Regional Internet Registries
An Overview

GSM Association IREG Meeting
Bali, Indonesia
## 19-21 September

Anne Lord, APNIC

Overview

- **RIR System Overview**
- Global and Regional Statistics
- APNIC Open Policy Process
- GSM-A and IR.40
- APNIC Resource Requests
- Questions

# What is an RIR?

- **Regional authority for Internet Resource distribution**
  - IP addresses, AS numbers, in-addr.arpa delegation
- **Industry self-regulatory body**
  - Non-profit, neutral and independent
  - Participation by those who need and use IP addresses
  - Consensus-based, open and transparent
- **Membership-based structure**
  - Open to any interested party
  - Provides formal structure for cost recovery, election of representatives etc

Internet Registry Hierarchy
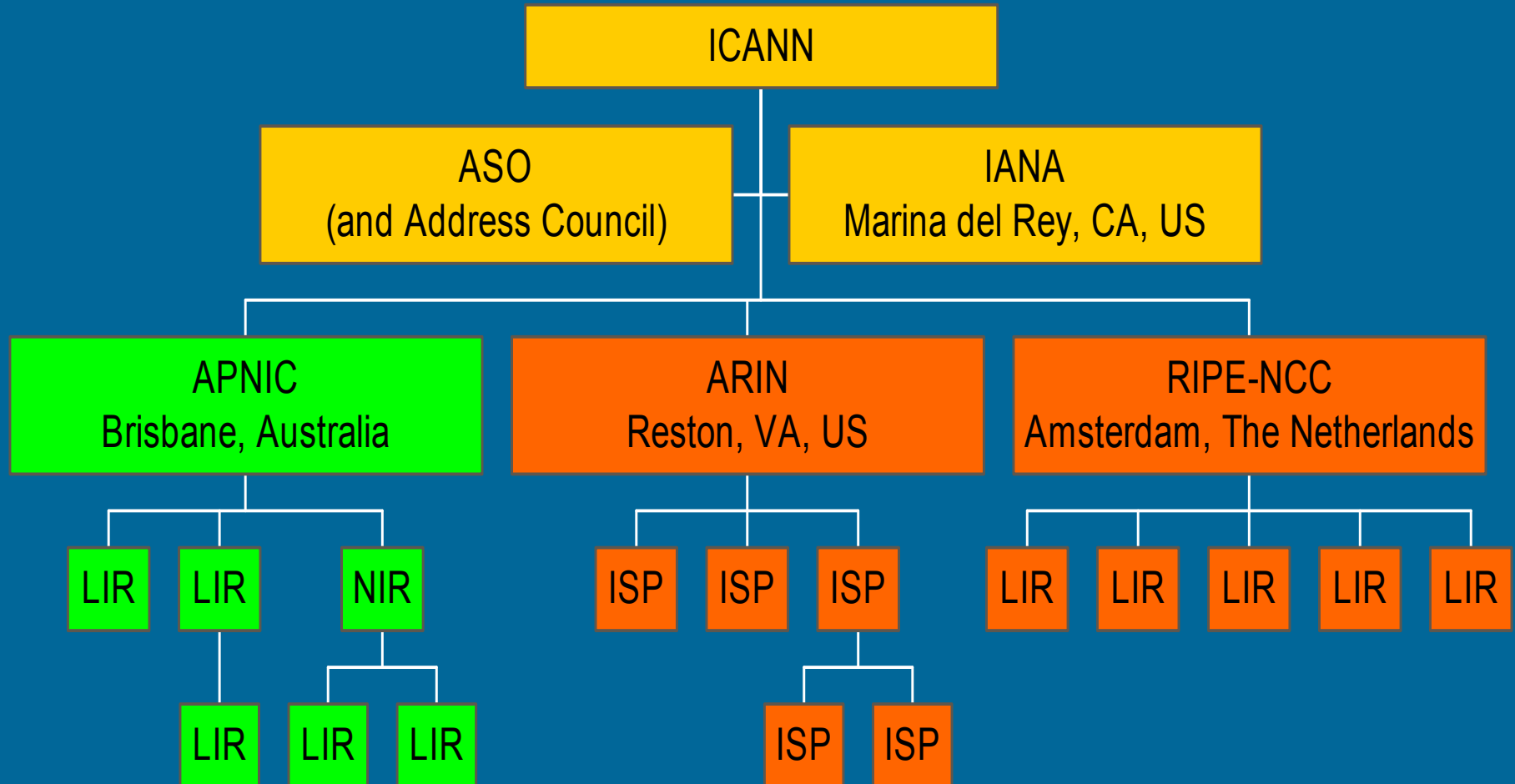
Internet Organisations Hierarchy
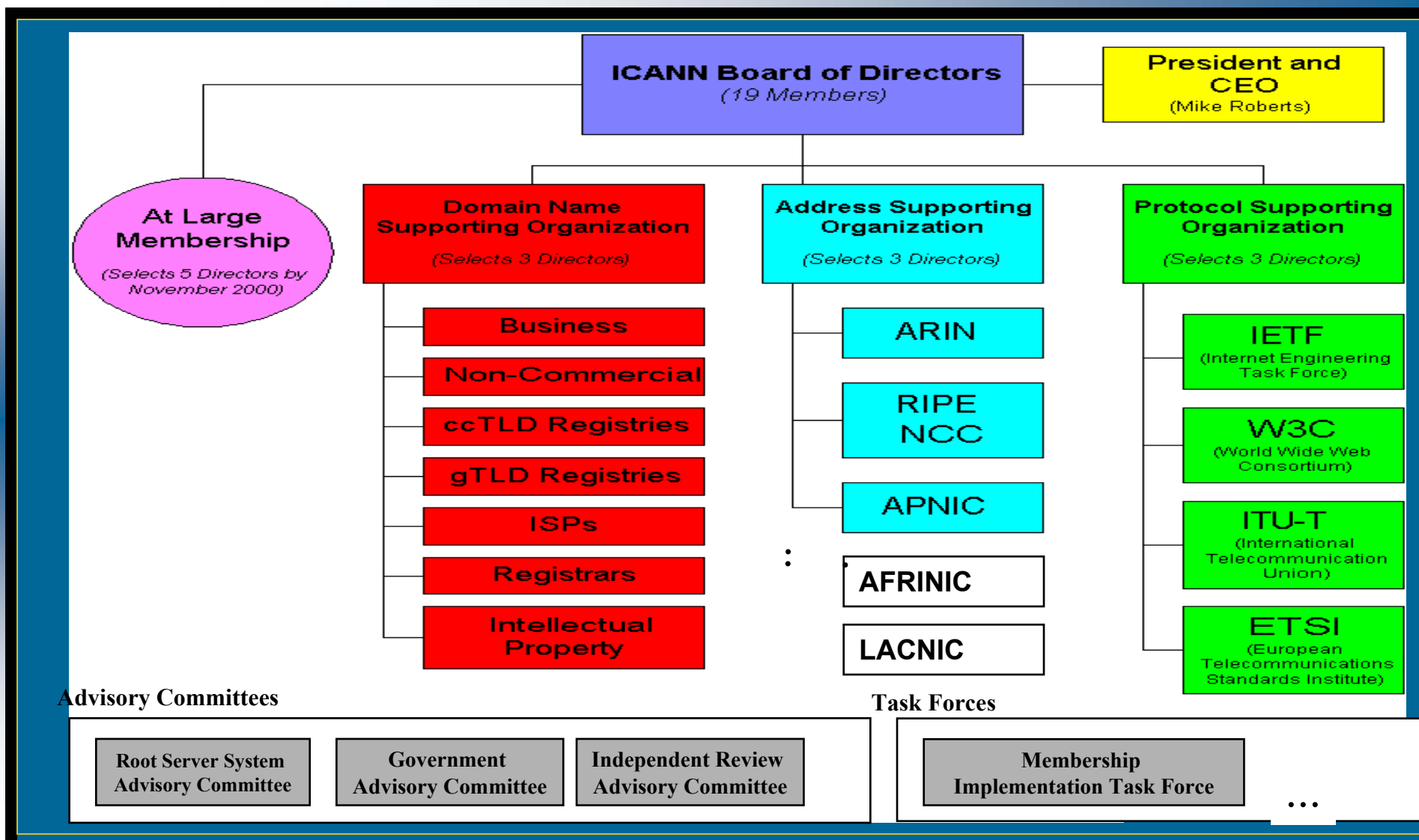
RIR Service Regions

Activities of the RIRs

- **Resource allocation, assignment and registration**
  - AS numbers, IPv4 & IPv6 addresses
  - Reverse DNS management
  - Operation of 'whois' registration database
- **Policy development and implementation**
  - Policy discussions via mailing lists, open policy meetings, working group sessions
  - Community reviews and approves policy
- **Training and education**
  - In how to manage and request resources

Activities of the RIRs

- **Representation and coordination**
  - Regional representation at Internet meetings
  - Regional liaison with industry and other stakeholders
  - Support to emerging RIRs LACNIC & AfriNIC
  - Liaison and representation with other RIRs
- **Information dissemination**
  - RIR meetings
  - Web and ftp site, mailing lists
- **RIRs are NOT**
  - Network operators,
  - Standards body (like IETF)
 - Domain name registrars

RIR Membership
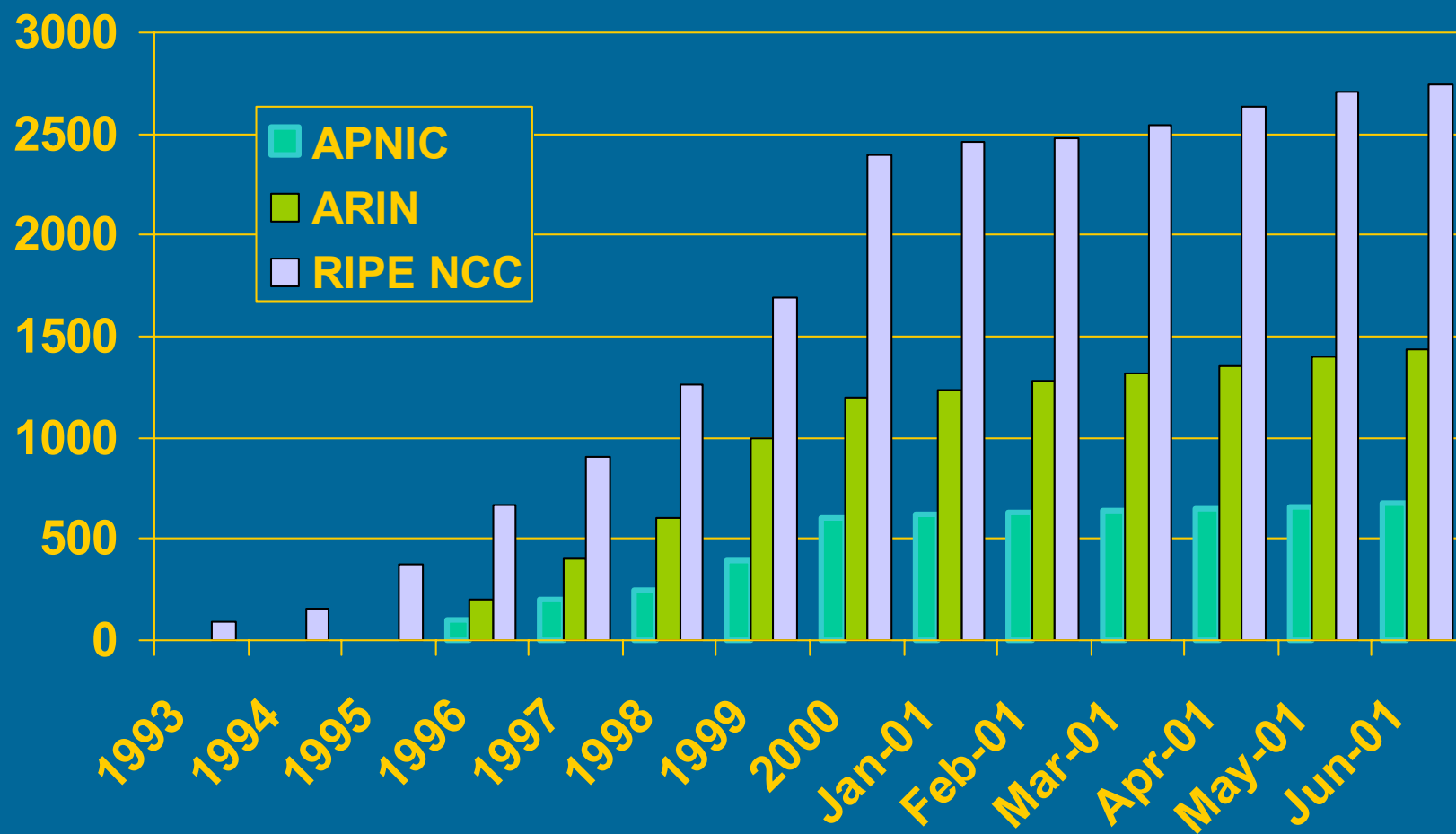
APNIC Overview

- **Asia Pacific Network Information Centre**
  - Founded in 1993
  - Membership structure established in 1996
  - 689 members
    - 1000+ members including NIR membership
  - Located in Brisbane, Australia
    - Relocated from Tokyo, Japan 1998
  - More information
    - http://www.apnic.net

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IANA Delegations (Apr 2001)

ARIN 5%   2% APNIC
4% RIPE NCC

36%

Unallocated

Other Orgs.
(pre-RIR)

53%
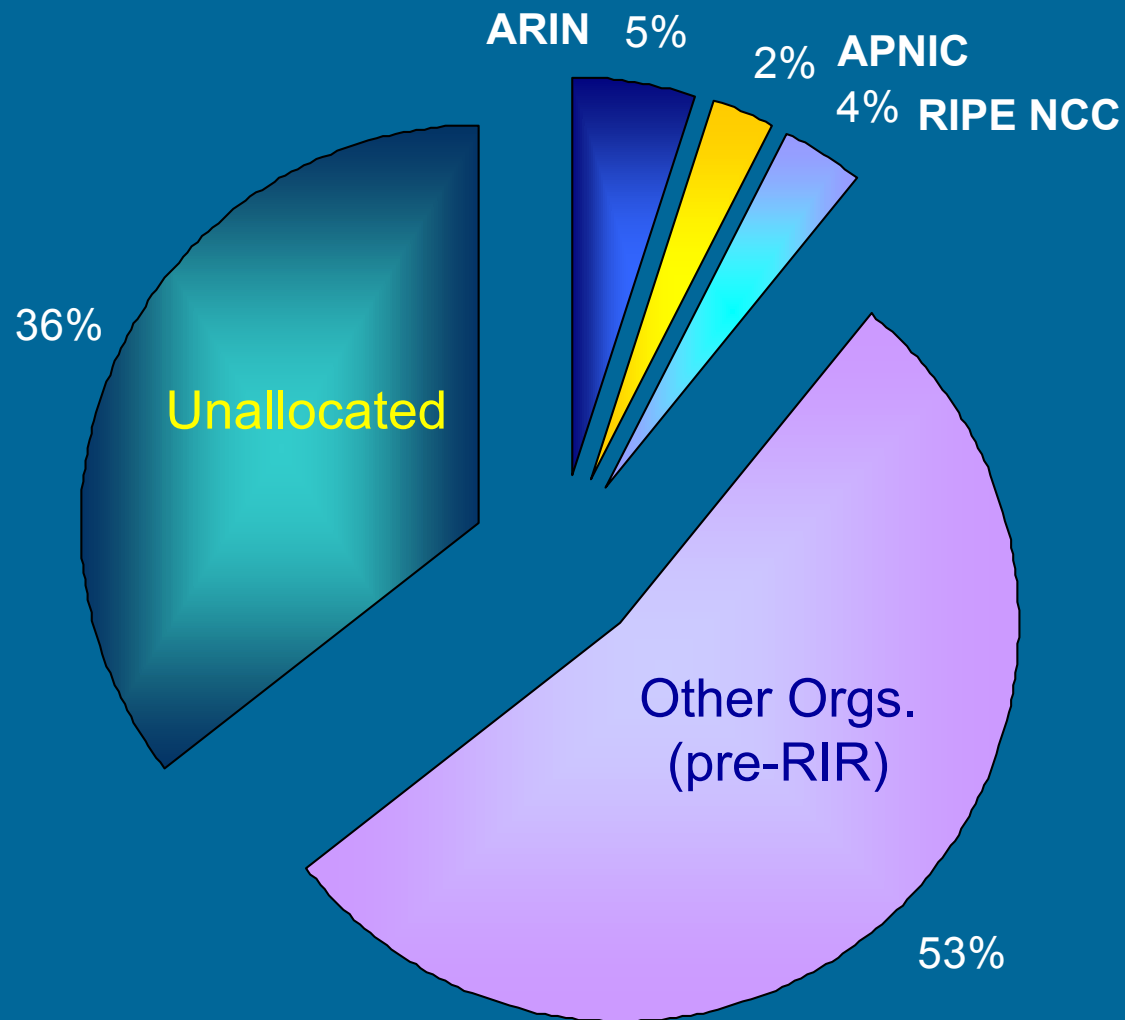
RIR IPv4 Allocations 1999-2000

RIR IPv6 Allocations - Total

- **Total of 102 RIR Allocations (/35s)**
    - Top 3: USA (21), Japan (21), and Germany (9)
    - Bootstrap criteria phase complete (100 subTLAs)
        - Will extend until new criteria in place

- **Allocations**
    - APNIC   38
    - ARIN   21
    - RIPE NCC   43
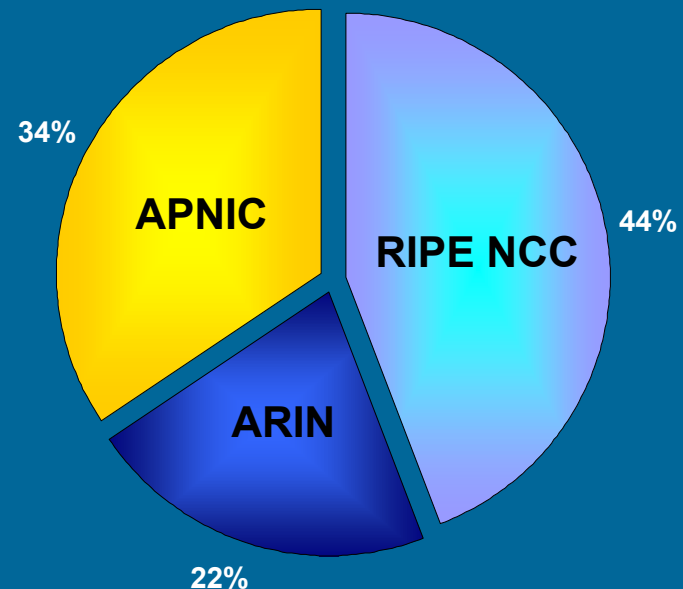
34% APNIC

44% RIPE NCC

22% ARIN

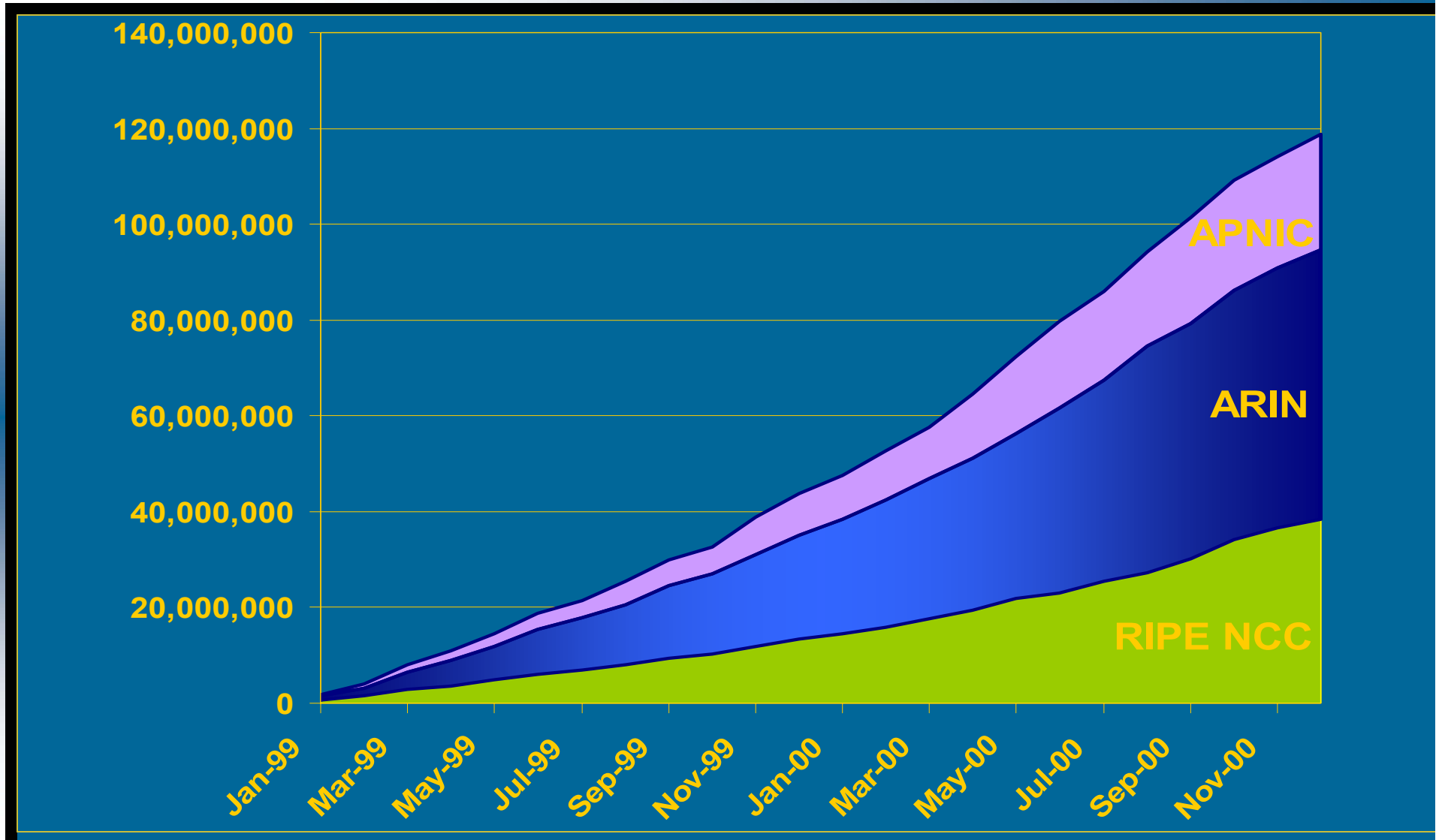# Overview

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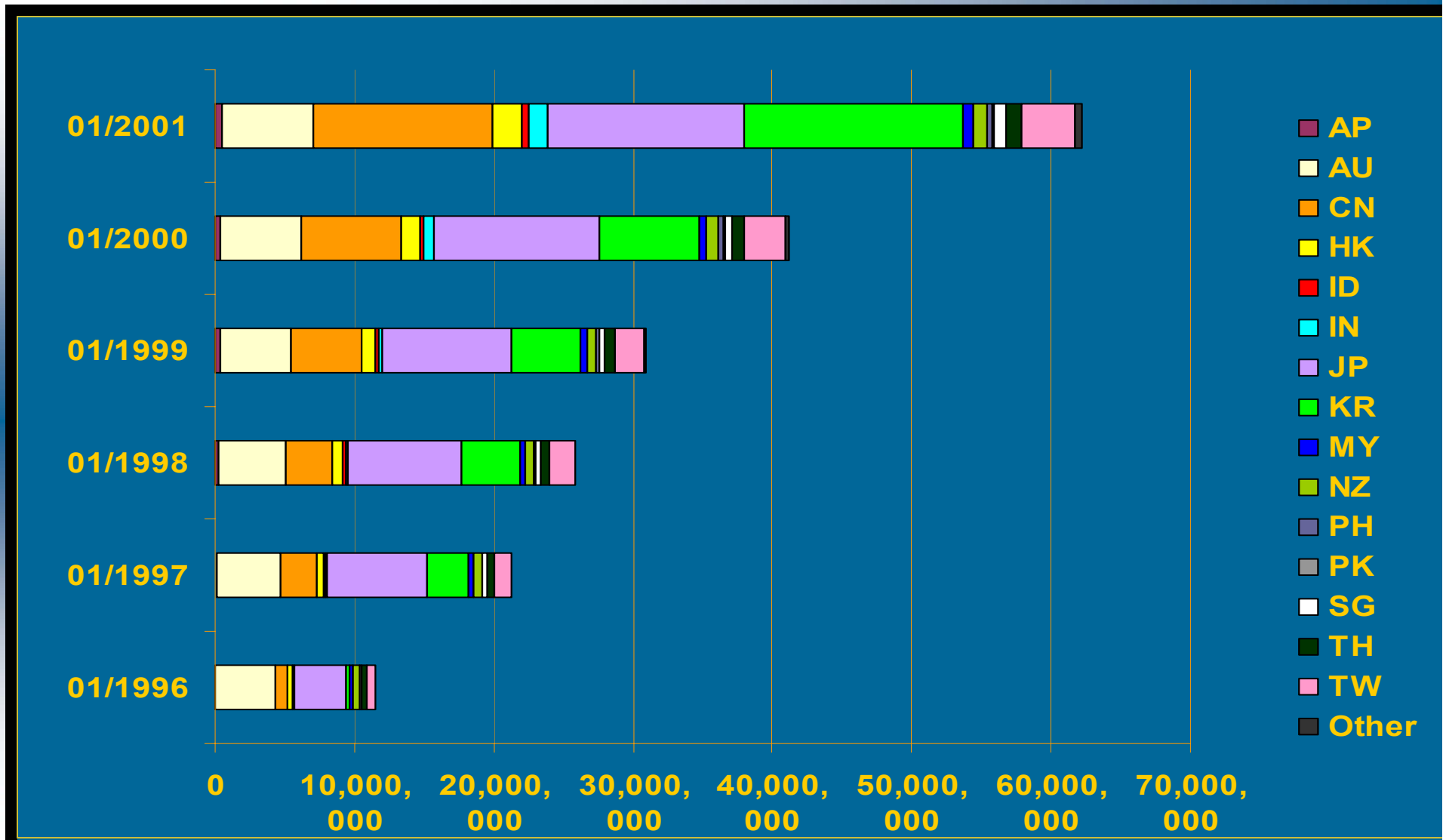- APNIC Resource Requests
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Address Management Challenges

- **Address space depletion**
  - IPv4 address space is finite
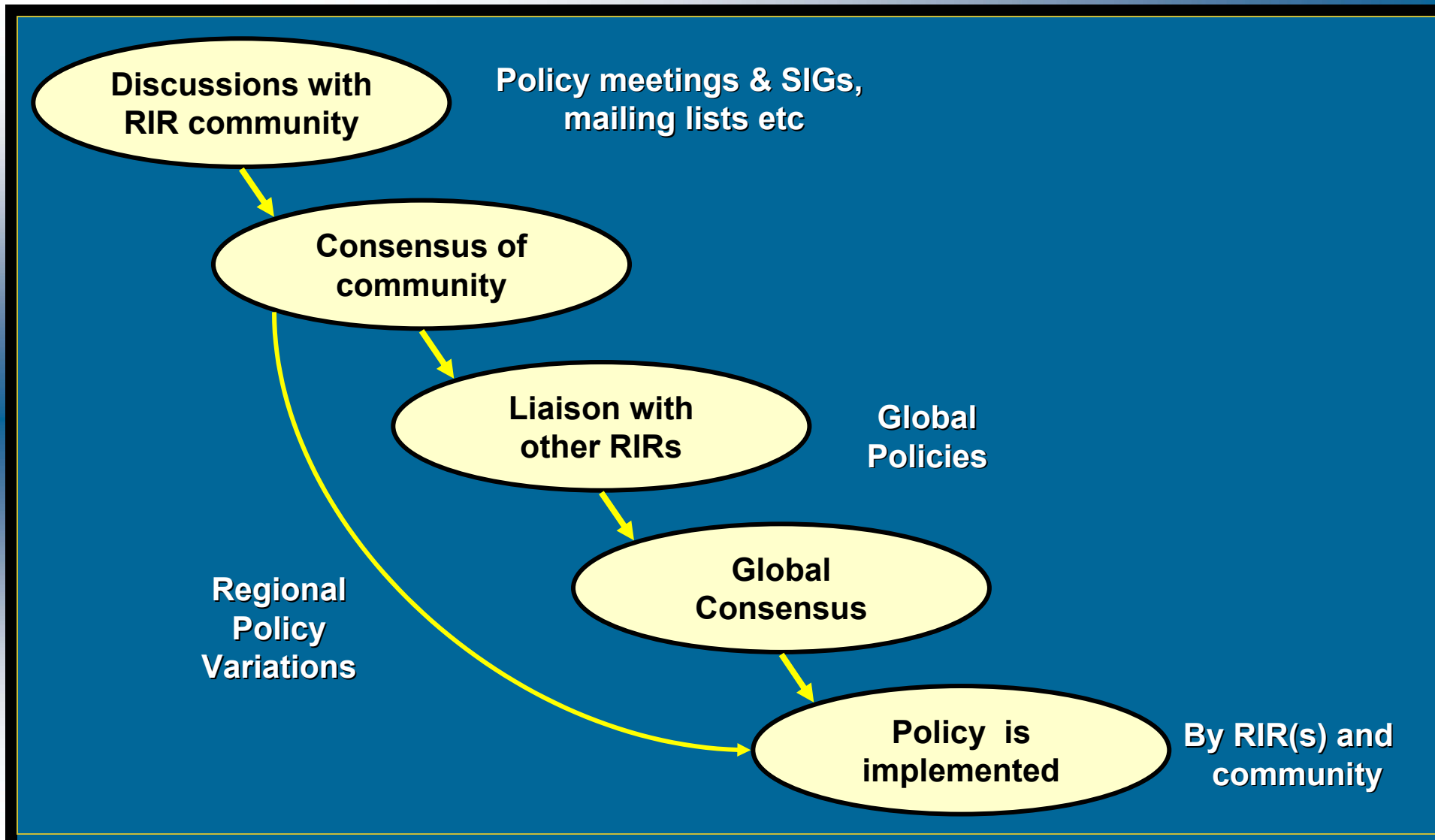 - Historically many wasteful allocations
- **Routing chaos**
  - Legacy routing structure, router overload
  - CIDR and aggregation are now vital
- **Inequitable management**
  - Unstructured and wasteful address space distribution

Address Management Objectives

- **Conservation**
  - Efficient use of resources
  - Allocation based on demonstrated need
- **Aggregation**
  - Limiting growth of routable prefixes
  - Provider based addressing policies
- **Registration**
  - Ensuring uniqueness
  - Trouble shooting
- **Fairness and consistency**
  - In the interests of regional and global communities
  - Internet can grow to the maximum extent possible

Policy Development Process

Discussions with RIR community

Policy meetings & SIGs, mailing lists etc

Consensus of community

Liaison with other RIRs

Global Policies

Regional Policy Variations

Global Consensus

Policy is implemented

By RIR(s) and community

APNIC's Open Policy Forum

- ◆ **APNIC Open Policy Meeting**
  - ◆ 2 meetings a year, open to all
  - ◆ Many 'special interest groups'
    - ◆ Open public forum to discuss topics of interest to APNIC and the Internet community in the region

- ◆ **Document Revision**
  - ◆ Documents posted for public comment
  - ◆ Via web sites and mailing lists
  - ◆ Translated documents available

- ◆ **Training & Education**
  - ◆ Delivered across the region
  - ◆ Feedback into policy discussions

APNIC's Mailing Lists

APNIC Special Interest Group (SIG) Mailing Lists:

- ☐ **sig-ca** — [Archive] — Certification Authority project
- ☐ **sig-db** — [Archive] — Whois database issues
- ☐ **sig-dns** — [Archive] — Reverse DNS issues
- ☐ **sig-ipv6** — [Archive] — IPv6 technology & policy
- ☐ **sig-policy** — [Archive] — Resource management policy
- ☐ **sig-routing** — [Archive] — IP routing technology & policy

Working Groups:

- ☐ **dns-wg** — [Archive] — DNS-Working Group
- ☐ **wg-bb** — [Archive] — Broadband (xDSL/cable) Working Group
- ☐ **wg-irr** — [Archive] — APNIC IRR Working Group

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APNIC Community & GSM-A

- **Close collaboration with "AP" community**
  - Linh Duong, Brisbane Oct 2000
    - Public IP addresses for GPRS infrastructure
    - Proposal accepted as operational matter
      - See http://www.apnic.net/meetings/10/
  - Kim Fullbrook, Taipei, August 2001
    - IP addresses for mobile terminals
    - Proposal accepted as informational
      - http://www.apnic.net/meetings/12/sigs/address_policy.html
- **Close collaboration with RIRs**
  - Jarnail Malra and many others
    - Ongoing feedback and review of IR.40

GPRS Requests to RIRs

- **Summary of requests received**
    - **ARIN**
        - 2 requests for GPRS infrastructure
        - 1 pending
    - **APNIC**
        - 3 requests for GPRS infrastructure
        - 0 for mobile phones
    - **RIPE NCC**
        - 27 requests for GPRS infrastructure
        - 6 of these were also for mobile phones

Next Steps

- **IR.40 document**
  - Presented at forthcoming RIR meetings
    - RIPE 40, 1-5 October
    - ARIN VIII, 28-31 October
  - Will examine policy implications in light of discussions within other RIR communities
- **Global policy**
  - Desirable, but regional differences may be appropriate

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Need to Make a Request to APNIC?

- **Become a member**
  - FAQ, information, step-by-step guide and forms at
    - http://www.apnic.net/member/
- **Existing fee structure**
  - Based on 4 categories
    - Smallest $2,500
    - Largest $20,000
  - Category depends on address holdings (IPv4 and IPv6)
- **Revised fee structure**
  - Adds two new categories
    - Very small $1,250
    - Very large $40,000
  - http://www.apnic.net/meetings/12/results

IPv4 Allocation Criteria

- **New policy approved at APNIC meeting**
    - To be implemented in December 2001
- **Minimum criteria for a /20 allocation**
    - Have used a /22 from upstream
    OR
        - Demonstrate the need for a /22 immediately
    AND
    - Demonstrate the need for a /21 in a year
    - Agree to renumber within one year
- **Request form, policy document and info**
    - http://www.apnic.net/services/ipv4_guide.html

IPv6 Allocation Criteria (Bootstrap)

- **Criteria for a subTLA allocation (/35)**
  - Peering with $\geq$3 Ases

    AND
  - Plan to provide IPv6 services in 12 months

    AND either
  - $\geq$40 IPv4 customers

    OR
    - 6bone experience
- **Request form and FAQ**
  - http://www.apnic.net/apnic-bin/ipv6-subtla-request.pl

Questions?