ASO Workshop

Louie Lee
Chair, ASO Address Council
ICANN 44
Prague, Czech Republic
27 June 2012

Agenda

- About the ASO

- Update on outreach and education activities

- ASO Review Report

- Global Policy Update

- Regional Policy Update

- Internet Number Resource Status Report

About the ASO

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About the ASO

- Address Supporting Organization (ASO)
  - Function performed by the Number Resource Organization (NRO)

- Comprises two bodies
  - Executive Council (ASO EC)
  - Address Council (ASO AC)

- Purpose
  - Recommendations on Internet number resources
  - Appoint Seats 9 and 10 to ICANN Board
  - Appoint individuals to ICANN bodies
    - NomCom 2012 — Hartmut Glaser (LACNIC)
    - SSR Review Team — Hartmut Glaser (LACNIC)
   - WHOIS Policy Review Team — Wilfried Woeber (RIPE)

ASO Executive Council

- ASO EC Members:
  - Chief Executives of the RIRs (NRO EC)

- Office Bearer positions rotate annually

- 2012 Members
  - **Chairman**: John Curran (ARIN)
  - **Secretary**: Paul Wilson (APNIC)
  - **Treasurer**: Adiel Akplogan (AFRINIC)
  - **Member**: Axel Pawlik (RIPE NCC)
  - **Member**: Raúl Echeberría (LACNIC)

What is the NRO?

- Number Resource Organization
  - 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

- Fulfills the role, responsibilities, and functions of the ASO within ICANN framework
  - By ICANN/ASO MoU signed on 21 October 2004

RIR Regions
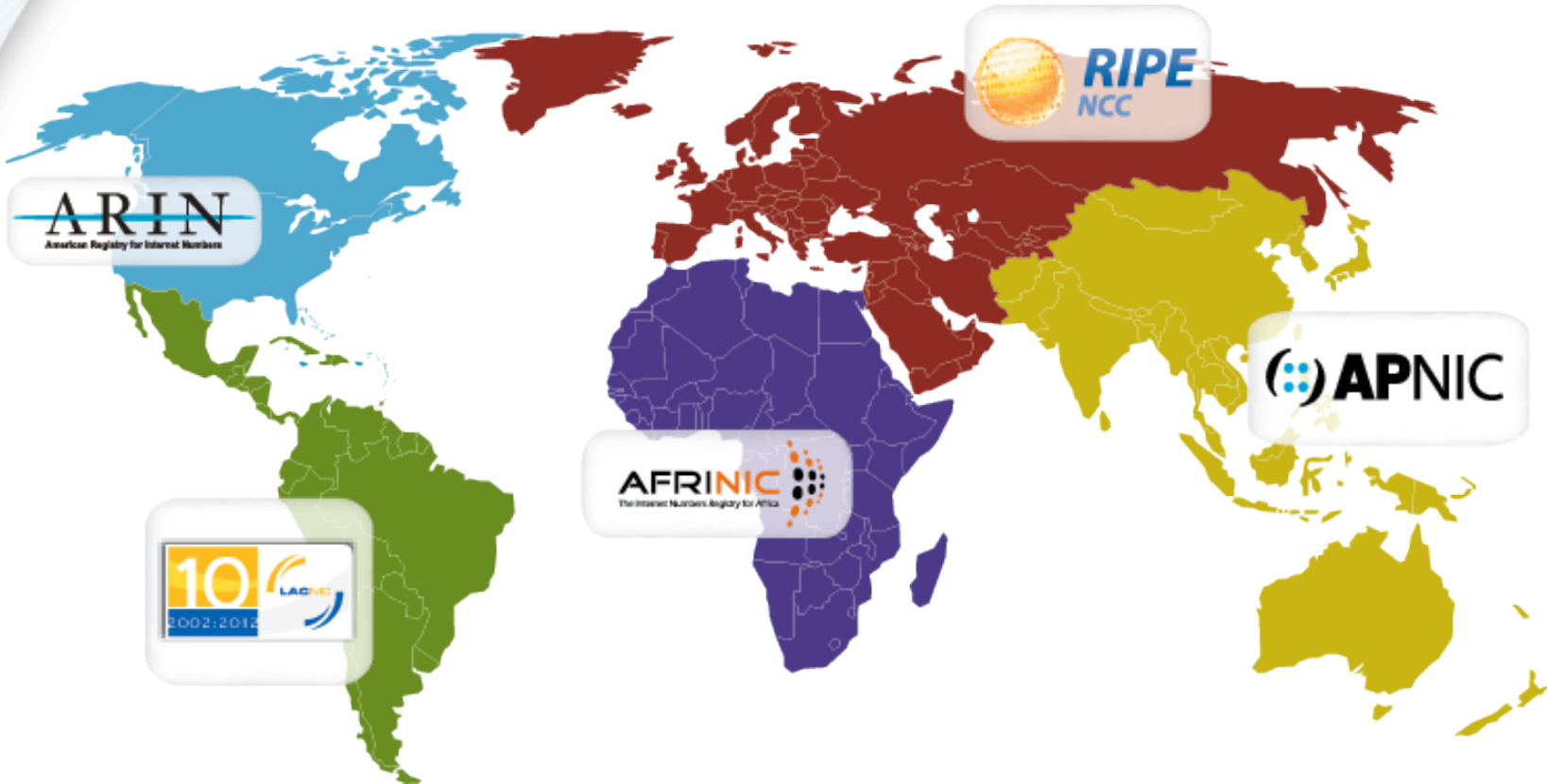
ASO Funding to ICANN

- **NRO expenses distribution**
  - Weighted formula (under review) based on revenue and total number of resources held:
    - AFRINIC (4.14%)
    - APNIC (37.50%)
    - ARIN (18.17%)
    - LACNIC (6.86%)
    - RIPE (33.45%)

- **NRO contribution to ICANN**
  - The NRO remains committed to a yearly contribution of $823,000

ASO Address Council

- Function performed by NRO Number Council

- 15 Community Members
    - 3 from each RIR region (2 elected, 1 appointed)

- Independent body separate from RIR management and Boards to:
    - Oversee global number resource policy work
    - Appoint 2 Directors to the ICANN Board
    - Serve on various ICANN bodies as needed: (e.g. ICANN Nominating Committee, Affirmation of Commitment Review Teams)
    - Advise ICANN Board on number resource matters

Registry	Member
AFRINIC — The Internet Numbers Registry for Africa	Fiona Asonga
	Alan Barrett* [Vice Chair]
	Douglas Onyango
APNIC	Naresh Ajwani
	Tomohiro Fujisaki
	Andy Linton*
ARIN — American Registry for Internet Numbers	Louis Lee [Chair]
	Jason Schiller
	Ron da Silva*
LACNIC 10 2002:2012	Sebastian Bellagamba
	Hartmut Glaser*
	Alejandro Guzman
RIPE NCC	Hans Petter Holen
	Dave Wilson [Vice Chair]
	Wilfried Woeber*

Thank you.
Questions?

Outreach

Louie Lee
Chair, ASO Address Council
ICANN 44
Prague, Czech Republic
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Community Outreach

- Regional Policy Meetings

- Sub-regional meetings

- IETF participation

- Network Operator Groups (NOGs)

- IGF and regional preparatory meetings

- IPv6 forums, workshops, and websites

- Trade shows

- Civil Society collaboration

RIR Training

- Face-to-face
  - Training
  - Workshops
  - Seminars
  - Roadshows

- eLearning
  - Interactive webinars
  - Self-paced learning modules

- Collaboration
  - NOGs
  - Training organizations and universities

Public Affairs Activities

- Roundtables, workshops, representation
  - Individual Regulator relationships
  - International Telecommunications Union (ITU)
    - WTSA & WCIT
  - Organisation for Economic Co-operation and Development (OECD)
  - Asia-Pacific Economic Cooperation (APEC)
  - Inter-American Telecommunications Commission (CITEL)
  - Caribbean Association of National Telecommunication Organizations (CANTO)

The Seed Alliance

- New umbrella alliance
  - To promote innovation and social development

- Funding by
  - International Development Research Centre (IDRC)
  - AFRINIC
  - APNIC
  - LACNIC

- RIR Partners
  - APNIC (ISIF)
  - LACNIC (FRIDA)
  - AFRINIC (FIRE) new grants program

- Seed Alliance Launch on 31 March 2012

2012 IGF: Baku Azerbaijan, 6-9 November

- **NRO Activities**
  - MAG members (Paul Wilson, Paul Rendek)
  - NRO booth space and materials
  - Press activity

- **NRO Workshops**
  - **Internet Governance and RPKI**

    Examines the implications of RPKI for ISPs, govt's, LEAs, and individuals
  - **Moving to IPv6: Challenges for Internet Governance**

    Examines strategies for progressing the global adoption of IPv6

Thank you.
Questions?

Independent Review of ICANN ASO

John Curran
Chair, Number Resource Organization (NRO)
ICANN 44
Prague, Czech Republic
27 June 2012

ASO Review

- Request for Proposal
  - ITEMS International, a Paris-based consultancy firm specialized in strategic consulting in the areas of telecommunications and the Internet

- Aims
  - Assess how well the ASO performs within the ICANN system
  - Determine whether any change in its structure or operations is desirable

- Conducted between July and December 2011
  - Global survey
  - Individual interviews at ICANN and RIR meetings

ASO Review

- ASO Review Report
  - Published 14 March 2012
    - aso.icann.org/news/aso-review-report-published
  - ICANN Public Comment Period

- Joint NRO / ASO AC response
  - Published 3 May 2012
  - Response to 26 Report Recommendations
    - + 1 Public Comment
  - nro.net/news/review-response-2012

- Next: report, comments, and response go to
  - Structural Review Committee
  - ICANN Board

Thank you.
Questions?

Global Policy Update

Louie Lee
Chair, ASO Address Council
ICANN 44
Prague, Czech Republic
27 June 2012

Global Policy Process

Global Policy Process

- GPP Process defined by ASO MOU
  - http://www.icann.org/en/aso/aso-mou-29oct04.htm

- Must complete the PDP in all five RIR regions

- ASO AC must review and verify PDP followed

- ICANN Board must ratify policy

- Implemented by the IANA and RIRs

Current Global Policies

- Criteria for establishing new RIRs

- Allocation of AS Number blocks from IANA to the RIRs

- Allocation of IPv6 address space from IANA to the RIRs

- Allocation of IPv4 address space from IANA to the RIRs
  - Pre-exhaustion and at exhaustion (final five /8s)
  - Not covering post-exhaustion

New Global Policy

- GPP-IPv4-2011
  - Global Policy Proposal for Post Exhaustion IPv4 Allocation Mechanisms by IANA

- Describes how IANA will re-allocate returned IPv4 resources

- Ratified by ICANN Board: 15 May 2012
  - Pending implementation by IANA

- Resources returned by two RIRs
  - RIPE
  - ARIN

Thank you.
Questions?

Regional Policy Update

Louie Lee
Chair, ICANN ASO Address Council
ICANN 43
San José, Costa Rica
14 March 2012

Summary of Recent Proposals

- **IPv4** — IPv4 policies: allocation, reclamation (11)
  - AFRINIC (3), ARIN (1), LACNIC (5), RIPE (2)

- **IPv6** — IPv6 address allocation policies (7)
  - APNIC (4), ARIN (1), RIPE (2)

- **Transfers** — Transfer policies (10)
  - ARIN (7), RIPE (3)

- **WHOIS** — WHOIS, registration change policies (6)
  - AFRINIC (2), ARIN (1), LACNIC (2), RIPE (1)

- **Other** — Other, reverse DNS, ASN (3)
  - AFRINIC (1), ARIN (2)

Total: 37 proposals

APNIC Policy Update

- ## Under Discussion
  - prop-101
    - Removing multihoming requirement for IPv6 portable assignments
  - prop-099
    - IPv6 Reservation for Large Networks

- ## Pending Implementation
  - prop-102
    - Sparse allocation guidelines for IPv6 resource allocations

- ## Recently Abandoned
  - Prop-098
    - Optimizing IPv6 allocation strategies (simplified)

AfriNIC Policy Update

WHOIS

- Recently Implemented
  - AFPUB-2010-GEN-006: Abuse Contact Information in the AFRINIC service region
    - Adds a way of recording abuse contact information in Whois data

AfriNIC Policy Update

- ## Under Discussion

  IPv4

  - AFPUB-2012-V4-001-DRAFT-01: Anycast Assignment in Service region

  Other

  - AFPUB-2012-DNS-001-DRAFT-01: No Reverse Unless Assigned

- ## Recently Expired

  IPv4

  - AFPUB-2011-v4-002: Reclamation of Allocated but Un-routed IPv4 Addresses

  IPv4

  - AFPUB-2011-v4-001: Transfer of IPv4 Addresses to Any Entity

  WHOIS

  - AFPUB-2010-GEN-007: Addition of Real Contact Email into ASN Whois Bulk Data

ARIN Policy Update

- Recently Adopted (implementation NLT 31 July 2012)

  Transfers

  Transfers

  Transfers

  – ARIN-2011-1: ARIN Inter-RIR Transfers
  – ARIN-2012-1: Clarifying requirements for IPv4 transfers
  – ARIN-2012-3: ASN Transfers

ARIN Policy Update
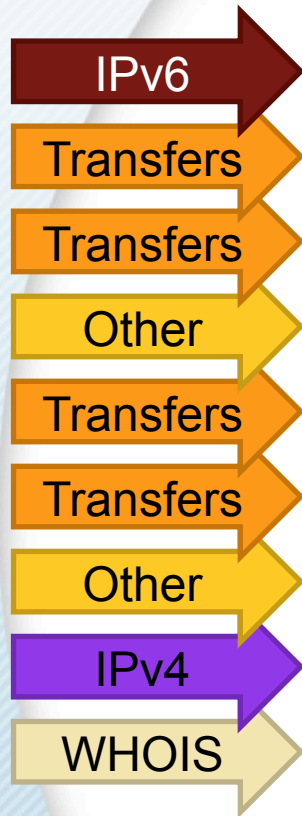
- Under Discussion
  - ARIN-2012-2 IPv6 Subsequent Allocations Utilization Requirement
  - ARIN-prop-174 Policies Apply to All Resources in the Registry
  - ARIN-prop-173 Revisions to M&A Transfer Requirements
  - ARIN-prop-172 Additional definition for NRPM Section 2 - Legacy Resources
  - ARIN-prop-171 Section 8.4 Modifications: ASN and legacy resources
  - ARIN-prop-170 Transfer of Number Resources in case of Bankruptcy
  - ARIN-prop-168 Promote 4byte ASN Usage
  - ARIN-prop-167 Removal of Renumbering Requirement for Small Multihomers
  - ARIN-prop-166 Clarify /29 Assignment Identification Requirement

Arrow labels (left side): IPv6, Transfers, Transfers, Other, Transfers, Transfers, Other, IPv4, WHOIS

LACNIC Policy Update

- Under Discussion (Last Call)
  - LAC-2011-08 Including ROA data in the Whois database when available
  - LAC-2012-01 Eliminate the use of the term "dial-up"
  - LAC-2012-02 Registering assignments
  - LAC-2012-03 Special IPv4 Allocations/Assignments Reserved for New Members

WHOIS

IPv4

WHOIS

IPv4

LACNIC Policy Update

- Recently implemented:
  - LAC-2011-03 Modification of Section 2.3.4 - Policies for the Distribution of Additional IPv4 Address Space
  - LAC-2011-04 Add line 6 to Section 11.1 of the Policy Manual on IPv4 address exhaustion
  - LAC-2011-06 Distributions / Allocations for a smooth finish of IPv4 resources

IPv4

IPv4

IPv4

RIPE Policy Update

WHOIS

Transfers

Transfers

IPv4

Transfers

- Under Discussion
  - 2011-06 Abuse Contact Management in the RIPE NCC Database
  - 2012-02 Inter-RIR Transfers of IPv4 Address Space
  - 2012-03 Intra-RIR Transfer
  - 2012-04 PI Assignments from the last /8
  - 2012-05 Transparency in Address Block Transfers

RIPE Policy Update

- Recently Implemented
  - 2011-02 Removal of multihomed requirement for IPv6 PI
  - 2011-04 Extension of the Minimum Size for IPv6 Initial Allocation
  - 2011-05 Safeguarding future IXPs with IPv4 space

IPv6

IPv6

IPv4

Participation is Easy!

- Subscribe to the RIR policy mailing list(s)
  - No membership requirements

- Attend RIR meetings
  - In person (open: free or nominal fee)
  - Remote (free)

- Upcoming Meetings
  - APNIC 34: 27 – 31 August, Phnom Penh, Cambodia
  - RIPE 65: 24 – 28 September, Amsterdam, Netherlands
  - ARIN XXX: 24 – 26 October, Dallas, TX, USA
  - LACNIC XVIII: 29 October - 2 November, Montevideo, Uruguay
  - AFRINIC 17: 24 – 30 November, Khartoum, Republic of Sudan

ASO
ICANN Address Supporting Organization

Thank you.
Questions?

Internet Number Resource Status Report

As of 31 March 2012
Prepared by
Regional Internet Registries
AFRINIC, APNIC, ARIN, LACNIC and the RIPE NCC

IPv4 Address Space
What is the status of each of the 256 /8s?
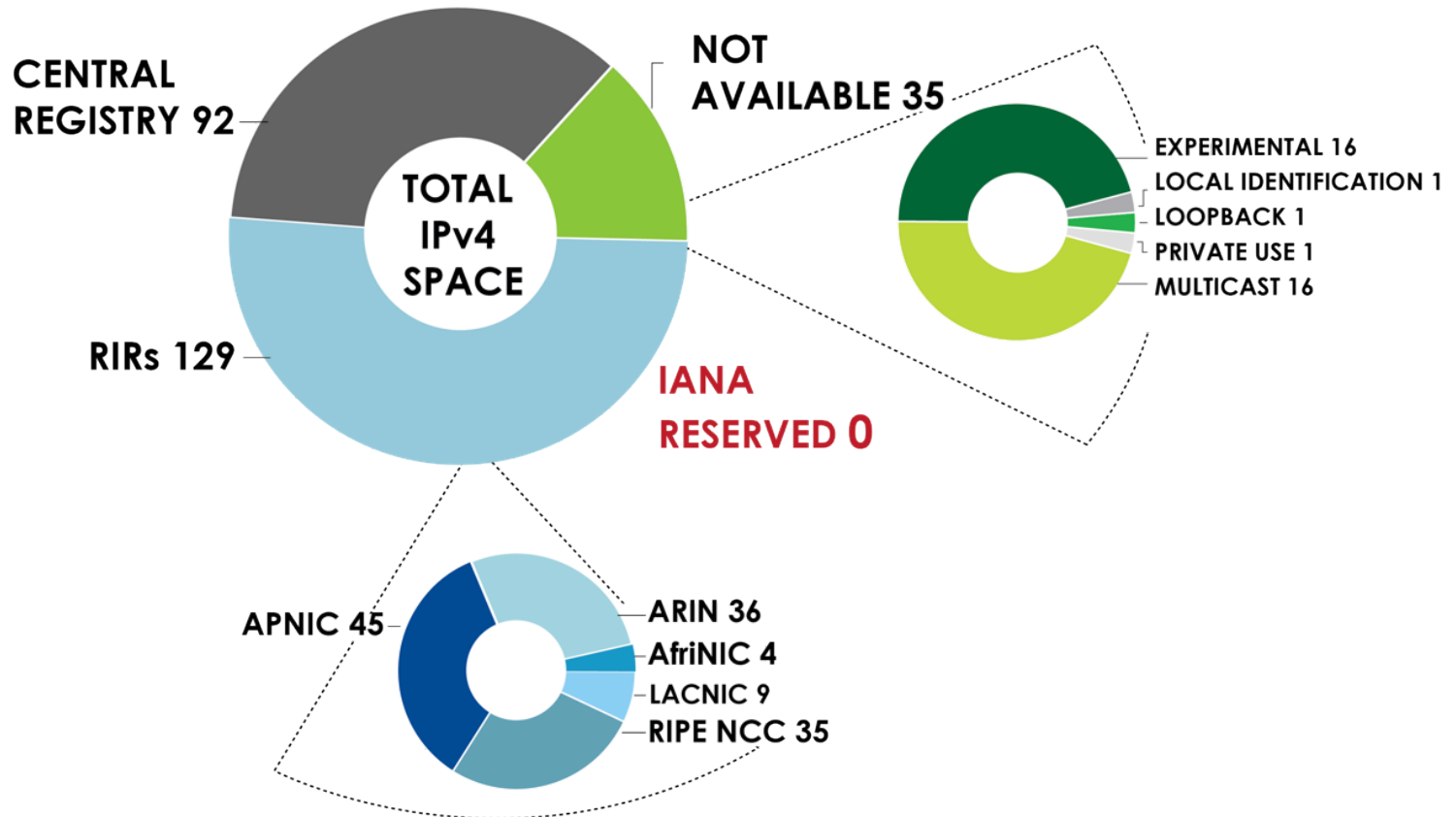
As of 31 March 2012

Available IPv4 /8s
As of 31 March 2012

AfriNIC **APNIC** **ARIN** **LACNIC** **RIPE NCC**

Registry	Value
AfriNIC	4.19
APNIC	.94
ARIN	4.98
LACNIC	3.73
RIPE NCC	2.48

IPv4 Address Space Issued

As of 31 March 2012
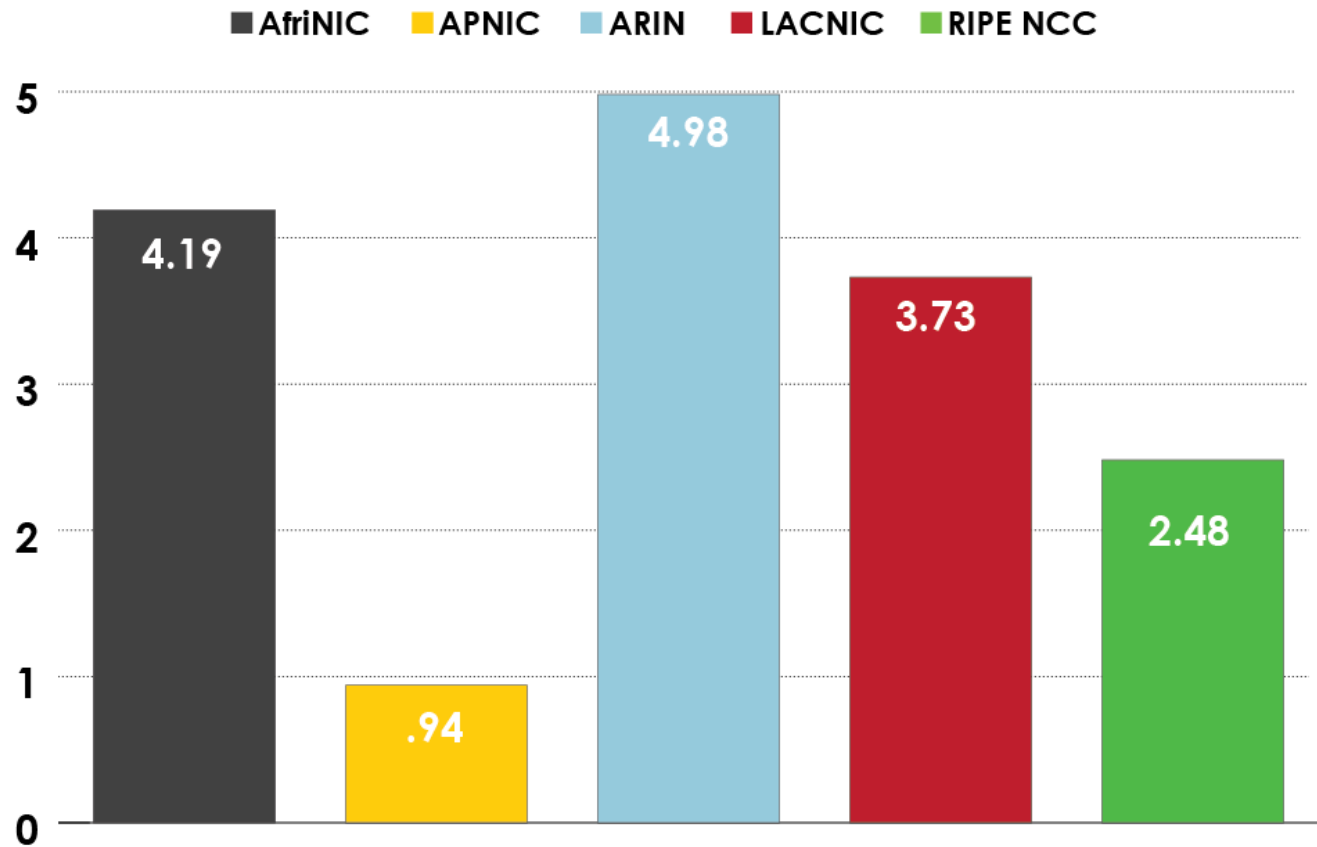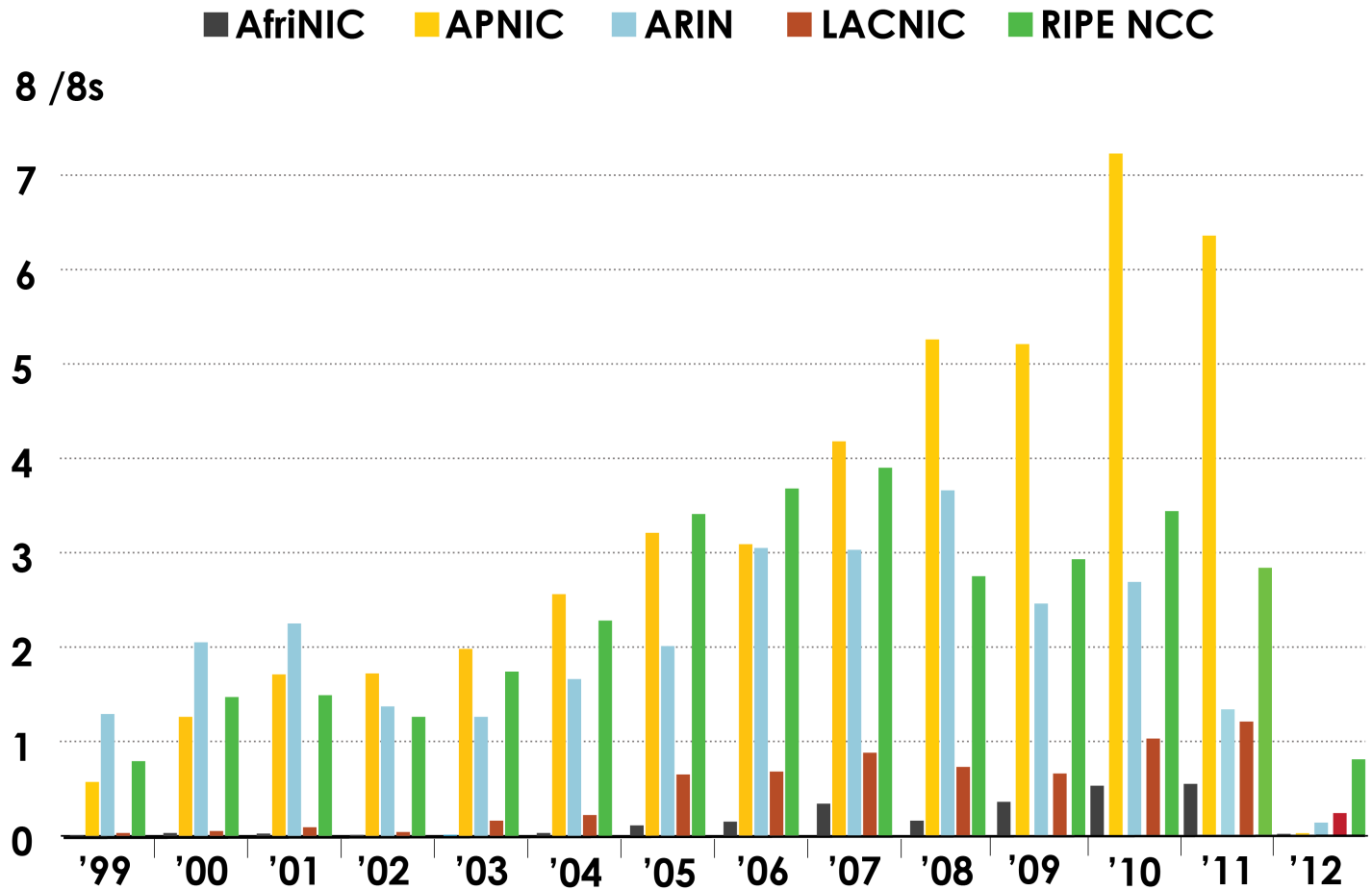
IPv4 Address Space Issued
(Jan 1999 – Mar 2012)

APNIC **44.34**

AfriNIC **2.33**

LACNIC **6.67**

ARIN **27.96**

RIPE NCC **32.78**

/8s

As of 31 March 2012

ASN Assignments

As of 31 March 2012
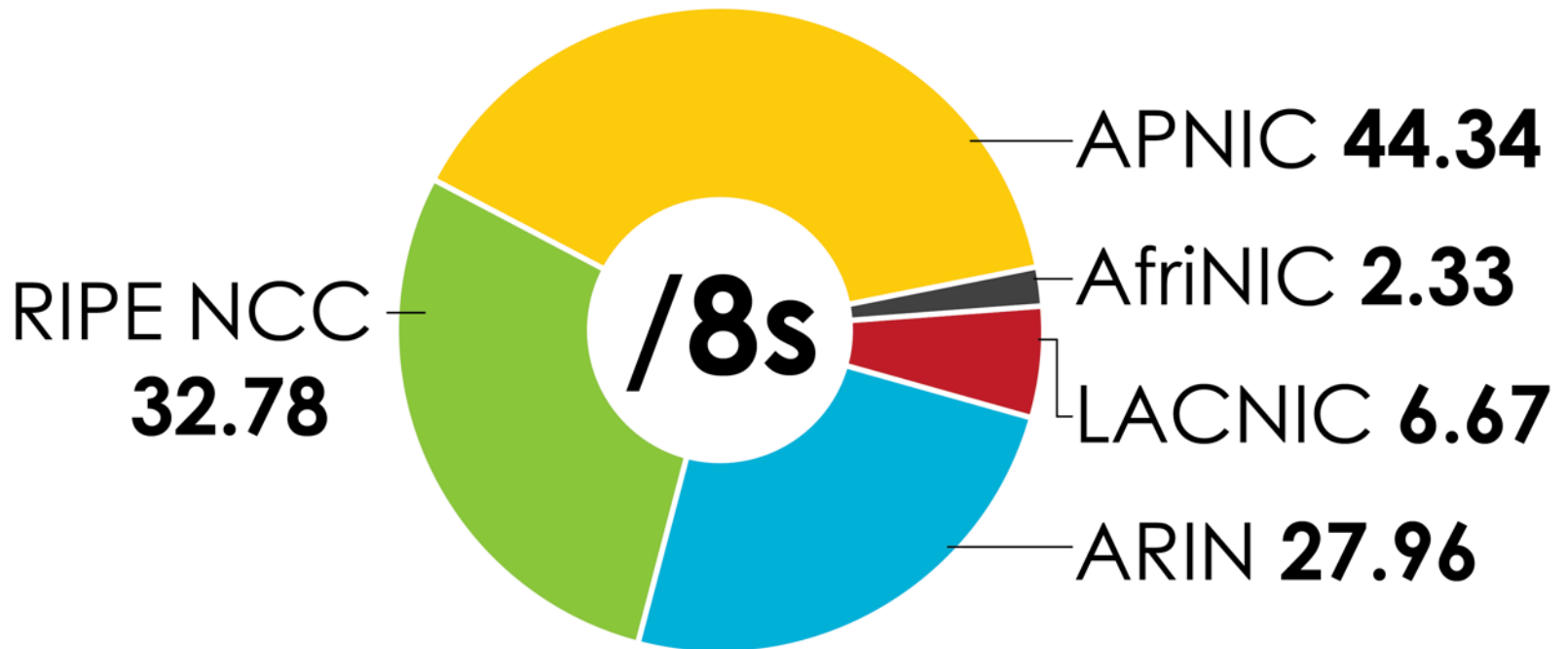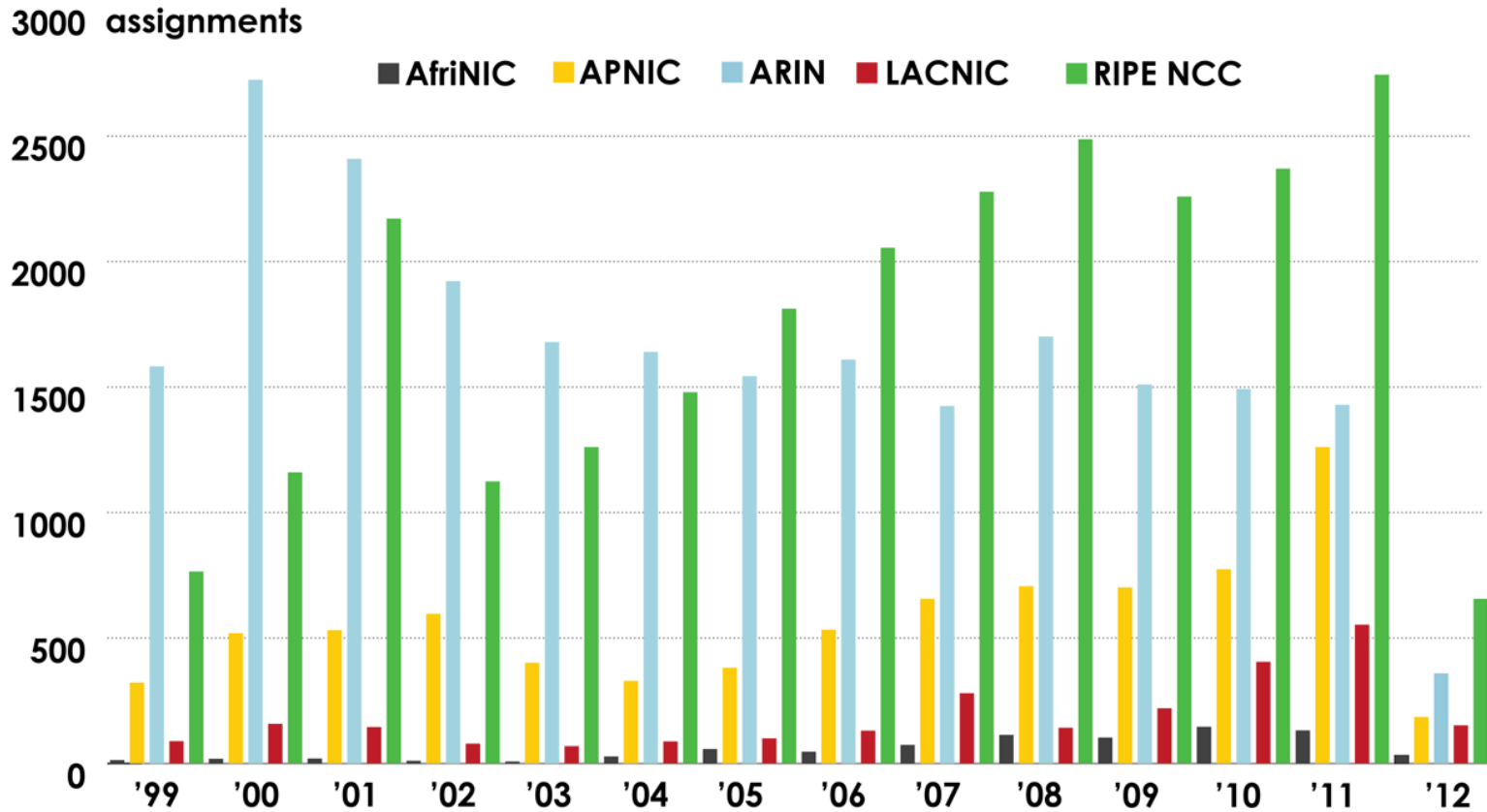
ASN Assignments
(Jan 1999 – Mar 2012)

ARIN **23,023**
AfriNIC **807**
LACNIC **2,611**
APNIC **7,895**
RIPE NCC **24,621**

As of 31 March 2012

4-Byte ASN Assignments

As of 31 March 2012
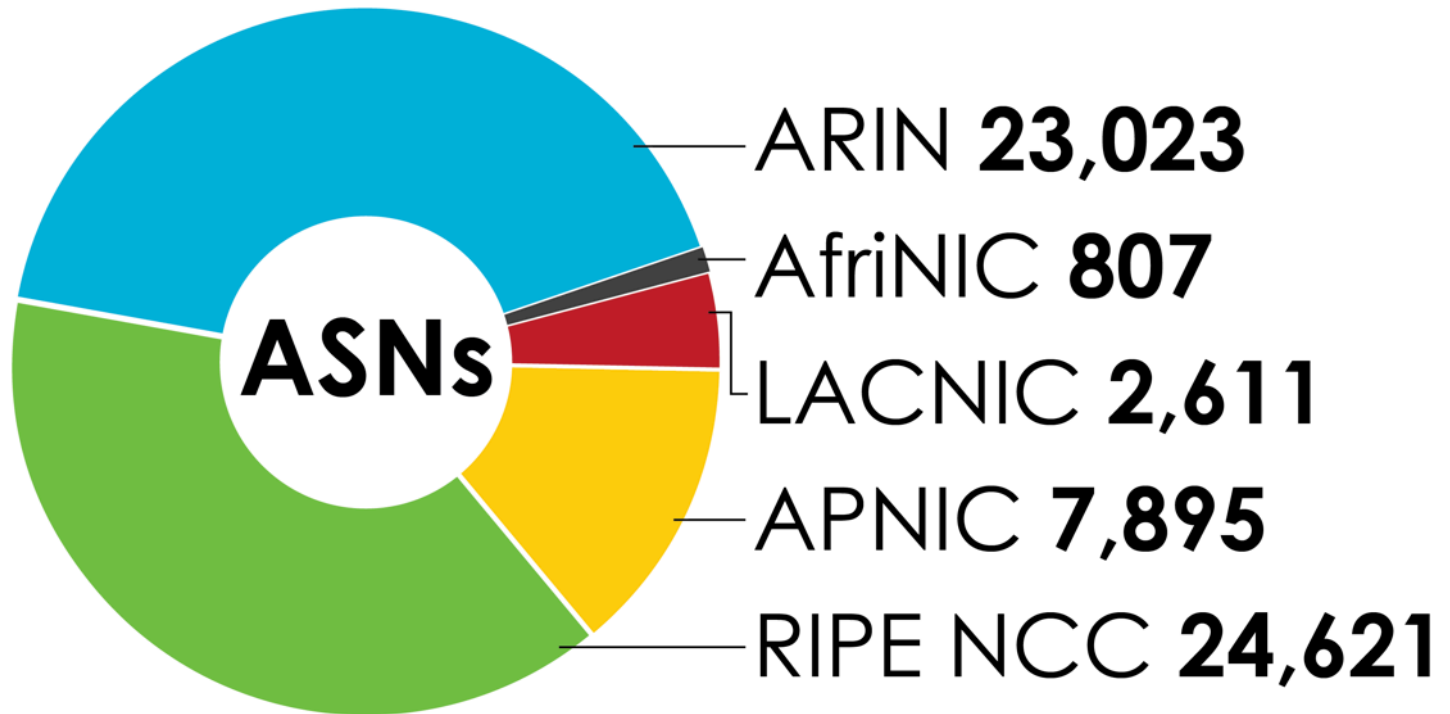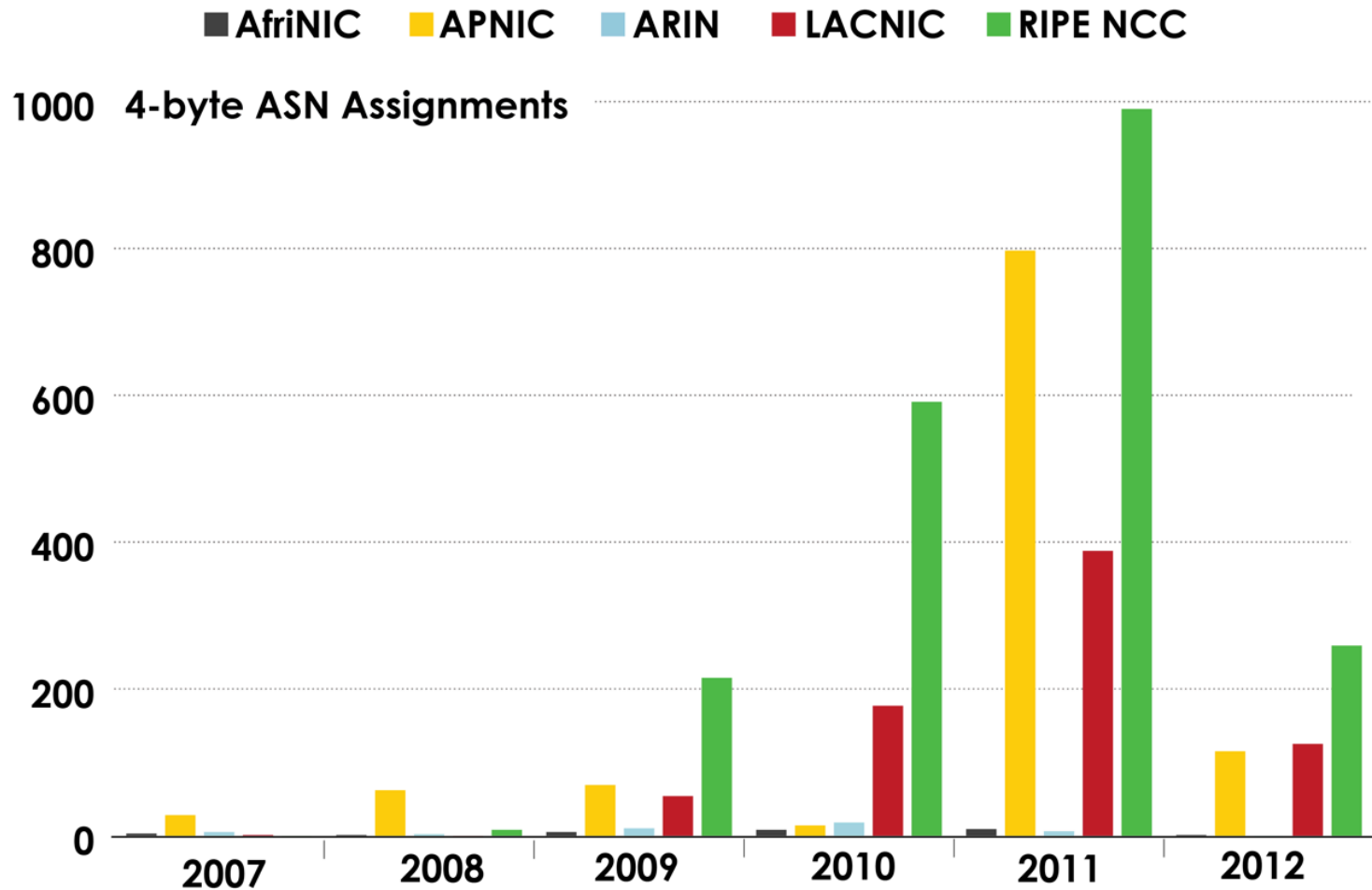
4-Byte ASN Assignments
(Jan 2007 – Mar 2012)

RIPE NCC 2,063

AfriNIC 27

APNIC 1,085

LACNIC 745

ARIN 41

4-byte ASNs
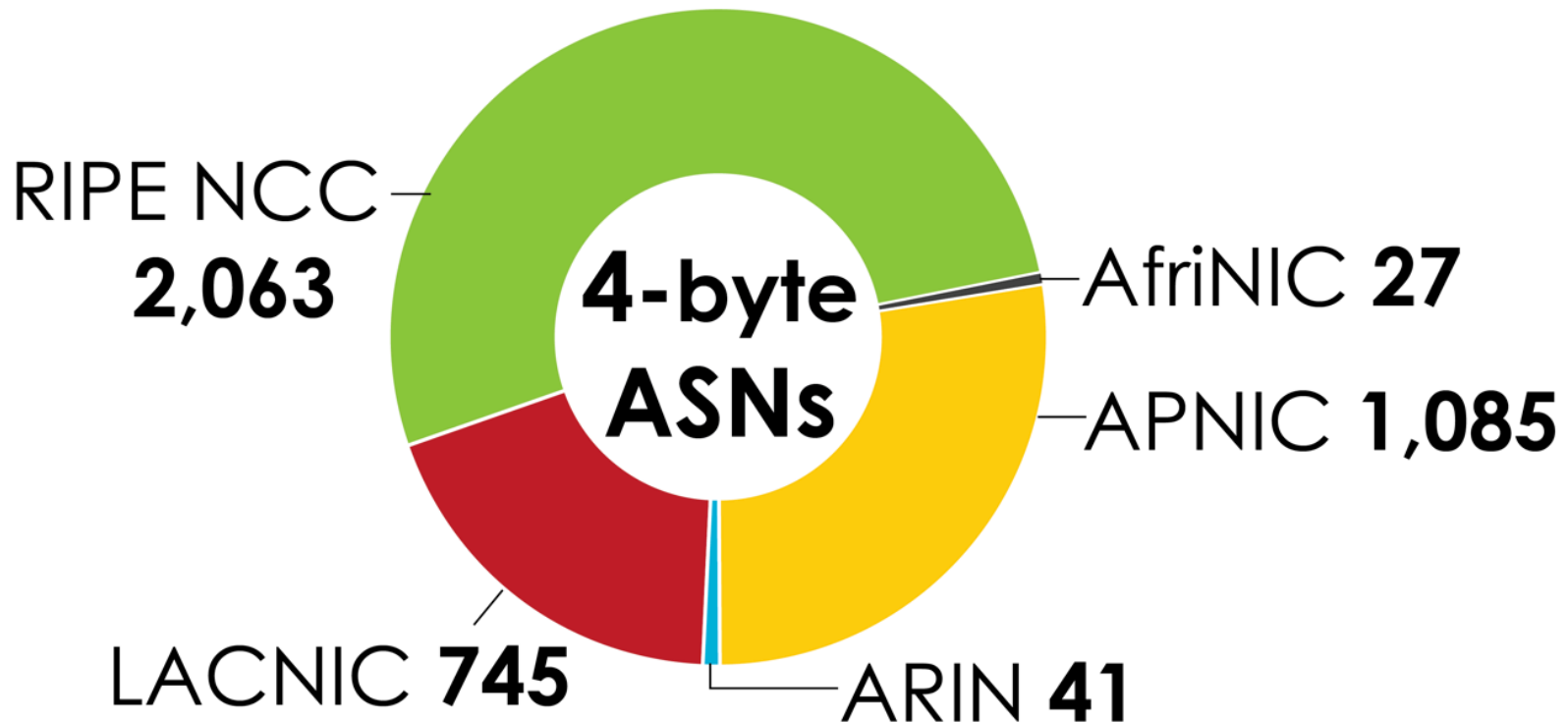
IPv6 Address Space
Allocated to the RIRs

As of 31 March 2012
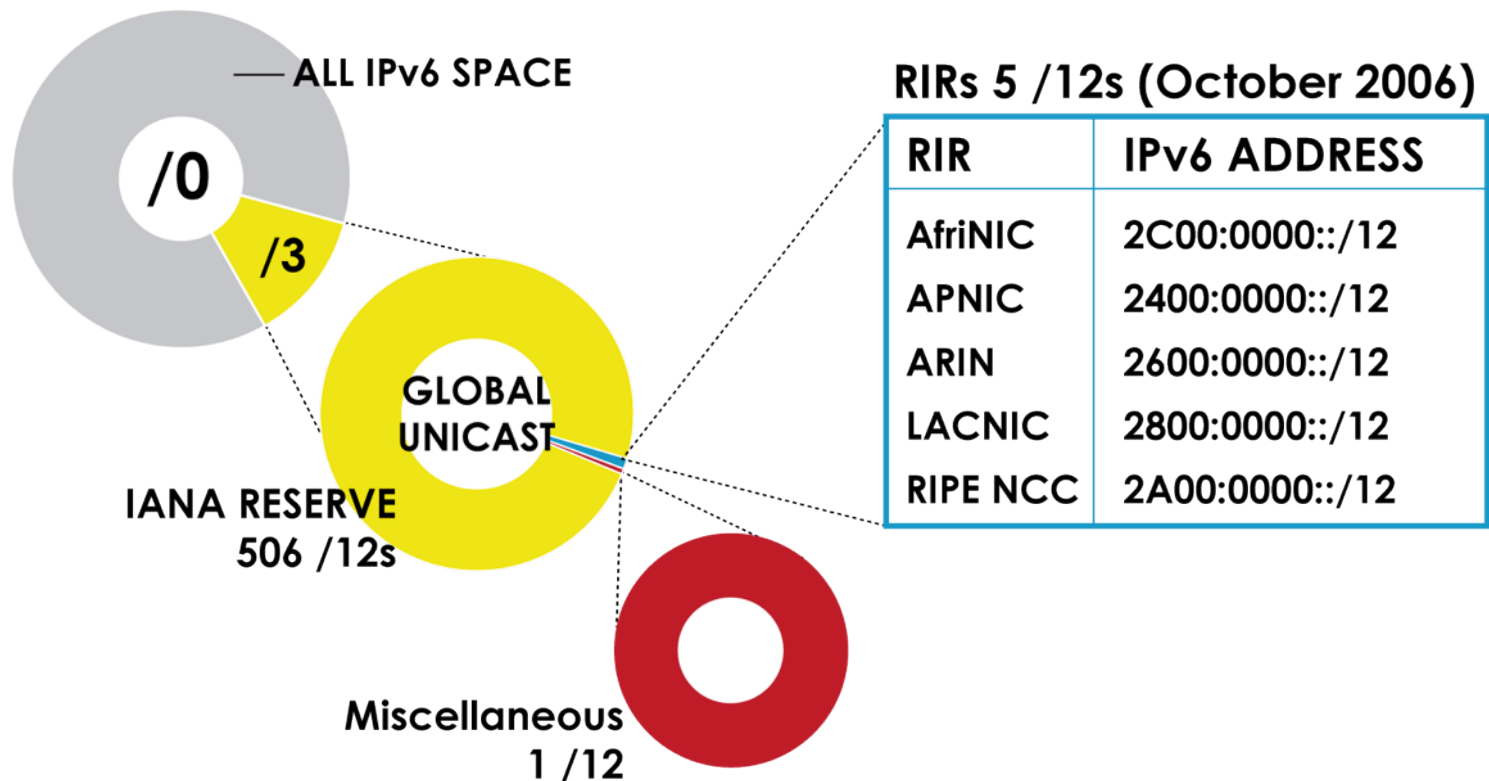
IPv6 Allocations by RIR
(Jan 1999 – Mar 2012)

RIPE NCC **4,048**

alloca-tions

AfriNIC **238**

LACNIC **942**

APNIC **1,651**

ARIN **1,761**

As of 31 March 2012
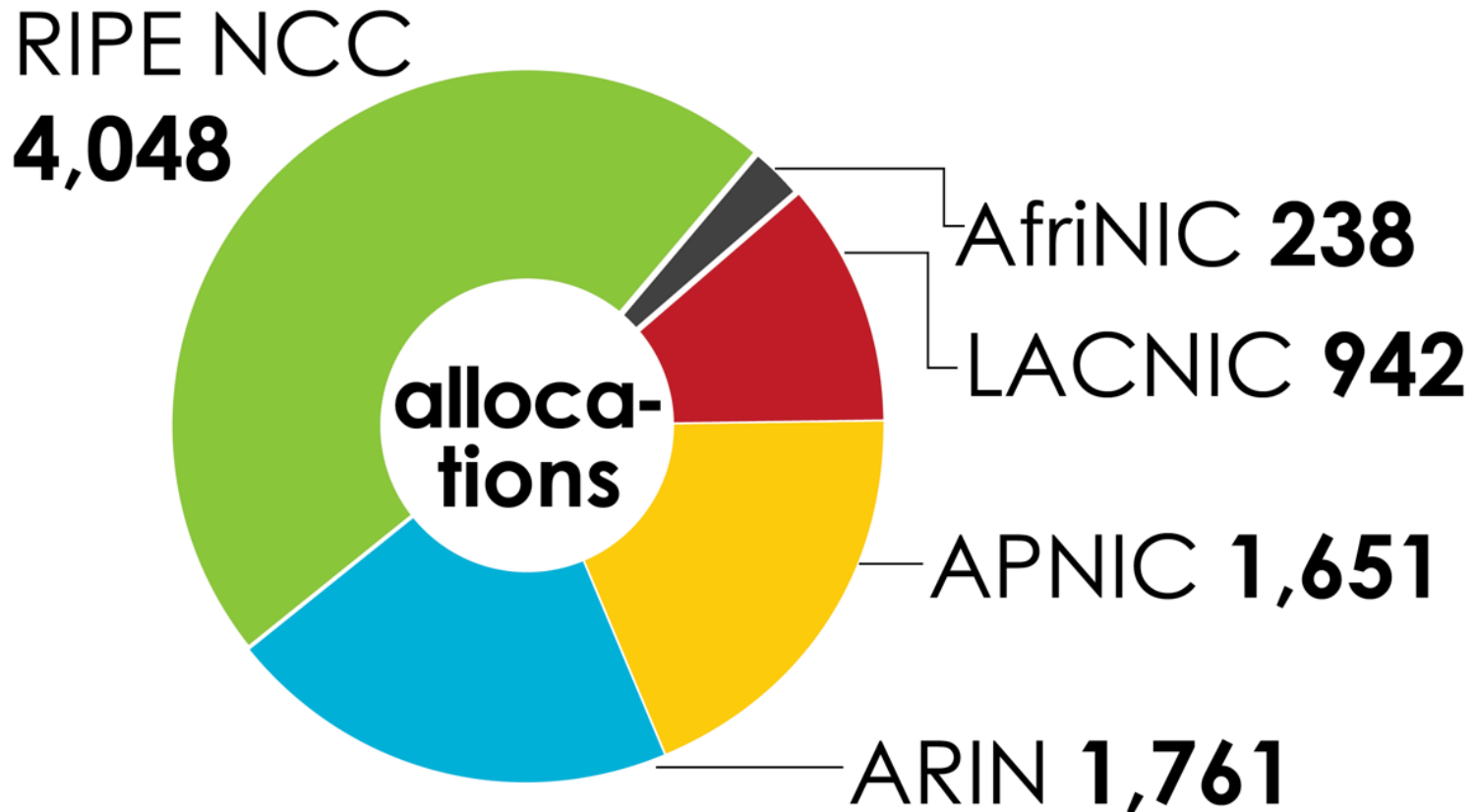
IPv6 Assignments
RIRS to End-Users

As of 31 March 2012
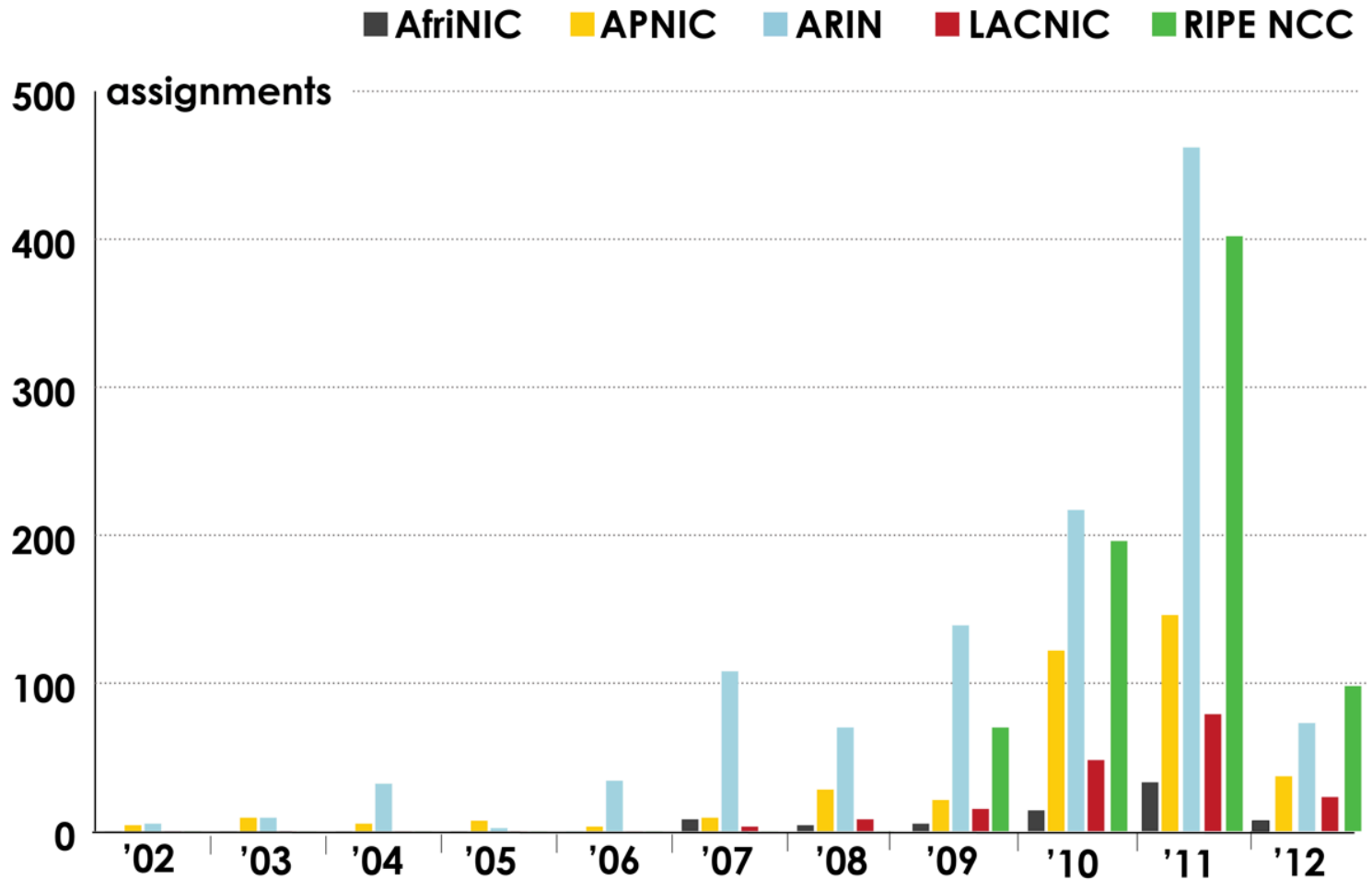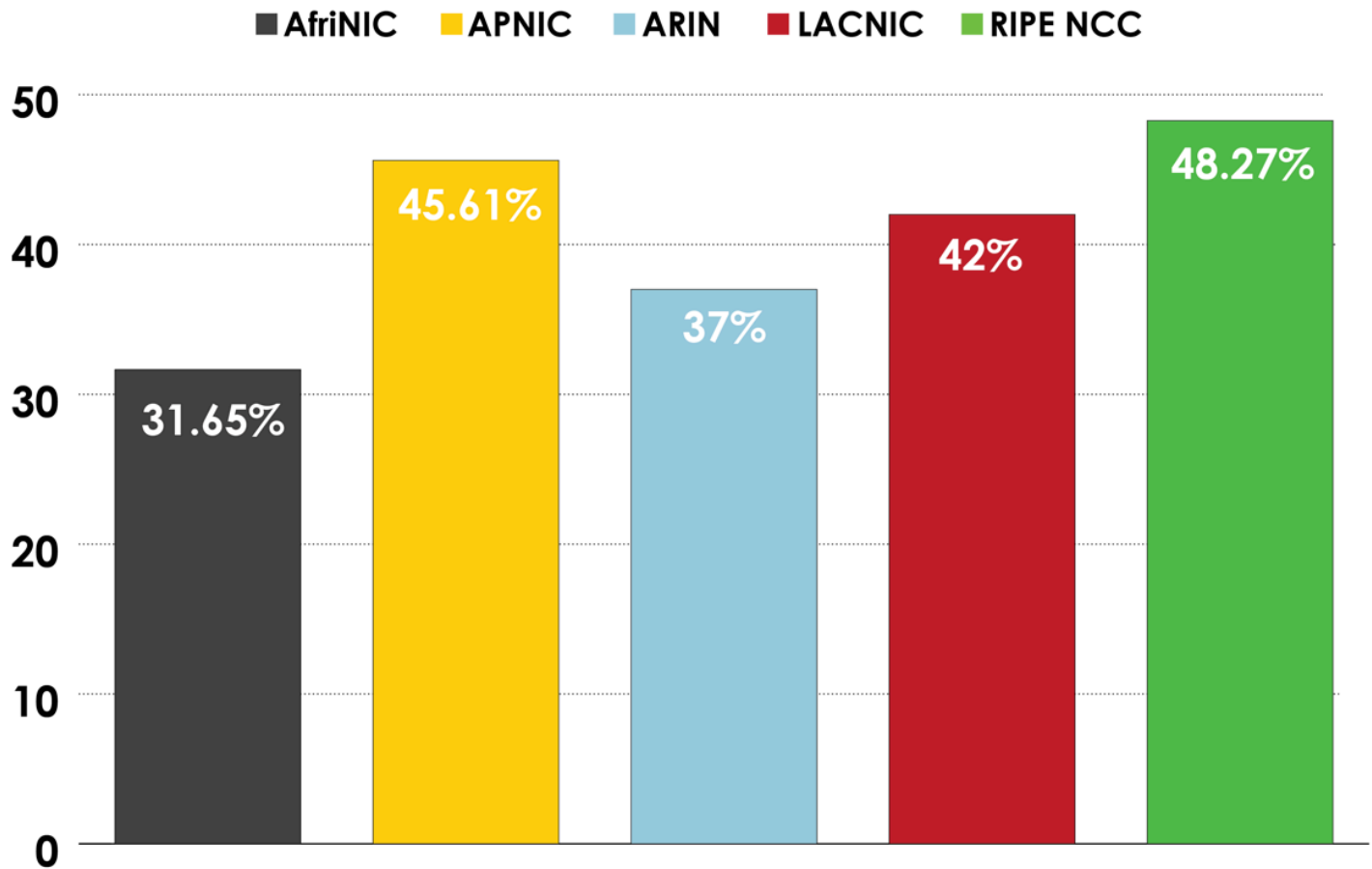
Available IPv4 /8s
As of 25 June 2012

Chart: Available IPv4 /8s by RIR
- AFRINIC: 4.2
- APNIC: 0.93
- ARIN: 3.2
- LACNIC: 3.43
- RIPE NCC: 1.99
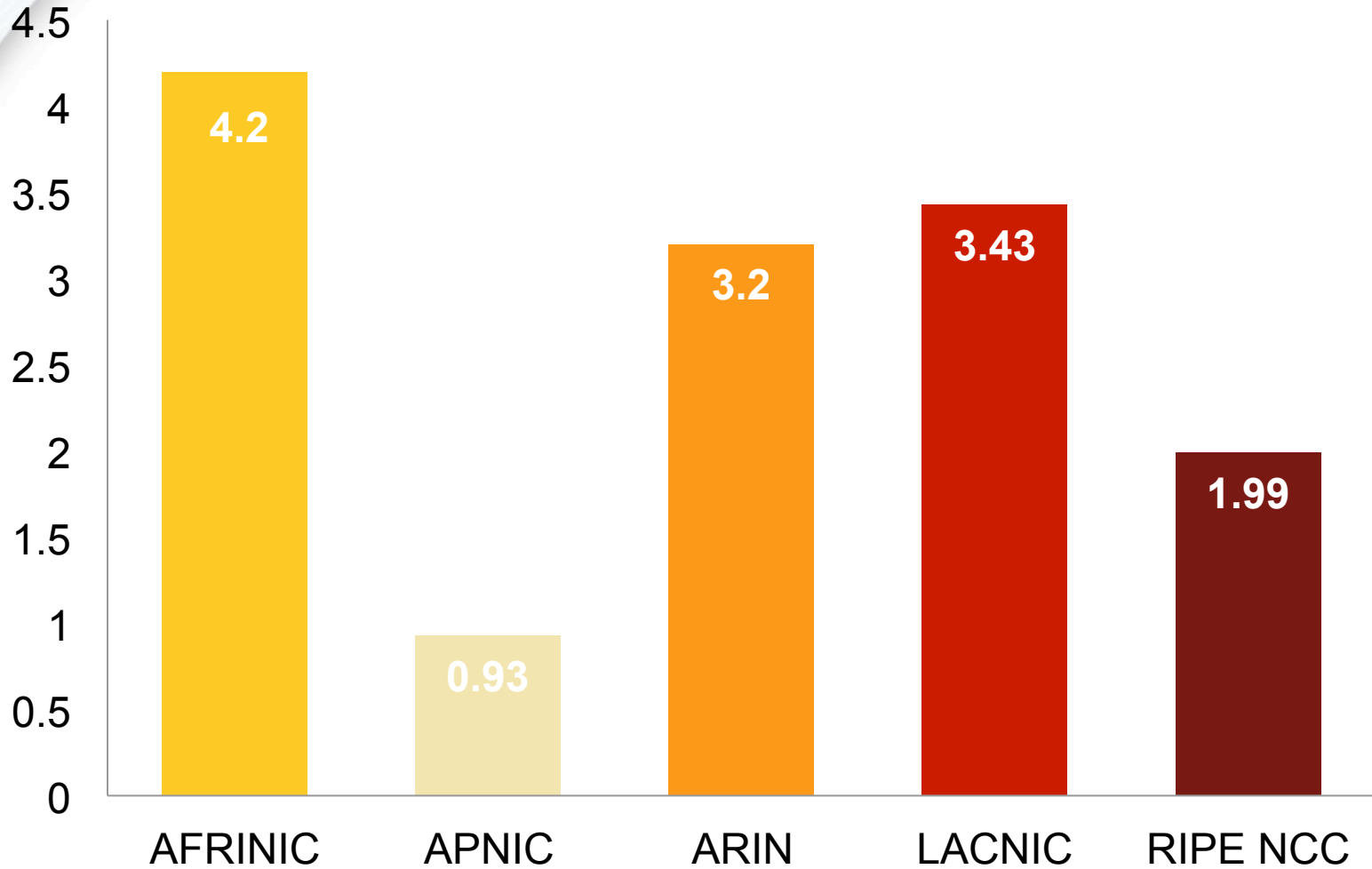
IPv4 Free Pool Exhaustion

- AFRINIC = 4.20 /8s

- APNIC = 0.93 /8s

- ARIN = 3.20 /8s

- LACNIC = 3.43 /8s

- RIPE = 1.99 /8s

As of 25 June 2012

Links to RIR Statistics

- RIR Stats:
  - www.nro.net/statistics

- Raw Data/Historical RIR Allocations:
  - www.iana.org/assignments/ipv4-address-space
  - www.iana.org/assignments/as-numbers
  - www.iana.org/assignments/ipv6-unicast-address-assignments

Thank you.
Questions?