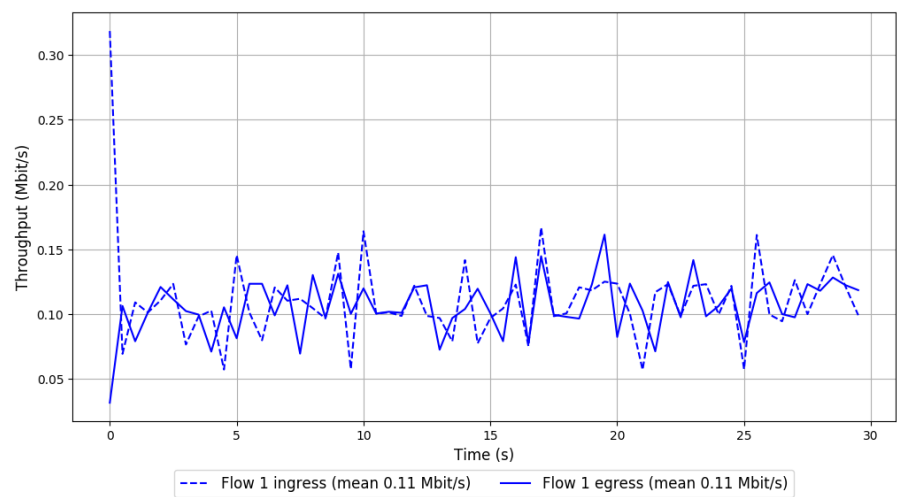Flow 1 (95th percentile 199.69 ms)

```
Run 3: Statistics of Sprout

Start at: 2017-09-22 10:24:12
End at: 2017-09-22 10:24:42
Local clock offset: -1.964 ms
Remote clock offset: -1.493 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 212.649 ms
Loss rate: 4.22%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 212.649 ms
Loss rate: 4.22%
```

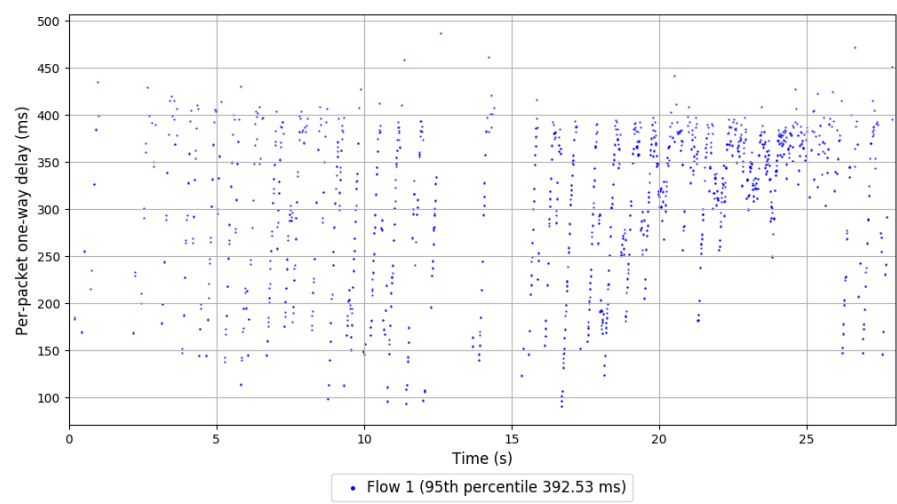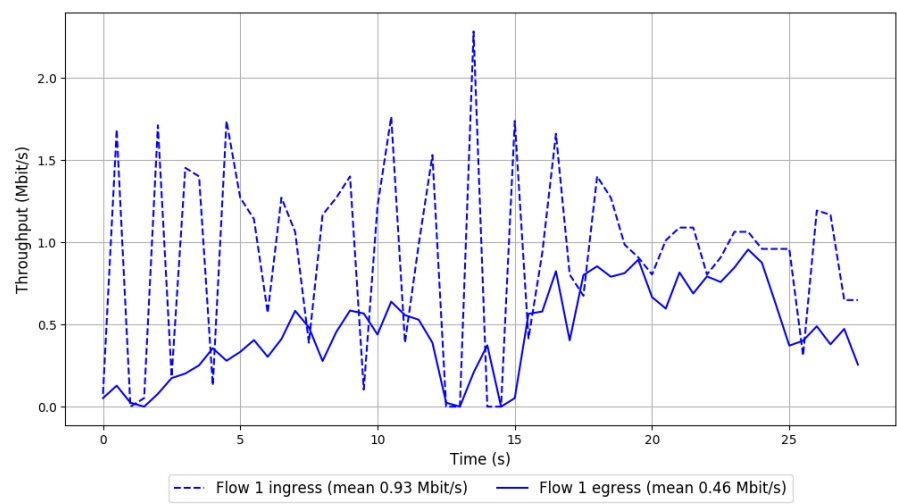## Run 3: Report of Sprout — Data Link

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

Start at: 2017-09-22 09:52:41
End at: 2017-09-22 09:53:11
Local clock offset: -1.062 ms
Remote clock offset: -1.165 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 392.528 ms
Loss rate: 50.38%
-- Flow 1:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 392.528 ms
Loss rate: 50.38%
```
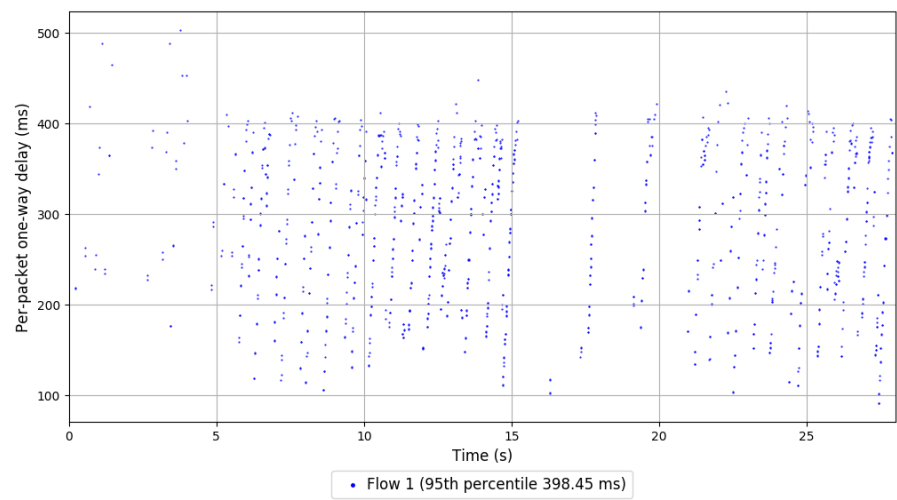
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 0.93 Mbit/s)   Flow 1 egress (mean 0.46 Mbit/s)

Flow 1 (95th percentile 392.53 ms)

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

Start at: 2017-09-22 10:09:11
End at: 2017-09-22 10:09:41
Local clock offset: -1.929 ms
Remote clock offset: -1.34 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 398.453 ms
Loss rate: 69.59%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 398.453 ms
Loss rate: 69.59%
```
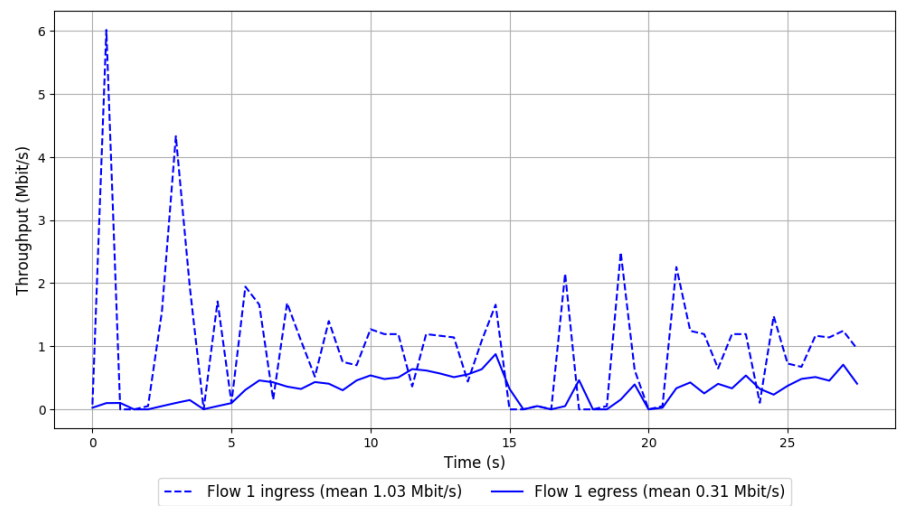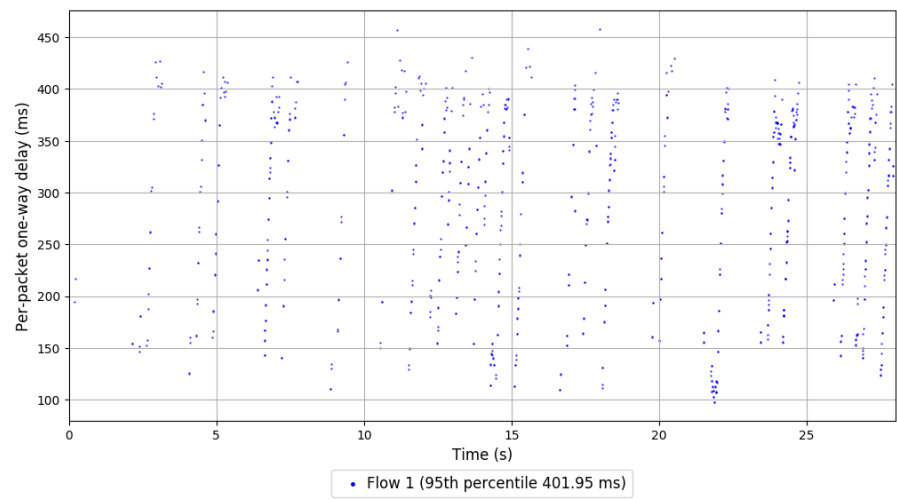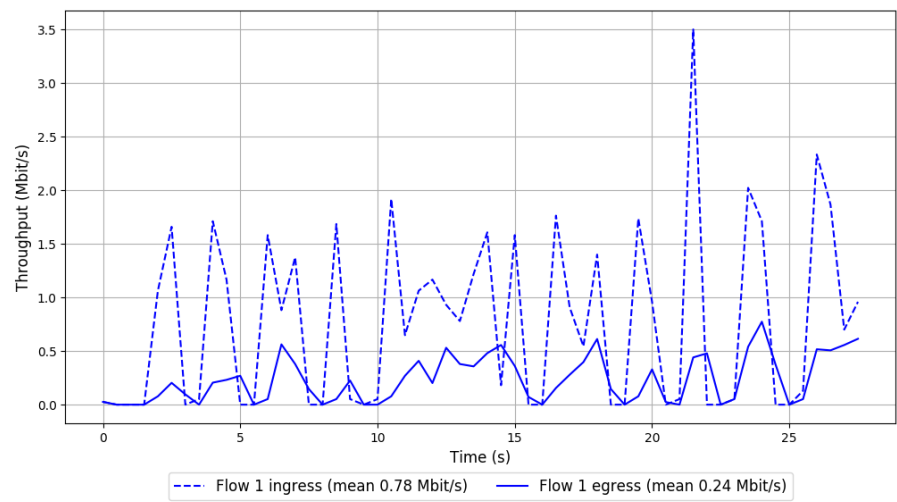
Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2017-09-22 10:25:20
End at: 2017-09-22 10:25:50
Local clock offset: -2.087 ms
Remote clock offset: -1.517 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 401.952 ms
Loss rate: 69.46%
-- Flow 1:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 401.952 ms
Loss rate: 69.46%
```

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

Flow 1 ingress (mean 0.78 Mbit/s)   Flow 1 egress (mean 0.24 Mbit/s)

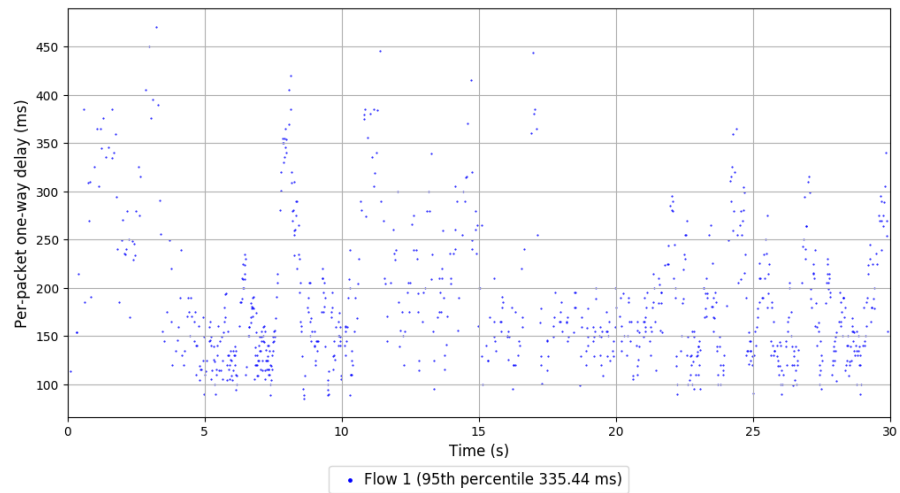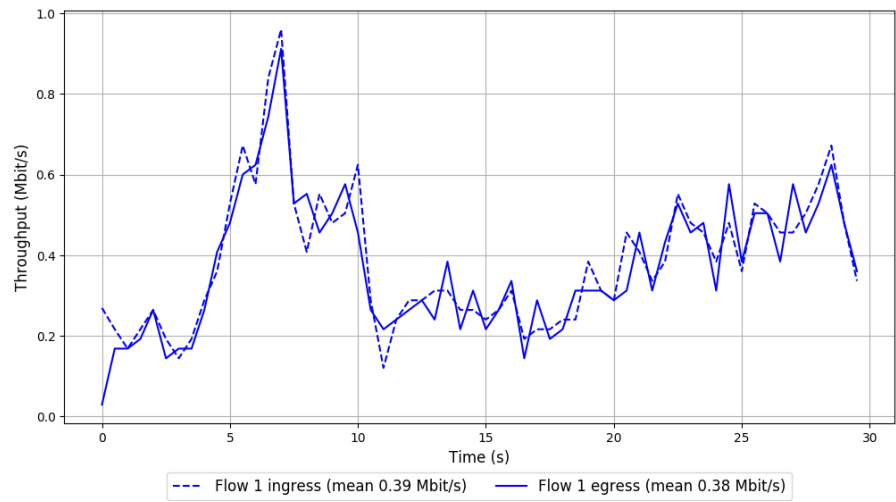
Flow 1 (95th percentile 401.95 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2017-09-22 09:53:50
End at: 2017-09-22 09:54:20
Local clock offset: -2.08 ms
Remote clock offset: -1.195 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 335.440 ms
Loss rate: 3.02%
-- Flow 1:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 335.440 ms
Loss rate: 3.02%
```

Run 1: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 0.39 Mbit/s)   Flow 1 egress (mean 0.38 Mbit/s)

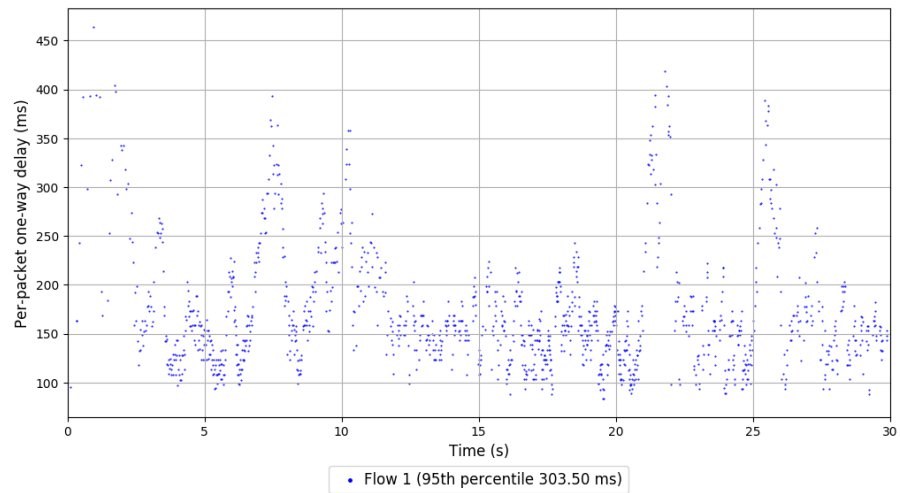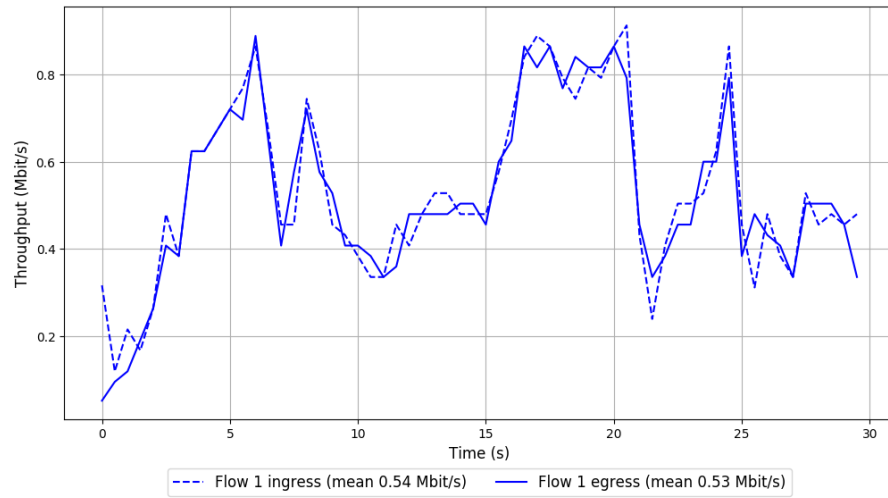Flow 1 (95th percentile 335.44 ms)

```
Run 2: Statistics of TCP Vegas

Start at: 2017-09-22 10:10:21
End at: 2017-09-22 10:10:51
Local clock offset: -1.86 ms
Remote clock offset: -1.413 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 303.495 ms
Loss rate: 1.94%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 303.495 ms
Loss rate: 1.94%
```
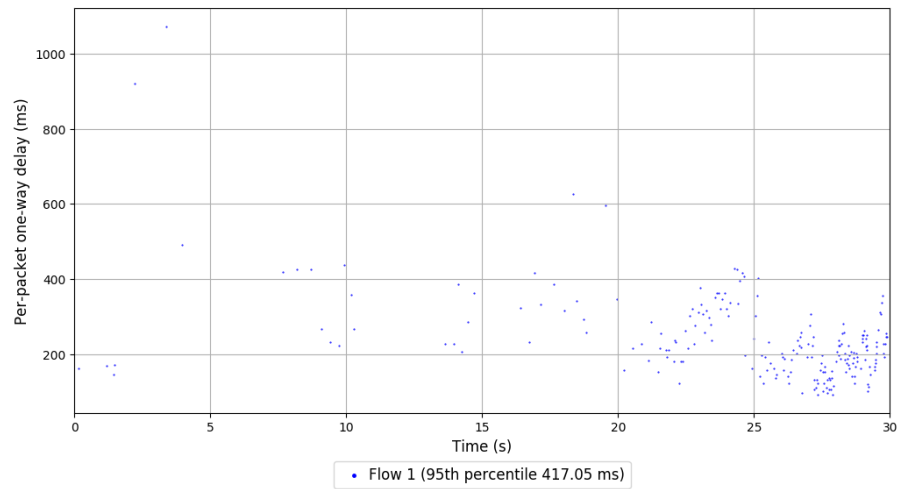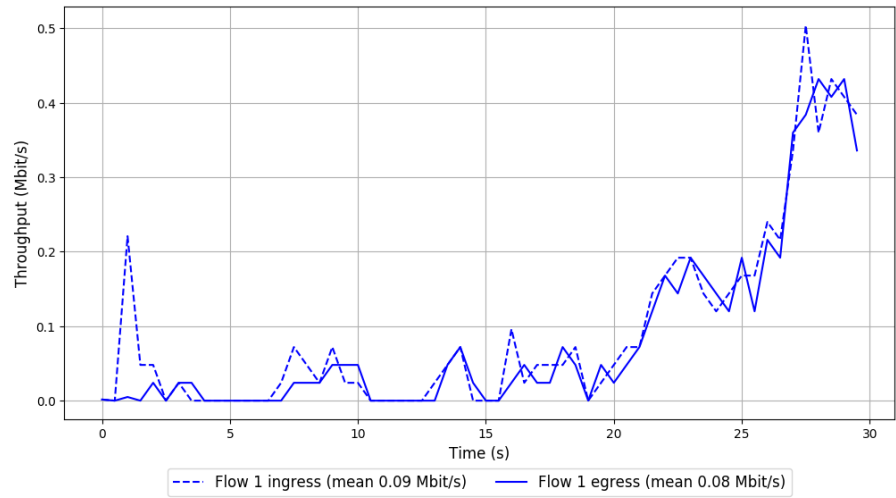
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2017-09-22 10:26:31
End at: 2017-09-22 10:27:01
Local clock offset: -1.989 ms
Remote clock offset: -1.528 ms

# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 417.049 ms
Loss rate: 11.48%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 417.049 ms
Loss rate: 11.48%
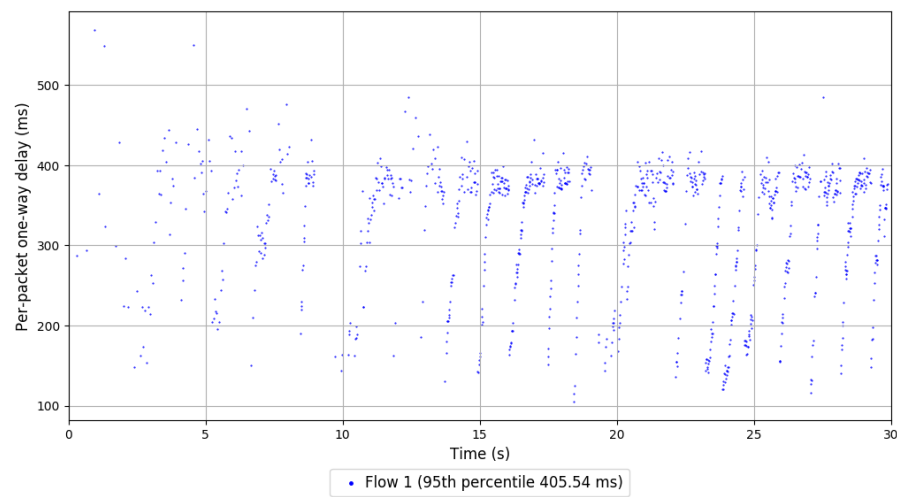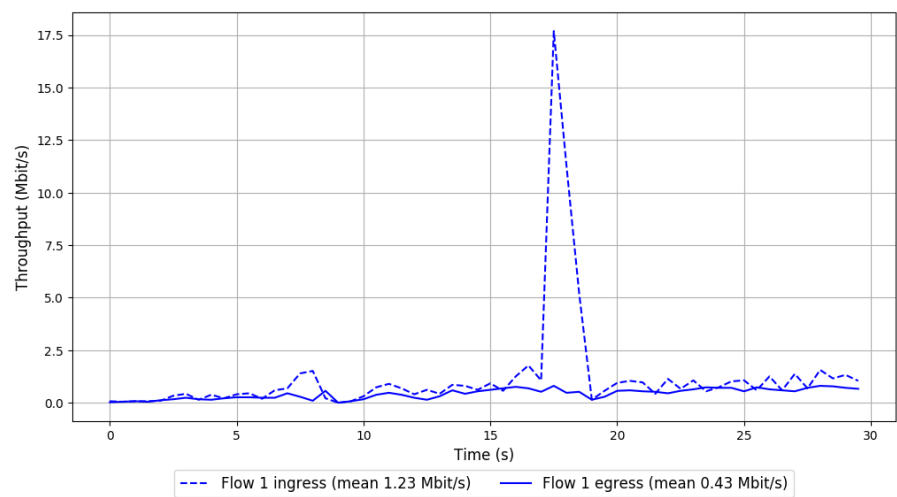```

Run 3: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2017-09-22 09:50:23
End at: 2017-09-22 09:50:53
Local clock offset: -0.86 ms
Remote clock offset: -1.104 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 405.544 ms
Loss rate: 65.14%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 405.544 ms
Loss rate: 65.14%
```

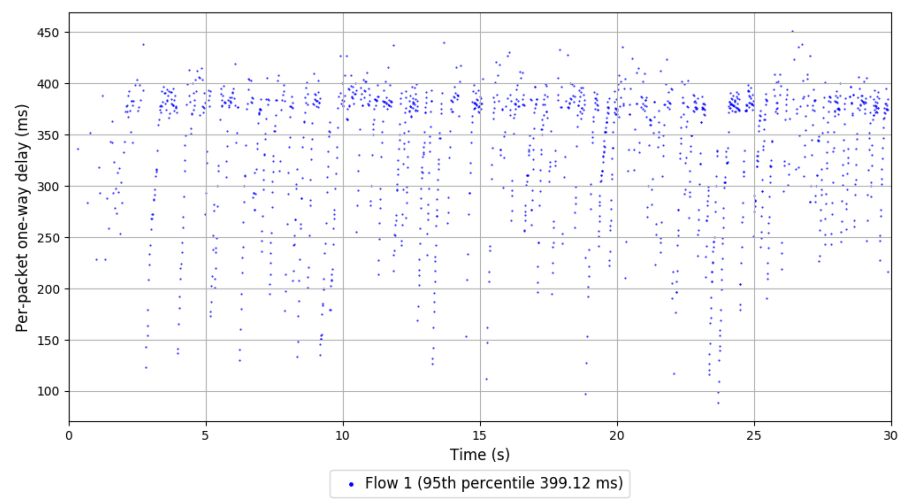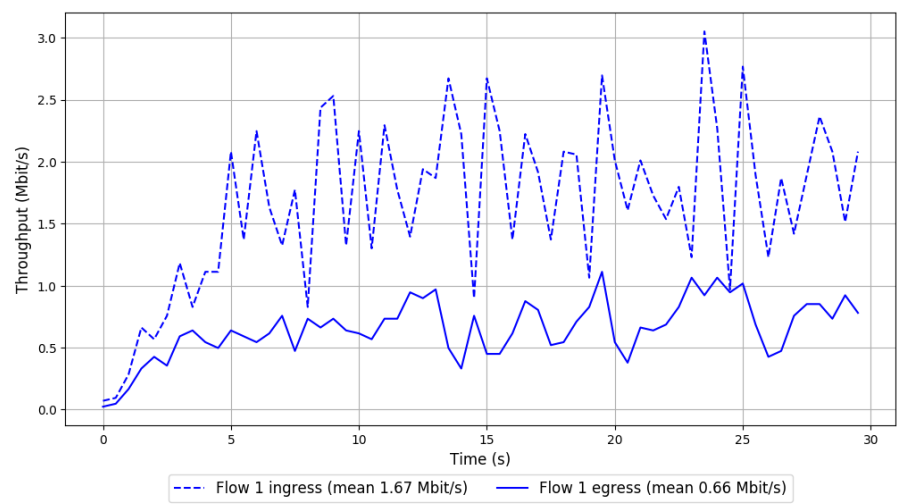Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2017-09-22 10:06:45
End at: 2017-09-22 10:07:15
Local clock offset: -1.838 ms
Remote clock offset: -1.334 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 399.118 ms
Loss rate: 60.75%
-- Flow 1:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 399.118 ms
Loss rate: 60.75%
```

Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2017-09-22 10:23:03
End at: 2017-09-22 10:23:33
Local clock offset: -2.021 ms
Remote clock offset: -1.51 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 413.712 ms
Loss rate: 58.14%
-- Flow 1:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 413.712 ms
Loss rate: 58.14%
```
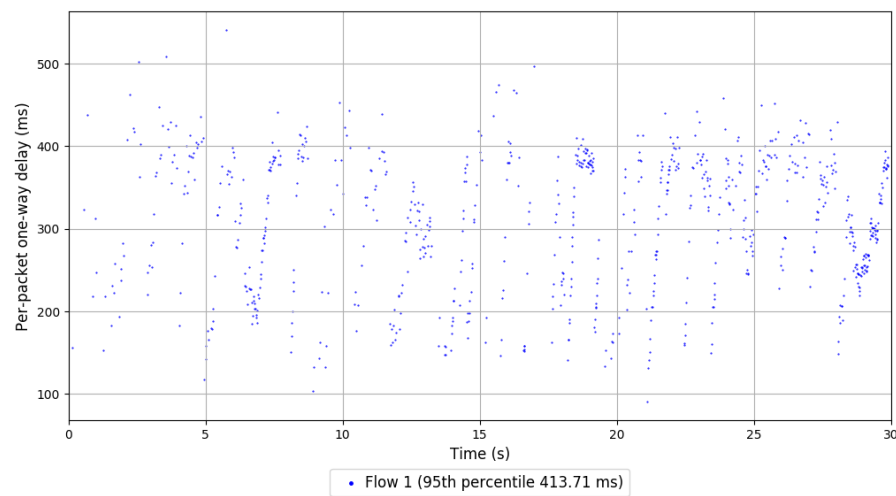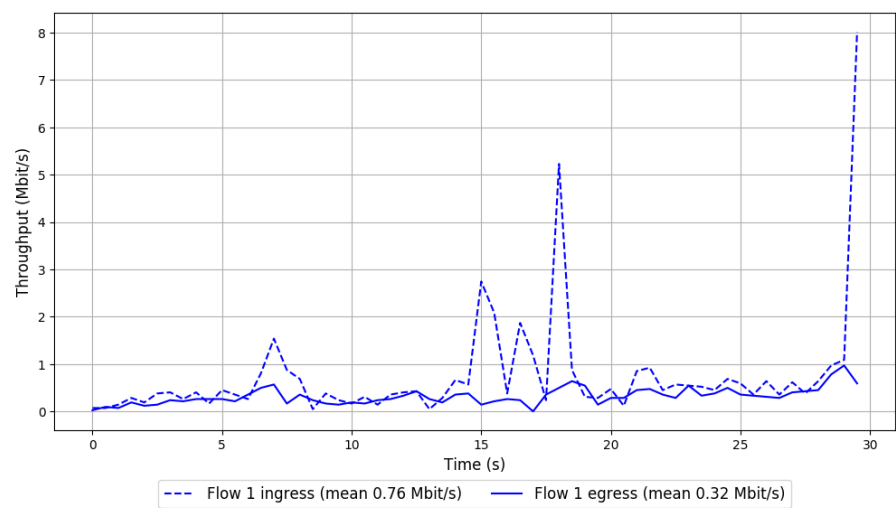
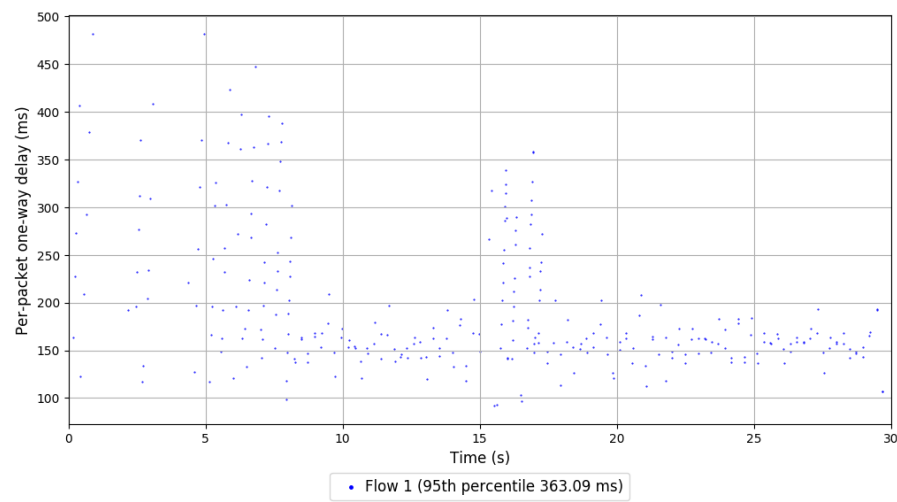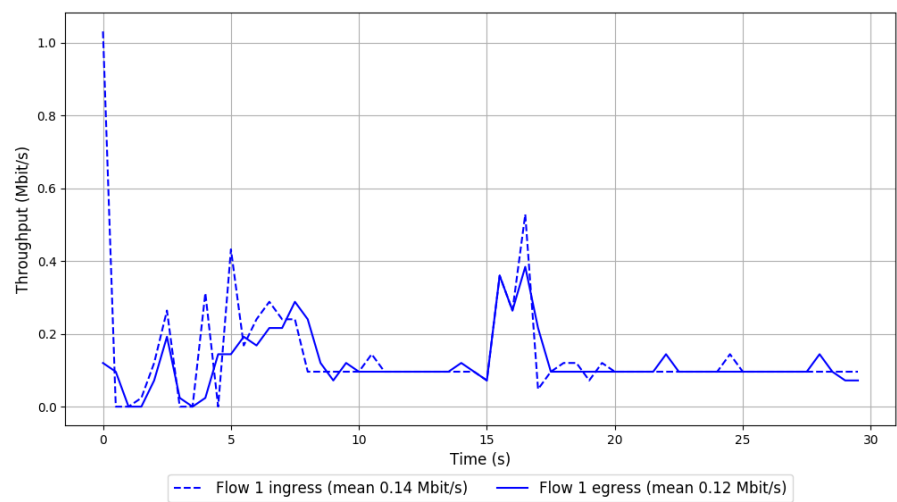Run 3: Report of Verus — Data Link

```
Run 1: Statistics of Indigo

Start at: 2017-09-22 09:45:48
End at: 2017-09-22 09:46:18
Local clock offset: -2.235 ms
Remote clock offset: -0.994 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 363.088 ms
Loss rate: 15.76%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 363.088 ms
Loss rate: 15.76%
```
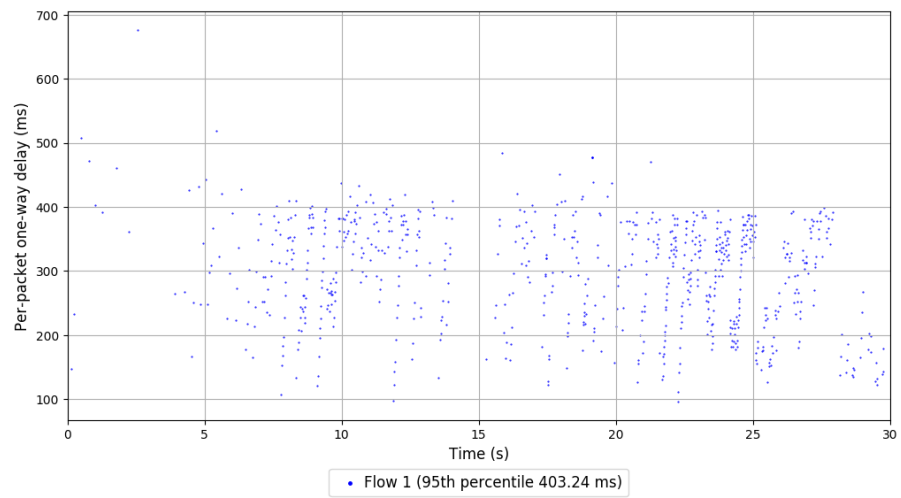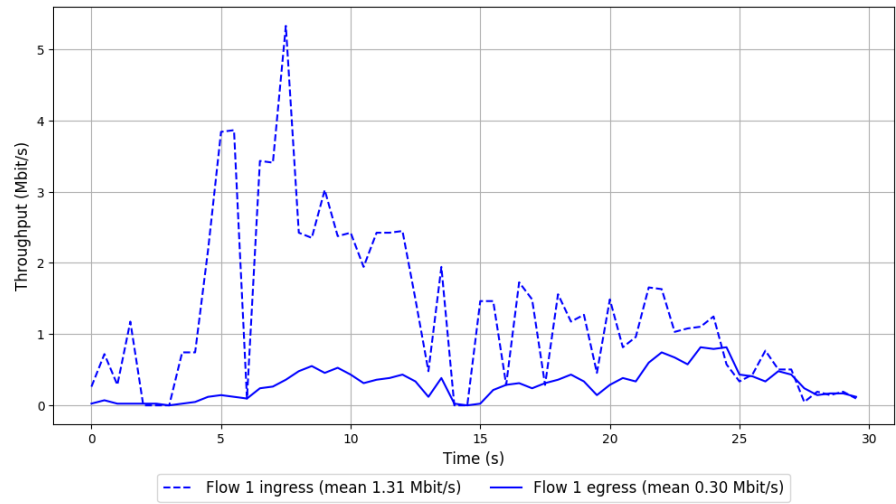
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2017-09-22 10:02:09
End at: 2017-09-22 10:02:39
Local clock offset: -2.013 ms
Remote clock offset: -1.304 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 403.244 ms
Loss rate: 76.84%
-- Flow 1:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 403.244 ms
Loss rate: 76.84%
```
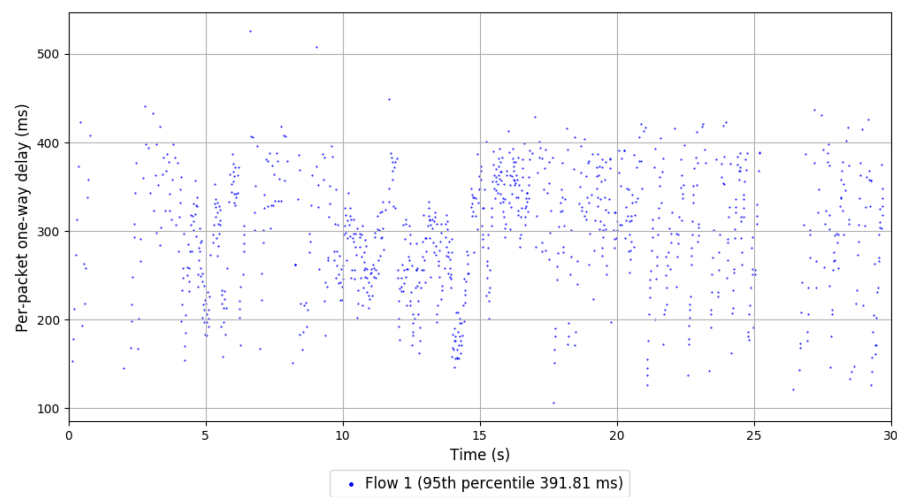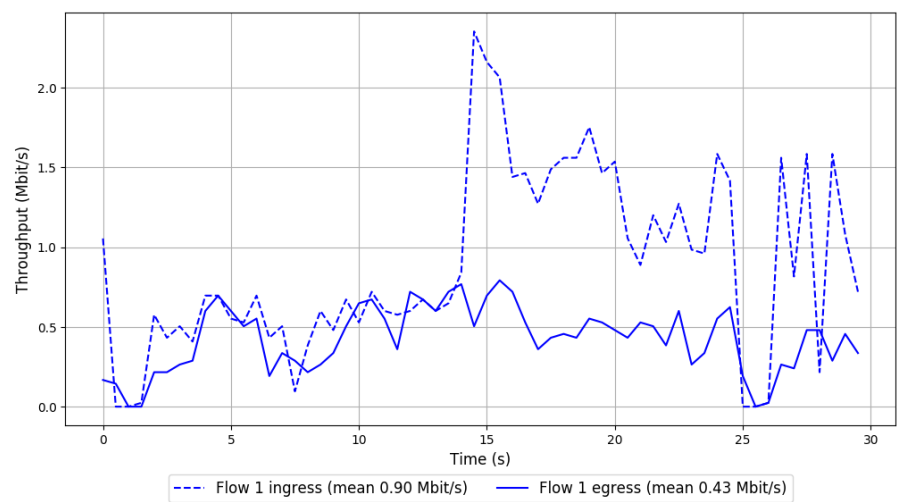
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2017-09-22 10:18:28
End at: 2017-09-22 10:18:58
Local clock offset: -2.089 ms
Remote clock offset: -1.448 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 391.805 ms
Loss rate: 51.96%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 391.805 ms
Loss rate: 51.96%
```
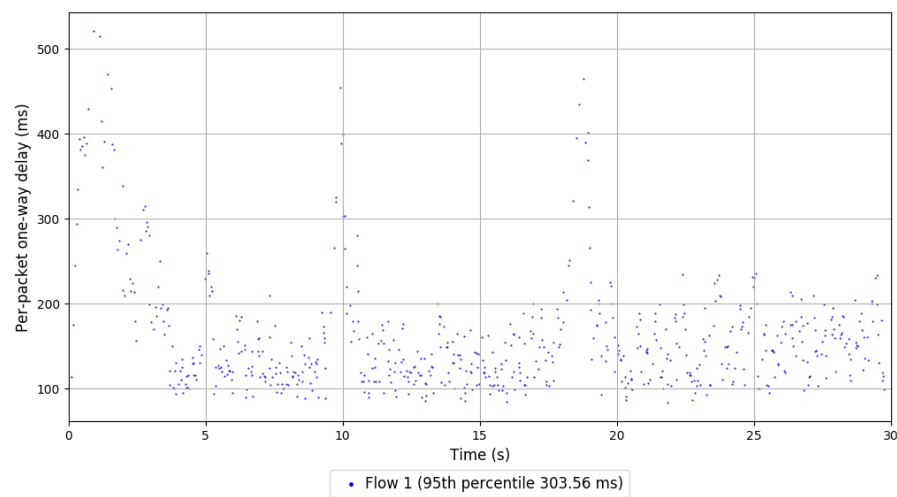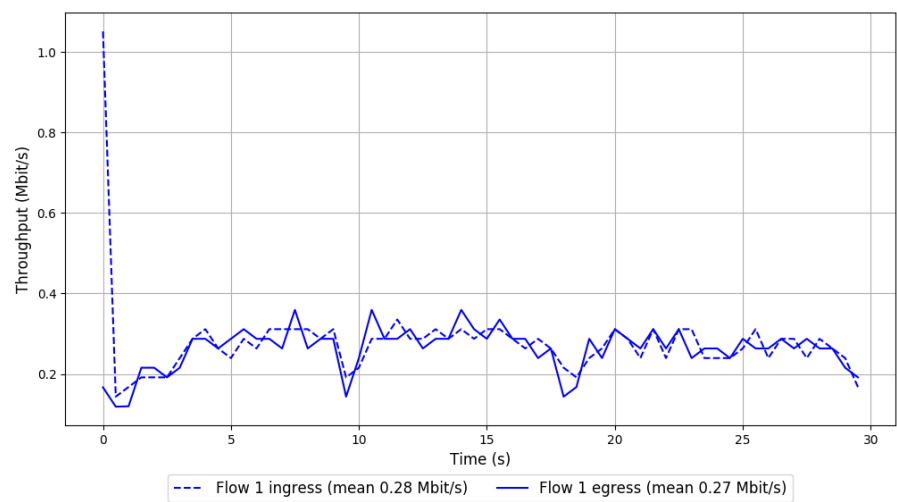
Run 3: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-cellular

Start at: 2017-09-22 09:44:34
End at: 2017-09-22 09:45:04
Local clock offset: -1.157 ms
Remote clock offset: -0.933 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 303.562 ms
Loss rate: 5.87%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 303.562 ms
Loss rate: 5.87%
```

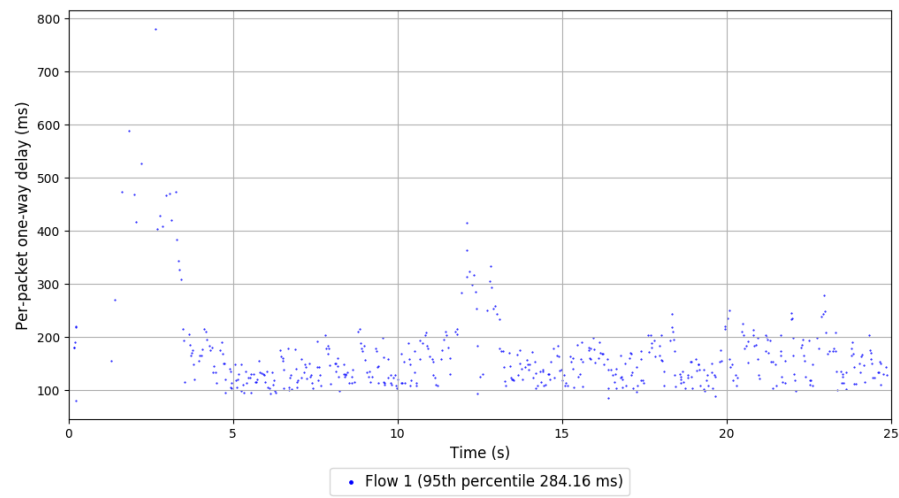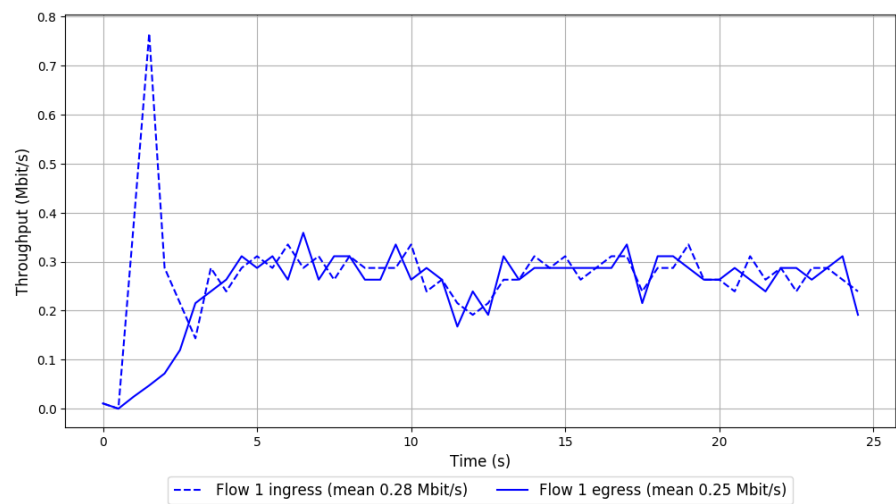Run 1: Report of Indigo-cellular — Data Link

```
Run 2: Statistics of Indigo-cellular

Start at: 2017-09-22 10:01:00
End at: 2017-09-22 10:01:30
Local clock offset: -0.885 ms
Remote clock offset: -1.247 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 284.161 ms
Loss rate: 9.90%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 284.161 ms
Loss rate: 9.90%
```

Run 2: Report of Indigo-cellular — Data Link

Flow 1 ingress (mean 0.28 Mbit/s)　　Flow 1 egress (mean 0.25 Mbit/s)
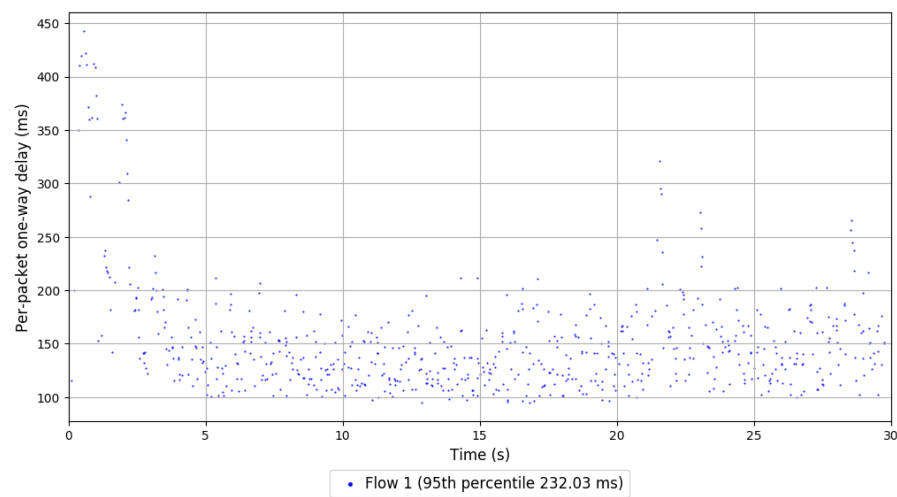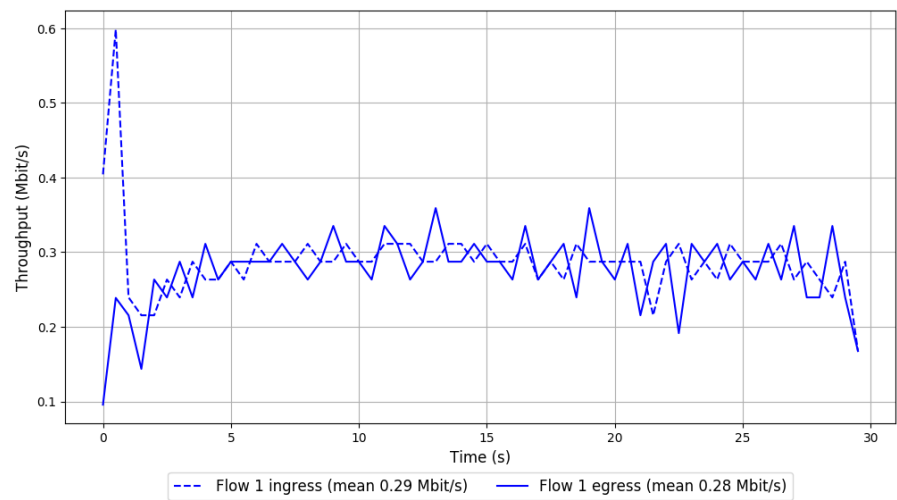

Flow 1 (95th percentile 284.16 ms)

```
Run 3: Statistics of Indigo-cellular

Start at: 2017-09-22 10:17:20
End at: 2017-09-22 10:17:50
Local clock offset: -0.866 ms
Remote clock offset: -10.536 ms

# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 232.035 ms
Loss rate: 4.14%
-- Flow 1:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 232.035 ms
Loss rate: 4.14%
```

Run 3: Report of Indigo-cellular — Data Link

Flow 1 ingress (mean 0.29 Mbit/s) --- Flow 1 egress (mean 0.28 Mbit/s)
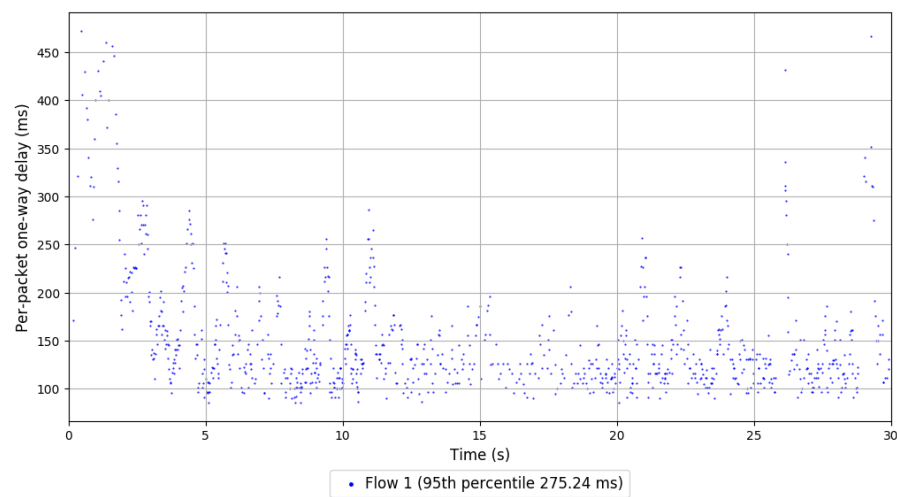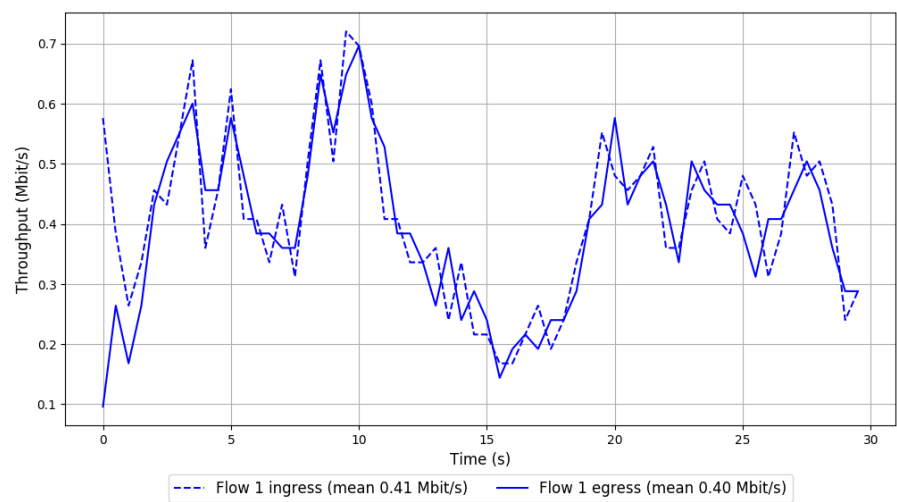

Flow 1 (95th percentile 232.03 ms)

```
Run 1: Statistics of KohoCC

Start at: 2017-09-22 09:48:05
End at: 2017-09-22 09:48:35
Local clock offset: -2.249 ms
Remote clock offset: -0.918 ms

# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 275.243 ms
Loss rate: 3.51%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 275.243 ms
Loss rate: 3.51%
```

Run 1: Report of KohoCC — Data Link

Flow 1 ingress (mean 0.41 Mbit/s) ----- Flow 1 egress (mean 0.40 Mbit/s) ——
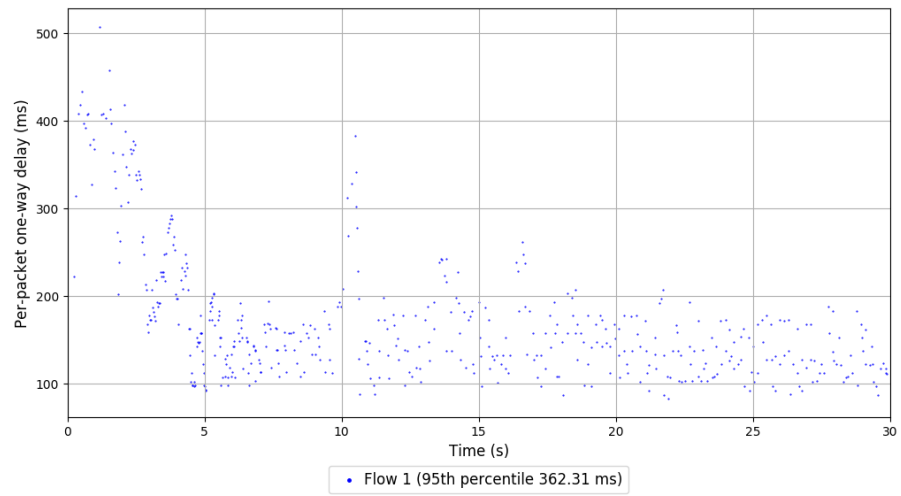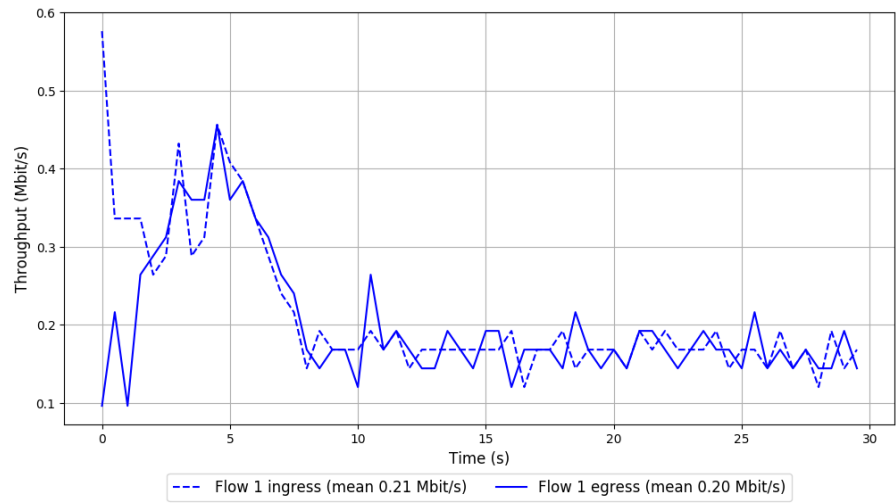

Flow 1 (95th percentile 275.24 ms)

```
Run 2: Statistics of KohoCC

Start at: 2017-09-22 10:04:27
End at: 2017-09-22 10:04:57
Local clock offset: -2.08 ms
Remote clock offset: -1.378 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 362.312 ms
Loss rate: 5.98%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 362.312 ms
Loss rate: 5.98%
```

Run 2: Report of KohoCC — Data Link

```
Run 3: Statistics of KohoCC

Start at: 2017-09-22 10:20:46
End at: 2017-09-22 10:21:16
Local clock offset: -1.963 ms
Remote clock offset: -1.431 ms


# Below is generated by plot.py at 2017-09-22 13:26:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 393.082 ms
Loss rate: 10.28%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 393.082 ms
Loss rate: 10.28%
```

Run 3: Report of KohoCC — Data Link

Flow 1 ingress (mean 0.22 Mbit/s)   Flow 1 egress (mean 0.20 Mbit/s)

Flow 1 (95th percentile 393.08 ms)