



Number Resource Policy Development Activities

Louie Lee

Chair, ICANN ASO Address Council

ICANN 41

Singapore

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- 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. World IPv6 Day**
- 6. Policy Discussions:**
 - Global Number Policy and Global Proposals
 - Regional Activities: AfriNIC, APNIC, ARIN, LACNIC, RIPE NCC
- 7. 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 Number 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

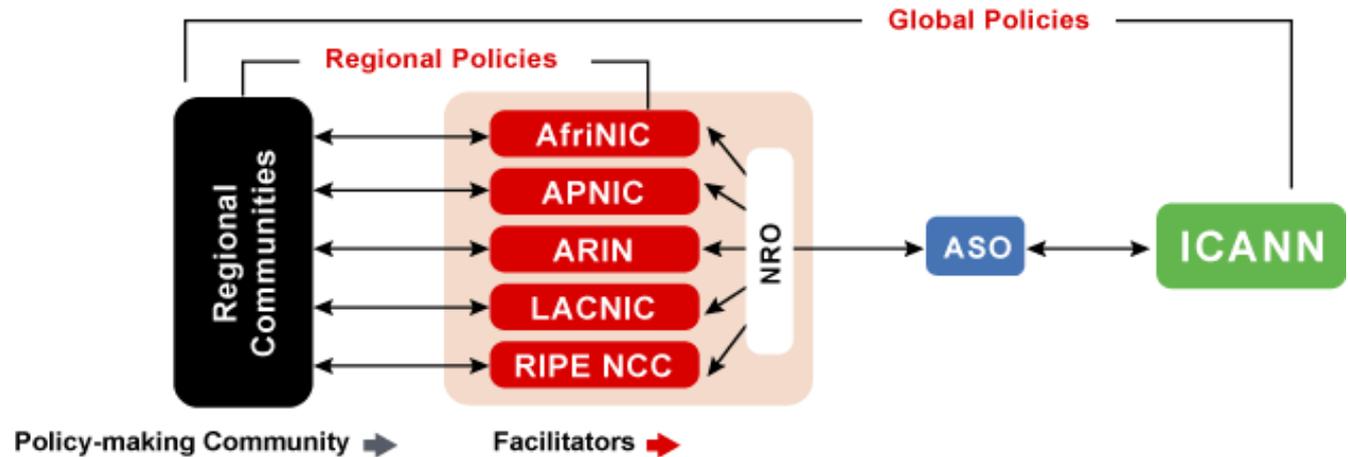
Board

- Provide fiduciary and process oversight
- Ratify policy

Staff

- Conducts assessments of proposal impacts
- Implement ratified policy

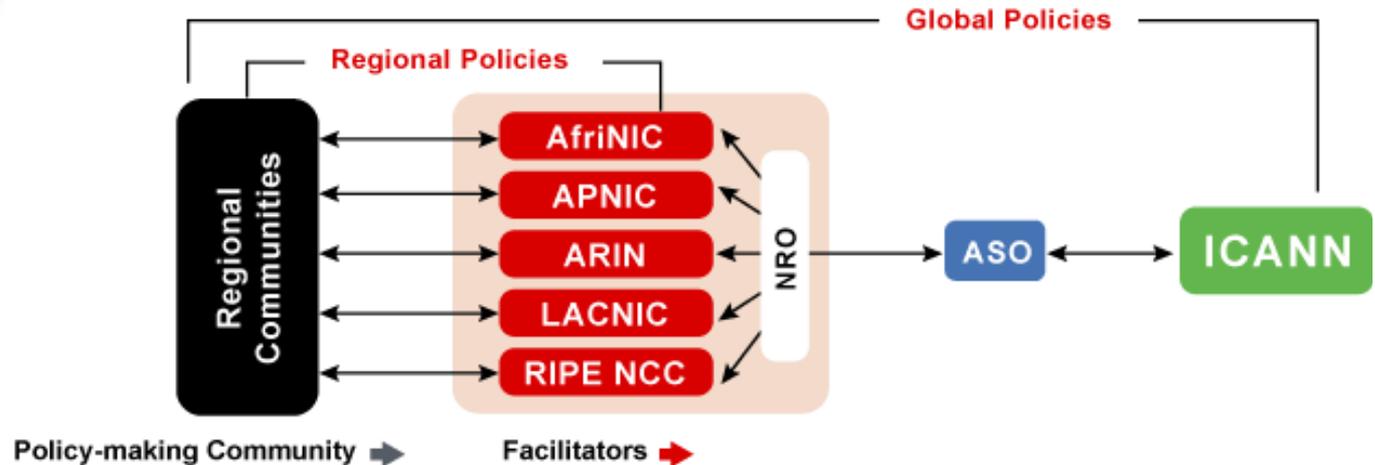
- 1. Community individuals and groups submit a proposal**
- 2. Community discusses the proposal on the mailing list**
- 3. Community discusses the proposal at an open policy meeting**
- 4. Consensus evaluation**
- 5. Last Call**
- 6. Adoption**
- 7. Implementation**



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

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 = 2
- Abandoned = 1

Details of these policies/proposals in later presentation

<http://nro.net/policy/index.html#regional>

Review

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

Globally coordinated proposal

- Same proposal discussed/presented at each of the RIRs
- Normally the goal is to have the same policy worldwide
 - Processed as normal RIR proposals without triggering action by IANA
 - Examples include original IPv6 allocation policy and transition policy to 4-byte AS numbers



NRO report

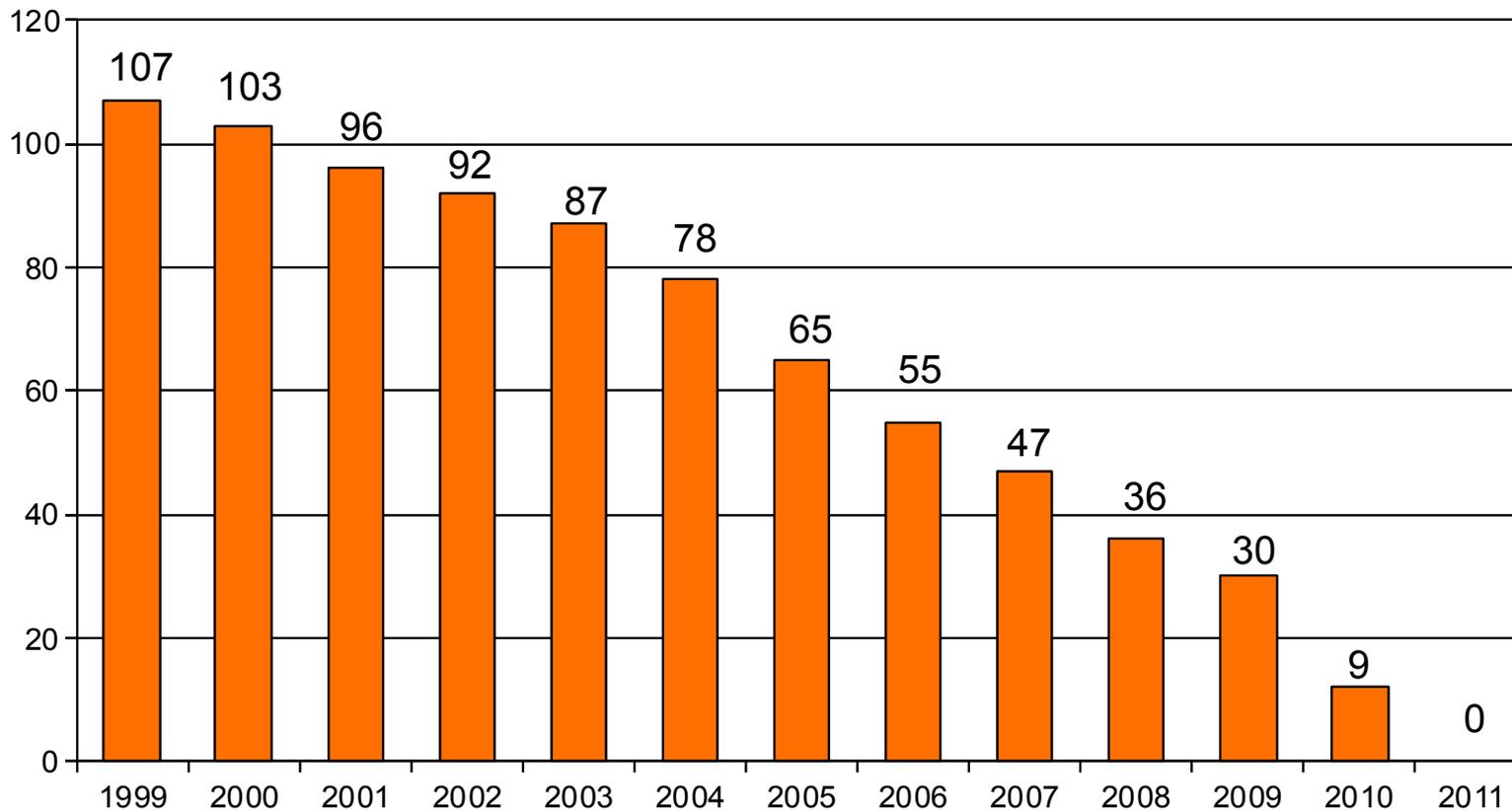


What is the NRO?

- 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
 - Registration Services Managers (RSM): Chair - Leslie Nobile, ARIN

IPv4 central pool evolution.



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
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
193.0.0.203 2001:610:240:0 193.0.0.202
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



Allocation of last 5 /8

- Based on the global policy approved by the 5 RIRs and ratified by ICANN Board.
- Equitable distribution of last 5 /8s. 1 to each RIR
- Date : February 3rd. 2011



IANA Status Update



World IPv6 Day

On 8 June, 2011, top websites and Internet service providers around the world, including Google, Facebook, Yahoo!, Akamai and Limelight Networks joined together with more than 1000 other participating websites in World IPv6 Day for a successful global-scale trial of the new Internet Protocol, IPv6. By providing a coordinated 24-hour “test flight”, the event helped demonstrate that major websites around the world are well-positioned for the move to a global IPv6-enabled Internet, enabling its continued exponential growth.



<http://www.worldipv6day.org/>

Major Carriers, ISPs, CDNs, Content Providers (eg. Yahoo):

“It felt like Y2K. After the preparations were completed, most everything worked very well.”

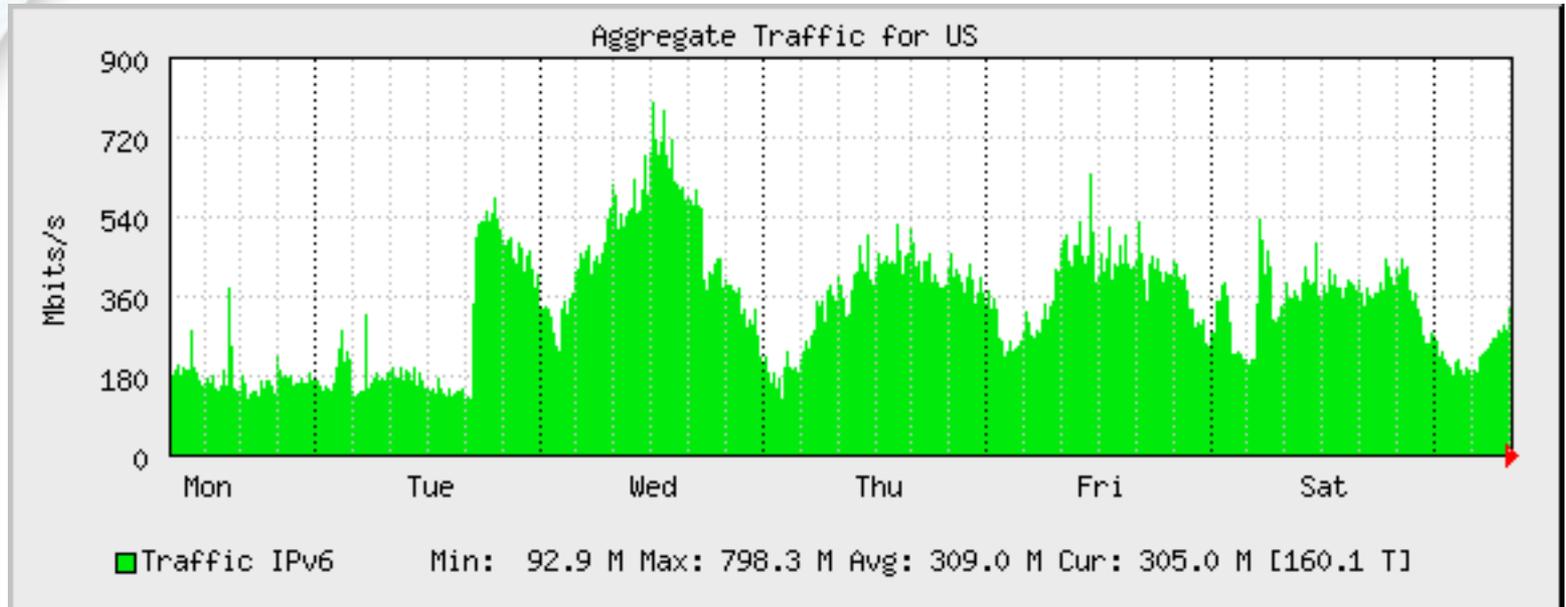
Enterprise:

“World IPv6 Day gave us the management visibility and support we needed to dedicate resources to implement IPv6.”



<http://www.worldipv6day.org/>

IPv6 on Equinix Exchange:



<http://www.worldipv6day.org/>

Panel discussion at recent network operator forum:

NANOG 52
Denver, Colorado, United States
13 June 2011

Abstract and Panel Presentations:

<http://www.nanog.org/meetings/nanog52/abstracts.php?pt=MTc2NiZuYW5vZzUy&nm=nanog52>



<http://www.worldipv6day.org/>



Global Number Policy and Global Proposals

Louie Lee

Chair, ICANN ASO Address Council

Criteria for Establishment of New Regional Internet Registries (ICP-2* “Internet Coordination Policy”)

- Adopted by ICANN Board per ASO AC recommendation on 4 June 2001
- October 2002 LACNIC was recognized by ICANN as an RIR
- April 2005 AfriNIC was recognized by ICANN as an RIR

Global policy on IANA Allocation of IPv4 address space to the Regional Internet Registries

- IPv4 allocations from IANA to the RIRs (unit is /8s, 18-month needs)
- Adopted by ICANN Board per ASO AC recommendation on 8 April 2005

Global Policy for Allocation of IPv6 Address Space

- IPv6 allocations from IANA to the RIRs (unit is /12s, 18-month needs)
- Adopted by ICANN Board per ASO AC recommendation 7 September 2006

*ICP-1 and ICP-3 are DNS policies

Global Policy for Allocation of ASN Blocks to Regional Internet Registries

- Autonomous System Numbers allocations from IANA to the RIRs (unit is blocks of 1024 AS numbers)
- Adopted by the ICANN Board per ASO AC recommendation 31 July 2008

Global Policy for the Allocation of the Remaining IPv4 Address Space

- The last five /8s are reserved, one /8 per RIR from the IANA at the end
- Adopted by the ICANN Board per ASO AC recommendation on 6 March 2009

Global IANA Policy for Allocation of ASN Blocks to RIRs

- Modified the global ASN policy to allow IANA to process separate 2-byte and 4-byte requests through 2010.
- Adopted by the ICANN Board per ASO AC recommendation on 22 July 2010

[GPP-IPv4-2009] Global Policy for Allocation of IPv4 Blocks to RIRs

- Passed in 5 RIRs, but passed in one with revised text
- Does not meet the criteria to be advanced by the NRO EC to the ASO AC in its current state
- Abandoned

[GPP-IPv4-2010] Global Policy for IPv4 Allocations by the IANA Post Exhaustion

- Allows IANA to receive address space from the RIRs
- Allows IANA to allocate space back to the RIRs
- Status:
 - AfriNIC – Did not gain consensus
 - APNIC – Abandoned
 - ARIN – Adopted
 - LACNIC – Withdrawn
 - RIPE NCC – Abandoned

[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 – Under discussion
 - LACNIC – Back to the list for further discussion
 - RIPE NCC – Under discussion

<u>Global Proposal</u>	<u>RIR return of address space to IANA</u>	<u>RIR Eligibility</u>
GPP-IPv4-2009	Mandatory	Need based
GPP-IPv4-2010	Voluntary	Need based
GPP-IPv4-2011	Voluntary	Equal distribution to RIRs



Regional Policy Proposals

Louie Lee

Chair, ICANN ASO Address Council

Recent Regional Policy Proposal Activities (Q2 2011)

IPv4 policies: allocation, reclamation, transfer (50)

IPv6 address policies (6)

WHOIS changes (7)

Other (5)

Total: 68 regional policy proposals



AfriNIC Policies and Proposals

Alan Barrett

AfriNIC representative, ICANN ASO Address Council

AfriNIC Policies and Proposals

Alan Barrett

AfriNIC representative,
ICANN ASO Address Council

Presented at ICANN 41
Singapore, June 2011

AfriNIC Policy Development Process

- Anybody can propose a policy
- Discussion on “Resource Policy Discussion” mailing list
 - At least 4 weeks
- Discussion at Public Policy Meeting
 - Two meetings per year
 - Consensus?
- Last Call on RPD mailing list
 - 2 weeks
 - Consensus?
- Ratification by Board

Recently Approved Policies

- Abuse contact information in WHOIS
 - Optional extra information to help deal with abuse
 - Ratified by Board in June 2011
- IPv4 Soft Landing
 - Stricter rules as we run out of IPv4 space
 - Some space reserved for unforeseen future needs
 - Consensus at AfriNIC-14 meeting (June 2011); Last Call not yet started
- GPP-IPv4-2011
 - IPv4 space returned to IANA
 - Consensus at AfriNIC-14 meeting (June 2011); Last Call not yet started

Other Recent Policy Proposals

- GPP-IPv4-2010
 - No consensus
 - Conflicts with GPP-IPv4-2011, which has reached consensus
- Several proposals dealing with IPv4 address transfer, and allocation outside the AfriNIC service region
 - No consensus

Learn and Participate

- Read about the policy development process, current policies, and new proposals
 - <http://www.afrinic.net/policy.htm>
- Join the RPD mailing list, or read the archives
 - <http://www.afrinic.net/maillinglist.htm>
- Attend a Public Policy Meeting
 - November 2011 in Cameroon
- You do not have to be a member of AfriNIC
- You do not have to live in Africa



APNIC Policies and Proposals

Andy Linton

APNIC representative, ICANN ASO Address Council

APNIC Update

ASO Workshop

Andy Linton, Acting Chair Policy SIG

Policy Development Process

- Open, transparent, bottom-up
- Three main phases for community input and discussion:
 - Before, during, and after the APNIC Conferences
 - Policy SIG Chairs and Co-Chairs observe community consensus decision making
- At APNIC 31, 11 policy proposals discussed, 6 reached consensus, 3 did not reach consensus; 1 sent back to mailing list; 1 withdrawn by author

www.apnic.net/policy

Policy Update

Implemented in 2011

Proposal	Title	Overview
Prop-088 <i>*Implemented May 2011</i>	Distribution of IPv4 addresses once the final /8 period starts	A proposal to handle any IPv4 address space received by APNIC after the final /8 policy is implemented as being part of the final /8 pool and to redistribute these resources according to the final /8 policies.
Prop-093 <i>*Implemented May 2011</i>	Reducing the minimum delegation size for the final /8 policy	A proposal to change the minimum size of IPv4 delegations to a /24 when the final /8 policy is activated.
Prop-094 <i>*Implemented May 2011</i>	Removing renumbering requirement from final /8 policy <i>* Reached consensus on revised text</i>	A proposal to remove the requirement for organizations receiving their initial allocation from APNIC to renumber out of their previously deployed space when they are allocated addresses under the final /8 policy.

Policy Update

Endorsed by EC pending implementation

Proposal	Title	Overview
Prop-083	Alternative criteria for subsequent IPv6 allocations <i>* Reached consensus on revised text</i>	A proposal to enable current APNIC account holders with existing IPv6 allocations to receive subsequent IPv6 allocations from APNIC for use in networks that are not connected to the initial IPv6 allocation.
Prop-095	Inter-RIR IPv4 address transfer proposal <i>* Reached consensus on revised text</i>	A proposal to allow and define a mechanism for the transfer of IPv4 address space between APNIC account holders and organizations in other RIR region(s), providing that the counterpart RIR has a policy that allows transfers of address space with APNIC account holders.
Prop-097	Global policy for post exhaustion IPv4 allocation mechanisms by the IANA <i>* Pending remaining steps of the global policy process</i>	<p>This proposal describes the process that IANA will follow to allocate IPv4 resources to Regional Internet Registries (RIRs) after the central pool of addresses is exhausted.</p> <p>The processes for how IPv4 space may be placed in the IANA Recovered IPv4 Pool is out of the scope of this proposal.</p>

Policy Update

Under discussion on the Policy SIG mailing list:

Proposal	Title	Overview
Prop-087	IPv6 address allocation for deployment purposes	A proposal to add alternative criteria for receiving a larger than /32 initial IPv6 allocation during the initial IPv6 deployment phase (from now until 2013). Under this proposal, a network can justify more than a /32 if the network is using deployment protocol described in a RFC.
Prop-084	Frequent whois information update request	A proposal for APNIC to regularly contact all APNIC current account holders with resources in the APNIC Whois Database to ask them to actively check that all their details in whois are up to date.
Prop-096	Maintaining demonstrated needs requirement in transfer policy after the final /8 phase	A proposal to maintain the requirement for recipients of IPv4 transfers to justify their need for address space beyond the current allocation phase and into the final /8 phase.



ARIN Policy and Proposals

Louis Lee

ARIN representative, ICANN ASO Address Council

Participation in Policy Discussion at ARIN

- Official forums for ARIN policy participation
 - Mailing List (arin-ppml@arin.net)
 - Open to anyone
 - Public Policy Meetings (Spring and Fall)
 - Open to anyone
 - Remote participation available
- How to participate
 - Review Public Policy Meeting agenda and/or archive of policy proposals (<https://www.arin.net/policy/proposals/>)
 - Review mailing list discussion (arin-ppml@arin.net)
 - Post opinion to list as we lead up to a meeting and/or attend the meeting in person or remotely
 - Post to last calls following the meetings

Recently Implemented Policies

ARIN-2010-1: Waiting List for Unmet IPv4 Requests

- “ARIN will make each allocation and assignment as a single continuous range of addresses”, or, you can wait in line.
- Unused space must be returned to ARIN

ARIN-2010-12: IPv6 Subsequent Allocation

- “Subsequent allocations will also be considered for deployments that cannot be accommodated by, nor were accounted for, under the initial allocation.” Eg. 6rd.

ARIN-2010-8: Rework of IPv6 assignment criteria

- Nibble boundary assignments based on site counts. Starts with /48 for one to twelve sites, then /44 for 13-192 sites, etc.
- “A site is a discrete location that is part of an organization’s network.”

[https://www.arin.net/policy/proposals/policy_archive.html]

Recent Policy Discussions

Awaiting ARIN Board Review (post last call)

ARIN-2011-3: Better IPv6 Allocations for ISPs

- Enable ISPs to request larger blocks of IPv6 space on nibble boundaries

ARIN-2011-4: Reserved Pool for Critical Infrastructure

- Reserves an IPv4 /16 for critical infrastructure

ARIN-2011-5: Shared Transition Space for IPv4 Address Extension

- Allocates an IPv4 /10 for ISPs to share (eg. NAT444, like RFC 1918 address space)

ARIN-2011-6: Returned IPv4 Addresses

- Instructs ARIN to quickly recycle address space in the ARIN region

Text being revised by ARIN Advisory Council

ARIN-2011-1: Globally Coordinated Transfer Policy

- Allows needs based transfers to/from ARIN region (inter-RIR)

[<https://www.arin.net/policy/proposals/>]

New Policy Proposals

More than 15 new proposals, most on subject of transfers.

[<https://www.arin.net/policy/proposals/>]

ARIN Meetings





LACNIC Policy and Proposals

Francisco Obispo

LACNIC representative, ICANN ASO Address Council



Latin American and **Caribbean** Internet Addresses Registry
Registro de Direcciones de Internet para **América Latina** y **Caribe**
Registro de Endereços da Internet para **América Latina** e **Caribe**

LACNIC Update

Francisco Obispo
francisco@obispo.com.ve



LACNIC Meetings

The LACNIC meeting is usually held in parallel with:

- LACTLD Meeting
- LACTF – IPv6 Task Force
- FLIP6 - Latin American IPv6 Forum
- LACSEC – Latin American Security Forum
- LAC Governments
- Regional Interconnection Forum (NAPLA)
- LACNOG (LAC Network Operations Group)

It is the single most important Internet-related event in Latin America and the Caribbean



LACNIC XV

Cancun, Mexico, May 15-20 2011
297 participants from 32 different countries

- Introduction to IPv6 and transition mechanisms
- Resource Certification, RPKI
- The IPv6 Protocol, Routing Practices, IPv6 security
- Resources Administration at LACNIC
- Operation and Troubleshooting DNS and DNSSEC
- Computer Security Incident Response Teams (CSIRTs)





Policies – LACNIC XV

The following proposals reached consensus during the Public Forum and remain in the 45 day period call for last comments:

- **LAC-2011-01 - Elimination of technical restrictions on IPv6 prefix de-aggregation.**
- **LAC-2011-02 – Modification of Section 2.3.3 - Initial IPv4 Address Allocation and Assignment.**
- LAC-2011-05 Global Policy for post exhaustion IPv4 allocation mechanisms by the IANA**



Policies – LACNIC XV

Consensus was not reached in the following proposals, they returned to the forum for further discussion:

- LAC-2011-03 Modification of Section 2.3.4 - Policies for the Distribution of Additional IPv4 Address Space.**
- LAC-2011-04 Adding subsection 11.2 to the Policy Manual under the IPv4 Address Space Exhaustion section.**
- LAC-2011-06 Allocations / assignments from the final /8 space.**
- LAC-2011-07 Modification of Policy 2.3 IPv4 Address Allocation and Assignment Policies.**



Upcoming Meetings

**LACNIC Caribbean
Surinam – July 13-15**





More Information

Mailing Lists:

<http://www.lacnic.net>

Mailing Lists:

<http://lacnic.net/en/lists/>

are::you:IPv6:ready?



RIPE Policies and Proposals

Hans Petter Holen

RIPE representative, ICANN ASO Address Council

RIPE NCC Report

Hans Petter Holen, RIPE NCC



RIPE NCC and the RIPE Community

- The RIR for Europe, the Middle East and parts of Central Asia, with over 7,420 members in 78 countries
- Provides administrative support to Réseaux IP Européens (RIPE)
- Policies are proposed, discussed, accepted or rejected by the RIPE community
- Anyone can submit a policy proposal
- The RIPE NCC also conducts an impact analysis into possible effects and work involved in a policy's implementation

Policy Development Process (PDP)

- Long established, open, bottom-up policy development process and consensus-based decision making
- Policy is developed at Working Group (WG) sessions at RIPE Meetings and on WG mailing lists
- Four phases of PDP (19 weeks minimum):
 - Creating a Proposal
 - Discussion Phase
 - Review Phase
 - Concluding Phase
- The WG Chair collective declares consensus on whether the proposal is accepted

Current Policies

- 2006-05, “PI Assignment Size” - Review Phase
- 2008-08, “Initial Certification Policy in the RIPE NCC Service Region” - Concluding Phase
- 2010-01, “Temporary Internet Number Assignment Policies” - Concluding Phase
- 2011-01, “Global Policy for post exhaustion IPv4 allocation mechanisms by the IANA” - Discussion Phase
- 2011-02, “Removal of multihomed requirement for IPv6 PI” - Discussion Phase
- 2011-03, “Post-depletion IPv4 address recycling” - Discussion Phase
- <http://www.ripe.net/ripe/policies/current-proposals>

More Information

- RIPE NCC and RIPE:
- www.ripe.net
- RIPE PDP:
- <http://www.ripe.net/ripe/docs/ripe-500>
- Archived Policy Proposals:
- <http://www.ripe.net/ripe/policies/archived-policy-proposals>
- Contact:
- pdo@ripe.net, twitter: PDO_RIPE_NCC

Questions?





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?**

Louie Lee

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Chair, ICANN ASO Address Council