



RIPE NCC LIR Tutorial

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The Internet Registry (IR) system

Getting resources

RIPE Database



What is an LIR?

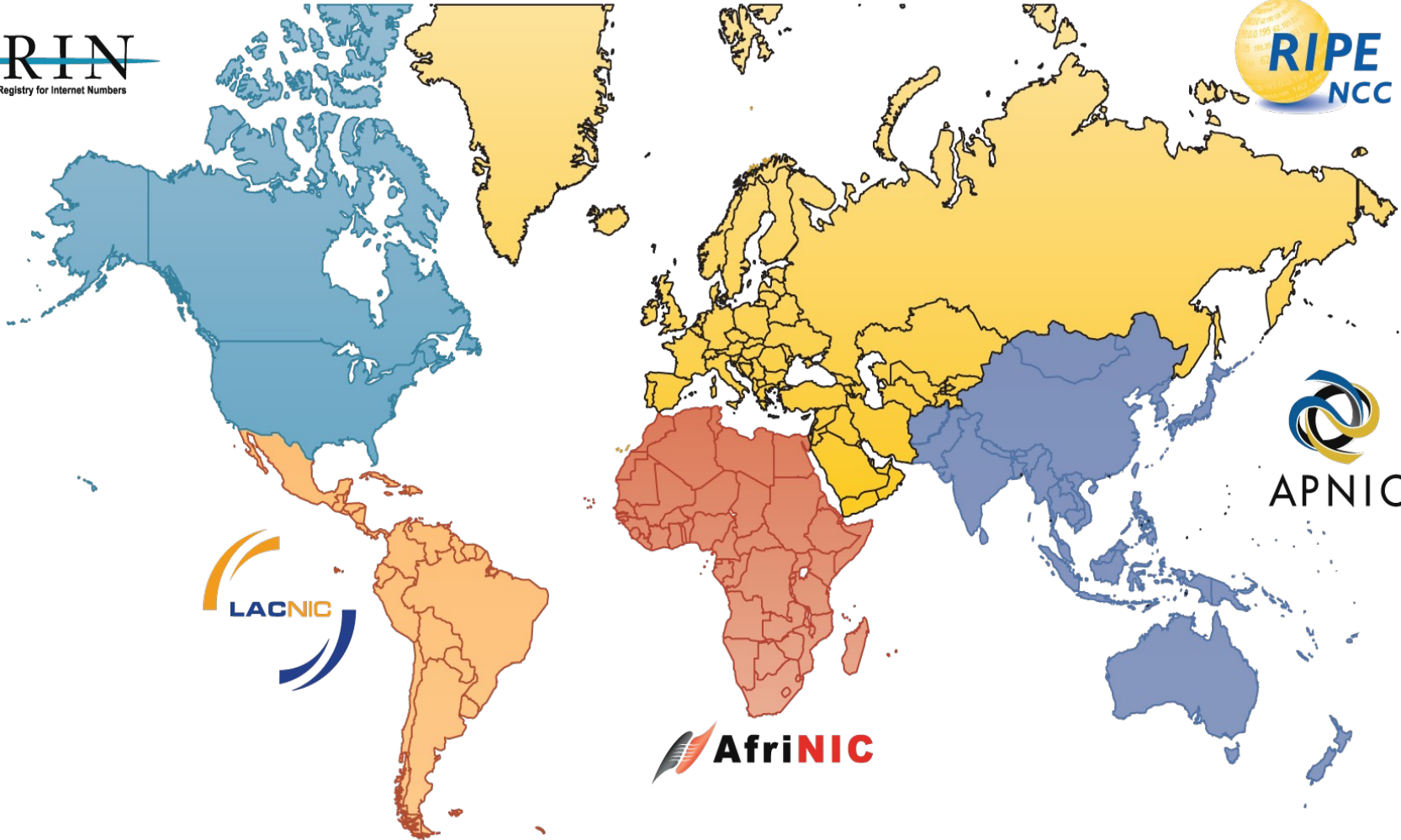
- **Local Internet Registry**
 - responsible for obtaining, distributing and registering IP resources, according to the RIPE policies
- **Member of the RIPE NCC**
 - receiving resources directly from the RIPE NCC
 - RIPE NCC is a Regional Internet Registry (RIR)
- **Benefits**
 - flexibility
 - independence (BGP multihoming)



The Internet Registry System



RIR Service Regions





Goals: Registration

Why?

- Ensure uniqueness of Internet number resources
- Provide contact information for users of Internet number resources

How?

- RIR whois databases

Results:

- IP address space used only by one organisation
- Information available on users of Internet number resources



Goals: Aggregation

Why?

- Routing tables growing too fast
- Provide scalable routing solution for Internet

How?

- Encourage announcement of whole allocations
- Introduction of Classless Inter Domain Routing (CIDR)

Result:

- Growth of routing tables has slowed, but could still be better



Goals: Conservation

Why?

- IP address space and AS Numbers are limited resources
- These resources were not used efficiently in the past

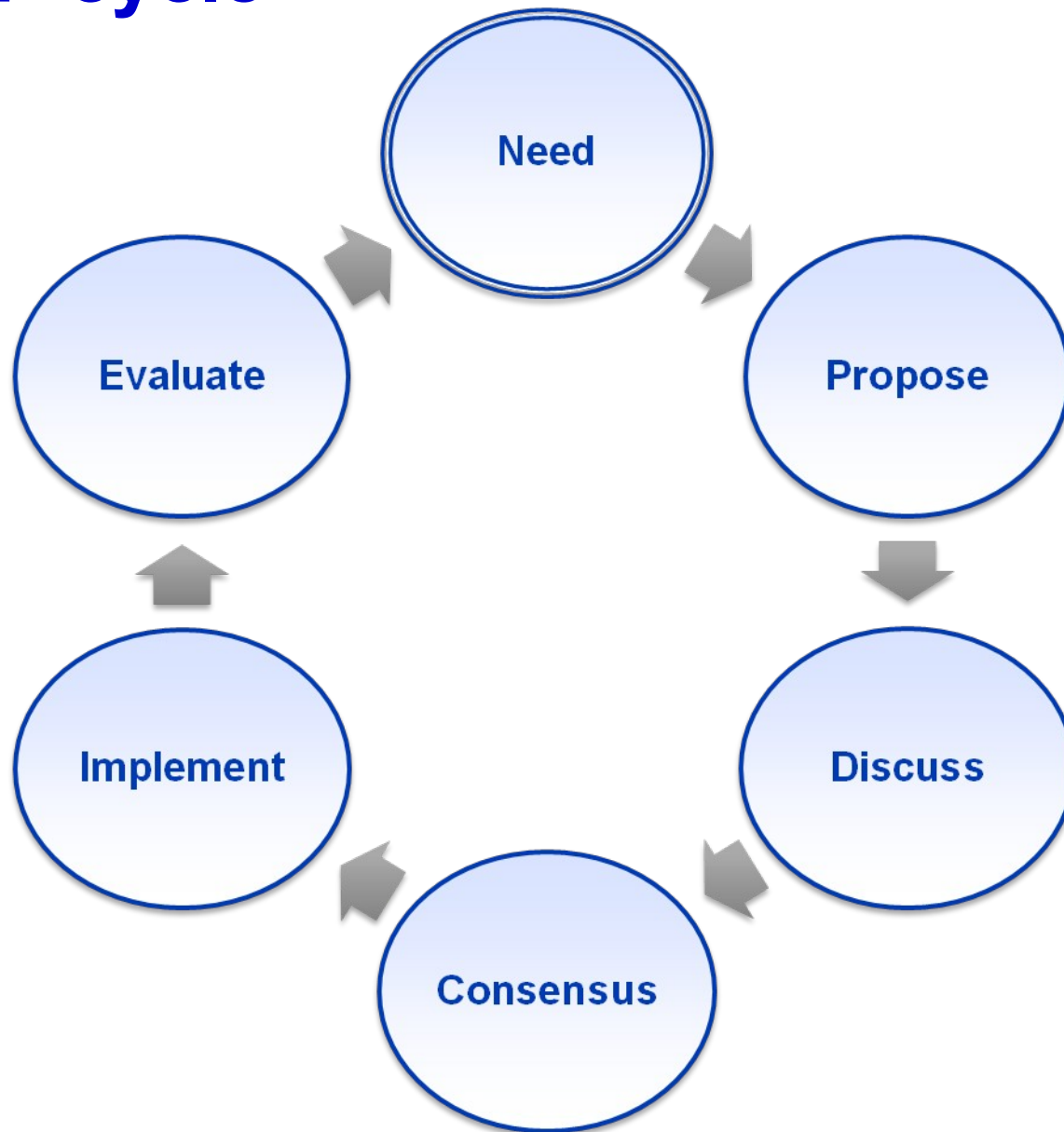
How?

- Introduction of CIDR
- Policies to ensure fair usage

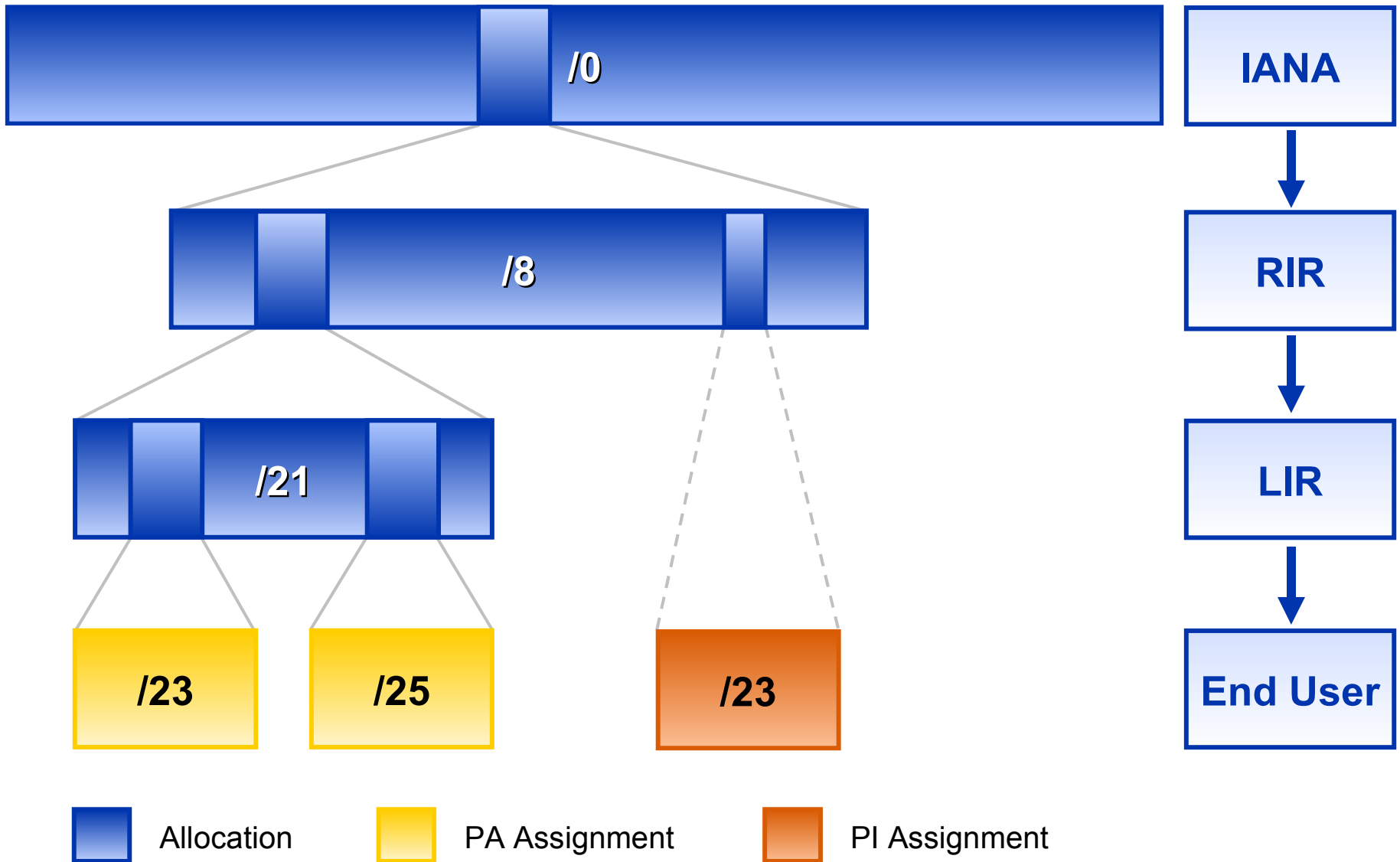
Results:

- Growth in IP address space usage slowed down
- Internet number resources are distributed based on need

PDP cycle



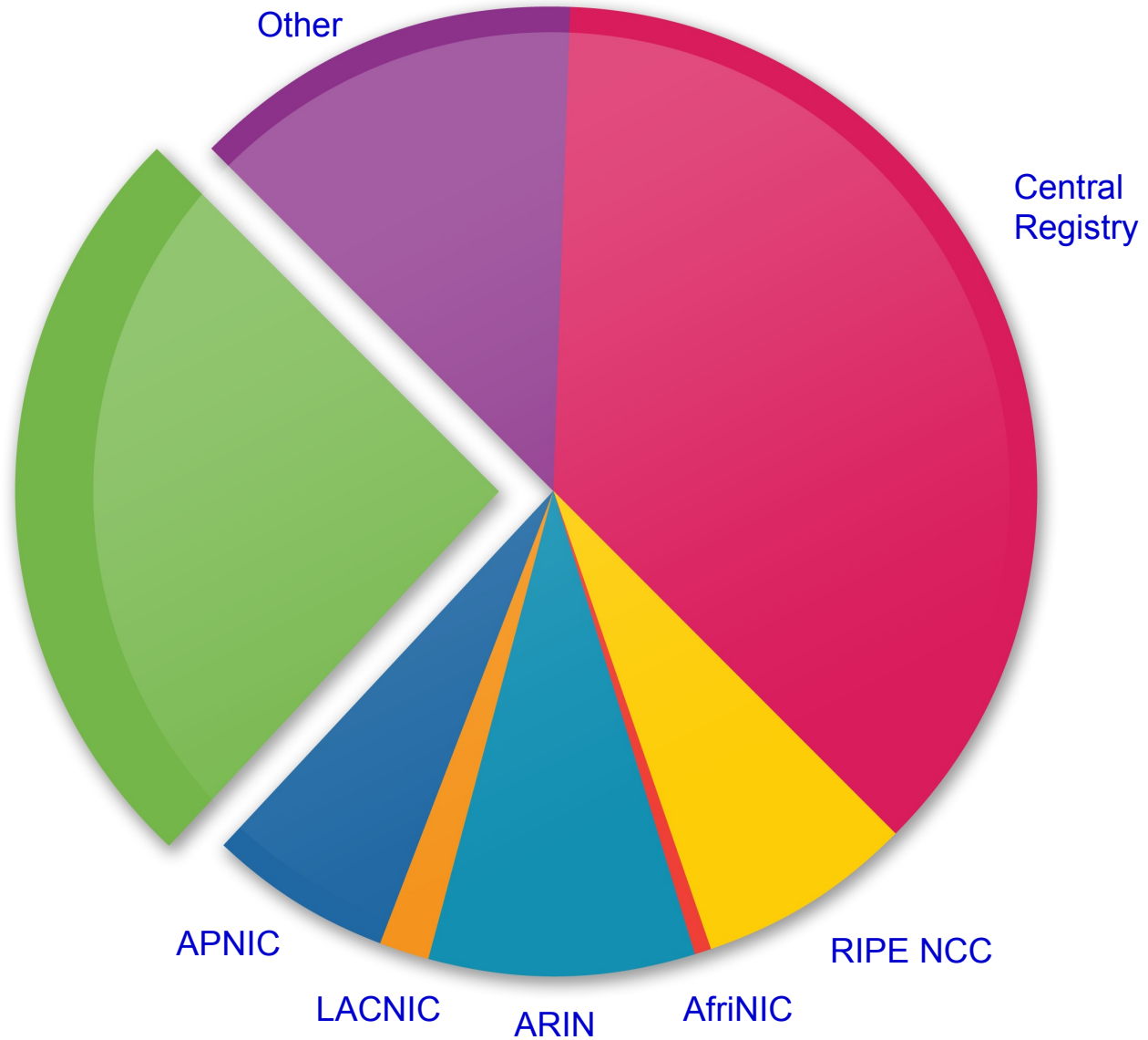
IP Address Distribution





IPv4 Address Pool – June 2005

25%
available

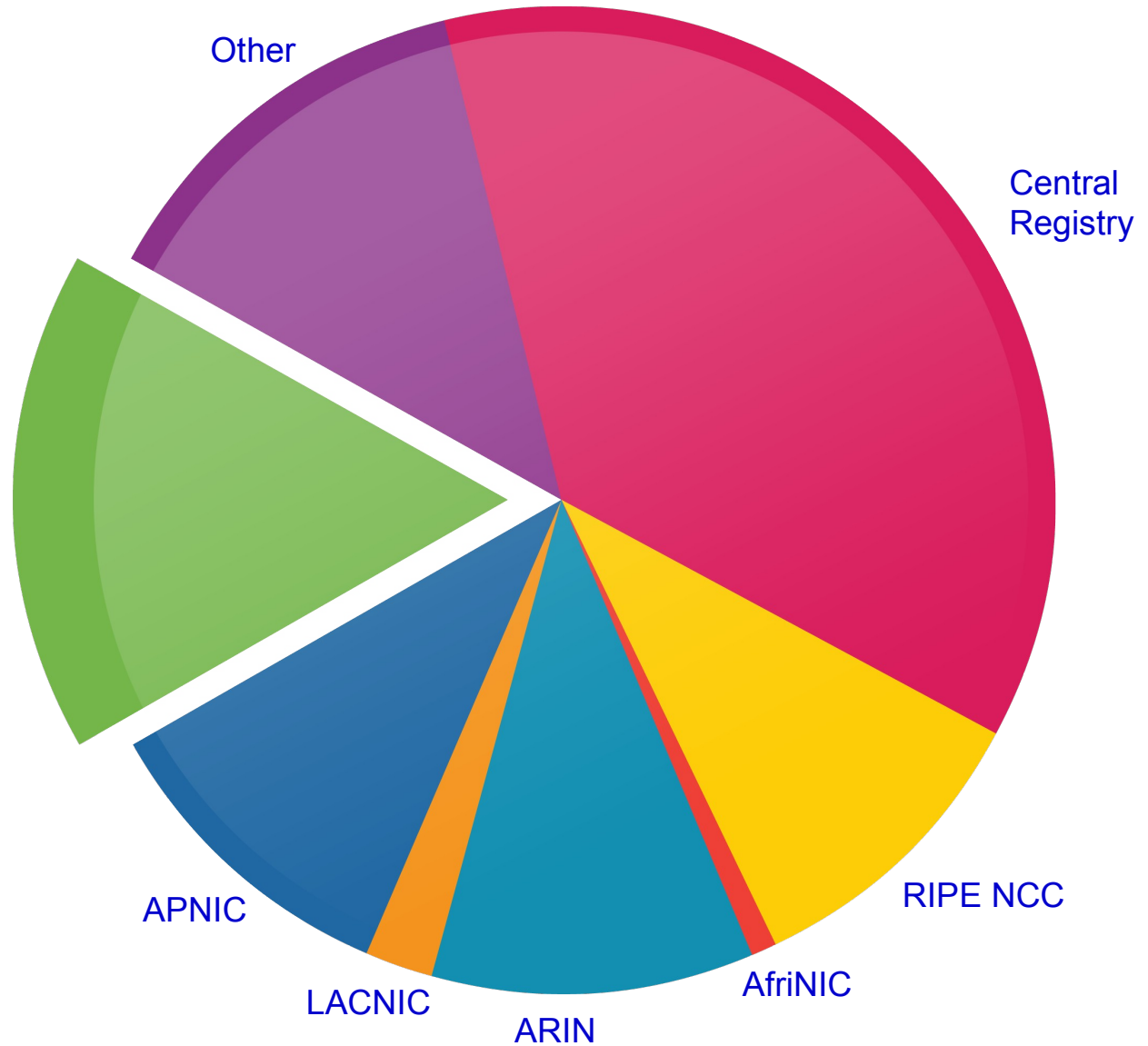


source: <http://potaroo.net>



IPv4 Address Pool - Now

16%
available

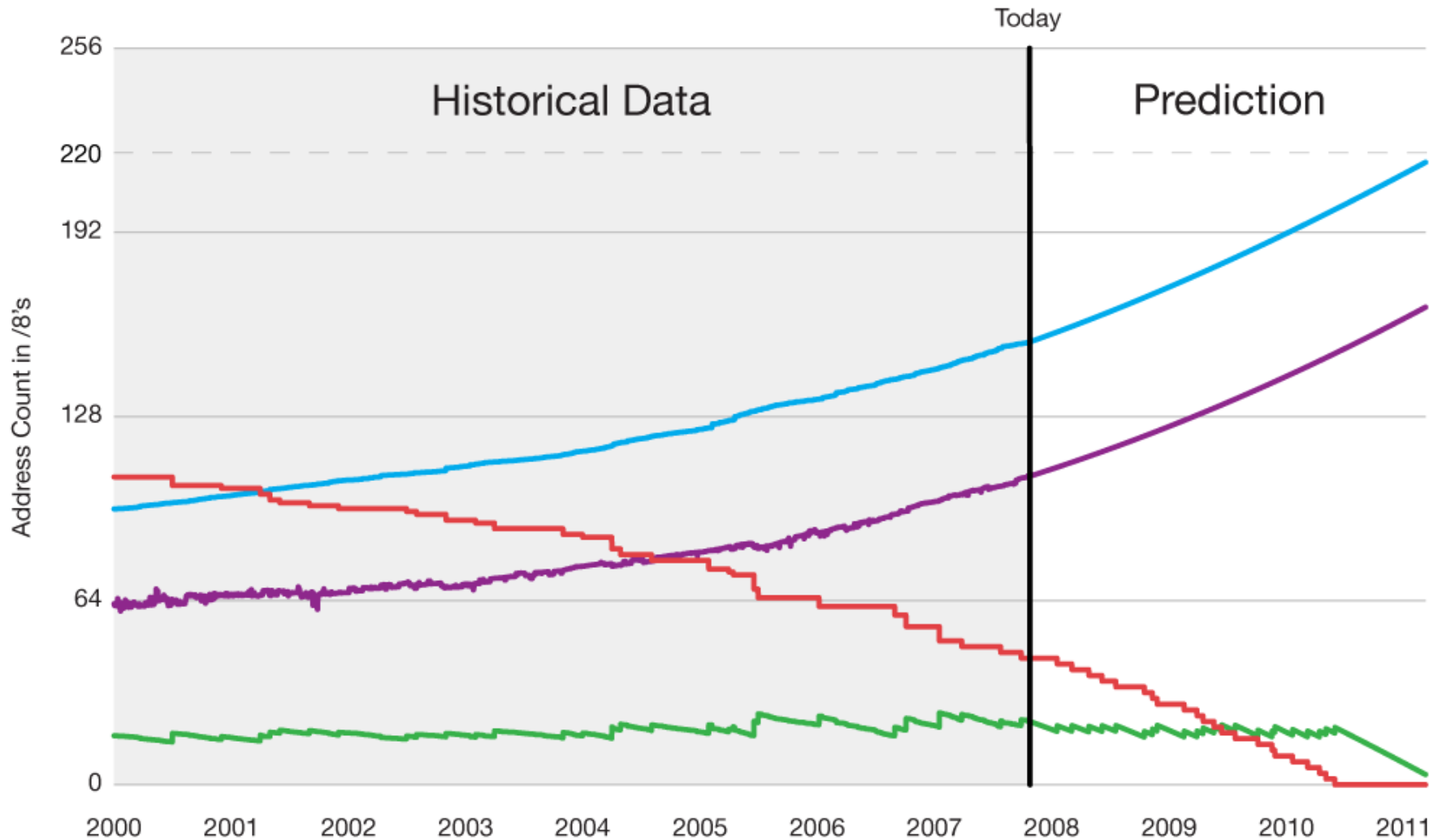


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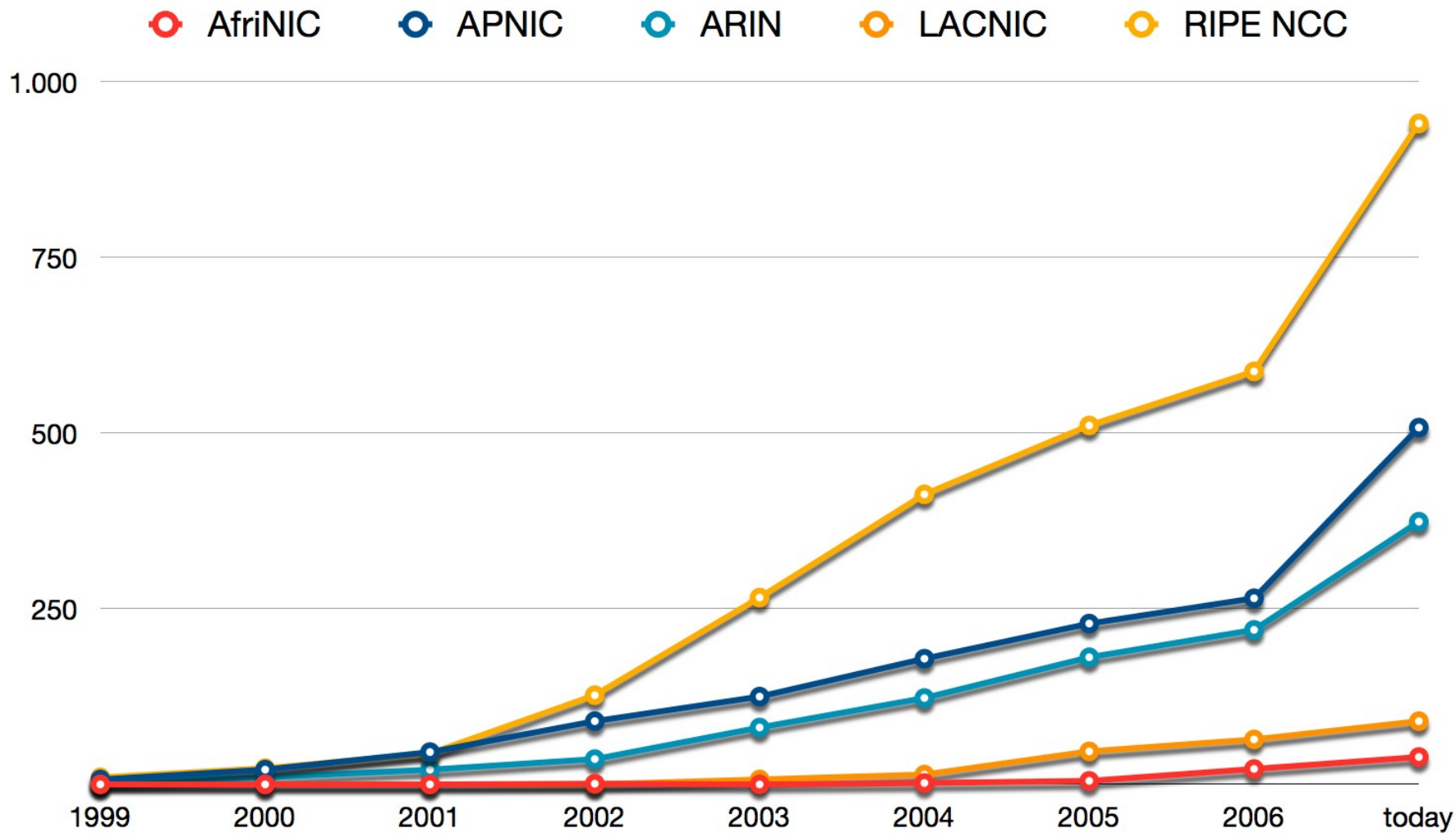
Lies, Damn Lies and....

— IANA Pool — RIR Pool — Allocated — Advertised

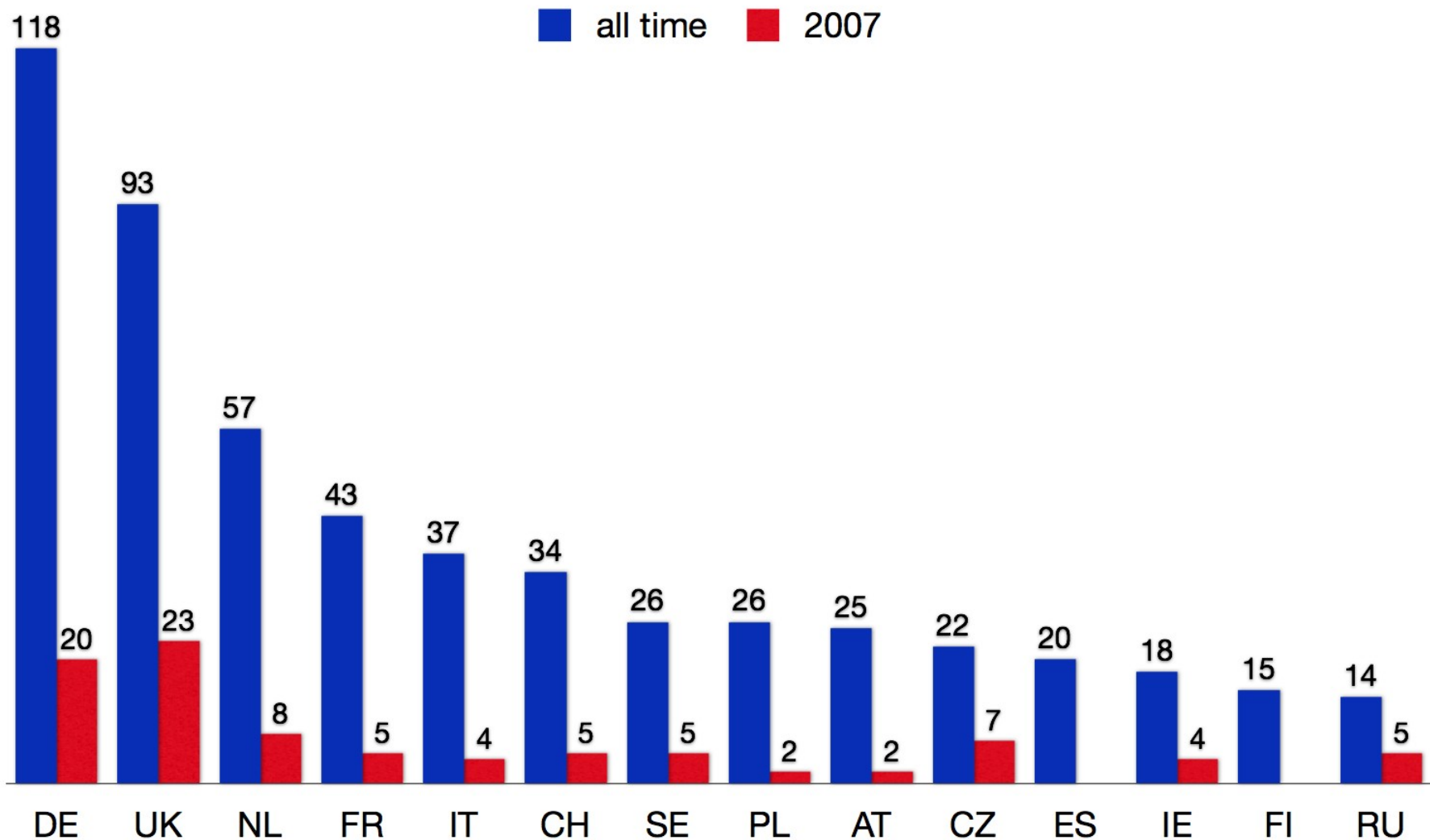




IPv6 Allocations



IPv6 Allocations per Country



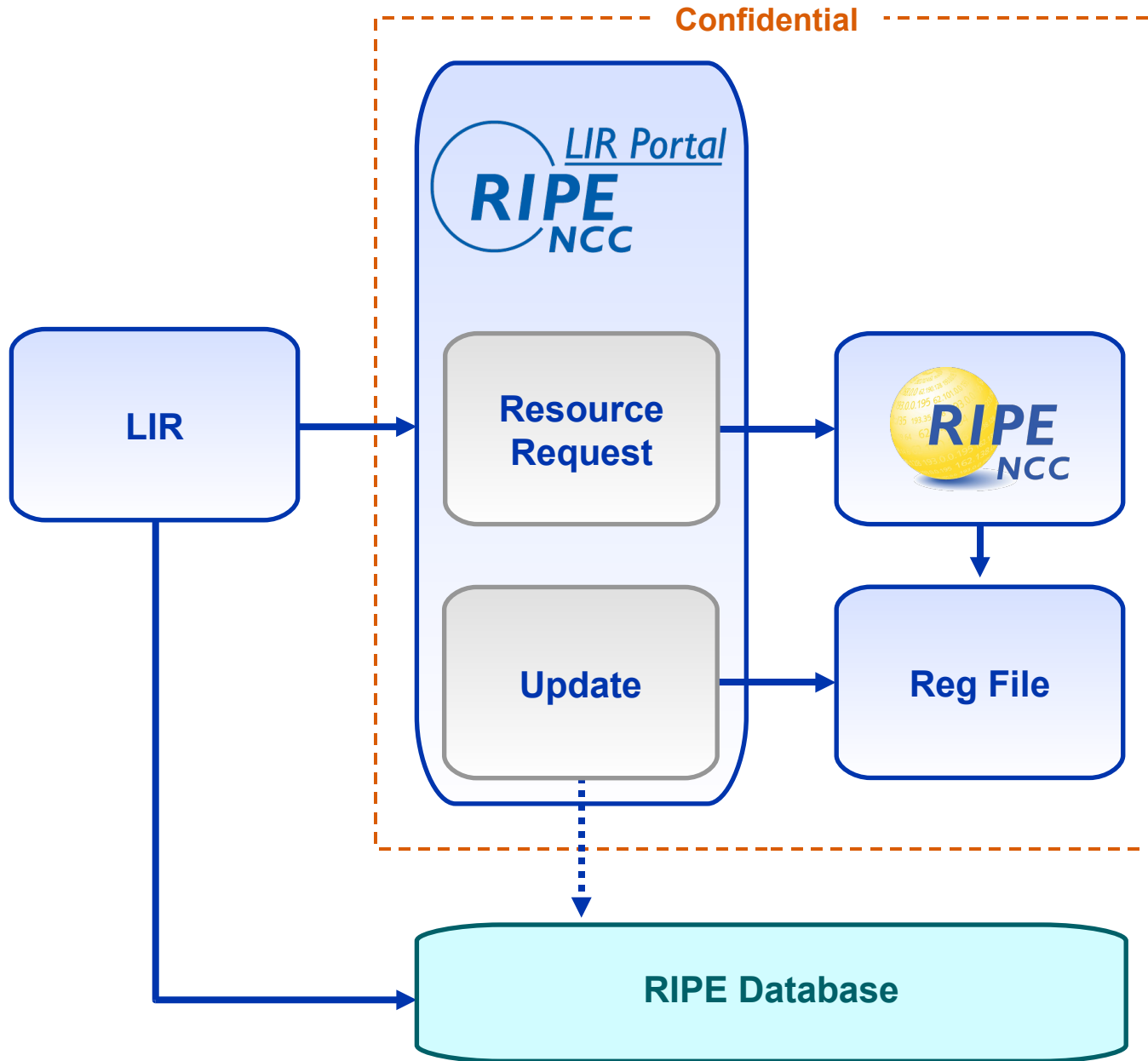


Questions?





Getting Resources





IPv4 Allocation

- If you...
 - are an LIR
 - need IPv4 addresses

- Minimum allocation size is /21



IPv6 Allocation

- If you...
 - are an LIR
 - advertise the allocation as a single prefix
 - have a plan for making assignments within two years

- Minimum allocation size is /32



Assignment Window (AW)

Maximum number of IP addresses the LIR can assign without approval from the RIPE NCC

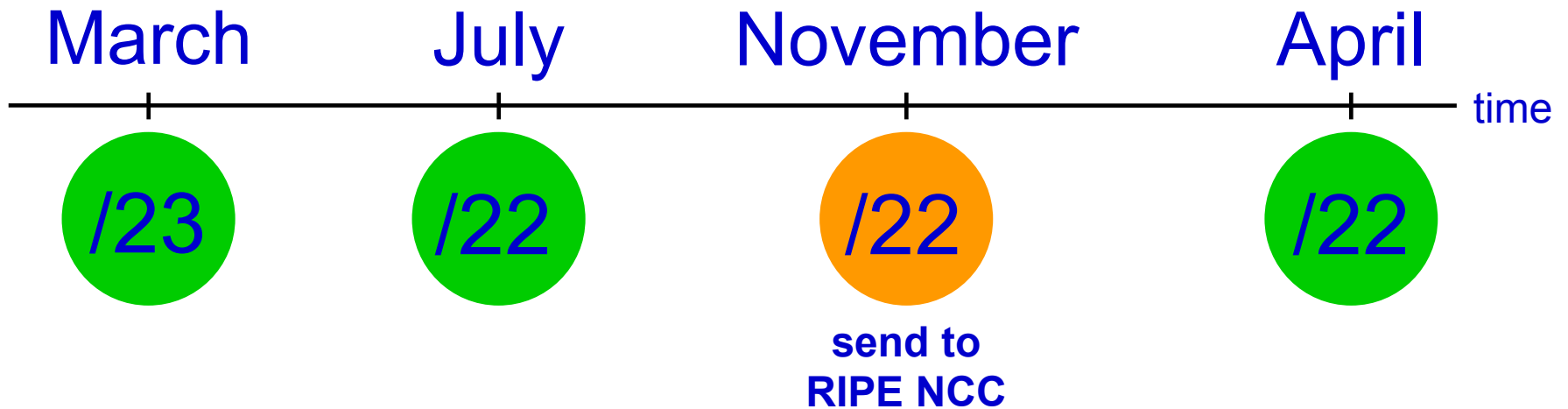
- To any End User within 12 months
- New LIR: $AW = 0$
- Six months after the first allocation: $AW = /21$



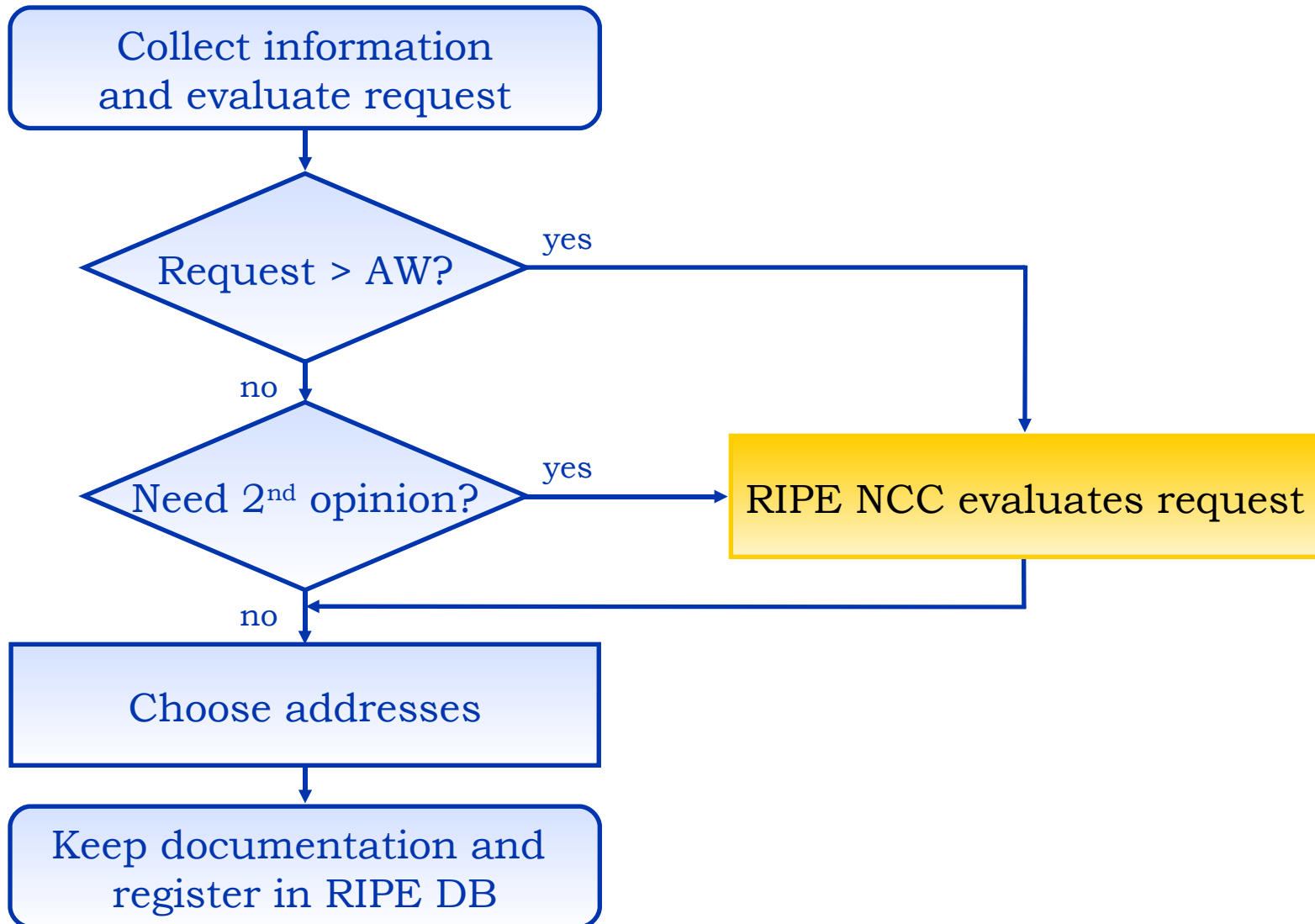
Using your AW

The AW is /21

All requests are from the same customer



LIR Assignment Process



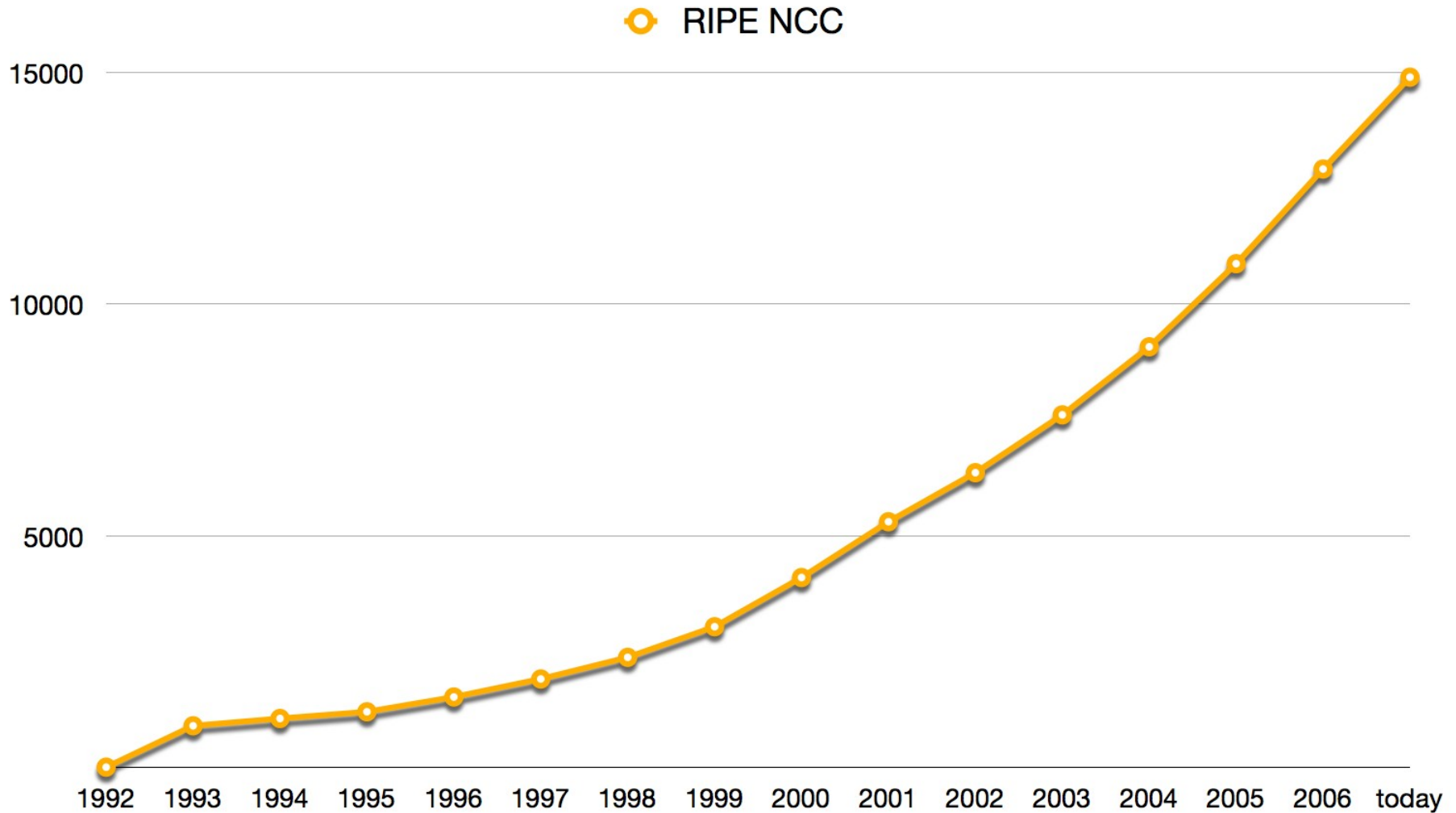


AS Numbers

- If you...
 - want to become multihomed
 - have peering agreements



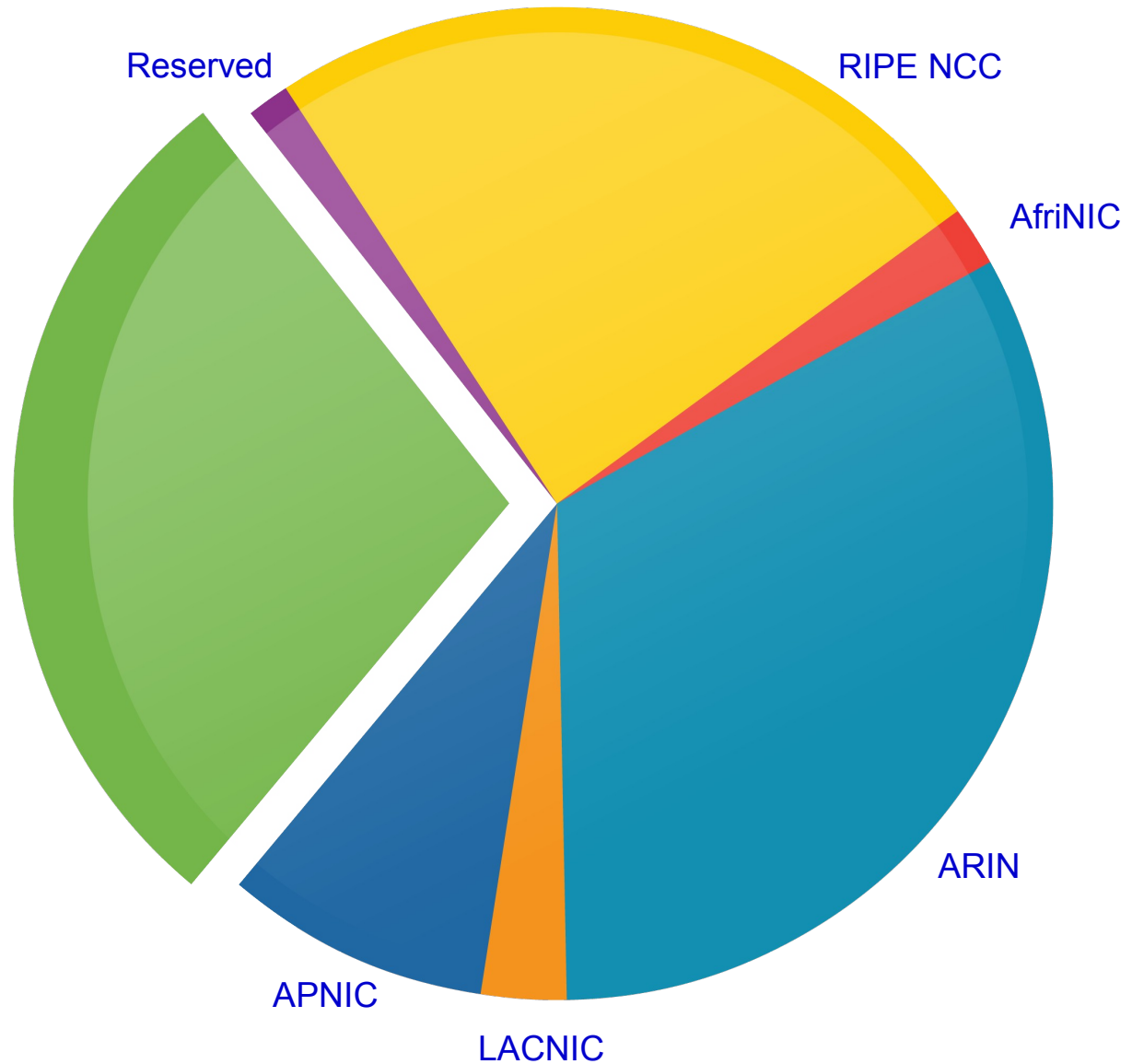
ASN Assignment rate





16-Bit AS Number Pool - Now

28%
available



source: <http://potaroo.net>



32 Bit AS Numbers

Assignments

- in 2007-2008: 16-bit AS default, 32-bit AS on request
- in 2009: 32-bit AS default, 16-bit AS on request
- as of 2010: only 32-bit AS numbers

Prepare for 32-bit AS numbers in your organisation

Ask your hardware vendor for support

Please don't wait until 2009



Questions?





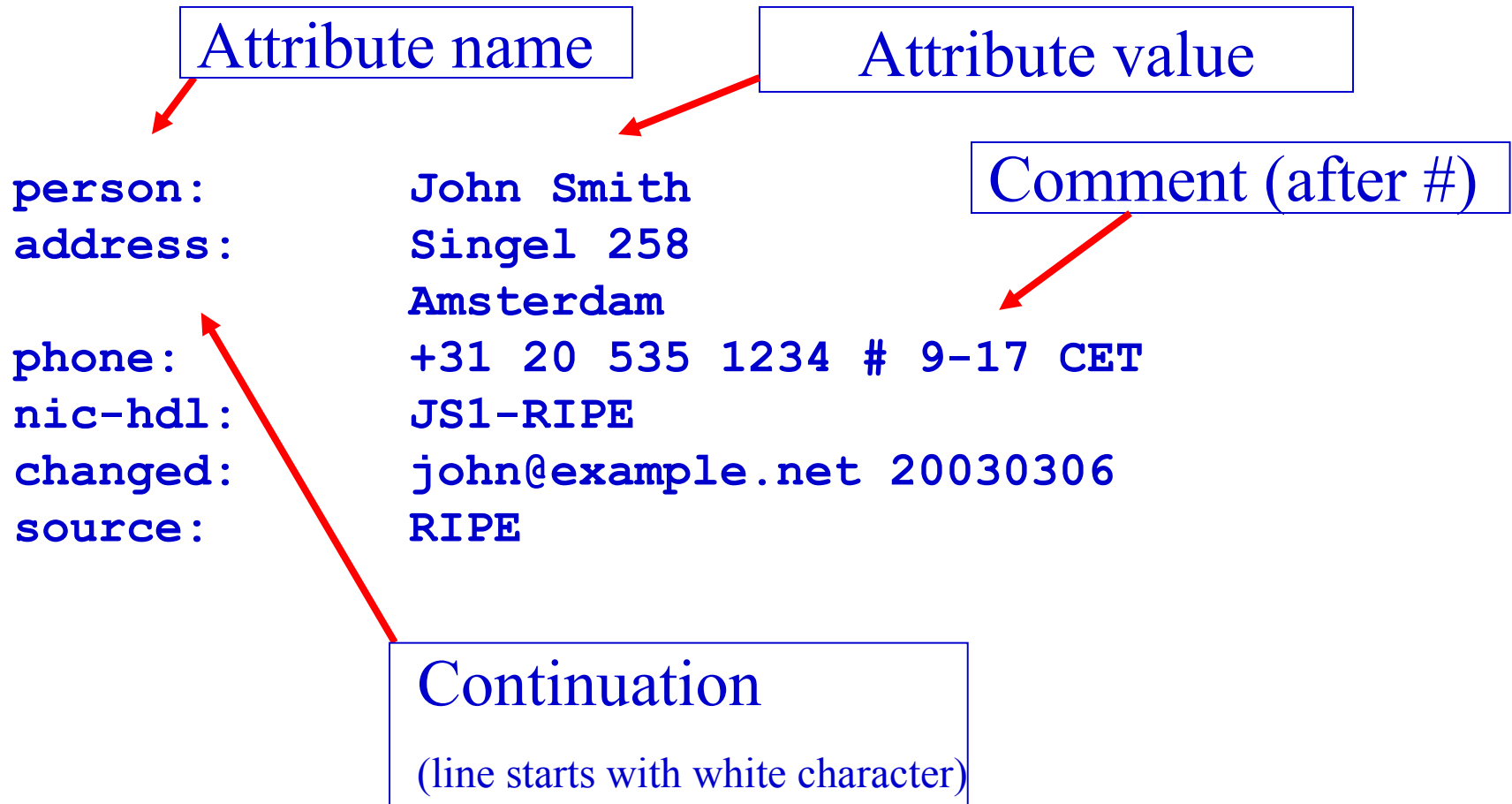
RIPE Database



RIPE Database

- Public Network Management Database
- All LIRs must have
 - **person** object
 - maintainer (**mntner**) object
 - **organisation** object

Database Object Syntax





Not using a Role Object

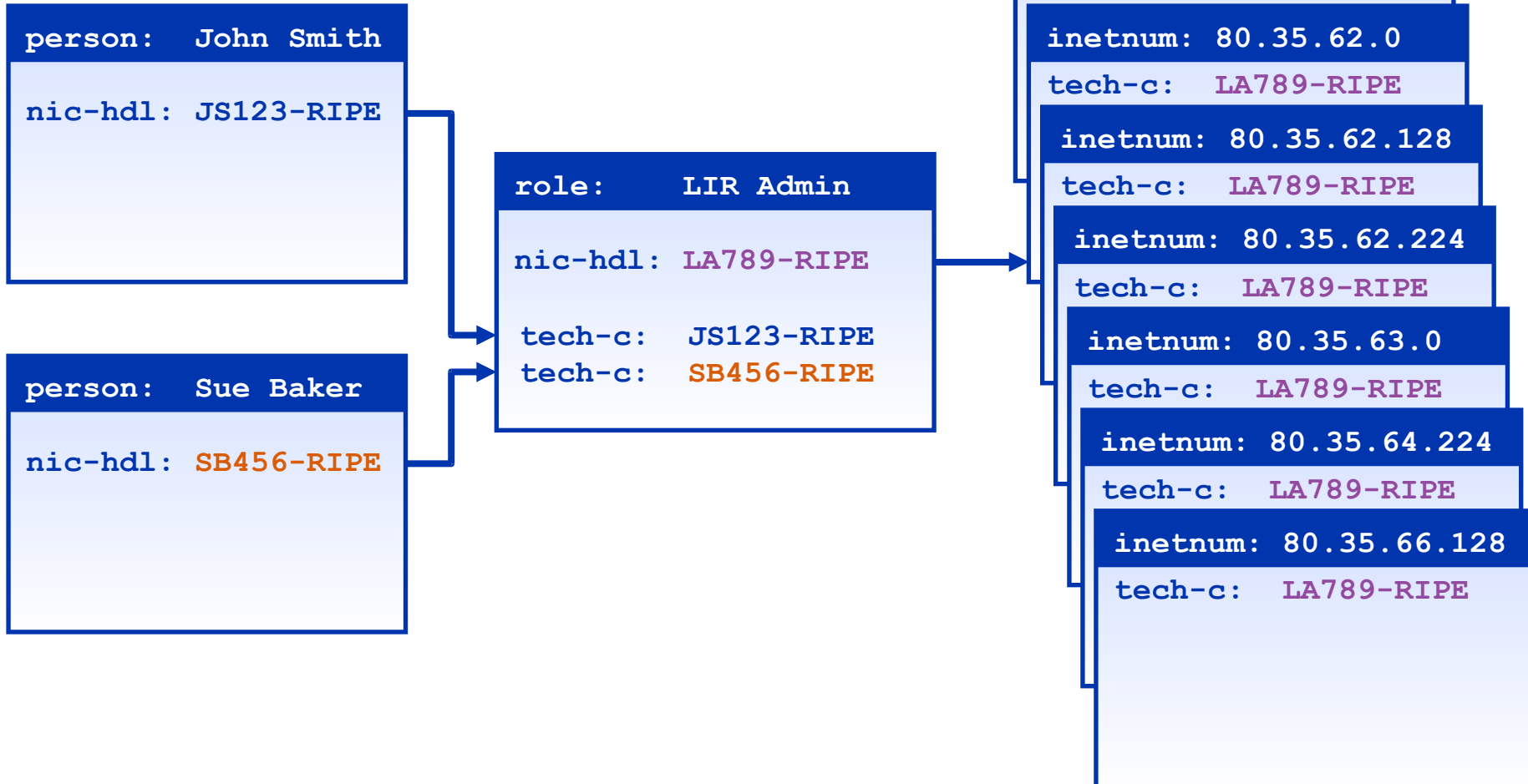
```
person: John Smith
nic-hdl: JS123-RIPE
```

```
person: Sue Baker
nic-hdl: SB456-RIPE
```

```
inetnum: 80.35.61.0
tech-c: SB456-RIPE
inetnum: 80.35.62.0
tech-c: SB456-RIPE
inetnum: 80.35.62.128
tech-c: SB456-RIPE
inetnum: 80.35.62.224
tech-c: SB456-RIPE
inetnum: 80.35.63.0
tech-c: SB456-RIPE
inetnum: 80.35.64.224
tech-c: SB456-RIPE
inetnum: 80.35.66.128
tech-c: SB456-RIPE
```




Using a Role Object

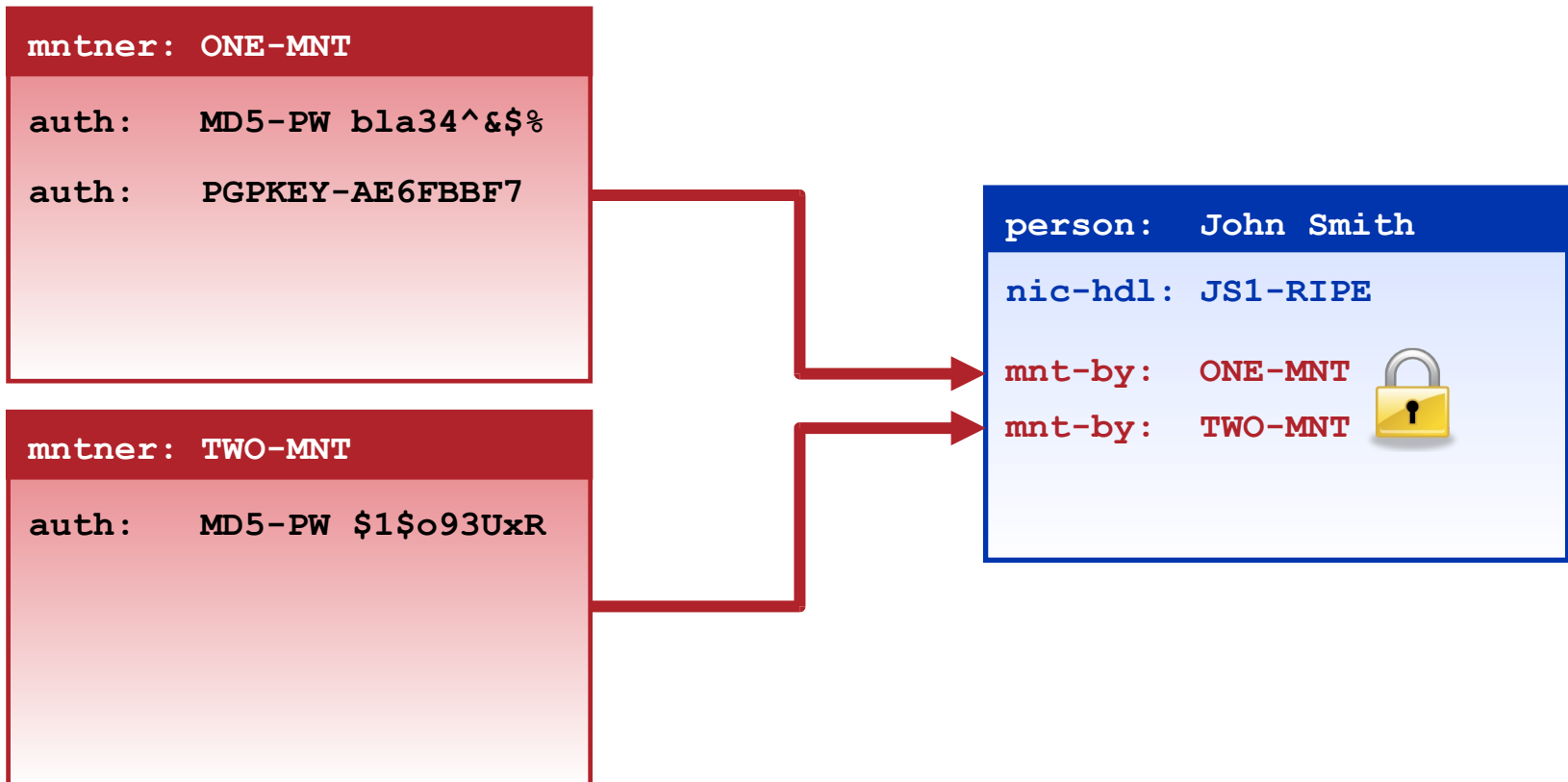




RIPE Database Protection

- `mntner` holds the password / key for authorisation of updates of other objects
- Include "`mnt-by: NAME-MNT`" in all objects!
 - for updates: include "`password: bla`" or sign
- Authentication methods:
 - **MD5-PW** <encrypted password>
 - encryption web interface available
 - **PGPKEY**-<key ID>
 - **X509**-<ID>
- Forgot password? Go to [RIPE DB > DB Support > Security](#)

Multiple protection

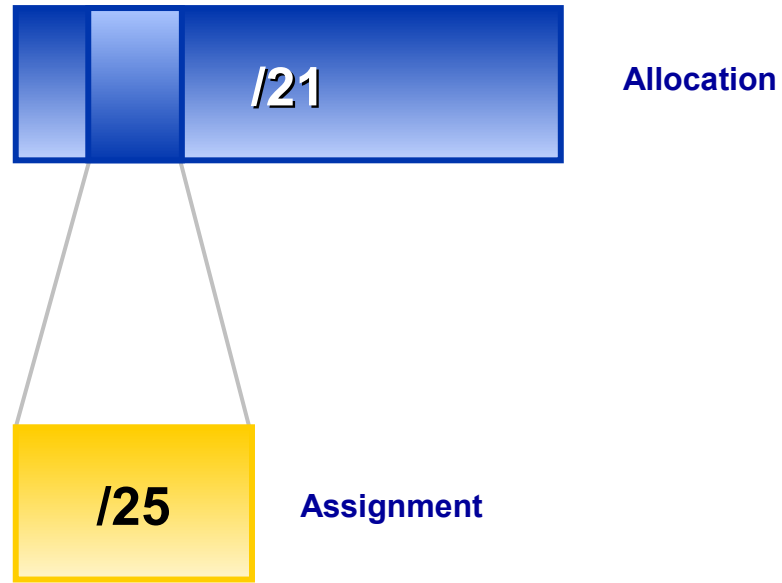


Any of the three authentications

Hierarchical Authorisation

```
inetnum: 85.118.184.0/21
status: ALLOCATED PA
mnt-by: RIPE-NCC-HM-MNT
mnt-lower: LIR-MNT
```

```
inetnum: 85.118.186.0/25
status: ASSIGNED PA
mnt-by: LIR-MNT
```





Questions?





Do You Want to Host RIPE NCC Training Courses?

- **You will provide**
 - Location with lunch facilities
 - High speed Internet connection
- **The RIPE NCC will**
 - Provide the Training Course
 - Announce the Training Course at your location
 - Register the attendees
 - Send the training material to your location
- **The RIPE NCC will pay for**
 - Catering (Food and drink)
 - Travel and accommodation for the RIPE NCC trainers
 - Shipping the training material
- <http://www.ripe.net/training/hosting.html>



The End!

Край Y Diwedd
 Finis
 النهاية Fí
 Соңы Կերջ Liðugt
 Ende Кінець
 Konec Fund پایان
 Kraj Son
 Vége Kraj
 Lõpp An Críoch
 Fine 𐌺𐌹𐌸𐌹 Endir Sfârșit Fin Τέλος
 Einde Конец
 დასასრული Pabaiga Slut Slutt
 Fim Amaia Loppu Tmíem Koniec