RIPE NCC
RIPE NETWORK COORDINATION CENTRE

RIPE Database

Applications

Webinar

RIPE NCC Learning & Development

This webinar is being recorded

Take the poll!

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

2 min.

Registering PA assignments

What is registration?

Filling in the inet(6)num template

Registering sub-allocations

What is a sub-allocation?

Using “mnt-lower:”

RIPE Routing Registry

aut-num objects

route(6) objects

as-set objects

Reverse Delegation

What is reverse DNS?

domain objects

Notifications

“notify:”

“upd-to:” and “mnt-nfy:”

The RESTful API

What is it?

How can I use it?

PA Assignments

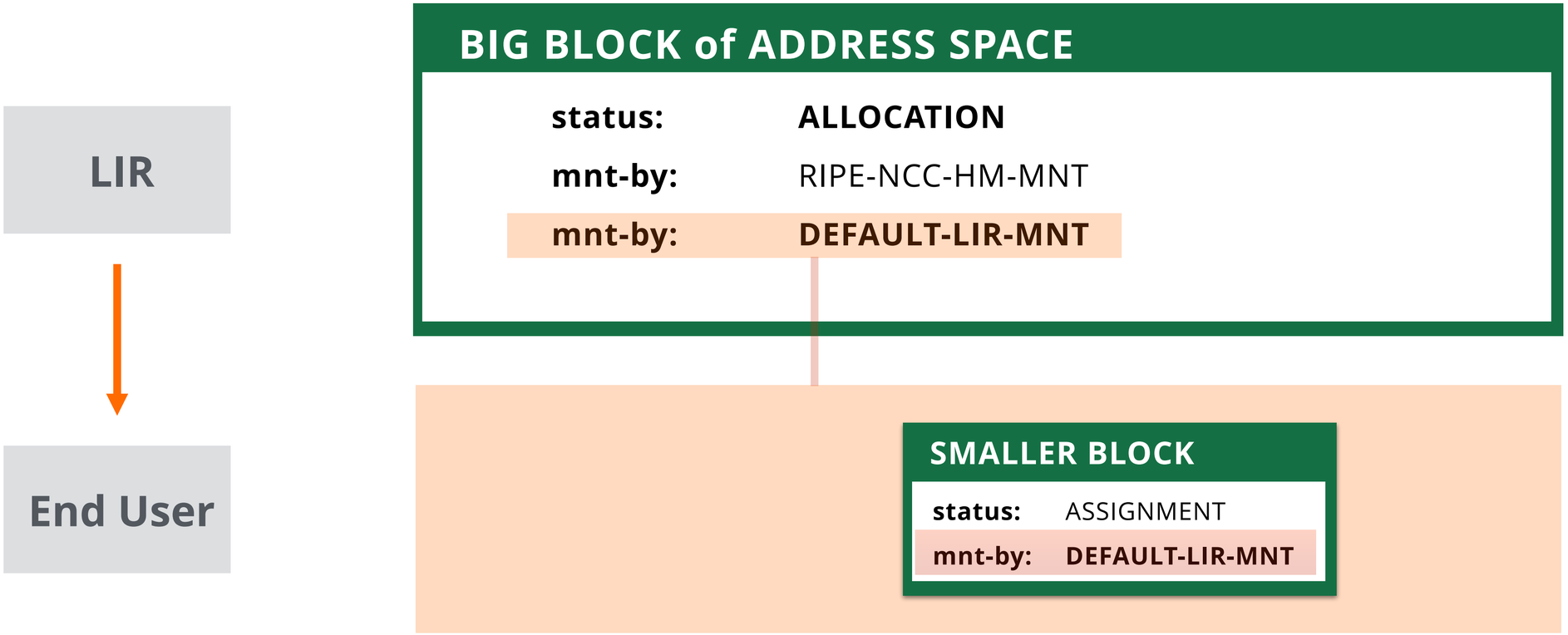
How to register them

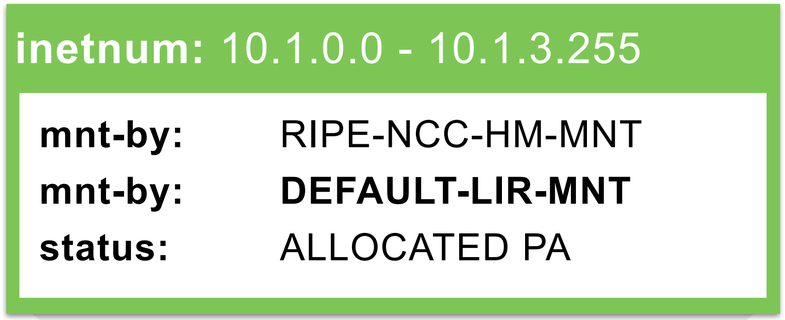
Take the poll!

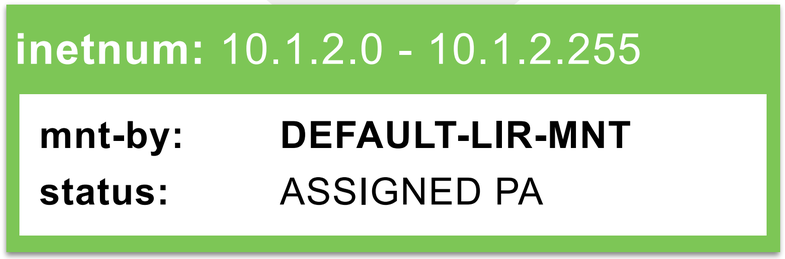
Why do **you** register PA assignments?

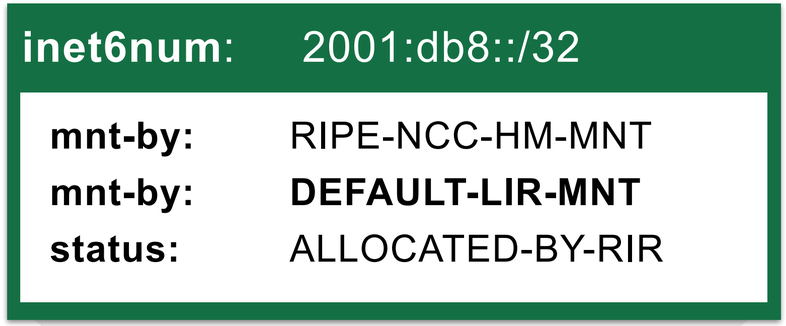
2 min.

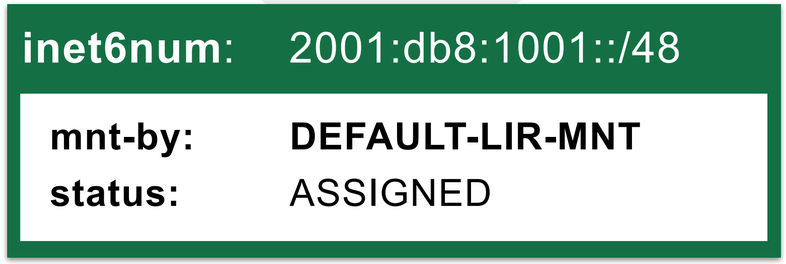
Registering PA Assignments




inetnum: 10.1.0.0 - 10.1.3.255
mnt-by: RIPE-NCC-HM-MNT
mnt-by: DEFAULT-LIR-MNT
status: ALLOCATED PA


inetnum: 10.1.2.0 - 10.1.2.255
mnt-by: DEFAULT-LIR-MNT
status: ASSIGNED PA


inet6num: 2001:db8::/32
mnt-by: RIPE-NCC-HM-MNT
mnt-by: DEFAULT-LIR-MNT
status: ALLOCATED-BY-RIR


inet6num: 2001:db8:1001::/48
mnt-by: DEFAULT-LIR-MNT
status: ASSIGNED

- You can group multiple assignments in one single object
- Use “**status: AGGREGATED-BY-LIR**”
- “**assignment-size:**” attribute is
  - optional in IPv4
  - mandatory in IPv6

inetnum: 10.XX.0.0 - 10.XX.0.128

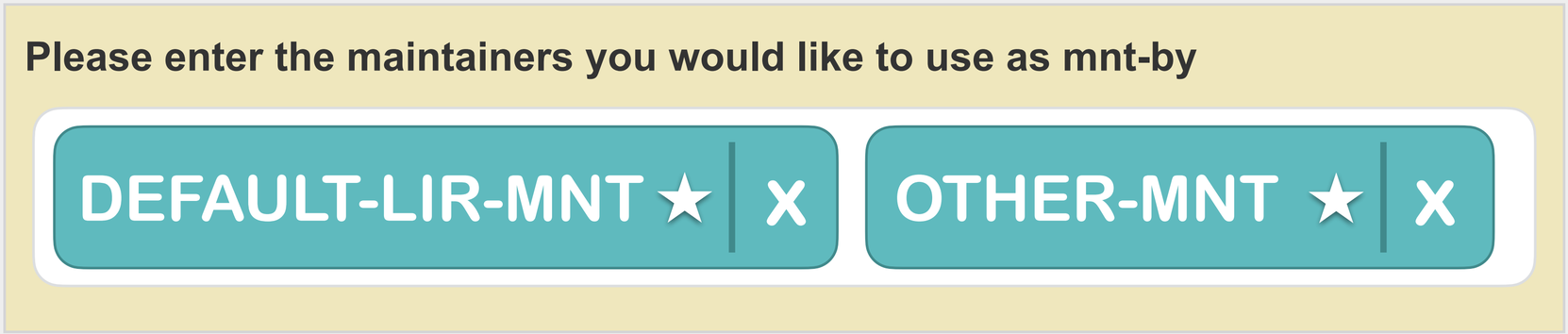
mnt-by: **SMXX-MNT**
status: AGGREGATED-BY-LIR
assignment-size: *30*

inet6num: 2002:ffXX:1000::/36

mnt-by: SMXX-MNT
status: AGGREGATED-BY-LIR
assignment-size: 56

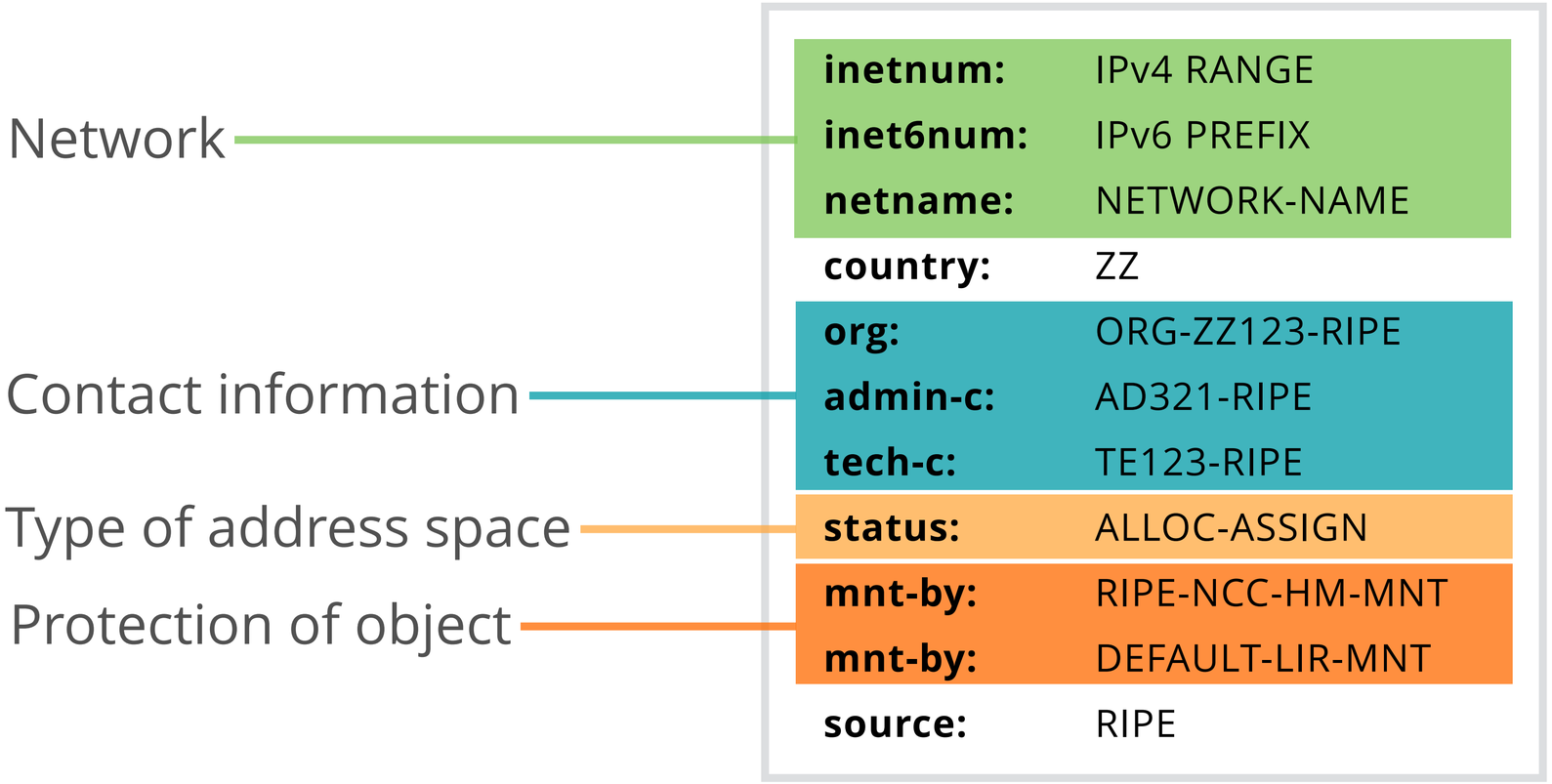
Filling in the Template

- Choose which maintainer will protect the new object
- Click on the **X** to remove a maintainer



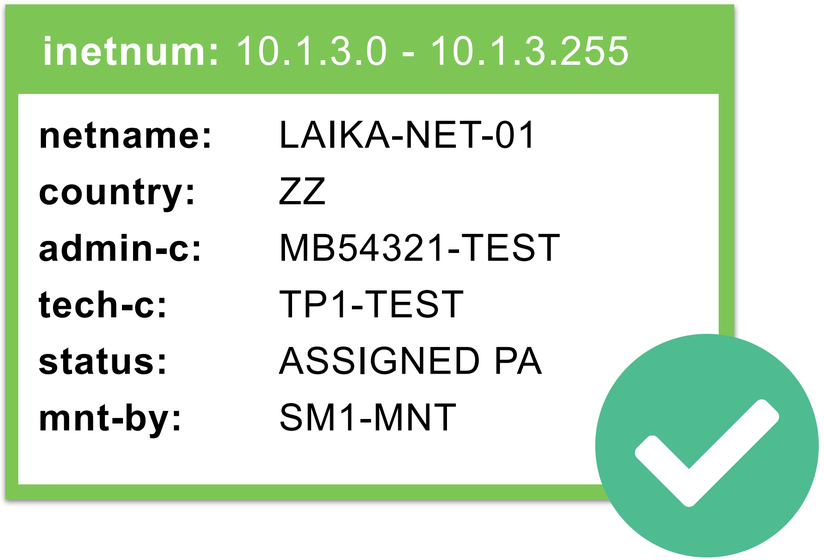
☆ = Associated with your Access account

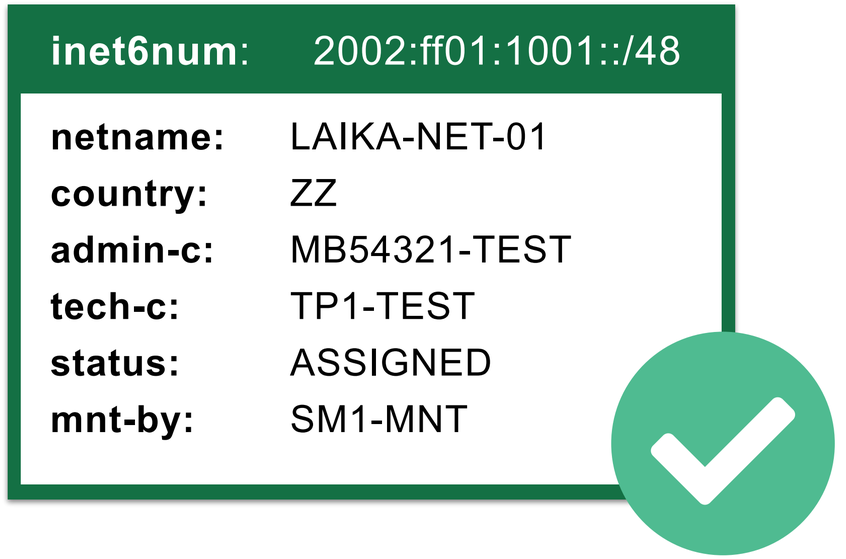
Same object structure for IPv4 and IPv6



Object Creation Success

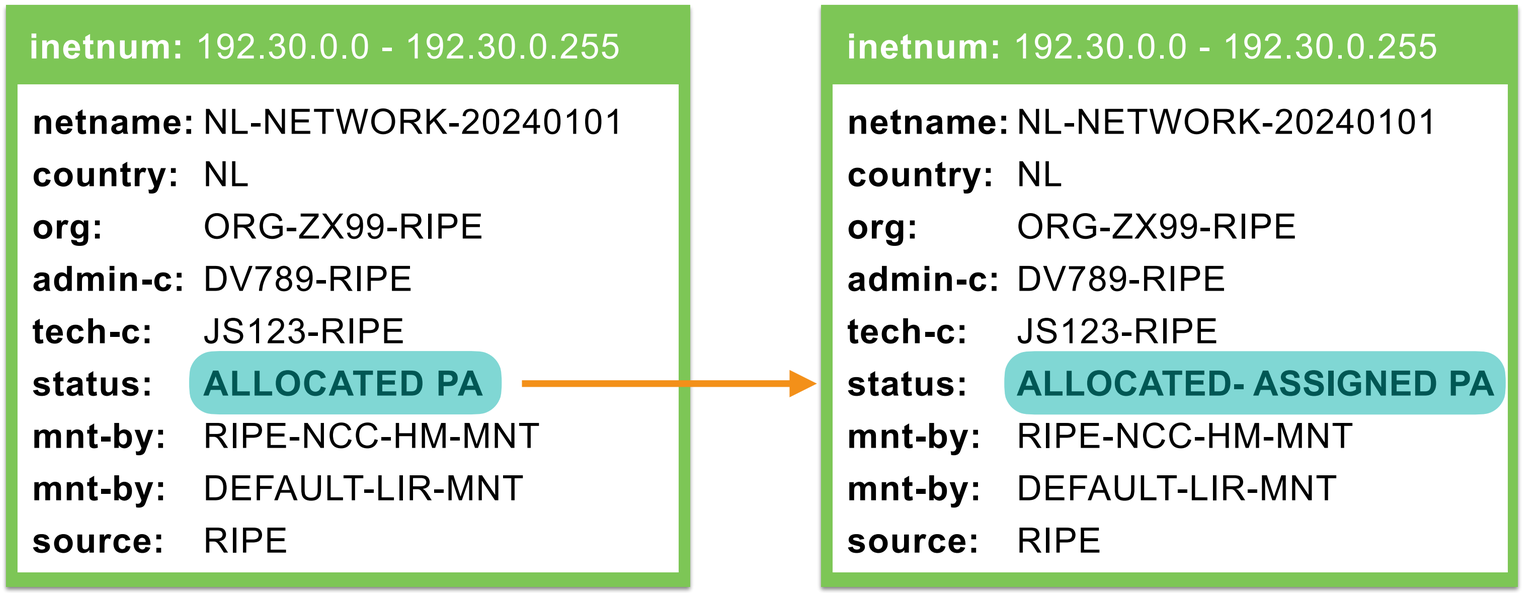
If the **values** in the object template are **correct**,
then the RIPE Database will **create** the object.





status: ALLOCATED-ASSIGNED PA

- Registers a whole assignment for small IPv4 allocations
- LIR changes status in the RIPE Database
- It is seen **both** as **ALLOCATED PA** and **ASSIGNED PA**



Demo

Register an IPv4 PA assignment.

Register a group of IPv4 assignments.

Questions

Sub-Allocations

Delegating to someone else

Take the poll!

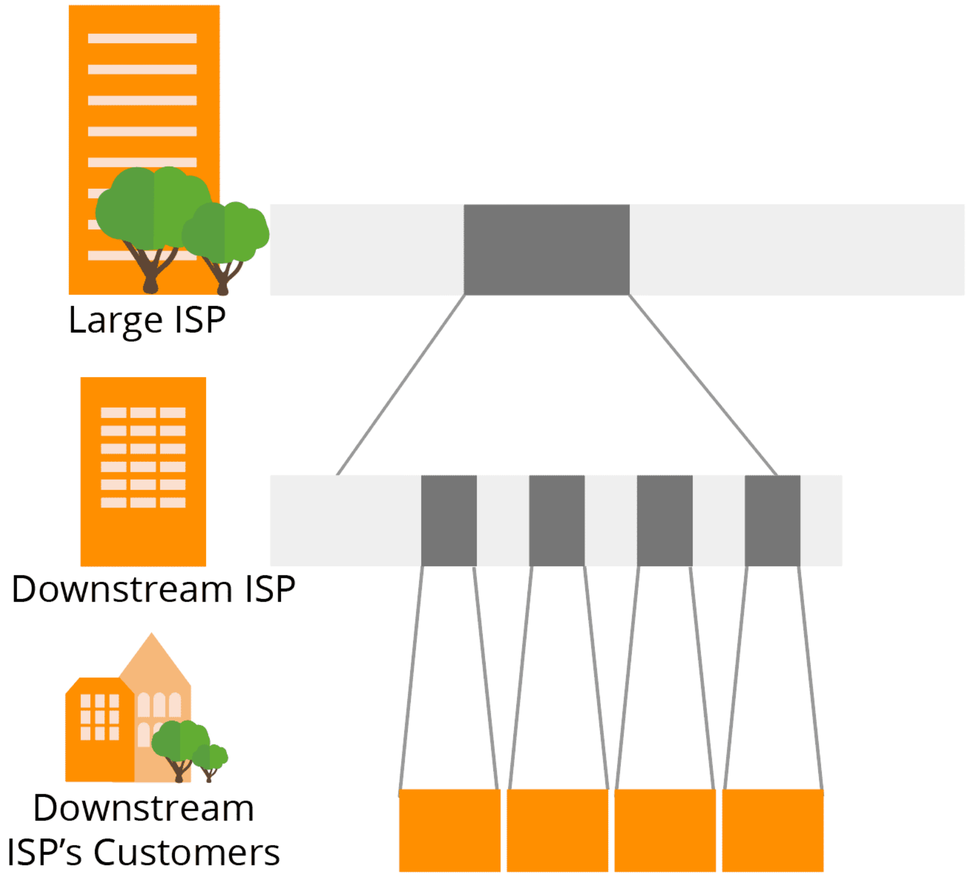
Why would **you** delegate address space to someone else?

2 min.

Sub-Allocations

Block for a downstream ISP

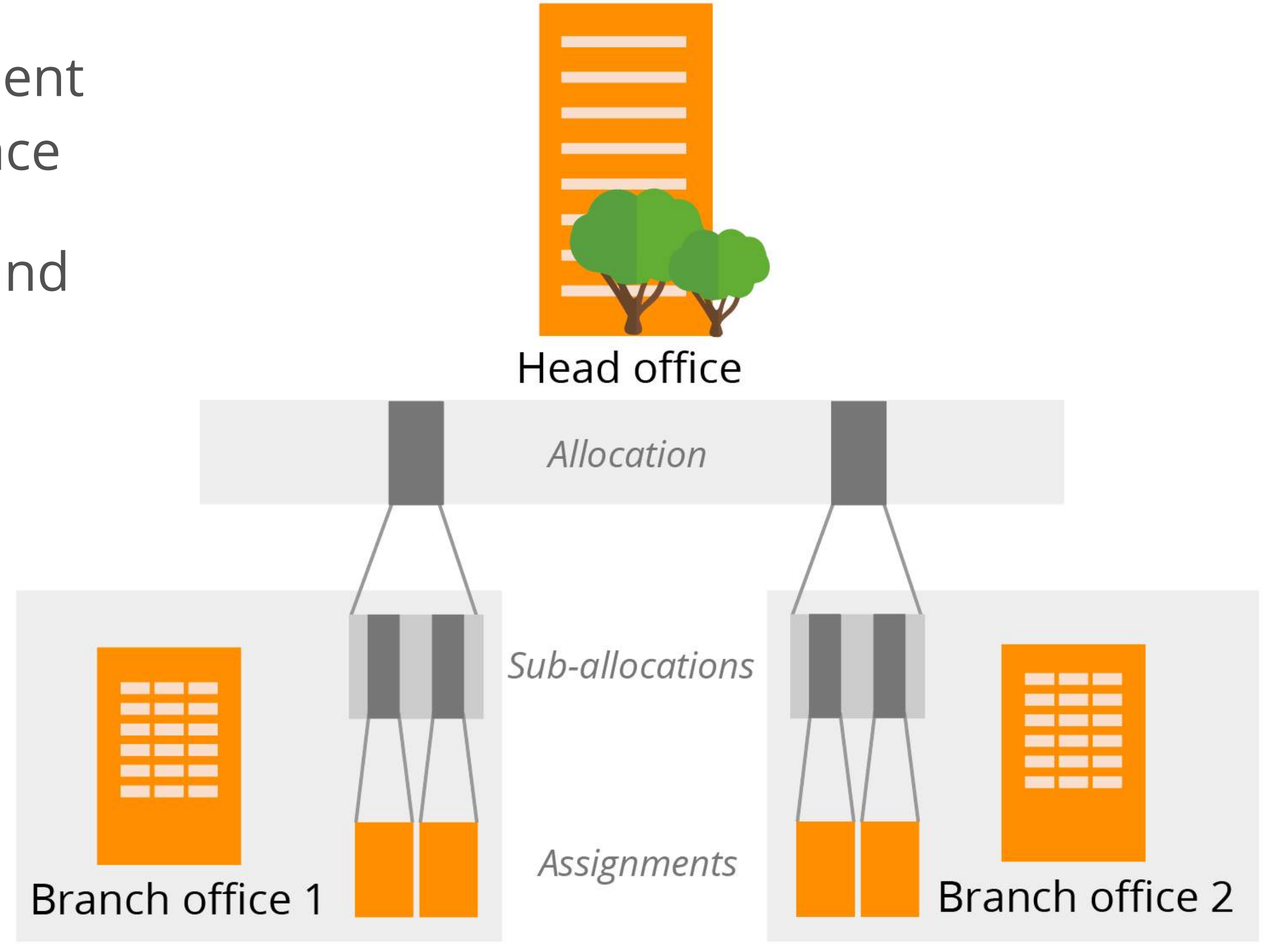
- ISP can register the assignments to its customers.
- Allows them to create their own route(6) and domain objects



Sub-Allocations

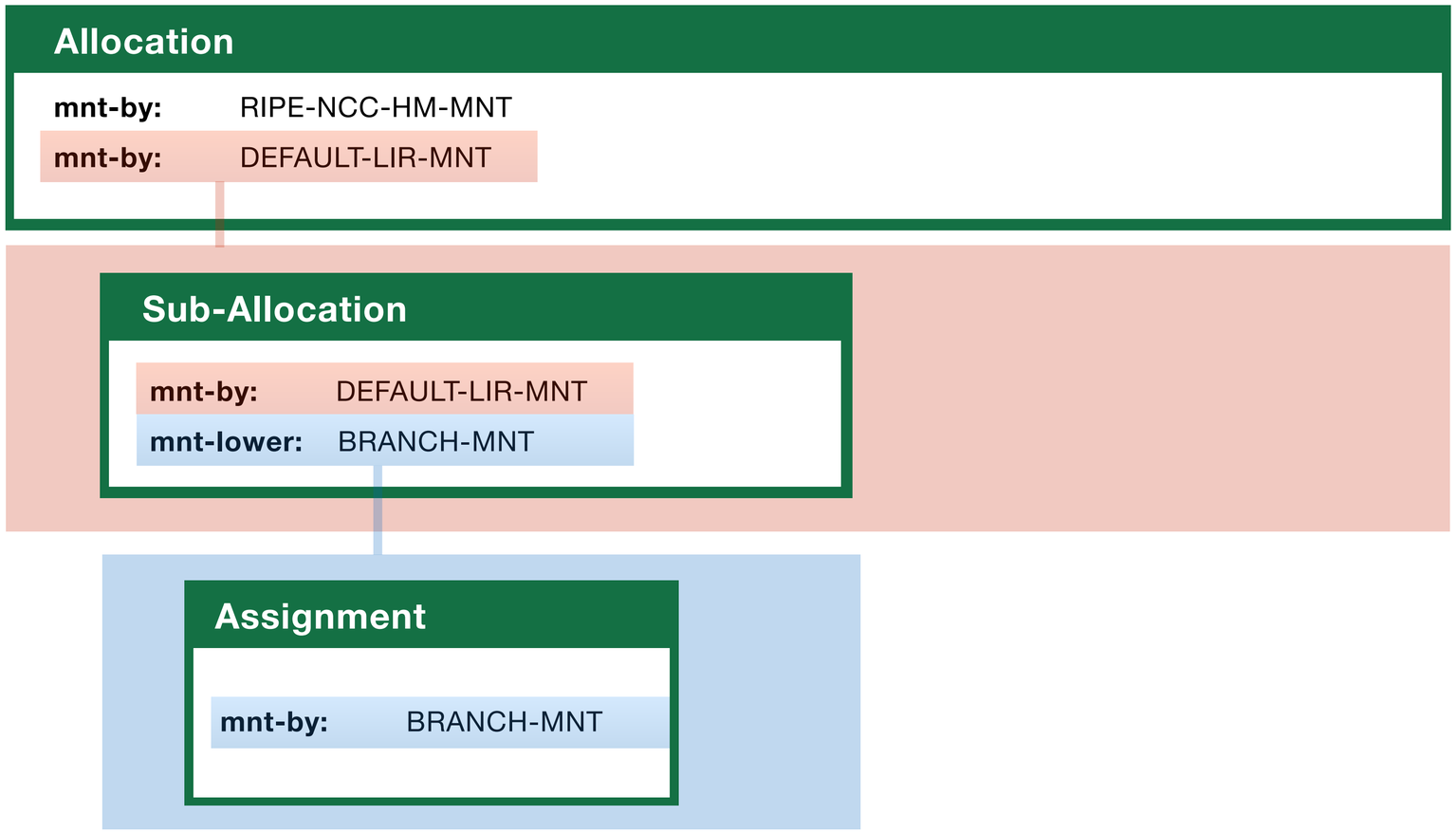
Branch office or department

- Allows the branch office or department to control their block of address space
- They can create their own route(6) and domain objects



Delegating Control

“**mnt-lower:**” gives permission to create more specific objects.



Registering Sub-Allocations

Use the appropriate “**status:**”

IPv4 = SUB-ALLOCATED PA

IPv6 = ALLOCATED-BY-LIR

inetnum:	10.0.1.0 - 10.0.2.255
netname:	Branch-office-1
country:	NL
admin-c:	LA789-RIPE
tech-c:	LA789-RIPE
status:	**SUB-ALLOCATED PA**
mnt-by:	LIR-MNT
mnt-lower:	BRANCH-MNT

inet6num:	2001:db8:a000::/36
netname:	Branch-office-1
country:	NL
admin-c:	LA789-RIPE
tech-c:	LA789-RIPE
status:	**ALLOCATED-BY-LIR**
mnt-by:	LIR-MNT
mnt-lower:	BRANCH-MNT

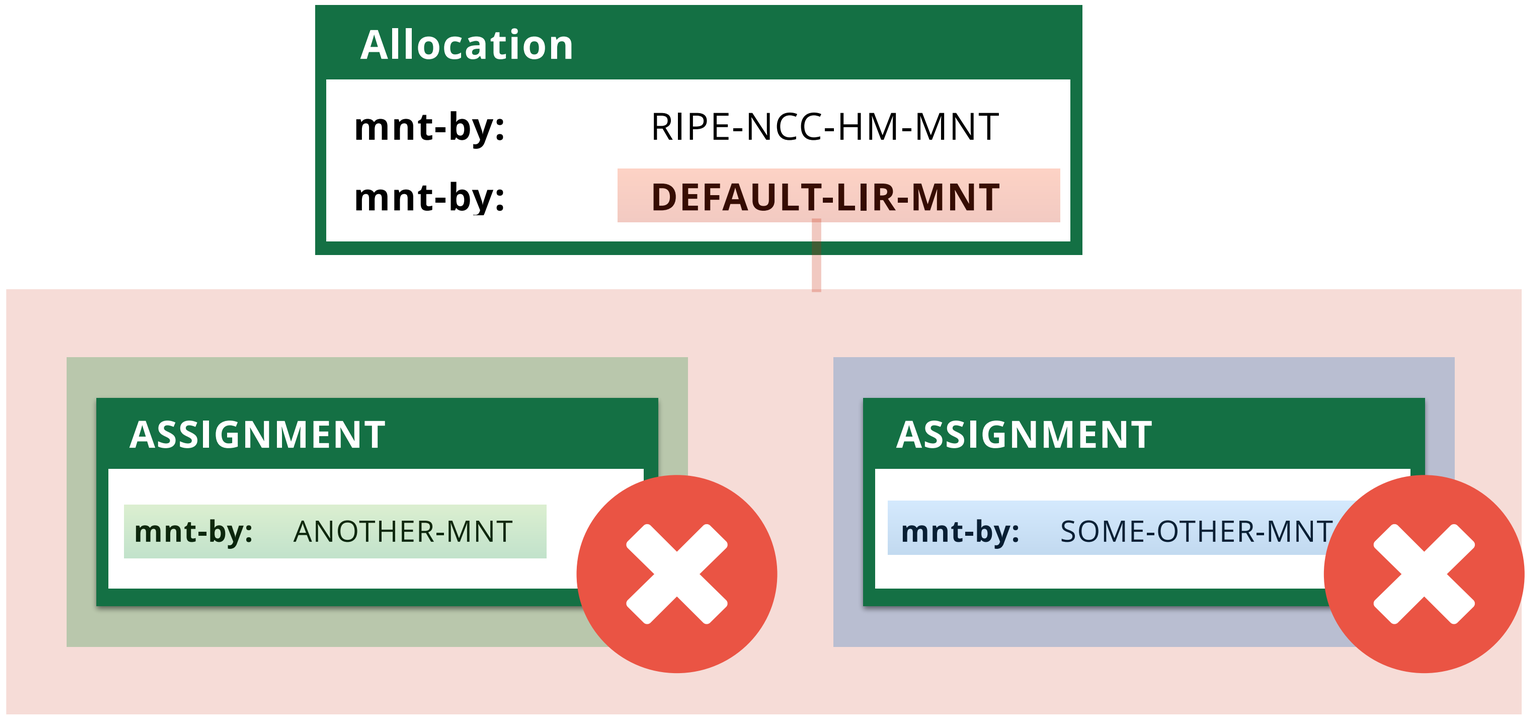
Demo

Register an IPv4 or IPv6 sub-allocation.

Register an assignment in the sub-allocation.

LIR Keeps Control

- LIR Default Maintainer has control over the whole address space
- Use “**Force Delete**” to remove lost objects



Take the poll!

Which **status** do you use for an IPv6 sub-allocation?

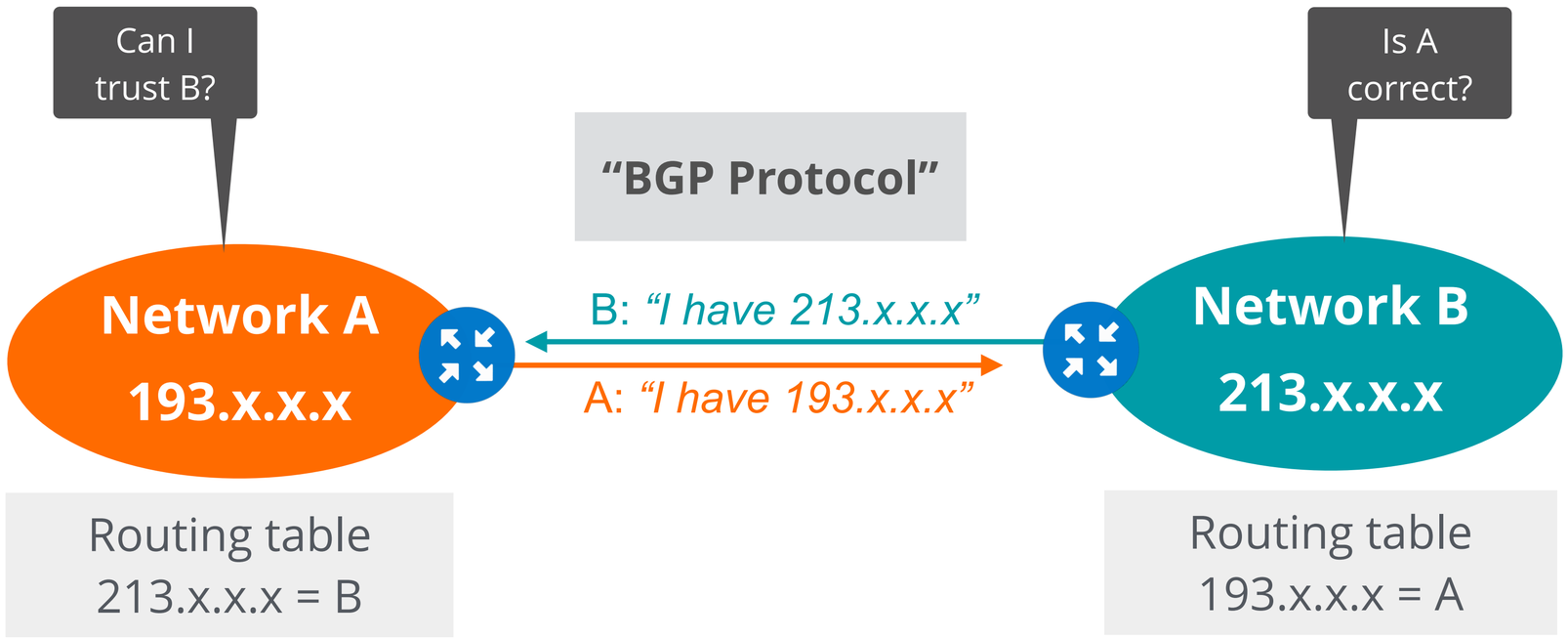
2 min.

Routing Registry

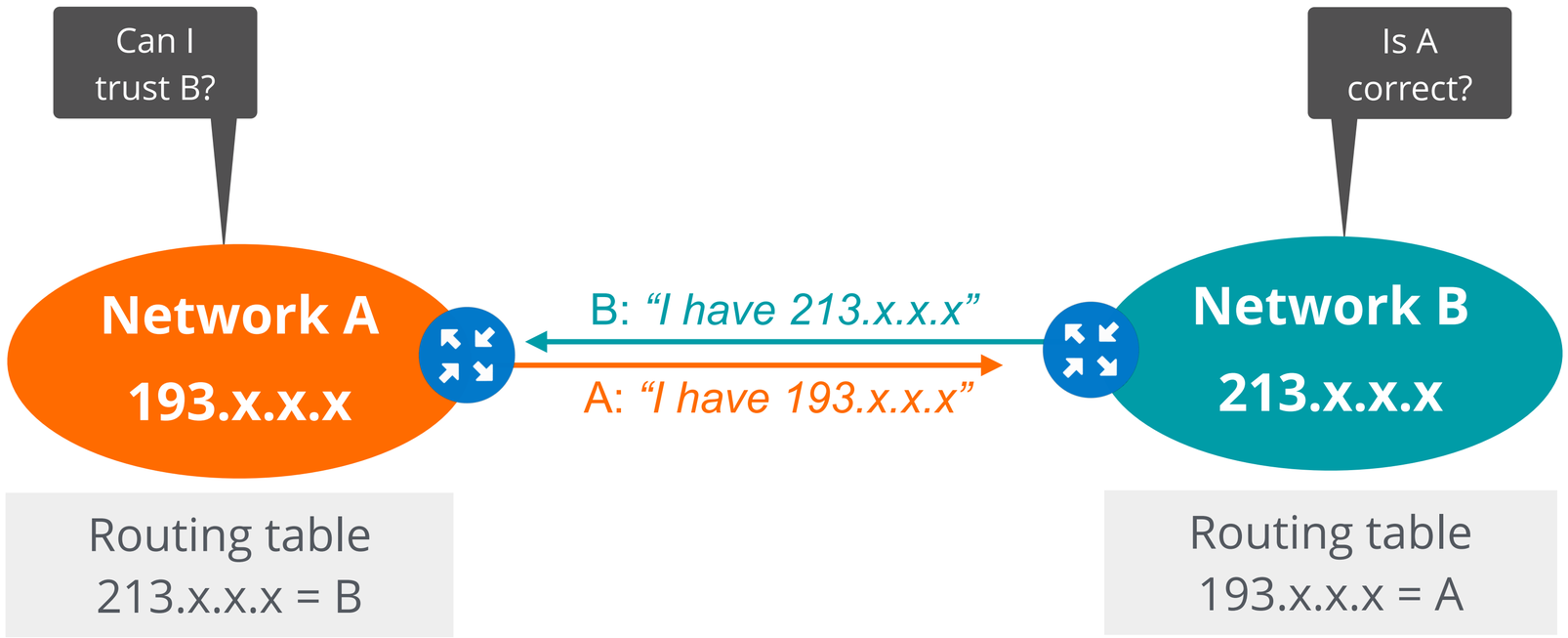
Making routing safer

Routing on the Internet

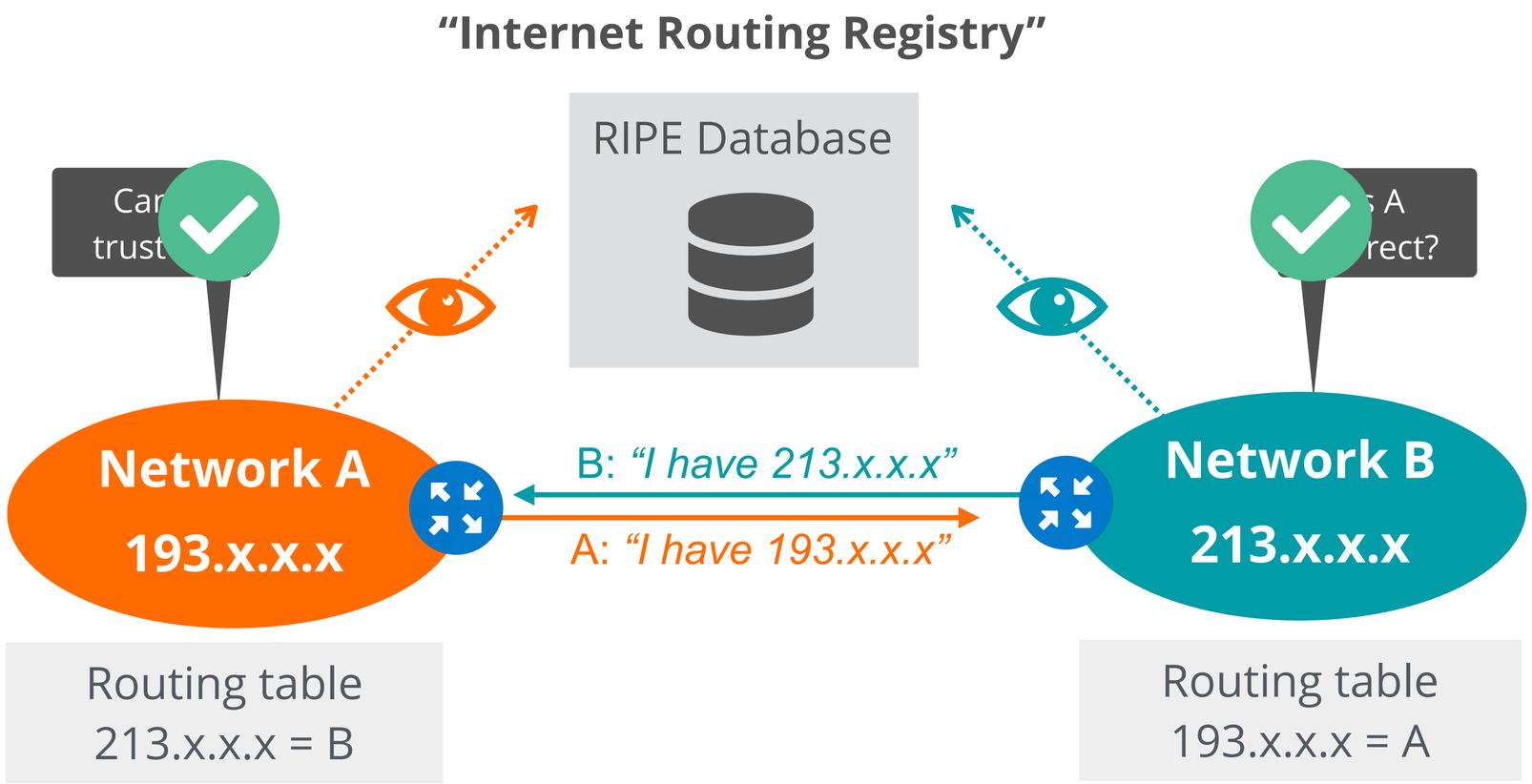
Routing on the Internet



Routing on the Internet



How to Secure Routing?

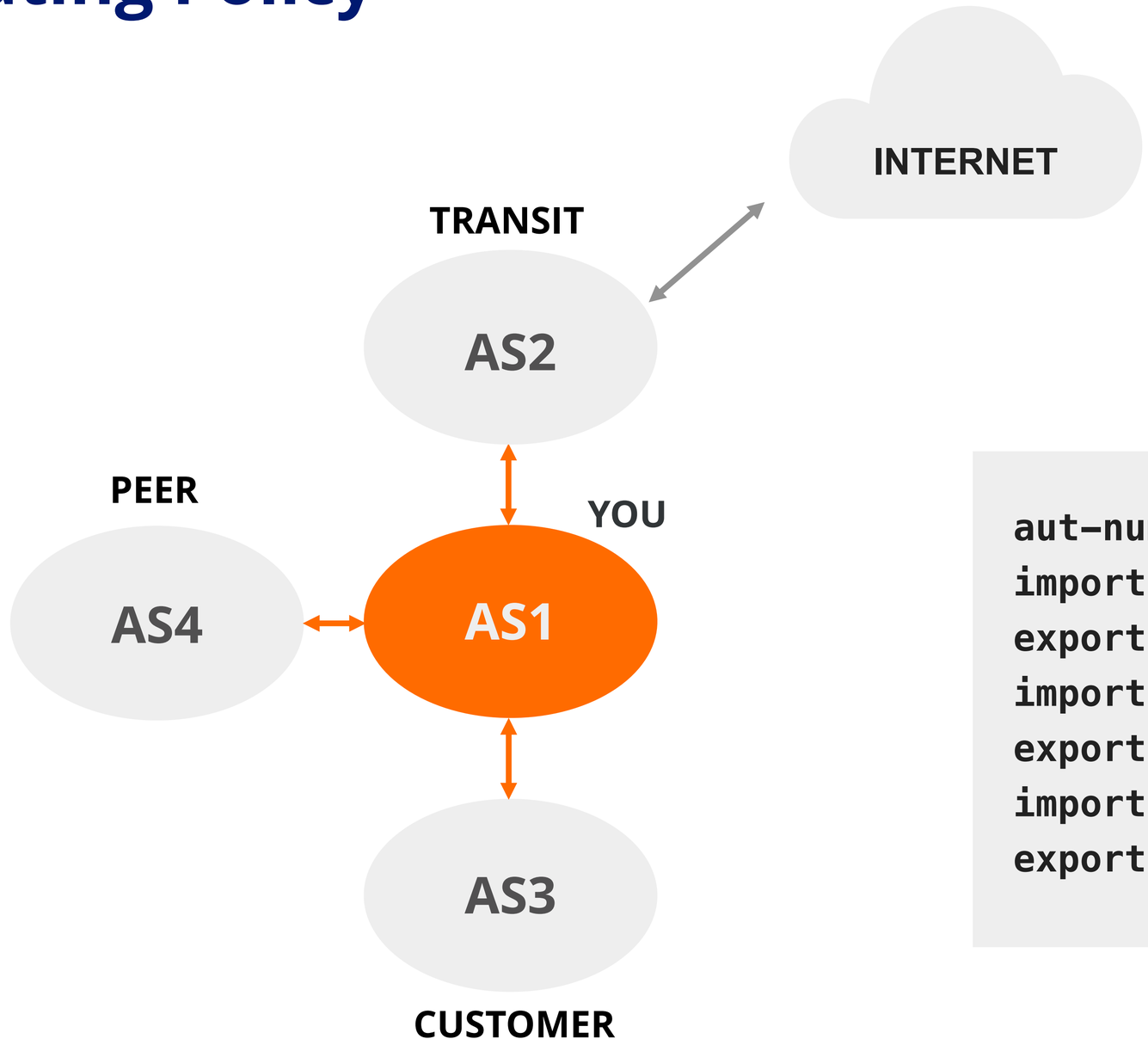


Autonomous Number Objects

- Known as **aut-num** objects
- Register **who** holds an AS Number
- Shows the routing policy for that AS

aut-num:	AS12345
as-name:	YOUR-AS-NAME
org:	ORG-EE2-RIPE
import:	**from AS1010 accept ANY**
export:	**to AS1010 announce AS12345**
import:	**from AS987 accept ANY**
export:	**to AS987 announce AS12345**
admin-c:	DV789-RIPE
tech-c:	JS123-RIPE
status:	ASSIGNED
mnt-by:	RIPE-NCC-END-MNT
mnt-by:	DEFAULT-LIR-MNT
source:	RIPE

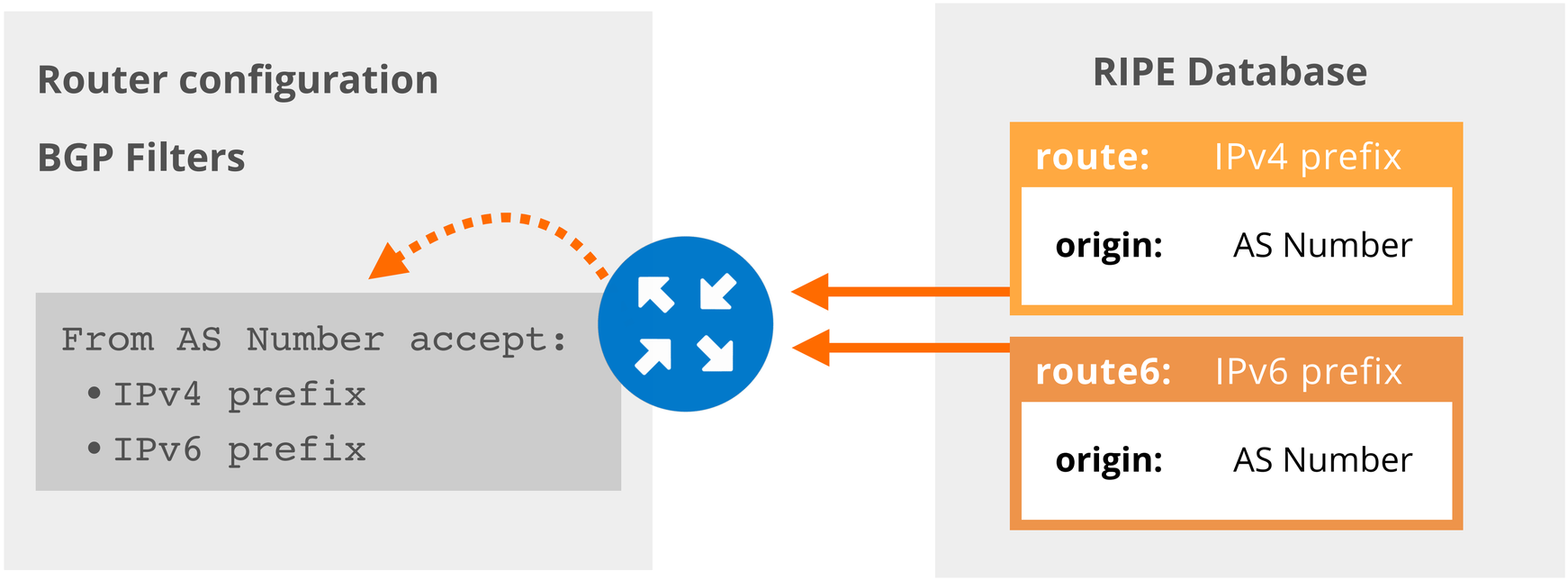
Routing Policy



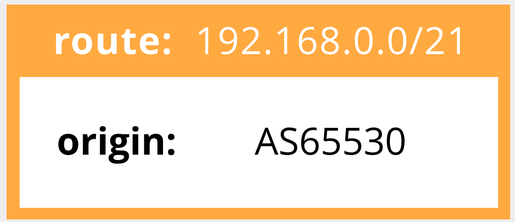

```
aut-num:  AS1
import: from AS2 accept ANY
export: to AS2 announce AS1 AS3
import: from AS3 accept AS3
export: to AS3 announce ANY
import: from AS4 accept AS4
export: to AS4 announce AS1 AS3
```

What Are route(6) Objects?

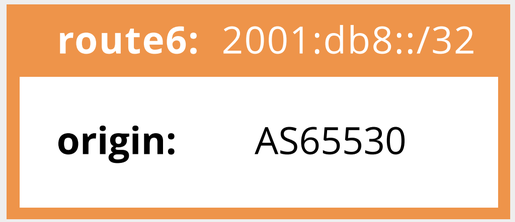
- **route(6)** objects register which IPv4/IPv6 prefix will be announced by which AS number
- Used for creating BGP filters



Primary key of route(6) objects



192.168.0.0/21AS65530

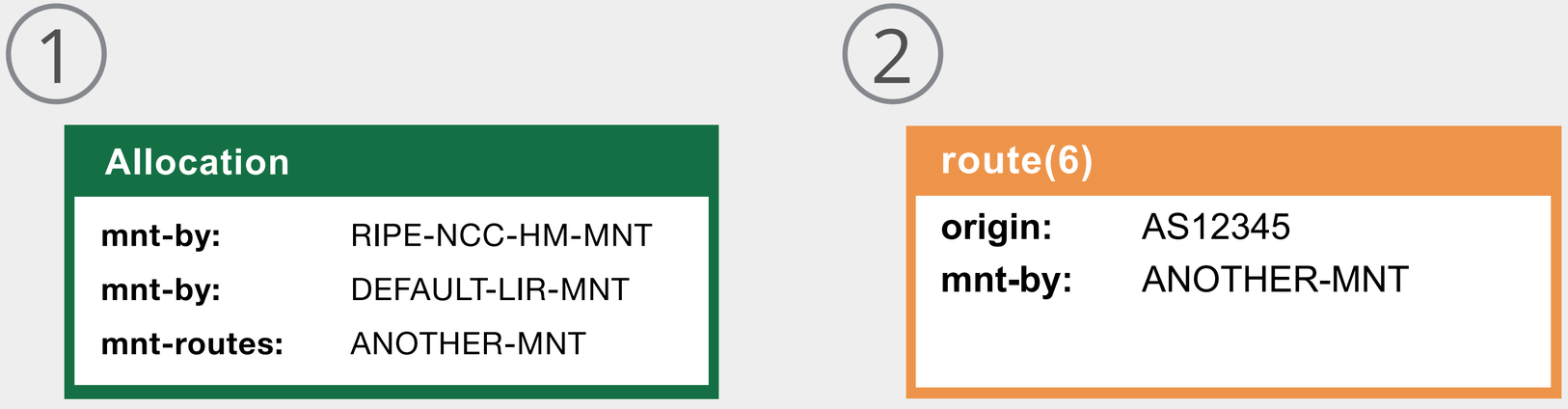


2001:db8::/32AS65530

How To Create route(6) Objects

You need permission from:

1. **inetnum** or **inet6num**
2. **route** or **route6**

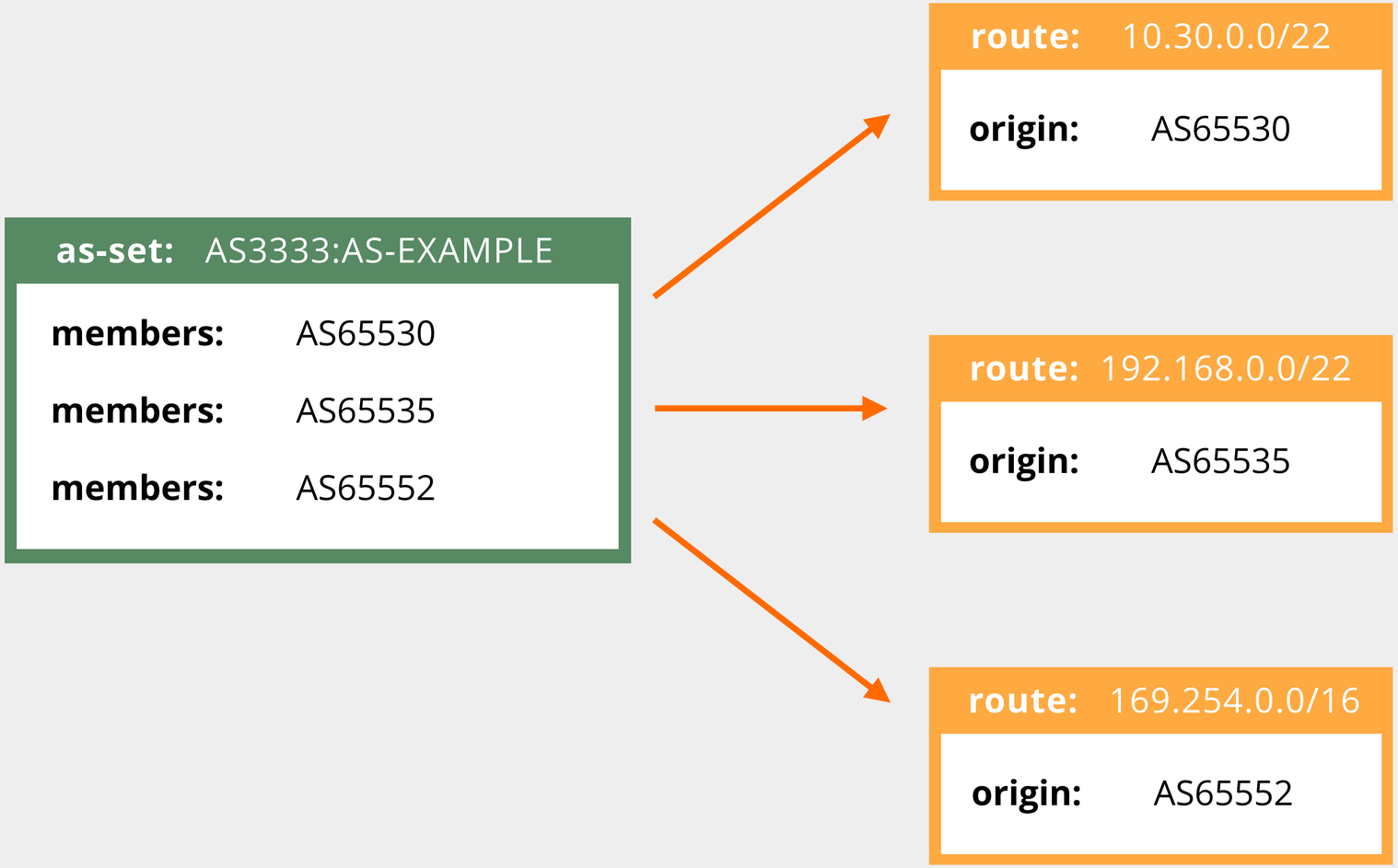


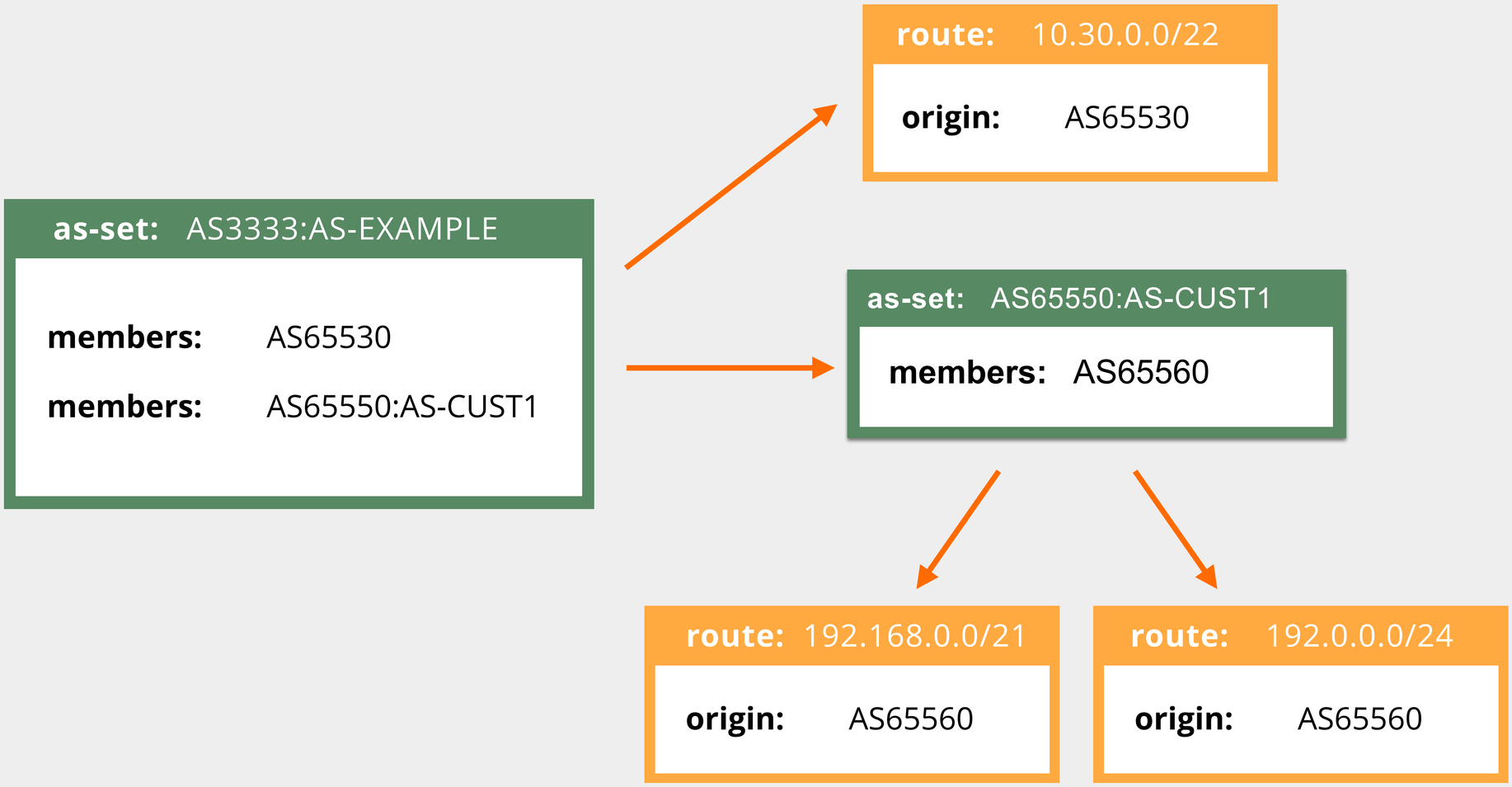
Take the poll!

What would happen if your **route(6)** objects were deleted?

2 min.

as-sets


as-set: AS3333:AS-EXAMPLE
members: AS65530
members: AS65535
members: AS65552
route: 10.30.0.0/22
origin: AS65530
route: 192.168.0.0/22
origin: AS65535
route: 169.254.0.0/16
origin: AS65552


route: 10.30.0.0/22
origin: AS65530
as-set: AS3333:AS-EXAMPLE
members: AS65530
members: AS65550:AS-CUST1
as-set: AS65550:AS-CUST1
members: AS65560
route: 192.168.0.0/21
origin: AS65560
route: 192.0.0.0/24
origin: AS65560

Demo

Create a **route** object.

Create an **as-set** object.

Questions

We will continue in 5 minutes!

Welcome back!

Take the poll!

Are you enjoying the RIPE NCC webinar?

2 min.

Reverse DNS

How to request reverse delegation

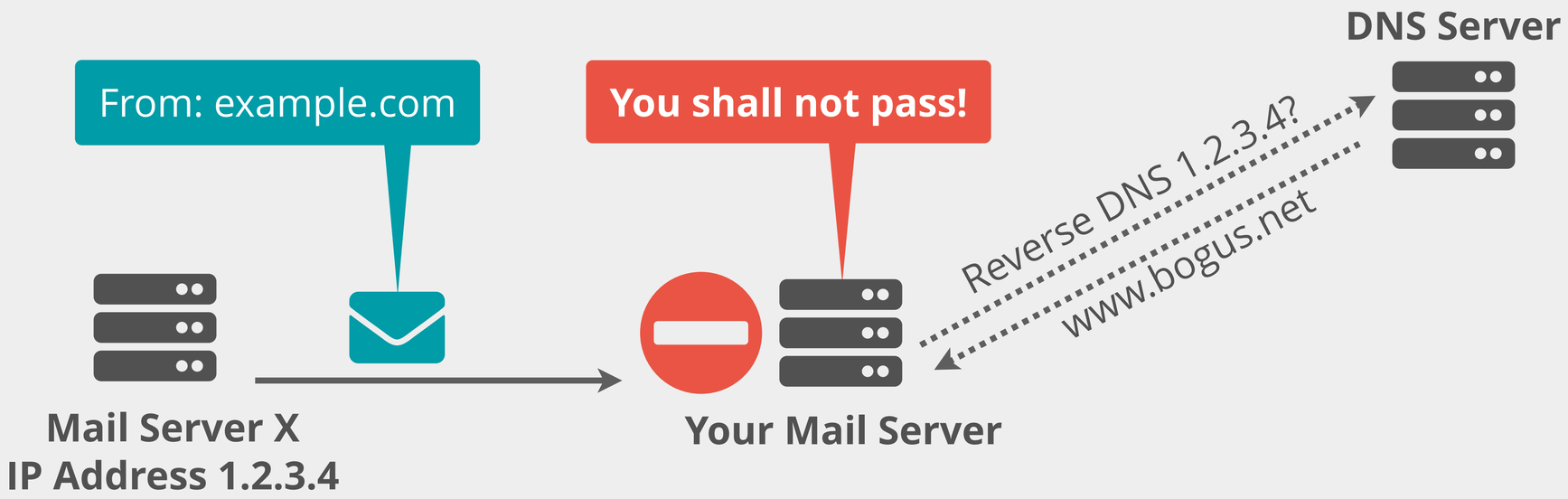
What is Reverse DNS ?

Mapping of IP addresses to host names

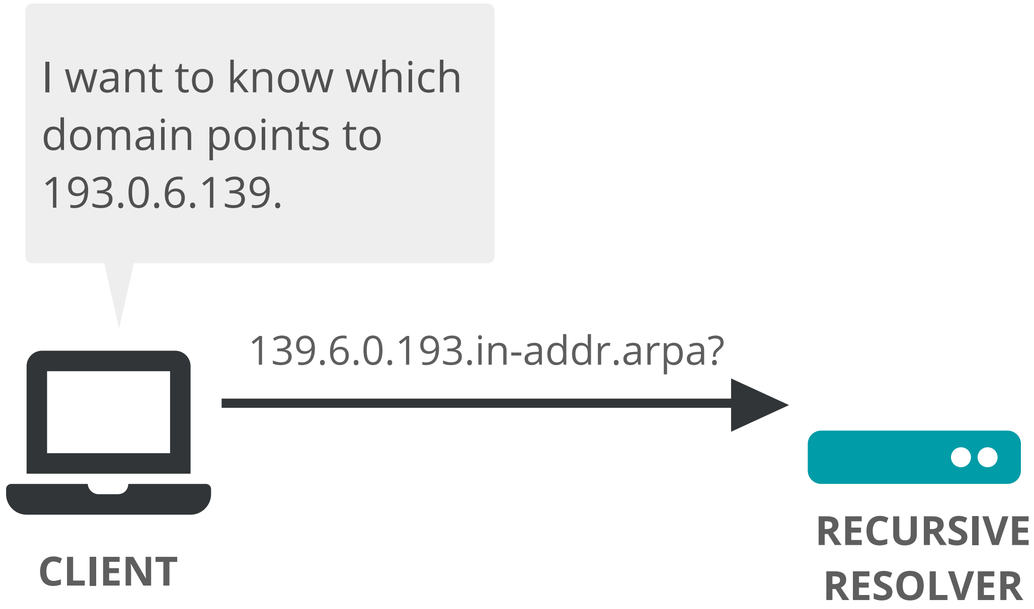
Purpose of Reverse DNS

Reverse DNS is used for:

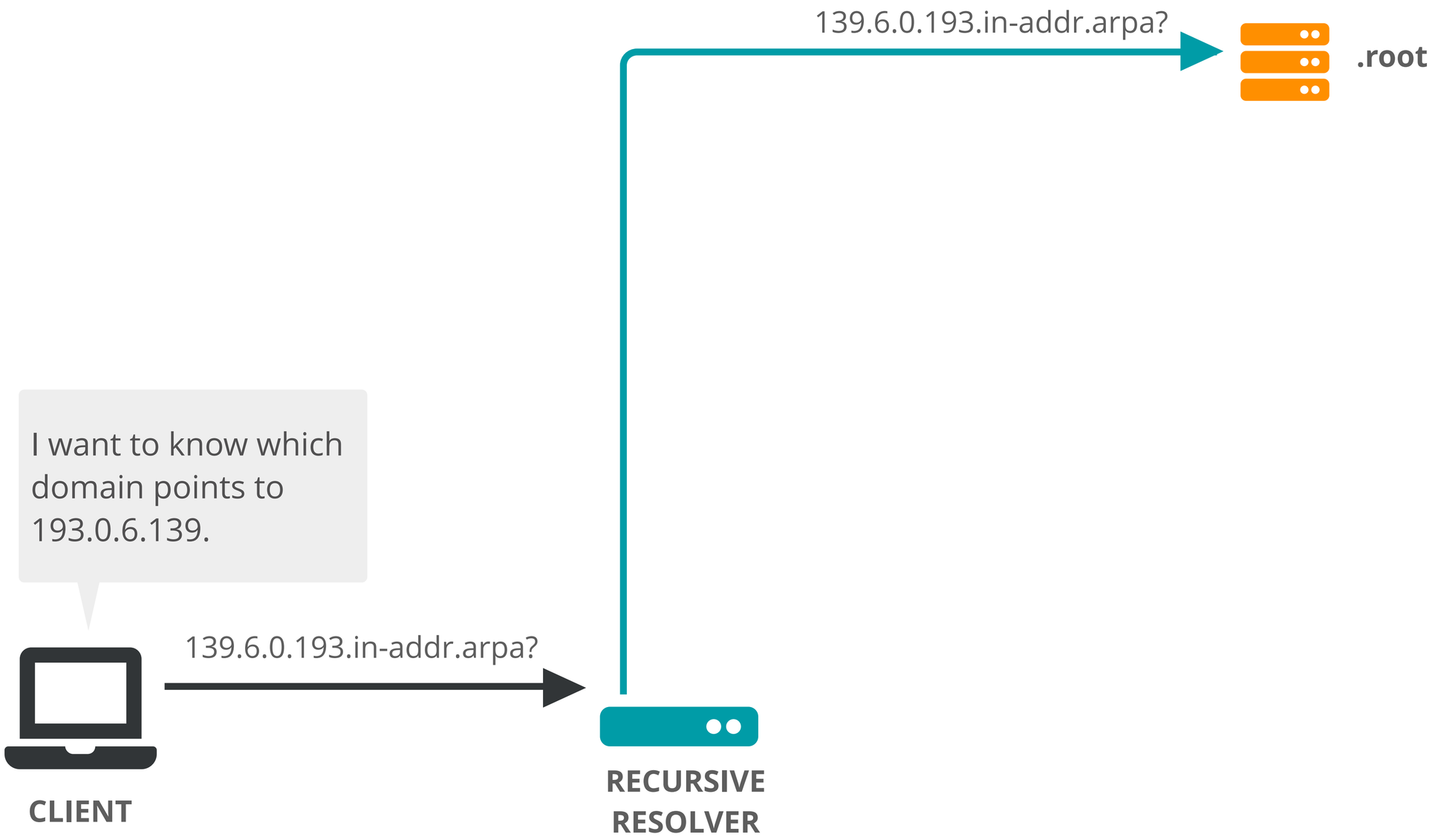
- Identifying Spam
- Network Diagnostics
- Controlling Access to a Network



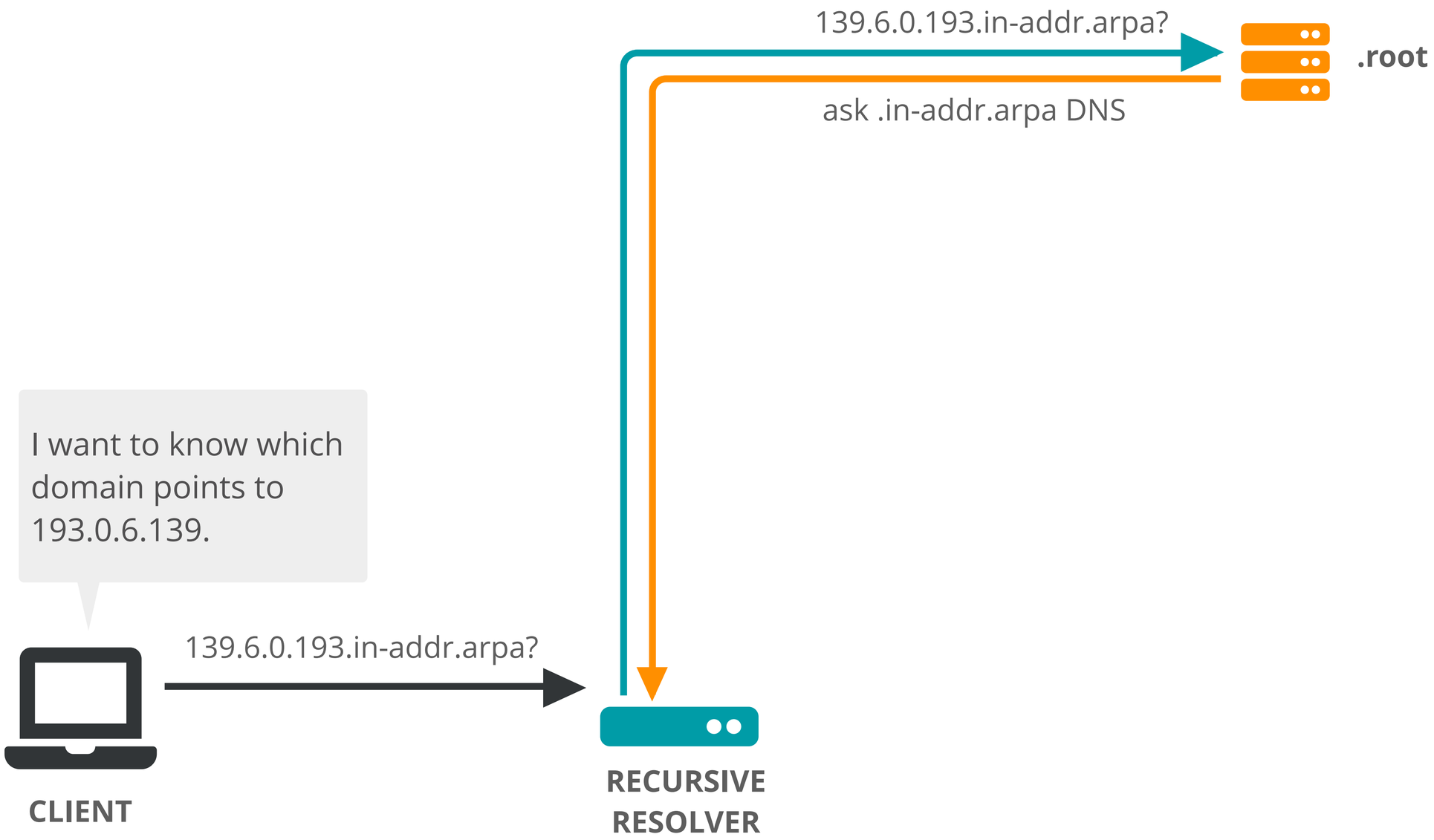
How does Reverse DNS Work?



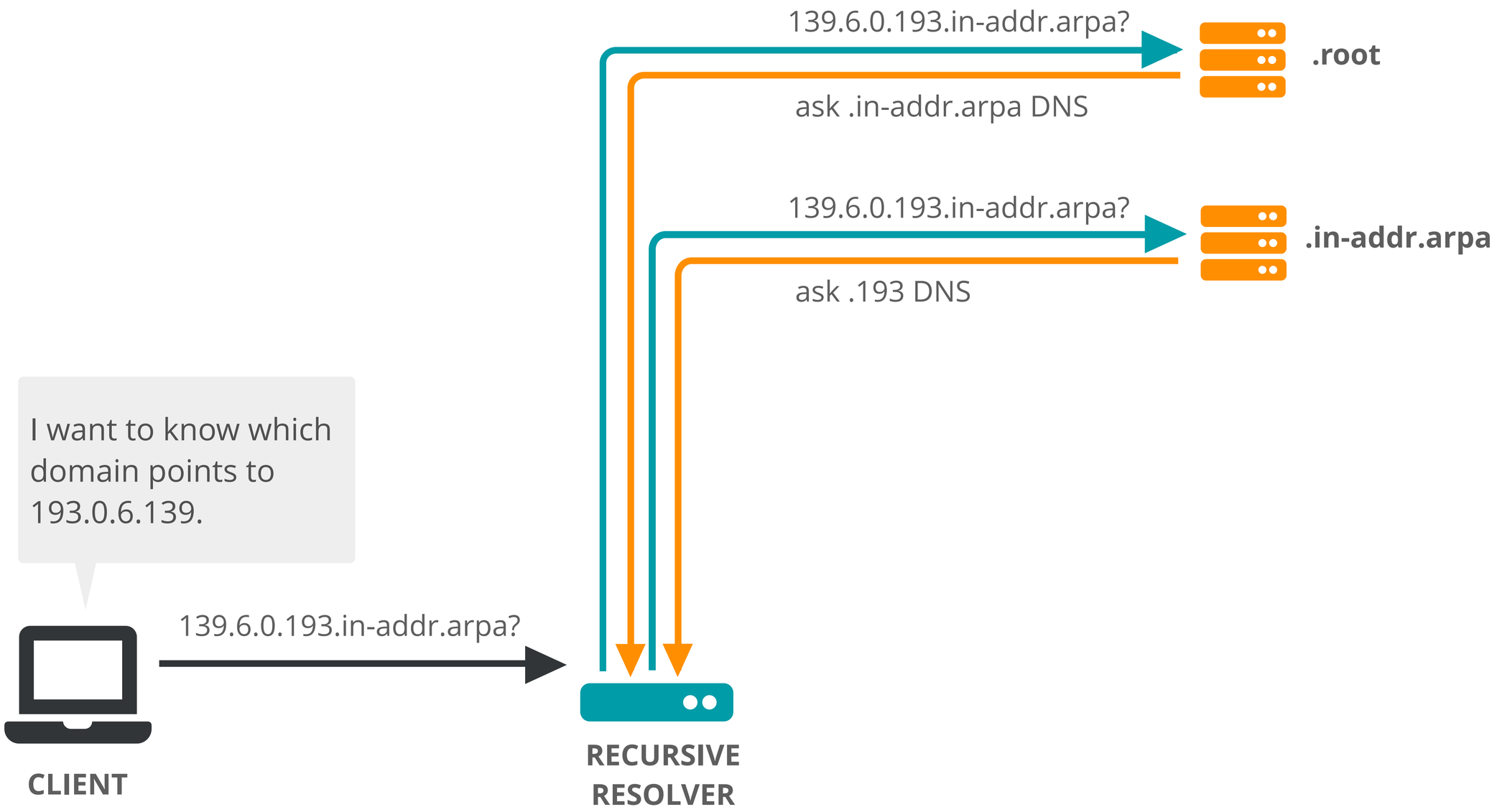
How does Reverse DNS Work?



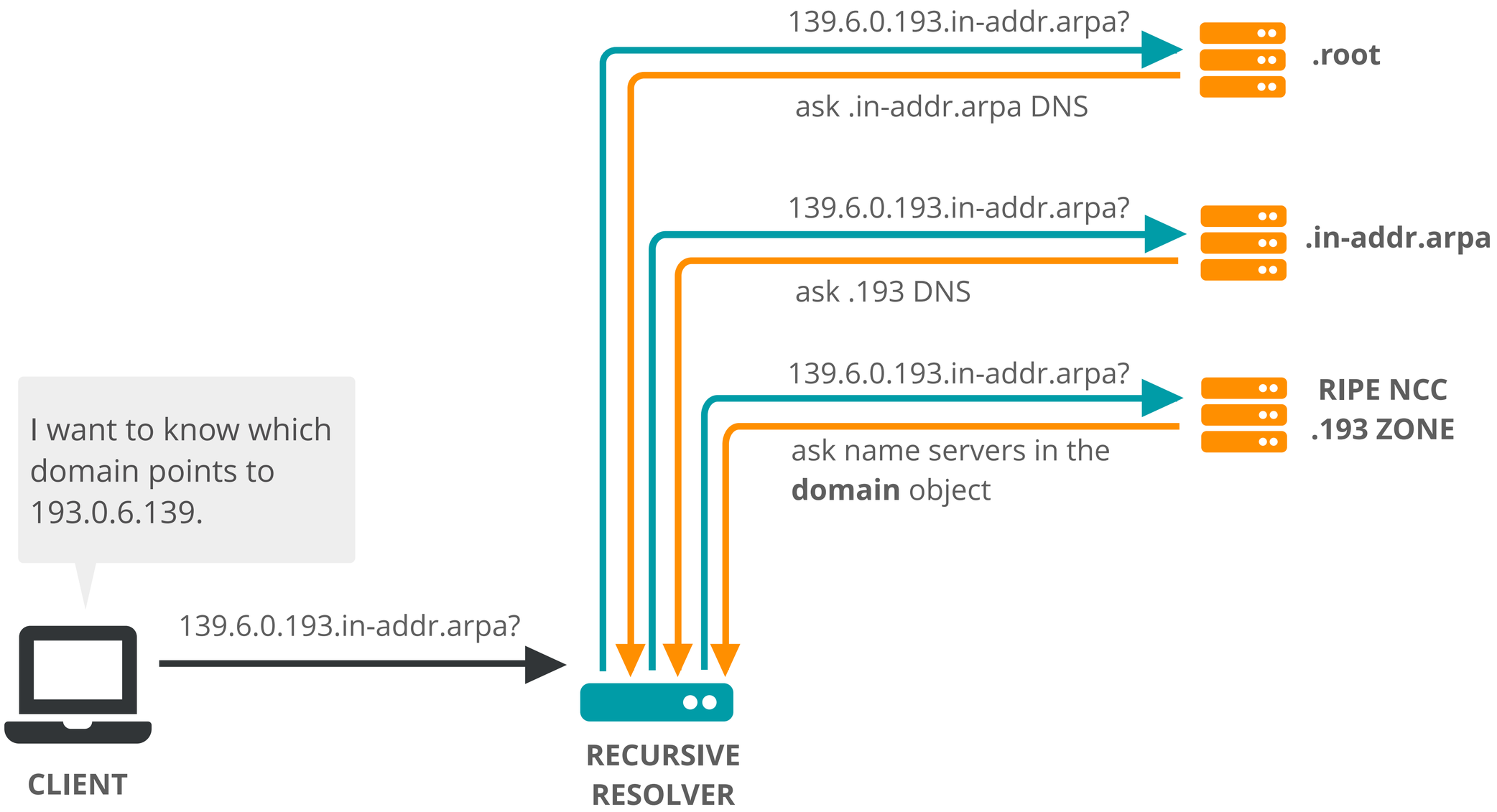
How does Reverse DNS Work?



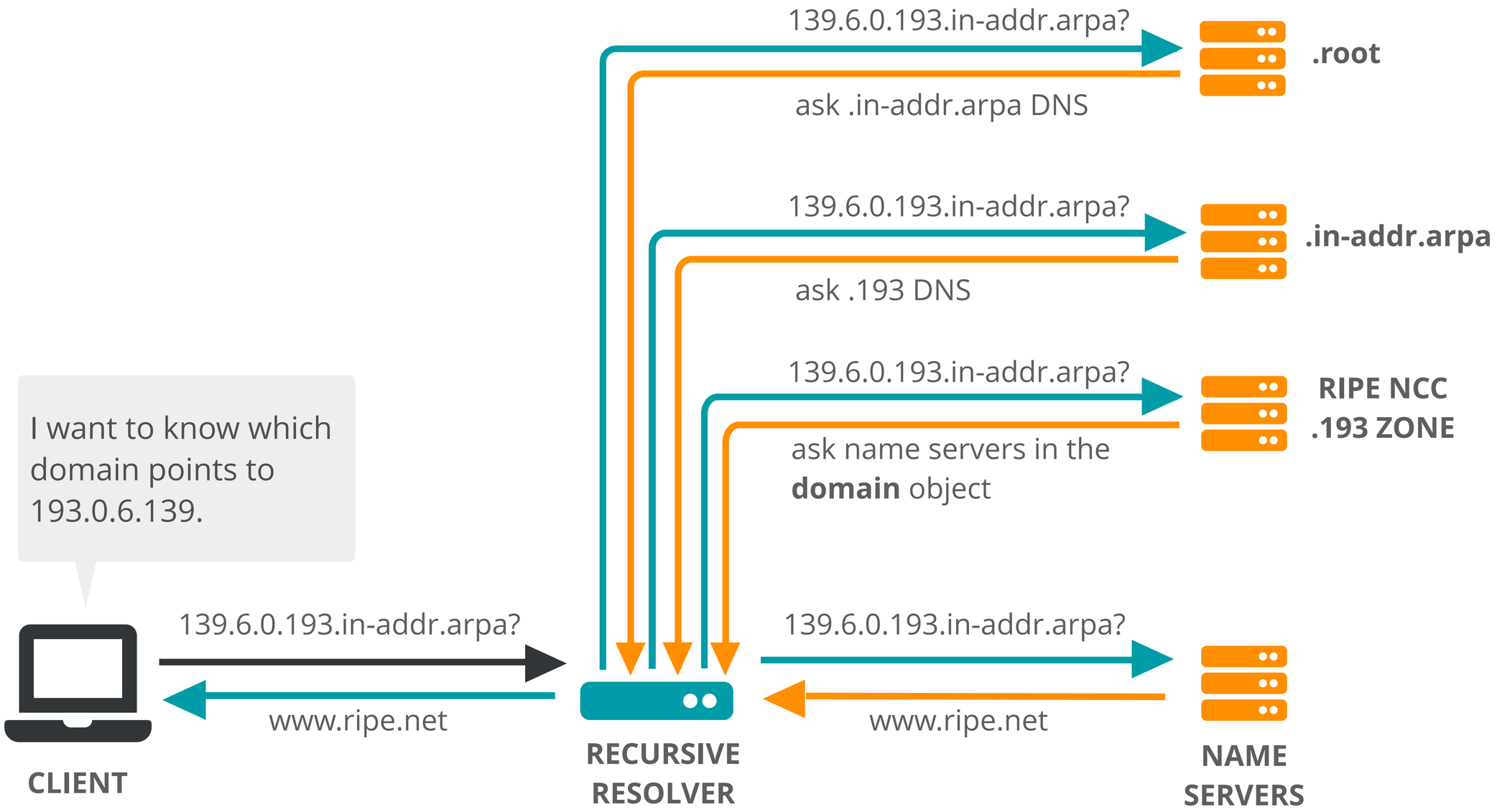
How does Reverse DNS Work?



How does Reverse DNS Work?

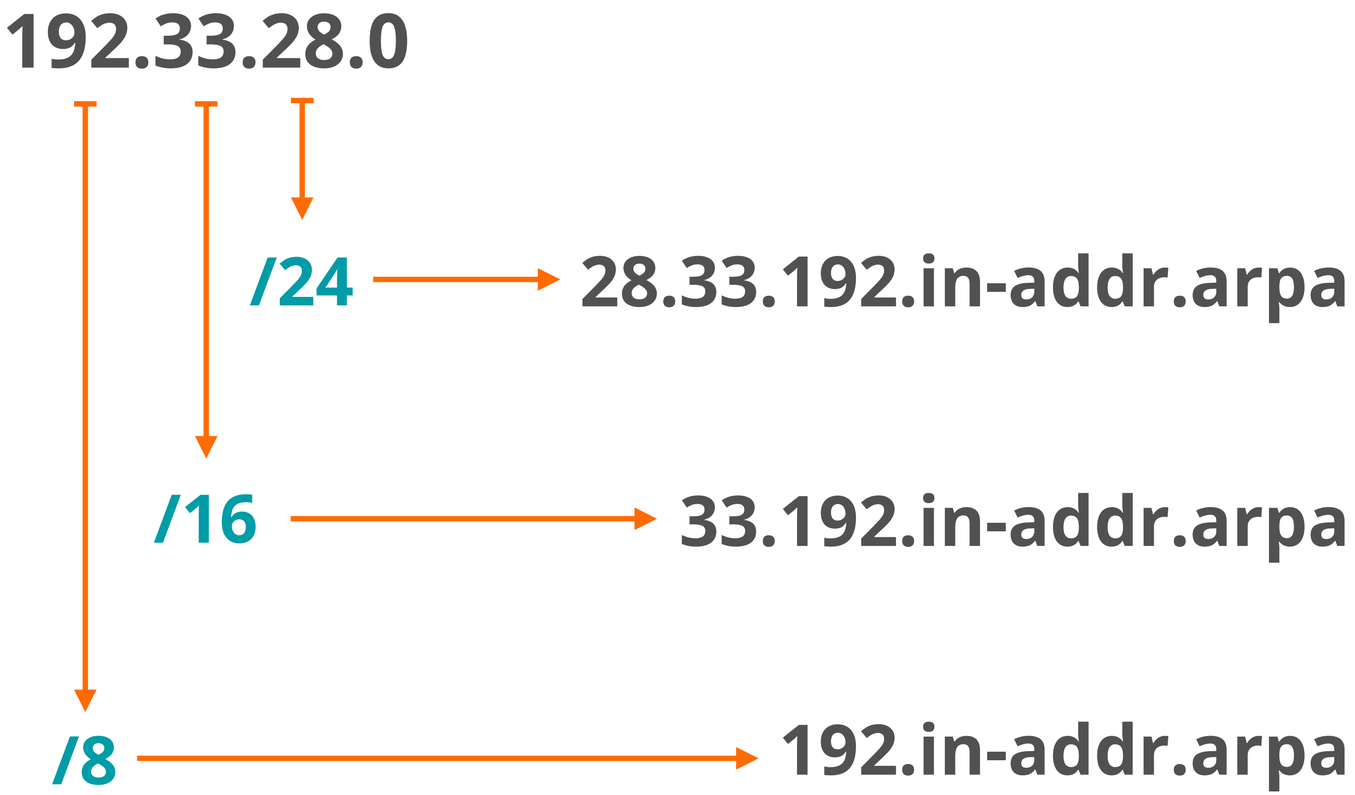


How does Reverse DNS Work?



Reverse Delegation Basics

IPv4
in-addr.arpa zone
/24 or /16 blocks



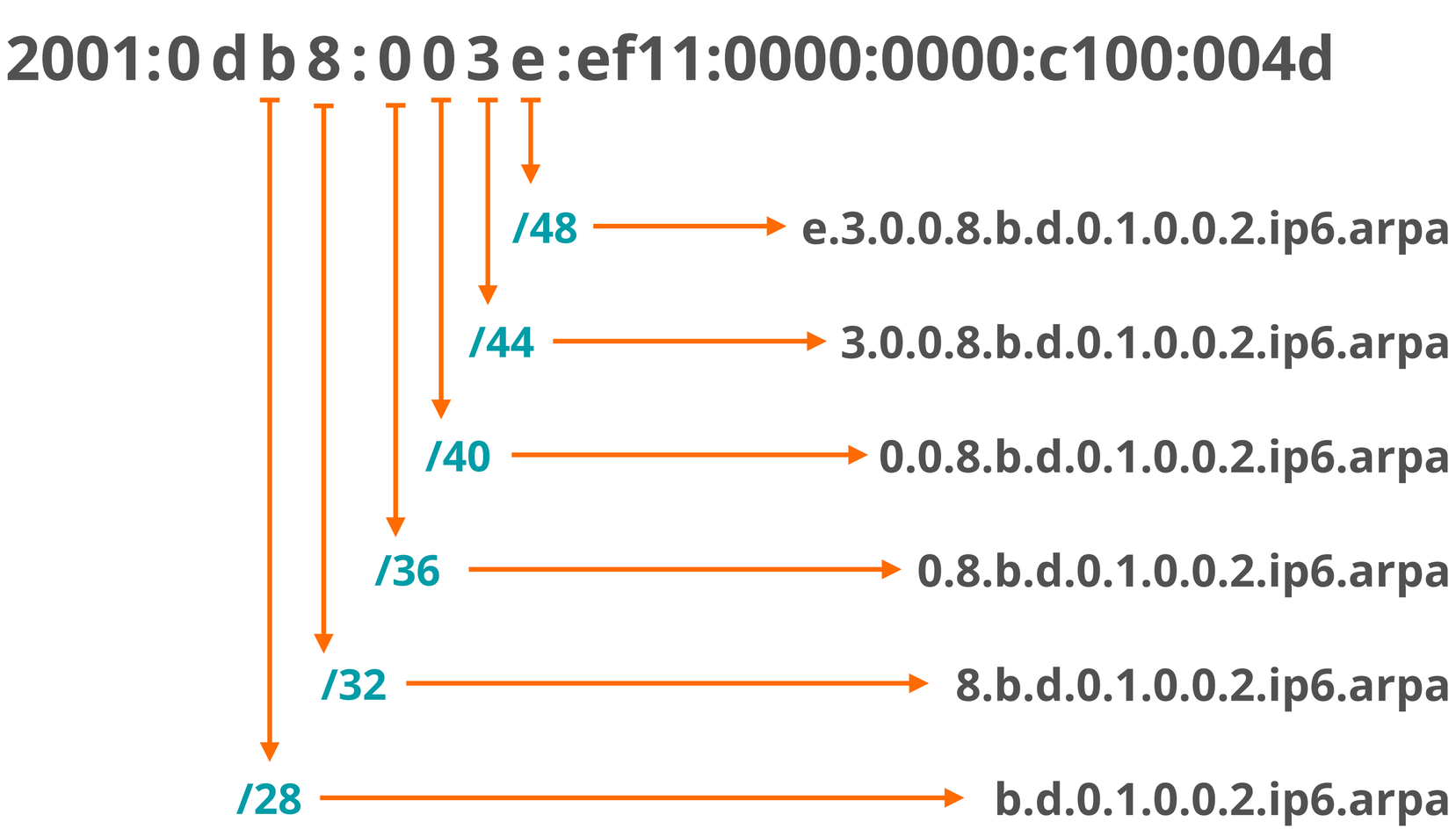
Take the poll!

How many domain objects need to be created for **192.168.8.0/21**?

2 min.

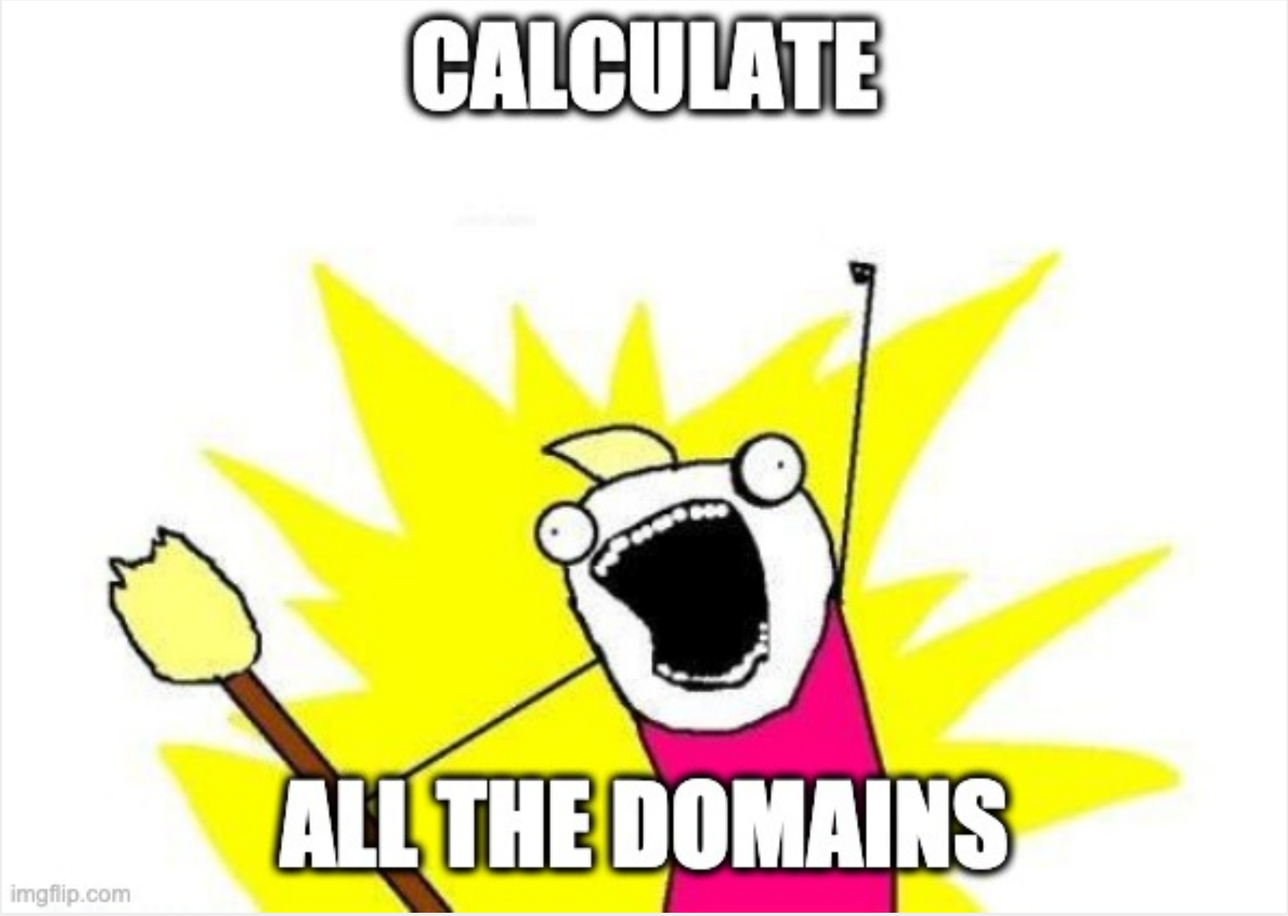
Reverse Delegation Basics

IPv6
ip6.arpa zone
Multiple of 4 bits
/28, /32, /36, /40, /44, /48, /52, /56…



Take the poll!

How many domain objects need to be created for **2001:db8::/29**?



2 min.

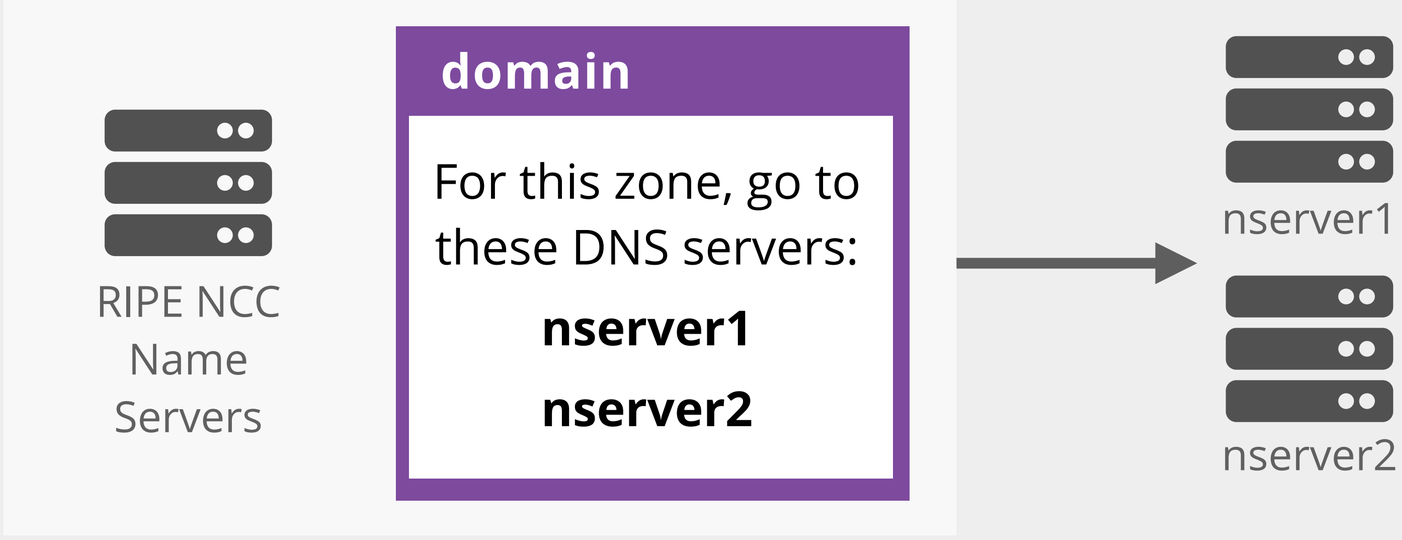
Setting up Reverse Delegation

- Configure your DNS servers
  - at least two name servers in different subnets
  - create a zone file on each for each chunk

- Check your zones: http://dnscheck.ripe.net

domain objects

- Create records on RIPE NCC DNS servers
- They point to name servers that will be authoritative for the zone



IPv4 and domain objects

domain object for prefix: **192.33.28.0/24**

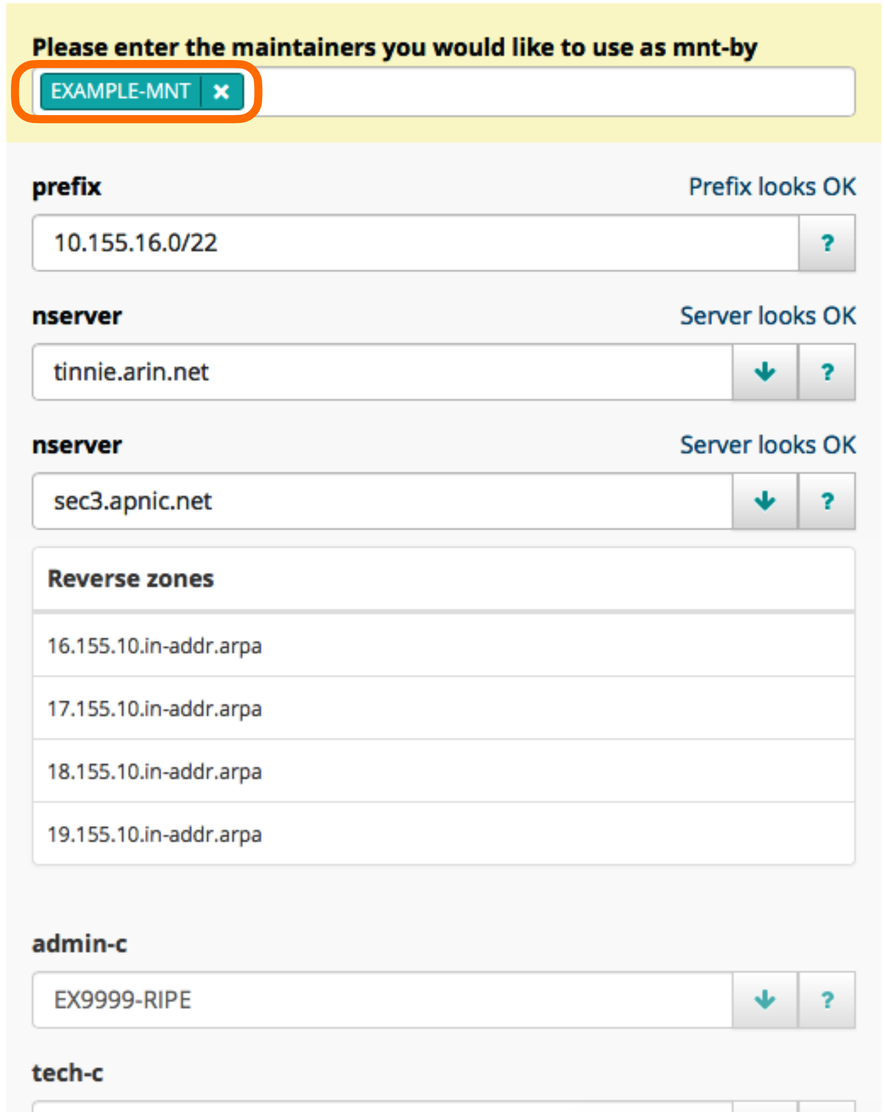
domain:	**28.33.192.in-addr.arpa**
descr:	rDNS for my IPv4 network
admin-c:	NOC12-RIPE
tech-c:	NOC12-RIPE
zone-c:	**NOC12-RIPE**
nserver:	**pri.example.net**
nserver:	**sns.company.org**
ds-rdata:	45062 8 2 275d9acbf3d3fec11b6d6...
mnt-by:	EXAMPLE-LIR—MNT
created:	2015-01-21T13:52:29Z
last-modified:	2016-02-07T15:09:46Z
source:	RIPE

IPv6 and domain objects

domain object for prefix: **2001:db8::/32**

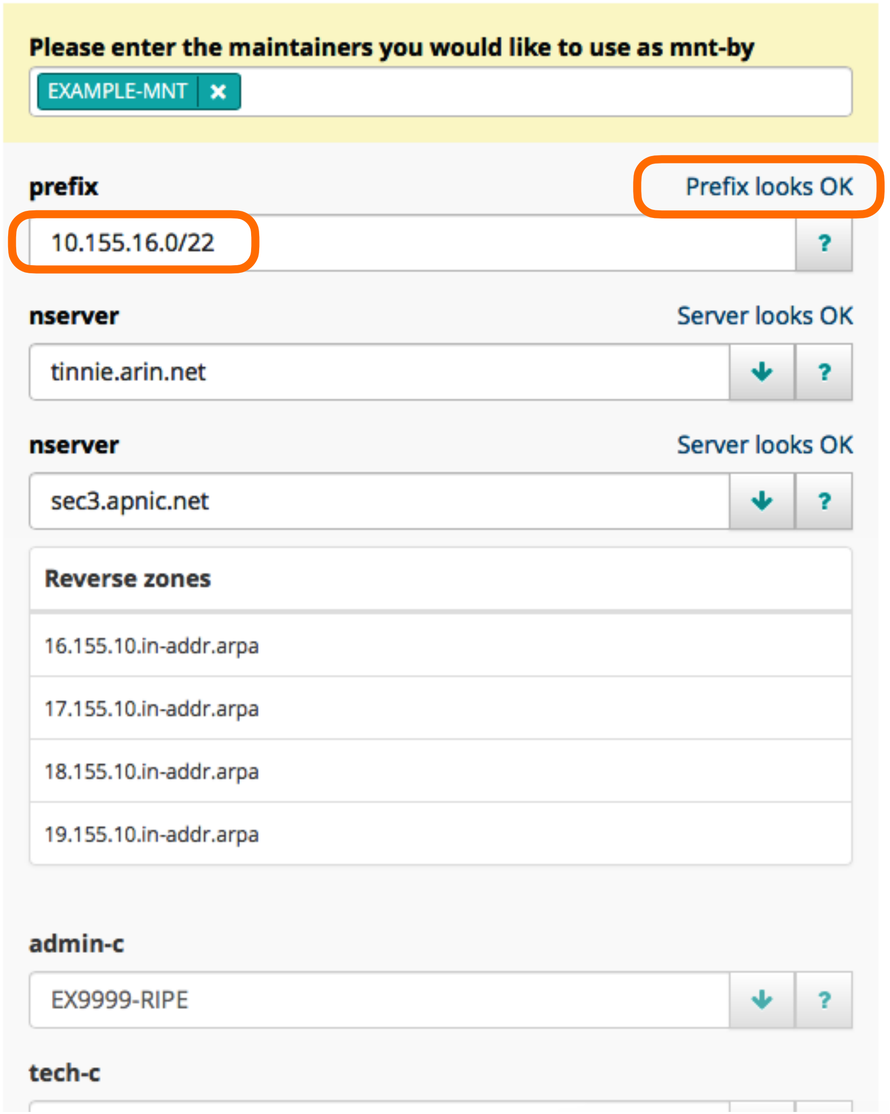
domain:	**8.b.d.0.1.0.0.2.ip6.arpa**
descr:	rDNS for my IPv6 network
admin-c:	NOC12-RIPE
tech-c:	NOC12-RIPE
zone-c:	**NOC12-RIPE**
nserver:	**pri.example.net**
nserver:	**sns.company.org**
ds-rdata:	45062 8 2 275d9acbf3d3fec11b6d6...
mnt-by:	EXAMPLE-LIR—MNT
created:	2015-01-21T13:52:29Z
last-modified:	2016-02-07T15:09:46Z
source:	RIPE

Create Domain Objects Wizard



Provide the **maintainer** that will protect the domain objects.

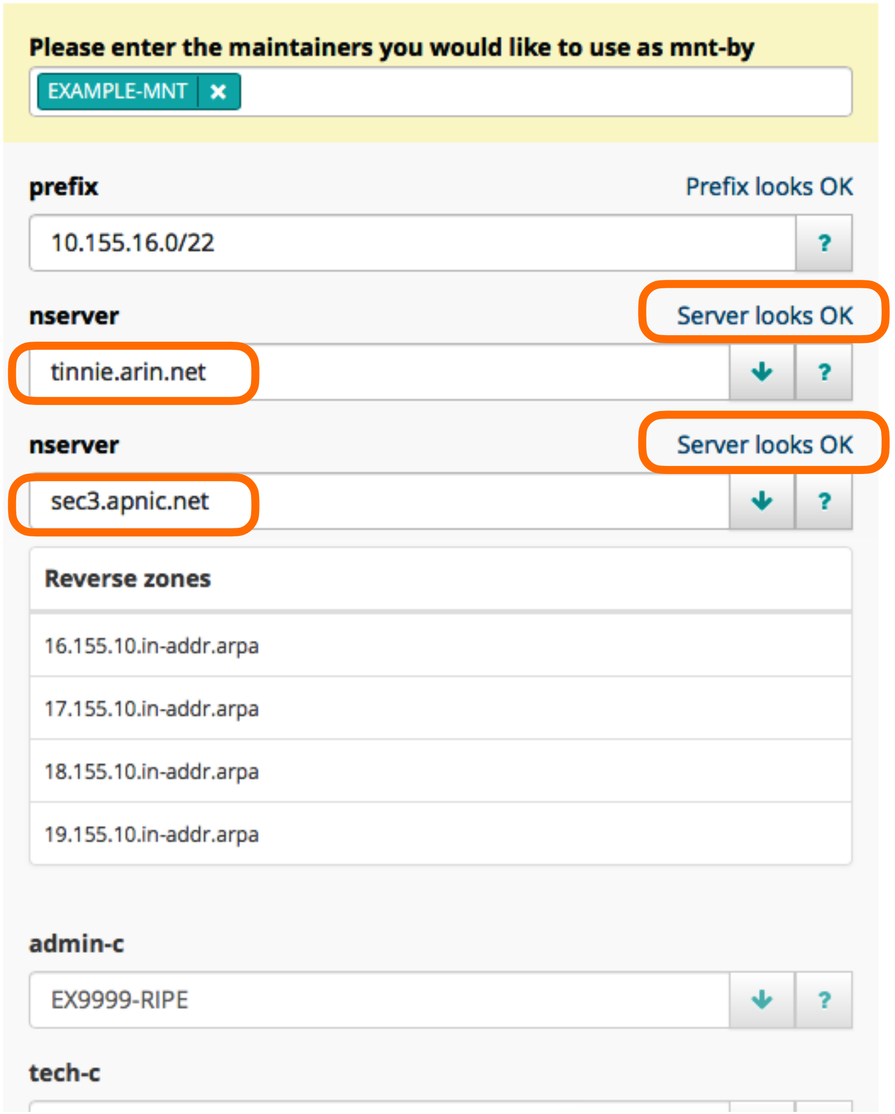
Create Domain Objects Wizard



Order in which the RIPE Database checks for authorisation from the address space:

- mnt-domains:
- mnt-lower:
- mnt-by:

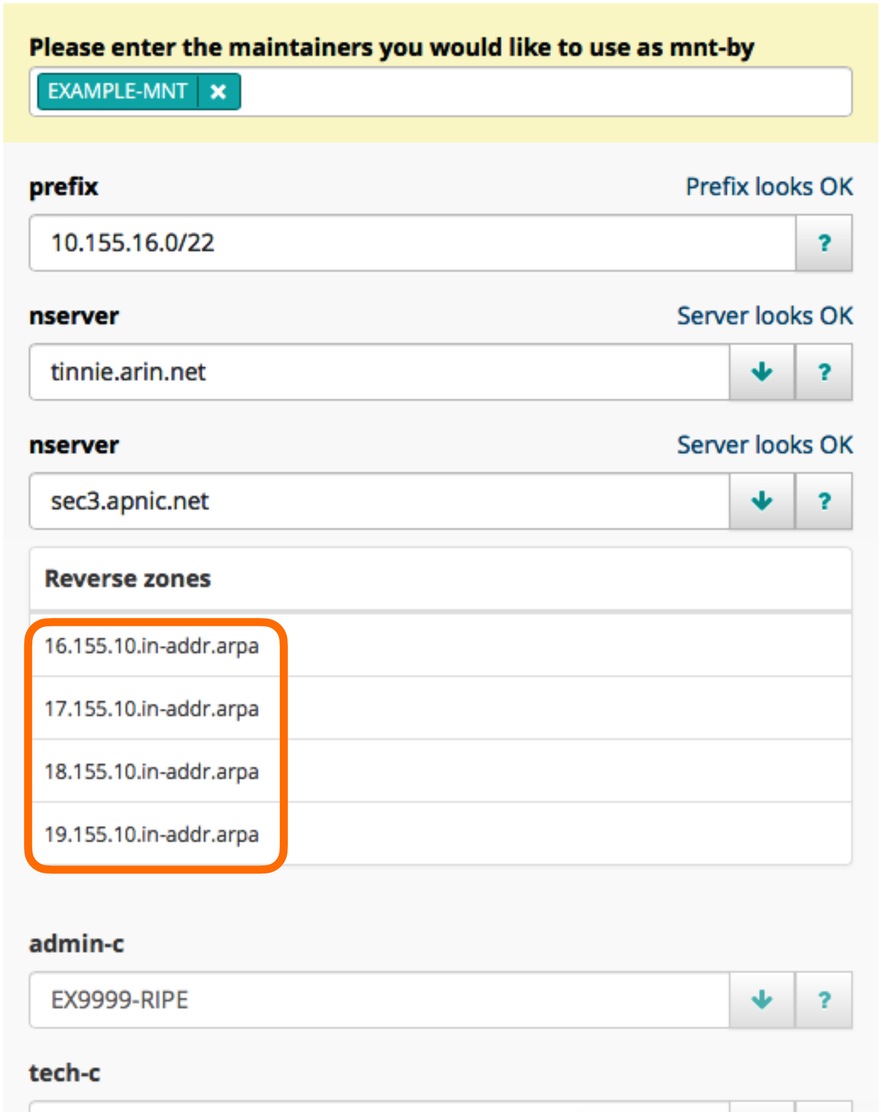
Create Domain Objects Wizard



Provide at least **two** different name servers in **two** different subnets.

They must be **reachable**!

Create Domain Objects Wizard



domain: 16.155.10.in-addr.arpa
mnt-by: EXAMPLE-MNT

domain: 17.155.10.in-addr.arpa
mnt-by: EXAMPLE-MNT
nserver: tinnie.arin.net

domain: 18.155.10.in-addr.arpa
mnt-by: EXAMPLE-MNT
nserver: tinnie.arin.net

domain: 19.155.10.in-addr.arpa
mnt-by: EXAMPLE-MNT
nserver: tinnie.arin.net
nserver: sec3.apnic.net

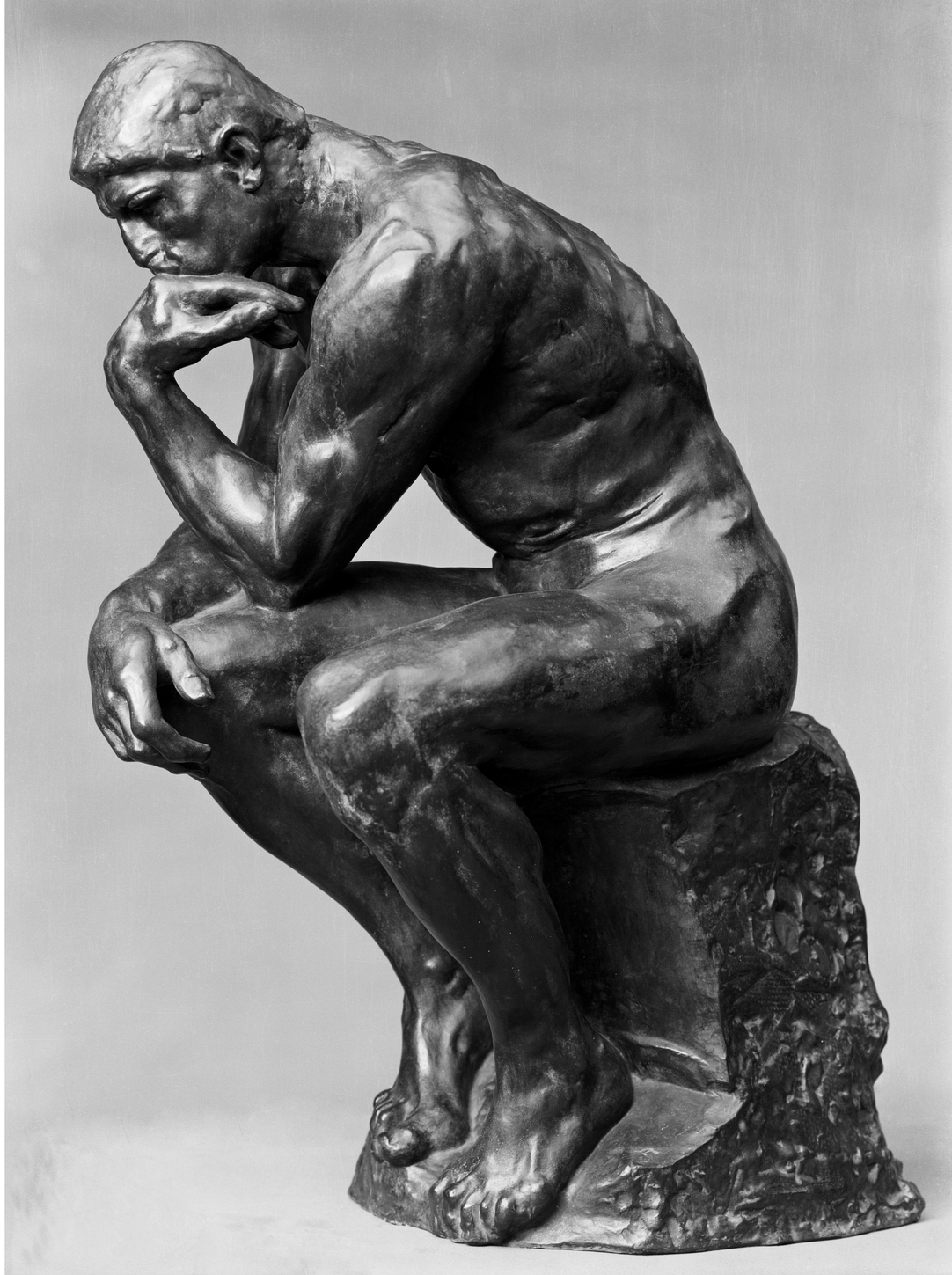
Questions

Notifications

How to know if your objects change?

Think about this…

- The RIPE Database is a **public** database
- **Anybody** can search in the database
- **Who** can make updates?
- How can you **know** if somebody updates your objects?



“notify:”

The “**notify:**” attribute is optional

- Can be used on any object
- An email is sent when the object is updated

Person

notify: email@example.com

IP Address Block

notify: noc-team@example.com

LIR Organisation

notify: admin@example.com

“upd-to:”

For **failed** attempts to update objects.

mntner: **LIR-MNT**

upd-to: db-alerts@example.com

IP Address Block

mnt-by: LIR-MNT

“mnt-nfy:”

For **succesful** attempts to update objects.

mntner: LIR-MNT
mnt-nfy: db-success@example.com

IP Address Block
mnt-by: LIR-MNT

Take the poll!

What would happen if your objects were updated and you had **not** set up notifications?

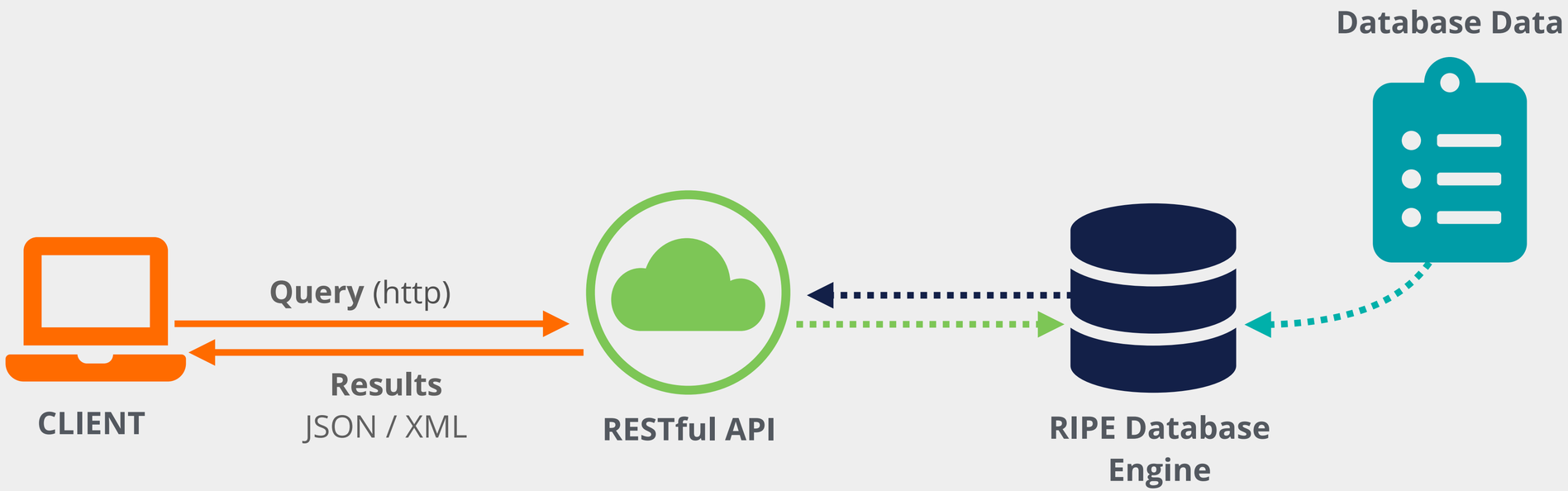
2 min.

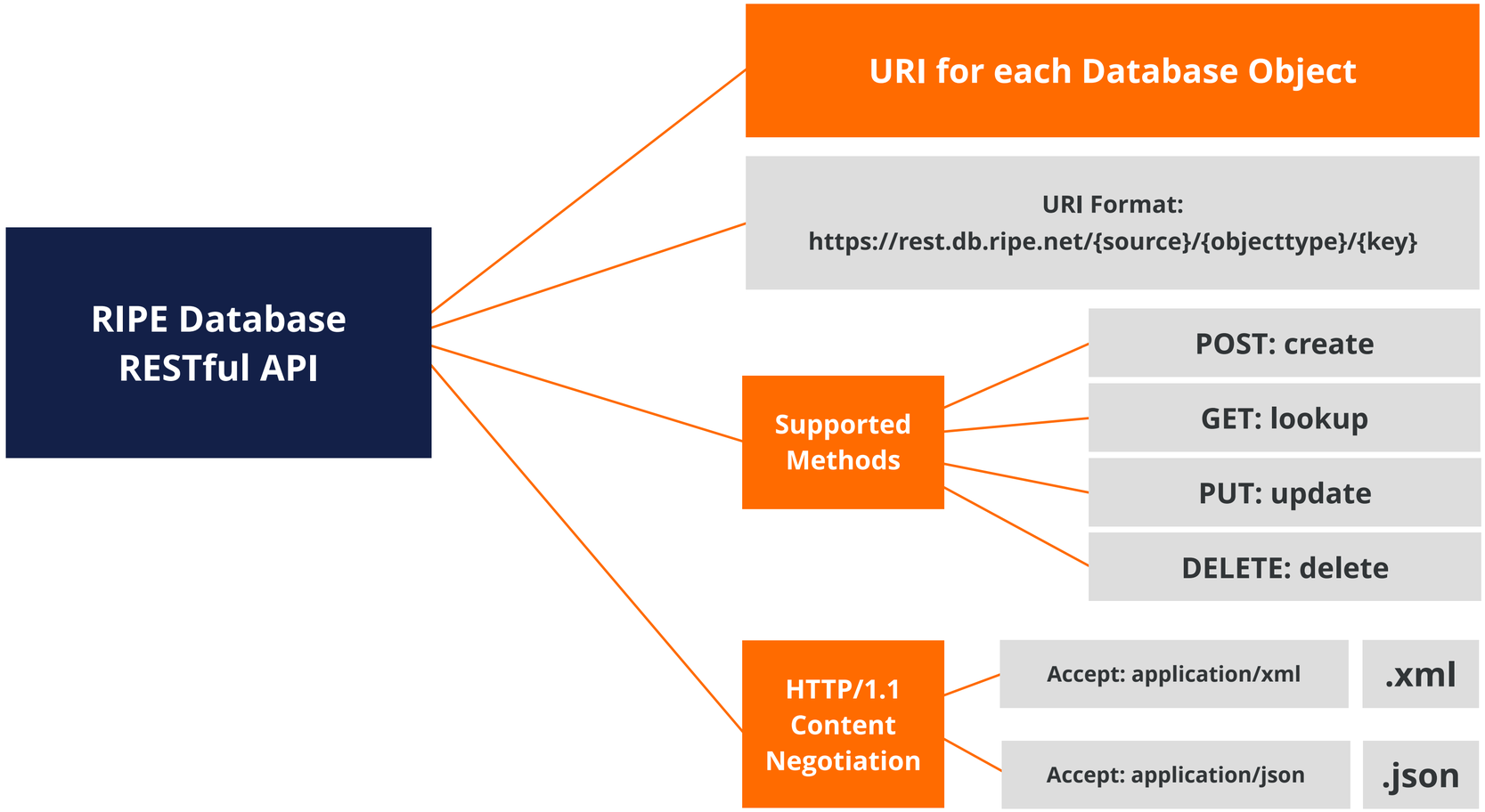
Beyond The Database

The RESTful API

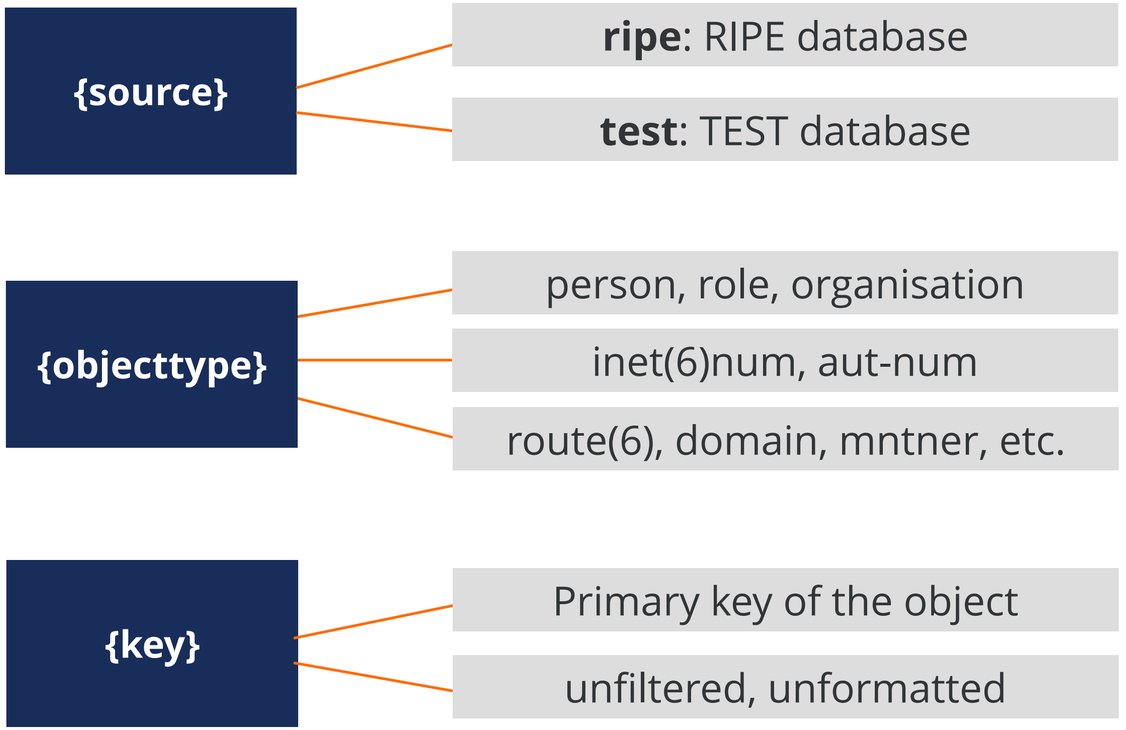
RIPE Database RESTful API

- Allows **REST-compliant** systems to access the RIPE Database
- Data is exchanged in **XML** or **JSON** format
- Standard **query limits** apply




RIPE Database
RESTful API
URI for each Database Object
URI Format:
https://rest.db.ripe.net/{source}/{objecttype}/{key}
Supported Methods
POST: create
GET: lookup
PUT: update
DELETE: delete
HTTP/1.1 Content Negotiation
Accept: application/xml
.xml
Accept: application/json
.json

Uniform Resource Identifier (URI) Format:
https://rest.db.ripe.net/{source}/{objecttype}/{key}



Examples of URIs

Maintainer object RIPE-DBM-MNT (XML)

https://rest.db.ripe.net/ripe/mntner/RIPE-DBM-MNT

inetnum object for 193.0.0.0 - 193.0.7.255 (json)

https://rest.db.ripe.net/ripe/inetnum/193.0.0.0%20-%20193.0.7.255.json

Person object PP1-RIPE

https://rest.db.ripe.net/ripe/person/pp1-ripe

Additional Services

Search	RIPE Database whois search service
Metadata	List available sources Object type template
Geolocation	Geolocation and language attributes for IPv4/IPv6 Address
Abuse Contact	Lookup abuse contact for Internet Resource

More Examples of URIs

Search for ‘tp19-ripe’ in the RIPE Database

https://rest.db.ripe.net/search?source=ripe&query-string=tp19-ripe

Show the template for the person object type

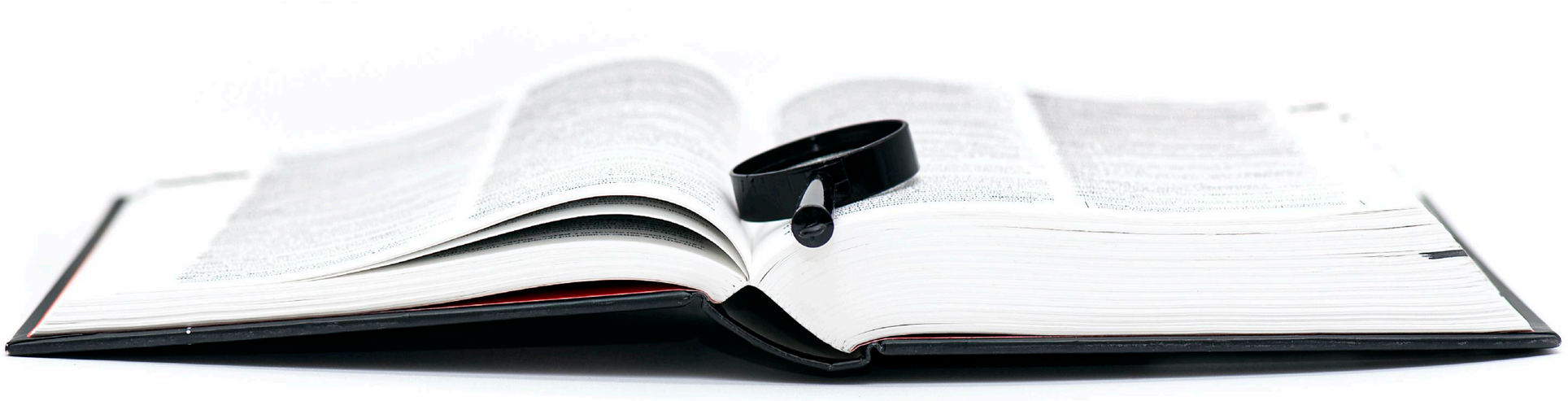
https://rest.db.ripe.net/metadata/templates/person.xml

Show the abuse contact email address for AS3333

https://rest-test.db.ripe.net/abuse-contact/AS3333

RESTful API Documentation

Get the documentation!



Link to documentation:
https://apps.db.ripe.net/docs/Update-Methods/RESTful-API/

Questions

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Fí

Край

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