RIPE

Address Policy Working Group

RIPE Regional Meeting
Moscow
June 08, 2011

Gert Döring, June 08, 2011

Welcome

- Welcome to the Address Policy Working Group
- Your WG chairs:
  - Gert Döring
  - Sander Steffann
- Supported by the RIPE NCC Policy Development Officer
  - Emilio Madaio
- to contact all of us: apwg-chairs@ripe.net

Agenda

- Welcome and Introduction
- What does the Address Policy WG do?
- How does the Policy Development Process work in practice?
- Global Policy Overview
- Presentation of all open policy proposals
  - explanation of each proposal
  - answering questions
  - discussion
- Hot Policy Topics / upcoming policy proposals

What does the Address Policy WG do?

- the technical operation of the Internet needs certain *numbers*
  - IPv4 addresses
  - IPv6 addresses
  - AS numbers
- these numbers need to be unique, so a hierarchical approach to distribution works best
- the RIPE NCC distributes numbers to their members according to specific rules, called „address policy“
- the **address policy working group creates this policy**

Bottom Up process to change policy

- a member of the community proposes a policy change (this can be anyone!)
  - proposer might need to convince the WG to support proposal
- primary medium for the discussion is the WG mailing list: address-policy-wg@ripe.net
- discussion at RIPE meetings serve to get quick feedback and clarifications
- decisions are made based on mailing list activity: open, transparent, and archived
- policy is changed if there is ***consensus*** to do so
- detailed explanation: Policy Development Process

What does the Working Group Chair do?

- the working group chair…
  - works with the proposer of a policy change and the NCC PDO on the proposal text, to improve clarity
  - oversees the discussions on the WG mailing list and at RIPE meetings (keeping the discussions focused, point out problems)
  - works with the proposer to integrate feedback from the community into the proposal (if needed)
  - declares consensus, eventually
- the chairs of *all* working groups together
  - attest that the policy process has been followed

Questions?

Global Policy Overview

- Global Internet split into 5 RIR regions
  - ARIN, RIPE, APNIC, AfriNIC, Lacnic
- all regions have their own policy development process
- regional differences in process details, but always „bottom-up“ approach, policy is made by the community, RIR implements policy
- Emilio Madaio from the RIPE NCC keeps track for us what‘s being discussed in other regions

Address Policy WG - Agenda

- Currently, 6 policy proposals formally in the system
- Every proposal will now be covered in detail
  - presentation of the proposal
  - answering questions
  - collect feedback from the community (you!)

- ***no decisions made here***
- minutes will be published on the AP WG mailing list
- please contribute on the AP WG mailing list
- all details about policy proposals online:
  http://www.ripe.net/ripe/policies/current-proposals

2006-05 IPv4 PI Assignment Size

- Problem: if an end user requests IPv4 PI space, the RIPE NCC will assign a network that is big enough to *address* everything in the address plan (e.g. /27), but might not be big enough to be *routed* on the global Internet (needs /24)

- initial policy proposal, simplified:
  „just give end user a /24 if needed for routing“
- some support, lots of opposition
- seen as „too wastive“, and „open for abuse“, and „unfair in comparison to PA space“

2006-05 IPv4 PI Assignment Size

- original proposer lost interest in proposal
- if nobody is pushing a policy proposal forward anymore, it usually will not go anywhere - so WG chairs wanted to withdraw proposal
- new proposer took over in 2010
- worked on integrating feedback, changed text to make more flexible and reduce potential for abuse (presented on next slide)

2006-05 IPv4 PI Assignment Size

- 6.10 Provider Independent IPv4 Assignments for Multihoming
- The RIPE NCC will assign additional IPv4 addresses to an End User in order to make the assignment size a multiple of a /24 if an End User demonstrates:
  - the need for Provider Independent (PI) IPv4 address space; and
  - the intent to announce this address space for the purpose of multihoming to two or more Autonomous Systems which the End User does not own or control.
  - Cumulatively, no more than 248 additional IPv4 addresses may be assigned to any particular End User for the purposes outlined in section 6.10.

2006-05 IPv4 PI Assignment Size

- current state of proposal:
  - proposer working with new volunteer on integrating comments to most recent text
  - new version will be published in the next weeks
  - will then re-enter „review phase“

- any questions from the room?
- any feedback from the room?
- your input is appreciated!

2008-08 Initial Certification Policy (…)

- came out of the Certification Task Force
- Goal: define conditions under which the RIPE NCC would create and revoke RPKI certificates for resource holders in the RIPE region
- limited to PA space to get started

- initially, not much interest on the mailing list
- comments received led to version 4 of proposal

2008-08 Initial Certification Policy (…)

- The following guidelines apply only to certification of Internet number resources held by RIPE NCC members in good standing.
- The RIPE NCC will issue certificates for Internet number resources upon request to the registered holder of those resources.
- Initially, the following Internet number resources distributed by the RIPE NCC will be eligible for certification:
- IPv4 resources with the status "ALLOCATED PA" and "ALLOCATED UNSPECIFIED", IPv6 resources with the status "ALLOCATED-BY-RIR"
- The RIPE NCC will issue certificates upon request for RIPE NCC supplied IP Resources to the LIR that is the registered holder of those resources.
- The certificate will be issued via a secure channel.
- Certificates will be issued with a validity period of up to 18 months or as otherwise stated in the RIPE NCC Certificate Practice Statement [1].
- In the event of revocation due to security breach or similar, new certificates will be issued with a validity period equal to the remaining validity of the revoked certificate.
- **Certificates will at all times reflect the registration status of the resource**.

2008-08 Initial Certification Policy (…)

- current state of proposal:
  - enough support on the mailing list for v4 to go forward
  - in Last Call (concluding phase) since April 26, 2011
  - huge outbreak of discussion, some participants have made strong arguments against RPKI certificates in general
    - decision what to do next just now at WG chairs collective

- any questions from the room?
- any feedback from the room?
- your input is appreciated!

coffee break

- please be back at 12:00
- 4 more formal policy proposals
- ongoing thoughts about IPv6 PA/PI changes, 6rd allocations and IXP assignments

Address Policy WG Part II

- Welcome back
- Agenda
- Policy Proposals
- Hot Policy Topics (upcoming proposals)

Address Policy WG - Agenda

- Currently, 6 policy proposals formally in the system
- Every proposal will now be covered in detail
  - presentation of the proposal
  - answering questions
  - collect feedback from the community (you!)

- ***no decisions made here***
- minutes will be published on the AP WG mailing list
- please contribute on the AP WG mailing list
- all details about policy proposals online:
  http://www.ripe.net/ripe/policies/current-proposals

2010-01 Temporary Internet Number (…)

- current address policy permits temporary assignments for „experiments“, but scope is fairly restrictive
- goal of proposal:
  - widen policy to permit assignments for any kind of temporary purpose
  - set aside a resource pool to be used for that goal
- some urgency regarding setup of the pool for IPv4 – must be done before run-out

2010-01 Temporary Internet Number (…)

- 1.0 Introduction
  This policy allows the RIPE NCC to **assign number resources for temporary direct assignment purposes** and, for this purpose, to reserve pools of IPv4/IPv6 addresses, AS Numbers and any other numbers for which it acts as Regional Internet Registry (RIR).
- 2.0 Internet Registry Number Resource Pool Reservation
  The RIPE NCC is **authorised to reserve pools** of IPv4 addresses, IPv6 addresses, 16-bit AS Numbers and 32-bit AS Numbers for the purpose of direct assignment under this policy.
- 2.1 RIPE NCC Assignment Procedures
  The RIPE NCC may assign number resources to End Users on a temporary deployment basis for a specific time-limited purpose. […]
- 3.0 End User Terms and Limitations
- 3.1 Assignment Time Limits
- 3.2 Realistic Expectations
- 3.3 IPv4 Address Utilisation Rates
- 3.4 Compliance with Other RIPE NCC Assignment Policies

2010-01 Temporary Internet Number (…)

- current state of proposal:
  - some support, some requests to change details
  - due to urgency of IPv4 run-out, the WG decided to go ahead (to setup the resource pool) and change details later on
  - in WG Chairs Last Call in December 2010
  - sent back due to procedural error
  - now again in WG Chairs Last Call (concluding phase)

- any questions from the room?
- any feedback from the room?
- your input is appreciated!

2011-01 Global Policy for post exhaustion IPv4 allocation mechanisms by the IANA

- on a global policy level, IANA/ICANN has a policy to distribute IPv4 in /8 blocks to individual RIRs
- problem: if someone returns a smaller block, e.g. an IPv4 /16, to IANA, there is no policy how to distribute these addresses to the RIRs
- policy proposal: every 6 months, distribute all addresses that are in IANA free pool evenly to all RIRs (1/5 to each)
- special twist: global policy proposal can only become policy if all 5 RIR regions agree on the text

2011-01 Global Policy for post exhaustion IPv4 allocation mechanisms by the IANA

- Abstract
  Upon adoption of this IPv4 address policy by the ICANN Board of Directors, the IANA shall establish a Recovered IPv4 Pool to be utilized post RIR IPv4 exhaustion as defined in Section 1. The Recovered IPv4 Pool will initially contain any fragments that may be left over in the IANA. It will also hold any space returned to the IANA by any other means.
- 1.0 Recovered IPv4 Pool
- The Recovered IPv4 Pool will be administered by the IANA. It will contain:
- Any fragments left over in the IANA inventory after the last /8s of IPv4 space are delegated to the RIRs
- The IANA inventory excludes "Special use IPv4 addresses" as defined in BCP 153 and any addresses allocated by the IANA for experimental use.
- Any IPv4 space returned to the IANA by any means.
- The Recovered IPv4 Pool will stay inactive until the first RIR has less than a total of a /9 in its inventory of IPv4 address space.
- When one of the RIRs declares it has less than a total of a /9 in its inventory, the Recovered IPv4 pool will be declared active, and IP addresses from the Recovered IPv4 Pool will be allocated as stated in Section 2.0 below.

2011-01 Global Policy for post exhaustion IPv4 allocation mechanisms by the IANA

- 2.0 Allocation of returned IPv4 address space by the IANA
- Allocations from the IANA may begin once the pool is declared active.
- **In each "IPv4 allocation period", each RIR will receive a single "IPv4 allocation unit"** from the IANA.
- An "IPv4 allocation period" is defined as a **6-month period** following 1 March or 1 September in each year
- The IANA will calculate the size of the "IPv4 allocation unit" at the following times:
- When the Recovered IPv4 Pool is first activated
- At the beginning of each IPv4 allocation period
- To calculate the "IPv4 allocation unit" at these times, the IANA will use the following formula:
- **IPv4 allocation unit = 1/5 of Recovered IPv4 pool**, rounded down to the next CIDR (power-of-2) boundary.
- No RIR may get more than this calculation used to determine the IPv4 allocation unit even when they can justify a need for it.
- The minimum "IPv4 allocation unit" size will be a /24. […]

2011-01 Global Policy for post exhaustion IPv4 allocation mechanisms by the IANA

- current state of proposal:
  - proposed in March 2011, not much interest yet
  - WG chairs decided to go forward to „review phase“
  - waiting for NCC documentation (impact analysis)
- *global proposal*: textual changes to be avoided

- any questions from the room?
- any feedback from the room?
- your input is appreciated!

2011-02 remove multihoming req. for IPv6 PI

- current IPv6 PI policy requires that the receipient needs to do multihoming
  (interpreted as, „BGP-based multihoming“)
- IPv4 PI policy does not require that
  - problem for single-homed networks that currently use IPv4 PI and want to add IPv6 PI
  - proposal: remove multihoming requirements from assignment requirements

2011-02 remove multihoming req. for IPv6 PI

Current policy text:

8. IPv6 Provider Independent (PI) Assignments

To qualify for IPv6 PI address space, an organisation must:

a) demonstrate that it will be multihomed

b) meet the requirements of the policies described in the RIPE NCC document entitled "Contractual Requirements for Provider Independent Resources Holders in the RIPE NCC Service Region".

New policy text:

8. IPv6 Provider Independent (PI) Assignments

To qualify for IPv6 PI address space, an organisation must meet the requirements of the policies described in the RIPE NCC document entitled "Contractual Requirements for Provider Independent Resources Holders in the RIPE NCC Service Region"

2011-02 remove multihoming req. for IPv6 PI

- current state of proposal:
  - initial proposal at April 15, 2011
  - 15 voices in favour, 4 voices against proposal
    - main reason for opposition: „routing table will explode“
  - waiting for proposers to update documentation, then proposal will go to „review phase“

- any questions from the room?
- any feedback from the room?
- your input is appreciated!

2011-03 post-depletion IPv4 addr. recycling

- current IPv4 address policy has special-case for the „last /8“:
  - every LIR can get exactly one /22, nothing more
- policy text can be misunderstood regarding „what happens if address space is returned to the RIPE NCC after the last-/8-Policy is in effect“
- proposal to make text more explicit
- proposal **not** intended to introduce or change policy

2011-03 post-depletion IPv4 addr. recycling

5.6 Use of last /8 for PA Allocations

The following policies come into effect as soon as RIPE NCC is required to make allocations from the final /8 it receives from the IANA. **From then on** the distribution of IPv4 address space **will only be done** as follows:

[**existing text is kept unmodified, new sections 3.+4. to be added**]

3. Post-depletion Address Recycling

This section only applies to address space that is returned to the RIPE NCC and that will not be returned to the IANA but re-issued by the RIPE NCC itself.

a. Any address space that is returned to the RIPE NCC will be covered by the same rules as the address space intended in clause 1.

b. Minimum allocation sizes for the relevant /8 blocks will be updated if necessary.

4. Insufficient address space

a. In case an allocation of a single /22 as per clause 1 can no longer be made, multiple allocations up to an equivalent of a /22 in address space will be made to fulfill a request.

2011-03 post-depletion IPv4 addr. recycling

- current state of proposal:
  - problem brought up at RIPE-Meeting in May
  - volunteer found to write proposal and drive process
  - policy proposal in „discussion phase“ until June 17
  - quite some discussion, but somewhat sidetracked on general issues regarding „last /8“ policy

- any questions from the room?
- any feedback from the room?
- your input is appreciated!

outlook on policy topics: IPv6 PA/PI

- IPv6 PI assignment policy is a hot topic
  - multihoming requirement does not work for all users
  - sub-assignment is not permitted, causes problems for e.g. small data-center hosting providers
- difference between „PA“ and „PI“ space is largely historic
  - ISPs use „PA“ to number network and customers
  - „large enterprises“ use „PI“ to do multihoming
- this model does not reflect reality anymore

outlook on policy topics: IPv6 PA/PI

- RIPE NCC charging scheme further complicates things
  - smaller providers want to use PI space because it is much cheaper to get (50 EUR/year per block instead of paying full LIR fee)
  - but IPv6 PI can not be used for „ISP business“
  - „expensive“ LIR space is bigger (/32 instead of /48) and has no restrictions regarding multihoming or sub-assignments
  - this is seen as „money rules“, which was *not the intent*

outlook on policy topics: IPv6 PA/PI

- proposal at the last RIPE meeting:
- abandon distinction between IPv6 PA and PI
- RIPE NCC would only assign „numbers“ (IPv6 address blocks) with no difference between PA and PI
- the size of the address block would depend on the usage:
  - if assignment to 3rd-party end-users is planned, allocate a /32
  - otherwise, allocate a /48
  - larger block if „documented need“
- charging scheme is currently being reworked by RIPE NCC financial officer (→ NCC services WG), new model could be something like „low entry fee, one fixed fee per address block, no matter which size“ – ***not APWG matter***!

outlook on policy topics: IPv6 PA/PI

- current state of proposal:
  - idea brought up at RIPE-Meeting in May 2011
  - mostly positive feedback
  - needs to be written down, in a very clear policy text
  - then formally enters the PDP in „discussion phase“
- changes to charging scheme can only be decided by the RIPE membership general meeting (AGM)

- any questions from the room?
- any feedback from the room?
- your input is appreciated!

Outlook on policy topics: 6rd allocations

- 6rd is an IPv6 migration technique that helps ISP to get IPv6 connectivity to customer routers (CPEs) even if there are backbone components (e.g. DSLAMs) that can not do IPv6 yet
- 6rd essentially is an evolution of 6to4 without the disadvantages of global anycast relays
- IPv4 address of the CPE router is encoded in the IPv6 prefix (adding up to 32 bits to base prefix)
- simplified summary: to be able to give customers a /62 prefix, you **need** /62-32 bits = **/29 allocation to the ISP**
- details here: http://ripe62.ripe.net/presentations/193-zorz-townsley-6rd-ripe62-may-2011.pptx

outlook on policy topics: 6rd allocations

- current policy does not permit /28 „just for 6rd“
- current state of proposal:
  - problem statement brought up at RIPE-Meeting in May 2011
  - Mark and Jan are working on the formal proposal text now
  - most likely proposal will be something like
    „increase minimum size for (all) IPv6 allocations to /29“
  - then formally enters the PDP in „discussion phase“
    (which will be announced on the APWG list, of course)
- any questions from the room?
- any feedback from the room?
- your input is appreciated!

outlook on policy topics: IXP space

- after „last /8“ policy comes into effect, there will not be any more IPv4 PI assignments
- so new (or growing) exchange points (IXP) cannot get „independent“ address space for their exchange fabric
- EIX working group considers this a problem
- Andy Davidson (EIX WG chair) came to the AP WG working group meeting in May, presented that problem, and announced that a new policy proposal would be coming
- Proposal would be something like „reserve an IPv4 /16 to be used for PI assignments for IXP exchange fabrics“
- http://ripe62.ripe.net/presentations/154-Post-ipv4-ixp.pptx

outlook on policy topics: IXP space

- current state of proposal:
  - problem statement brought up at RIPE-Meeting in May 2011
  - Andy Davidson working on the formal proposal text now
  - then formally enters the PDP in „discussion phase“
    (which will be announced on the APWG list, of course)

- any questions from the room?
- any feedback from the room?
- your input is appreciated!

Questions?