



Routing Beacons

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Motivation

- Lots of studies looking at route flapping, flap dampening, BGP behavior under stress, ...
 - Craig Labovitz *et al*, SIGCOMM 2000
 - Morley Mao *et al*, SIGCOMM 2002
 - ...
- Most of these studies require prefixes that are announced or withdrawn at known times
- This is known as a BGP Beacon



RIPE NCC RIS

- Limited amount of beacons available so-far
 - 2 or 3, usually for a limited time
- RIPE NCC RIS has 9 route collectors all over the world
- Got a /19 for this
- Assigned a /24 to each collector

BGP Beacons

- Announced at 0, 4, 8, 12, 16, 20 GMT
- Withdrawn at 2, 6, 10, 14, 18, 22 GMT
- Active since 30/9/2002
- Data at: <http://www.ris.ripe.net/beacons>
- Prefix **195.80.(224+n).0/24**
 - N=0 ... 8 for the 9 route collectors

All Beacons

Prefix	Source AS	Upstream	Contact	Start date
198.133.206.0/24	3927	AS2914, AS1	Randy Bush	10-Aug-2002
192.135.183.0/24	5637	AS3701, AS2914	Dave Meyer	4-Sep-2002
203.10.63.0/24	1221	AS1221	Geoff Huston	25-Sep-2002
198.32.7.0/24	3944	AS2914, AS8001	Andrew Partan	24-Oct-2002
195.80.(224+n).0/ 24	12654	Various	ris@ripe.net	30-Sep-2002



First look at the data

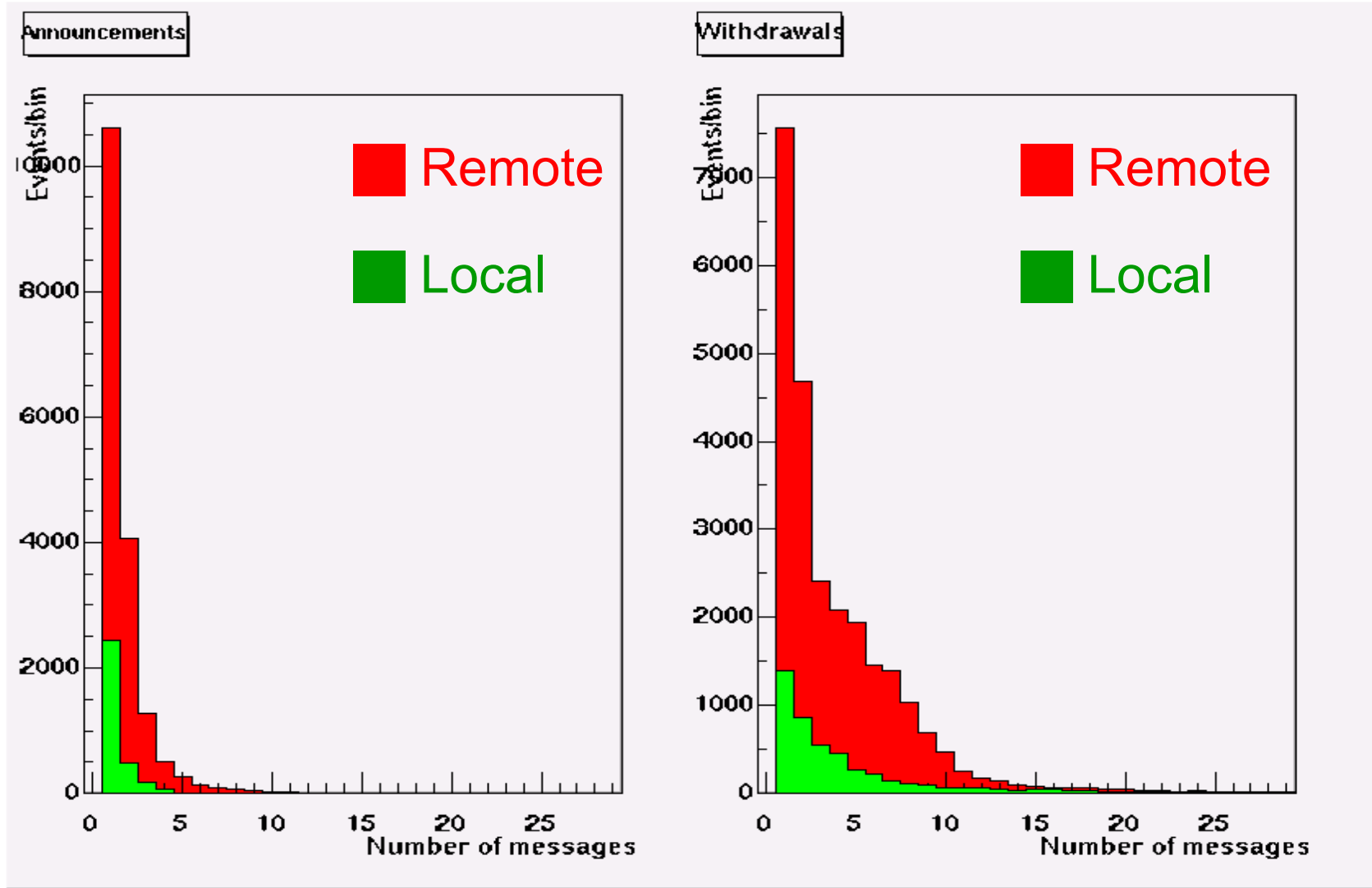
- First results:
 - Code written on a transatlantic flight
 - Not thoroughly checked
 - RIS beacons only
 - All disclaimers apply
- October 2002 data
- Not all prefixes had transit at the start

Definition of an event

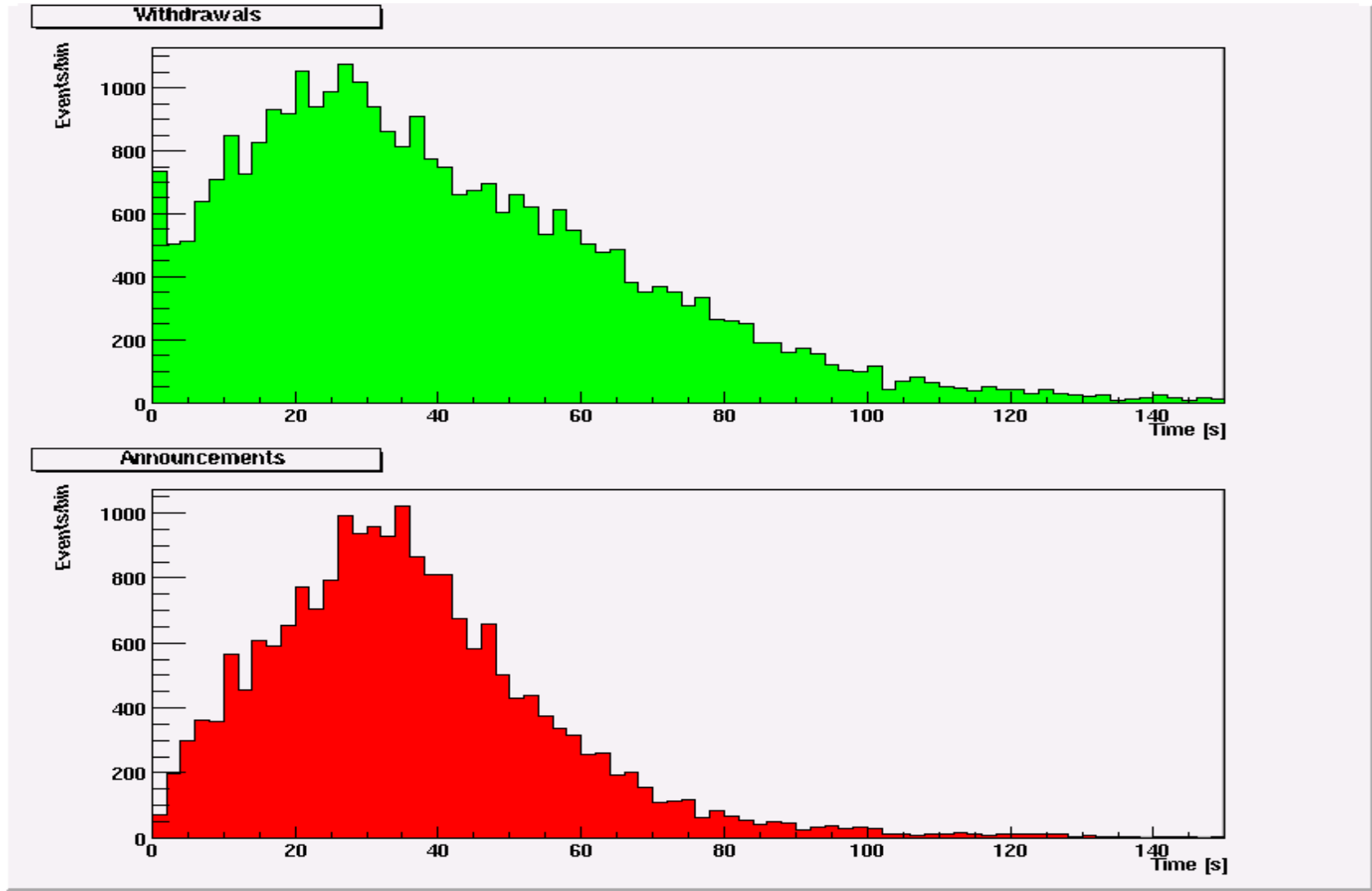
- All BGP updates for a prefix seen by a peer when a prefix is announced or withdrawn
 - Announce events
 - Withdraw events
- Parameters:
 - T_{start} : MIN (time of first BGP update, 7200)
 - T_{end} : MIN (time of last BGP update, 7200)
 - # BGP updates seen
 - Minimum AS path length
 - Maximum AS path length
 - Final AS path length



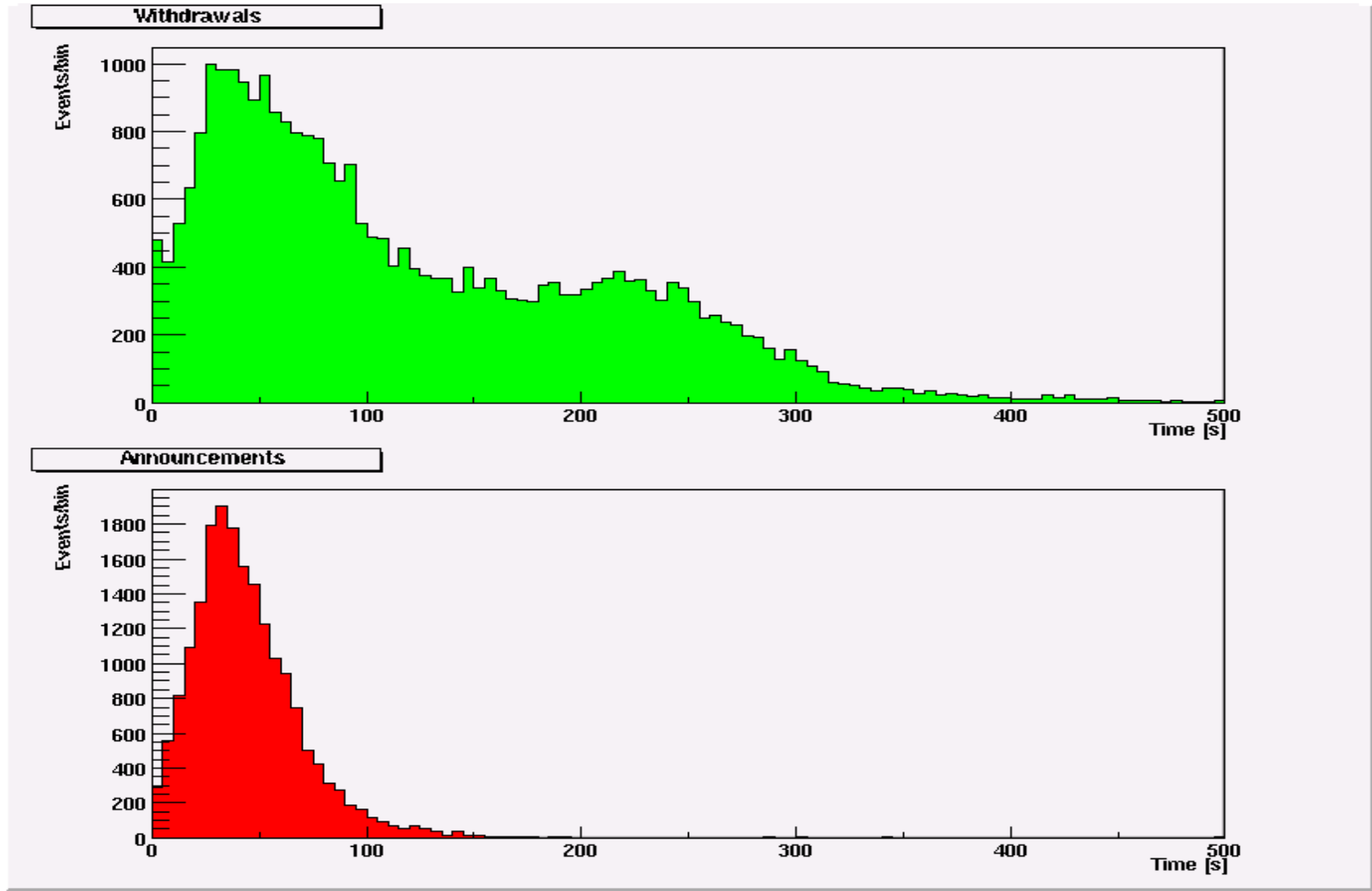
Number of BGP updates per event



Latency for first BGP update

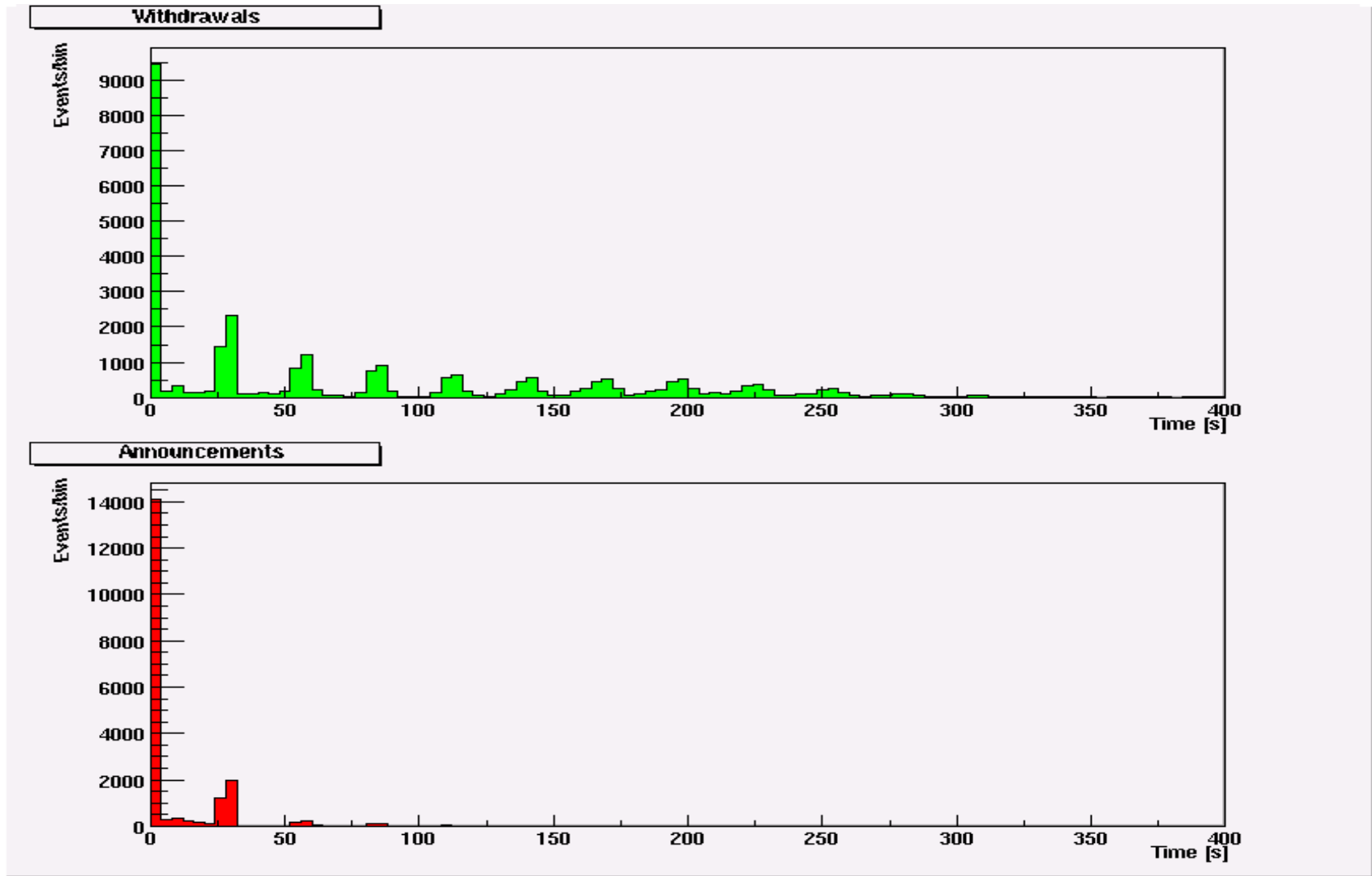


Latency for last BGP update



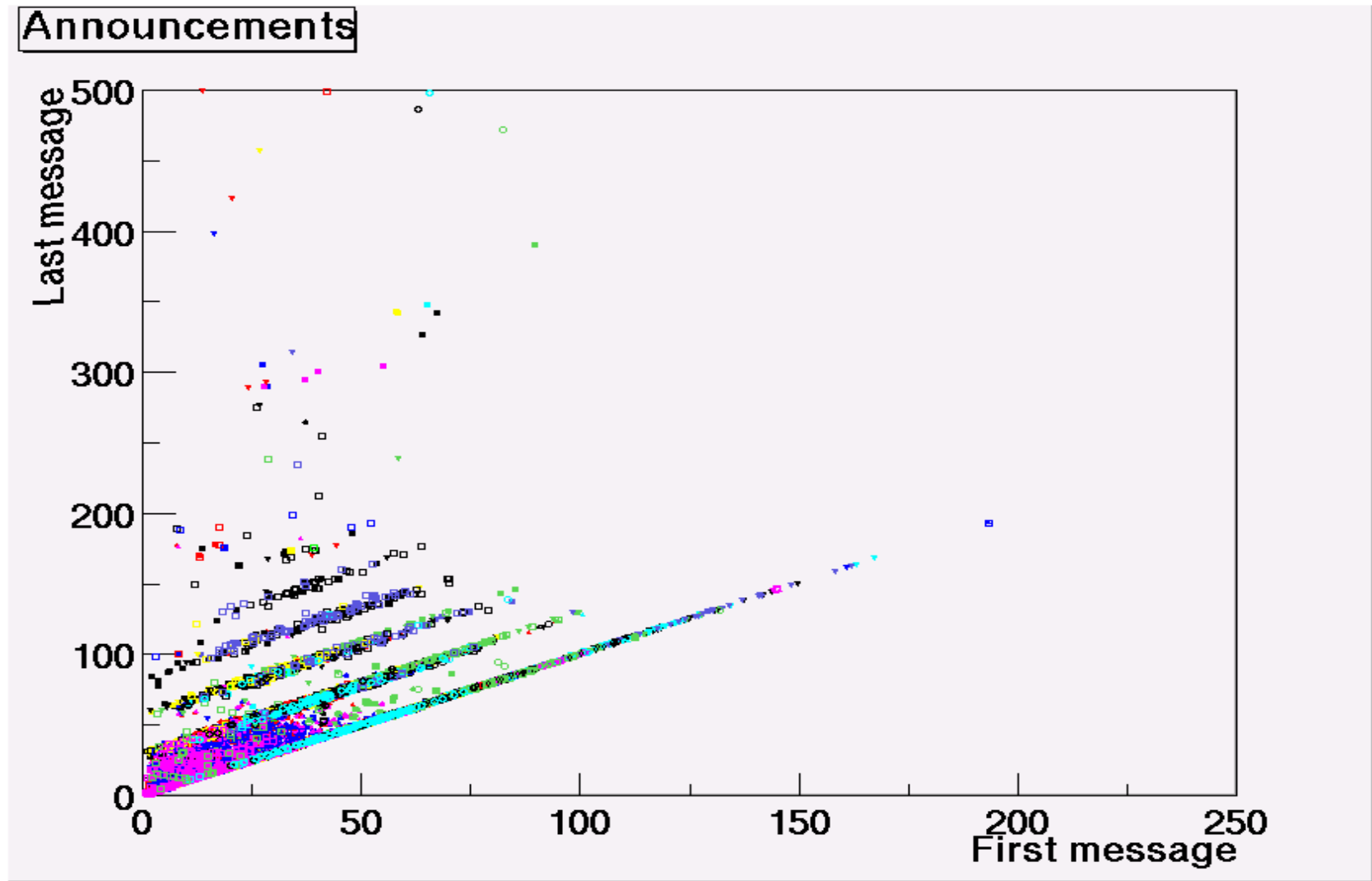
Time that a prefix is unstable

($T_{\text{end}} - T_{\text{start}}$)



Propagation of announce events

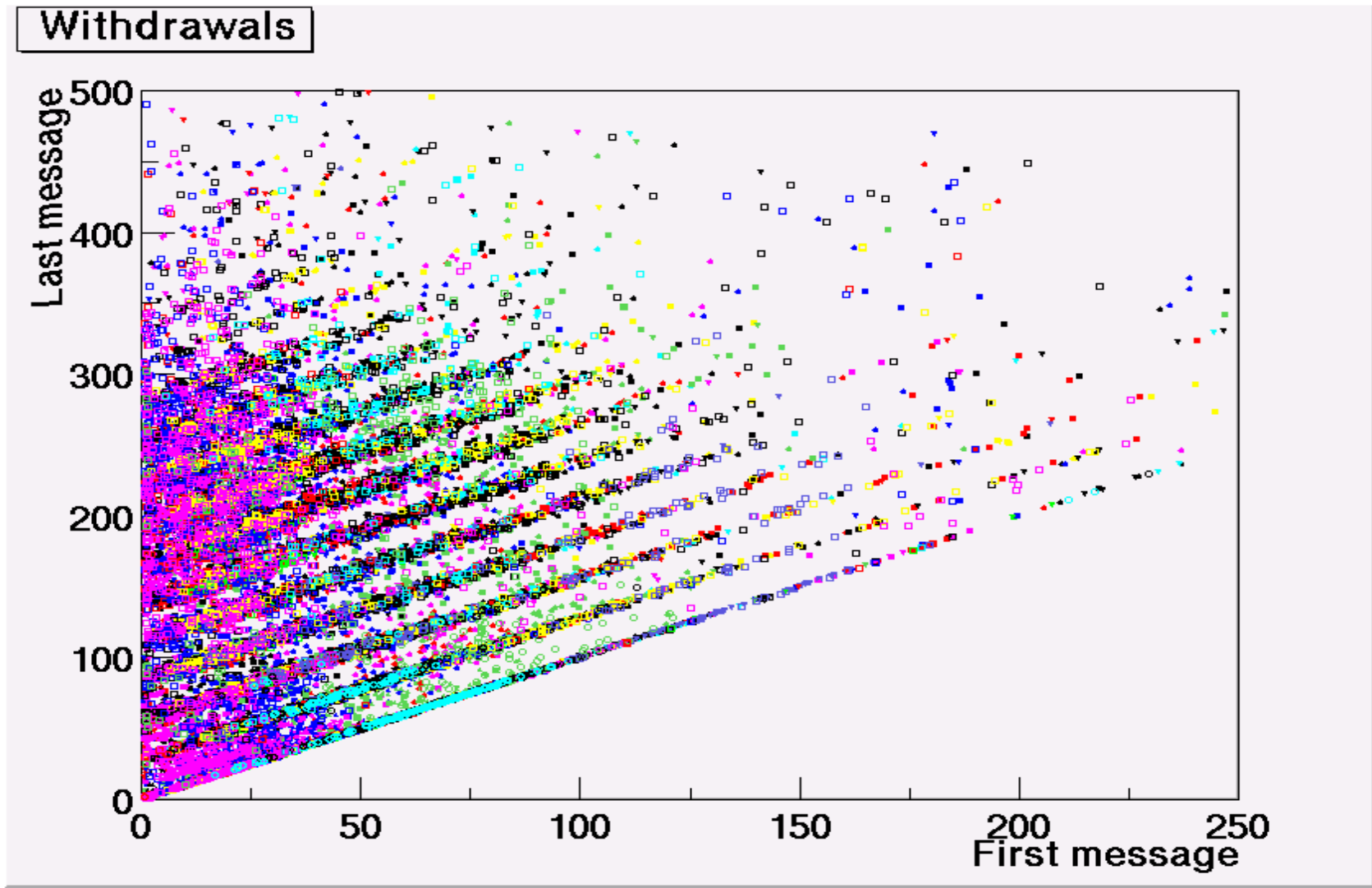
(Color=RRC, Shape=Prefix)





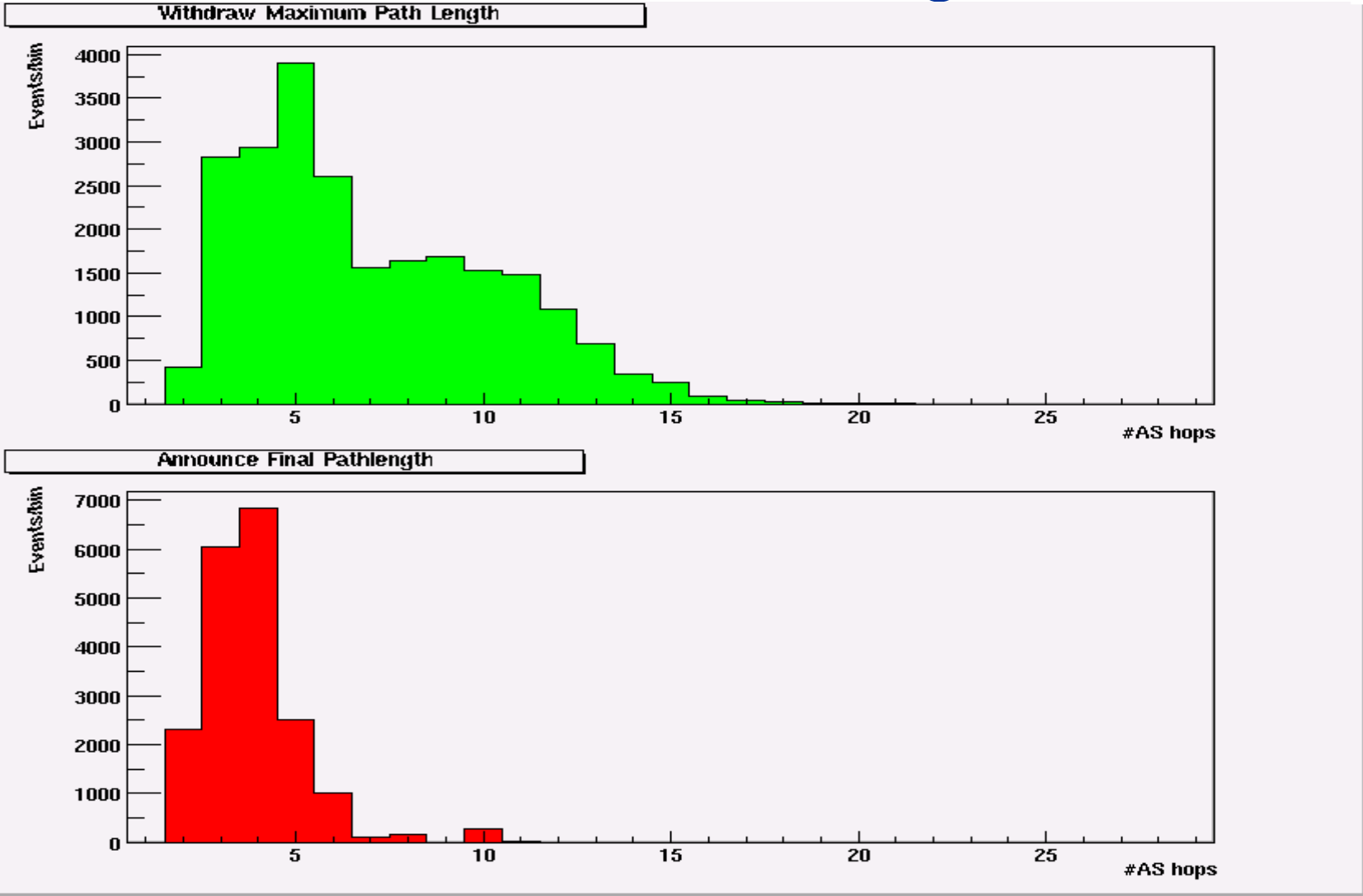
Propagation of withdraw events

(Color=RRC, Shape=Prefix)



Path length

after announce and during withdraw



Conclusion

- Latency roughly consistent with previous studies
- Same effect for path expansions as previous studies
- Lots of questions, lots of work left



Other new stuff from the RIPE NCC

RIS

- IPv6 routing tables are now being collected
 - History of the IPv6 routing table
 - Raw data only
 - About 350 prefixes

- Results
 - Hot spots webpage
 - Martians, the list you don't want to be on



Test Traffic Measurements

- One way delay measurements, need synchronized clocks
- GPS hard to install
- CDMA recently became available
 - Needs clock signal, from base stations
 - No need to see the sky
 - US, Australia, Korea, ...
- Clock is more expensive, installation much cheaper
- Contact me for details

IPv6 version

- IPv6 networks so-far
 - Tunneled over v4
 - Performance monitoring was an afterthought
- Several native IPv6 network now operational
 - Interested in performance measurements from the start
- Use existing products: RIPE NCC TTM
- Porting
- Shipping in December

Questions, Discussion

