



IPv6 Address Allocation Policies and Management

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Outline

- Introduction to RIPE & RIPE NCC
 - RIPE NCC in the Global Context
- Policy Development
 - How to participate
- IPv6 Allocation Policies
- Allocation Statistics



RIPE & The RIPE NCC



RIPE



- RIPE (Réseaux IP Européens)
 - open forum (no membership, no fees)
 - 10 years of history
 - diverse participation
 - Chairman: Rob Blokzijl
 - RIPE Meetings - 3 times per year
- Real work is done in Working Groups

<http://www.ripe.net>



What is the RIPE NCC?

- Established in Amsterdam in 1992
- Not-for-profit Membership Association
- Neutral and Impartial
- 80 staff (25 nationalities)
- More than 3,000 members
- Co-ordination and support for RIPE community (ISPs, network & mobile operators etc.)
- One of 3 Regional Internet Registries (RIRs)



RIPE NCC Activities

Member Services

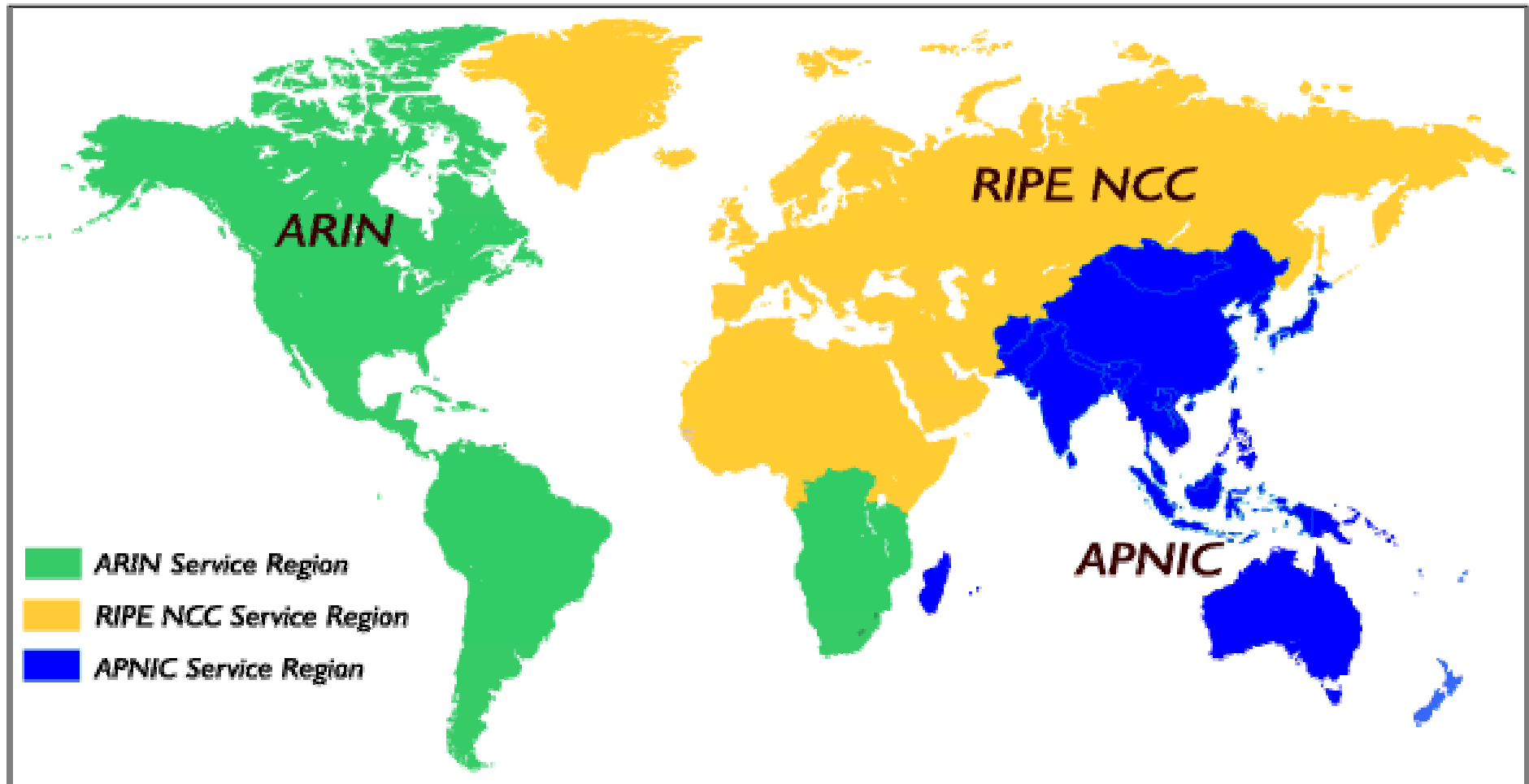
- Registration Services
 - IP address and AS Number distribution
 - Reverse domain name delegation
 - Training and Education

Public Services

- RIPE support
- RIPE database maintenance
- Liaison and Outreach (RIRs / ICANN / IETF / new industry players / etc.)
- Technical Projects



RIPE NCC Service Region





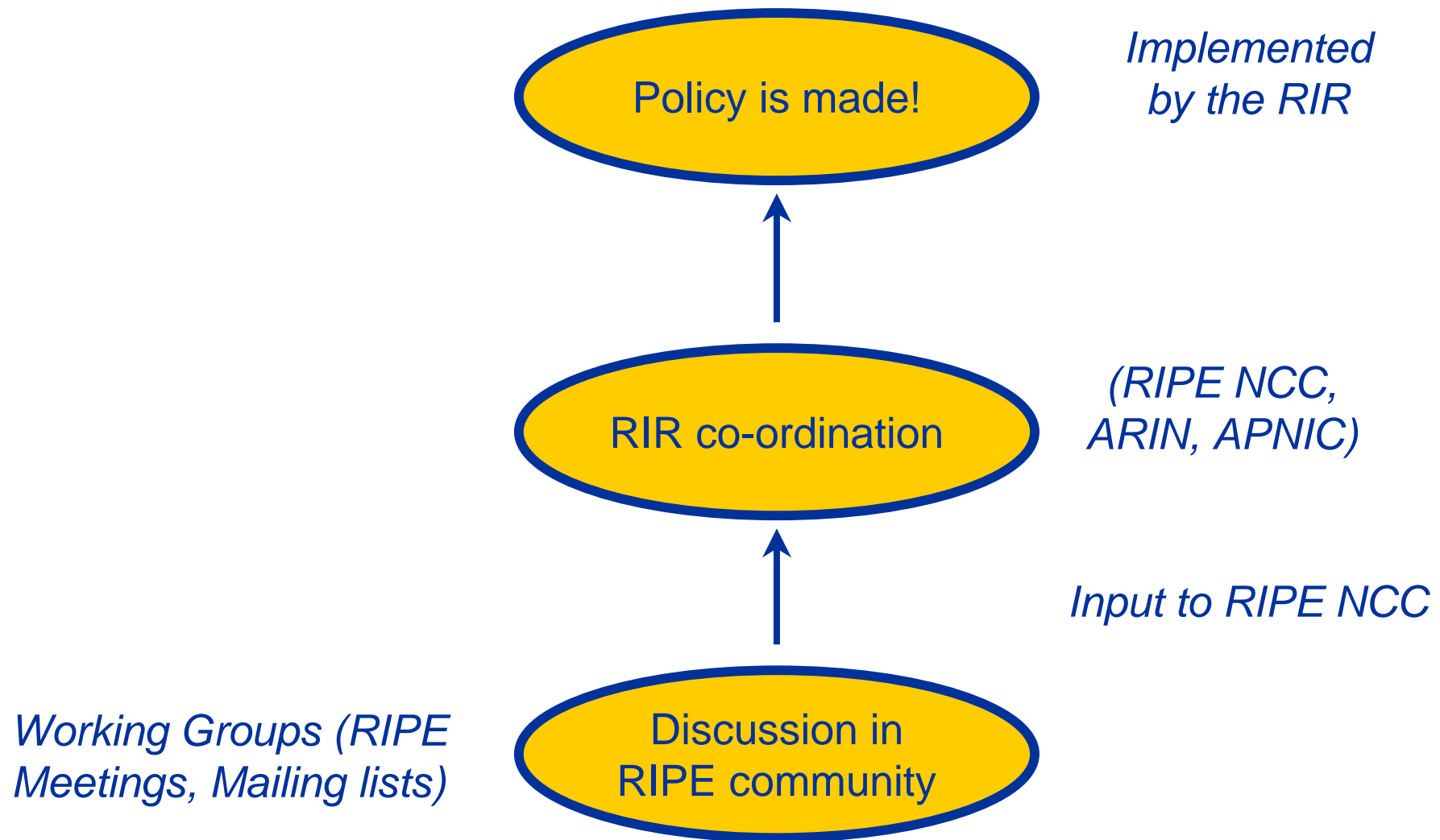
Policy Development



Global Policy Development

- Developed in open policy forums
 - within industry self-regulatory framework
 - by those who need the resources
- Implemented by RIRs
- Responsive policy development
 - fair to all
 - changing requirements of industry
 - new technology (e.g. GPRS, UMTS)

Policy Development





Goals of the Registry System

- Conservation/Efficiency
 - fair distribution of address space
- Aggregation
 - hierarchical distribution of globally unique address space
 - aggregation of routing information
- Registration
 - ensures uniqueness of addresses
 - enables trouble shooting

Fair Distribution of Internet Resources

IPv4

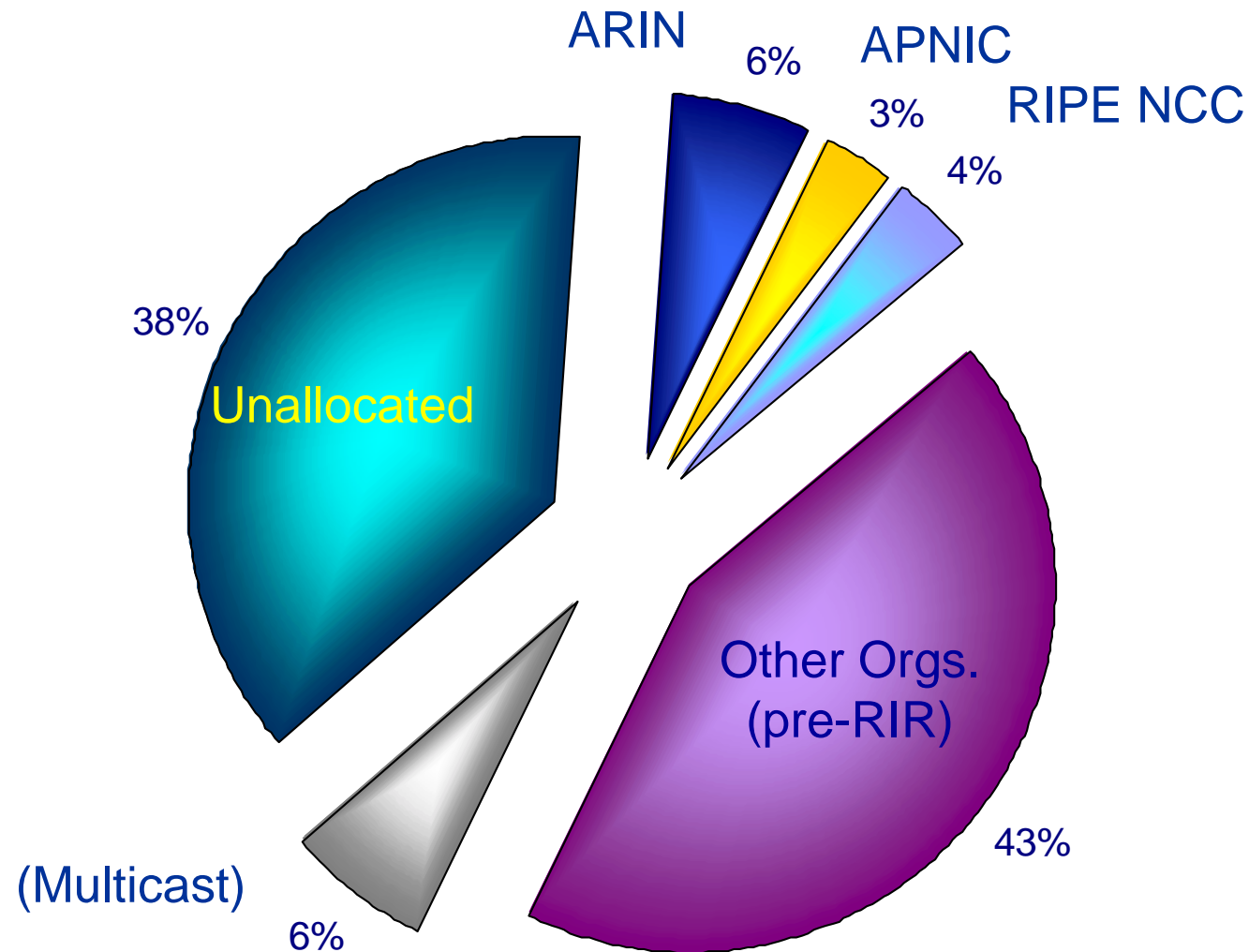
Policies and Utilisation Statistics



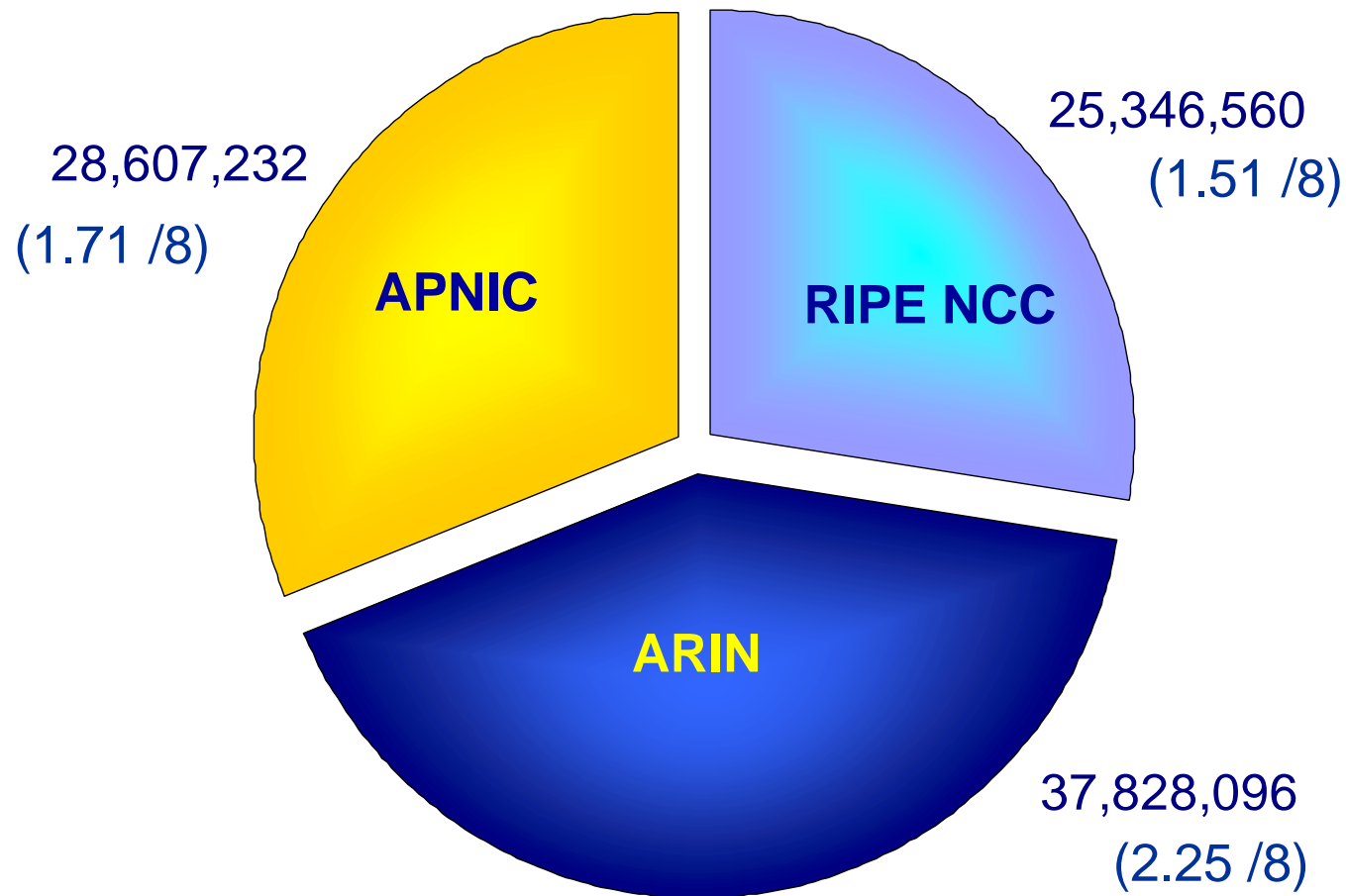
IPv4 Allocation Policies

- RIPE NCC Member (Local Internet Registry)
- Slow Start:
 - initial allocation: /20
 - subsequent allocation based on usage rate
- Support and training to ensure fair distribution
 - Assignment Window
 - LIR Training Courses

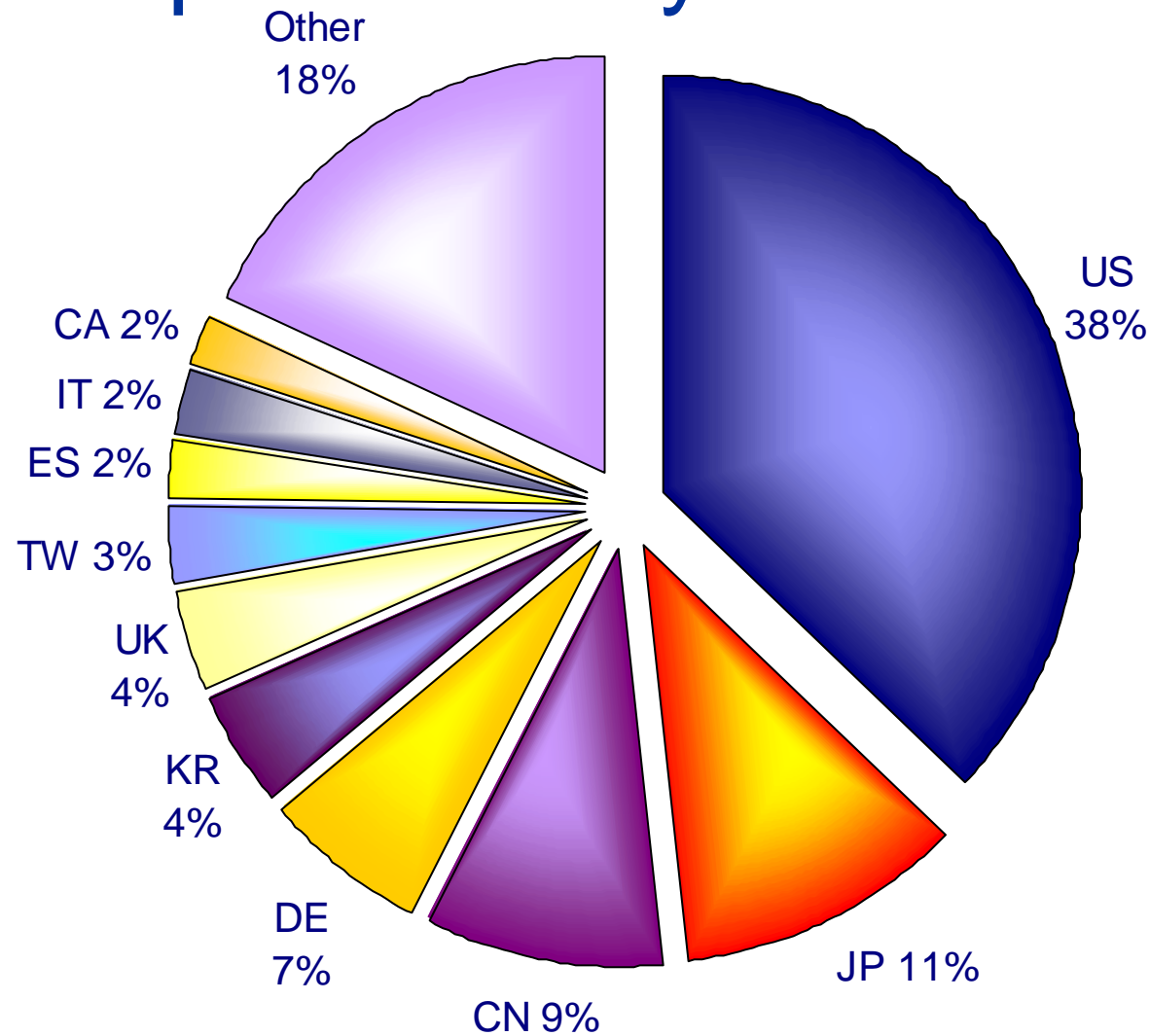
IANA Delegations



Global IPv4 Allocation 2001



Global IPv4 Allocation per Country 2001



IPv6

Status of Policy Development and IPv6 Deployment

IPv6 Allocation Policies (changing)

Peering with ≥ 3 IPv6 networks

AND either

Plan to provide IPv6 services within 12 months

OR

≥ 40 customers (non dial-up)



Global IPv6 Allocation Policies - Bootstrap Phase

Peering with ≥ 3 Autonomous Systems

AND

Plan to provide IPv6 services within 12 months

AND either

≥ 40 IPv4 customers

OR

6bone experience



Duration of Bootstrap Phase

Originally

- Until 100 allocations made worldwide

OR

- 60 allocations within one Region
(but less than 100 worldwide)

- *Bootstrap Phase extended*



IANA Allocations to RIRs

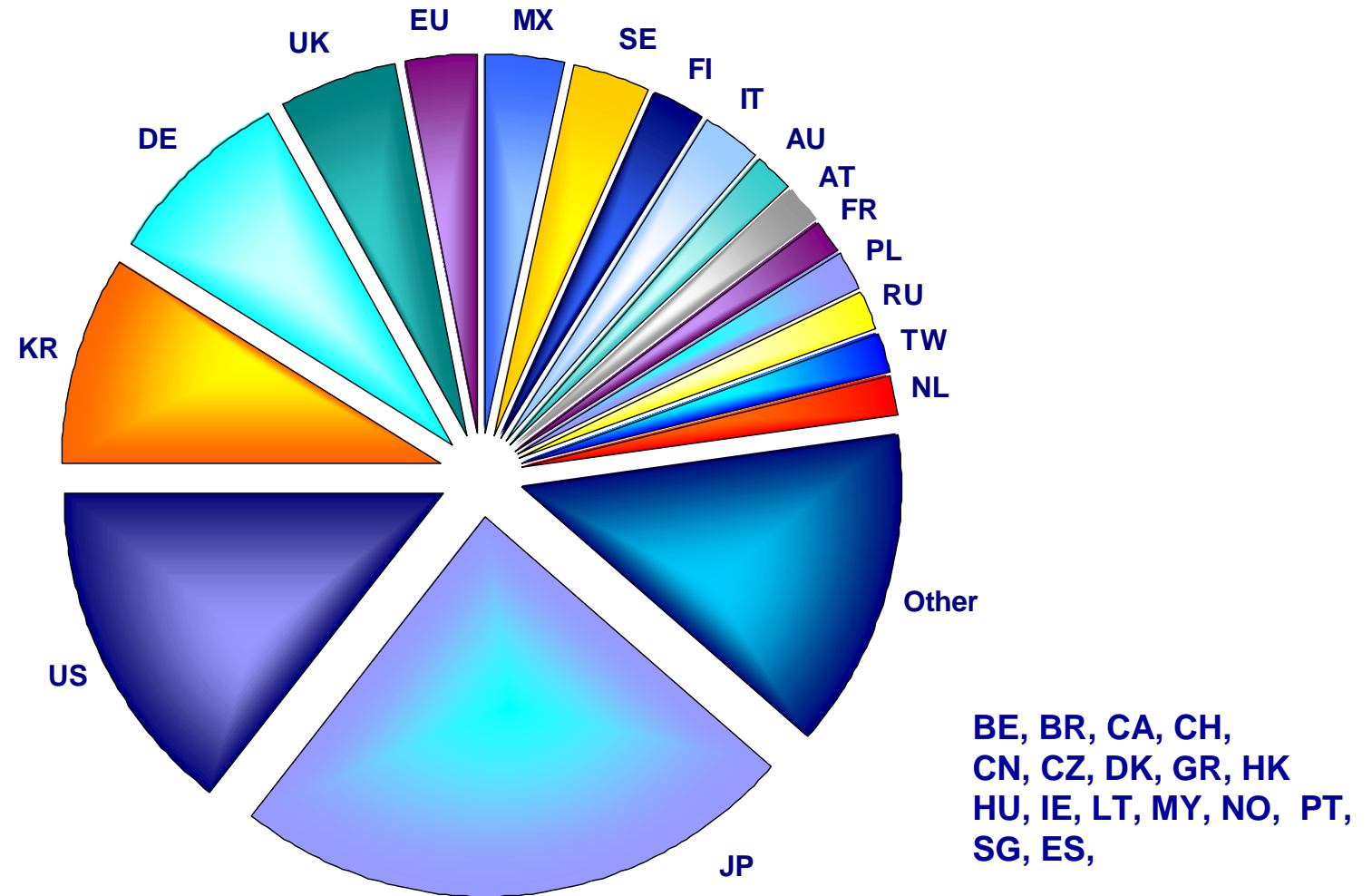
- APNIC: 2001:0200::/23
- ARIN: 2001:0400::/23
- RIPE NCC: 2001:0600::/23



IPv6 Allocations

- Initial Allocation: /35
- Entire /29 reserved (aggregatable)
- APNIC: 49 /35s allocated
- ARIN: 24 /35s allocated
- RIPE NCC: 51 /35s allocated
- List of RIR IPv6 allocations:
<http://www.ripe.net/cgi-bin/ipv6allocs>

Total IPv6 Distribution

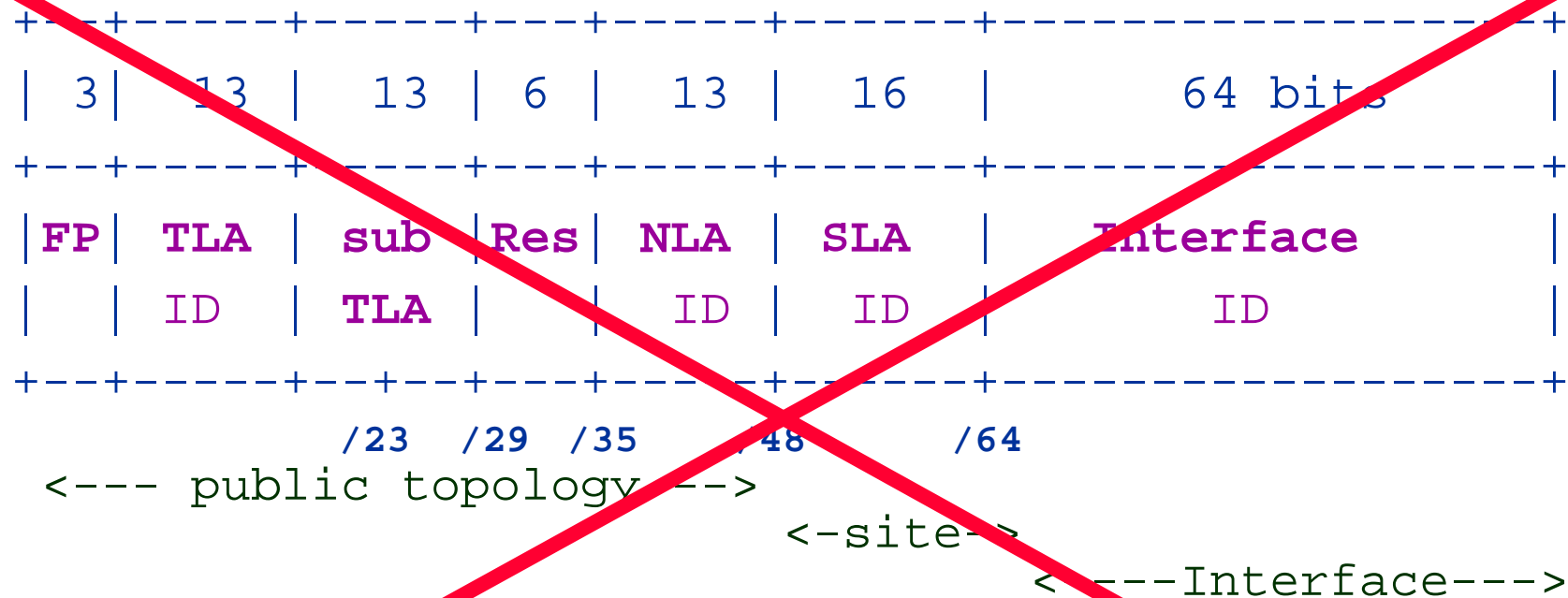




Costs for IPv6 Allocations

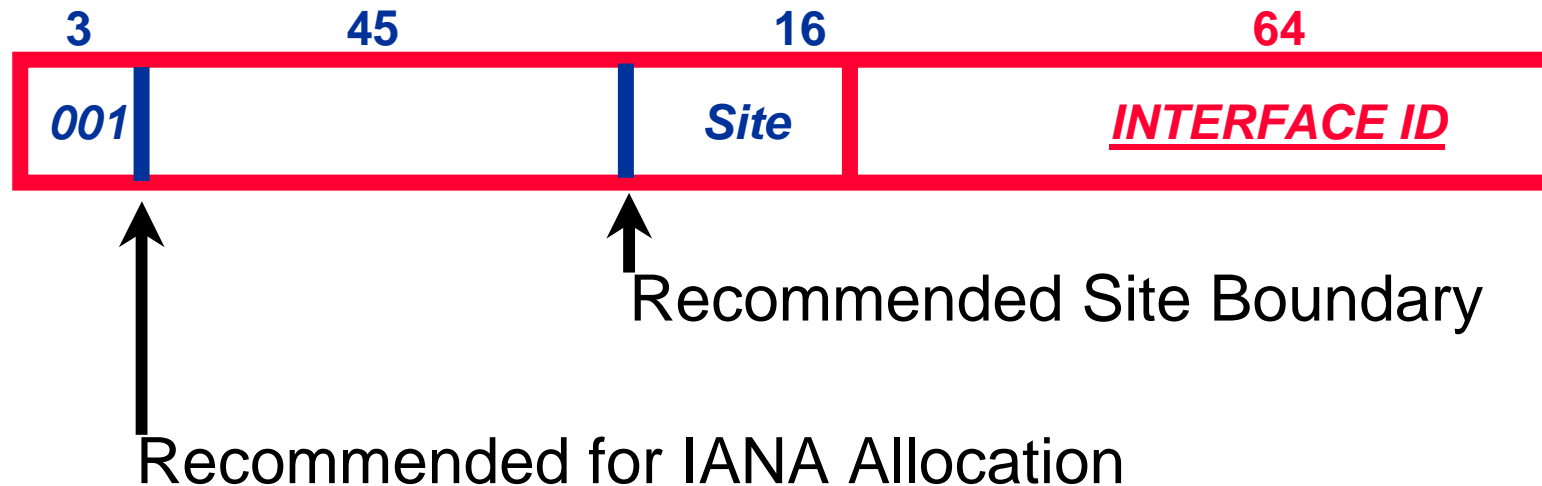
- One of RIPE NCC's Services
 - i.e. no additional charge for members (LIRs)
 - annual service fee approved by members
 - “RIPE NCC Charging Scheme 2001”
- Running a Local Internet Registry
 - costs resources
 - staff training
 - customer services
 - resource maintenance
 - “Guidelines for Setting up a Local Internet Registry at the RIPE NCC”

Old IPv6 Address Boundaries



(RFC 2374 - Mixes technology and policy)

New IPv6 Unicast Address: **Technology** and **Recommendations**



Technology is what can be Hard-Coded in Routers



Proposed Allocation Principles

- Recognise existing infrastructure
 - IPv4 and IPv6
- Minimum allocation - only for new organisations
- Measure Utilisation Rate with HD ratio (RFC 3194)
- Subsequent Allocations when HD ratio met
- New policy document
 - <http://www.ripe.net/ripenncc/member-services/registration/ipv6/global-ipv6-assign-2001-12-22.html>
- Global IPv6 policy discussion list
 - [<global-v6@lists.apnic.net>](mailto:global-v6@lists.apnic.net)



Presentations & Discussion Papers

- RIR Allocation Statistics

<http://www.aso.icann.org/rirs/stats/index.html>

- IAB/IESG Addressing recommendations

<http://www.ietf.org/rfc/rfc3177.txt>

- IPv6 Presentations at last RIPE Meeting

<http://www.ripe.net/ripe/meetings/archive/ripe-41/index.html>

- IPv6 Addressing policy and technology

<http://www.ripe.net/presentations>



Pointers & References

- IPv6 Allocation Policies

<http://www.ripe.net/ipv6.html>

<http://www.ripe.net/ripe/docs/ripe-196.html>

- RIPE Meetings & Mailing lists

<http://www.ripe.net/meetings/ripe/index.html>

<http://www.ripe.net/ripe/wg/lir/index.html>

<http://www.ripe.net/ripe/wg/ipv6/index.html>

- RIPE Documents & FAQ

<http://www.ripe.net/ripe/docs/>

<http://www.ripe.net/ripenncc/faq/registration/qa7.html>

Questions



<http://www.ripe.net/presentations>