



RIPE NCC

RIPE NETWORK COORDINATION CENTRE

RIPE Database Basics

Webinar

March 2025

RIPE NCC Learning & Development



**This webinar is
being recorded**

Take the poll!

What do you know about
the **RIPE Database**?





The RIPE Database

Purpose of the Database

RIPE Database Objects

Contact Objects

Network Objects

Query the RIPE Database

Available interfaces

Default query results

Using flags and options

Inverse Lookups

Full Text Search

Create and update objects

Maintainer Objects

Authentication Mechanisms

Best practices

Updating objects



The RIPE Database

Purpose and Objects



RIPE Database

- Public Internet resource and routing registry database
 - Registry of **WHO** holds IPs and ASNs
 - Keep **contact information**
 - For troubleshooting, notifying of outages
 - Publishing **routing policies**
 - Provisioning **reverse DNS**





Try it out!

Go to *apps.db.ripe.net*

Search for **193.0.24.10**

What did you find in the RIPE Database?



IPs and ASNs

inetnum

inet6num

aut-num

Contact Information

organisation

person

role

Routing

route

route6

as-set

Reverse DNS

domain

Object Protection

mntner

Demo

Let's do a quick search
in the RIPE Database...



Anatomy of an Object



Attributes

person:
address:
address:
e-mail:
nic-hdl:
mnt-by:
created:
last-modified:
source:

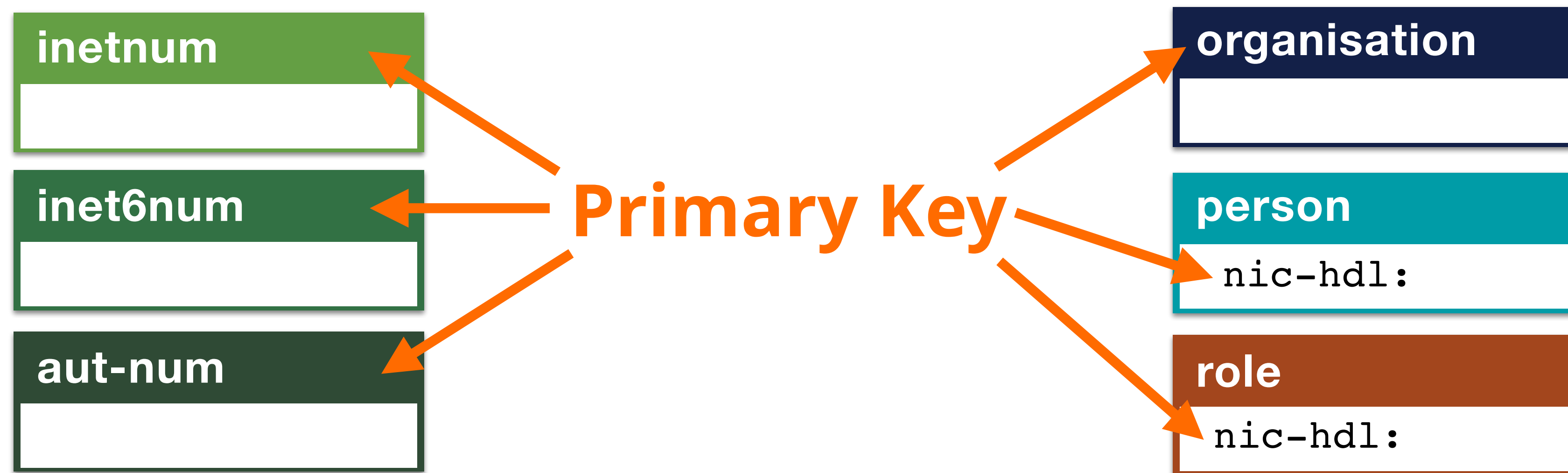
Jean Blue
Long Street 123
76543 Big City
j.blue@example.com
JB0123-RIPE
SECURITY-MNT
(date & time)
(date & time)
RIPE

Values



Primary Key

- Every object has one Primary Key
- It makes the object unique
 - Different from other objects of the same type

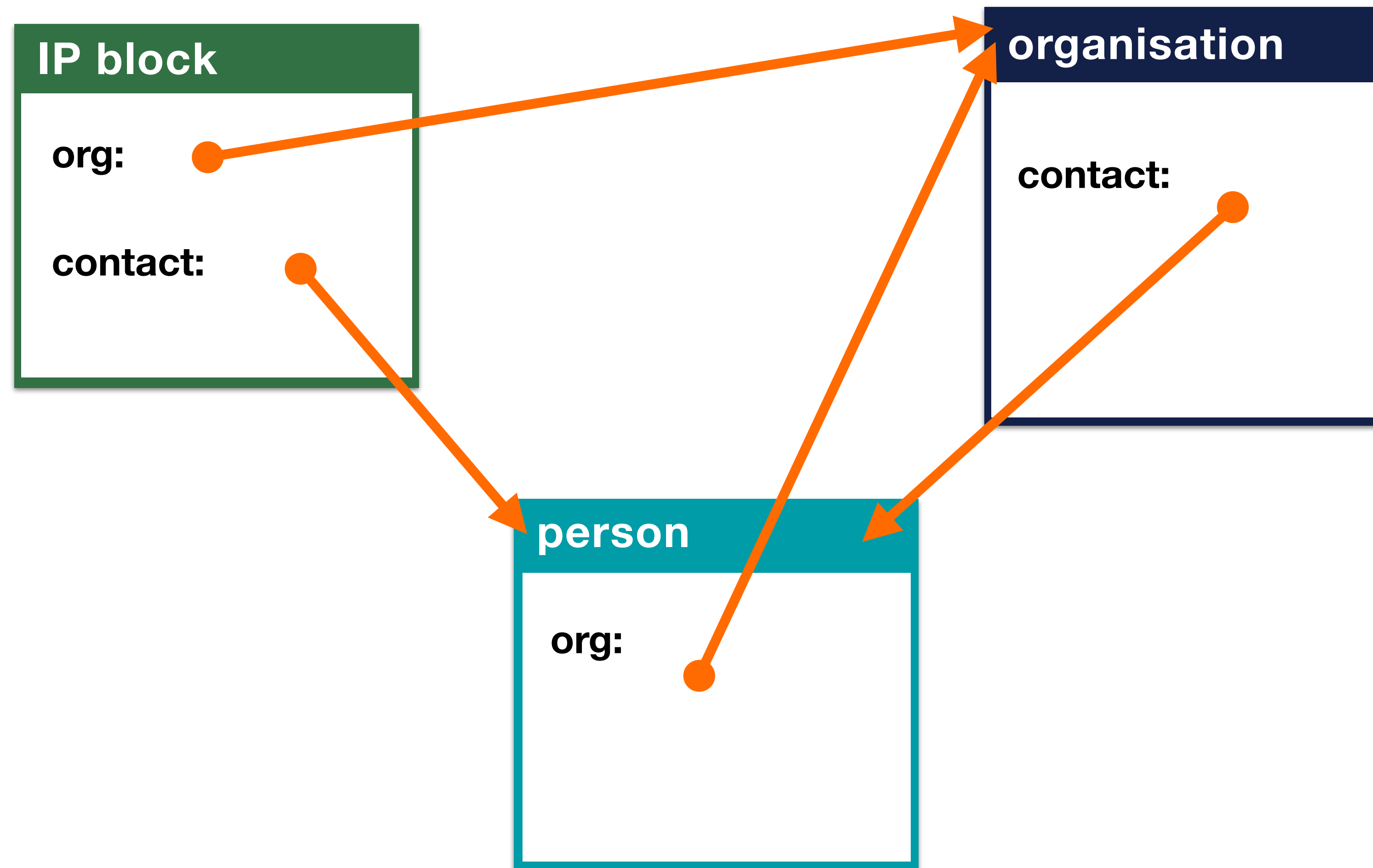


Lookup Keys



person:	Jean Blue
address:	Long Street 123
address:	76543 Big City
e-mail:	j.blue@example.com
nic-hdl:	JB0123-RIPE
mnt-by:	SECURITY-MNT
created:	(date & time)
last-modified:	(date & time)
source:	RIPE

Objects are Linked to Each Other





Questions



Take the poll!

What do you do when you have **Internet problems**?





Contact Objects

How contact data is registered

ORGANISATION object



Has data about a company, institution or any other kind of organisation that has IP addresses and AS Numbers.



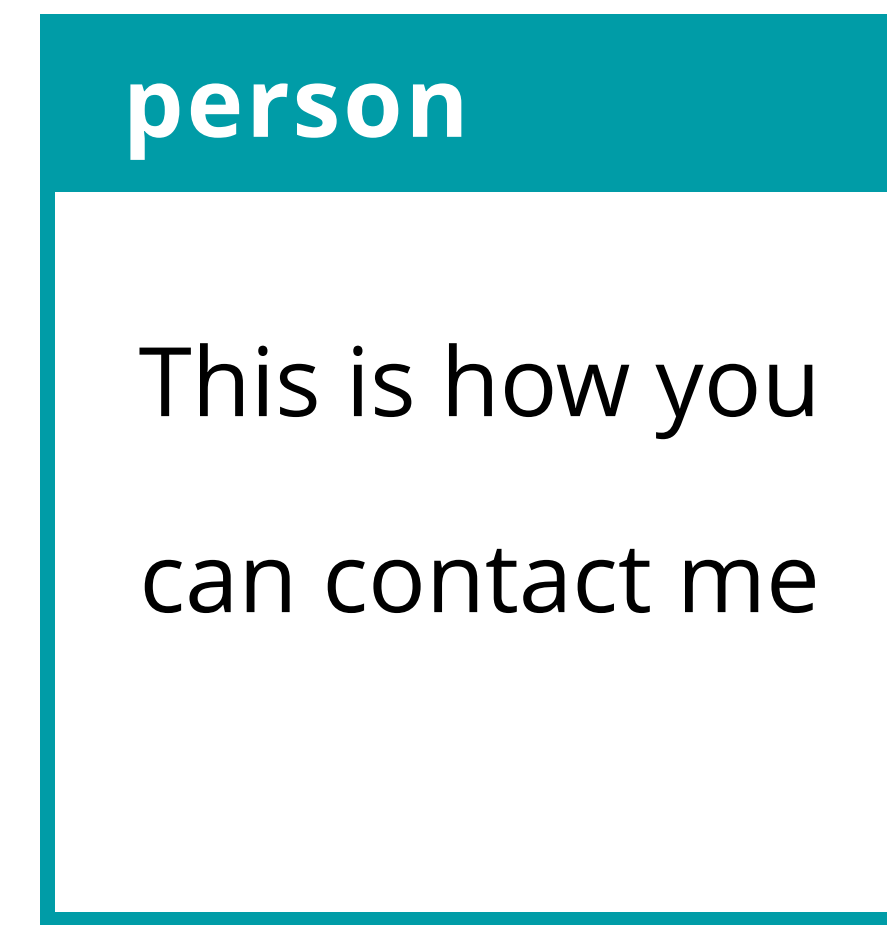
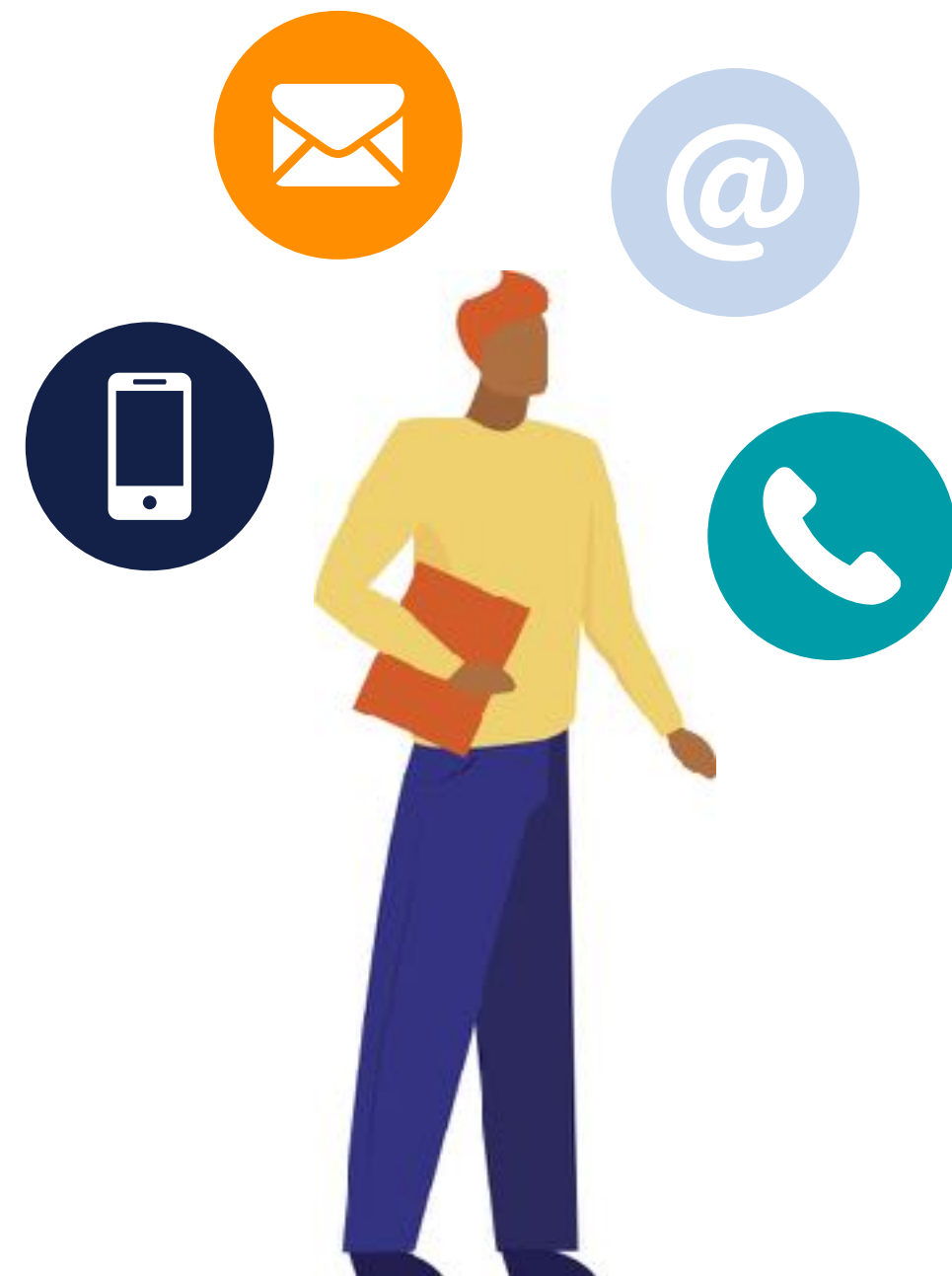
organisation

This is how you
can contact ORG
and who is
responsible



PERSON object

Has data that can be used to contact a real person.



ROLE object



Group of Persons



role

admin-c:
tech-c:

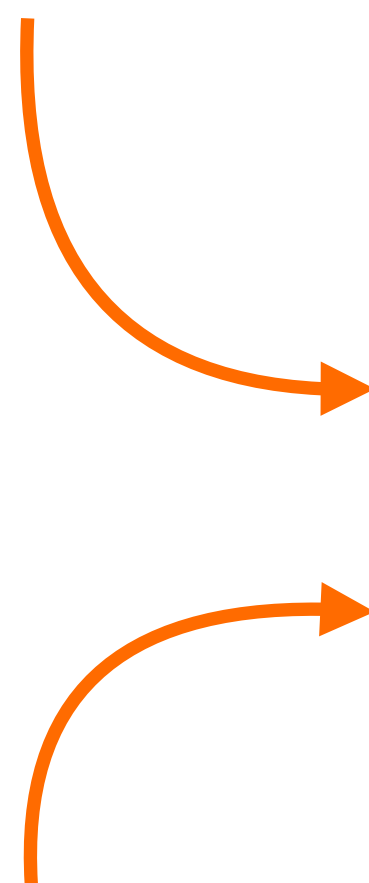
abuse-mailbox:

Abuse Contact



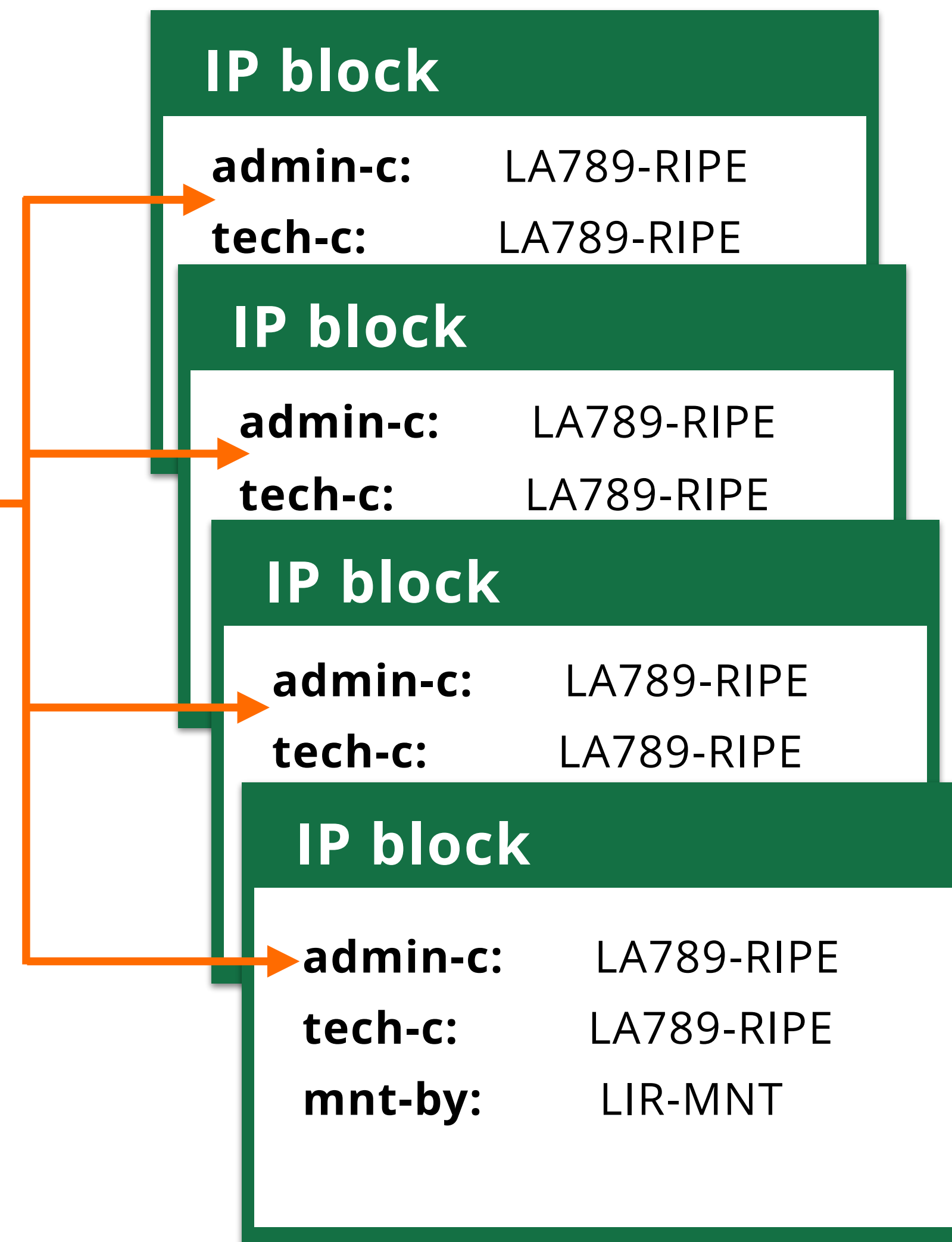


person: Jean Blue
nic-hdl: **JB123-RIPE**
address: Long Street 5
phone: +31 20 555 0101
email: jean@example.net
mnt-by: LIR-MNT



role: LIR Admin
nic-hdl: **LA789-RIPE**
admin-c: **JB123-RIPE**
tech-c: **JB123-RIPE**
admin-c: **BW531-RIPE**
tech-c: **BW531-RIPE**
mnt-by: LIR-MNT

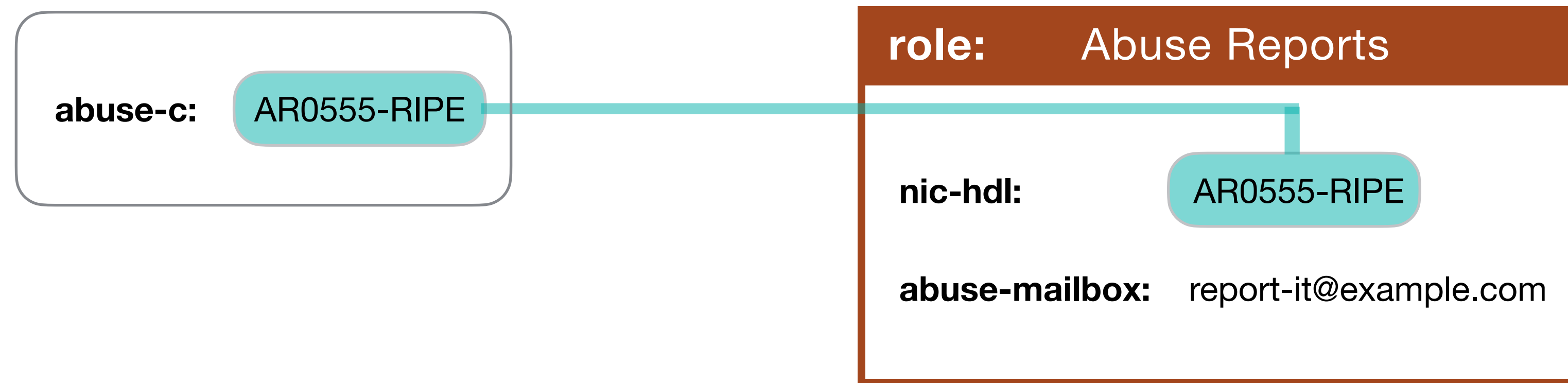
person: Betty White
nic-hdl: **BW531-RIPE**
address: Long Street 5
phone: +31 20 555 0101
email: betty@example.net
mnt-by: LIR-MNT





ROLE object: Abuse Contact

- The **role** object contains the “abuse-mailbox:”
- Objects reference the **role** in “abuse-c:”
- RIPE Database shows the abuse contact in WHOIS query results



Demo

Let's search for a **role** in
the RIPE Database...





Network objects

How networks are registered



Network objects

IPv4 = inetnum

inetnum: 192.30.0.0 - 192.30.3.255

netname:	NL-NETWORK-20170101
country:	NL
org:	ORG-EE2-RIPE
admin-c:	DV789-RIPE
tech-c:	JS123-RIPE
status:	ALLOCATED PA
mnt-by:	RIPE-NCC-HM-MNT
mnt-by:	DEFAULT-LIR-MNT
source:	RIPE

IPv6 = inet6num

inet6num: 2001:db8::/32

netname:	NL-NETWORK-20170101
country:	NL
org:	ORG-EE2-RIPE
admin-c:	DV789-RIPE
tech-c:	JS123-RIPE
status:	ALLOCATED-BY-RIR
mnt-by:	RIPE-NCC-HM-MNT
mnt-by:	DEFAULT-LIR-MNT
source:	RIPE



Same object structure for IPv4 and IPv6

Network

inetnum: IPv4 RANGE
inet6num: IPv6 PREFIX
netname: NETWORK-NAME

Contact information

country: ZZ
org: ORG-ZZ123-RIPE
admin-c: AD321-RIPE
tech-c: TE123-RIPE

Type of address space

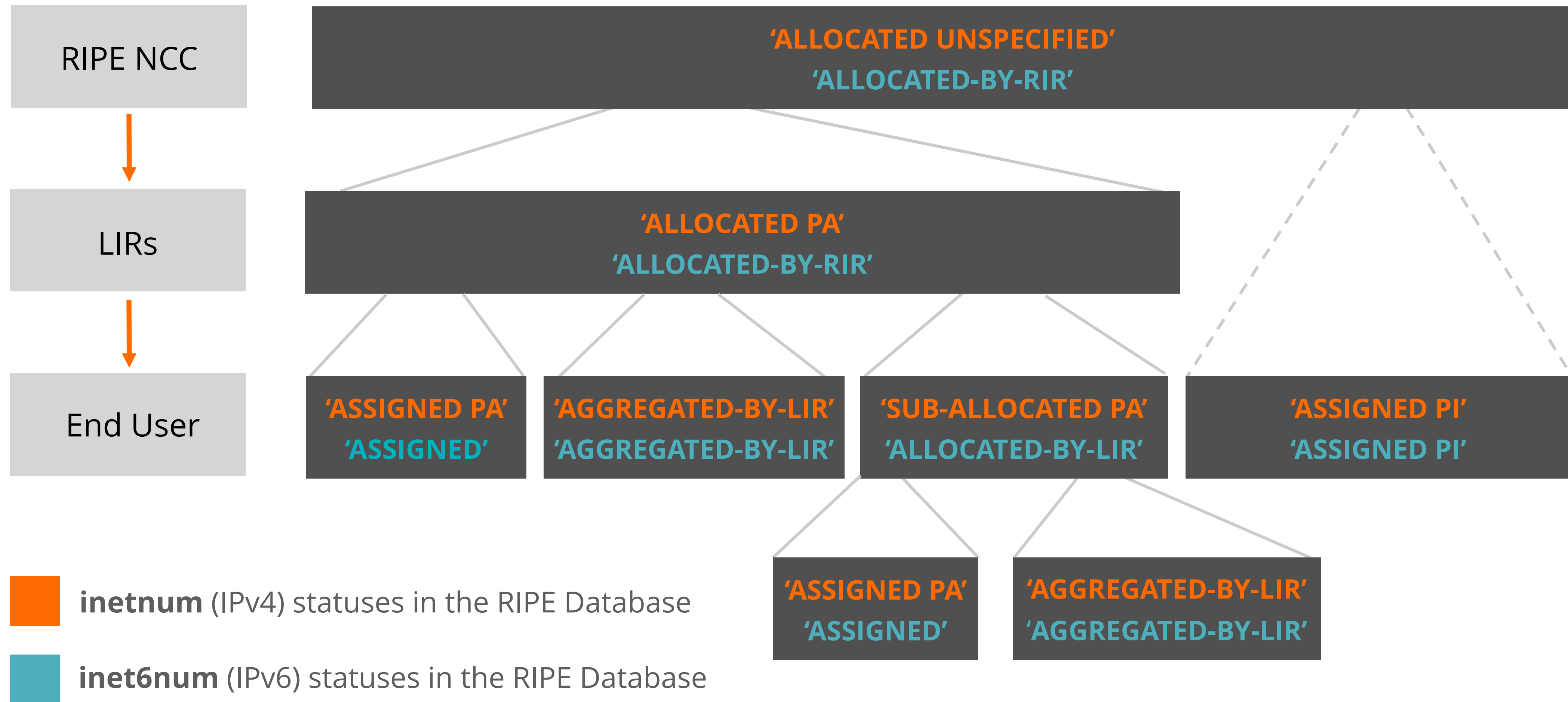
status: ALLOC-ASSIGN

Protection of object

mnt-by: RIPE-NCC-HM-MNT
mnt-by: DEFAULT-LIR-MNT

source: RIPE

Object Status Hierarchy





Questions





Querying

Default results, flags and options

Querying the RIPE Database



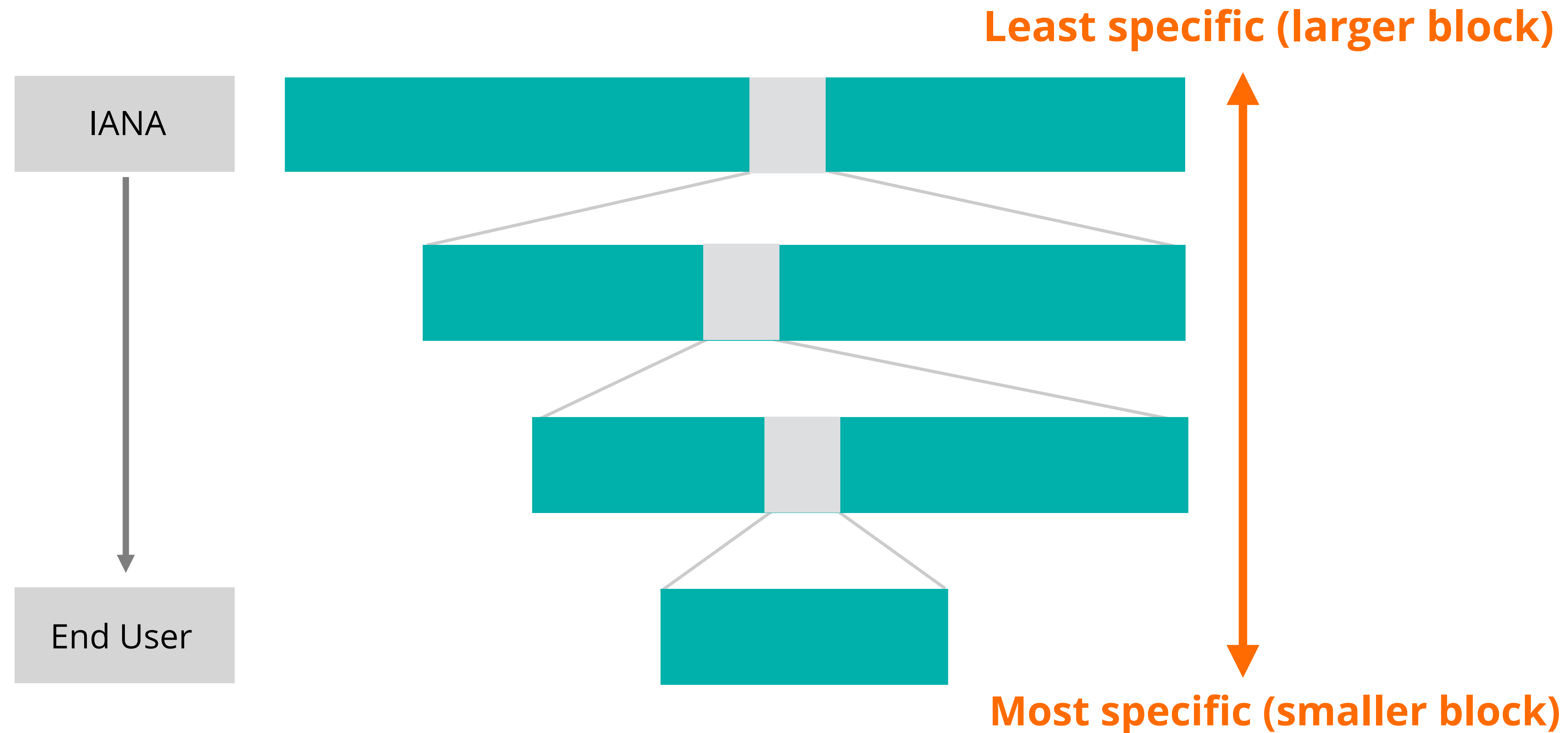
- Web interface
- Command line
- Full Text Search
- RESTful API
- RIPEstat





Default Query Results

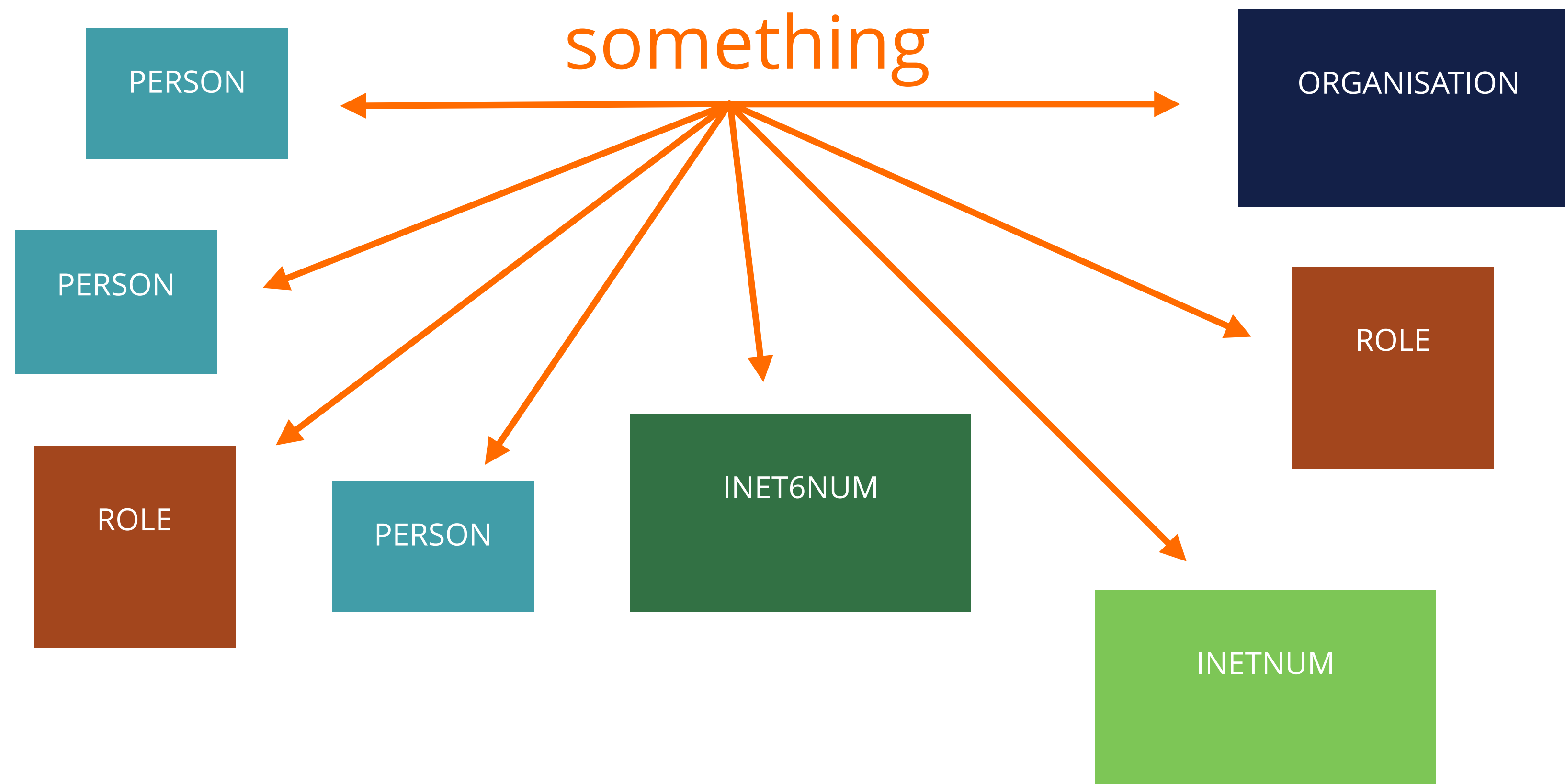
When you query for an **IP address** or **prefix**...





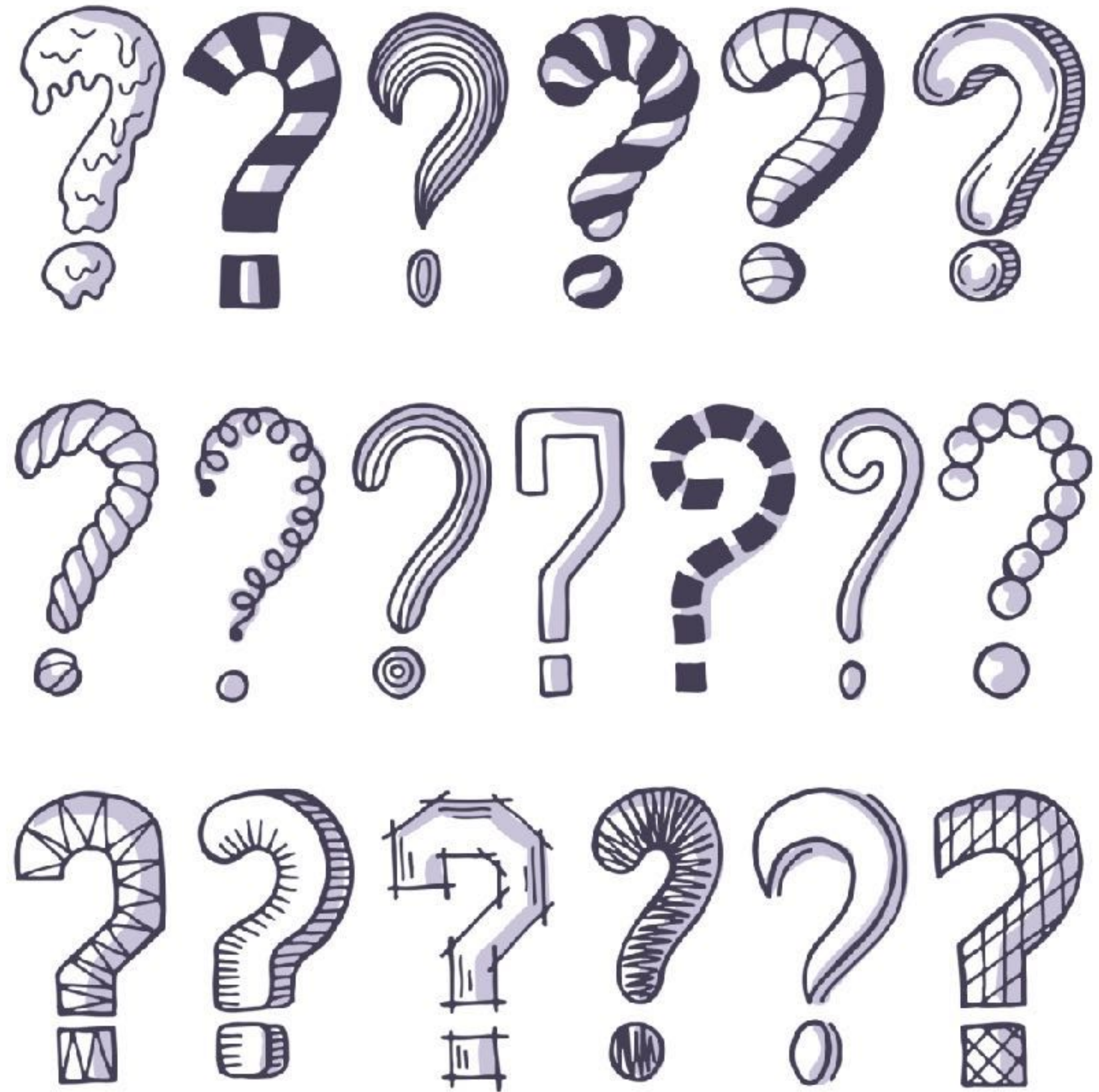
Default Query Results

When you query for simple **text**...



Take the poll!

How can you make
better queries in the
RIPE Database?



Making Better Queries

- Reduce the amount of objects returned
- Use options and flags to optimise the results.
- Avoid getting blocked!





Filtered Query Results

- All email addresses **are filtered**
- Show them with **-B** flag in query
 - Or turn on “Show full object details”
- “auth:” attribute values are always filtered

person: Jean Blue

nic-hdl: JB123-RIPE

address: Long Street 5

phone: +31 20 555 0101

mnt-by: LIR-MNT

source: RIPE # **Filtered**

mntner: LIR-MNT

admin-c: JB123-RIPE

auth: SSO # **Filtered**

auth: SSO # **Filtered**

auth: PGP-KEY-54321

mnt-by: LIR-MNT

source: RIPE # **Filtered**



Results Without Related Objects

Search term:

Search

inetnum: 193.0.24.0 - 193.0.30.255

admin-c: BRD-RIPE

tech-c: OPS4-RIPE

route: 193.0.24.0/21

origin: AS2121



Results With Related Objects

Search term: 193.0.24.1

Search

inetnum: 193.0.24.0 - 193.0.30.255

admin-c:

BRD-RIPE

tech-c:

OPS4-RIPE

role: RIPE NCC Operations

admin-c:

admin-c:

tech-c:

tech-c:

tech-c:

tech-c:

nic-hdl:

person: Brian Riddle

address: Stationsplein 11

address: 1012 AB Amsterdam

phone: +31 20 535 4444

e-mail: brian@ripe.net

nic-hdl: BRD-RIPE

OPS4-RIPE

route: 193.0.24.0/21

origin:

AS2121

Selecting Object Types



☐ as-block	☐ inet-rtr	☐ poem
☐ as-set	☐ irt	☐ poetic-form
☐ aut-num	☐ key-cert	☐ role
☐ domain	☐ mntner	☐ route
☐ filter-set	☐ organisation	☐ route6
☒ inet6num	☐ peering-set	☐ route-set
☒ inetnum	☐ person	☐ rtr-set

- Choose the types of objects you want to see
- This results in fewer objects to process
- Using a flag: **-T {object type}**
 - i.e. -T inetnum 192.168.0.0/21



Navigating the Hierarchy

- Using flags, you can find what is under or above an inet(6)num object
 - Under = More Specific
 - Above = Less Specific
- The flags: -m, -M, -l, -L
- Also found in the “Hierarchy Flags” tab



More Specific inetnums: -m



-m 193.0.24.0/21

Search



193.0.24.0/21

/24

/25

/26

More Specific inetnums: -M



-M 193.0.24.0/21

Search



193.0.24.0/21

/24

/25

/26

/26

Less Specific inetnums: -l



-l 193.0.25.0/24

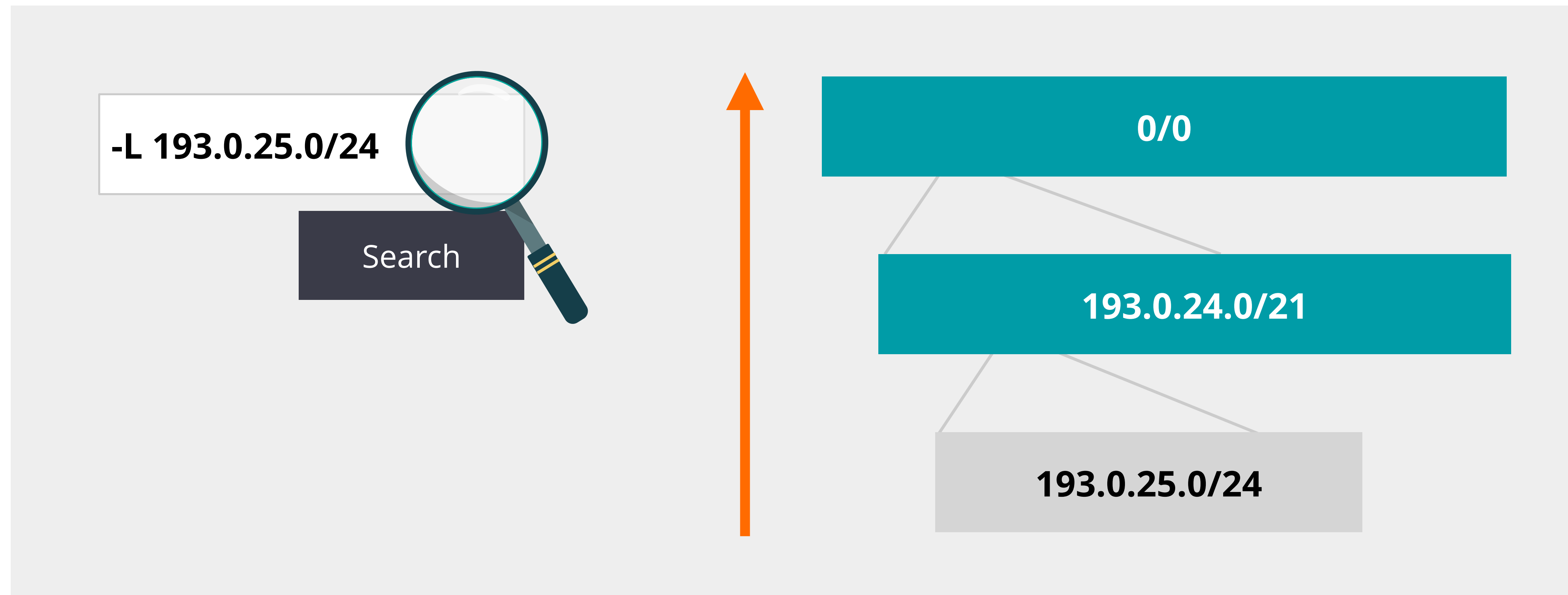
Search



193.0.2.0/21

193.0.25.0/24

Less Specific inetnums: -L





Let's practice! (1)

Which **flag** would give you this object as a result?

person:	Jean Blue
nic-hdl:	JB123-RIPE
address:	Long Street 5
phone:	+31 20 555 0101
e-mail:	j.blue@example.net
mnt-by:	LIR-MNT
source:	RIPE



Let's practice! (2)

Which **flag** would give you these objects as a result?

193.0.24.0/21

/24

/26



Let's practice! (3)

Which **flag** would give you this object as a result?

```
route6: 2001:db8::/32
```

```
origin: AS65530
```



Questions





**We will continue in
5 minutes!**

Welcome back!



Take the poll!

Are you enjoying the
RIPE NCC webinar?





Inverse Lookups

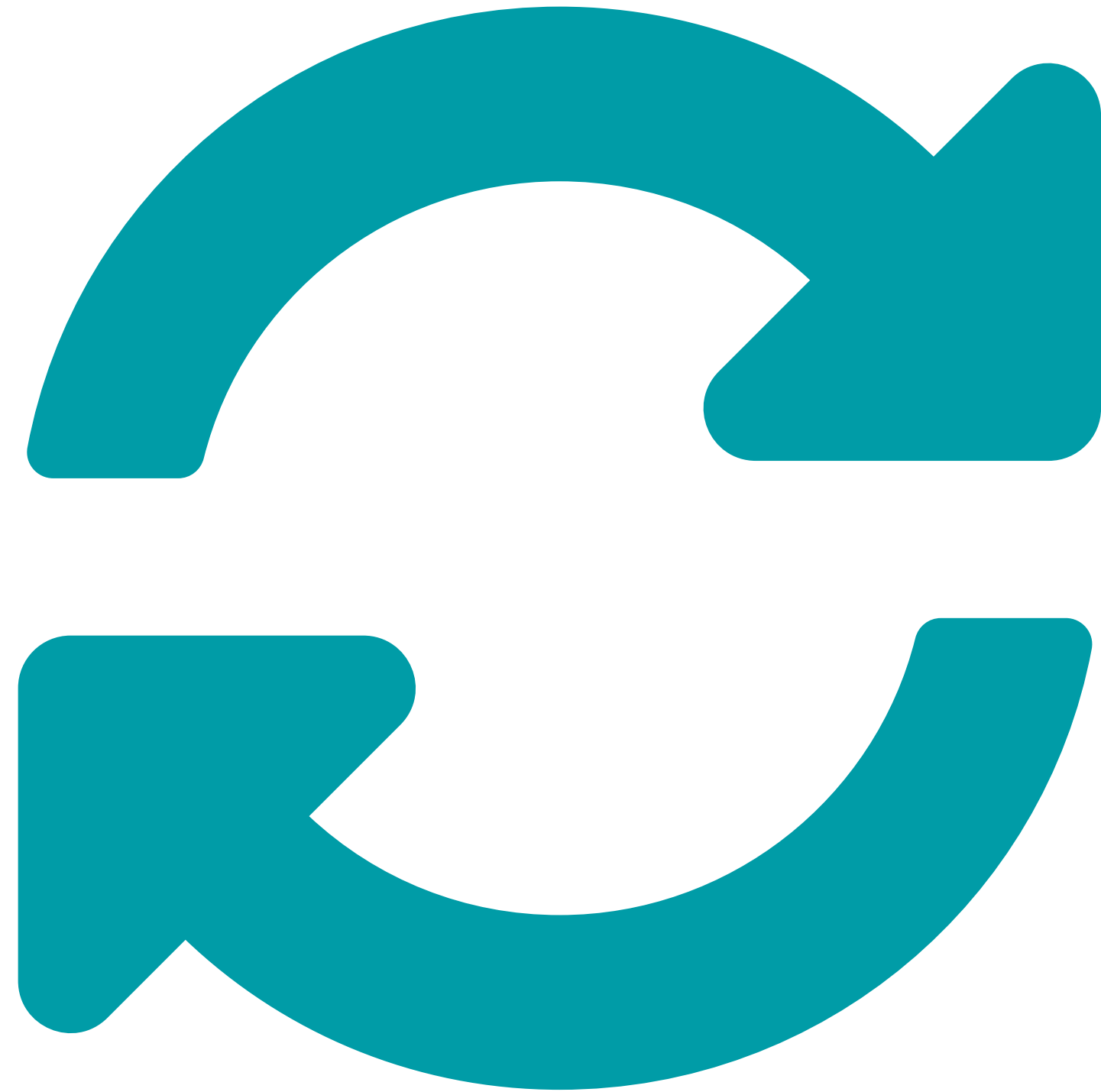
Searching for references

Take the poll!

What is an “inverse lookup”?



Inverse Lookup



Finding all other objects in which
your object is **referenced**.

Inverse Lookup: admin-c



inet6num: 2001:db8::/32

org: ORG-BB2-RIPE
admin-c: BW280-RIPE
tech-c: JB1-RIPE
mnt-by: RIPE-NCC-HM-MNT
mnt-by: DEFAULT-LIR-MNT

aut-num: AS64551

org: ORG-BB2-RIPE
admin-c: **JB1-RIPE**
tech-c: TT789-RIPE
mnt-by: RIPE-NCC-END-MNT
mnt-by: DEFAULT-LIR-MNT

mntner: DEFAULT-LIR-MNT

admin-c: **JB1-RIPE**
tech-c: TT789-RIPE
mnt-by: DEFAULT-LIR-MNT

role: Tech Team

nic-hdl: TT789-RIPE
admin-c: **JB1-RIPE**
tech-c: KH404-RIPE
mnt-by: DEFAULT-LIR-MNT

-i admin-c JB1-RIPE

person: Jean Blue

address: Big Street 45
phone: +31 20 345 6854
e-mail: jean.blue@example.net
nic-hdl: JB1-RIPE
mnt-by: BLUE-MNT

Inverse Lookup: person



inet6num: 2001:db8::/32	
org:	ORG-BB2-RIPE
admin-c:	BW280-RIPE
tech-c:	JB1-RIPE ←
mnt-by:	RIPE-NCC-HM-MNT
mnt-by:	DEFAULT-LIR-MNT

aut-num: AS64551	
org:	ORG-BB2-RIPE
admin-c:	JB1-RIPE ←
tech-c:	TT789-RIPE
mnt-by:	RIPE-NCC-END-MNT
mnt-by:	DEFAULT-LIR-MNT

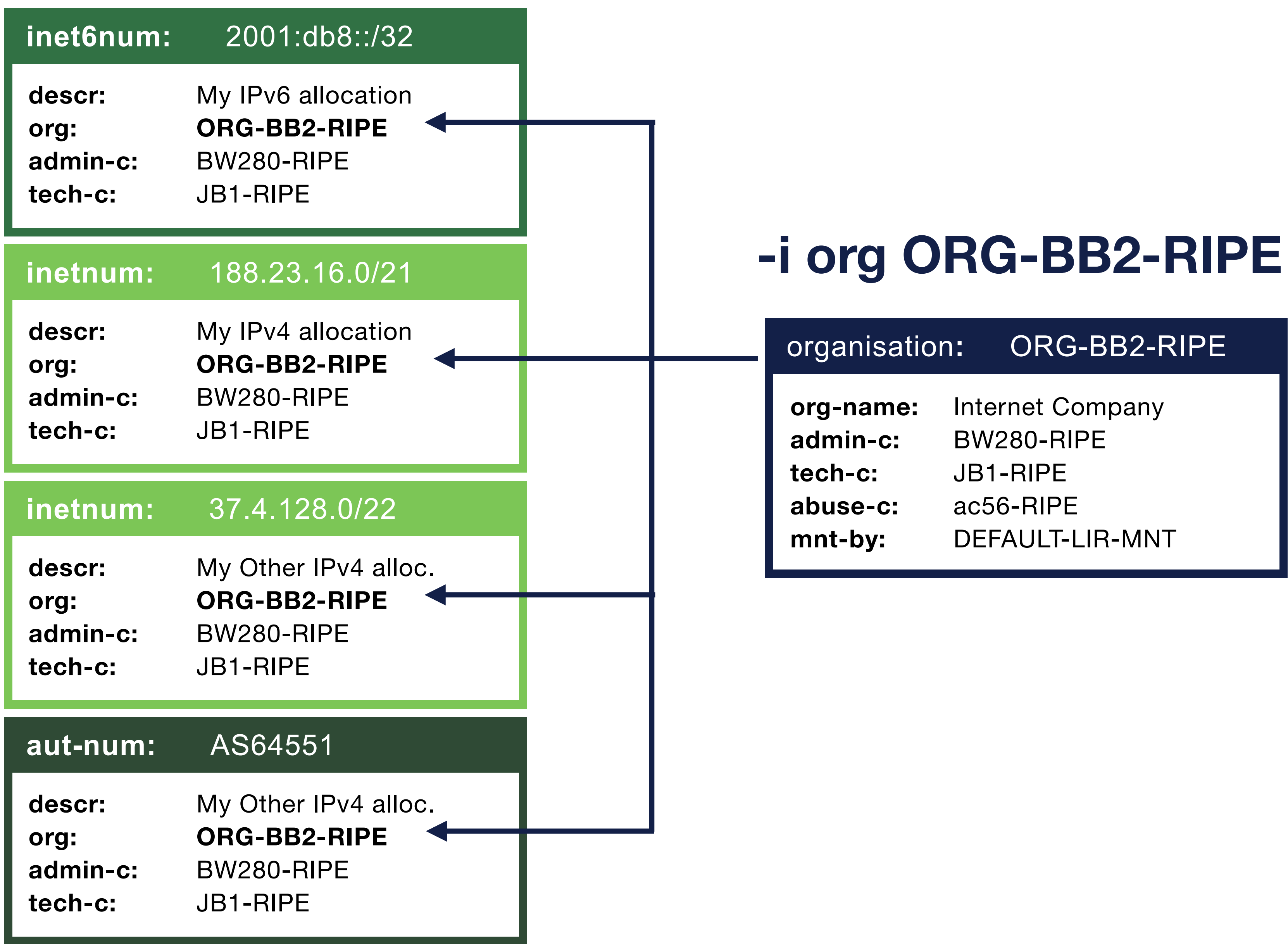
mntner: DEFAULT-LIR-MNT	
admin-c:	JB1-RIPE ←
tech-c:	TT789-RIPE
mnt-by:	DEFAULT-LIR-MNT

role: Tech Team	
nic-hdl:	TT789-RIPE
admin-c:	JB1-RIPE ←
tech-c:	KH404-RIPE
mnt-by:	DEFAULT-LIR-MNT

-i person JB1-RIPE

person: Jean Blue	
address:	Big Street 45
phone:	+31 20 345 6854
e-mail:	jean.blue@example.net
nic-hdl:	JB1-RIPE
mnt-by:	BLUE-MNT

Inverse Lookup: organisation



Inverse Lookup: mnt-by



inet6num: 2001:db8::/32

org: ORG-BB2-RIPE
admin-c: BW280-RIPE
tech-c: JB1-RIPE
mnt-by: RIPE-NCC-HM-MNT
mnt-lower: ANOTHER-MNT

aut-num: AS64551

org: ORG-BB2-RIPE
admin-c: JB1-RIPE
tech-c: TT789-RIPE
mnt-by: RIPE-NCC-END-MNT
mnt-by: **ANOTHER-MNT**

person: Jean Blue

nic-hdl: JB1-RIPE
phone: +31 20 543 9640
mnt-by: **ANOTHER-MNT**

role: Other Group

nic-hdl: OG10-RIPE
admin-c: JB1-RIPE
tech-c: SZ72-RIPE
mnt-by: **ANOTHER-MNT**

-i mnt-by ANOTHER-MNT

mntner: ANOTHER-MNT

admin-c: JB1-RIPE
auth: PGPKEY
auth: SSO
upd-to: jean.blue@example.net
mnt-by: ANOTHER-MNT



Full Text Search

Looking for text everywhere



RIPE Database Text Search

This service allows searches over the full text of the RIPE Database object data.

The search is done on object text without regard for any relationships. Multiple search terms should be separated with a space.

 [Advanced Search](#)

By submitting this form you explicitly express your agreement with the [RIPE Database Terms and Conditions](#)

Search



Search results

This is the RIPE Database full text search service.
The RIPE Database is subject to [Terms and Conditions](#).

Number of results - all object types	15
key-cert	6
person	3
domain	2
mntner	2
inet6num	1
inetnum	1

domain: [201.156.178.IN-ADDR.ARPA](#)
descr=BLUELIGHT , mnt-by=RO-BLUELIGHT

domain: [200.156.178.IN-ADDR.ARPA](#)
descr=BLUELIGHT , mnt-by=RO-BLUELIGHT

inet6num: [2a01:4f8:201:31ea::/64](#)
netname=BLUE-LIGHT



Basic Search

☒ All

☐ Any

☐ Exact Match

Search only within the following objects:

as-block

as-set

aut-num

domain

filter-set

inet-rtr

inet6num

inetnum

irt

key-cert

mntner

organisation

peering-set

person

poem

poetic-form

role

route

route-set

route6

rtr-set

Search within the following fields: ?

admin-c

changed

country

created

descr

geoloc

inetnum

language

last-modified

mnt-by

mnt-domains

mnt-irt

mnt-lower

mnt-routes

netname

notify

org

remarks

source

sponsoring-org

status

tech-c

By submitting this form you explicitly express your agreement with the [RIPE Database Terms and Conditions](#)

Search

Advanced search

60

Take the poll!

How would **you** use
the **Full Text Search**?





Questions





Creating Objects

How to put data in the RIPE Database

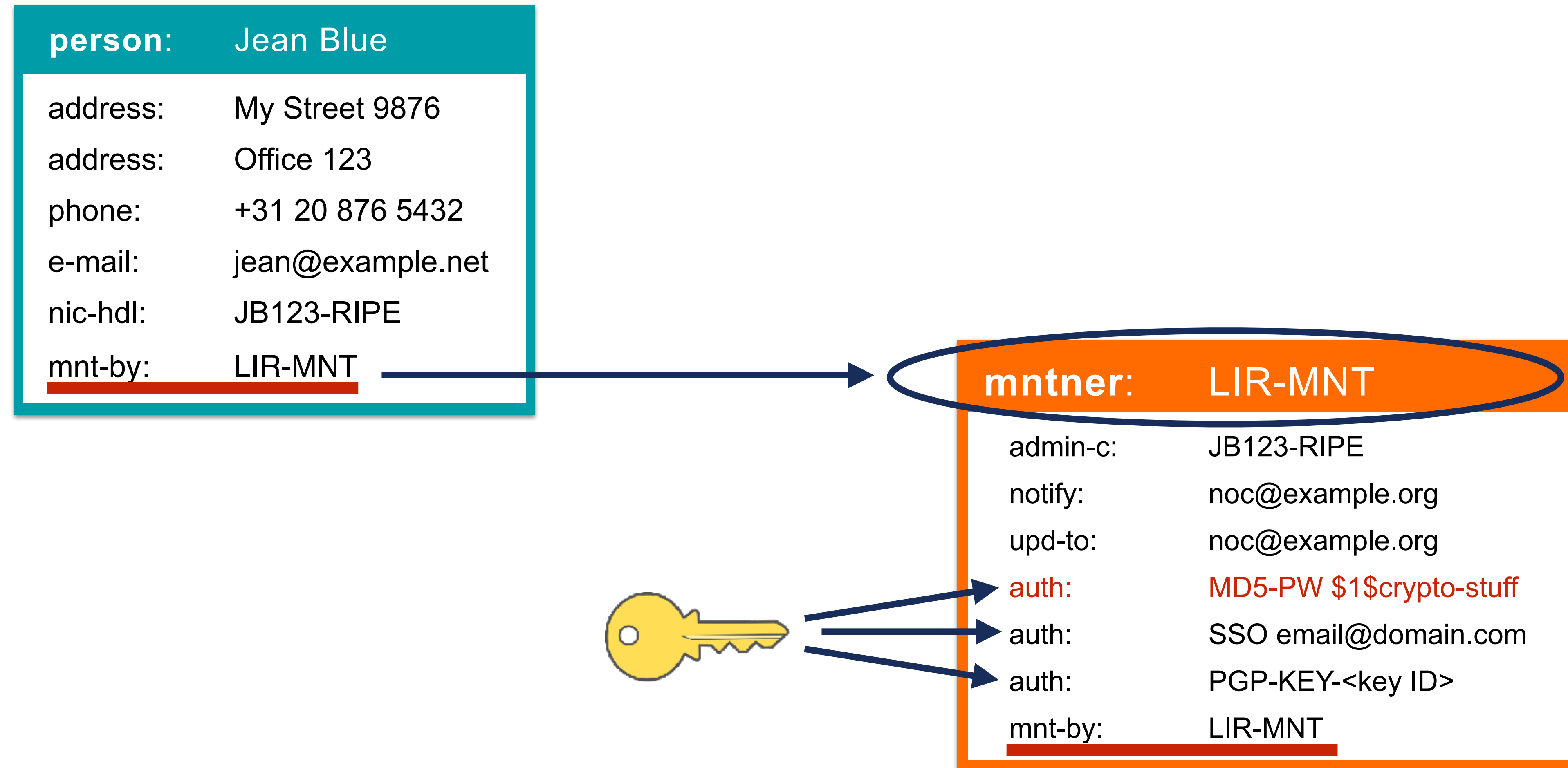
Demo

Let's create a **role** object.





Maintainers: Protecting Objects



* Will be deprecated in 2025

Authentication



- RIPE NCC Access (Single Sign-On)
- Password (MD5-PW) (**will be deprecated in 2025**)
- Private key/public key (PGP and x509)



auth: SSO



mntner: NCCTS-MNT

admin-c: JB123-RIPE

upd-to: noc@example.org

auth: SSO email@domain.com

mnt-by: NCCTS-MNT

Maintainer with SSO

Sign in using your RIPE NCC
Access account

Your email address*

Your password*



SIGN IN

[Forgot password?](#)

[Create an account](#)

Sign in to Access

Create object!

Create "person" object

Please enter the maintainers you would like to use as mnt-by

NCCTS-MNT ★ ✕

person

Specifies the full name of a contact, e.g. John Smith.

address

Specifies the full postal address of a contact.

phone

Phone number with country code, e.g. +44 161 715 1234.



auth: MD5-PW

mntner: NCCTS-MNT

admin-c: JB123-RIPE

upd-to: noc@example.org

auth: MD5-PW \$1\$crypto-stuff

mnt-by: NCCTS-MNT

Maintainer with MD5

Password authentication

Select a maintainer to authenticate the update operation.

NCCTS-MNT

Provide the password for the selected maintainer [Forgotten MNTNER password?](#)

☒ Also authorise my RIPE NCC Access account for this maintainer. [Learn more.](#)

Submit

Provide password

Create object!

Create "person" object

Please enter the maintainers you would like to use as mnt-by

NCCTS-MNT ★ ✕

person

Specifies the full name of a contact, e.g. John Smith.

address

Specifies the full postal address of a contact.

phone

Phone number with country code, e.g. +44 161 715 1234.

* Will be deprecated in 2025



auth: PGPKEY

mntner: SPIDERMAN-MNT

admin-c: JB123-RIPE

upd-to: noc@example.org

auth: **PGP-KEY-<key ID>**

mnt-by: LIR-MNT

Maintainer with PGPKEY

key-cert: PGP-KEY-<keyID>

```
method: PGP
owner: Some Body <somebody@domain.email>
fingerpr: B8C7 456D 66DD 4A26 D976 9987 79D2 7CC1
certif: -----BEGIN PGP PUBLIC KEY BLOCK-----
certif: Version: PGP Desktop 10.1.1 (Build 10)
certif:
certif: mQENBE800ZIBCAC07Dj4BJ1NwWpiCOzA
certif: aGpzuMVJB0QO6HzGvC9t8F4uBJdderTtCd
certif: wWe2foVxMgF2upPpGmpfq6TxuEekM/5XB
certif: jfETr4J77VsSW9Q581HyRDdVaAT9wdL8jZa
certif: bxQbO3XZrROjmf5PPq+5/XNv7tQs1AtglEu
```

key-cert object holds the public key

- X509 certificate authentication works the same way

auth: PGPKEY



New message

To: auto-dbm@ripe.net

Subject: New object creation

person: Peter Parker
address: Some Long Street 123
phone: +99876543210
nic-hdl: PP999-RIPE
mnt-by: SPIDERMAN-MNT
source: RIPE

- - - BEGIN PGP SIGNATURE - - -
Version: PGP Desktop 10.1.1 (Build 10)

mQGIBDuWQtARBACA88T3KzHTmirNtTQ3zo7l6KhZIZCJ9+i5yJaDIaPTGmT7/LuO
VXaM01liLqjIzRb+EZbV48979UcYNHu7HpBiaRX9wLXVxb2OQANGME5mkhDtFsNP
tA0k0SaEzXUBH4l2k8UuMT8Ph779q/kvO2S5kno7WLnOsHYXKvyGIn2QDwCght3g

Send A ☺ 🖼️

Send update in email

Signed with private key

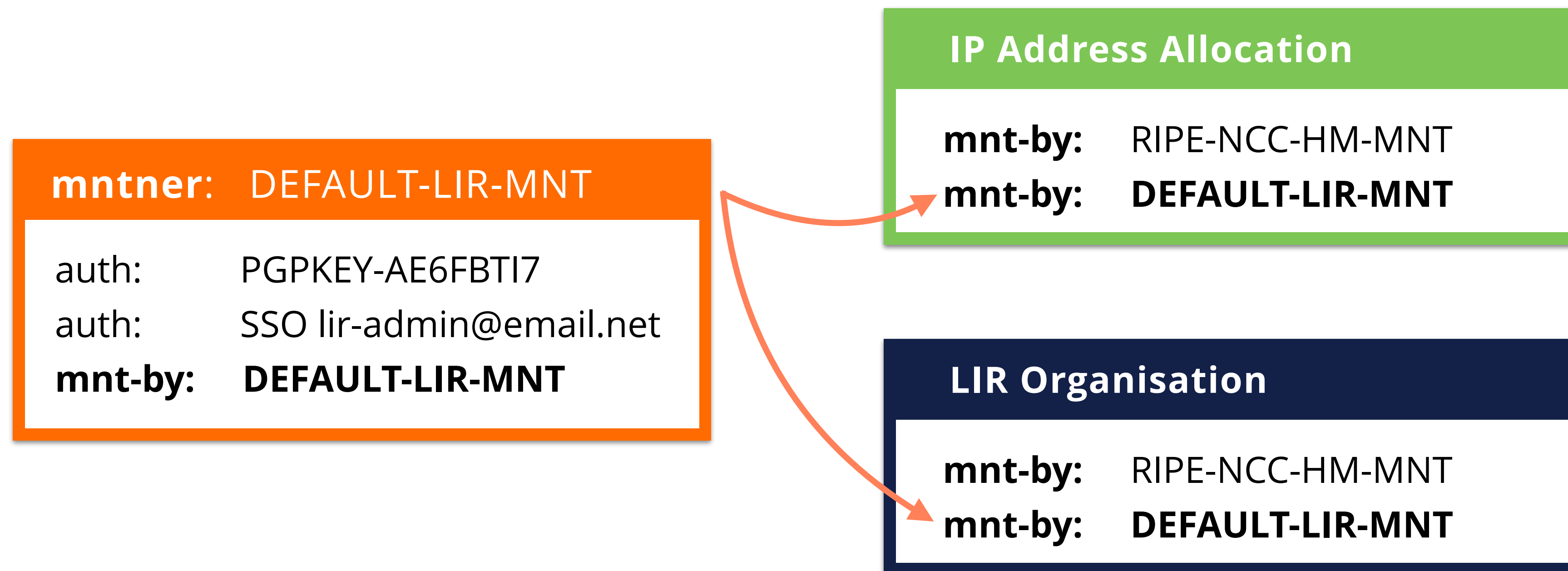
Create object!

person: Peter Parker
address: Some Long Street 123
phone: +99876543210
nic-hdl: PP999-RIPE
mnt-by: SPIDERMAN-MNT
created: 2019-04-03T11:44:58Z
last-modified: 2019-04-03T11:44:58Z
source: RIPE



Default Maintainer for LIRs

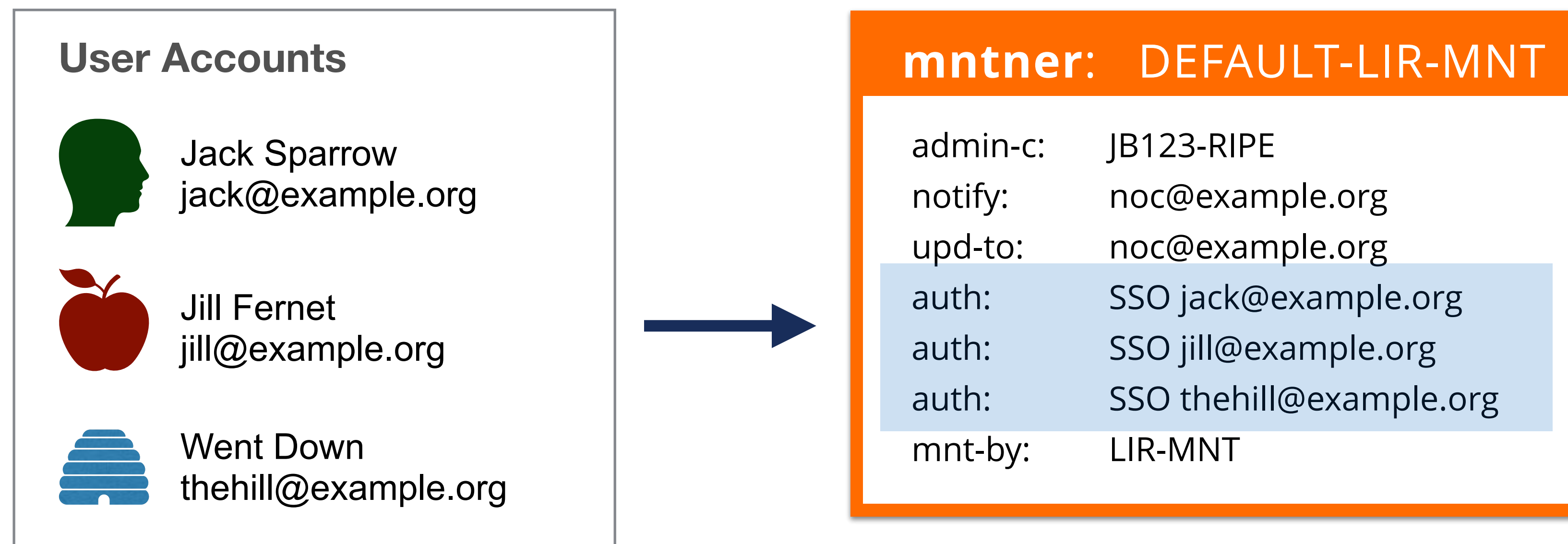
- Allows partial control over your allocations, ASNs and ORG
- Can be selected in the LIR Account Details
- Automatically reflected in the RIPE Database





Synch With LIR Portal

- Default LIR Maintainer can be synchronised with LIR Portal
- Users added as SSO to the maintainer
- Previous “auth:” lines are removed





Take the poll!

Which maintainer would **you** use to protect **your own person object**?





Personal vs Shared

LIR objects, shared maintainer

mntner: DEFAULT-LIR-MNT

auth: PGPKEY-423789
auth: SSO johndoe@email.net
auth: SSO clara@network.com

IP Address Allocation

mnt-by: RIPE-NCC-HM-MNT
mnt-by: **DEFAULT-LIR-MNT**

LIR Organisation

mnt-by: RIPE-NCC-HM-MNT
mnt-by: **DEFAULT-LIR-MNT**

Your person, your maintainer

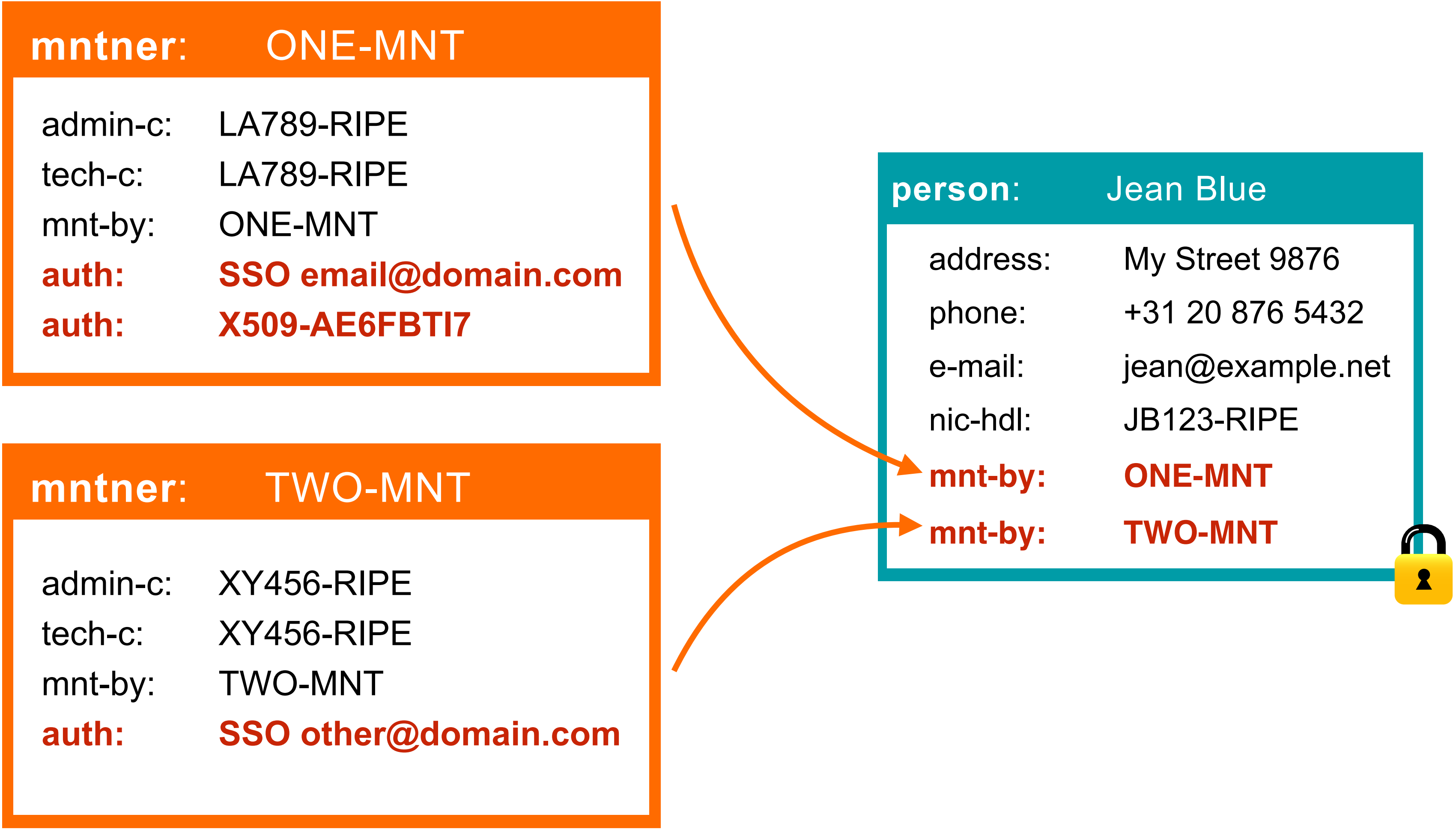
mntner: PERSONAL-MNT

auth: SSO johndoe@email.net

Person

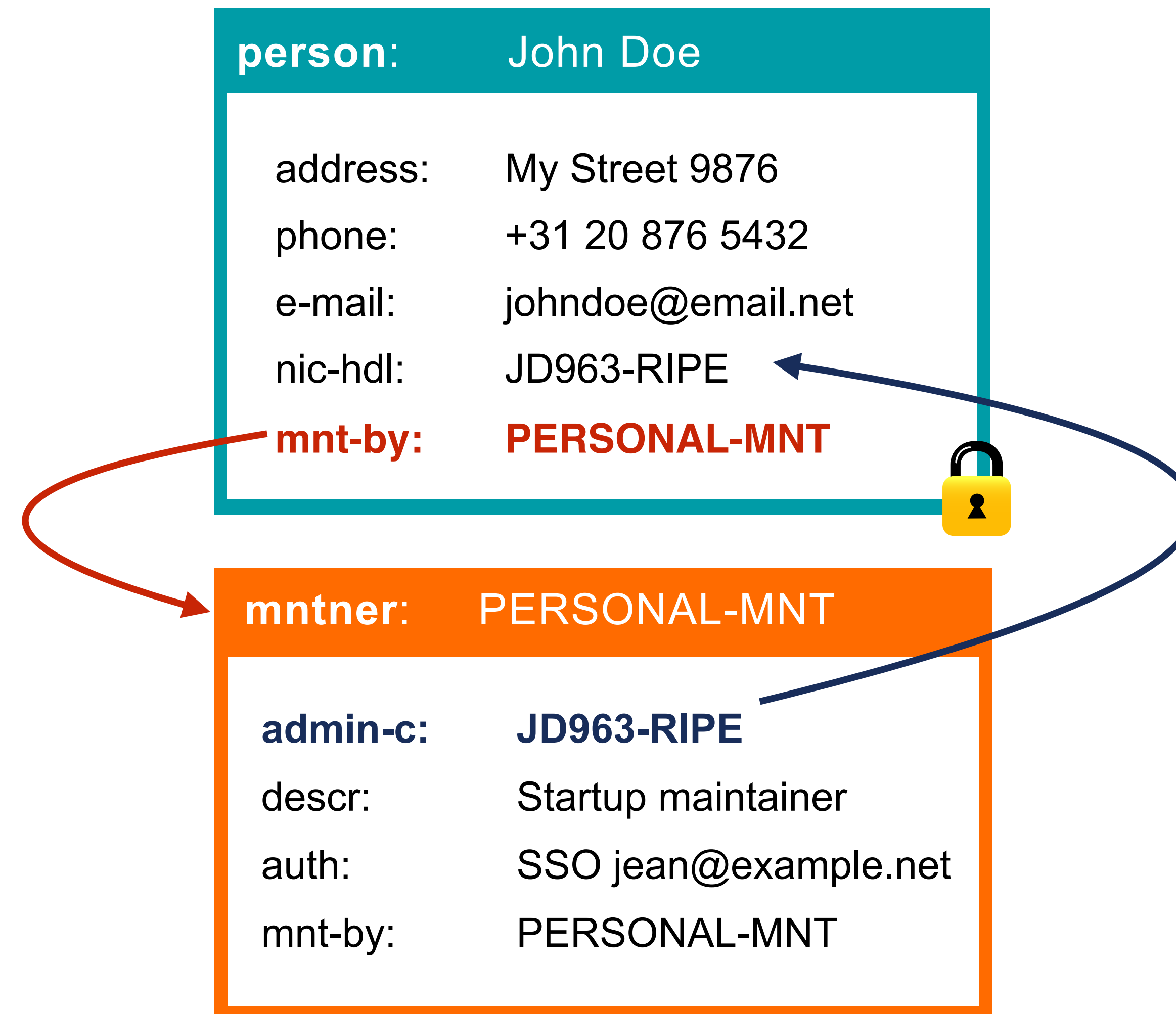
mnt-by: PERSONAL-MNT

Multiple Maintainers





MAINTAINER and PERSON



Demo

Let's create
a **person /maintainer** pair...





Questions





Updating Objects

The easy way



Take the poll!

In which cases would you **update** an existing object?



Sign in to Access



Sign in using your RIPE NCC
Access account

Your email address*

Your password*



SIGN IN

[Forgot password?](#)

[Create an account](#)

You **always** need to be signed in to your RIPE NCC Access account to create and update objects.

Go to Webupdates



**RIPE Database**

Enter a search term

By submitting this form you explicitly express your agreement with the [RIPE Database Terms and Conditions](#)



Search for the object

Search results

[PERMA](#) [XML](#) [JSON](#)

This is the RIPE Database search service. The objects are in RPSL format.
The RIPE Database is subject to [Terms and Conditions](#).

Responsible organisation: [Reseaux IP Europeens Network Coordination Centre \(RIPE NCC\)](#)

Abuse contact info: abuse@ripe.net

inetnum: 193.0.24.0 - 193.0.30.255
netname: LARGE-NETWORK
country: NL
admin-c: BRD-RIPE
tech-c: GAV
status: ASSIGNED PA
mnt-by: RIPE-NCC-MNT
created: 2020-03-26T14:07:53Z
last-modified: 2020-03-26T14:07:53Z
source: RIPE

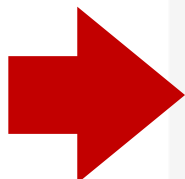
Update object

RIPEstat [↗](#)

Click here!

Update object



Some attributes **cannot** be updated 

This one **can** be updated! 

Modify "inetnum" object

 Edit in text area

Please enter the maintainers you would like to use as mnt-by

RIPE-NCC-MNT ★  

inetnum

193.0.24.0 - 193.0.30.255  

netname

LARGE-NETWORK  

country

NL   

admin-c

BRD-RIPE   

tech-c

GAV   

status

ASSIGNED PA  

source

RIPE  

By submitting this form you explicitly express your agreement with the [RIPE Database Terms and Conditions](#)

Delete this object

Cancel

Submit

Submit the changes



Your object has been successfully modified

inetnum "193.0.24.0 - 193.0.30.255"

inetnum:	193.0.24.0 - 193.0.30.255
netname:	LARGE-NETWORK
country:	NL
admin-c:	BRD-RIPE
- tech-c:	GAV
+ tech-c:	OPS-RIPE
status:	ASSIGNED PA
mnt-by:	RIPE-NCC-MNT
created:	2020-03-26T14:07:53Z
- last-modified:	2020-03-26T14:07:53Z
+ last-modified:	2020-03-26T14:16:28Z
source:	RIPE

Modify

Back to Create object





Questions



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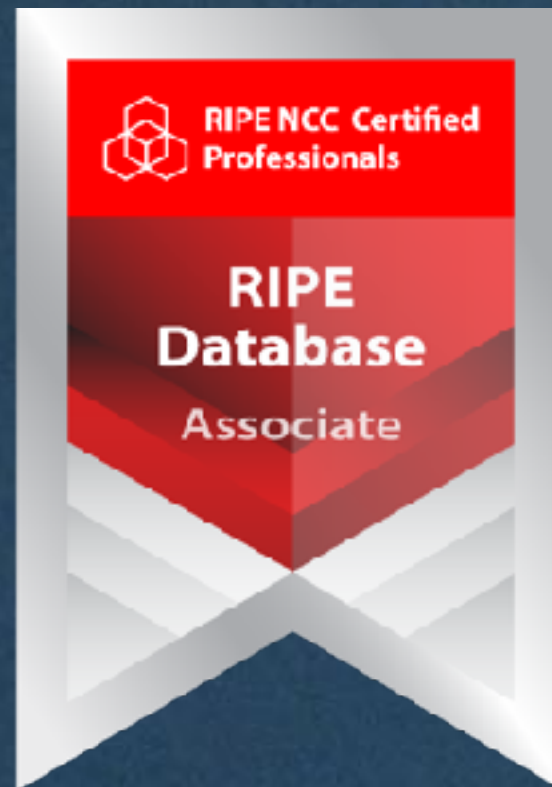
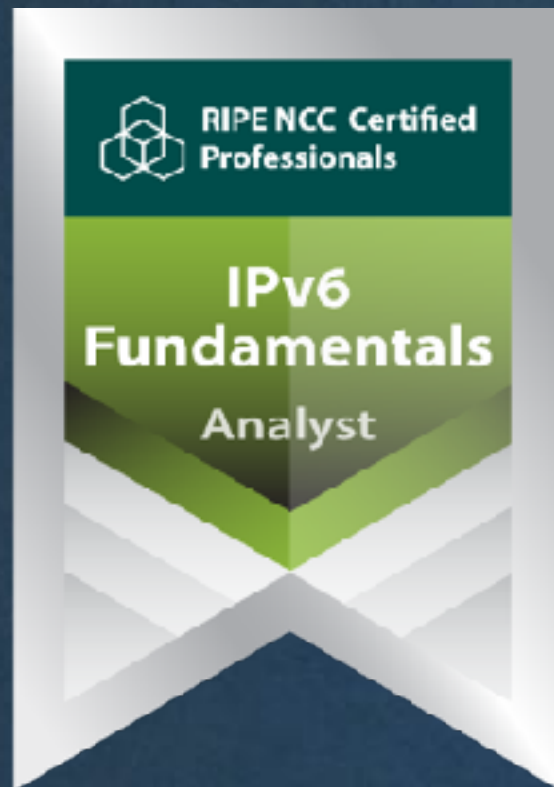


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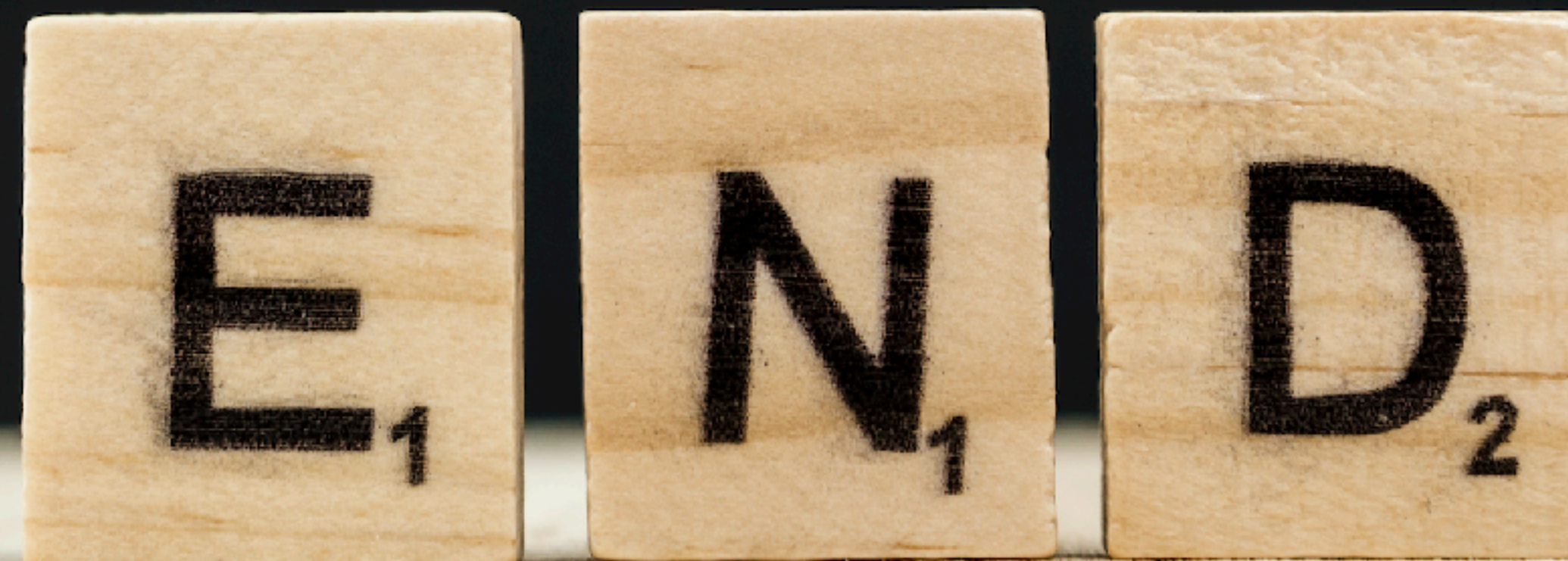


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Lõpp	Amaia	Loppu	Slutt		Kraj
Kraj	Sfârșit	النهاية	Конец	Konec	Fund
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