RIPE NCC DNS Update

Anand Buddhdev
DNS Services Manager

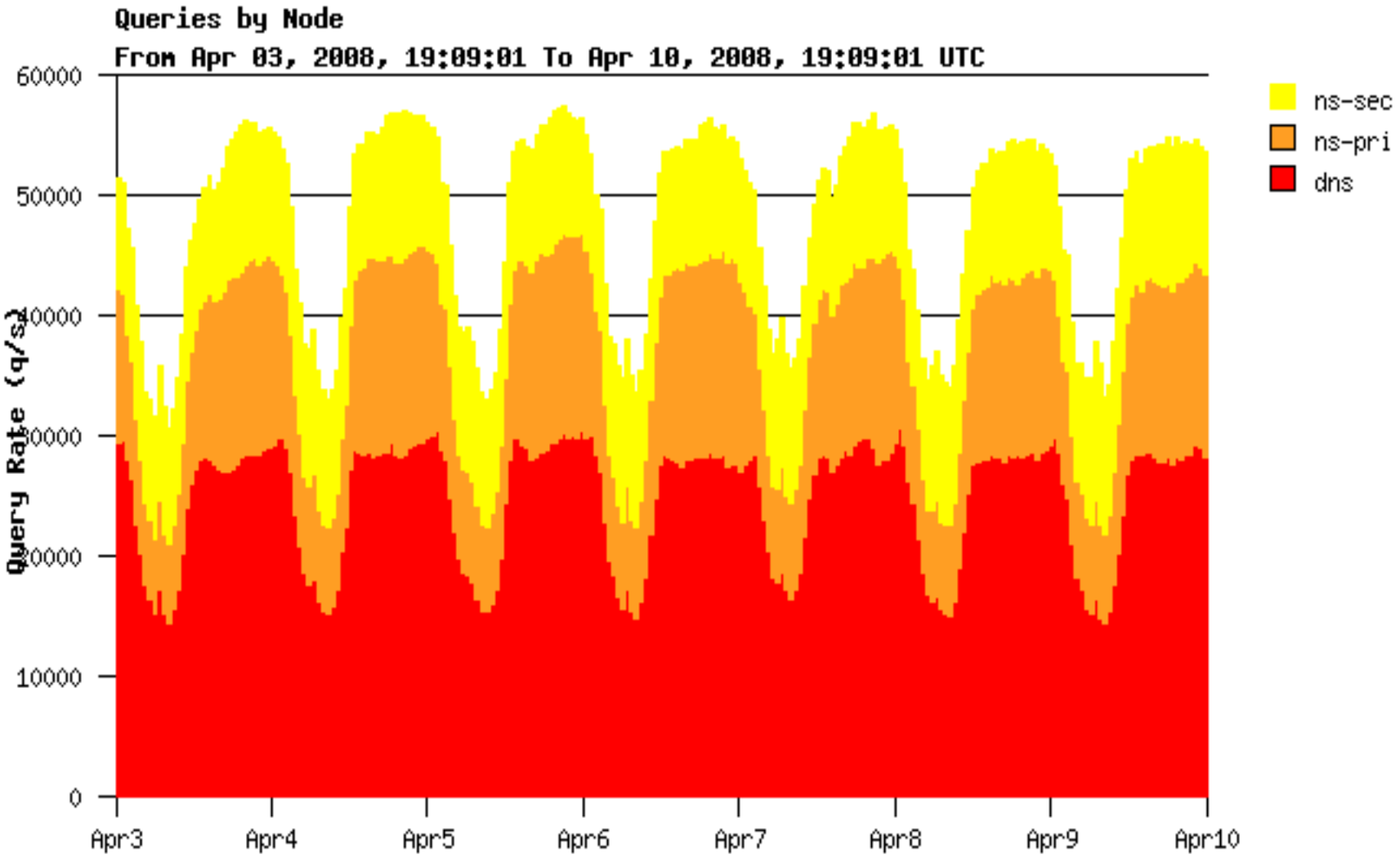
The DNS Services Team

Sjoerd Oostdijck, Anand Buddhdev, Wolfgang Nagele

Services overview

- Reverse DNS for the RIPE NCC's IPv4 and IPv6 allocations
- Secondary DNS service for several ccTLDs
- K-root anycast
- DNS operations of the ENUM (e164.arpa) zone
- An AS112 node
- RIPE NCC internal services (ripe.net and related zones)

Reverse DNS


Queries by Node
From Apr 03, 2008, 19:09:01 To Apr 10, 2008, 19:09:01 UTC
Query Rate (q/s)
60000
50000
40000
30000
20000
10000
0
Apr3
Apr4
Apr5
Apr6
Apr7
Apr8
Apr9
Apr10
ns-sec
ns-pri
dns

DNSSEC statistics

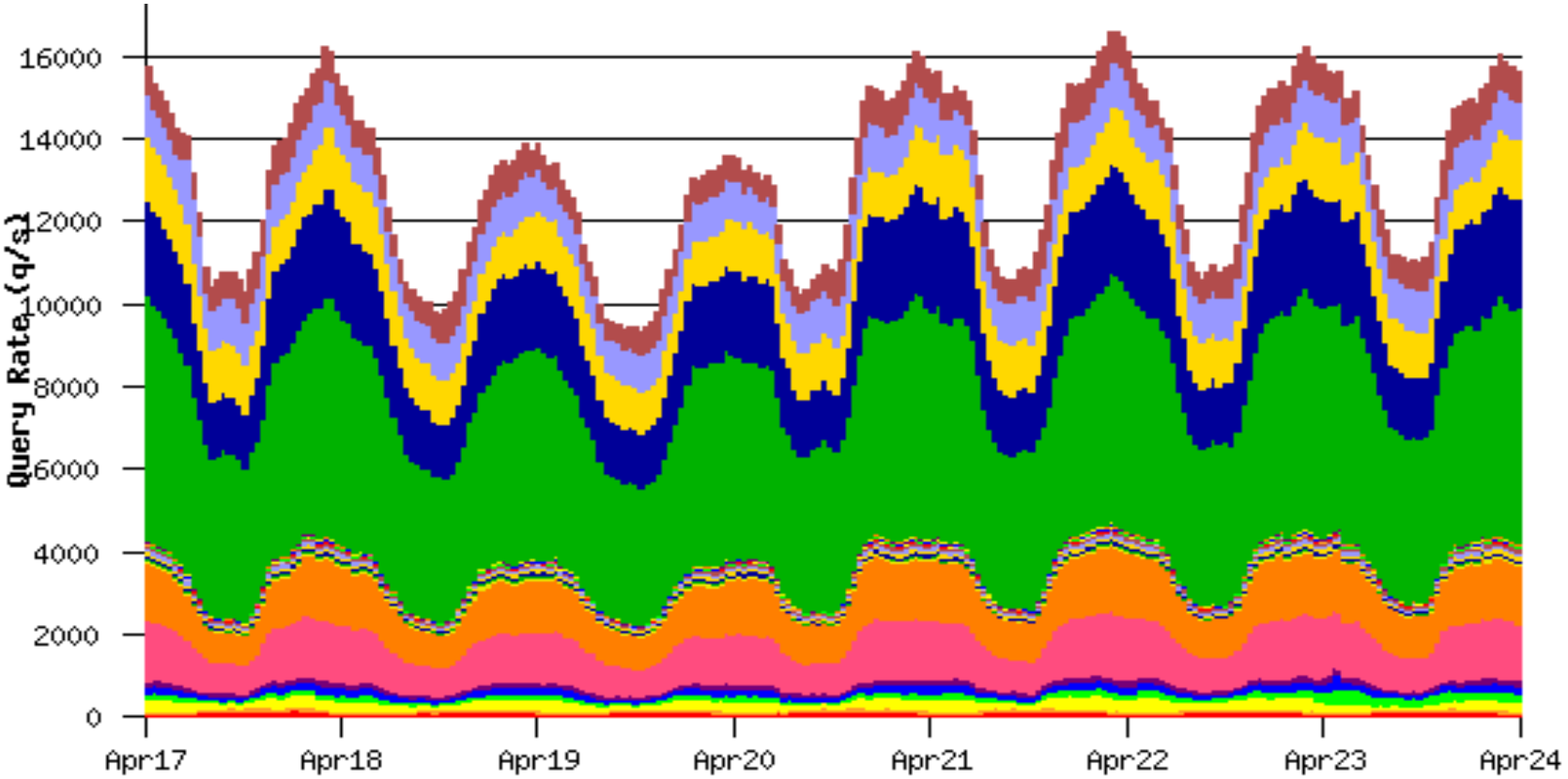
- Totals at RIPE 55
  - Total primary zones 127
  - Signed zones 62
  - NS records 690419 (295103 sets)
  - DS records 96
- Totals at RIPE 56
  - Total primary zones 127
  - Signed zones 63 (ENUM signed in Nov 2007)
  - NS records 836126
  - DS records 104

ENUM operations

- ENUM operations are stable
- The ENUM zone is now signed, and we are accepting secure delegations since 25 March 2008
- Separate presentation in the ENUM WG

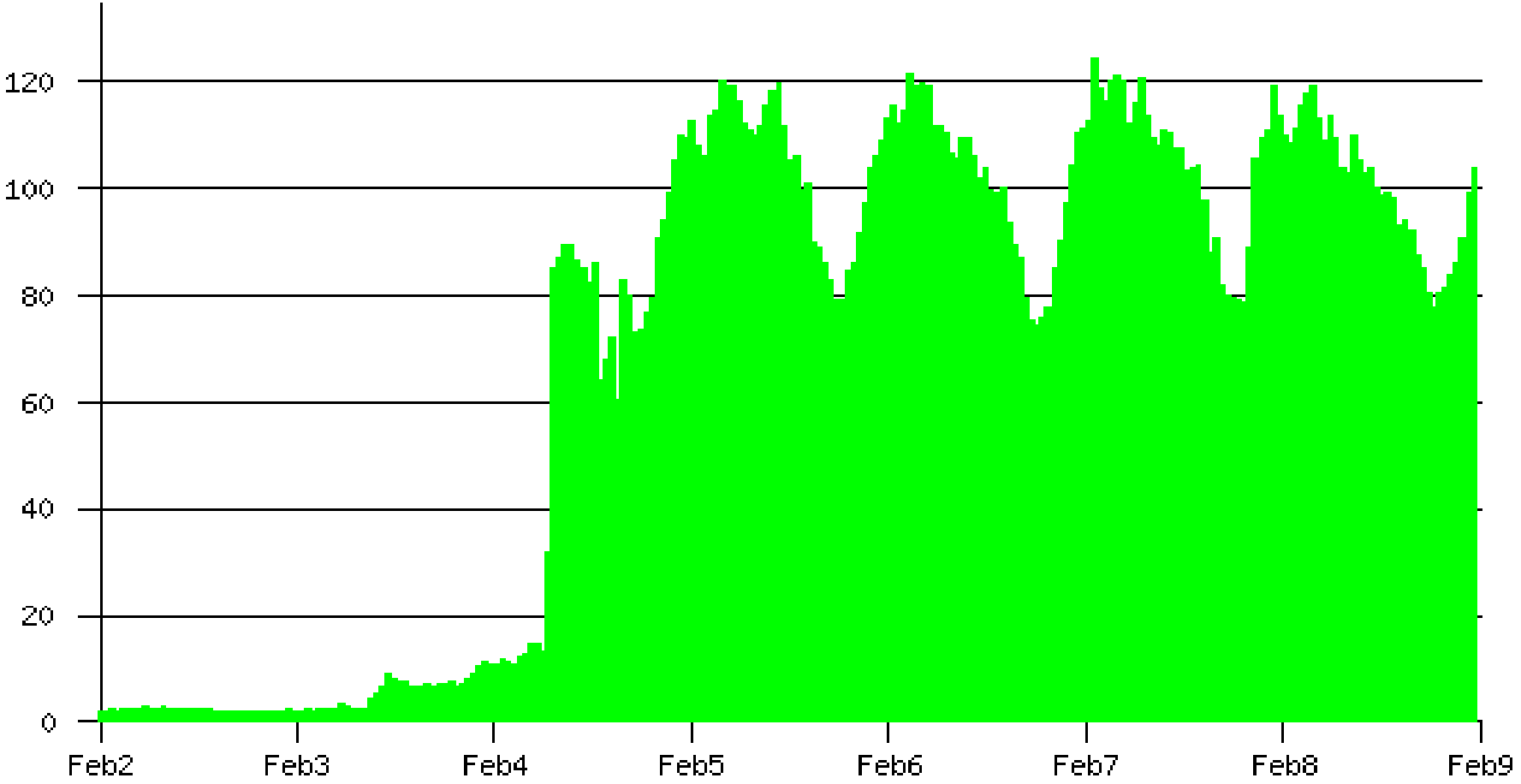
K-root

- Operations stable with 17 instances
- All instances upgraded to CentOS 4 and NSD 2.3.7
- Around 16,000 q/s during peak periods



K-root IPv6

- 2001:7FD::1 added to root zone on 4 February 2008
- ~ 120 q/s at peak time, mainly at AMS-IX

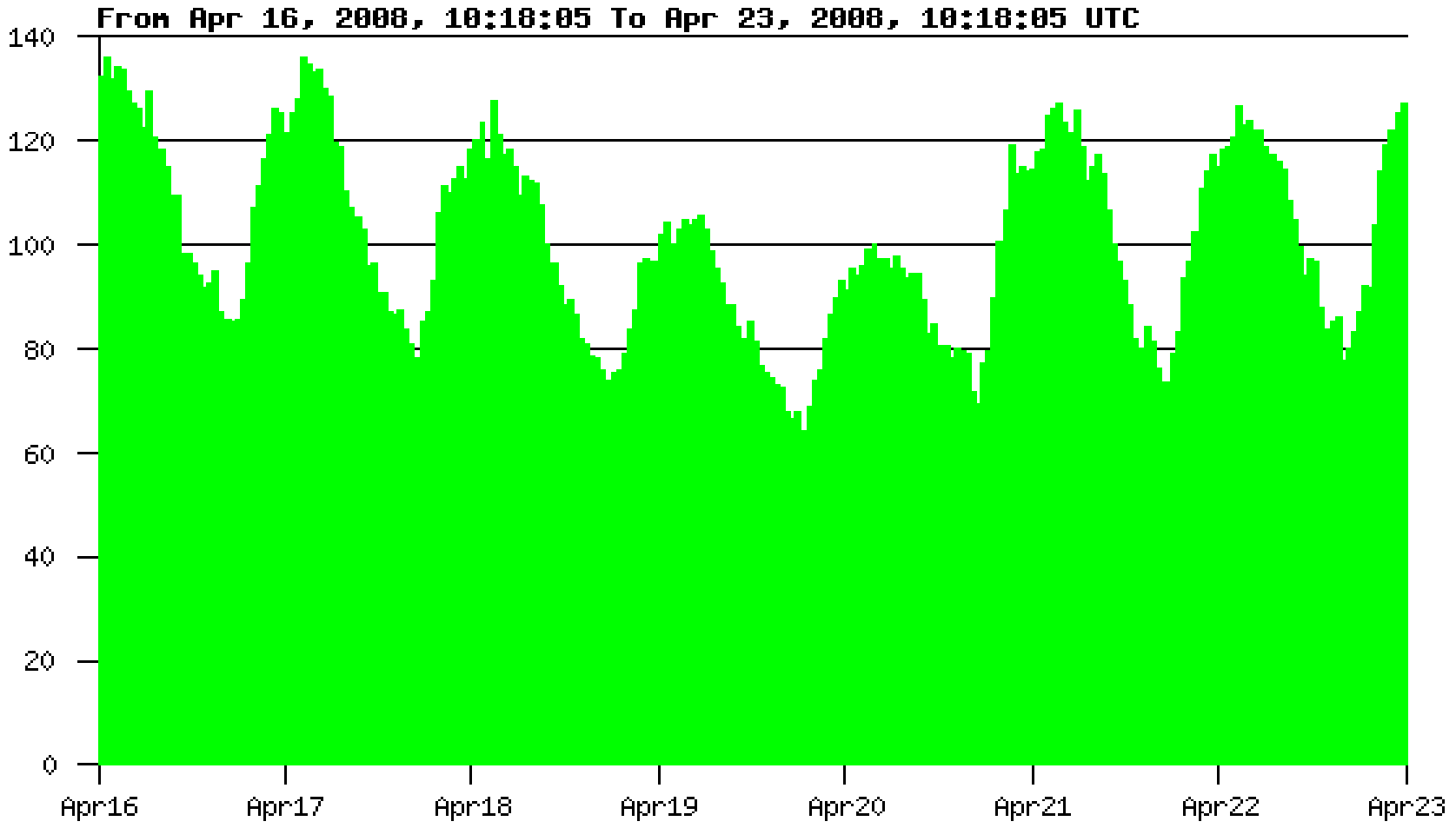


K-root IPv6 (contd.)

- Global nodes (2001:7FD::/32)
  - Amsterdam (AMX-IX)
  - Miami (NAP of the Americas)
- Local nodes (2001:7FD::/48)
  - Athens (GRNET)
  - Geneva (CIXP)
  - Budapest (BIX)
- Contact us on dns-help@ripe.net to peer over IPv6

K-root IPv6 (contd.)

- Current query rate: ~ 140 q/s



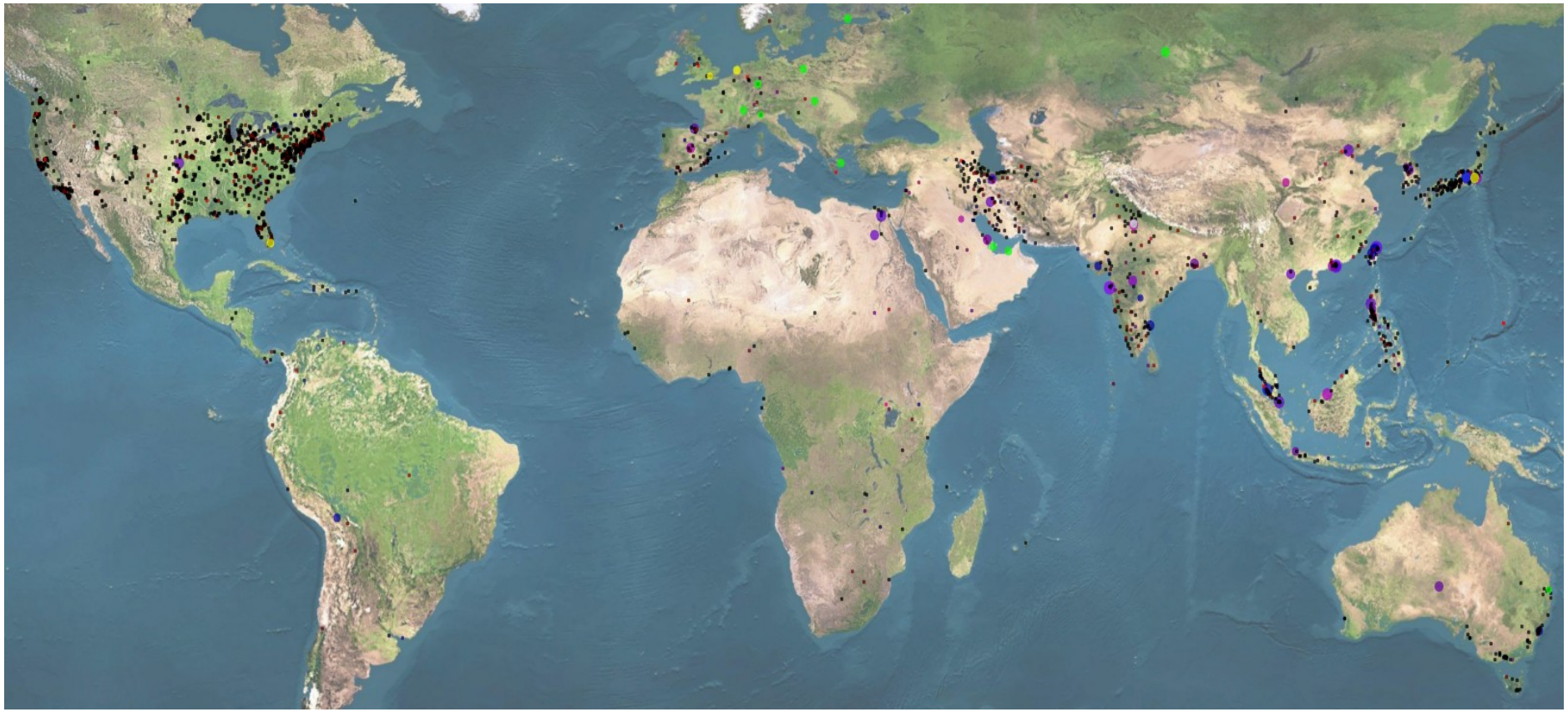
K-root traffic engineering (current)

- All instances announce /24 prefix
- AMS-IX instance announces covering /23 prefix
- Global instances prepend AS25152 twice or thrice
- Local instances have no prepend, but set NO_EXPORT

Drawbacks

- Inconsistent AS path length – unbalanced query load
- “Uncoloured” prefixes – difficult to diagnose route leaks from local nodes
- Absence of the covering /23 prefix can lead to blackhole situations for customers close to local nodes

Delhi – source addresses



K-root traffic engineering (future)

- Do away with path prepend
  - ✓ Allow BGP to select nearest node
- Announce /23 covering prefix from all global nodes
- Announce /24 prefix from local nodes
  - ✓ Local nodes will be automatically preferred
  - ✓ Blackhole situations will be eliminated
- Set BGP aggregator attribute to unique value for announcement from each node
  - ✓ Prefixes will be “coloured” and easier to identify

Lameness checks

- Code is production quality and runs every month
- Data from the last seven months
- http://www.ripe.net/info/stats/dns-lameness/
- We're finalising the next phase where e-mails will be sent to notify contacts of lame servers
  - ✓ Target: July 2008

E-mail message template

Subject: Notification of broken DNS configuration

Dear DNS administrator,

The RIPE NCC recently carried out DNS checks against the server [server name (numeric address)], and found it to be lame for the following zones:

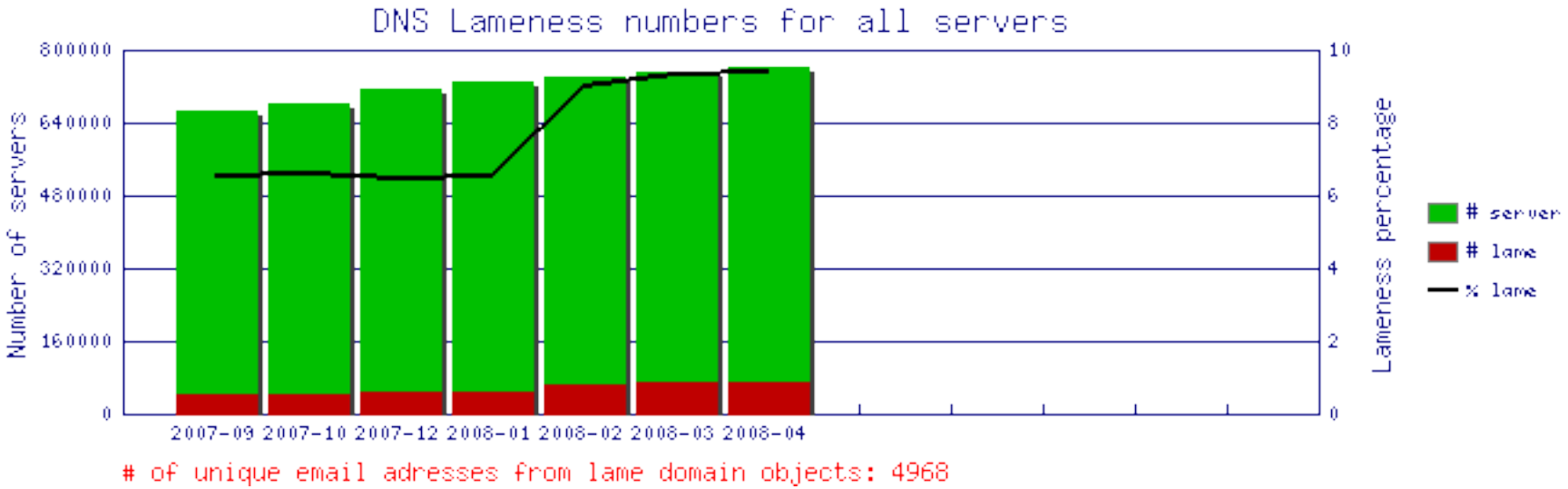
[list of zones]

You are receiving this e-mail because you are listed as a contact for the zone(s) listed above (either in the RIPE database, or in the SOA records of the zones).

These checks are carried out for your zone(s) by the RIPE NCC in accordance with the wishes of the RIPE community. For more information about these checks please see: http://www.ripe.net/ripe/docs/ripe-400.html

If you have read the above document, and still have questions, please contact us at <e-mail address>.

Lameness statistics



- Average is about 9.5%
- Min (2.2 %) 86.in-addr.arpa
- Max (100 %) 94.in-addr.arpa, 95.in-addr.arpa
- 4968 unique contacts

Secondary service for ccTLDs

- Overview
  - Secondary DNS service for many ccTLDs on a best-effort basis, free of charge
  - Potential competition with RIPE NCC members
- RIPE NCC is slowly phasing out this service for developed ccTLDs
  - DE, NL, AT, AU and IT phased out in 2007
  - LT phased out in April 2008
  - Currently phasing out IE, HK, RO and SK

Future plans

- Finalise the lameness checking project
- End-of-life hardware replacement
- Improved IPv6 peering and transit for K-root
- Expansion of K-root anycast infrastructure
- Zone transfers over IPv6 for ns.ripe.net
- Review and update of the DNSSEC infrastructure

Questions?