

WELCOME

WE ARE

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RIPE NCC
RIPE NETWORK COORDINATION CENTRE

LIRs and the Internet Ecosystem

LIRs: Managing IP Addresses and AS Numbers



This session is being recorded

Agenda



LIRs and the Internet Ecosystem

1. The Internet Registry System
2. RIPE and the RIPE NCC
3. How to improve the Internet
4. The LIR Portal
5. The RIPE Database

LIRs: Manage your IP Addresses and AS Numbers

1. Which Internet Numbers does the RIPE NCC distribute?
2. How to get Internet Numbers from the RIPE NCC
3. How to transfer them to/from another LIR
4. Using the Internet Numbers
5. Tips and tricks

Take the poll!

What does an **LIR** do?

Please type in your answer





The Internet Registry System

Section 1 of 5



Internet Assigned Numbers Authority



All five RIRs are:

- Not-for-profit organisation
- Funded by membership fees
- Policies developed by regional communities
- Neutral, impartial, open, and transparent

RIR = Regional Internet Registry



RIRs are responsible for:

- Keeping the registry up to date, correct, and secure
- Using hierarchical allocations
- Maintaining neutrality towards all members



The RIPE NCC Service Region



Europe, the Middle East, and parts of Central Asia



LIRs: Local Internet Registries

Who can become an LIR?



- Organisations:
 - Internet Service Provider (ISP)
 - University
 - Bank
 - ...
- A private person

Any **legal entity** or **natural person** can become a member of the RIPE NCC → become a Local Internet Registry (**LIR**)

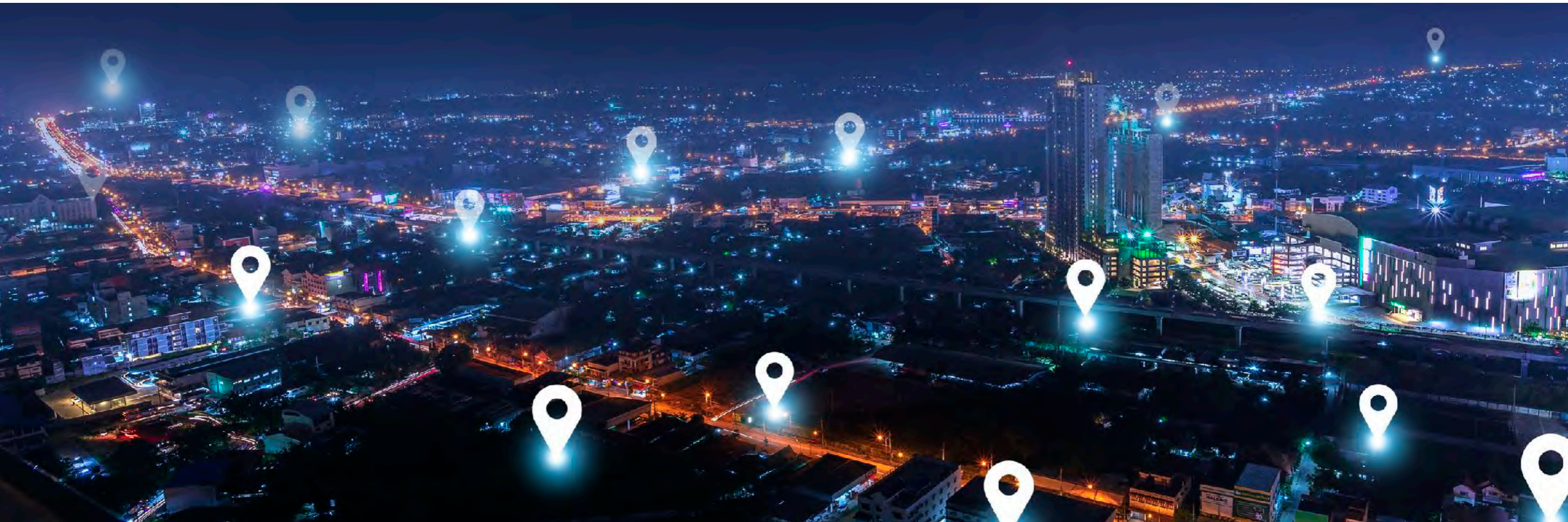
The RIPE NCC membership landing page:

<https://www.ripe.net/participate/member-support>

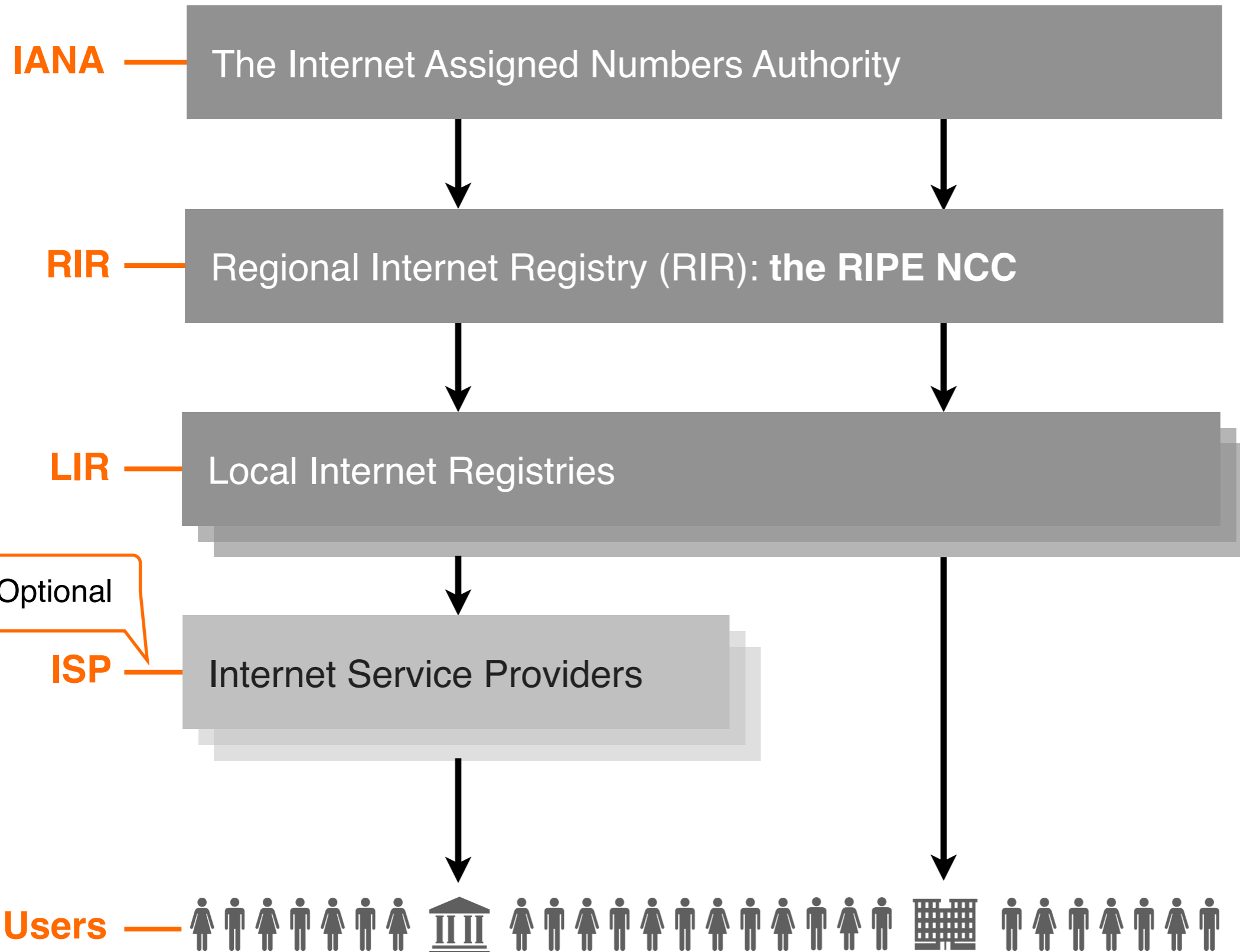
What are LIRs responsible for?



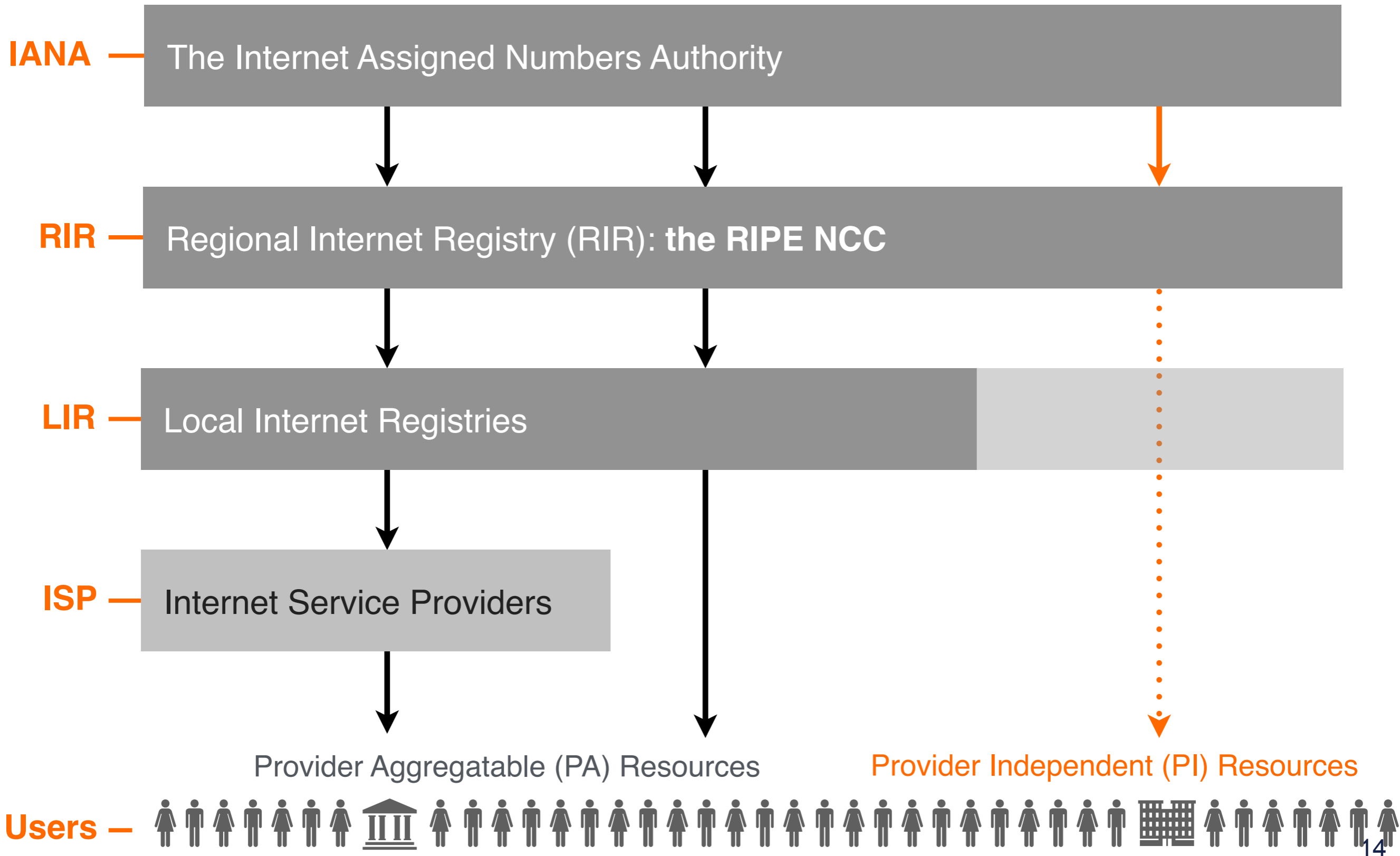
- Distributing Internet Number resources to End Users
- Registering them in the RIPE Database
- Keeping the registry up-to-date
- Can participate in discussions on the future of the RIPE NCC



There is a Distribution Hierarchy

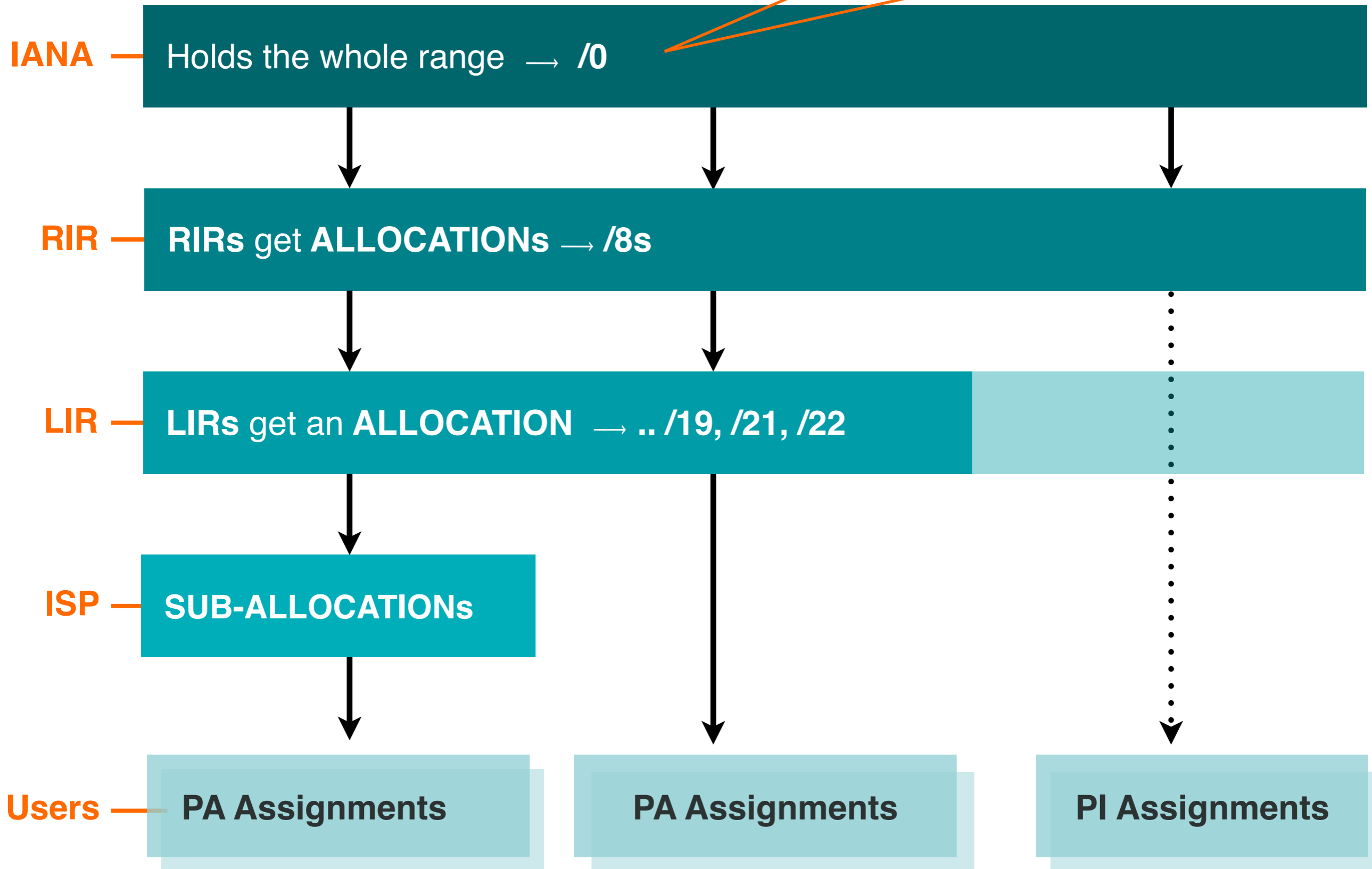


PA and PI Resources

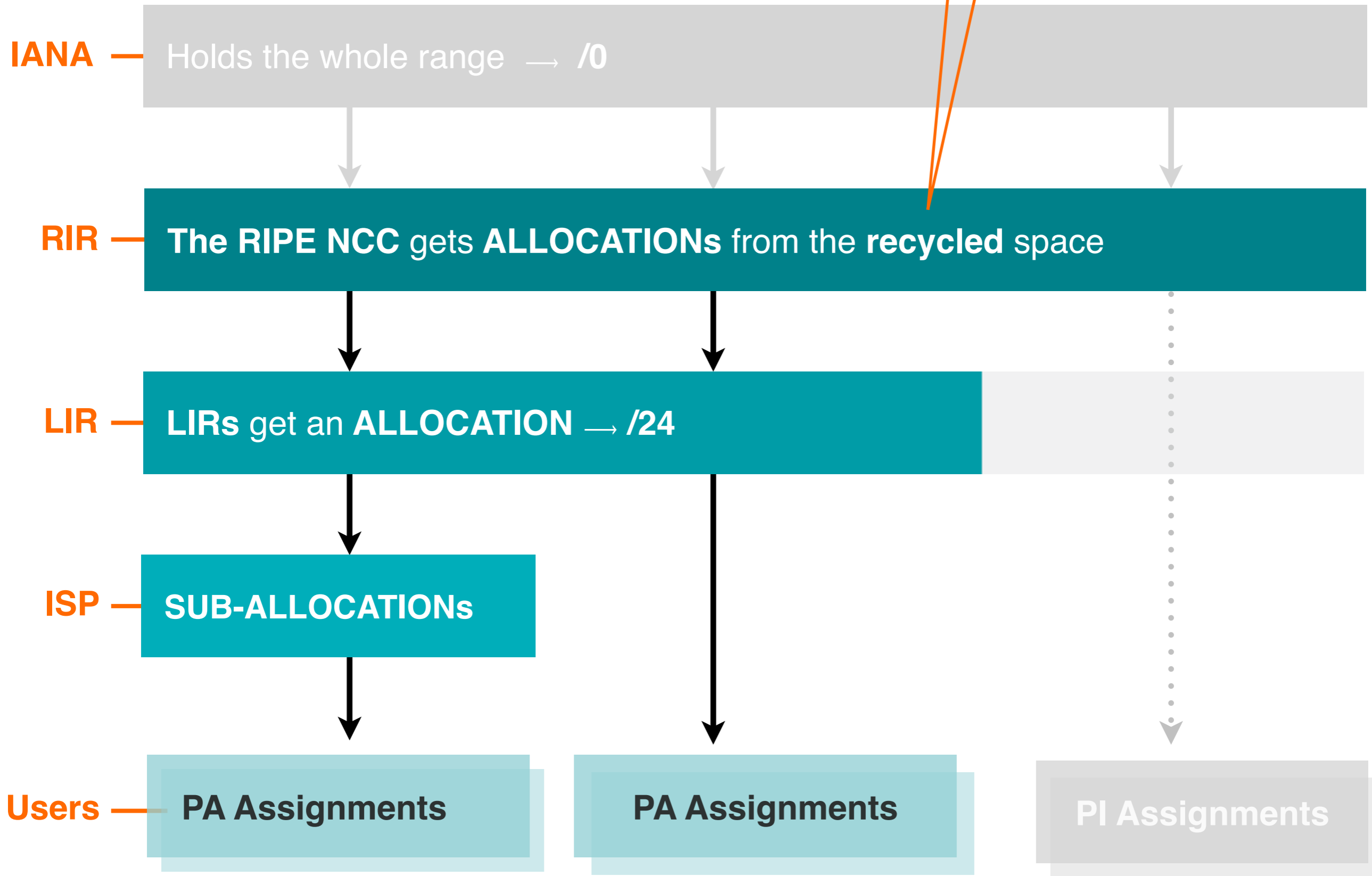


IPv4: How it used to be

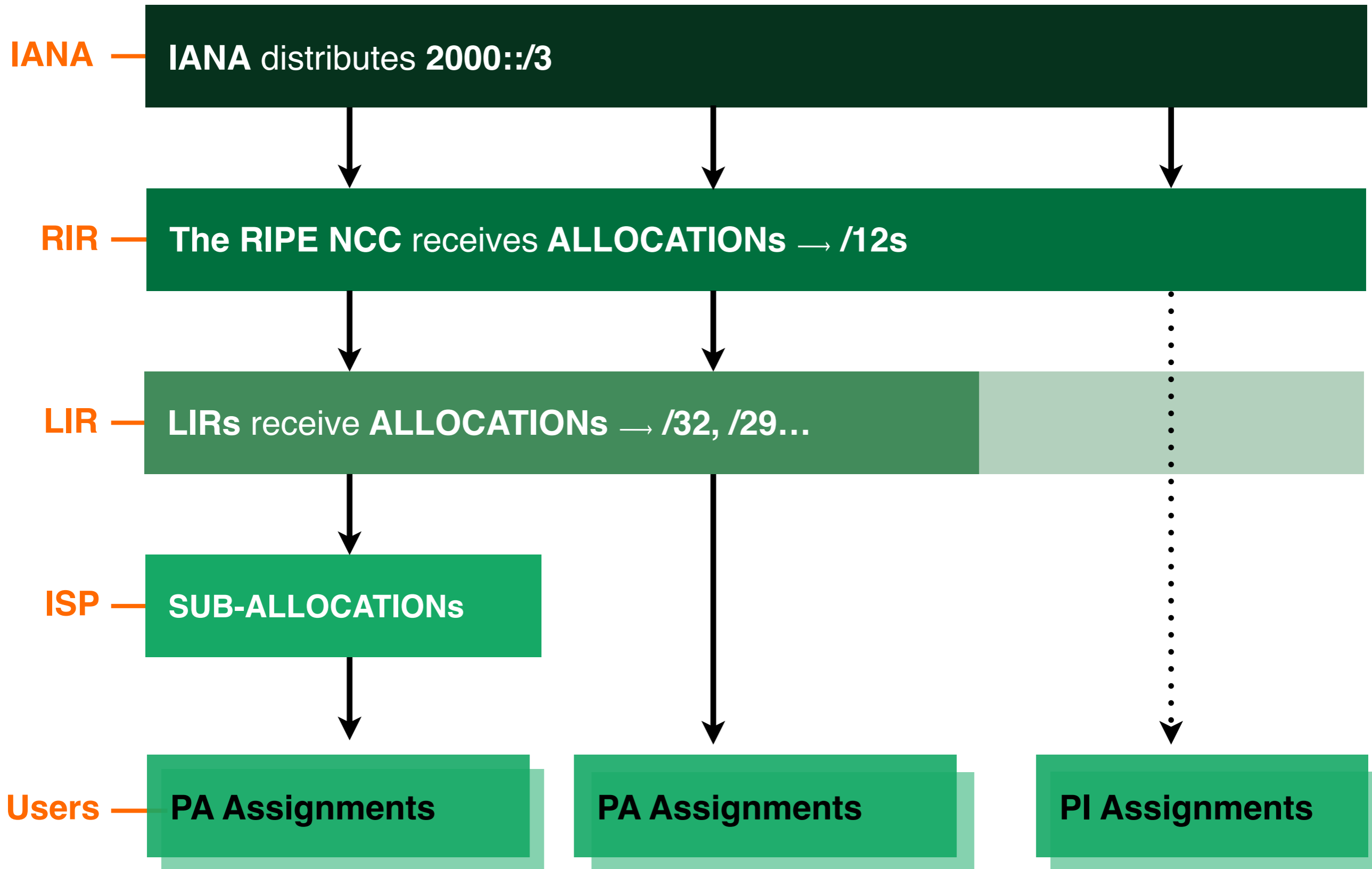
/8 = 16,77 million IPv4 addresses
/16 = 65536 IPv4 addresses
/24 = 256 IPv4 addresses



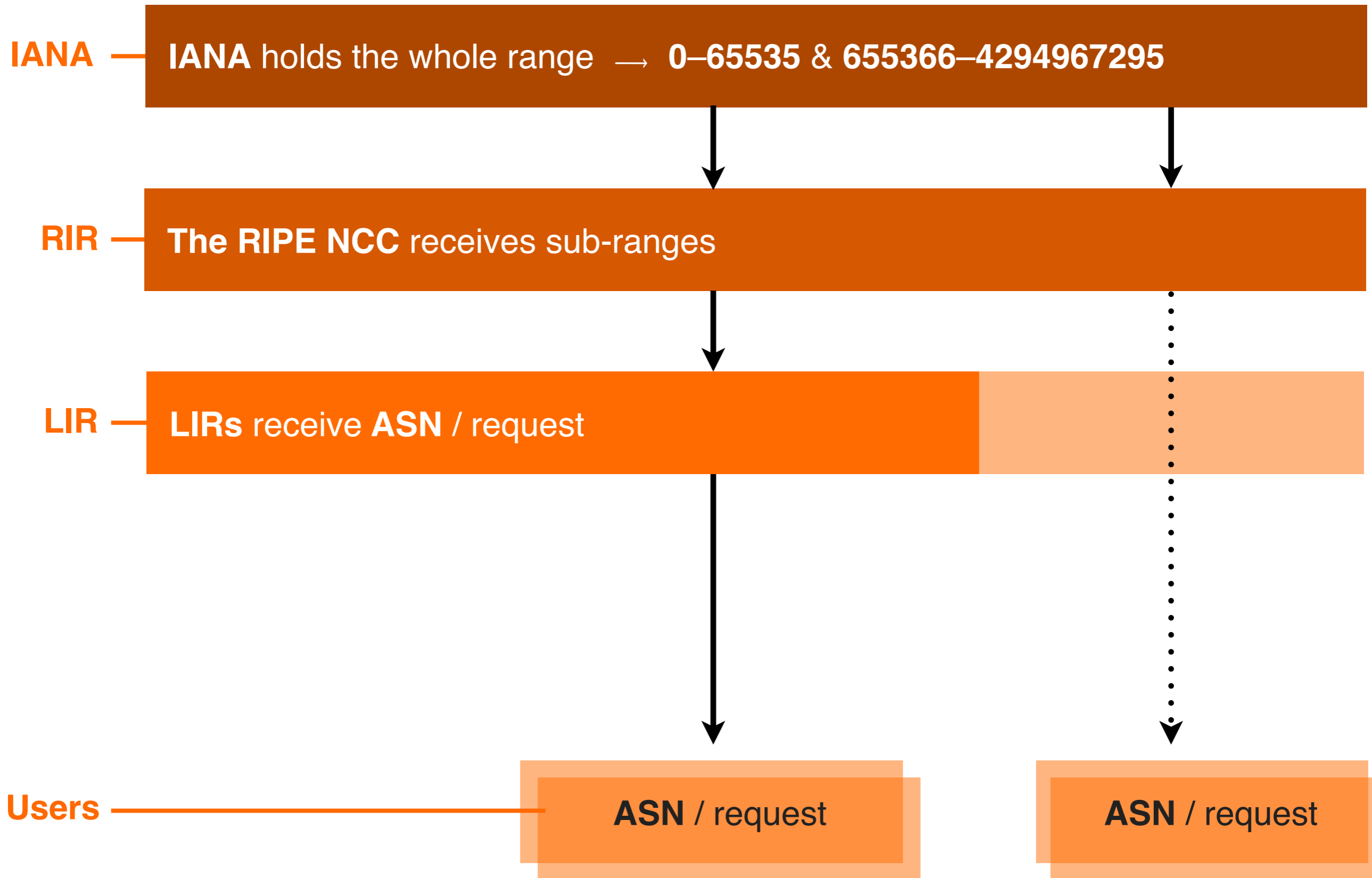
How it is for IPv4 now



How it works for IPv6



How it works for **ASNs**





Questions





RIPE and the RIPE NCC

Section 2 of 5

Réseaux IP Européens (RIPE)



Discussion forum open to everybody interested

The RIPE community

The RIPE Network Coordination Centre



RIPE NCC

RIPE NETWORK COORDINATION CENTRE

- ~160 employees
- Offices in Amsterdam and Dubai

The RIPE community



- Started in 1989
- Discussion forum **open** to all parties interested
- Not a legal entity and **no formal membership**
- Develops **policies**
- Work done in Working Groups
- Activities are performed on a voluntary basis
- Decisions formed by **consensus**

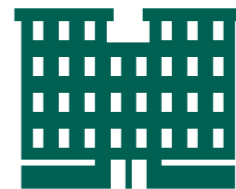
The RIPE NCC



- Distributes IP addresses and ASNs
- Maintains the registry
- Outreach activities with governments and LEAs
- Internet measurements
- Operates the K-root name servers

LEA = Law Enforcement Agency

RIPE

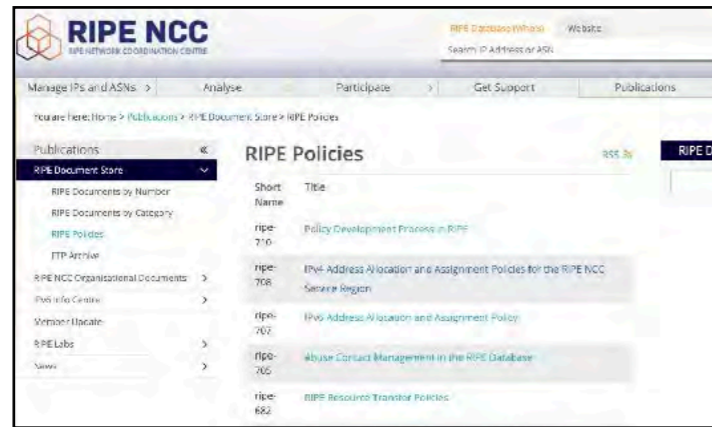


RIPE Working Groups

RIPE Meetings



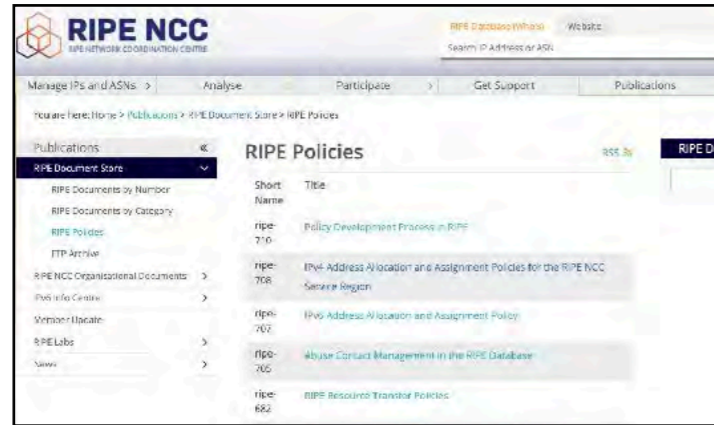
RIPE Policies



RIPE Working Groups
RIPE Meetings



RIPE Policies



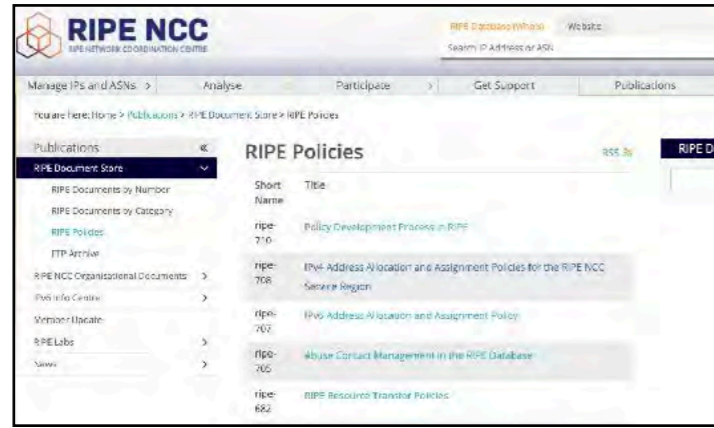
RIPE Working Groups
RIPE Meetings



LIRs



RIPE Policies



RIPE Working Groups
RIPE Meetings



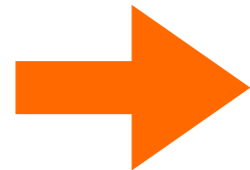
RIPE NCC
General Meetings
Mailing Lists



LIRs



Demo: Registering for the GM



The screenshot shows the RIPE NCC website with the following elements:

- Header:** RIPE NCC logo and navigation links: Manage IPs and ASNs, Analyse, Participate (active), Get Support, Publications, About Us.
- Breadcrumbs:** You are here: Home > Participate > Meetings and Events > General Meetings
- Left Sidebar:** A list of navigation options under 'Participate', with 'Meetings and Events' expanded to show 'General Meetings'.
- Main Content:**
 - RIPE NCC General Meetings (GM)**: A section explaining that the GM is open to members and candidate members, serving as a forum for discussions on operations and activities.
 - Upcoming GMs**: A list of upcoming meetings, including 'RIPE NCC General Meeting 19 May 2021 - 21 May 2021 Virtual'.
 - Previous GMs**: A list of past meetings, including 'RIPE NCC General Meeting, 28 - 30 October 2020' and 'RIPE NCC General Meeting, 13 - 15 May 2020'.
 - Why should you attend the GM?**: A section detailing the benefits of attending, such as voting on resolutions and providing input on the Activity Plan and Budget.

The General Meeting information page:

<https://www.ripe.net/participate/meetings/gm>



Questions





How to Improve the Internet

Section 3 of 5

RIPE Policies:

- How IPv4 addresses are allocated and assigned
- How IPv6 addresses are allocated and assigned
- How abuse contacts are managed

...



How can you improve the Internet?

1. Check the current policies
2. Suggest an improvement to the Working Group
3. Try to reach consensus
4. Make a RIPE policy 👍

Current RIPE policies:

<https://www.ripe.net/publications/docs/ripe-policies>

Too difficult? Takes too long?



Need help from the RIPE NCC?



Angela Dall'Ara
pdo@ripe.net

YES! The **Policy Officer** will assist you.

How can you start?



1. Stay up-to-date with new policies
2. Join in the policy discussions
3. Propose a new policy

Join WG Mailing Lists:

<https://www.ripe.net/participate/ripe/wg/active-wg>

Join RIPE NCC Membership Announce Mailing List:

<https://www.ripe.net/participate/mail/ripe-ncc-mailing-lists/ncc-announce>

Current Policy Proposals:

<https://www.ripe.net/participate/policies/current-proposals/current-policy-proposals>



The RIPE Community:

- Creates and discusses proposals
- Seeks consensus

Working Group Chairs:

- Accept proposals
- Chair discussions
- Decide whether consensus has been reached



- Supports these activities
- Publishes accepted policies
- Implements and enforces them





Questions





The LIR Portal

Section 4 of 5

A RIPE NCC Access Account



- For all RIPE NCC services
- Free to create
- Can be associated with one or more LIRs → gets access to the LIR Portal

A screenshot of the RIPE NCC website. The browser address bar shows 'ripe.net'. The page header includes the RIPE NCC logo and a search bar. A user account is logged in as 'John Smith'. The navigation menu includes 'Manage IPs and ASNs', 'Analyse', 'Participate', 'Get Support', and 'Publications'. A banner for the RPKI Test is visible, along with icons for 'My Resources', 'Become a Member', 'Report Hacking and Spamming', and 'What is an IP Address?'. A large orange arrow points from the right side of the slide towards the user account area of the website.

Demo: LIR Portal Overview



- Account details
- Resources details
- Communicating with the RIPE NCC:
 - Request resources
 - Create tickets
 - Sign up for a training or webinar

LIR Portal: <https://my.ripe.net>



Questions





The RIPE Database

Section 5 of 5

The purpose of the RIPE Database



- Registry of **who** holds IP addresses and ASNs
- Keeps **contact** information
 - For troubleshooting, notifying outages, etc.
- Publishing **routing** policies
- Provisioning **reverse DNS**



The RIPE Database

Production



<https://apps.db.ripe.net/>

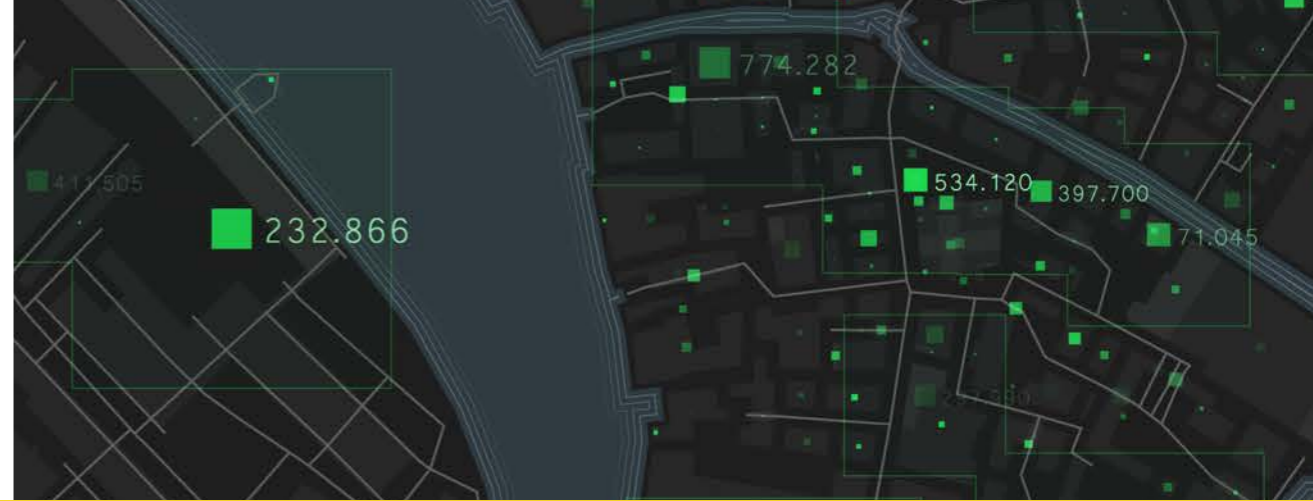
The Test Database

For testing purposes



<https://apps-test.db.ripe.net/>

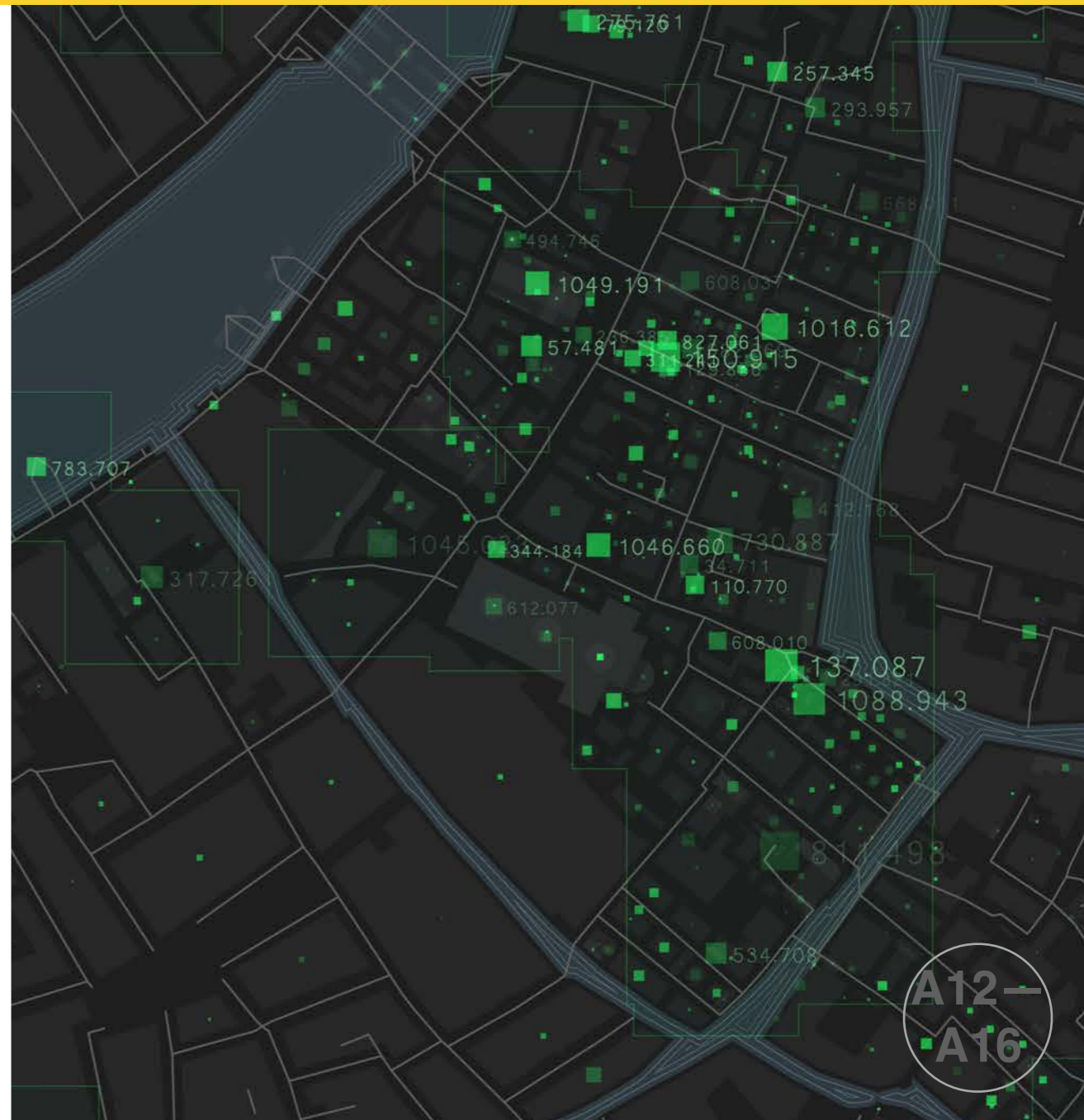
Lab: Look up a network



We are using the TEST Database: <https://apps-test.db.ripe.net/>

You want to buy a company which is using **193.0.29.71** for their services.

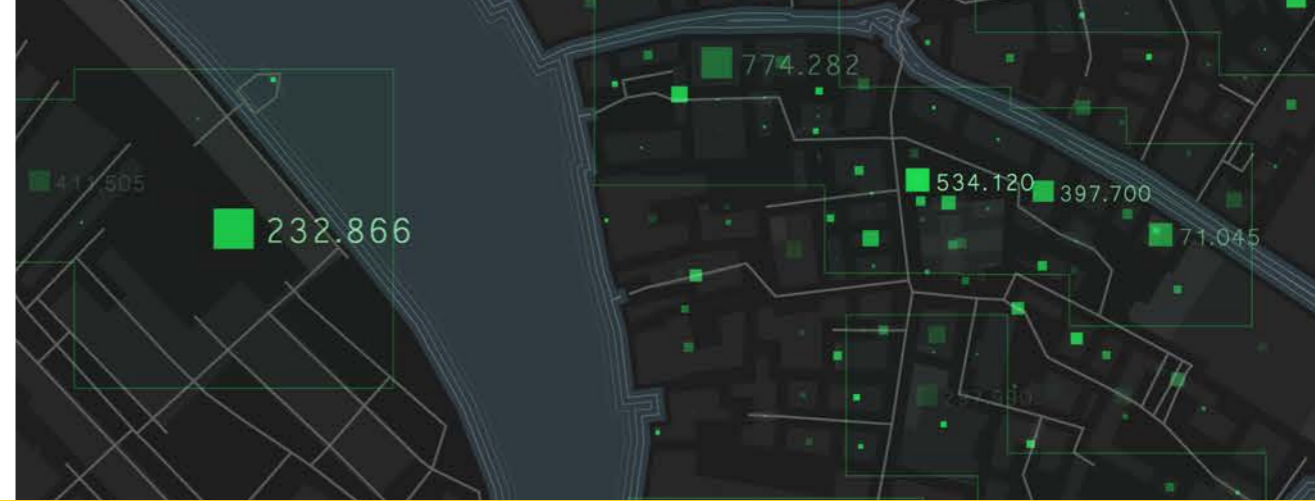
Before signing the contract, you want to investigate this a bit further.



Demo

🕒 15 min.

Lab: Look up a network



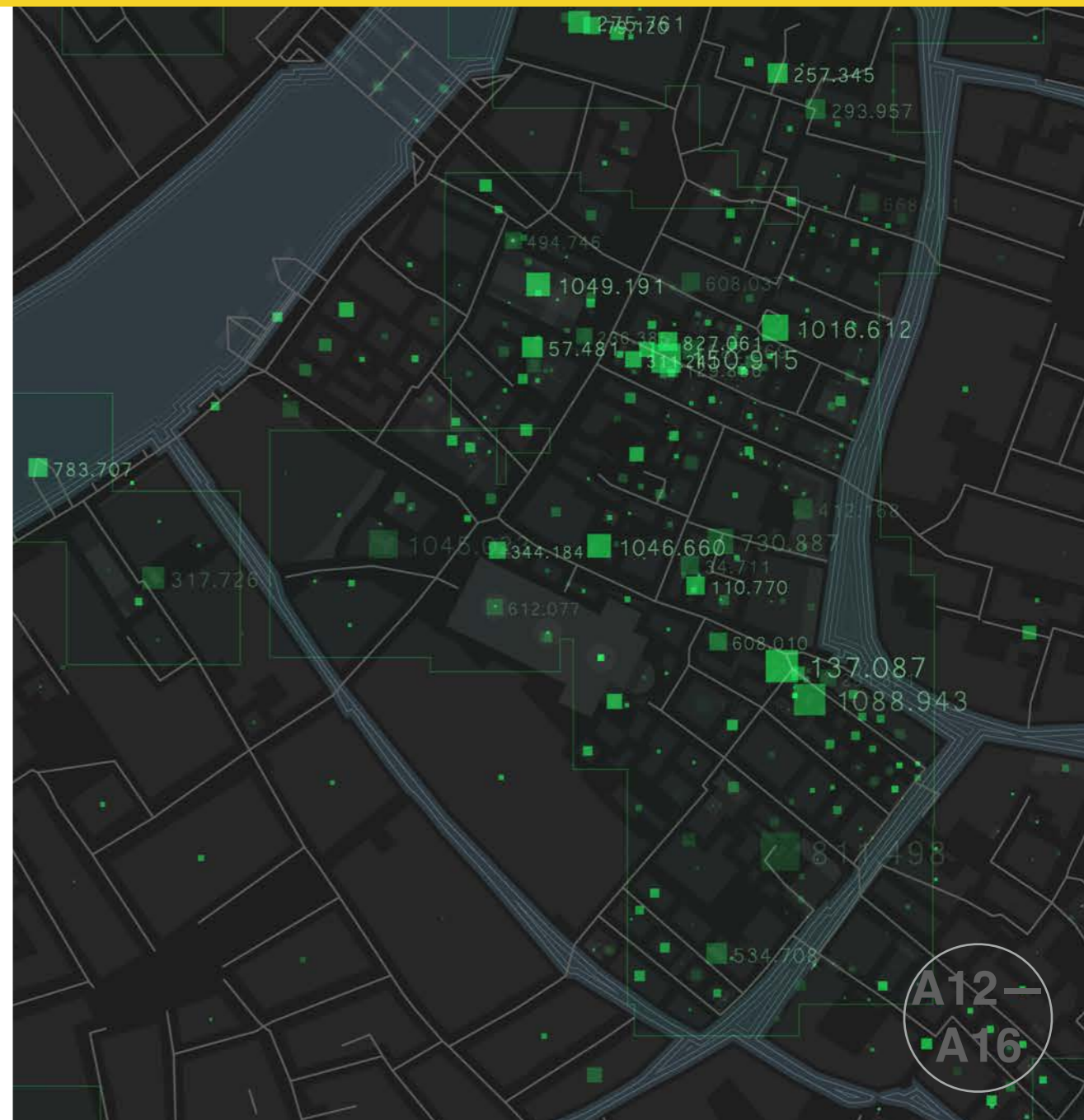
We are using the TEST Database: <https://apps-test.db.ripe.net/>

You want to buy a company which is using **193.0.29.71** for their services.

- What is the name of the company to which this IP is registered to?
- What is the assignment (the range of addresses or prefix) this IP belongs to?
- Who is the administrative contact of the network?
- Who is providing technical support for the network?
- * How many people in total have a relation to the prefix?
- * Anything suspicious?

Demo

🕒 20 min.





Questions



What's Next in Internet Registry



Webinars

Attend another webinar live wherever you are.

- ❖ LIRs and the Internet Ecosystem (2 hrs)
- ❖ LIRs: Managing IP Addresses and ASNs (2 hrs)
- ❖ Internet Governance (1 hr)
- ❖ Policy Development Process (1 hr)
- ❖ Webinar for New LIRs (1 hr)

↓ For more info
click the link
below



learning.ripe.net



Face-to-face

Meet us at a location near you for a training session delivered in person.

- ❖ LIR (8.5 hrs)
- ❖ RIPE Database (8.5 hrs)



E-learning

Learn at your own pace at our online Academy.

- ❖ Internet Governance (3 hrs)
- ❖ RIPE Database (16 hrs)

↓ For more info
click the link
below



academy.ripe.net



Examinations

Learnt everything you needed? Get certified!

- ❖ RIPE Database Associate

↓ For more info
click the link
below



getcertified.ripe.net

What's Next



LIRs and the Internet Ecosystem

1. The Internet Registry System
2. RIPE & RIPE NCC
3. How to improve the Internet
4. LIR Portal
5. The RIPE Database

LIRs: Manage your IP Addresses and AS Numbers

1. Which Internet Number resources does the RIPE NCC distribute?
2. How to get Internet Number resources from the RIPE NCC
3. How to transfer them to/from another LIR
4. Using the Internet Number resources
5. Tips and tricks

**Let's take a
5 minute
break!**



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Agenda



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1. The Internet Registry System
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LIRs: Manage your IP Addresses and AS Numbers

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Which Internet number resources does the RIPE NCC distribute?

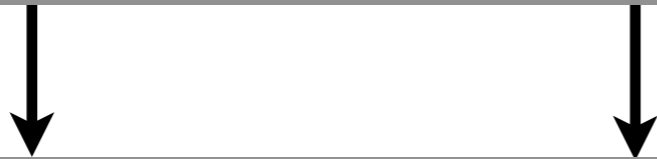
Section 1 of 5

There is a Distribution Hierarchy:



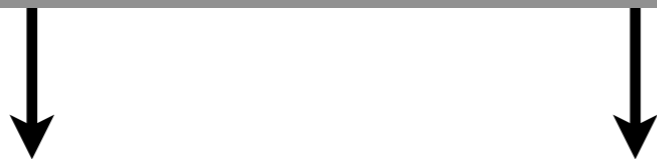
IANA:

The Internet Assigned Numbers Authority



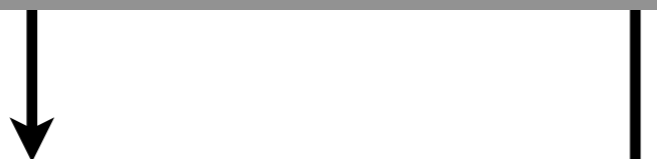
RIR:

Regional Internet Registry (RIR): the RIPE NCC



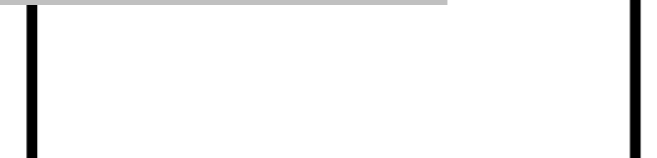
LIR:

Local Internet Registries



ISP:

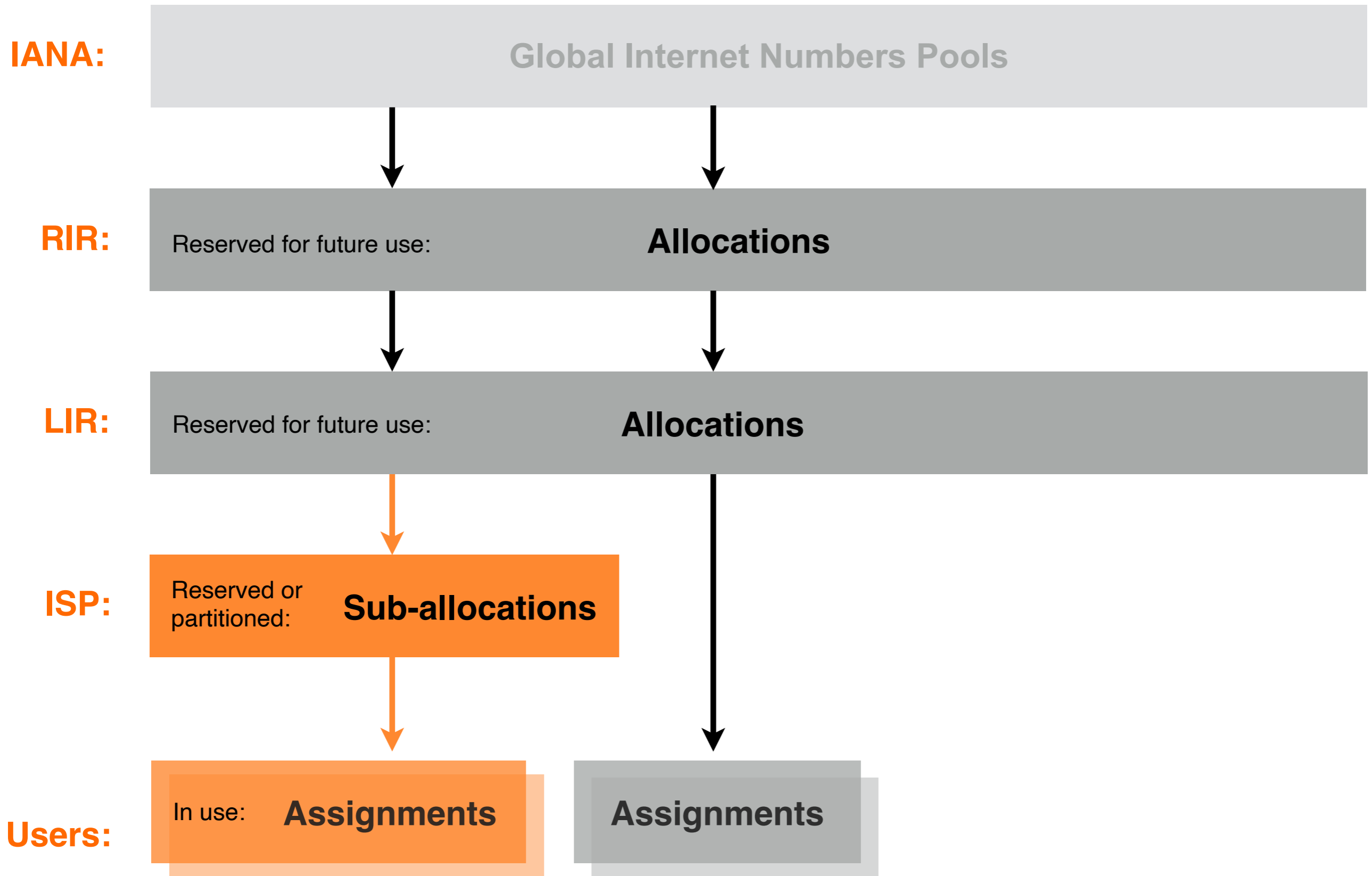
Internet Service Providers



Users:



Behind the scenes:



Who gets IP address **allocations**?



IANA:

The Internet Assigned Numbers Authority (IANA)

RIR:

The RIPE NCC

LIR:

Local Internet Registries

ISP:

Internet Service Providers

Users:



.... Assignments?



IANA:

The Internet Assigned Numbers Authority (IANA)

RIR:

The RIPE NCC

LIR:

Local Internet Registries

ISP:

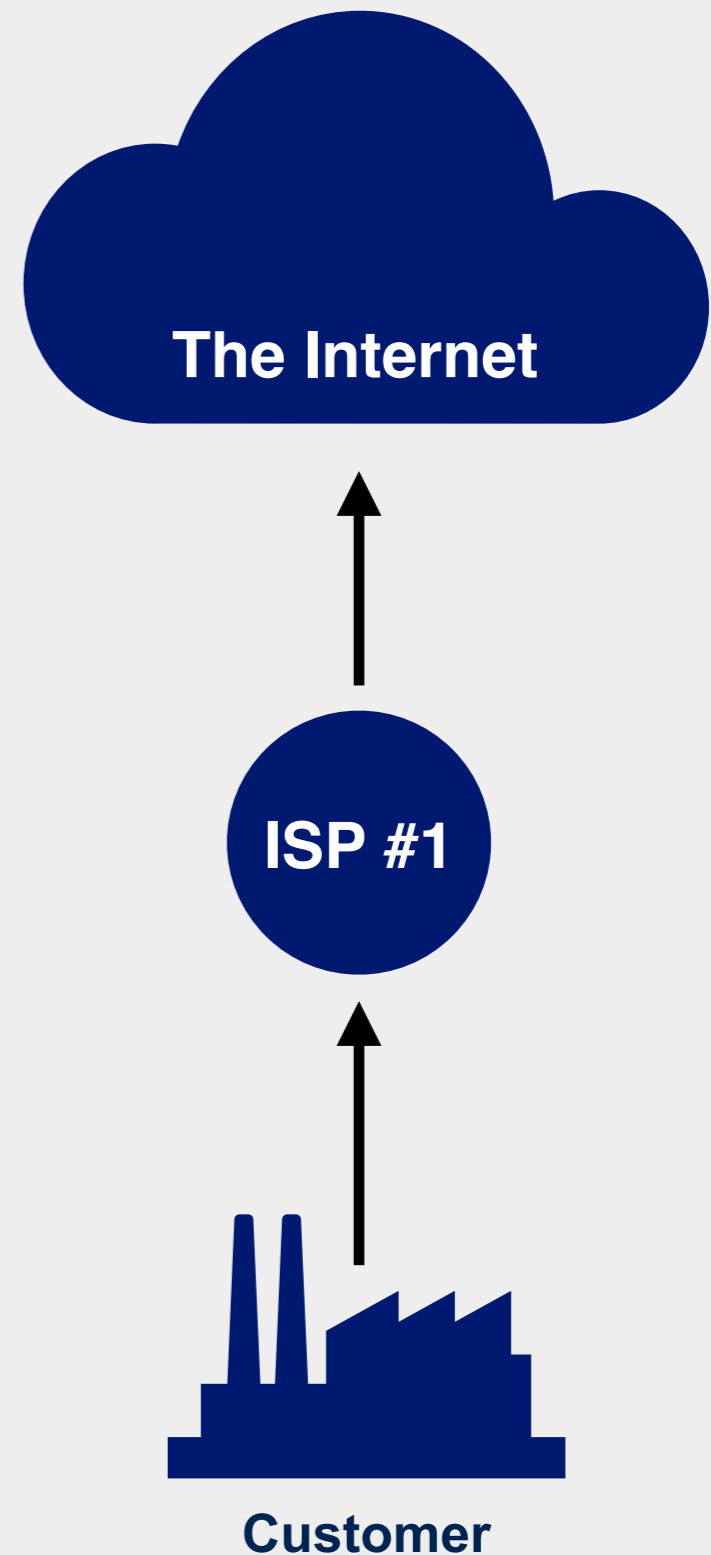
Internet Service Providers

Users:

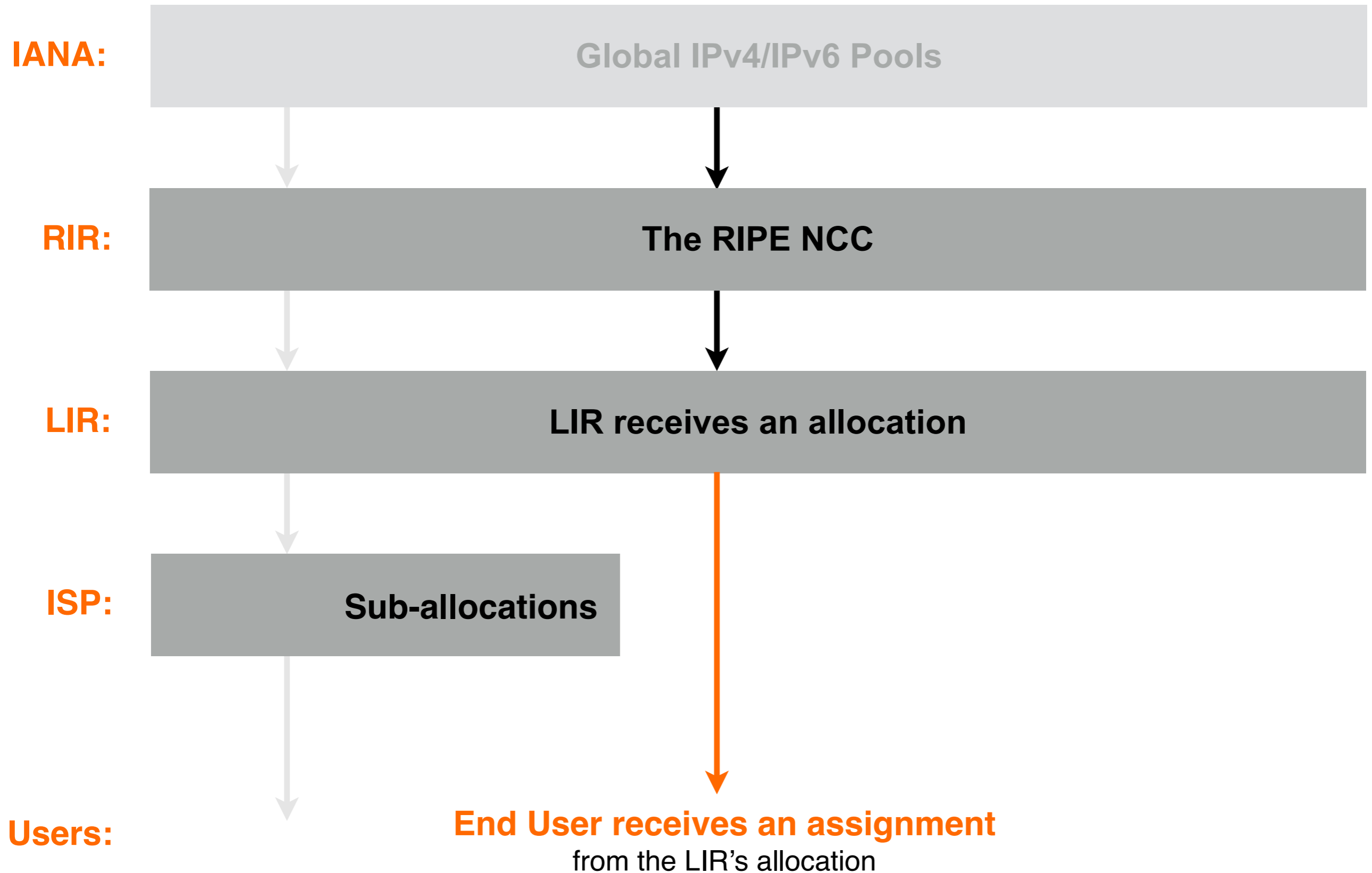


What should a customer do if they need a public IP?

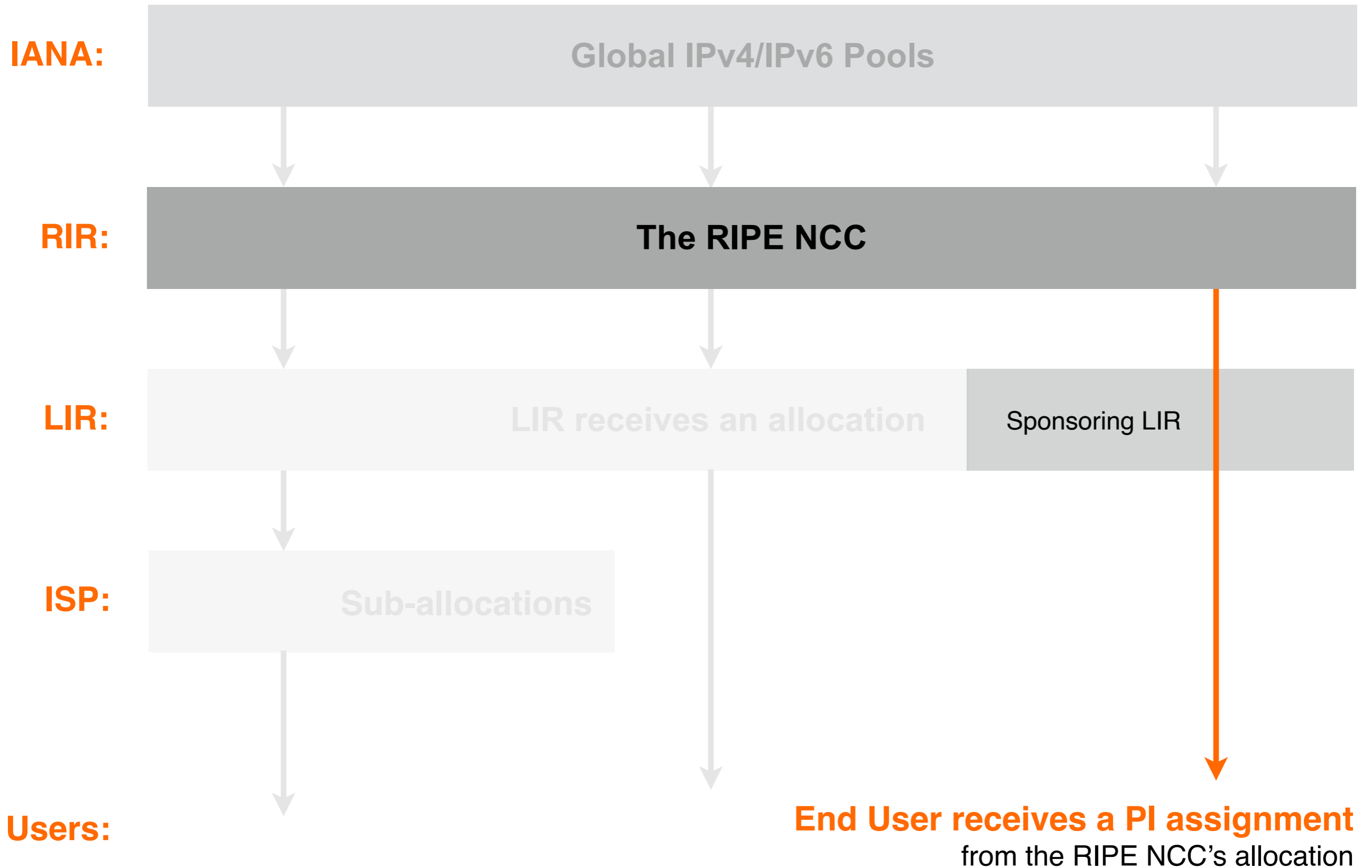
1. Find an ISP which provides public IPs
2. Ask the ISP for a public IP
3. Use it 👍



Behind the scenes...



Where does PI space come from?



ASNs: 16-bit and 32-bit



IANA:

IANA holds the whole range → 0—65535 & 65536—4294967295

RIR:

The RIPE NCC receives subranges

LIR:

LIRs receive an ASN / request

Sponsoring LIR

ISP:

ASN / request

Users:





Questions





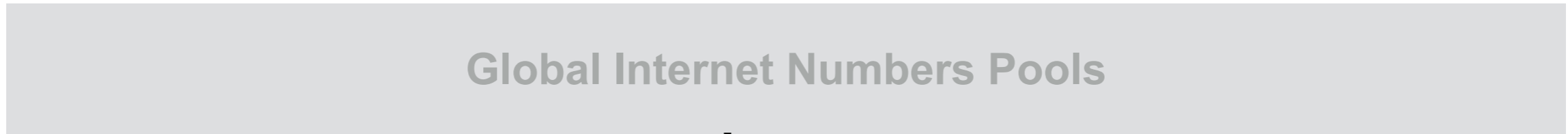
How to get Internet number resources from the RIPE NCC

Section 2 of 5

The RIPE NCC allocates / assigns:



IANA:



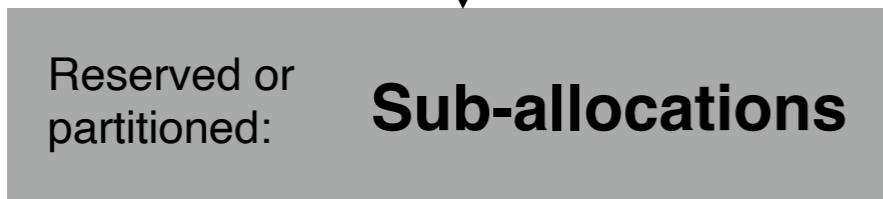
RIR:



LIR:



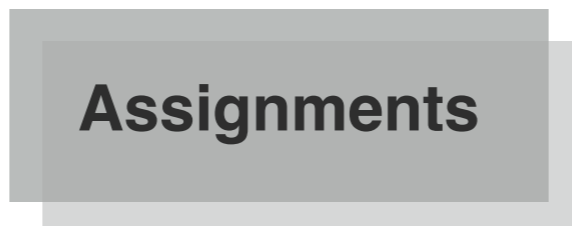
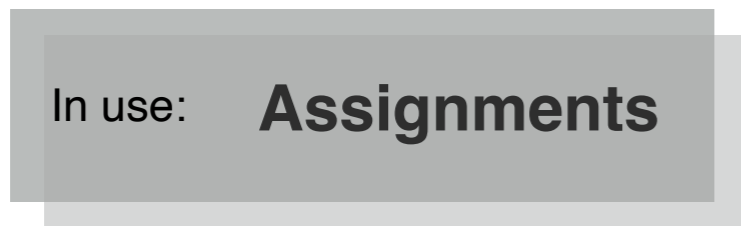
ISP:



Provider Aggregatable (PA) Resources

Provider Independent (PI)

Users:



The RIPE NCC allocates / assigns:



To LIR: **Provider Aggregatable (PA):**

1. IPv4 allocations
2. IPv6 allocations

To End Users: **Provider Independent (PI):**

4. IPv4 assignments
5. IPv6 assignments
6. ASNs

The RIPE NCC allocates / assigns:



To LIR:

Provider Aggregatable (PA):

1. IPv4 allocations
2. IPv6 allocations

To End Users:

Provider Independent (PI):

4. IPv4 assignments
5. IPv6 assignments
6. ASNs

IPv4 Distribution Timeline



Original policy: **Everybody receives as many addresses as they can justify**

IPv4 Distribution Timeline



Original policy: Everybody receives as many addresses as they can justify

2011: **IANA allocates the RIPE NCC the last block: 185/8**

IPv4 Distribution Timeline



Original policy: Everybody receives as many addresses as they can justify

2011: IANA allocates the RIPE NCC the last block: 185/8

2012: **LIRs start receiving allocations from the last new block: 185/8**

New policy: **No more than a single /22 for each new LIR**

IPv4 Distribution Timeline



- Original policy: Everybody receives as many addresses as they can justify
- 2011: IANA allocates the RIPE NCC the last block: 185/8
- 2012: LIRs start receiving allocations from the last new block: 185/8
New policy: No more than a single /22 for each new LIR

2018: **LIRs start receiving /22 allocations from the recycled space**

Soon continuous /22 are gone; LIRs start receiving /22 allocation equivalents in multiple smaller prefixes (/23—/24)

IPv4 Distribution Timeline



Original policy:	Everybody receives as many addresses as they can justify
2011:	IANA allocates the RIPE NCC the last block: 185/8
2012:	LIRs start receiving allocations from the last new block: 185/8 New policy: No more than a single /22 for each new LIR
2018:	LIRs start receiving /22 allocations from the recycled space

November 2019:	An equivalent of /22 can no longer be allocated New policy: No more than a single /24 for each new LIR. The waiting list is introduced
----------------	--

Our Reality: The Waiting List




1. Submit the IPv4 allocation request form at the LIR Portal
2. Wait



Take the poll!

How long do you have to wait for your IPv4 allocation?

 2 min.



B5

Our Reality: Limitations



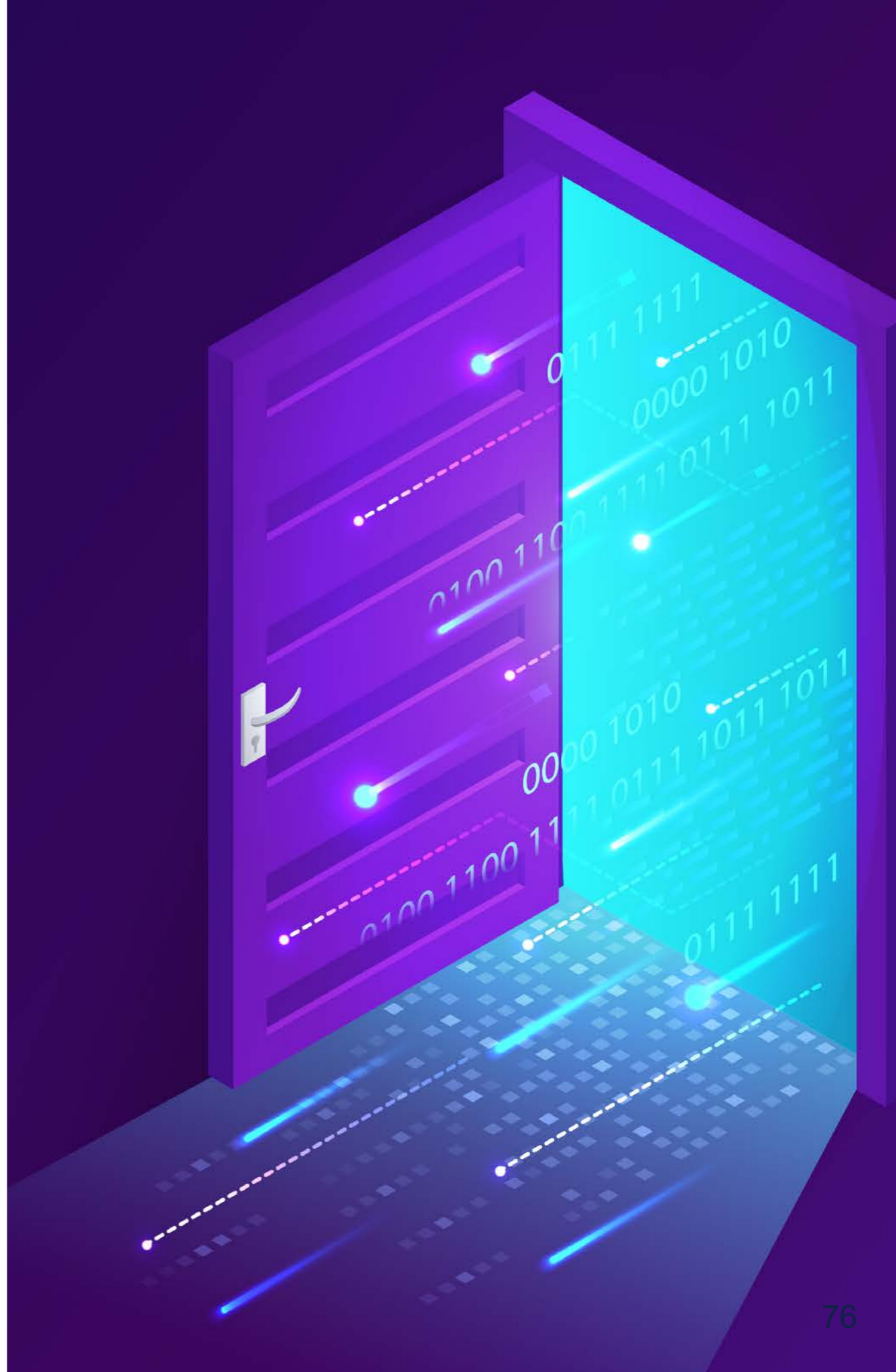
- The waiting list is first-come-first-served
- Each LIR receives only **one /24** block (256 IPv4 addresses)
- IPv4 allocation cannot be transferred for 24 months after receiving it

The IPv4 waiting list right now:

<https://www.ripe.net/manage-ips-and-asns/ipv4/ipv4-waiting-list>

Let's use IPv6!

- All LIRs can receive as many IPv6 addresses as they can justify
- There are no limitations on the transfer
- There is no waiting list!



The RIPE NCC allocates / assigns:



To LIR:

Provider Aggregatable (PA):

1. IPv4 allocations
2. IPv6 allocations

To End Users:

Provider Independent (PI):

4. IPv4 assignments
5. IPv6 assignments
6. ASNs

How to request IPv6 addresses..

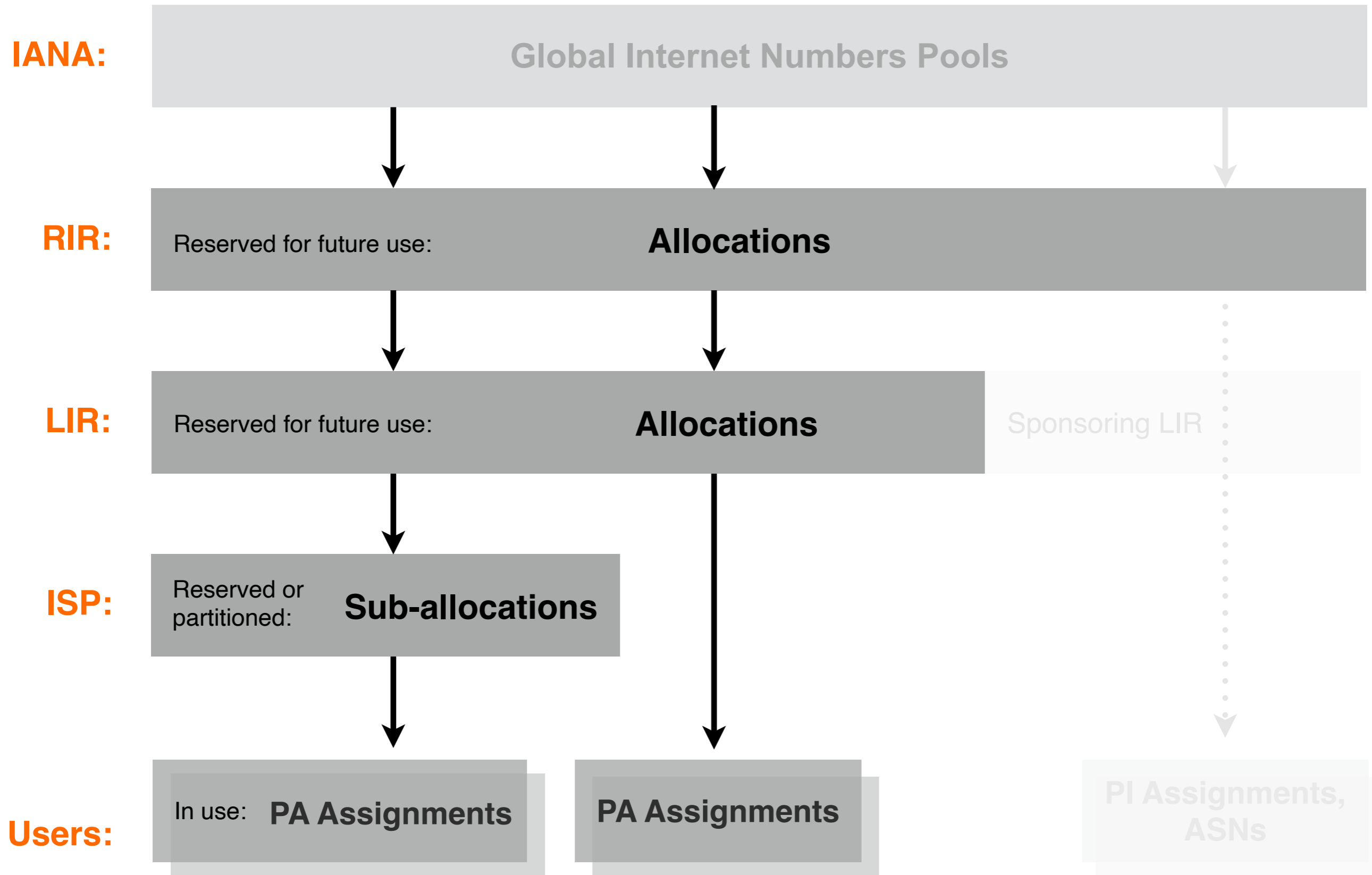


1. Submit the **IPv6 allocation request form** in the LIR Portal:

- Have a plan for making assignments within two years
- Minimum block: /32 (16 millions /56 IPv6 subnets)
- Maximum block without justification: /29 (134 million /56 IPv6 subnets)
- But sky's the limit if the LIR can justify the business need!

2. Get it approved!

Behind the scenes:



The RIPE NCC allocates / assigns:



To LIR:

Provider Aggregatable (PA):

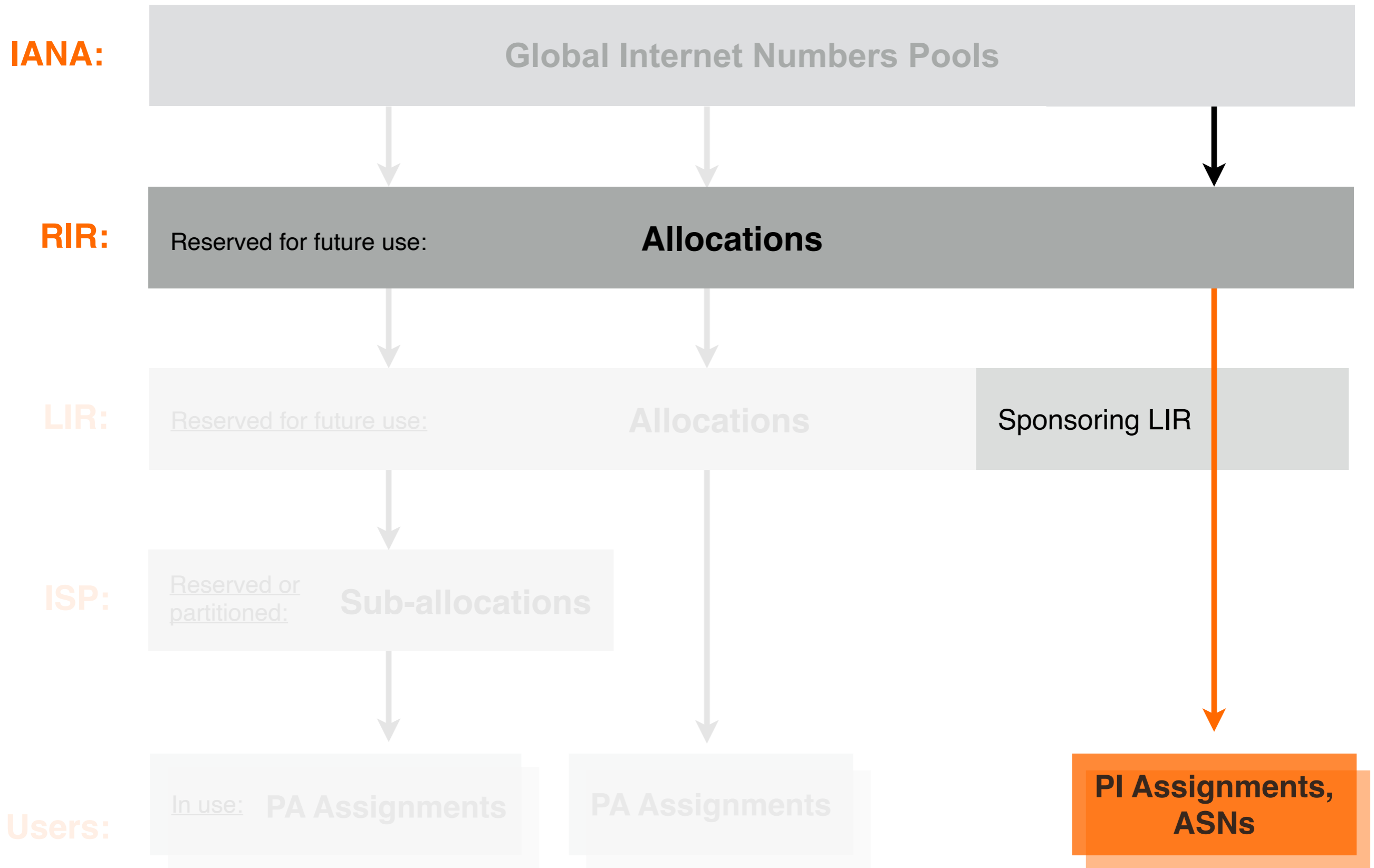
1. IPv4 allocations
2. IPv6 allocations

To End Users:

Provider Independent (PI):

4. IPv4 assignments
5. IPv6 assignments
6. ASNs

PI is assigned per User / Network



4. IPv4 PI Assignments



Get it transferred from another resource holder.

5. IPv6 PI Assignments



**A sponsoring LIR requests it on behalf of
the End User**

(min. assignment size: /48)

How to request PI resources:

[https://www.ripe.net/manage-ips-and-asns/resource-management/
number-resources/independent-resources](https://www.ripe.net/manage-ips-and-asns/resource-management/number-resources/independent-resources)

6. ASNs



A sponsoring LIR requests it on behalf of the End User

(the Network must be multi-homed and have a
unique routing policy for each AS)

ASN Assignment Criteria:

<https://www.ripe.net/publications/docs/ripe-679#AssignmentCriteria>

How to request ASN:

<https://www.ripe.net/manage-ips-and-asns/as-numbers/request-an-as-number>



Questions



Activity:

RIPE-745 defines the SSA.

<https://www.ripe.net/publications/docs/ripe-745>

Which article says when the RIPE NCC can close an LIR?



**Let's take a
5 minute
break!**



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How to transfer Internet number resources to/from another LIR

Section 3 of 5

The General Procedure



The current
resource holder

1. Check if the transfer is possible
2. Sign the transfer agreement
3. The current resource holder starts the transfer



The receiving
party

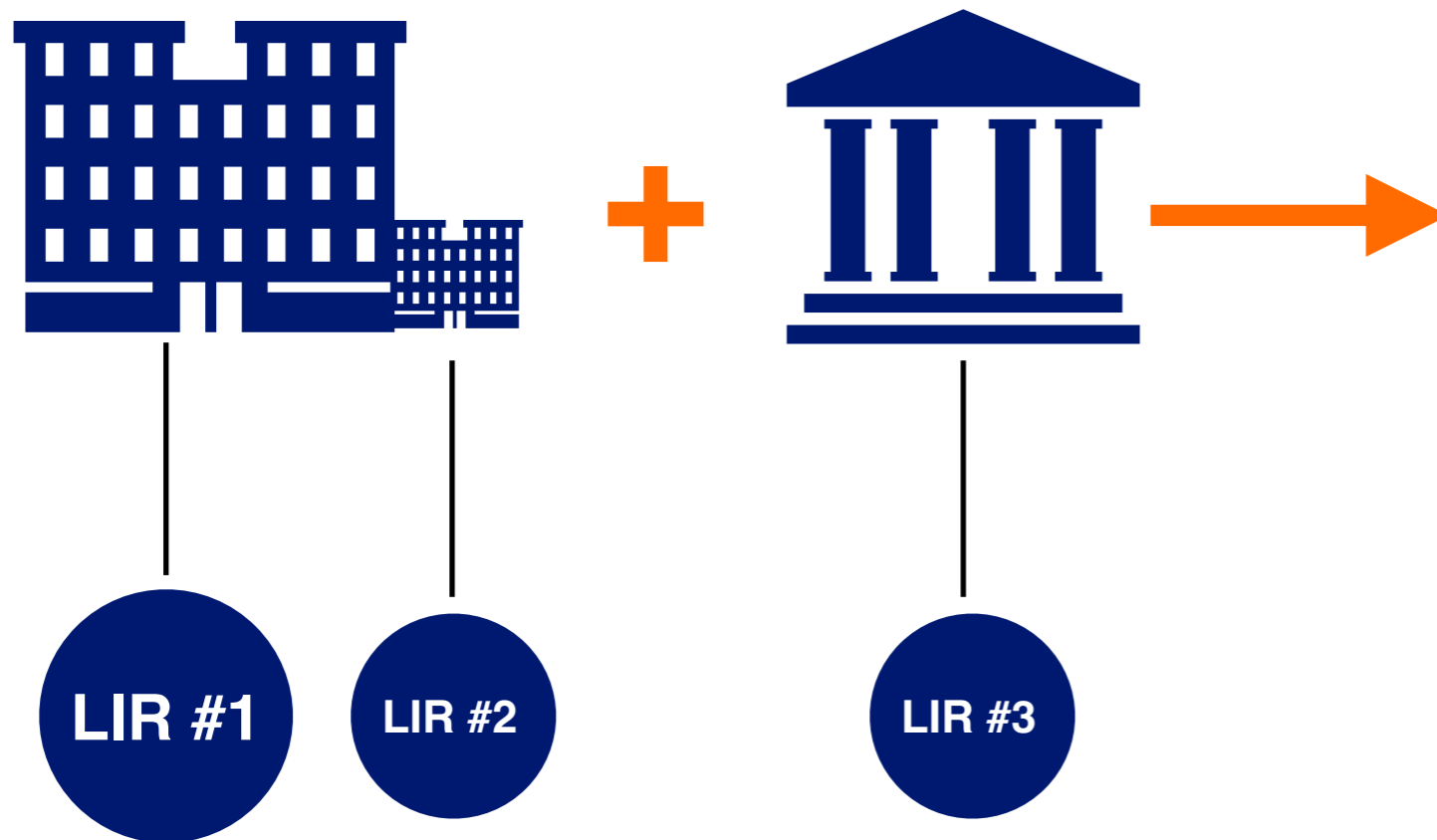
Take the poll!

In the RIPE NCC region, there is a restriction prohibiting transfers within 24 months since the last transfer/allocation.

For which resources does this apply?



Company Mergers/Acquisitions



1. Check the policy if the transfer is possible
2. Transfer the resources to one of the LIRs
3. Close LIRs that you do not need anymore

How to start a merger/acquisition:

<https://www.ripe.net/manage-ips-and-asns/resource-transfers-and-mergers/mergers-and-acquisitions>

Transfers can be temporary!



- The resource holder can temporary transfer:
 - Allocations / sub-allocations
 - PI assignments & ASNs
- The temporary transfer must have an expiration date
- The restrictions for transfers do not apply upon return



Can **PI resources** be transferred?



- The End User name changes → notify the RIPE NCC
- The sponsoring LIR changes → notify the RIPE NCC
- The sponsoring LIR closes → within 20 working days find a new one
- Transfer PI resources to another company/person → submit the transfer request

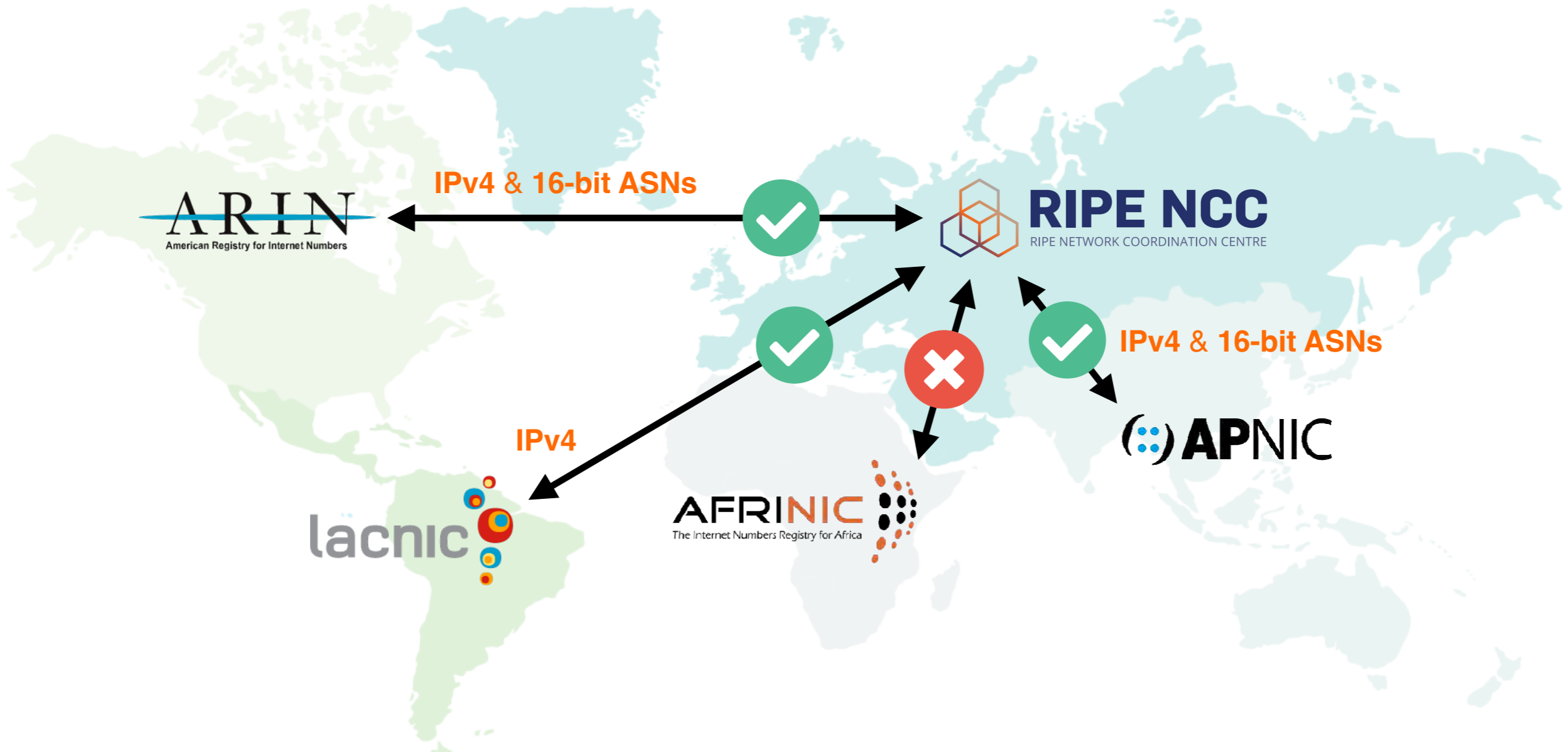
The RIPE Policy to check:

<https://www.ripe.net/publications/docs/ripe-757>

Transfers with other RIRs



Transfers with other RIRs



Inter-RIR transfers procedure:

<https://www.ripe.net/manage-ips-and-asns/resource-transfers-and-mergers/mergers-and-acquisitions>

To start inter-RIR transfer send request to: inter-rip@ripe.net



Questions





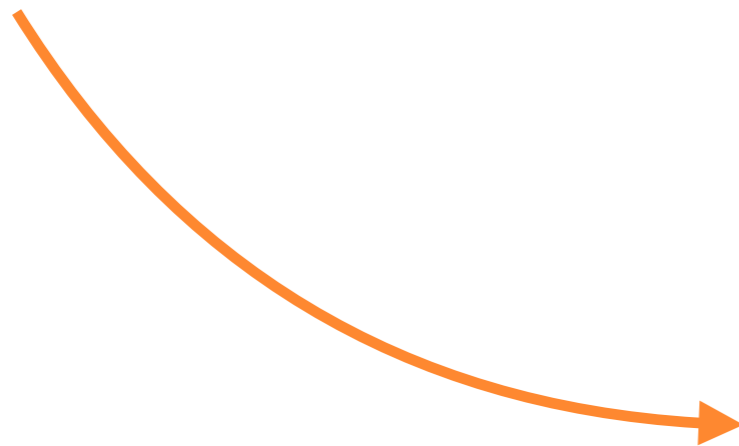
Using the Internet number resources

Section 4 of 5

Must be registered in the RIPE Database!

Step 1

The legitimate holder registers all assignments, (sub)-allocations, and ASNs.

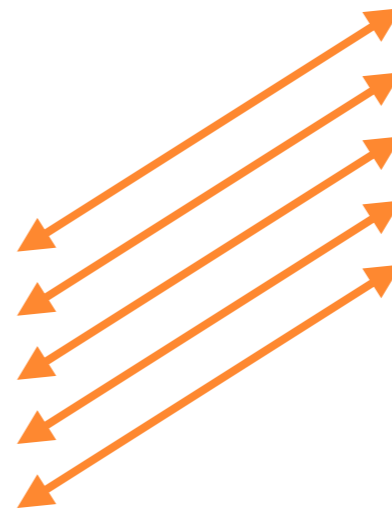


The RIPE database

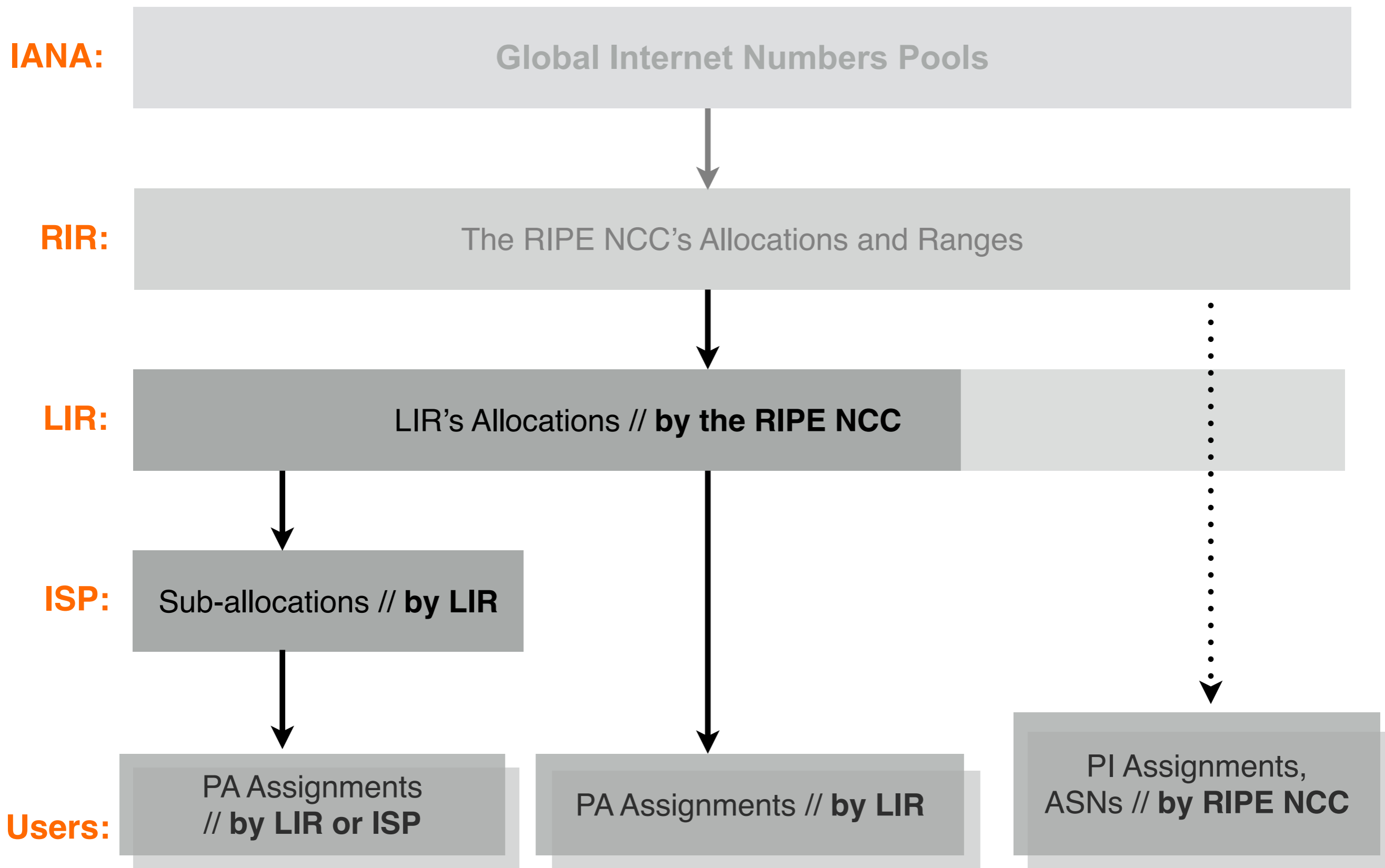


Step 2

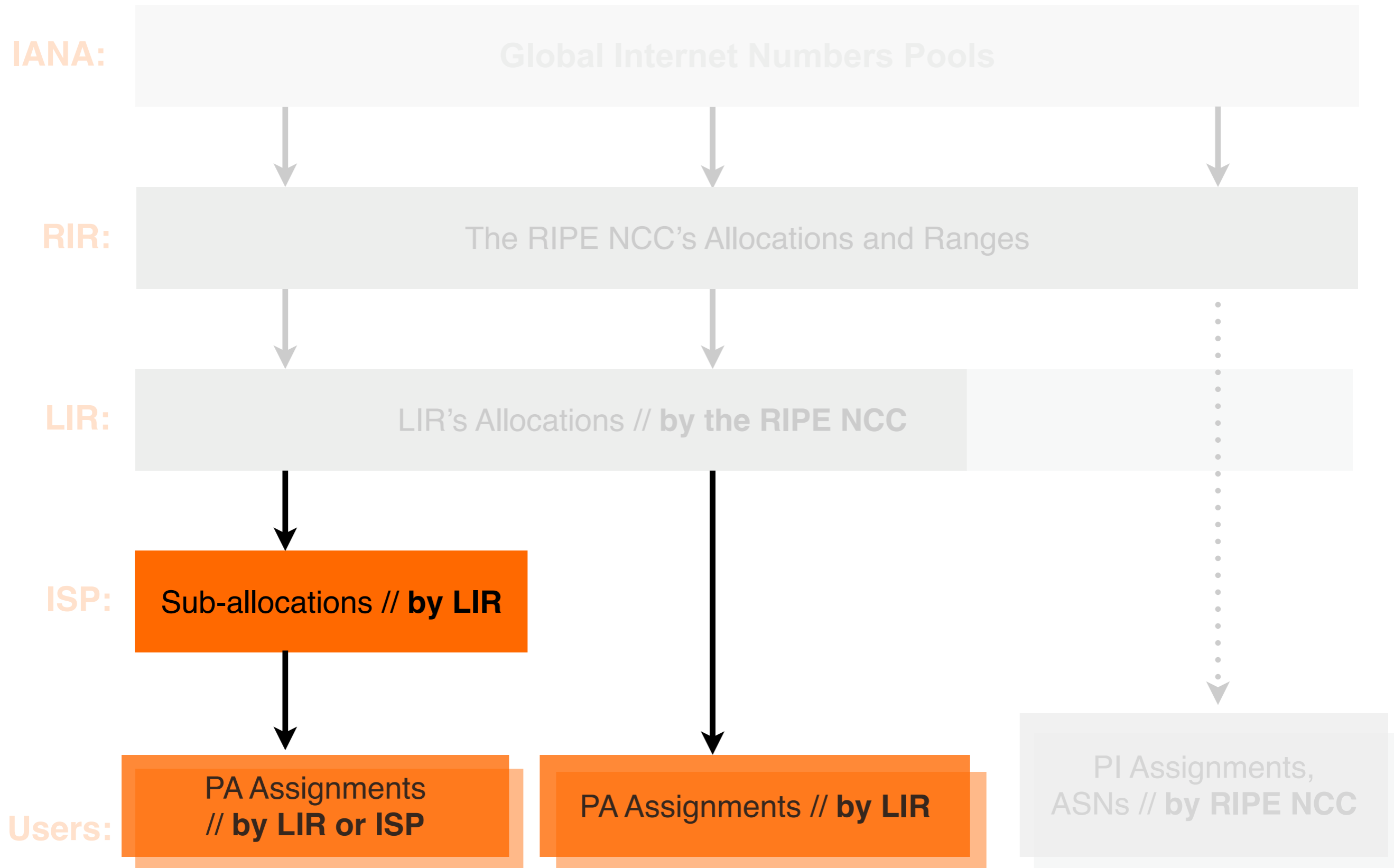
Other Internet users or ISPs can query who is the legitimate holder of a resource.



Who registers what?



An LIR registers:



Registering an assignment



The screenshot displays the RIPE Database web application. The browser address bar shows 'apps.db.ripe.net'. The page title is 'RIPE Database'. The user is logged in, as indicated by a profile picture in the top right. The main content area is titled 'My Resources' and 'Sponsored Resources'. It shows a summary of resource usage: 'Total allocated subnets: 0', 'Total allocated subnets used: 0', and 'Total allocated subnets free: 0'. Below this, there are tabs for 'IPv4', 'IPv6', and 'ASN'. The 'IPv6' tab is selected, showing a resource '2001:67c:64::/48' with tags 'ASSIGNED PI', 'RIPE-MEETING-NET', 'IRR', and 'rDNS'. A 'Create assignment' button is visible. The sidebar on the left contains various navigation options: 'My LIR', 'Requests', 'Resources', 'RIPE Database', 'RPKI', 'Documentation', 'Feedback/Support', and 'Legal'.

It's in the LIR portal!



Questions





Tips and Tricks

Section 5 of 5

It is an Assisted Registry Check!

Once in a while, we will reach you to ask how things are and:

1. Remind you that some important information in the LIR portal must be **up-to-date**: legal name, VAT, address, and phone number...
2. Check the allocated resource consistency.



Lost Maintainer Password



- **Automated recovery:** the link sent to “**upd-to:**” email address

A screenshot of the RIPE NCC web interface. The top navigation bar includes 'Manage IPs and ASNs', 'Analyse', 'Participate', 'Get Support', 'Publications', and 'About Us'. The main content area shows a breadcrumb trail 'Home > ... > Webupdates' and a dropdown menu 'You are editing Reseaux IP Europeens Network C...'. The central heading is 'Forgot maintainer password'. Below it, there is a text input field with the label 'Please enter your MNTNER name:' and two buttons: 'Search' and 'Cancel'.

- **Manual recovery:**
 1. Send statement and registration papers to the RIPE NCC
 2. After verification, we will send you an email with the recovery link
 3. We will add your **RIPE NCC Access account** to the maintainer

To start the password recovery:

<https://apps.db.ripe.net/change-auth/>

RIPEstat



- One-stop-shop for viewing all IP-resource related data from the RIPE NCC

The screenshot displays the RIPEstat interface for AS3333. The main content area is divided into several colored widgets:

- RIS Visibility:** AS3333 has HIGH visibility.
- Announced Prefixes:** AS3333 has 7 prefixes.
- Geolocation:** Loading...
- AS Routing Stats:** AS3333, RIPE-NCC-AS - Réseaux IP Européens Network Coordination Centre (RIPE NCC). Includes sub-widgets for IPv4 (Visibility: 312/330, Prefixes: 8, IPs: 4602) and IPv6 (Visibility: 315/330, Prefixes: 1, 48s).
- Abuse Contact:** abuse@ripe.net
- RIR:** Registration of AS3333 by RIPE NCC.
- Blacklist Status:** ASAS3333 NOT found in RECENT blacklists.
- RPKI Validation:** RPKI is VALID for AS3333.
- IANA:** 3154-3353 is ASSIGNED to RIPE NCC.
- WHOIS:** WHOIS information found for ASAS3333.
- Maxmind Geo Map:** Map showing ASAS3333 location.
- AS Neighbours:** 42 left, 2 right, 661 unique, 618 uncertain. Includes a table of neighboring ASNs.

ASN	Holder	Type	v4	v6
1103	SURFNET-NL - SURFnet bv	left	112519	4867
1257	SWIPNET TELE2	left	299515	17968
1273	CW - Vodafone Group PLC	left	166585	1079
12850	NL-BIT - BIT BV	left	5909	1137
12874	FASTWEB - Fastweb SpA	left	0	1

- Registry data, routing, reverse DNS, measurements, and third-party data
- Via web-site widgets, CLI, data API or mobile

RIPEstat:

<https://stat.ripe.net>

RIPE Atlas: Active Measurements



- Next generation Internet measurement network

Gives a bigger picture about the Internet traffic

- Currently **12,000+ active probes** worldwide

Hardware or software

- User Defined Measurements available for LIRs

ping, traceroute, DNS, SSL

- Set up IPv6 reachability test



RIPE Atlas:

<https://atlas.ripe.net>

RIPE Labs



- A place to showcase new and interesting Internet-related developments

The screenshot shows the RIPE Labs website interface. At the top, there's a navigation menu with links like COVID-19, RIPE Atlas, Tools, Security, RIPE Database, Data Repository, Network Operator Groups (NOG), History of Networking, Sustainability, and About. Below the navigation is a 'Contact us!' button and a link to 'See your ideas on RIPE Labs'. A 'Your IP address is:' section shows the IP 2001:67c:2e8:9::c100:14e6. The main content area features a 'Statistics' section with four cards: 'Number of LIRs' (23,599), 'LIRs with IPv6' (16,016), 'IPv4 addresses transferred' (1,047,296), and 'RIPE Atlas probes' (11,536). Below this is an 'Articles' section with two featured articles: 'Our First Glance at the Uganda Internet Shutdown' by Vesna Manojlovic and 'IETF Hackathon Online - Finding New Ways to Collaborate' by Charles Eckel. A 'TagCloud' is visible at the bottom left of the screenshot.

- **Anyone** can:
 - Present research
 - Showcase prototype tools
 - Share operational experience
 - Exchange ideas

RIPE Labs:

<https://labs.ripe.net>



Questions



What's Next in Internet Registry



Webinars

Attend another webinar live wherever you are.

- ❖ LIRs and the Internet Ecosystem (2 hrs)
- ❖ LIRs: Managing IP Addresses and ASNs (2 hrs)
- ❖ Internet Governance (1 hr)
- ❖ Policy Development Process (1 hr)
- ❖ Webinar for New LIRs (1 hr)

↓ For more info
click the link
below



learning.ripe.net



Face-to-face

Meet us at a location near you for a training session delivered in person.

- ❖ LIR (8.5 hrs)
- ❖ RIPE Database (8.5 hrs)



E-learning

Learn at your own pace at our online Academy.

- ❖ Internet Governance (3 hrs)
- ❖ RIPE Database (16 hrs)

↓ For more info
click the link
below



academy.ripe.net



Examinations

Learnt everything you needed? Get certified!

- ❖ RIPE Database Associate

↓ For more info
click the link
below



getcertified.ripe.net

We want your feedback!



What did you think about this session?

Take our survey at:

<https://www.ripe.net/feedback/lir2/>





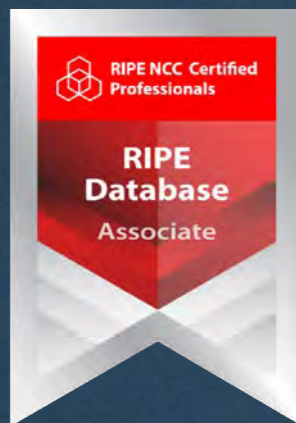
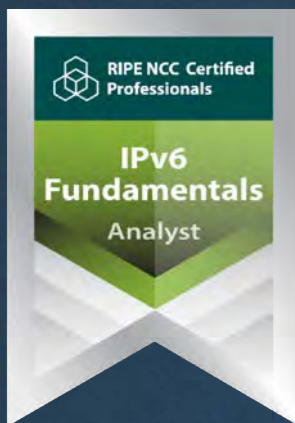
RIPE NCC
Academy

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RIPE NCC Certified Professionals



<https://getcertified.ripe.net/>



Do not hesitate to contact me!



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<https://www.facebook.com/alex.semenyaka/>

Links & Social



Published tags

events bgp rpk security community ripe country

Articles 3

Newest



RIPE NCC Engagement with Ukraine During the War

Alex Semenyaka · 19 Oct 2022 · 7 min read

Since the beginning of the war in Ukraine, the RIPE NCC has been carrying out a number of initiatives to help keep the country's Internet stable. In this article, we share information on these activities and what steps might be taken in the future.

ripe events country community

31 ❤️ 0 💬 📄



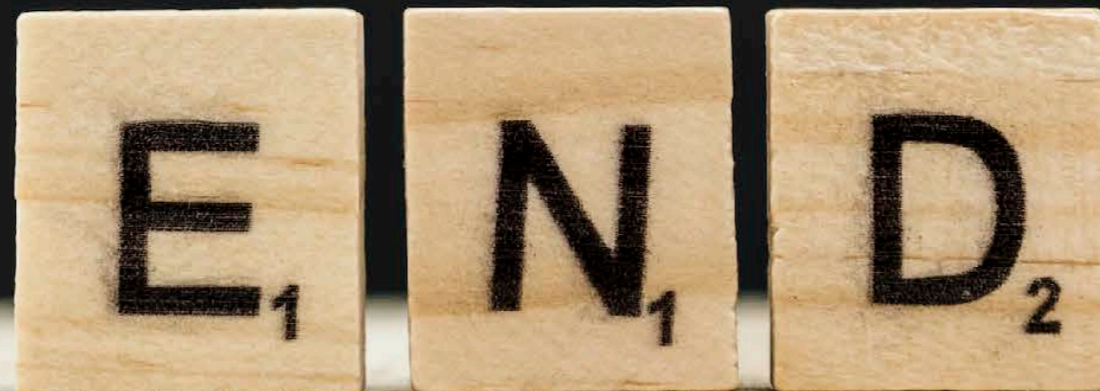
BGP & Routing Security

Is BGP secure?

Alex Semenyaka · 7 Jun 2022 · 3 min read

The RIPE NCC held online BGP Security training for Ukrainian telecom operators on 6 April. The training was delivered in English with translation into Ukrainian. In this article, we talk about the motivation for providing this particular kind of training and share the full recording.

Ēnn Соңы An Críoch Y Diwedd
Vége Endir ڤايان
Son Ժասահրուտի ڤتړږ
Lõpp Amaia תמיה
Sfârșit Loppu Tmiam
Kraj Конец Liðugt Крај
Fine Fin النهاية Konec Fund
Einde Fí Край Τέλος
Slut Fim Pabaiga
Beigas



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