



IPv4 Exhaustion & Ipv6 Status

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RIPE NCC

Located in Amsterdam

Not for profit membership
organisation

6000+ active members

Started by the RIPE community
in 1992

One of five RIRs

RIPE NCC services

Member services

Distributing resources

IPv4

IPv6

AS numbers

Training Courses

LIR

Routing Registry

DNS for LIRs

Public services

RIPE Database

Reverse DNS

ENUM (e164.arpa)

K-root nameserver

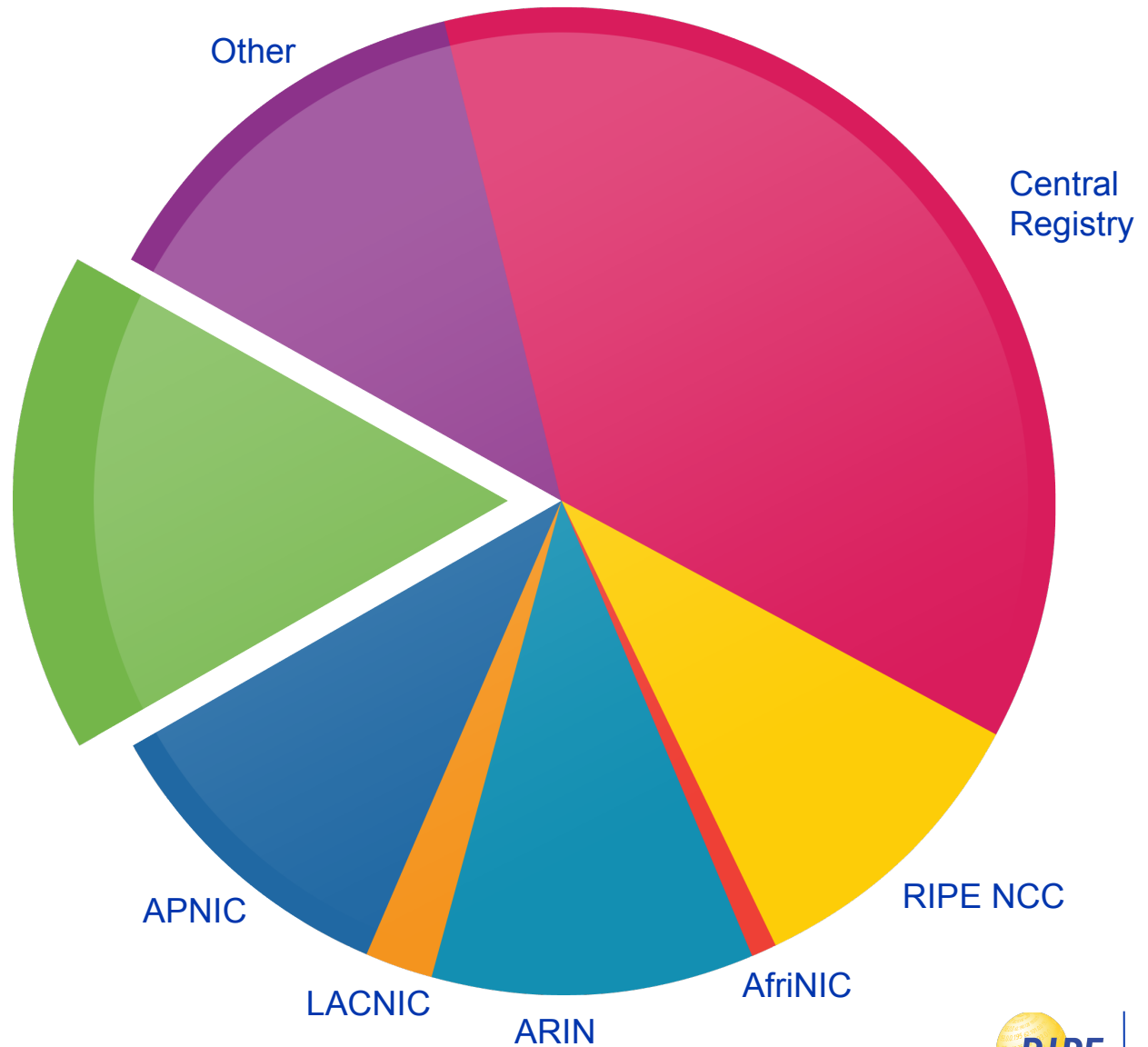
E-learning



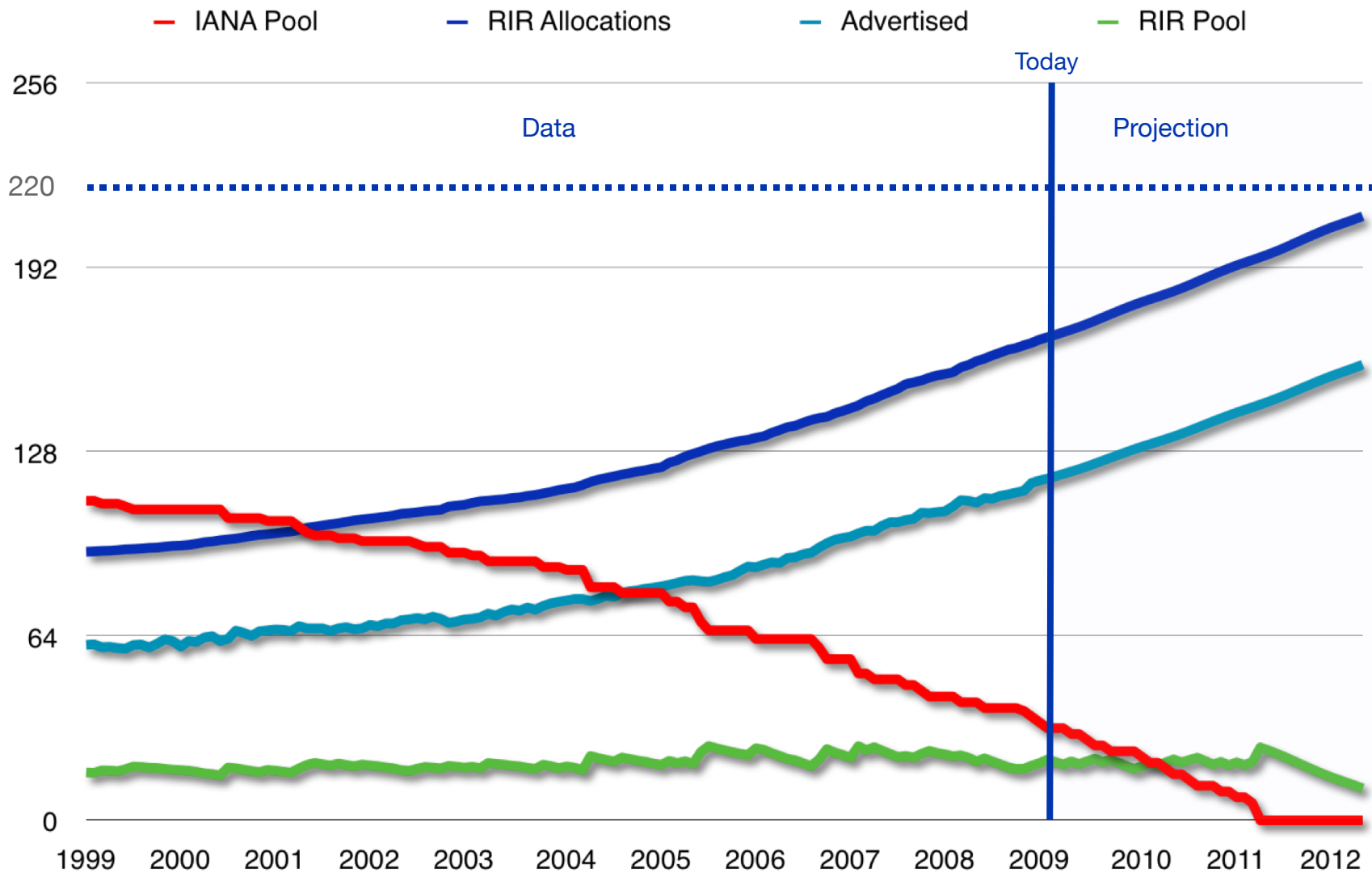
IPv4 exhaustion

Overall IPv4 address pool

13%
available



IPv4 Pool - The Future



Challenges for staying with IPv4

Finding “available” addresses

- redeploying?
- buying?

Network Address Translation (NAT)

- management overhead
- lower class Internet hosts



Why IPv6

IPv6: more addresses available

IPv6 address: 128 bits

- 32 bits in IPv4

Huge subnets

Huge allocations

Extra levels or hierarchy

IPv6 deployment challenges

Legacy devices

Firewalls

IPv6 / IPv4 priority

Make the transition on time

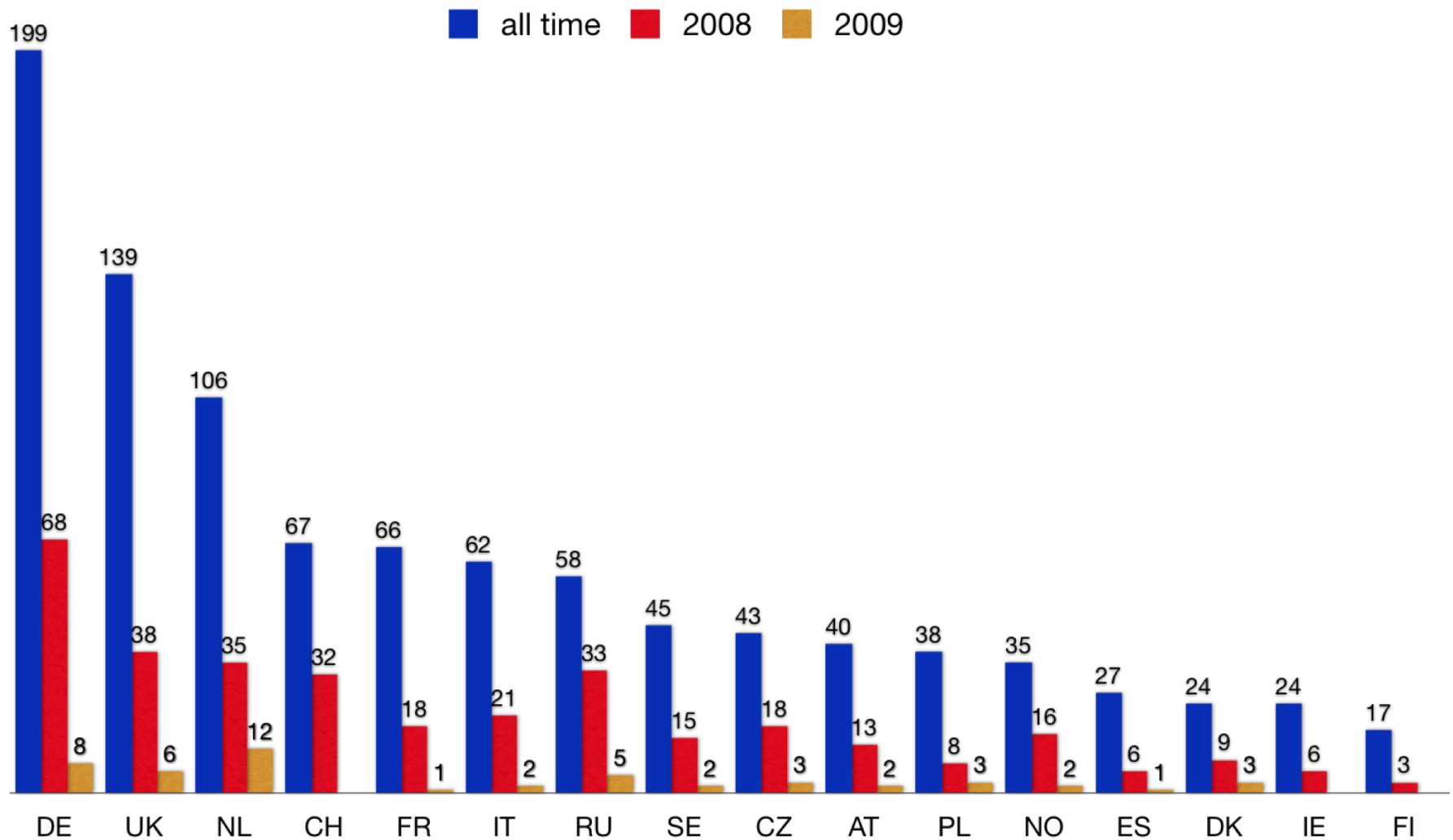
Give priority to IPv6 deployment

Get IPv6 addresses

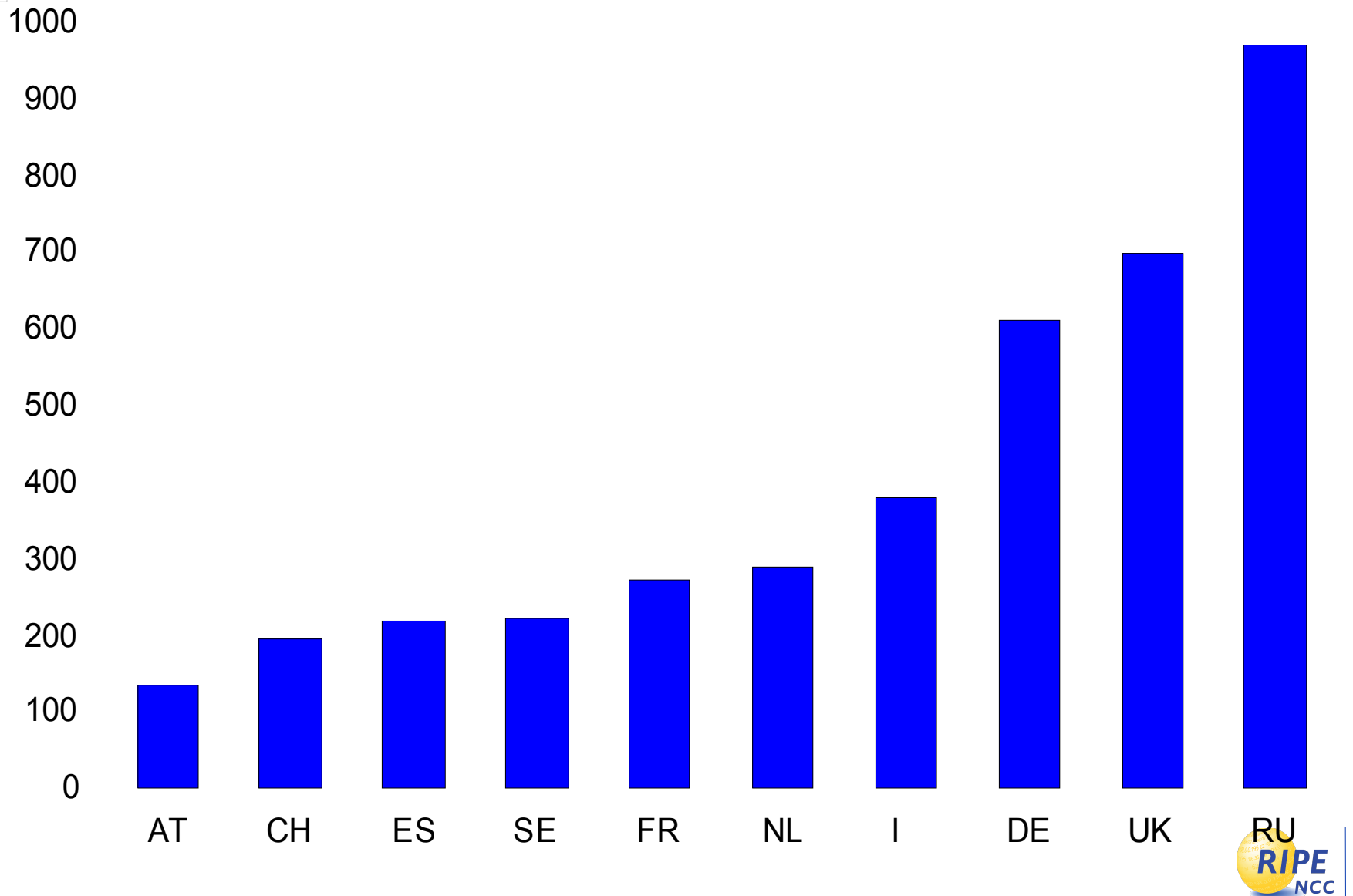
Train your staff

Make your services available over IPv6 and IPv4
("dualstacking")

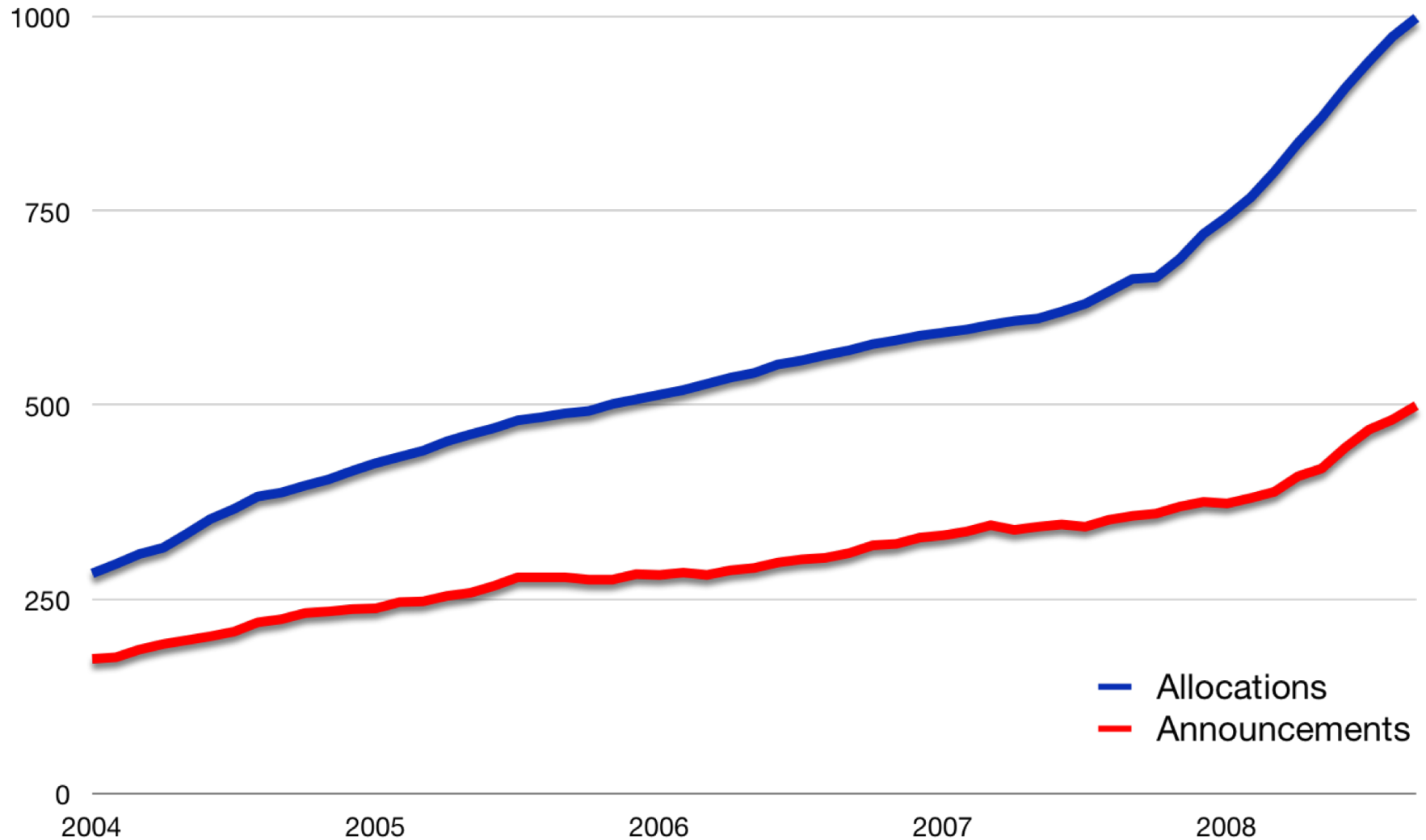
IPv6 Allocations per Country



Active LIRs per Country



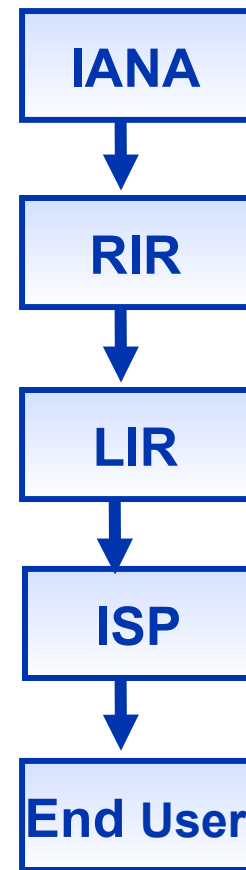
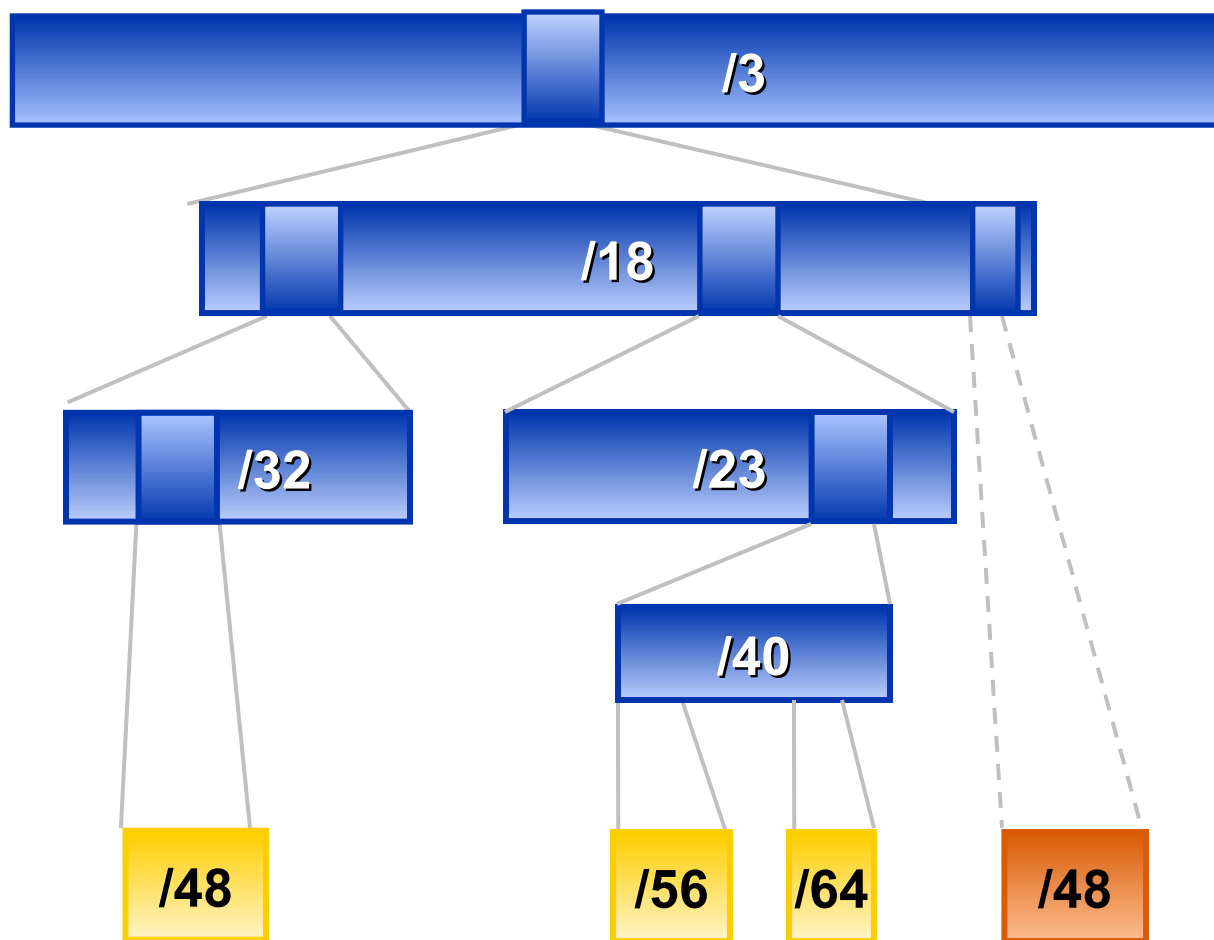
IPv6 Routing





Getting IPv6

IPv6 address space distribution



 Allocation  Assignment  PI Assignment

To get an IPv6 allocation

Be an LIR

Advertise the allocation as a single prefix

Have a plan for making assignments within two years

Minimum size: /32

For further allocations

- allocation should be used by HD ratio of 0.94
- the unit of measurement is /56

Getting IPv6 if you are not LIR

Get a sub-allocation from an LIR

Get an assignment from an LIR

- /48 or /56 for the End User sites
- /64 for one subnet
- /128 for hosts

Provider Independent (PI) IPv6 assignments - soon

<http://www.ripe.net/ripe/policies/proposals/2006-01.html>

How much does IPv6 allocation cost?

IPv6 allocations do not cost anything extra to LIRs

- a resource covered with a yearly membership fee

New LIRs start in the “Extra Small” billing category

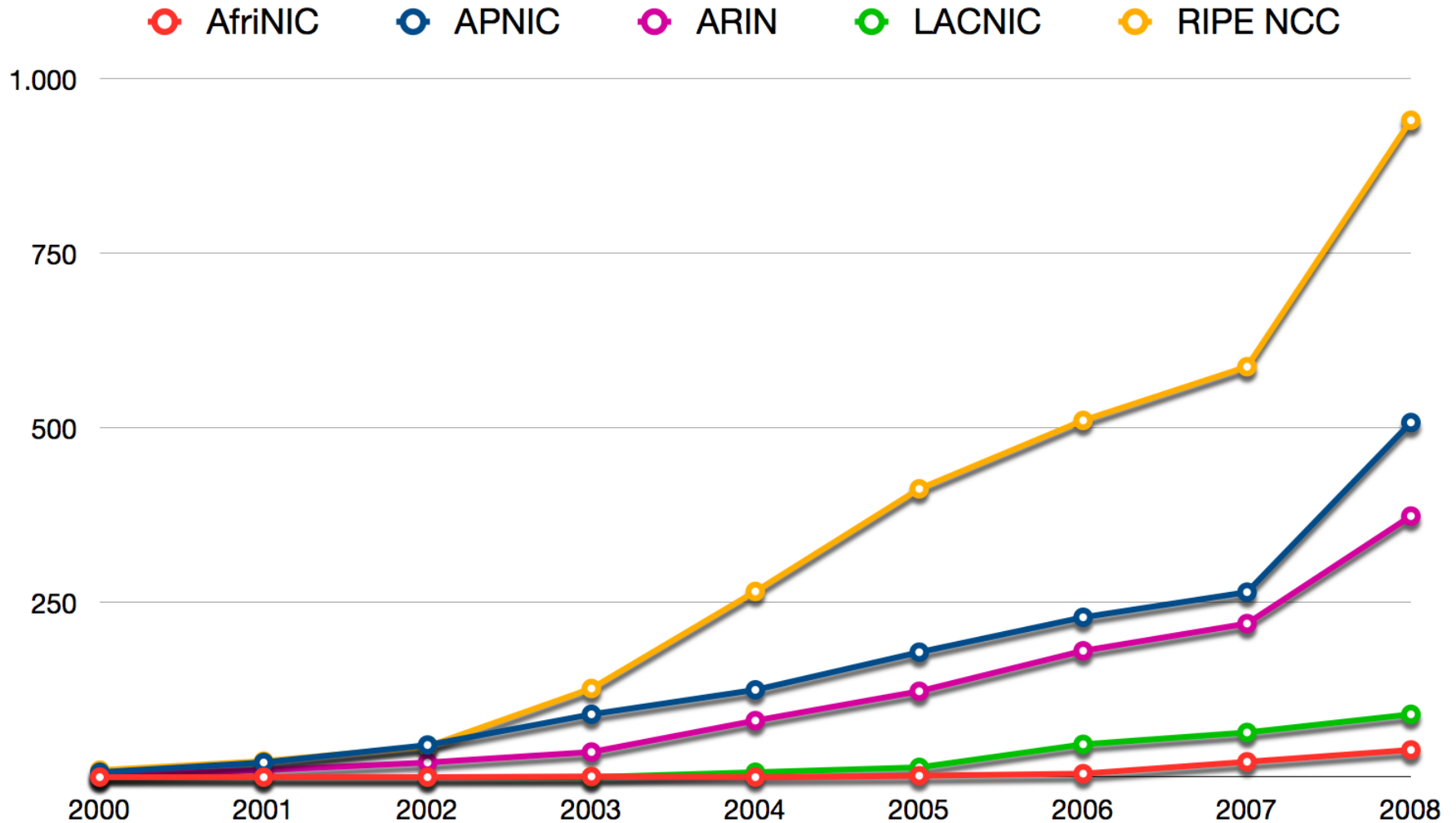
- yearly fee for 2009 is 1,300.- EUR

/32 of IPv6 is worth “1 scoring point”

- the same as /21 of IPv4, or one AS number
- /48 of PI IPv6 will also “cost” 1 scoring point

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

IPv6 Allocations



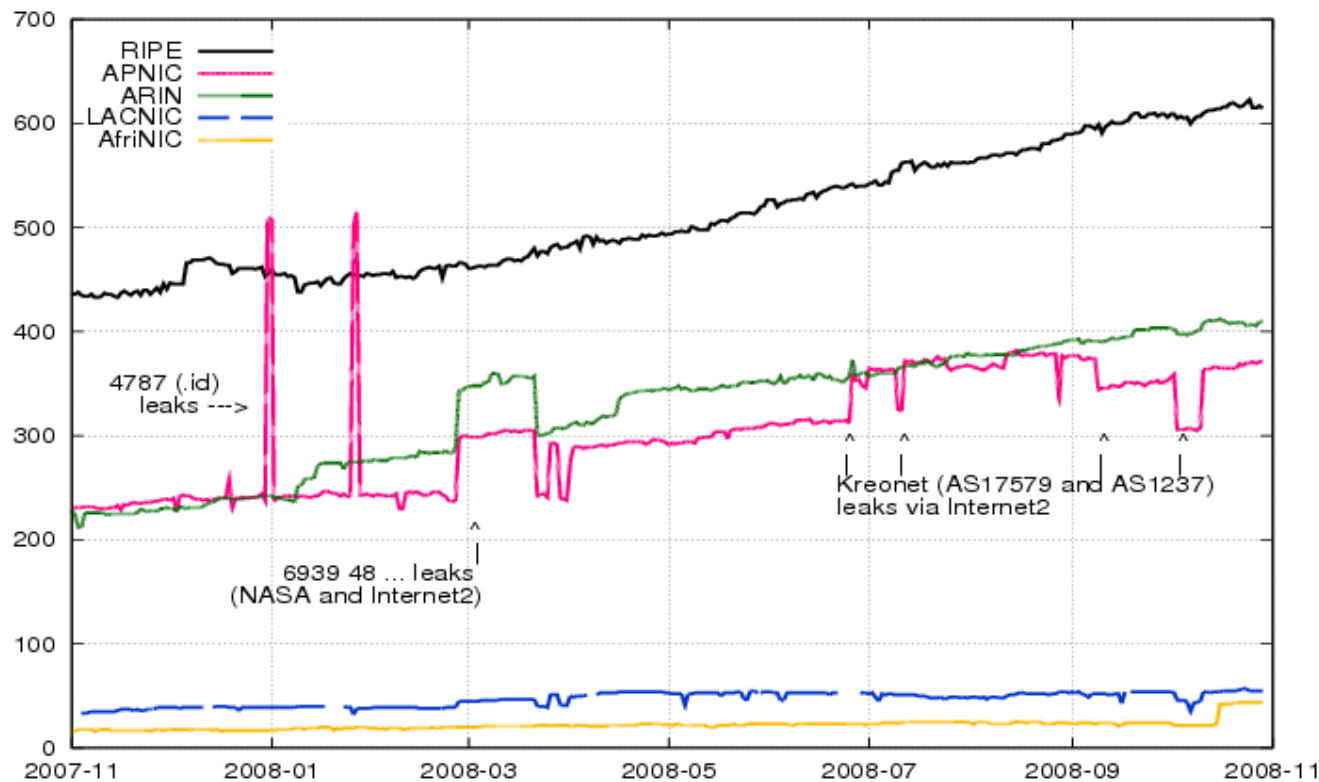
IPv6 routing table (prefixes by region)

IPv6 routing table

Graphics

6

Graphics: prefixes by RIR region



All RIPE NCC services IPv6 enabled

External online services	1
E-mail (ripe.net, nro.net, aso.icann.org)	Y
ftp.ripe.net	Y
www.ripe.net	Y
LIR Portal	Y
RIPE DB (whois)	
Queries (whois)	Y
Updates	Y
DNSMON	Y

Links

IPv6 info, news, education, fun

<http://www.ripe.net/ipv6/> | <http://www.getipv6.info/> | <http://www.6diss.org/e-learning>
<http://yapc.tv/2008/ye/lt/lt2-15-kane-fck/> | “The day that routers died” |

RIPE Policy Development Process

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

RIR Comparative Policy Overview

<http://www.nro.net/documents/comp-pol.htm>

RIPE NCC Member Update

<http://www.ripe.net/membership/newsletter/2008/newsletter14.pdf>

Conclusion

Increase IPv6 deployment

- Easier access to resources

- Raise awareness

Get ready for IPv4 endgame

- Minimise depletion impact

- Increased contact with space holders

- Increased efficiency in usage

- Enabling usage of allocated but unused space

- Pre-RIR blocks to be included in the system

- Focus on fairness and responsible stewardship