



Number Resource Policy Development Activities

Louie Lee

Chair, ICANN ASO Address Council

ICANN 42

Dakar

October 2011

1. About the ASO: MoU, Global Policy, Address Council

2. Policy Development Process

~~RIR PDP: Principles, Roles, Basic Steps~~

~~Global PDP~~

3. NRO Update

4. IANA Update

5. Policy Discussions:

Policy Proposals (Global and Regional)

Regional Activities: AfriNIC, APNIC, ARIN, LACNIC,
RIPE NCC

6. Closing: Questions and Answers, How to Participate

Please ask questions at the end of each section.

ASO MoU (dated 21 October 2004)

- Agreement between ICANN and the Numbering Resource Organization (NRO)
- NRO fulfills the role of the ASO
- The NRO Number Council fulfills the role of the ASO Address Council
- Defines the Global Policy Development Process (PDP) as a 15-step process
 - From proposal through adoption by the ICANN Board
 - Based on the RIR's PDPs... “...the global policy proposal [will] be placed on the agenda for next open policy meeting in each region, in accordance with the applicable policy process...”

Global Policy

- “Global policies are defined within the scope of this agreement as Internet number resource policies that have the agreement of all RIRs [Regional Internet Registries] according to their policy development processes and ICANN, and **require specific actions or outcomes on the part of IANA** or any other external ICANN-related body in order to be implemented.”*
- For the most part global proposals/global policies determine number allocation policy for requests from the RIRs to the IANA (RIRs receive their number resources from IANA)

**Defined in the ASO MoU (dated 21 October 2004)*

Comprised of 15 elected and appointed individuals from all 5 regions

Independent body separate from RIR management and board to:

1. Oversee global policy development
2. Appoint 2 ICANN Board of Directors
3. Serve on ICANN bodies:
NomCom, AoC Review Teams
4. Advise ICANN Board on number resource matters

Open Forum

- Open Policy Mailing List
- Open Policy Meetings

Transparent

- PDP documented
- Policies documented
- Meetings documented

Bottom Up

- Consensus-based
- RIRs do not dictate policy, they implement

Community

- Submit policy proposals
- Discuss policy proposals (in favor or not?)

Consensus Evaluator

- Determine consensus

Board

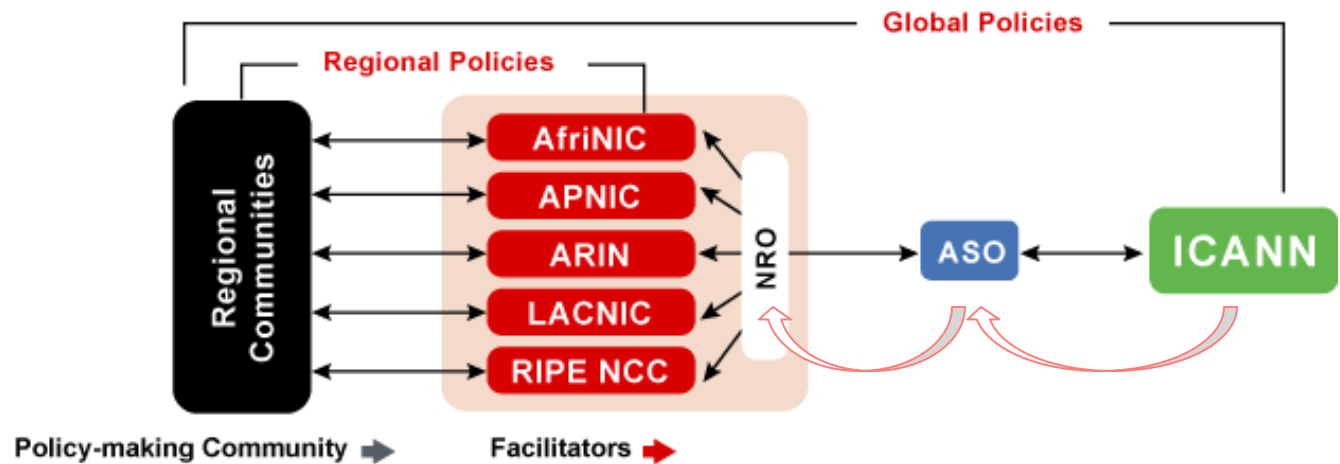
- Provide fiduciary and process oversight*
- Ratify policy*

**Responsibility shared with WG Chairs in some RIRs*

Staff

- Conducts assessments of proposal impacts
- Implement ratified policy

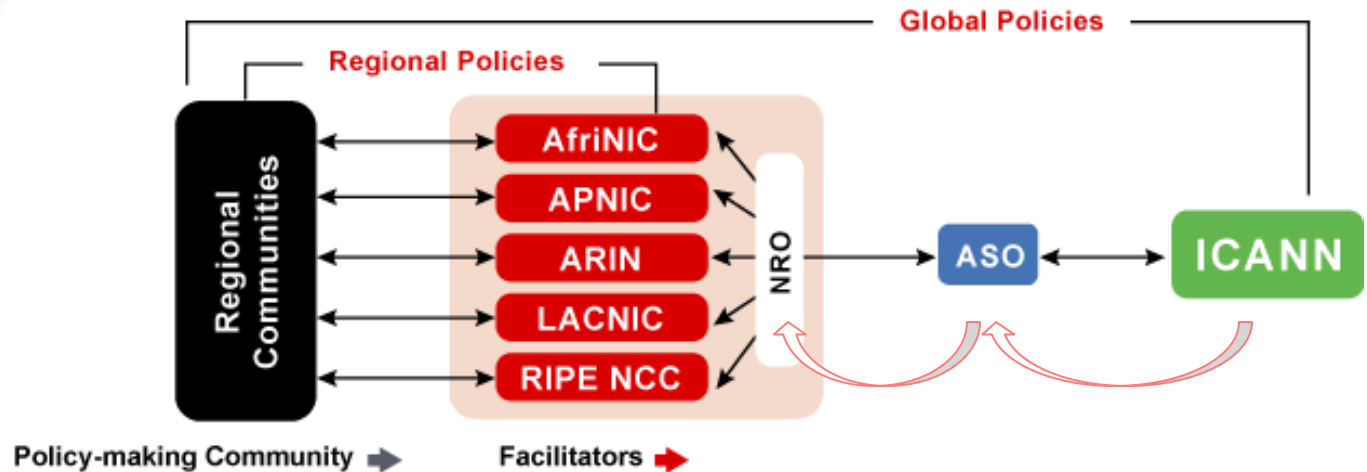
- 1. Community individuals and groups submit a proposal**
- 2. Community discusses the proposal on the mailing list**
- 3. Community discusses the proposal at an open policy meeting**
- 4. Consensus evaluation**
- 5. Last Call**
- 6. Adoption**
- 7. Implementation**



Global proposal discussed/presented at all 5 RIRs per their PDPs

- ASO AC members follow and participate in discussions

After adoption by all 5 RIRs proposal forwarded to the ASO AC



ASO AC Proposal Review

- Process (RIR PDP) review
- Common agreement among RIRs on common text
- Adequate consideration of viewpoints

Upon successful review, ASO AC forwards proposal to ICANN Board for adoption

ICANN Board adopts, and IANA implements

9 Global Proposals (since 2001)

- Adopted and implemented as policy = 6
- Under discussion = 1
- Abandoned = 2

<http://aso.icann.org/global-policies/>

Review

- Global Proposal
 - Policy about IANA and RIRs
- RIR Proposal
 - Policy about RIRs and their customers



NRO report

Raúl Echeberría
Chair

NRO Executive Council



What is the NRO?

- Number Resource Organisation
 - Vehicle for RIR cooperation and representation
- Formed for the purposes of:
 - protecting the unallocated Number Resource pool
 - promoting and protecting the bottom-up policy development process
 - acting as a focal point for Internet community input into the RIR system
- Established the ASO within ICANN framework
 - By MoU signed on 21 October 2004

- Current office holders
 - Chairman: Raúl Echeberría, LACNIC
 - Secretary: John Curran, ARIN
 - Treasurer: Paul Wilson, APNIC
- NRO Coordination Groups
 - Engineering Coordination Group (ECG): Chair - Arturo Servin, LACNIC
 - Communications Coordination Group (CCG): Chair - Ernesto Majó, LACNIC
 - Public Affairs Coordination Group (PACG) : Chair – Andrés Piazza, LACNIC
 - Registration Services Managers (RSM): Chair - Leslie Nobile, ARIN

- NRO expenses distribution 2010

- Weighted formula based on revenue and resources held

AfriNIC	3.50 %
APNIC	32.40 %
ARIN	24.70 %
LACNIC	4.70 %
RIPE NCC	34.60 %

- NRO contribution to ICANN

- We have renewed our agreement
- The NRO remains committed to a yearly contribution of \$823,000.



NRO

NRO & ICANN – 2010/2011

- Cartagena de Indias, Columbia, 5-10 December 2010
 - ASO AC Update to Community, ICANN Board and Government Advisory Committee (GAC)
- San Francisco, USA, 13-18 March 2011
 - ASO AC Update to Community
 - ASO AC meeting
- Singapore,



NRO

Internet Governance Forum

- NRO has actively participated in all the previous IGF events
- NRO is represented in the Multistakeholder Advisory Group (MAG) - Raúl Echeberría and Cathy Handley
- NRO is represented in the Commission on Science and Technology for Development (CSTD) Working Group - Sam Dickinson and Oscar Robles.

- Last Meeting
 - 27-30 September in Nairobi, Kenya
 - Meeting with UN Assistant Secretary General Thomas Stelzer
 - NRO Booth run by RIR staff
 - Workshop Coordination & Participation
 - Financial contribution to the IGF Host
 - Active participation in all discussions about IPv6, IGF improvements and institutional arrangements.
 - Meeting with Brazilian government representative about IBSA proposal.

International cooperation

- ITU

- Letter to the ITU-T and ITU-D inviting them to hold talks consistent with the outcomes of the Plenipot 2010 with regard to ITU interaction with other stakeholders. Meeting has not been possible yet.
- No IPv6 working group meeting this year.

- OECD

- The NRO is a founding member of the Internet Technical Advisory Committee (ITAC), continues its participation advising on issues of critical Internet resources in forums including the Working Party on Communications Infrastructure and Service Policy (CISP)



Ongoing activities in 2010/11

- Engineering Coordination
 - Focus on Resource Certification (RPKI) implementation coordination
- NRO workshop in 3-8 February, Miami, Florida
 - Hosted by ARIN
 - Concurrent with ICANN/IANA distribution of last 5 /8s
 - Met with ICANN, ISOC, IAB & IETF Executives
- NRO EC retreat, 16-17 August, Montevideo
 - Hosted by LACNIC
- Possible I* meeting in November.



Retreat Topics

- Agreement to establish Public Affairs Coordination Group
- Review & Discussion of RPKI
 - Technical coordination
 - Review of regional discussions / concerns
- Ongoing ASO Review
- Legacy Space
 - Interregional coordination



Recent NRO statements and communications

- 2010
 - Message development regarding IPv4 and IPv6
 - Develop Secure Internet through Resource Certification (RPKI) messaging
 - Preparations for ITU IPv6 (March) and IGF (September)
- 2011
 - Letter to ICANN about IANA contract
 - Letter to ICANN inviting them to hold talks about the implementation of a RPKI single root anchor
 - Comments to the US DoC Nol on IANA contract.
 - No expansion of IANA functions
 - Support to ICANN as IANA functions performer
 - Support to keep the IANA functions together
 - Introduction of the “cooperative agreement” concept.
 - Letter to ITU about NRO/ITU relationship.
 - Letter to ICANN proposing a meeting to evaluate the progresses made in technical discussions about RPKI GTA and to discuss future steps.
- All statements and correspondence with other organizations are available on the NRO website.

2001:610:240:0 193.0.0.202 62:109:128 195:048:02:03 178:12:02:02 2001:010:240 193.0.0.203 195:048:02:03
62:109:128 195:048:02:03 193:0.0.203 62:109:128 195:048:02:03 178:12:02:02 2001:610:240 193.0.0.202
193.0.0.203 2001:610:240:0 193.0.0.202 62:109:128 195:048:02:03 178:12:02:02 2001:610:240 193.0.0.203
2001:610:240:0 193.0.0.202 62:109:128 195:048:02:03 178:12:02:02 2001:610:240 193.0.0.203
Number Resource Organization



Thank You

<http://www.nro.net>

2001:610:240:0 193.0.0.202 62.109.128 195.048.02.03 178.12.02.02 2001:610:240 193.0.0.203 195.048.02.03
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193.0.0.203 2001:610:240:0 193.0.0.202 62.109.128 195.048.02.03 178.12.02.02 2001:610:240 193.0.0.203
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Number Resource Organization



IANA Update October 2011 Dakar, Senegal

Elise Gerich
VP IANA

IANA RFP

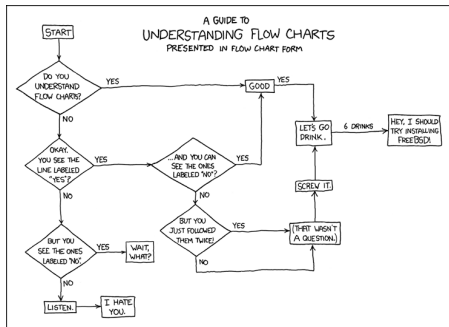


Internet Assigned Numbers Authority

- Current Contract extended to March 31, 2012
- On Oct 21, 2011 US DoC NTIA published Notice of Upcoming Solicitation
- Timeline
 - RFP expected Nov 4, 2011
 - Proposals due Dec 4, 2011

Business Excellence 2010-11

- We've converted the documentation for our core processes to a single standard format
- We've reviewed our KPIs
- Benchmarking performance and setting targets

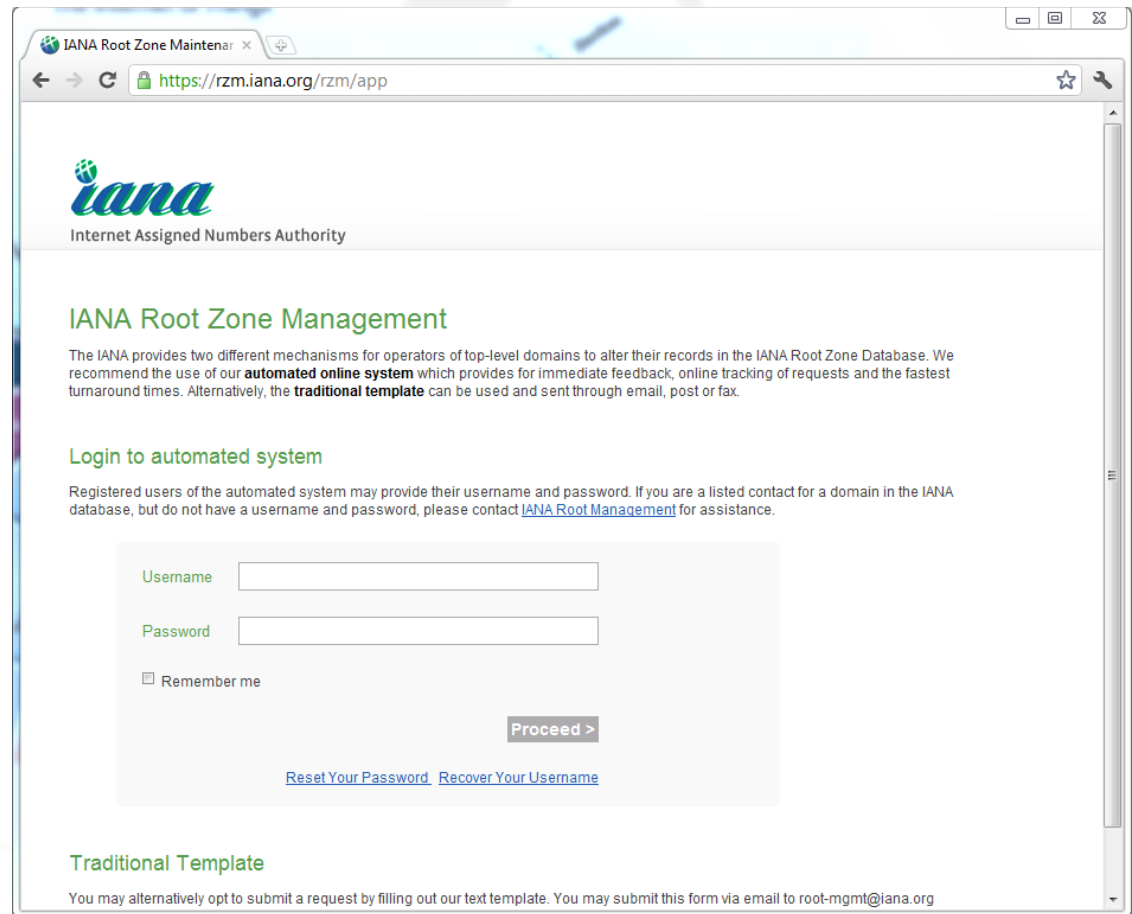


Used under a CC BY-NC 2.5 license from xkcd.com

Root zone automation

The new web interface to root zone management was launched in August


40% of TLD operators have claimed credentials for the system



The screenshot shows a web browser window with the URL <https://rzm.iana.org/rzm/app>. The page features the IANA logo and the title "IANA Root Zone Management". Below the title, there is a paragraph explaining the IANA's services for root zone management. A section titled "Login to automated system" contains a form with fields for "Username" and "Password", a "Remember me" checkbox, and a "Proceed >" button. Below the form are links for "Reset Your Password" and "Recover Your Username". At the bottom, there is a section for "Traditional Template" with a brief description and an email address: root-mgmt@iana.org.

IANA Root Zone Maintenance x

← → ↻ <https://rzm.iana.org/rzm/app> ☆


Internet Assigned Numbers Authority

IANA Root Zone Management

The IANA provides two different mechanisms for operators of top-level domains to alter their records in the IANA Root Zone Database. We recommend the use of our **automated online system** which provides for immediate feedback, online tracking of requests and the fastest turnaround times. Alternatively, the **traditional template** can be used and sent through email, post or fax.

Login to automated system

Registered users of the automated system may provide their username and password. If you are a listed contact for a domain in the IANA database, but do not have a username and password, please contact [IANA Root Management](#) for assistance.

Username

Password

Remember me

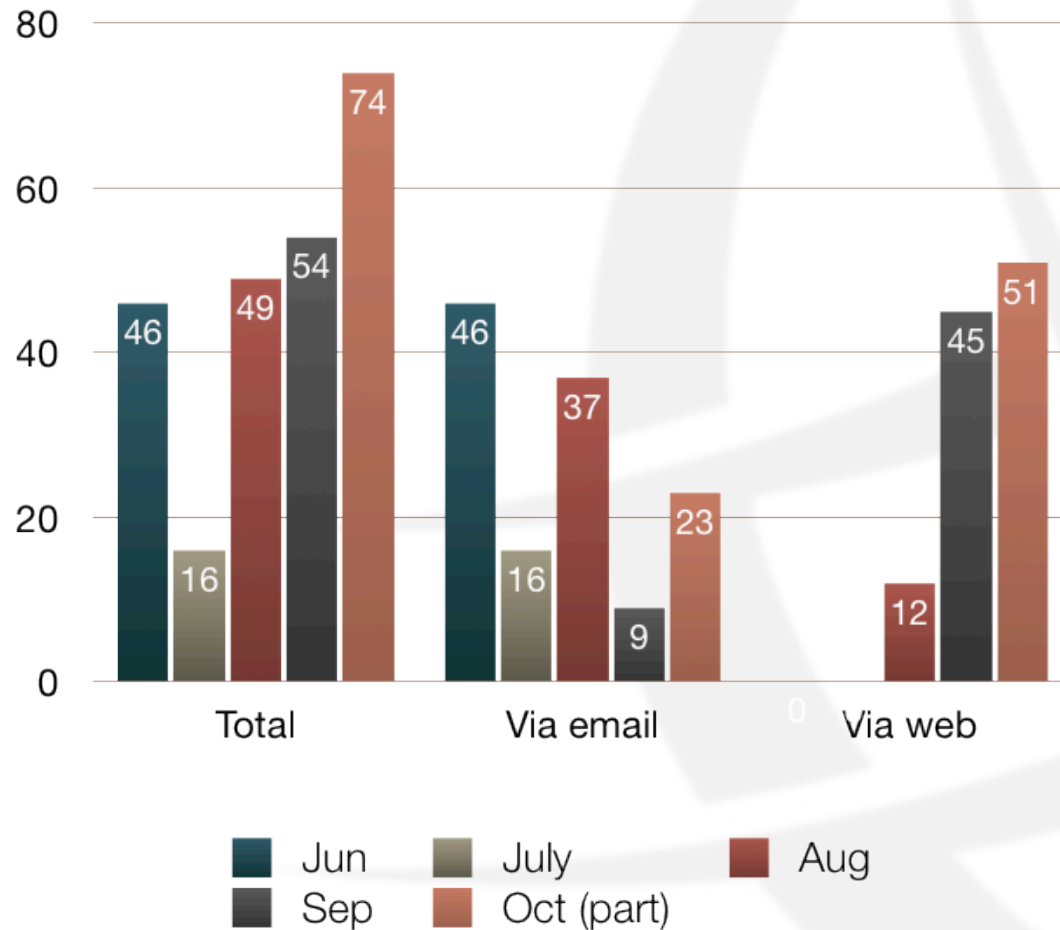
[Proceed >](#)

[Reset Your Password](#) [Recover Your Username](#)

Traditional Template

You may alternatively opt to submit a request by filling out our text template. You may submit this form via email to root-mgmt@iana.org

Number of requests lodged



Cooperating with the RIRs

- IANA & RIRs are working on clarifying the process for IPv6 allocation requests
- Meaning of “reserved” in IPv6 sparse allocation context
- Key goals include
 - Automation
 - Transparency



Internet Assigned Numbers Authority

Other good stuff

- Achieved SysTrust accreditation for DNSSEC
- Met & exceeded the SLA target for protocol parameter assignments for IETF
- MCAST.NET delegated to new nameservers & DNSSEC signed



Internet Assigned Numbers Authority



Thank you!

One World
One Internet
Everyone
Connected

Questions?



Overview of Number Policy Discussions: Global Proposals and Regional Policy Proposals

Louie Lee

Chair, ICANN ASO Address Council

[GPP-IPv4-2011] Global Policy for post exhaustion IPv4 allocation mechanisms by the IANA

Allows IANA to receive address space from the RIRs

Allows IANA to allocate space back to the RIRs

Status:

AfriNIC – Last call

APNIC – Adopted

ARIN – Last Call

LACNIC – Last Call

RIPE – Adopted

Recent Regional Policy Proposal Activities (Q4 2011)

IPv4 policies: allocation, reclamation, transfer (40)

IPv6 address policies (6)

WHOIS changes (5)

Other (1)

Total: 52 regional policy proposals in the later half of 2011 (there were about 50 in the first half of 2011)



AfriNIC Policy Case Study

Jean Robert Hountomey

AfriNIC representative, ICANN ASO Address Council

The IPv4 Soft Landing Policy Proposal

An AfriNIC Policy Proposal Case Study

The Problem

- ☑ With IPv4 address depletion, the current IPv4 allocation policy is not sustainable in the mid to long term.
- ☑ Current policy might lead to some getting a disproportionate share of addresses at the expense of others
- ☑ Context: IPv4 is a valuable resource in the transition to IPv6

The Solution: IPv4 Soft Landing Policy Proposal

- ☑ Set aside a full block of /8 IPv4 space (Final /8) and allocate according to new criteria.
- ☑ Use current allocation policies till a request for IPv4 space meets one of the following criteria:
 - a. Cannot be met from current pool (outside Final /8)
 - b. Can be fulfilled but would deplete the pool (except Final /8)
- ☑ Thereafter, use different criteria for allocation from the Final /8

IPv4 Soft Landing Phases

Current Phase

- Status quo at the time the policy goes into effect.
- Allocations done as per existing policies
- AFPUB-2005-v4-001 & AFPUB-2006-GEN-001

Exhaustion Phase

- Starts when a request for v4 space cannot be filled without dipping into Final /8
- Divided into Exhaustion Phase 1 and 2

IPv4 Soft Landing Exhaustion Phases

☑ Exhaustion Phase 1

- Minimum allocation (/24 for EU and /22 for LIR)
- Maximum allocation : /13 (down from /10)

☑ Exhaustion Phase 2

- Starts when only a /11 remains of Final /8
- Minimum allocation: /24
- Maximum allocation: /22

IPv4 Soft Landing Allocation Period Recommendations

- ☑ Allocation period changes from 12 to 8 months
 - Ensures requests are only made for short to medium term
 - Promotes fairness in equitable distribution of address space
- ☑ To be eligible for allocations in exhaustion phase
 - Existing members must have used 90% of ALL their current allocations.
 - All resources must be used to support connectivity back to the region.

Discussions

- ☑ Proposed: 13th May 2008 (3 years!! Ago)
- ☑ Discussed and failed to gain consensus outright at AfriNIC 10 and 12
- ☑ Discussed and gained consensus during AfriNIC-13 but failed to gain consensus during Last Call
- ☑ Gained consensus during AfriNIC-14 – last call currently being evaluated by PDWG co-chairs.

Current Status

- ☑ Policy working group currently evaluating consensus after last call
- ☑ No major objections during Last Call on mailing list

References

- ① AfrinIC PDP: <www.afrinic.net/policy.htm>
- ② IPv4 Soft Landing Proposal
<www.afrinic.net/docs/policies/AFPUB-2010-v4-005-draft-05.htm>
- ③ Minutes of Previous Policy Meetings
<www.afrinic.net/ppm_minutes.htm>
- ④ Policy Mailing List Discussion Archives
<<https://lists.afrinic.net/pipermail/rpd/>>

QUESTION? ANSWERS

THANK YOU



APNIC Policy Case Study

Tomohiro Fujisaki / 藤崎 智宏

APNIC representative, ICANN ASO Address Council

APNIC Policy Case Study

Removal of IPv4 prefix exchange policy
(Prop-080)



Delegations from the final /8

- Proposal submitted January 2010
 - A proposal to remove a policy permitting resource holders to return three or more non-contiguous IPv4 address blocks in return for a single, larger, contiguous block.
- Discussion
 - Mailing-List discussion
 - Discussed at APNIC 29 in March 2010
 - Completed the policy process in 18 May 2010
 - Draft editorial comment period ended 21 June 2010
- Implemented on 5 July 2010



Results

- Initial exchange policy
 - Led to increased aggregation
 - Reduced size of the global routing table
- However
 - IPv4 exhaustion would make it difficult to fulfill this policy
 - Some used the policy to get larger IPv4 address blocks without properly justifying their need
- Results
 - Community response to changing conditions
 - Policy change protected the free address pool



References

- **APNIC Policy Development Process**
 - <http://www.apnic.net/community/policy/process>
- **Prop-080: Removal of IPv4 prefix exchange policy**
 - <http://www.apnic.net/policy/proposals/prop-080>
- **Current IPv4 Policy**
 - <http://www.apnic.net/policy/add-manage-policy>



Thank You





ARIN Policy Case Study

Louis Lee

ARIN representative, ICANN ASO Address Council



ARIN Policy Case Study

POC Clean Up
(ARIN 2008-7)

POC Clean Up – (ARIN 2008-7)

- Proposal submitted Aug 2008
 - Directed ARIN to clean up bad POCs (email addresses) in the ARIN Whois database
 - Email POCs yearly and validate them
- Discussion
 - Public Policy Mailing List discussion and discussed at ARIN 22 (Oct 2008)
 - Revised version discussed on list and at ARIN 23 (April 2009)
 - Last call in May 2009
- Adopted in July 2009
- Fully implemented July 2010
 - Significant engineering was required (estimate was 18 months)

Results

- Ongoing automated process
 - Requires yearly validation and/or updating all of ARIN's POC records
 - If no response within 60 days, records marked "invalid"
 - ARIN will not process requests (such as for number resources) from invalid POCs (they have to validate first)
- POC records are being cleaned up

References

- **ARIN Policy Development Process**
 - <https://www.arin.net/policy/pdp.html>
- **Draft Policy 2008-7: Identify Invalid WHOIS POC's**
 - https://www.arin.net/policy/proposals/2008_7.html
- **Whois POC Validation**
 - https://www.arin.net/resources/services/poc_validation.html
 - Information about how POC validation works, etc.

Thank you



LACNIC Policy and Proposals

LACNIC representative, ICANN ASO Address Council

LACNIC Policy Case Study

Initial allocation and assignment of IPv4 addresses for ISPs
(LAC-2010-05)

Initial allocation and assignment of IPv4 addresses for ISPs

Proposal submitted September 2010

Objective: Replace the current multihoming condition with a broader requirement that includes both multihoming and interconnection needs.

People wanted this change because in some Latin American countries ISPs have only one connection to the Internet (in some cases only one option is available); however, peering possibilities exist that would allow lowering costs.

Discussion

List discussion and discussed at LACNIC XIV (Oct 2010)

Last call until December 2010

Ratified by Board in April 2010

Adopted in May 2011

Results

The same requirements apply both to multihomed ISPs and to ISPs planning to be multihomed soon or with interconnection needs when requesting an initial /21 or bigger block.

If the applicant is planning to become multihomed or needs to interconnect with other autonomous systems, they must describe in detail the corresponding plan and timeline.

This proposal made it easier to get IPv4 space, specially for those ISPs from countries or locations where it's difficult to be multihomed.

References

LACNIC Policy Development Process:

<http://lacnic.net/en/politicas/pdp.html>

Policy Proposal LAC-2010-05:

<http://lacnic.net/documentos/politicas/LAC-2010-05-en.pdf>

Section 2.3.3.1.2 of LACNIC's Policy Manual modified:

<http://www.lacnic.net/en/politicas/manual3.html>

Discussion during Public Policy Forum available at:

<http://lacnic.net/en/eventos/lacnicxiv/>

Thank you



RIPE Policies and Proposals

Wilfried Woeber

RIPE representative, ICANN ASO Address Council

RIPE Case Study: Prop 2011-03 (1/3)

- At RIPE 62 the RIPE NCC presented the implementation impact of the final /8 policy (sec 5.6 of ripe-530).
- The community identified the need to clarify how the RIPE NCC will manage returned IPv4 address space during exhaustion.

RIPE Case Study: Prop 2011-3 (2/3)

- Policy Proposal 2011-03, “Post-depletion IPv4 address recycling”, was submitted in May 2011
- Initial support from the community.
- Publication of the RIPE NCC Impact Analysis and further community discussion.
- After the proposer answered in the mailing list the last questions, the proposal entered in Last Call in August 2011.

RIPE Case Study: Prop 2011-03 (3/3)

- At the end of the 4 weeks Last Call period, the Address Policy Working Group co-chairs together with the chairs of all the other working groups evaluated the community discussion.
- Consensus was then declared and now section 5.6 is updated.

RIPE Case Study: Results

- All IPv4 address space eventually returned and kept in the NCC address pool will be distributed in compliance to the last /8 policy
- References:
 - <http://www.ripe.net/ripe/policies/archived-policy-proposals/proposals/2011-03> (prop 2011-03)
 - <http://www.ripe.net/ripe/docs/ripe-500> (RIPE PDP)
 - <https://www.ripe.net/ripe/mail/archives/address-policy-wg/> (Address Policy WG Mailing List Archive)



Closing: Questions and Answers

Louie Lee

Chair, ICANN ASO Address Council

Watch the ASO AC site for news about new global proposals

- <http://aso.icann.org/>

Participate in the Policy Discussions in your RIR region

- Global proposals are discussed on the RIR's policy mailing lists and at open policy meetings
- Subscribe and participate on the appropriate list and attend open public policy meetings (remote participation enabled)
 - Open, no membership requirements
 - State your opinion

Subscribe to the RIR policy list(s)

- No membership requirements

Attend RIR meetings

- In person (open, nominal fee)
- Remote (free)



Internet Number Resource Policy Development: Participation is Easy!

NRO

The Number Resource Organization (NRO) encourages all stakeholders to get involved and participate in the development of Internet number resource policy. These policies govern how the Regional Internet Registries (RIRs) distribute and manage IPv4 and IPv6 address space and Autonomous System Numbers.

<http://nro.net/about/rirs.html>

RIR policy forums are open to everyone. Anyone can propose a policy or argue for or against a policy proposal, so everyone's voice can be heard. All policy proposals, discussions, and debates are conducted publicly on email lists and at open policy meetings. Decisions are based on the consensus of all participants. There are several ways to get involved:

- 1. Read the Policy Proposals Under Discussion**
Proposals are available for anyone to read. To find out what's currently under discussion in your region, see:
Afrinic - <http://www.afrinic.net/policy.htm>
APNIC - <http://www.apnic.net/policy/proposals>
ARIN - <https://www.arin.net/policy/proposals>
LACNIC - <http://lacnic.net/en/politicas>
RIPE NCC - <http://www.ripe.net/ripe/policies/proposals>
- 2. Discuss Policy Proposals on RIR Mailing Lists**
Each RIR maintains an open mailing list devoted to the discussion and development of the policies in its region. No membership is required.
Afrinic - <https://lists.afrinic.net/mailman/listinfo/cgi/rpd>
APNIC - <http://mailman.apnic.net/mailman/listinfo/sig-policy>
ARIN - <http://lists.arin.net/mailman/listinfo/arin-ppml>
LACNIC - <https://mail.lacnic.net/mailman/listinfo/politicas>
RIPE NCC - <http://www.ripe.net/mailman/listinfo/address-policy-wg>
- 3. Attend RIR Public Policy Meetings**
Each RIR hosts regular open policy meetings where anyone interested in number resource policy can meet to discuss policy issues, share technical knowledge and best practices, and collaborate on solutions to maximize the growth and utility of the Internet. Remote participation options are also widely available.
<http://nro.net/meetings>
- 4. Propose a Policy Idea**
Internet number resource policy development starts when people just like you see a way that Internet number resource management and distribution could be improved. If you have an idea, contact your local RIR to find out more about how you can submit your idea for community consideration.

Your participation is a critical part of the continued success of the bottom-up policy development process and the sustained growth of the Internet. By staying actively involved, participants define how RIRs distribute the Internet number resources that organizations need for their networks and their customers, thereby ensuring the health and success of the Internet into the future and beyond.

Afrinic **APNIC** **ARIN** **LACNIC** **RIPE NCC**

www.nro.net



**Thank you.
Questions?**

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