

RIR allocation and policy update

JPNIC OPM

23 July 2008 - Tokyo, Japan

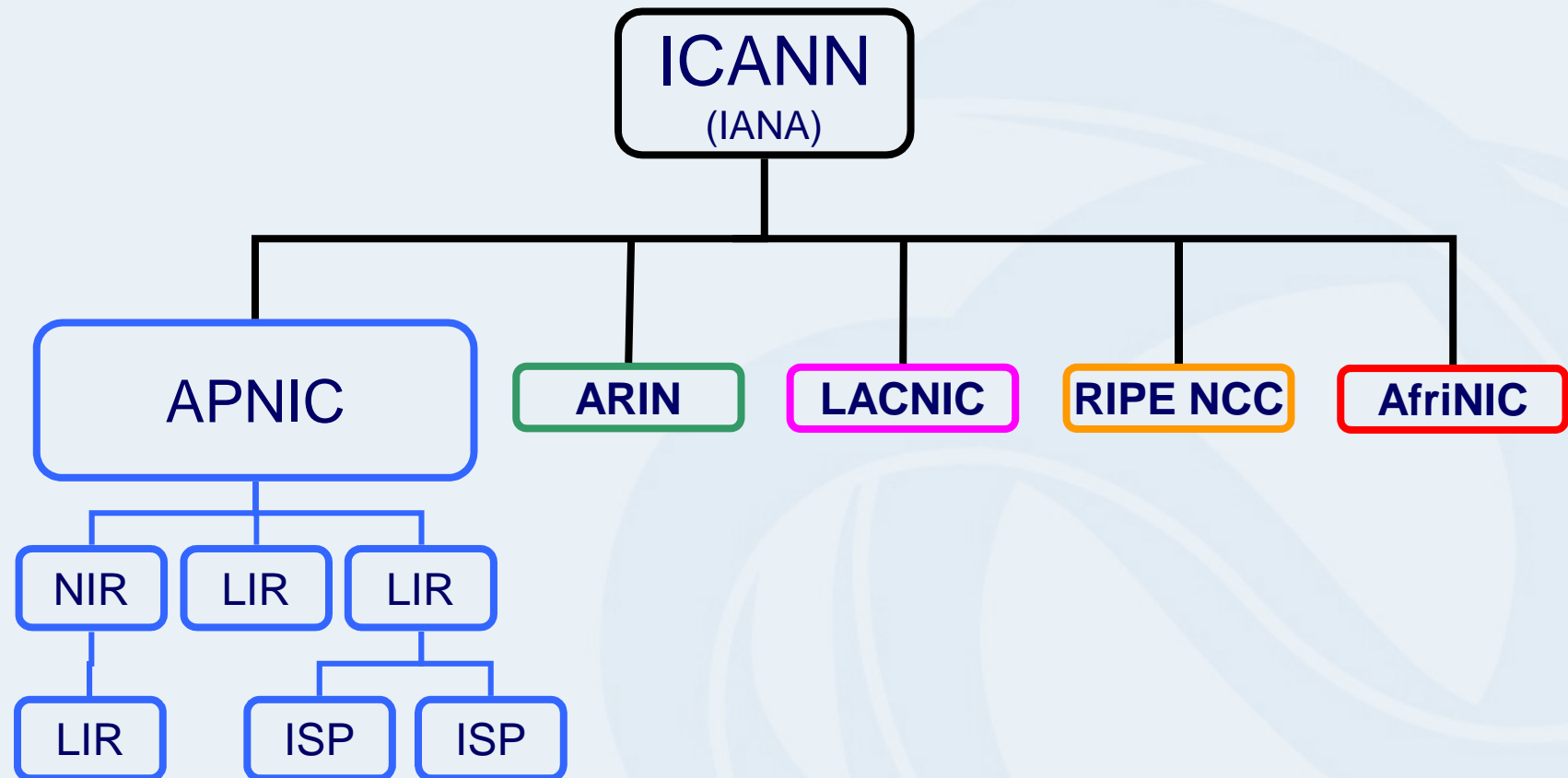
Sam Dickinson, APNIC Policy Development Manager
(presented by Miwa Fujii)

Overview

- Internet registry structure
- Number resource allocation statistics
- New policies in other RIR regions
- Policies proposals under discussion in other RIR regions
- APNIC at OECD Ministerial Meeting

Internet registry structure

Internet registry structure

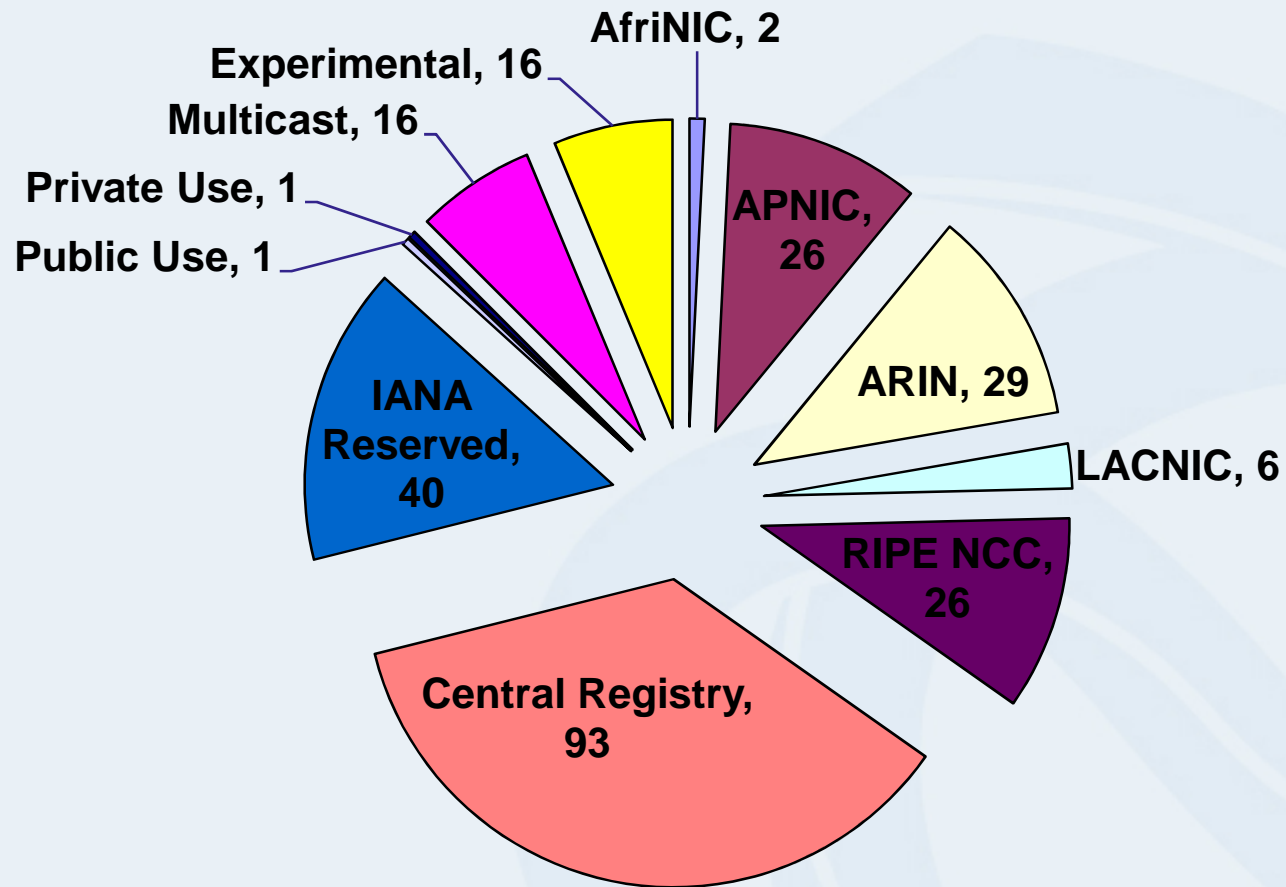


RIR service areas



Number resource allocation statistics

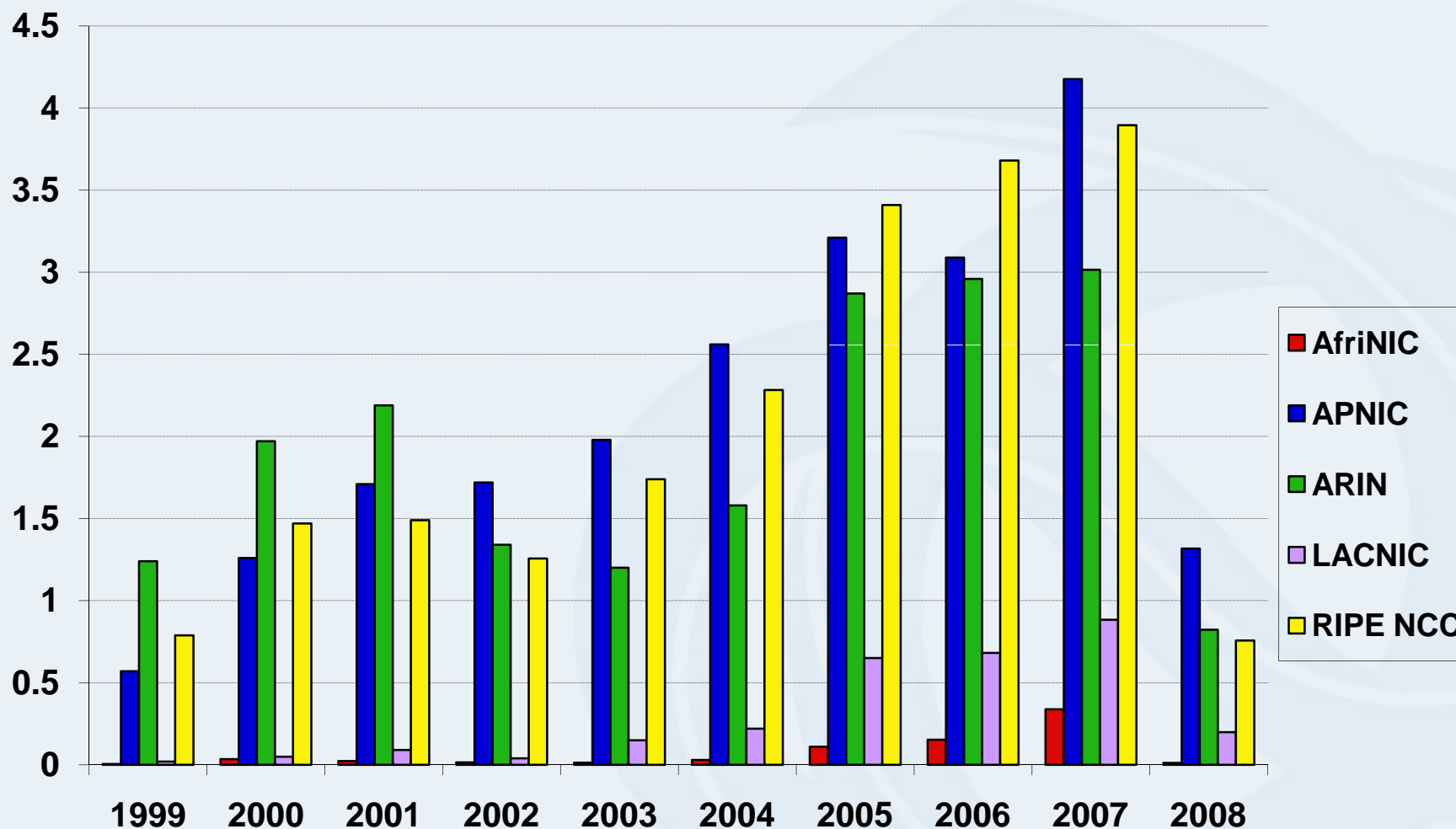
Distribution of IPv4 /8 blocks



Total /8 blocks: 256

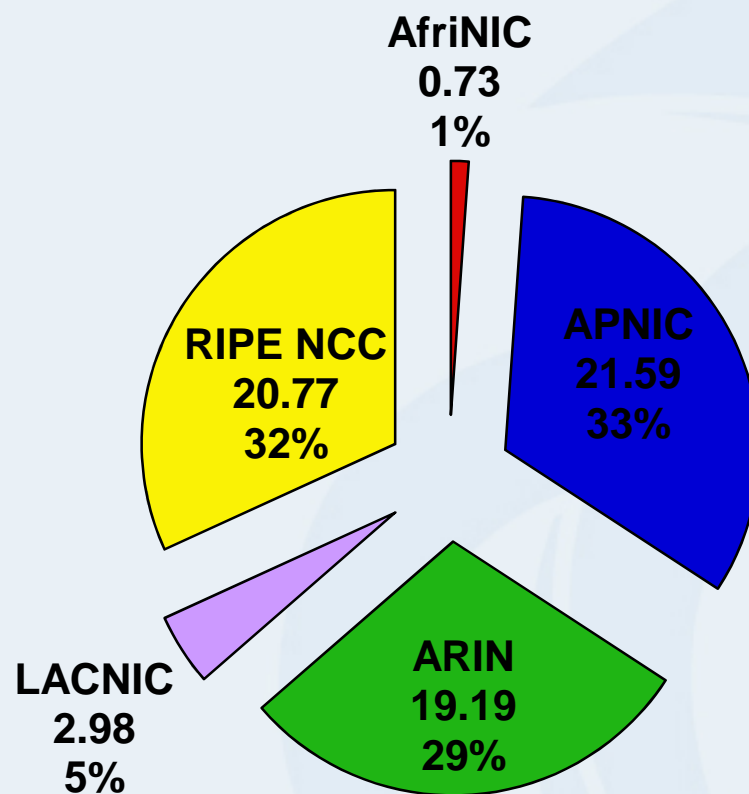
IPv4 allocations RIRs to LIRs/ISPs

Yearly comparison (/8s) - data up to Mar 2008



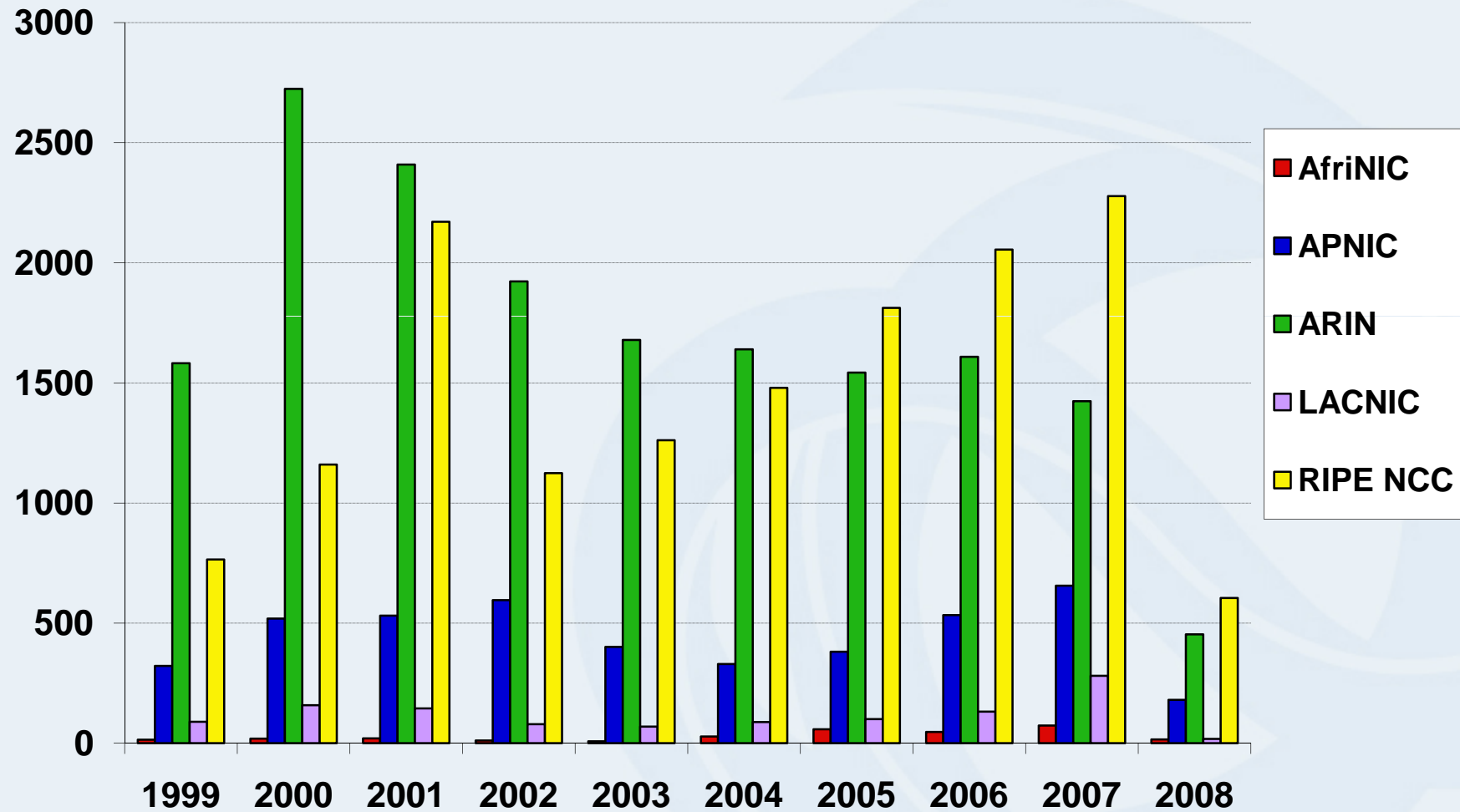
IPv4 allocations RIRs to LIRs/ISPs

Cumulative total (Jan 1999 – Mar 2008)



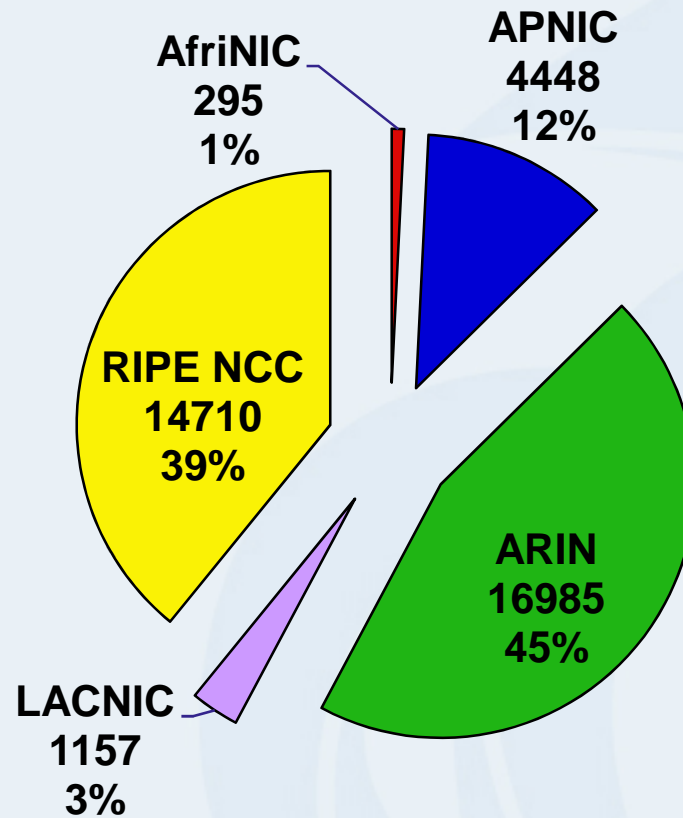
ASN assignments: RIRs to LIRs/ISPs

Yearly comparison - data up to Mar 2008



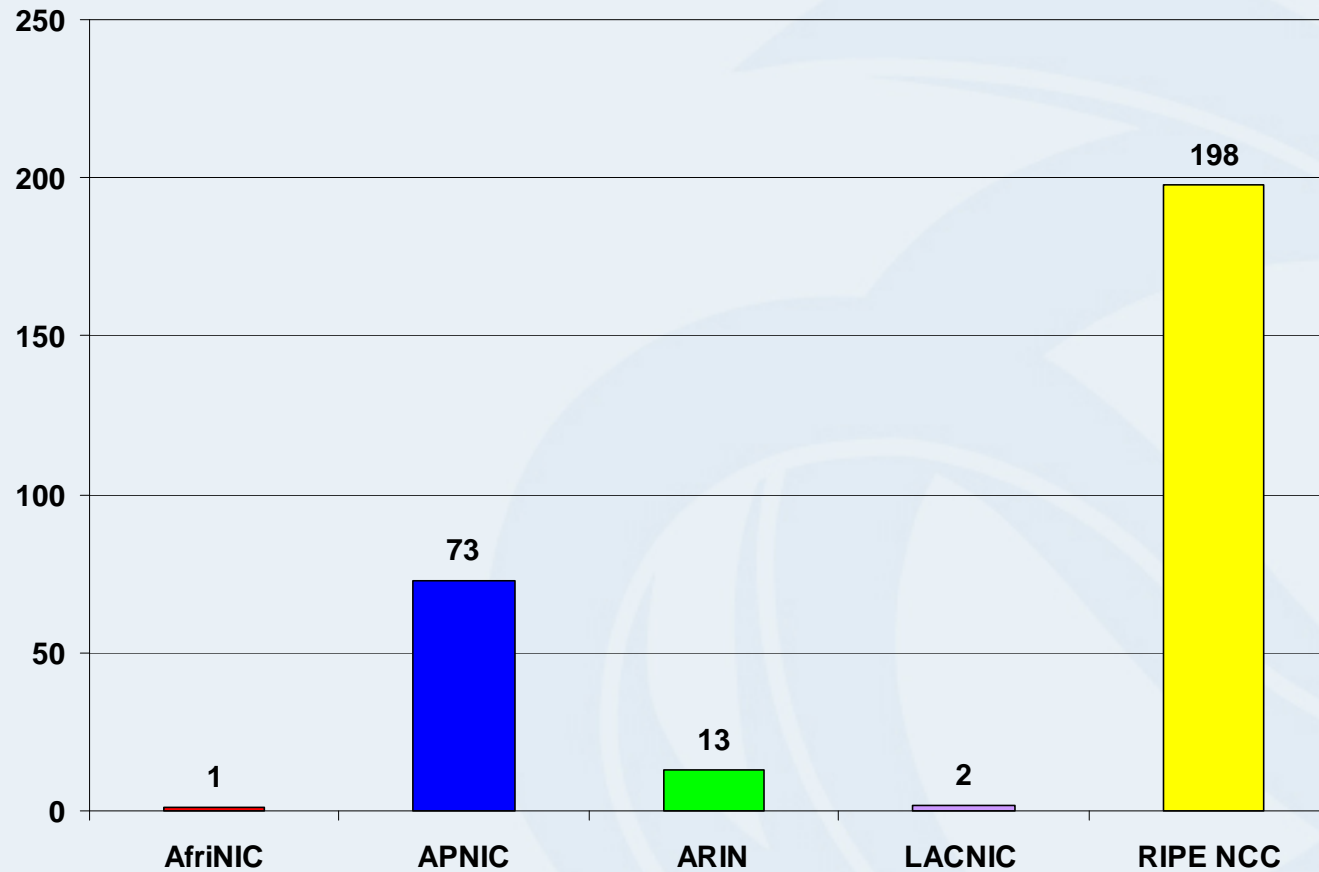
ASN assignments: RIRs to LIRs/ISPs

Cumulative total (Jan 1999 – Mar 2008)



IANA IPv6 allocations to RIRs

issued as /23s prior to Oct 2006



IANA IPv6 allocations to RIRs

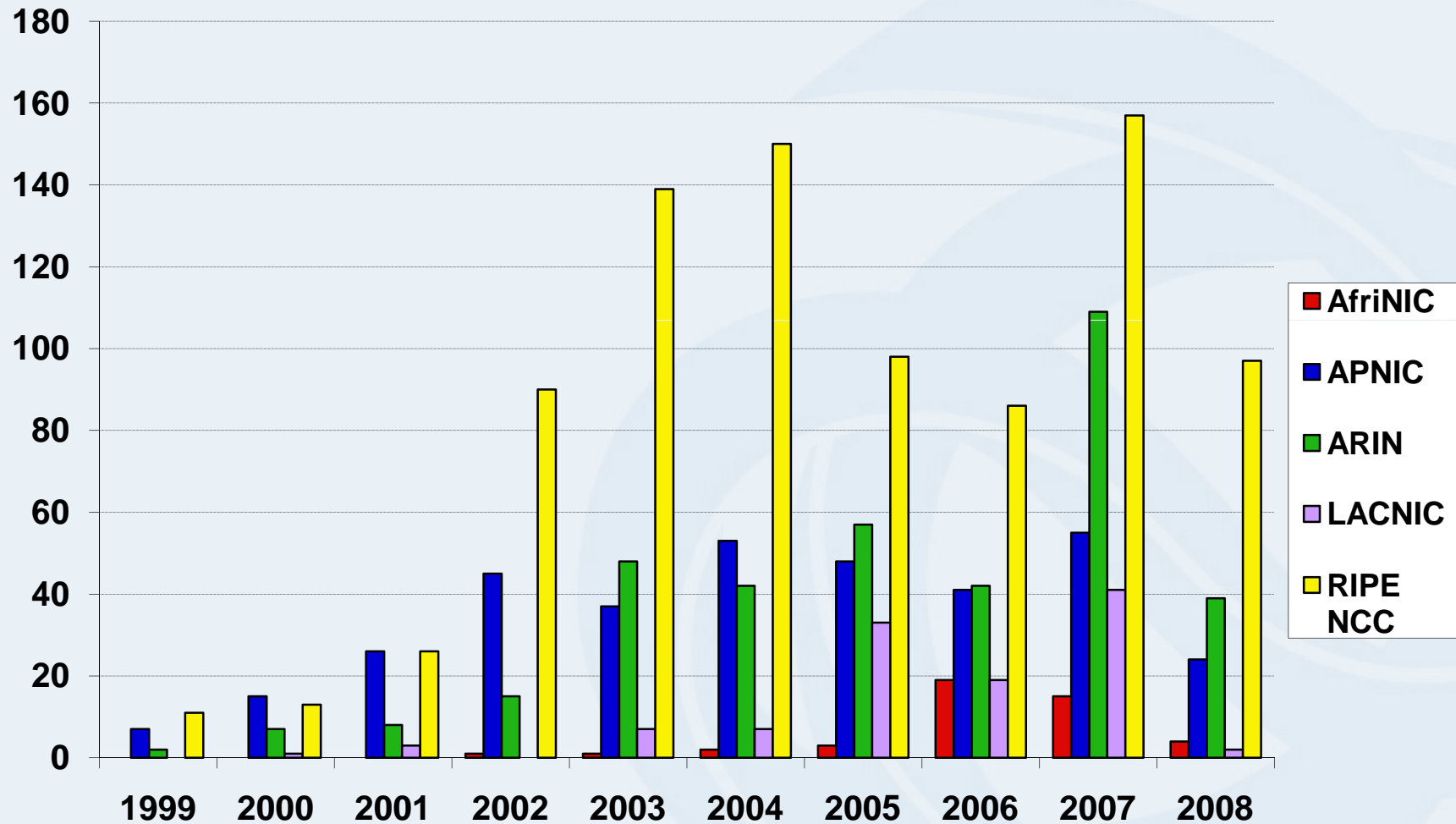
issued in Oct 2006

RIR	IPv6 Address
AfriNIC	2C00:0000::/12
APNIC	2400:0000::/12
ARIN	2600:0000::/12
LACNIC	2800:0000::/12
RIPE NCC	2A00:0000::/12

Some /23s from the previous slide are incorporated in these /12s

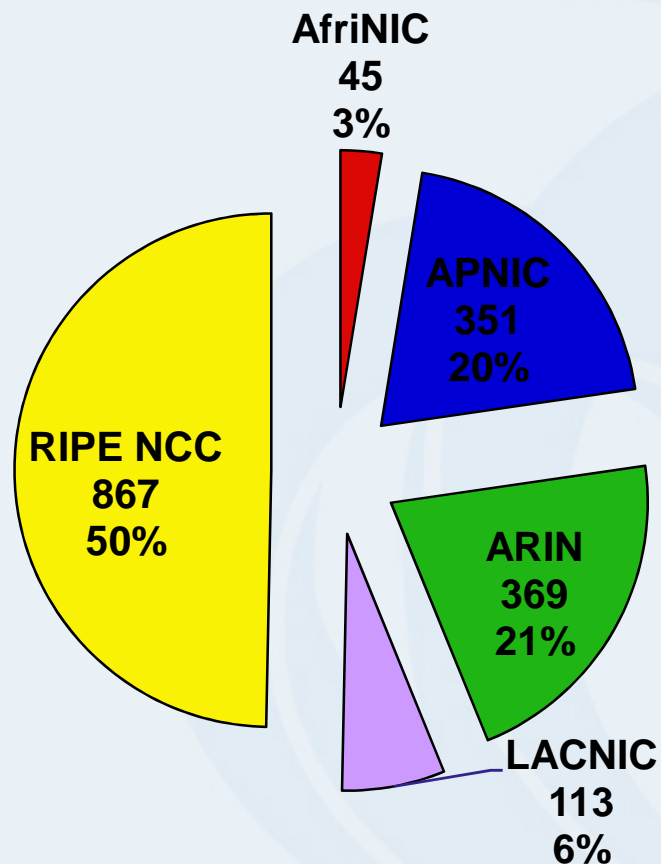
IPv6 Allocations: RIRs to LIRs/ISPs

Yearly comparison – data up to Mar 2008



IPv6 allocations RIRs to LIRs/ISPs

Cumulative total (Jan 1999 – Mar 2008)



Links to RIR statistics

- RIR stats:
www.nro.net/statistics
- Raw data/historical RIR allocations:
www.aso.icann.org/stats
www.iana.org/assignments/ipv4-address-space
www.iana.org/assignments/as-numbers
www.iana.org/assignments/ipv6-unicast-address-assignments

New policies in other RIR regions

Global policy proposal

- IANA Policy for Allocation of ASN Blocks to RIRs
 - IANA to delegate AS numbers to RIRs in blocks of 1024 AS numbers
 - Adopted by all RIRs September 2007 - January 2008
 - Formally recognized by the ASO as qualifying as a global policy proposal
 - Pending endorsement by the ICANN Board of Directors
 - Then to be implemented by IANA

AfriNIC

- Policy Development Process in the AfriNIC service region
 - Implemented February 2008
 - Introduced a PDP Moderator Group to help people with proposal ideas submit a fully formed proposal.
 - Timeline for proposals under new PDP:
 - 30 days on mailing list before OPM
 - Presentation at OPM
 - 15 day final comment period
 - Board of Trustees ratification, then implementation

ARIN

- 2007-9: Modernization of ISP Immediate Need Policy
 - Implemented August 2007
 - LIRs can request more than the minimum allocation size if they can demonstrate that they will use it in less than 30 days
 - Minimum allocation size for multihomed organizations is /22
 - Otherwise, minimum allocation size is /20

ARIN

- 2007-7: Creation of Policy for Subsequent End-User IP Requests/Assignments
 - Implemented August 2007
 - Clearly documents in policy that to qualify for a subsequent IPv4 allocation, an LIR must have assigned 80% of its previous allocations to customers

ARIN

- 2007-4: Changes to IPv6 policy - removal of "interim" consideration
 - Implemented August 2007
 - Removes the statement about the IPv6 policy document being an interim policy

ARIN

- 2007-22: Expand timeframe of Additional Requests
 - Implemented March 2008
 - Changes the timeframe for which ISPs can request IPv4 allocations from 6 months to 12 months

ARIN

- 2007-21: IPv6 for legacy holders with RSA and efficient use
 - To be implemented August 2008
 - Allows holders of historical IPv4 space that have signed a Resource Service Agreement (RSA) with ARIN to use that space to justify requests for IPv6 allocations and assignments

ARIN

- 2008-1: SWIP support for smaller than /29 assignments
 - To be implemented August 2008.
 - LIRs to be able to document assignments smaller than /29 using SWIP or RWHOIS.
 - Previously, ARIN would reject SWIP templates for assignments smaller than /29

LACNIC

- LAC-2007-03 Registration Policy for the Assignment and Allocation of IPv6 Addresses
 - Implemented December 2007
 - Expands the eligibility of an initial IPv6 allocation to organisations making assignments to their own departments or other sites that have a legal relationship with that organisation
 - Such organisations would previously have been considered end users and been eligible for an assignment rather than an allocation

LACNIC

- LAC-2007-04 Eliminating References to “Interim” Status of the IPv6 Policy
 - Implemented December 2007
 - Removes the statement about the IPv6 policy document being an interim policy
 - Same as ARIN proposal 2007-04

LACNIC

- LAC-2007-05 Modification of the Multiple /48 Reassignment Policy
 - Implemented December 2007
 - Removes the need for LIRs to justify assignment more than a /48 to an end site
 - Rationale is that there isn't enough experience in assignment IPv6, so it's difficult to assess whether assignments larger than /48 are or are not justified

LACNIC

- LAC-2007-10 Second IPv6 Allocations
 - Implemented December 2007
 - If an organization has only one IPv6 allocation from LACNIC, and wants a larger allocation, it can apply under the criteria for an initial allocation if it is willing to return the block it was originally allocated by LACNIC within 6 months.

RIPE

- 2005-08: Proposal to Amend the IPv6 Assignment and Utilisation Requirement Policy
 - Implemented November 2007
 - Changes minimum assignment size that LIRs can make to their customers from /48 to /64 (the assignment size to be the LIR's decision)
 - As a consequence of this change, the utilization rate that LIRs must meet changes to be calculated using an HD ratio of 0.94 based on the number of /56s assigned

Policy proposals under discussion in other RIR regions

Global policy proposal

- End Policy for IANA IPv4 allocations to RIRs/Global Policy for the Allocation of the Remaining IPv4 Address Space
 - Adopted in ARIN
 - Reached consensus at AfriNIC 8
 - Reached consensus at LACNIC XI
 - Under discussion in APNIC and RIPE

Proposals submitted to more than one RIR

- Cooperative distribution of the end of the IPv4 free pool
 - When RIRs start running low in unallocated address space, RIRs work together to transfer space from the RIR with the most remaining space to RIRs needing space:
 - When RIR is within 30 days of depleting its remaining pool, request a block sufficient for 3 months from RIR with longest allocation window
 - As less unallocated space is available, RIRs forward requests for addresses from their region to the RIR with the most remaining space at that point in time
 - Status
 - No consensus to date in AfriNIC and RIPE
 - Abandoned at APNIC and ARIN
 - Not officially submitted to LACNIC

Proposals submitted to more than one RIR

- IPv4 transfer proposals under discussion (no consensus to date)
 - ARIN: 2008-2: IPv4 Transfer Policy Proposal
 - Allow LIRs to transfer address space if the receiving network can justify the need for those addresses.
 - Policy to come into effect when the IANA pool is exhausted.
 - RIPE: 2007-08: Enabling Methods for Reallocation of IPv4 Resources
 - Allow LIRs to reallocate IPv4 address blocks (whole or partial blocks) to another RIPE member
 - Can't be smaller than minimum allocation size
 - Can be a permanent or temporary reallocation
 - When an LIR reallocates part or all of its space, it can't receive more space from RIPE for another 24 months

Proposals submitted to more than one RIR

- Policy for IPv6 ULA-central
 - RIRs to begin assigning from the ULA Central block.
 - Status
 - Abandoned at APNIC
 - No consensus to date in AfriNIC, LACNIC and RIPE
 - Never a formal proposal at ARIN

AfriNIC

- afpol-v6200607: IPv6 Address Allocation and Assignment Policy
 - Expands the eligibility of an initial IPv6 allocation to organisations making assignments to their own departments or other sites that have a legal relationship with that organisation. Such organisations would previously have been considered end users and been eligible for an assignment rather than an allocation.
 - Removes the need for LIRs to justify assignment more than a /48 to an end site.
 - No consensus to date

ARIN

- 2007-14: Resource Review Process
 - Version 2.1 submitted March 2008
 - Under discussion
 - ARIN to have the power to review resource usage of ARIN members and to ask members to return resources if they are not complying with ARIN policy
 - Historical resources cannot be reclaimed, however

ARIN

- 2007-16: IPv4 Soft Landing
 - Submitted August 2007
 - Withdrawn February 2008
 - As IPv4 pool becomes smaller, introduce stricter and stricter criteria to justify allocations of IPv4 address space

ARIN

- 2007-17: Legacy Outreach and Partial Reclamation
 - Version 3 submitted March 2008
 - Under discussion
 - Allows holders of historical space in ARIN region to:
 - Return discontinuous blocks and receive a contiguous (and possibly smaller) block in return
 - Return part of their historical block, but not all of it

ARIN

- 2008-3: Community Networks IPv6 Allocation
 - Version 2 submitted April 2008
 - No consensus to date
 - Allows community networks to receive an IPv6 assignment

ARIN

- 2008-4: Minimum Allocation in the Caribbean Region
 - Submitted May 2008
 - Under discussion
 - Allows LIRs from the Caribbean to receive a minimum allocation size of /22

ARIN

- 2008-5: Dedicated IPv4 block to facilitate IPv6 Deployment
 - Submitted June 2008
 - Under discussion
 - ARIN to reserve a /10 from its last block from IANA:
 - LIRs to receive a minimum allocation to assist with IPv6 deployment:
 - Minimum allocation size: /28
 - Maximum allocation size: /24
 - LIRs with existing IPv4 allocations or assignments are not eligible for this space

LACNIC

- LAC - 2007 - 01: Modifications to the IPv6 Prefix Initial Allocation Policy
 - Version 2 submitted April 2008
 - No consensus to date
 - Change initial IPv6 allocation criteria so that the allocated block does not have to be announced as a single aggregated block

LACNIC

- LAC-2008-02: Provider Independent (PI) IPv6 Assignments to End User Organizations with PI IPv4 Assignments
 - Submitted April 2008
 - Reached consensus at LACNIC XI in May 2008
 - An end - user organization may obtain a portable IPv6 assignment if it already has a portable IPv4 assignment previously allocated by LACNIC
 - Assignment size to be greater or equal to /48 and less than /32

LACNIC

- LAC-2008-03: Provider Independent (PI) IPv6 Assignments to End User Organizations
 - Submitted April 2008
 - Reached consensus at LACNIC XI in May 2008
 - Allows end user organisations to receive an assignment greater or equal to /48 and less than /32

LACNIC

- LAC - 2008 - 04: Special IPv4 Allocations/Assignments Reserved for New Members
 - Submitted April 2008
 - Reached consensus at LACNIC XI in May 2008
 - When LACNIC only has one /12 left:
 - Only allocations between /24 and /22 can be made:
 - /22s to new ISPs
 - /24 up to /22 to critical infrastructure
 - Organisations in the LACNIC region that already have IPv4 allocations will be ineligible to receive more

RIPE

- 2006-01: Provider Independent (PI) IPv6 Assignments for End User Organisations
 - Version 3 submitted May 2007
 - No consensus to date
 - Allows multihomed organisations to receive an assignment equal to or greater than /48

RIPE

- 2008-02: Assigning IPv6 PA to Every LIR
 - Submitted January 2008
 - Withdrawn May 2008 due to lack of support
 - Each RIPE LIR that does not already have IPv6 addresses to receive a /32 IPv6 address block immediately

RIPE

- 2008-01: Assigning IPv6 PI to Every Inetnum Holder
 - Submitted January 2008
 - Withdrawn May 2008 due to lack of support
 - Each RIPE LIR with an IPv4 assignment that does not already have an IPv6 assignment to receive a /56 IPv6 address block immediately

Hot topics in RIR policy discussions

- How to ensure IPv4 addresses already delegated are used efficiently
- How to manage the remaining unallocated IPv4 pool
- How to encourage IPv6 deployment

RIR Policy references

- AfriNIC:
<http://www.afrinic.net/policy.htm>
- ARIN:
http://www.arin.net/policy/proposals/proposal_archive.html
- APNIC:
<http://www.apnic.net/policy/index.html>
- LACNIC:
<http://lacnic.net/en/politicas/index.html>
- RIPE NCC:
<http://www.ripe.net/ripe/policies/proposals/index.html>

APNIC at OECD Ministerial Meeting

OECD “Future of the Internet Economy”

- 17-18 June 2008, Seoul, Korea
- 2200 participants
- 68 economies
- First OECD meeting in 10 years to discuss Internet
- Technical Internet organisations invited to contribute

<http://www.oecd.org/FutureInternet>

OECD “Future of the Internet Economy”

Outcomes of interest

- Recognition of IPv4 depletion
- Understanding of importance of IPv6 adoption
- Technical Internet organisations invited to continue contributing to OECD activities
- Recognition that the Internet changes quickly
 - The next OECD meeting to happen in three years
- Documented in “Seoul Declaration for the Future of the Internet Economy”

APNIC at OECD

- Contributed to OECD preparations
 - NSF/OECD Workshop, “Social and Economic Factors Shaping the Future of the Internet”
 - Publication, “Economic Considerations in the Management of IPv4 and in the Deployment of IPv6”
- In Seoul, presentations at:
 - Technical Community Stakeholders Forum
 - Benefiting from Convergence roundtable

APNIC and the other RIRs

- Input into technical community memorandum

Thanks!