World IPv6 Launch and IPv4 Depletion

7th Slovenian IPv6 Summit

18 October 2012

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RIPE NCC

RIPE NCC Measurements - IPv6 Launch

- Active Measurements
  - Sources: 53 vantage points, destinations: 60 participants
  - From **2012-05-19 to 2012-06-18** we measured:
    - DNS: A and/or AAAA records
    - ping(6)/traceroute(6)
    - HTTP over IPv4 and IPv6
  - In total **18,049,214** measurements

- Measuring IPv6 connectivity with RIPE Atlas
  - How do others see your network over IPv6?
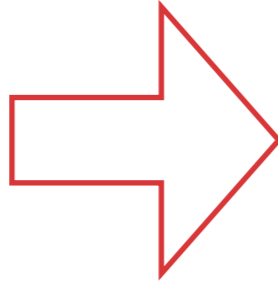 - Members only

Measurement Vantage Points

Percentage of Vantage Points Seeing AAAA

1-11 June 2012

6 June 2012; 00:00

Google
YouTube
Facebook
Yahoo
Bing
Netflix, US
Heise, DE
AOL, US
Akamai
Cisco
Juniper
Ericsson
Huawei
D-Link
Comcast, US
Swisscom, CH
VK, RU
Seznam, CZ
Detik, ID
ovh.net, FR
The Pirate Bay, SE
area254, KE
Espectador.com, UY
Telkom, ID
ATW, HU
mobile.de, DE
bt.shu.edu.cn, CN
GITN, MY
Globus Tour, KZ
ict.edu.rs, RS
oferia.pl, PL
nwt.se, SE
Kennisnet, NL
NASA, US
Omantel, OM
El Mundo, ES
ktu.lt, LT
mts.am, AM
nfsi telecom, PT
WISE, LB
PAU, TR
Hiroshima University, JP
posix.co.za, ZA
unito.it, IT
RO TLD, RO
@wt.be, BE
FICIX, FI
AFRINIC, MU
RIPE NCC, NL
ARIN, US
APNIC, AU
LACNIC, UY

Jun 1 Jun 2 Jun 3 Jun 4 Jun 5 Jun 6 Jun 7 Jun 8 Jun 9 Jun 10 Jun 11

0% 0%-10% 10%-20% 20%-80% 80%-90% 90%-100% 100% No data

0%   0%-10%   10%-20%   20%-80%   80%-90%   90%-100%   100%

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Alexa 1M/25K - After IPv6 Launch Day

Percentage of web sites in Alexa 1M that can be reached over IPv6

Alexa 1M
Alexa top 25k

Thursday, October 18, 2012
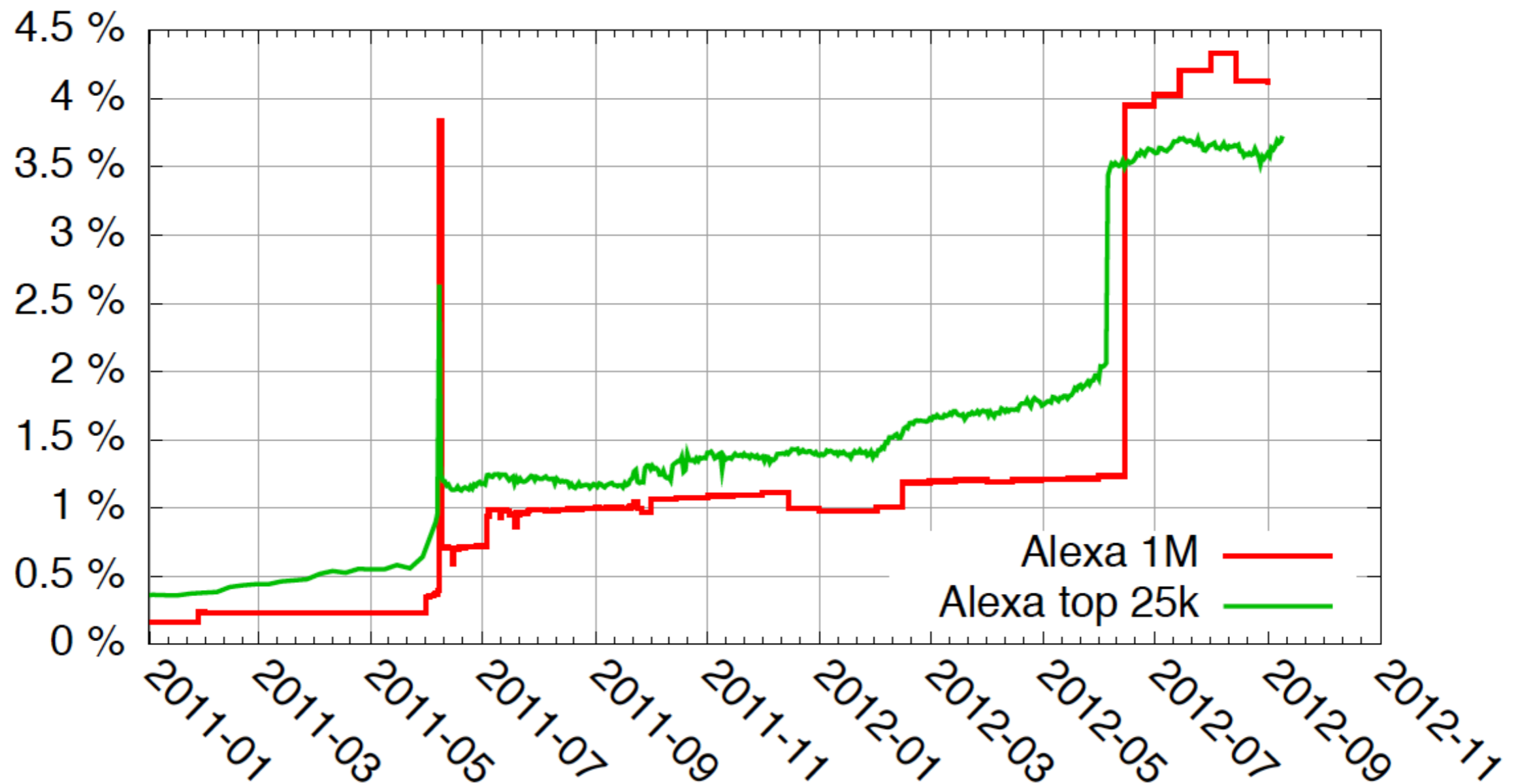
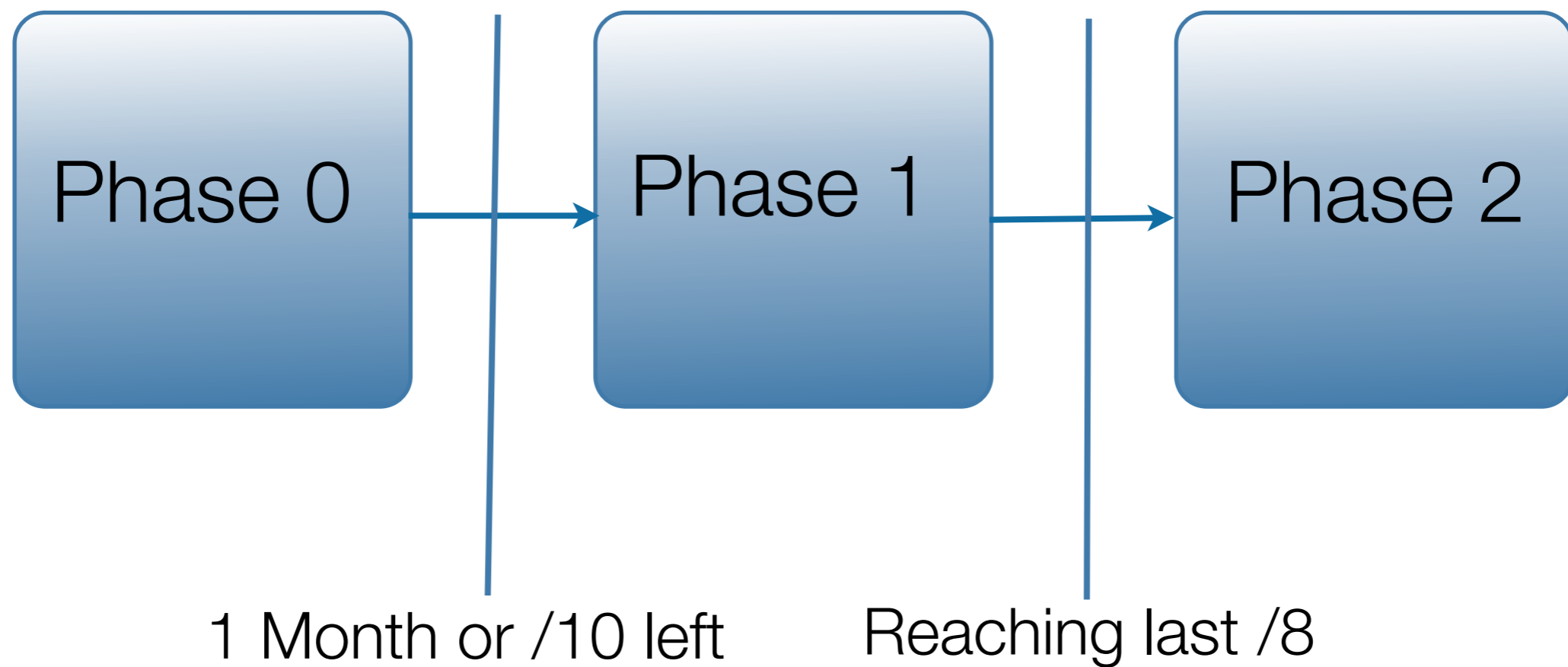# Conclusions - What We Learned

- IPv6 works just fine.

- Dual-stack = two chances for best performance

- Most sites kept IPv6 enabled

- Some sites did not enable IPv6 during the event

- For traceroute6 visualisations - please send us feedback or questions if at all possible.

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IPv4
Final Distribution

Phased Approach

Phase 0 → Phase 1 → Phase 2

1 Month or /10 left   Reaching last /8

Phase 1

- Started on 4th September 2012

- When 1 month *or* a /10 left available

- IPRAs working in pairs
  - Fairness, consistency and transparity
  - Longer response times

- Approvals artificially delayed until 09:00 next day
  - Allowed for additional checks

Phase 2

- Started on 14th of September 2012

- When the RIPE NCC reached the last /8

- Members can receive only one /22 (1024 IPs)

  - Even if they can justify a larger allocation

  - Members must have an IPv6 allocation to qualify

- No Provider Independent IPv4 address space is assigned

New IPv4 Requests
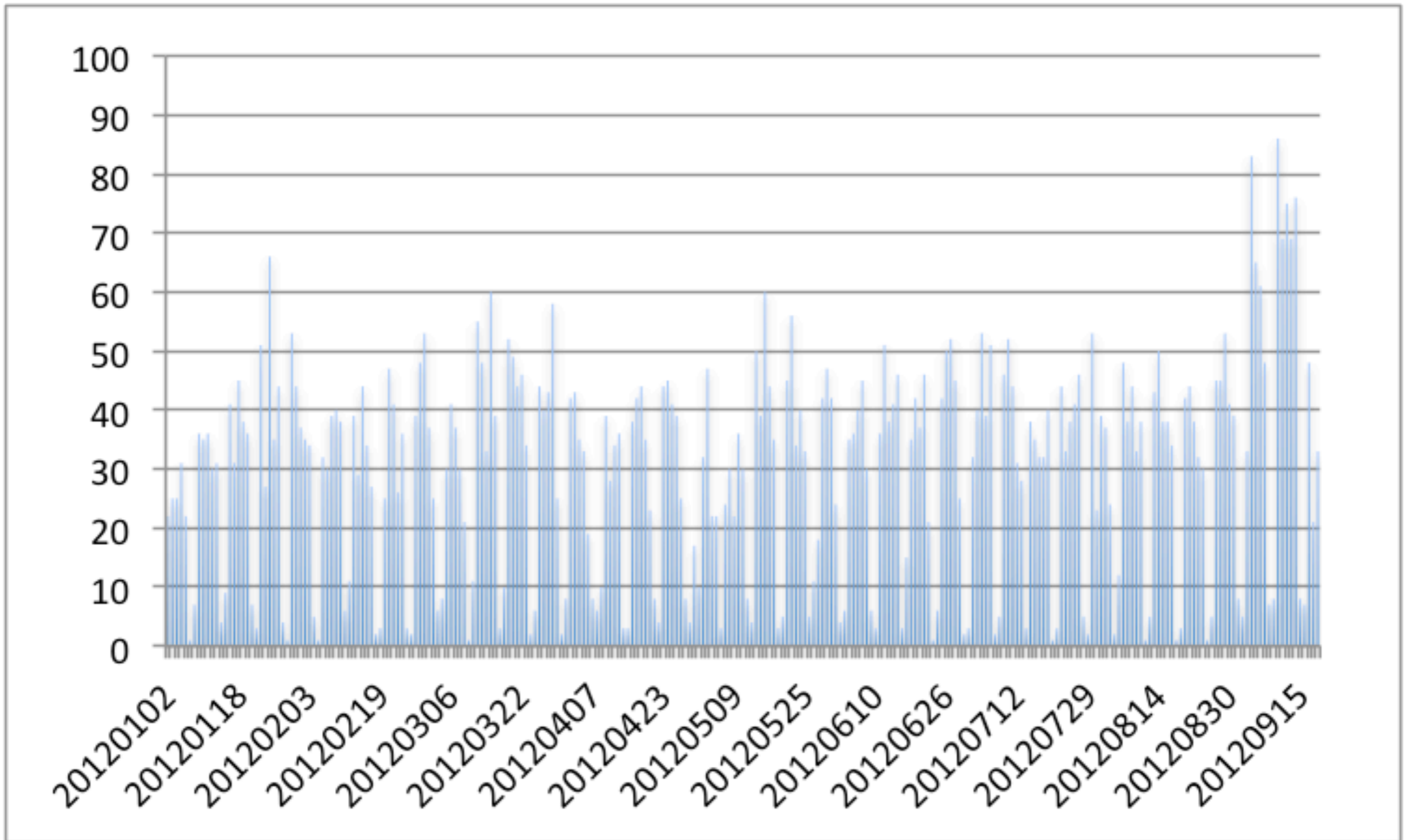
And after weeks of hard work....

Some Stats.....

- IPv4 address space issued during phase 1
  - Total allocated prefixes: 162
  - Total allocated IPv4 addresses:3383296 (/11,/12,/15+)
  - Total LIRs: 147

- From the last /8, 328* /22s allocated so far

Questions?