sib03

November 20, 2016

1 MI-SIB HW2

```python
In [16]: import numpy as np
         import datetime as dt
         import matplotlib.pyplot as plt
         import scipy.stats as stats


         TIMES_COL = 0
         SIZES_COL = 1


         def get_dump_data(filename):
             with open(filename) as f:
                 lines = f.readlines()

             timestamps = [ line.split()[TIMES_COL] for line in lines ]
             sizes      = [ int(line.split()[SIZES_COL]) for line in lines ]
             return timestamps, sizes


         def sizes_info(sizes):
             np_sizes = np.array(sizes)
             print("Sizes mean [B]:", np_sizes.mean())

             EQUAL_BINS = np.arange(min(np_sizes), max(np_sizes) + 50, 50)
             plt.hist(np_sizes, bins=EQUAL_BINS)
             plt.title("Packet sizes")
             plt.xlabel("Size [B]")
             plt.ylabel("Packet samples")
             plt.show()

             stats.probplot(np_sizes, dist="expon", plot=plt)
             plt.show()


         def times_info(times):
```

```python
dates = [ dt.datetime.strptime(t, "%H:%M:%S.%f") for t in times ]
deltas = [ date.microsecond for date in dates ]
np_deltas = np.array(deltas) / 1000

print("Time deltas mean [ms]:", np_deltas.mean())
EQUAL_BINS = np.arange(min(np_deltas), max(np_deltas) + 20, 20)
plt.hist(np_deltas, bins=EQUAL_BINS)
plt.title("Times between sending packets")
plt.xlabel("Time [ms]")
plt.ylabel("Packet samples")
plt.show()

stats.probplot(np_deltas, dist="expon", plot=plt)
plt.show()


exp_times, exp_sizes = get_dump_data("logs/exp.dump")
const_traffic_times, const_traffic_sizes = get_dump_data("logs/const_traff
exp_traffic_times, exp_traffic_sizes = get_dump_data("logs/exp_traffic.dum
```
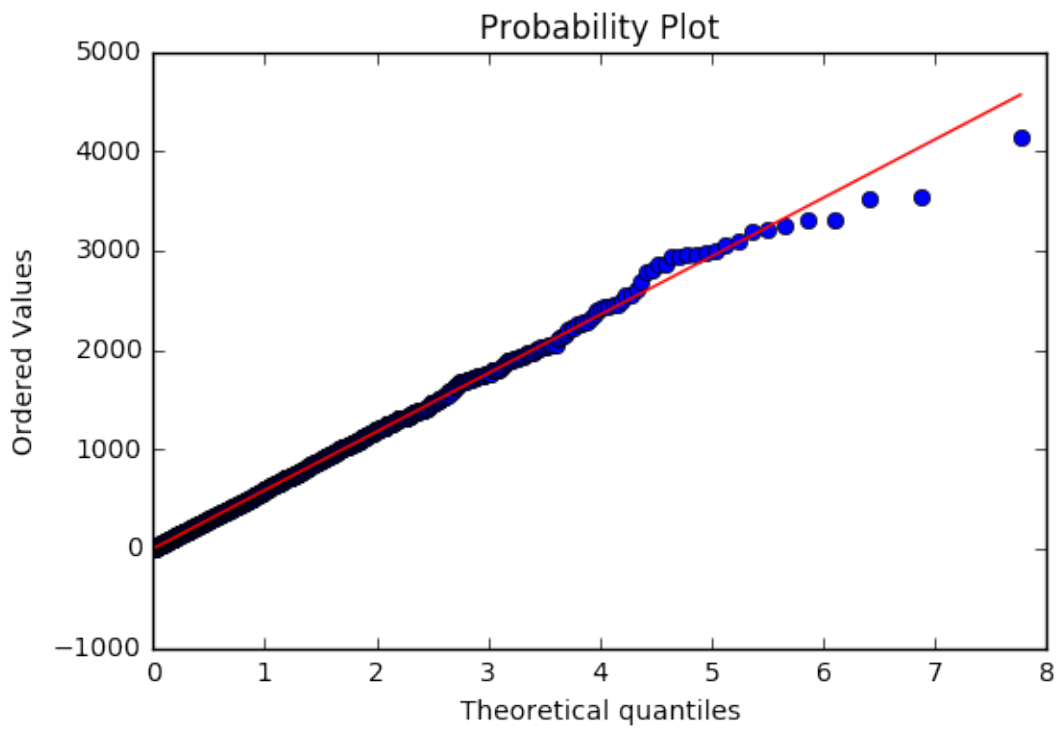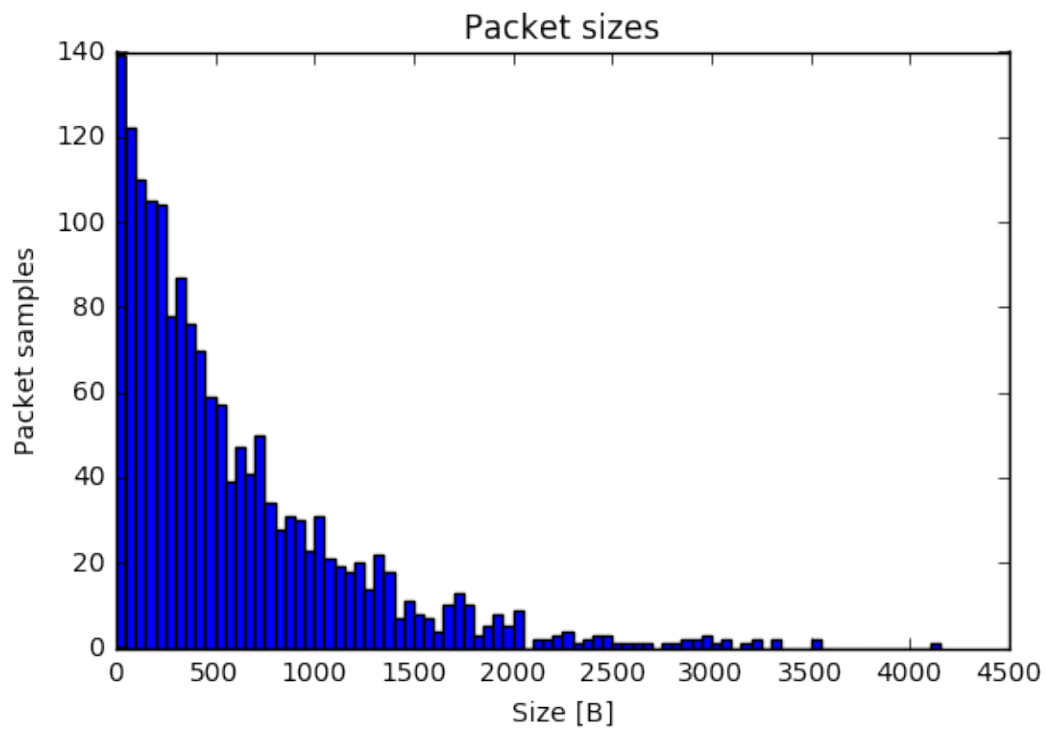
1.1 1) Random exp data (arrival exp 0.02, length exp 576)

1.1.1 Packet sizes
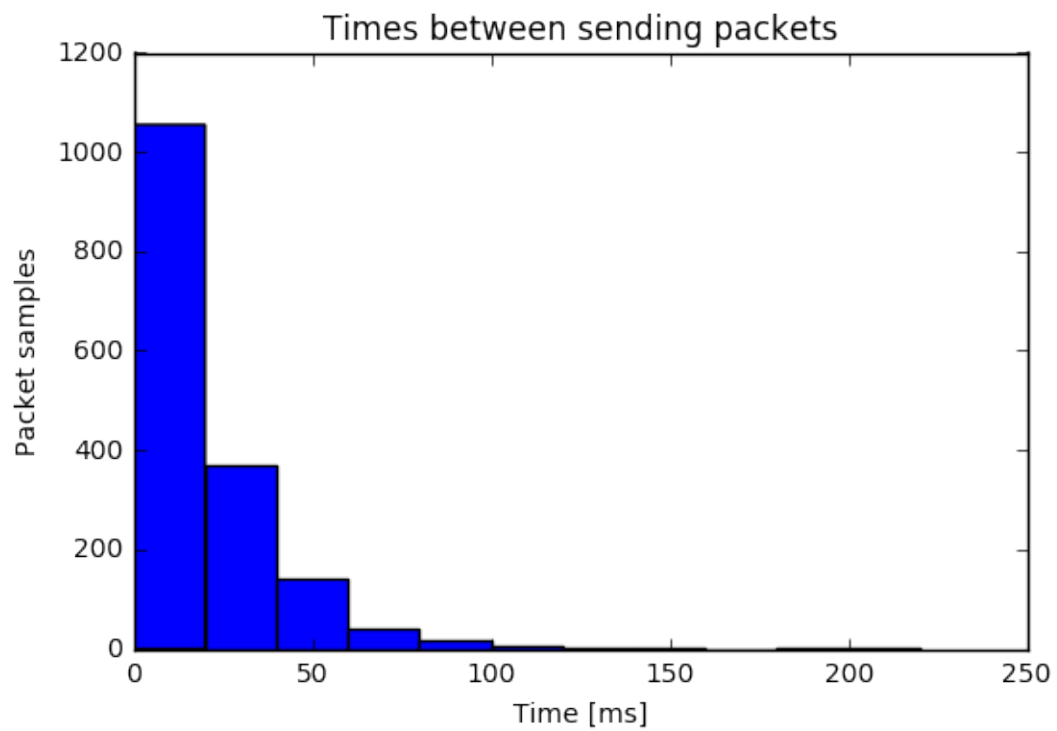
```
In [17]: sizes_info(exp_sizes)

Sizes mean [B]: 586.548564447
```

Packet sizes

Probability Plot

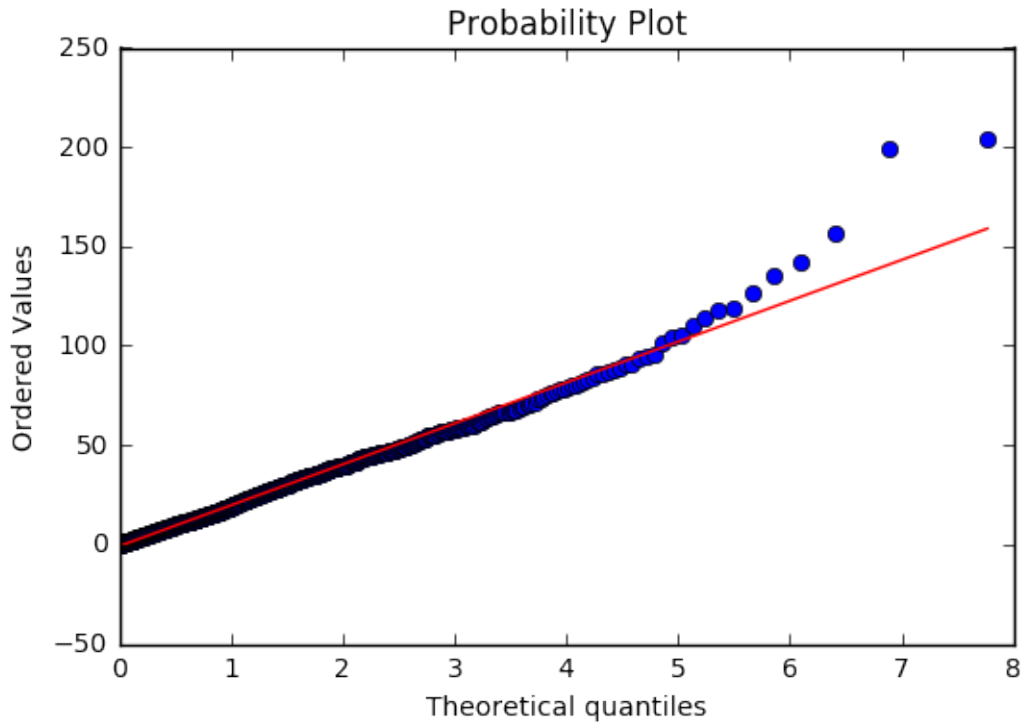### 1.1.2 Inter-packet times

```
In [18]: times_info(exp_times)

Time deltas mean [ms]: 19.7255638363
```

1.2 2a) Traffic generator (arrival exp 0.02, length 1400)
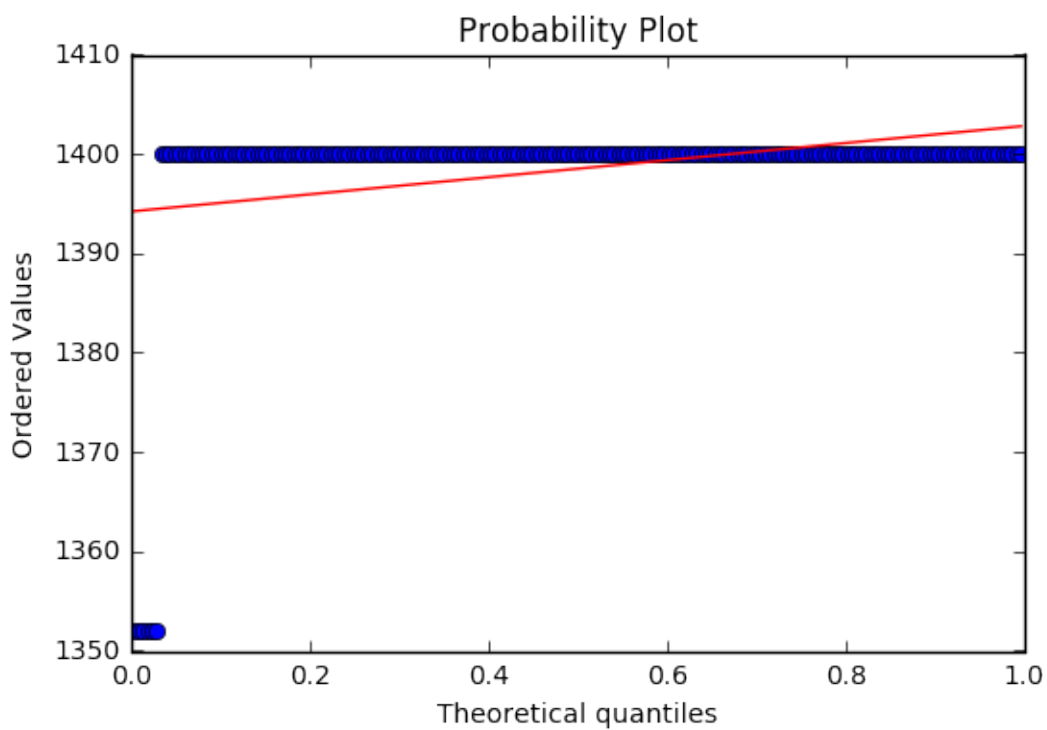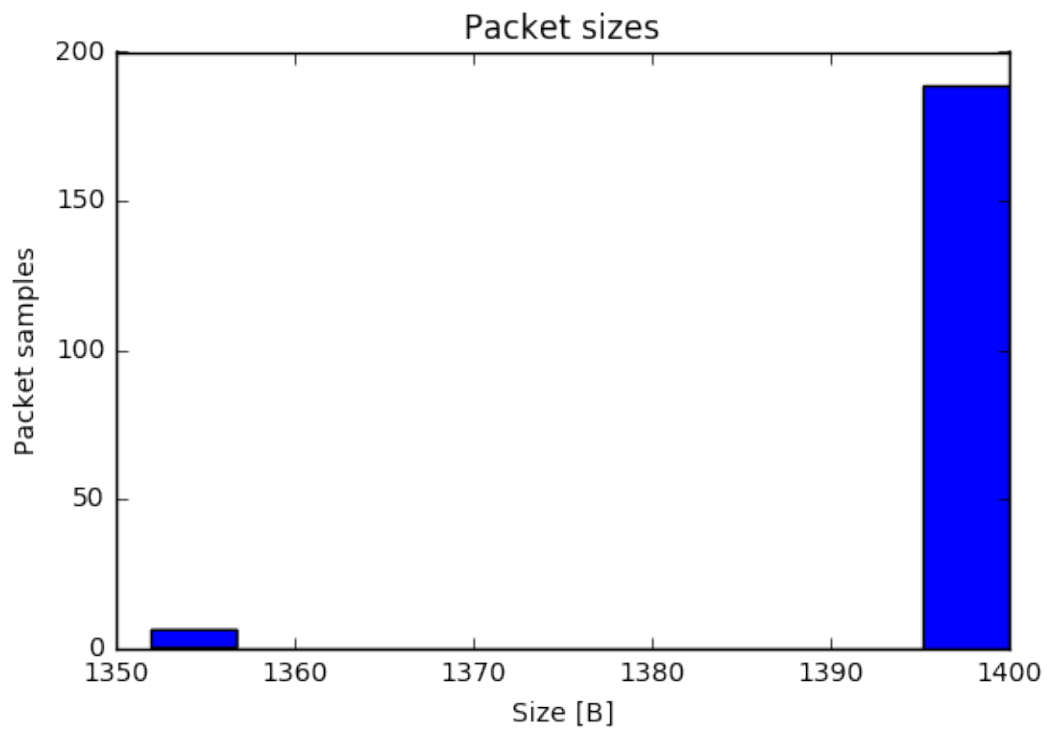
1.2.1 Packet sizes

```
In [19]: np_sizes = np.array(const_traffic_sizes)
         print("Sizes mean [B]:", np_sizes.mean())

         plt.hist(np_sizes)
         plt.title("Packet sizes")
         plt.xlabel("Size [B]")
         plt.ylabel("Packet samples")
         plt.show()

         stats.probplot(np_sizes, dist="uniform", plot=plt)
         plt.show()

Sizes mean [B]: 1398.52307692
```
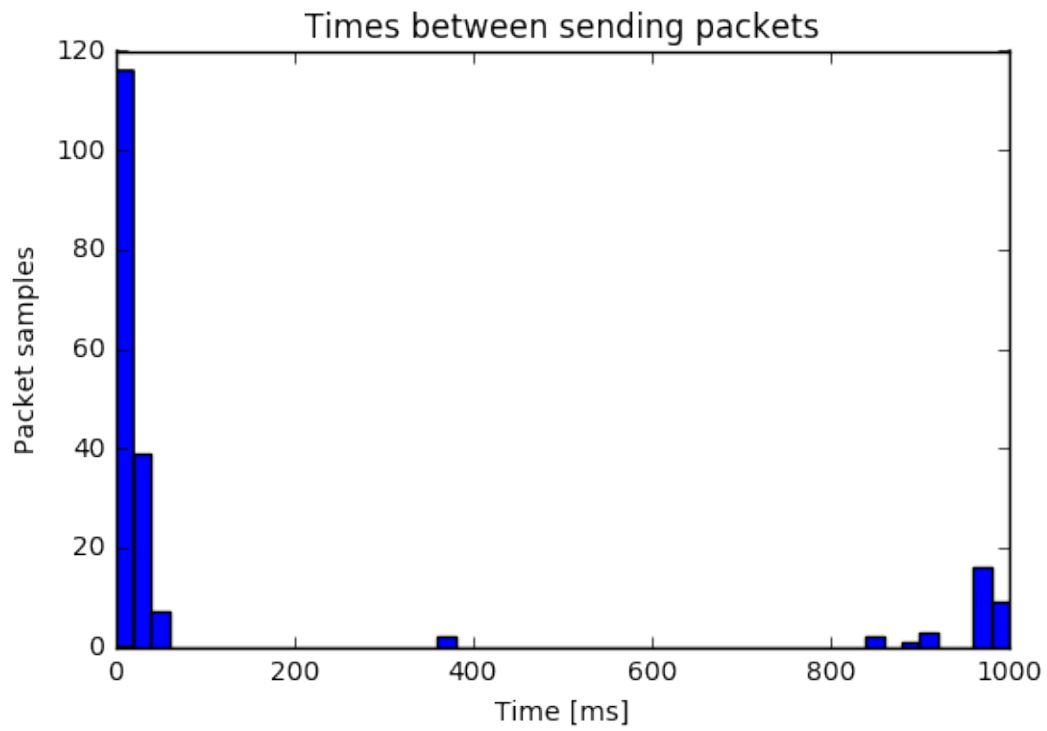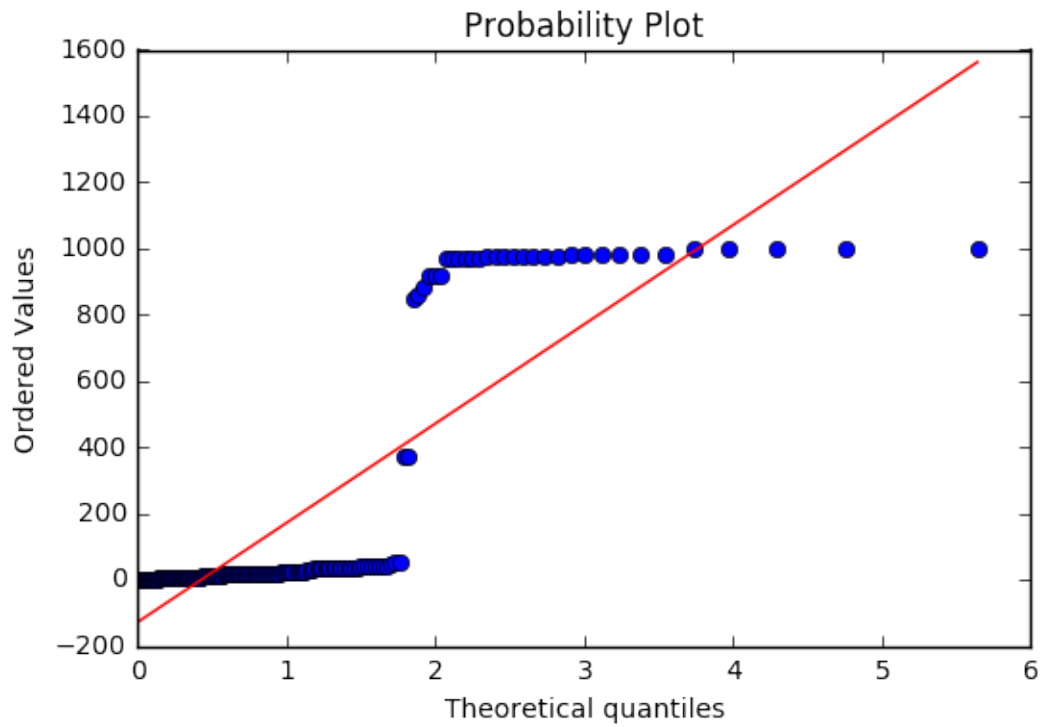
Packet sizes

Probability Plot

1.2.2 Inter-packet times

```
In [20]: times_info(const_traffic_times)

Time deltas mean [ms]: 169.831989744
```
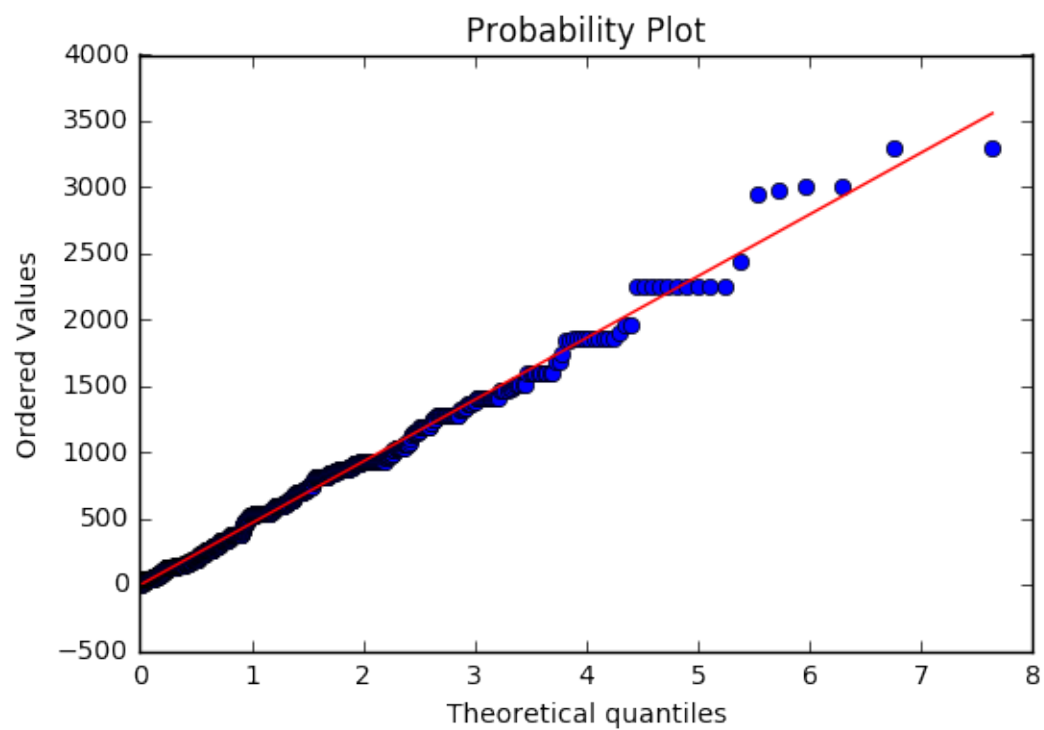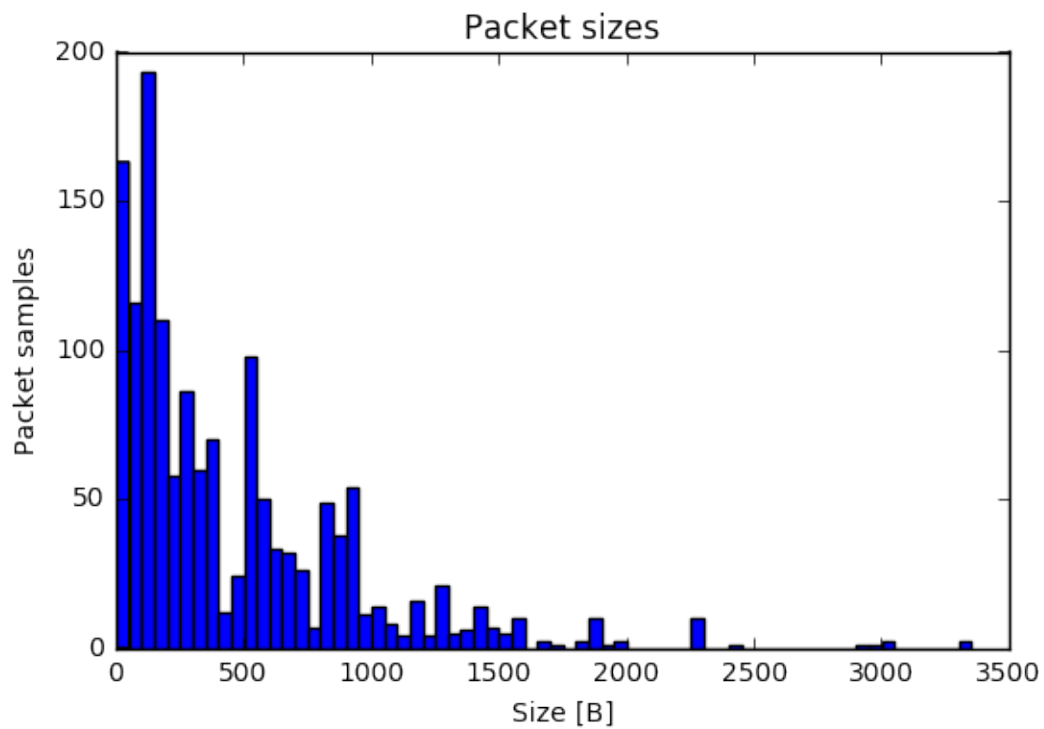
Probability Plot

1.3   2b) Traffic generator (arrival exp 0.02, length exp 576)

1.3.1   Packet sizes

```
In [21]: sizes_info(exp_traffic_sizes)
```

```
Sizes mean [B]: 462.387769284
```

Packet sizes

Probability Plot

1.3.2 Inter-packet times

```
In [22]: times_info(exp_traffic_times)
```

```
Time deltas mean [ms]: 48.0130354413
```


Times between sending packets

Probability Plot