RIPE Address Policy Working Group

Nov 3, 2011

RIPE 63, Vienna

WG Chairs: Gert Döring, & Sander Steffann

please remember: this session is webcast

APWG Agenda - Thursday

- R. on IPv6 PI/PA Unification - Gert Döring, WG Chair
  - recap on the genesis of the current IPv6 PA/PI policies
  - proposal how to re-do the IPv6 allocation framework
  - discussion!
  - (please read the concept document sent to the AP WG list)

- Y. Open Policy Hour
  - "The Open Policy Hour (OPH) is a showcase for your policy ideas. If you have a policy proposal you'd like to debut, prior to formally submitting it, here is your opportunity."

- Z. AOB

Let's enter the discussions

- No decisions are made here(!). This is to get feedback to the proposers and to get a feel for the Working Group's opinions.

- Consensus based process based on the *open* mailing list.

- please remember to speak into the microphone

- please speak your name, so the scribes can properly attribute what you said

- the session is webcast, so people that couldn't come to Vienna can still be participate

- remote feedback can be provided by webchat

returning to IPv6 PI discussion

- **this is only about IPv6**

- IPv4 is different, and we take this into account

- looking into the future

why is there a difference between PA and PI?

- in the end, it's "just some numbers" given out by the RIPE NCC to "consumers" of these numbers

- difference comes from intended use:

- PA

  - intended to aggregate (A) thousands or millions of end users into a single block, single routing table slot

  - assumed that "ISP" would be RIPE member anyway

  - liberal sizing, no strings attached

- PI

  - intended for a single independent (I) end-user network

  - not indended as "cheap replacement for RIPE membership"

  - specific purpose (BGP multhoming) $\Rightarrow$ strings attached

history of IPv6 allocation/assignment

- initial IETF model was very strict on aggregation

  - "Top Level Aggregator" ISPs get a /13

  - default-free zone hard bounded to 8192 routes

  - question "who is worthy?" not answerable $\Rightarrow$ abandoned

- initial RIR IPv6 policy (1999) gave LIRs a /35 (minimum)

  - avoided TLA problem, but a bit on the small side

  - changed to /32 in 2002

  - still strong focus on aggregation $\Rightarrow$ no PI

- since then, detail tuning of policy for allocation to LIRs

  - HD ratio and end user assignment size adjusted

  - removal of the requirements to announce as an aggregate (only) from the policy (2009-06), deferring to routing WG

## history of IPv6 allocation/assignment (2)

- IPv6 PI proposal introduced by Jordi Palet in 2006-01

  - *strong* resistance from the "aggregation!" camp

  - experience with IPv4 PI caused quite some opposition

  - argument that finally got accepted: multihoming proposals from IETF are not going anywhere (in reasonable time), and solution needed for *enterprise end-users* that want to do *BGP-based multihoming with IPv6*

  - proposal accepted in April 2009

  - lots of strings attached (multihoming, no sub-assignment)

- over time, emphasis shifted from "maximum aggregation" to "find workable compromise, encourage *use* of IPv6"

IPv6 PA and PI given out by RIRs
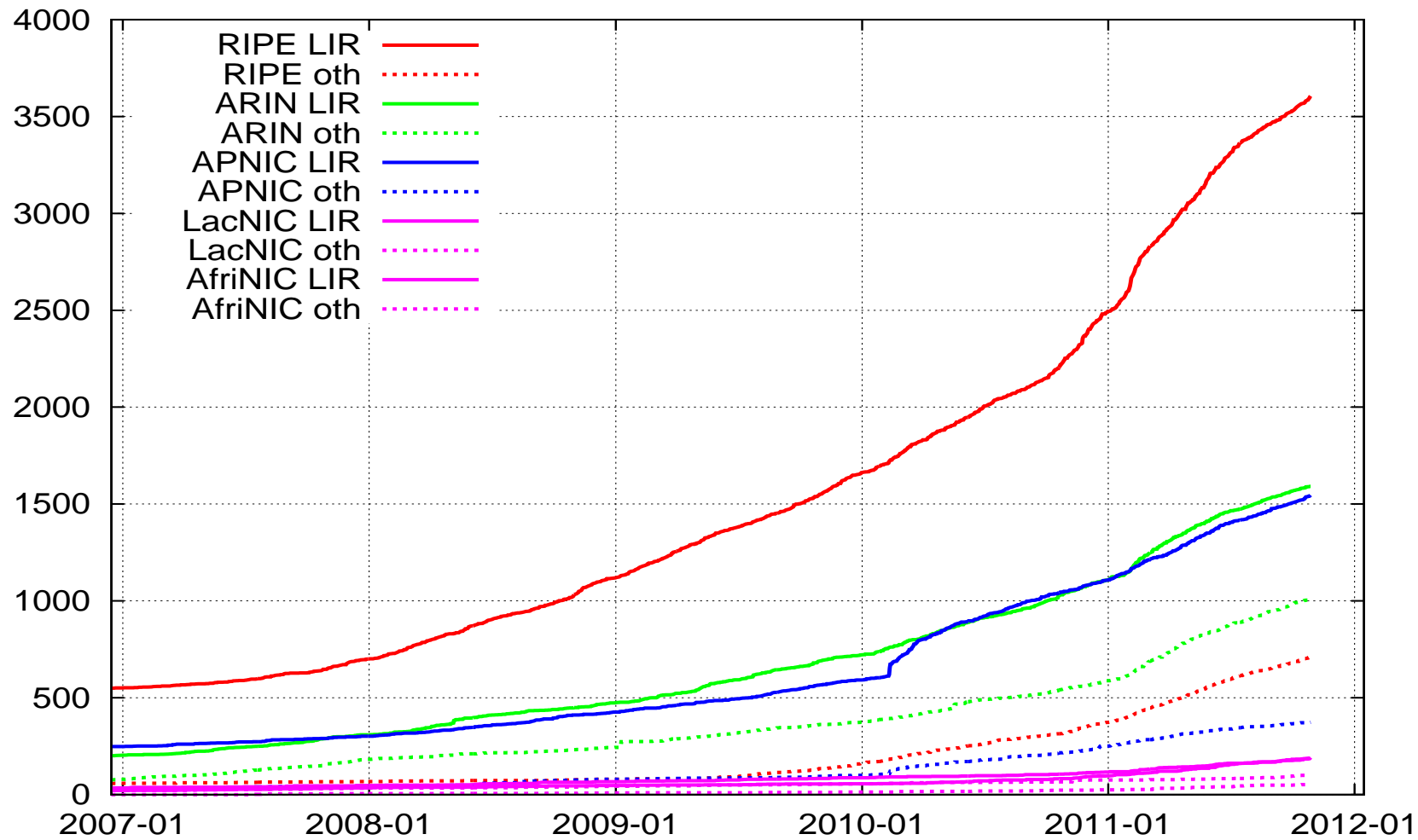
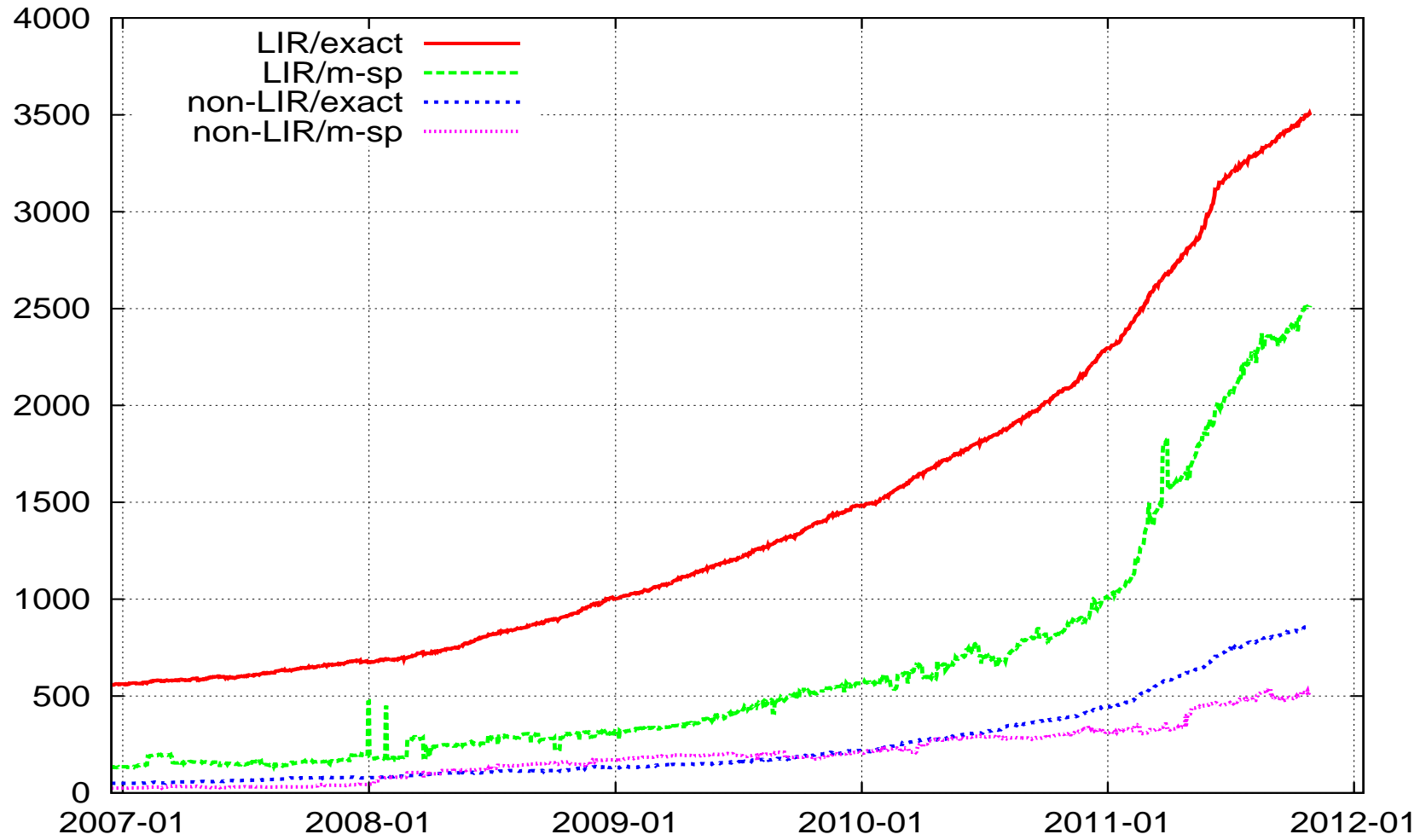## prefix size in IPv6 routing table
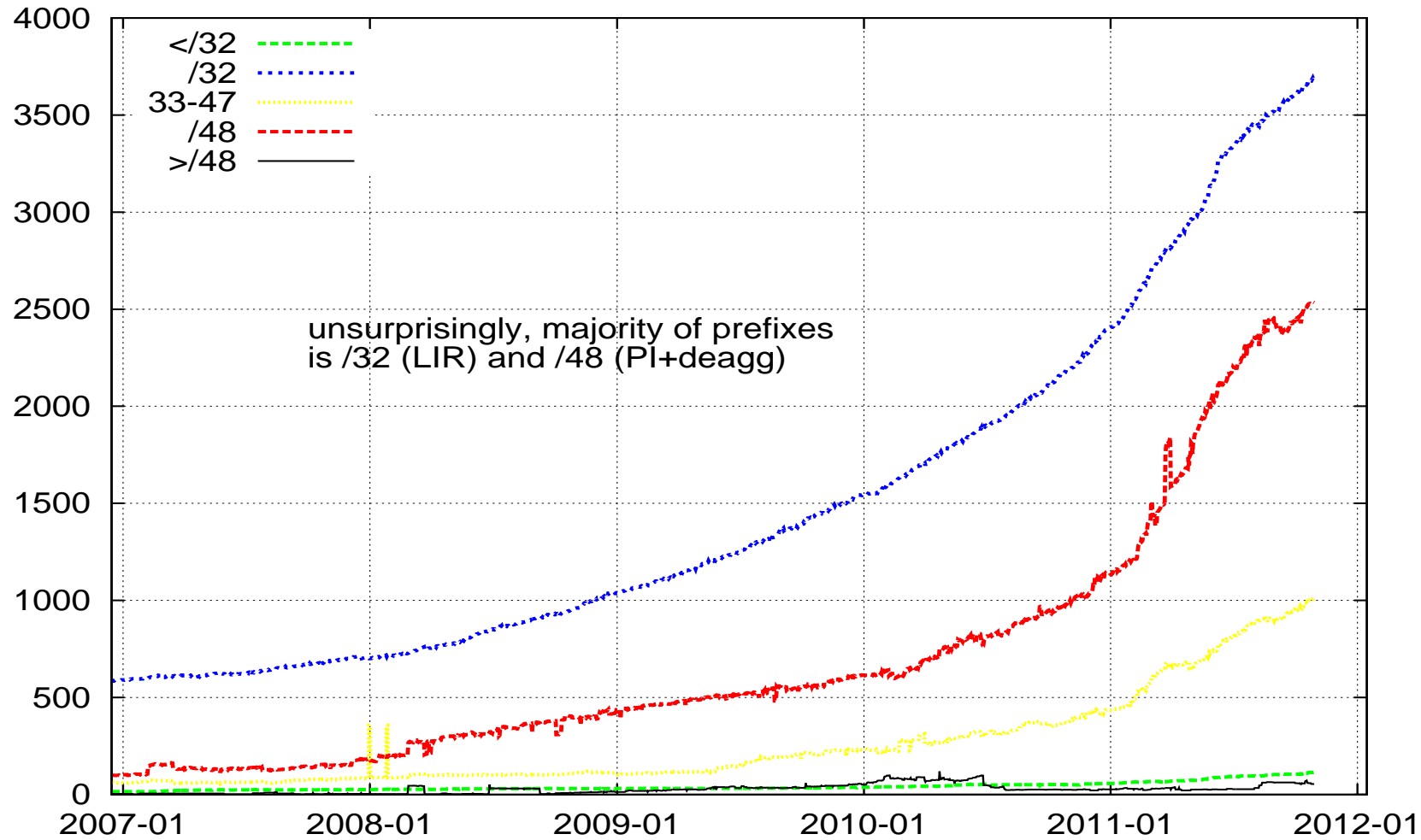
IPv6 routing table by prefix class

pillars of IP address management

- registration

  - clear documentation who "owns" a certain number

  - goes along with verifiability in the routing system

- aggregation

  - keeping the routing table size bounded

  - trying to balance business needs/wants and global cost

- conservation

  - making sure we don't run out of addresses

  - for v6, we can be more liberal, but still finite resource

address policy needs to balance...

- routing table
    - 1 million routes will break it for everbody

- NCC costs
    - we need the NCC to have a solid financial basis

- end user costs
    - too expensive RIR cost will lead to creative workarounds

- usefulness
    - address space acquired must be useful for the purpose

- address space efficiency

- good stewardship: encourage /48.../64 to end users

ongoing discussions about PI

- multihoming requirements

  – what *is* multihoming and how to prove it?

  – 2011-02 aims to remove this requirement

- costs

  – PI seen as "cheaper way to number my ISP business"

  – PI isn't meant as such, and that causes frictions

- usage restrictions (no sub-assignment)

  – "why can't I number my datacenter customers from my PI?"

  – some proposals in the discussions, nothing tangible yet

- is this detailed fine-tuning of PI policies the right approach?

more radical approach

- abandon distinction between PA and PI completely

- RIPE members (LIRs) go to RIPE NCC and ask for "numbers"

- numbers are then used to "number things"

- sounds easy...?

- the tricky bit is to get the details right

- draft at http://www.ripe.net/ripe/mail/archives/
  address-policy-wg/2011-October/006496.html

1. WHO gets address space?

- keep LIR (= RIPE member) and "sponsoring LIR" model

- all number blocks go from the RIPE NCC to a LIR

- then

  − either LIR uses it "for its own network"

  − or LIR passes on to customer that has signed appropriate contracts (keeping the requirements of 2007-01)

2. HOW BIG should a single block be?

- /48 "by default"

- larger than /48 for "end-sites with large networks", if justified

- /32 (.../29) when planning to assign /48.../64 to 3rd parties

- larger than that: when documented need (as now)

- automatic consequence: "multiple blocks of numbers" to a single LIR will have to be accepted as "frequently seen usage case" (we'll come back to this)

3. SPECIAL CASE networks

- currently: special case PI exists for IXP, Root DNS, Anycast DNS

- proposed implementation:
  - checkbox on the template "I want to use that for IXP/Root/Anycast DNS"
  - not used for evaluation (this is just numbers!) but used for selection of the address range to pick numbers from
  - people want to have the option to treat "special numbers" differently in their routing policy, and that's easier if they are easily recognized

- also proposed to have a well-documented range for /33…/48 number blocks (smaller "minimum assignment size" range)

4. COSTS

- we don't decide costs

- but we can send recommendations to the AGM (and then vote)

- one possible model could be:
  - yearly base fee for LIR
  - per-piece yearly fee for each number block held
  - /48 = 50 EUR, /32 = 100 EUR, /31+ = 200 EUR /year?
  - (per-piece installation fee for each new number block?)

5. MULTIPLE BLOCKS per LIR

- "more than one block for a single LIR" is not possible today for PA (unless full), but would be needed for new "number blocks"

- "get any number of blocks you ask for"
  - not likely to get consensus

- proposal for compromise:
  one "block of numbers" per "network"

- definition of "network"?

  − interconnected nodes

  − operated by same entity

  − operated with a common routing policy

  − operated as a *layer 3* network

- goal is to be *reasonably* flexible here

problem cases regarding multiple blocks

- ISPs providing L3 services on top of other ISPs' Layer 2 infrastructure

- single LIRs providing addresses to two independent Layer 3 networks that are not directly connected - e.g. due to political (commercial/NREN), legal or geographical reasons

- "classical PI" type connections - end users with independent numbers, having multiple non-connected end sites

- multiple L3 providers providing address space to a single user must be allowed (multi-homing, special-purpose networks, etc.)

what do YOU think?

- feedback from the room, please

- next steps: take feedback, form policy text, propose to the list

Y. Open Policy Hour

- Y.1 Kurtis Lindqvist - on AS numbers, anycast, and the IETF

- Z. AOB - anything else?

Thanks!

- thanks for your input

- thanks for your help in forming policies in the RIPE region

- . . . enjoy your coffee break!

- . . . and see you on the mailing list. . .