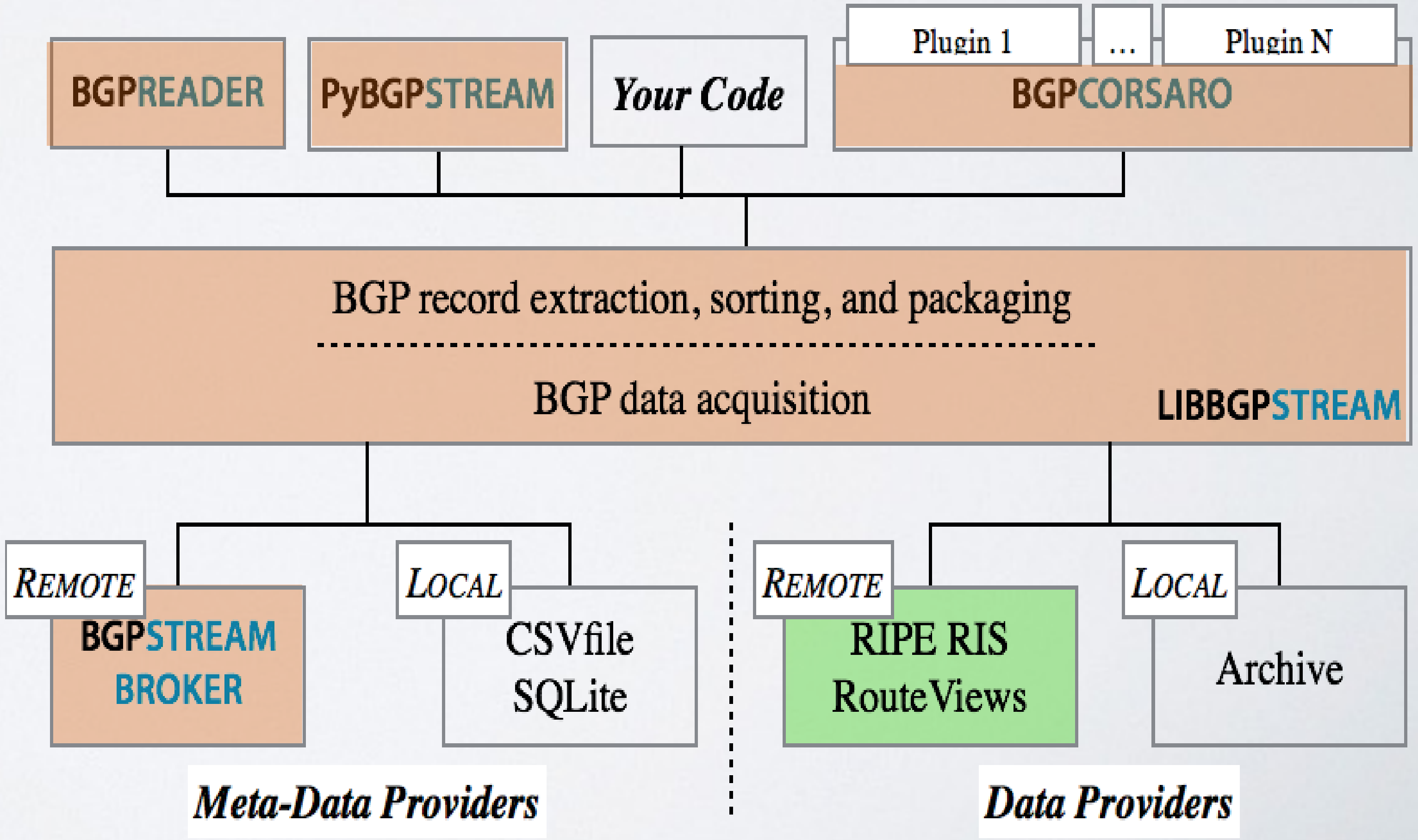
BGP STREAM

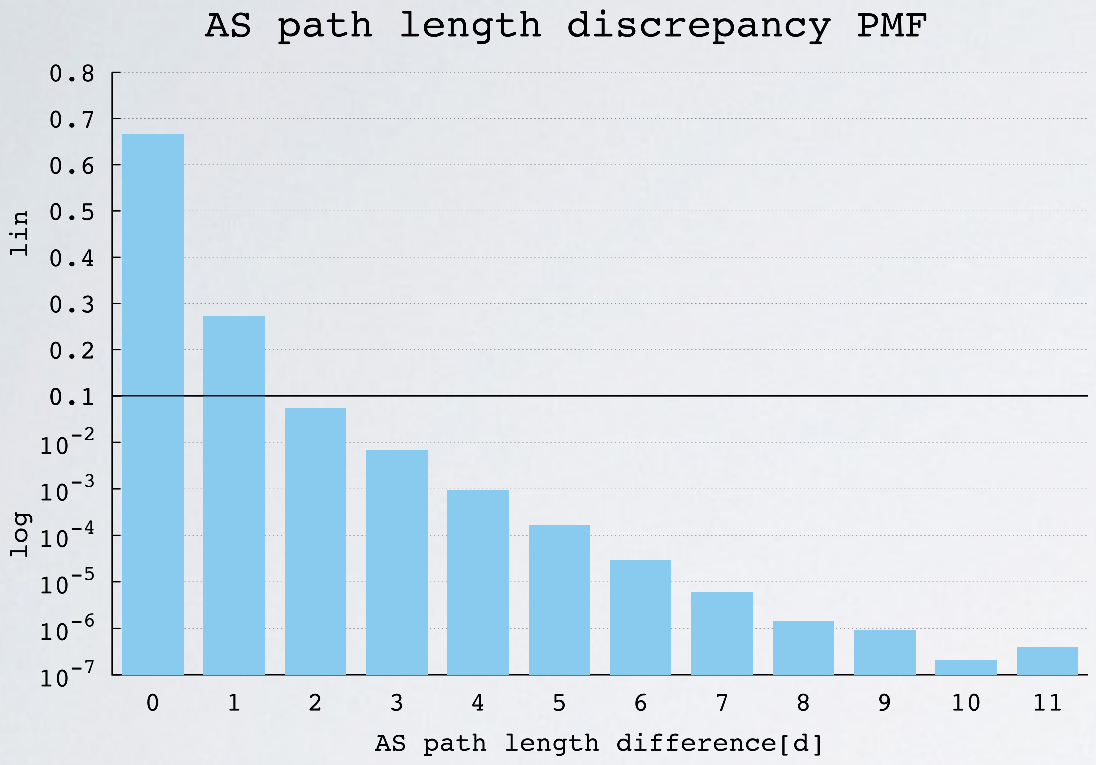
bgpstream.caida.org - github.com/CAIDA/bgpstream

- A software framework for **historical** and **live** BGP data analysis
- Design goals:
  - Efficiently deal with large amounts of distributed BGP data
  - Offer a time-ordered data stream of data from heterogeneous sources
  - Support near-realtime data processing
  - Target a broad range of applications and users
  - Scalable
  - Easily extensible



PYBGPSTREAM

Example: studying AS path inflation



How many AS paths are longer than the shortest path between two ASes due to routing policies? (directly correlates to the increase in BGP convergence time)

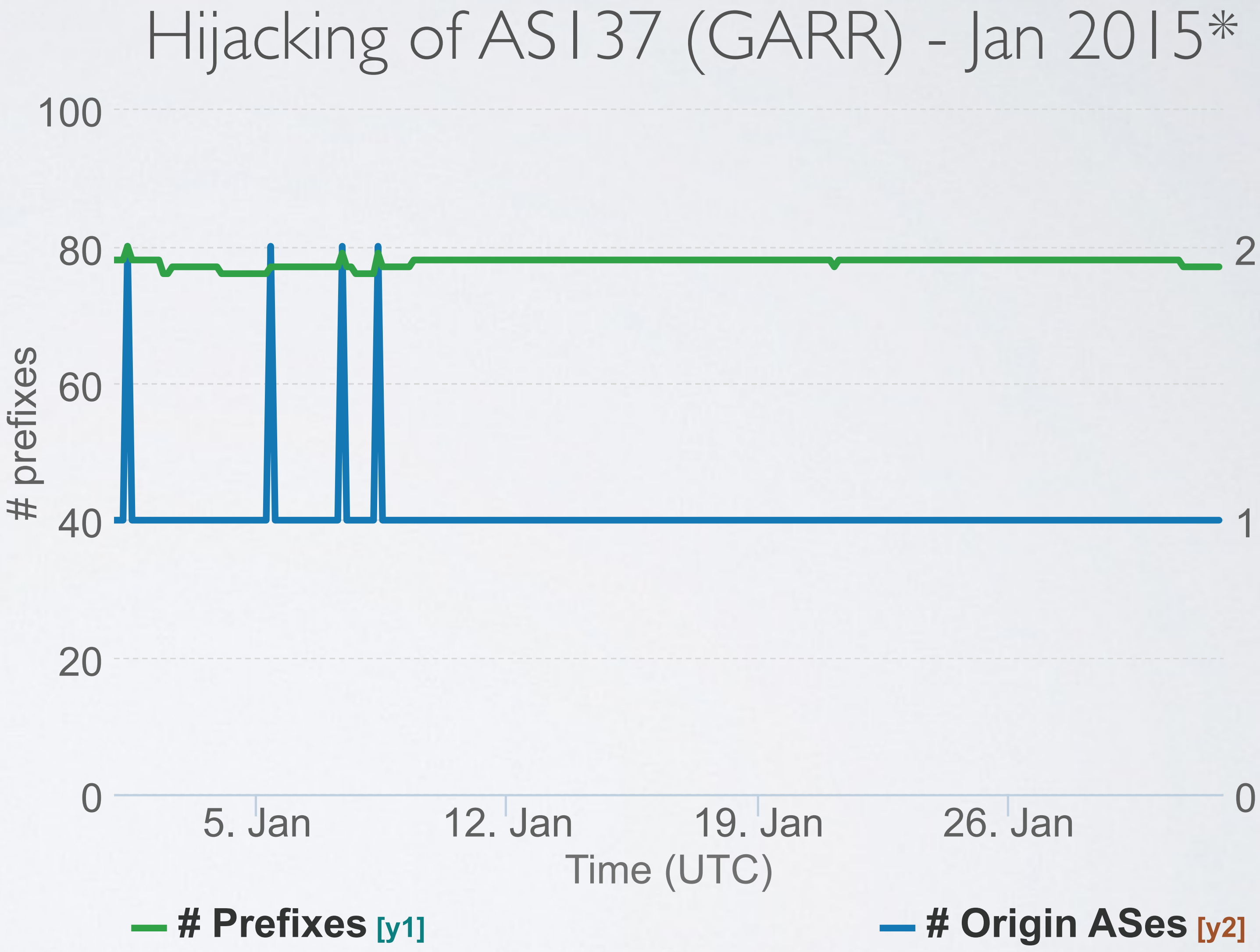
```
from _pybgpstream import BGPStream, BGPRecord, BGPElem
from collections import defaultdict
from itertools import groupby
import networkx as nx

stream = BGPStream()
as_graph = nx.Graph()
rec = BGPRecord()
bgp_lens = defaultdict(lambda: defaultdict(lambda: None))
stream.add_filter(’record-type’,’ribs’)
stream.add_interval_filter(1438415400,1438416600)
stream.start()

while(stream.get_next_record(rec)):
    elem = rec.get_next_elem()
    while(elem):
        monitor = str(elem.peer_asn)
        hops = [k for k, g in groupby(elem.fields[’as-path’].split(" "))]
        if len(hops) > 1 and hops[0] == monitor:
            origin = hops[-1]
            for i in range(0,len(hops)-1):
                as_graph.add_edge(hops[i],hops[i+1])
            bgp_lens[monitor][origin] = \
                min(filter(bool,[bgp_lens[monitor][origin],len(hops)]))
        elem = rec.get_next_elem()
for monitor in bgp_lens:
    for origin in bgp_lens[monitor]:
        nxlen = len(nx.shortest_path(as_graph, monitor, origin))
        print monitor, origin, bgp_lens[monitor][origin], nxlen
```

BGPCORSARO

Example: monitor your own address space on BGP

*The "**prefix-monitor**" plugin (distributed with source) monitors a set of IP ranges as they are seen from BGP monitors distributed worldwide:*

- *how many prefixes announced*
- *how many origin ASes*
- *generates detailed logs*



**Originally discovered by Dyn: http://research.dyn.com/2015/01/vast-world-of-fraudulent-routing/*