



**RIPE NCC**  
RIPE NETWORK COORDINATION CENTRE

# RIPE Database

Training Course

Training Services | RIPE NCC | October 2015

# Schedule



09:00 - 09:30	<b>Coffee, Tea</b>
11:00 - 11:15	<b>Break</b>
13:00 - 14:00	<b>Lunch</b>
15:30 - 15:45	<b>Break</b>
17:30	<b>End</b>

# Introduction



- **Name**
- **Number on the list**
- **Experience**
  - LIR
  - RIPE Database
  - RIPEstat
- **Goals**

# Overview



- **The RIPE Database Basics**
  - Exercise 1: Using the “New Organisation Startup Form”
- **Role Objects**
  - Exercise 2: Create a role Object
- **Querying the RIPE Database**
- **Inverse Lookups**
  - Exercise 3: Finding the Correct Contact Information
- **Database Protection Mechanisms**
  - Exercise 4: Finding the Addresses of an LIR
- **Hierarchical Authorisation**
  - Exercise 5: Hierarchical Authorisation
- **Reverse Delegation**
  - Exercise 6: Setting Up Reverse Delegation
- **Tools: LIR Portal, RIPEstat**



# RIPE Database Basics

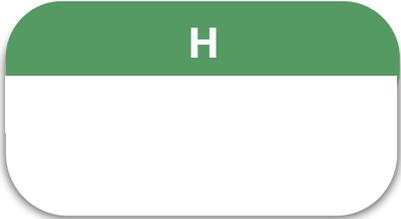
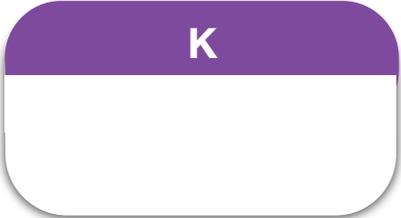
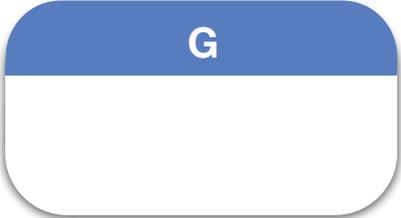
## Section 1



## Registration

- Ensures uniqueness of all Internet resources
- Provides contact information

# Objects in the Database

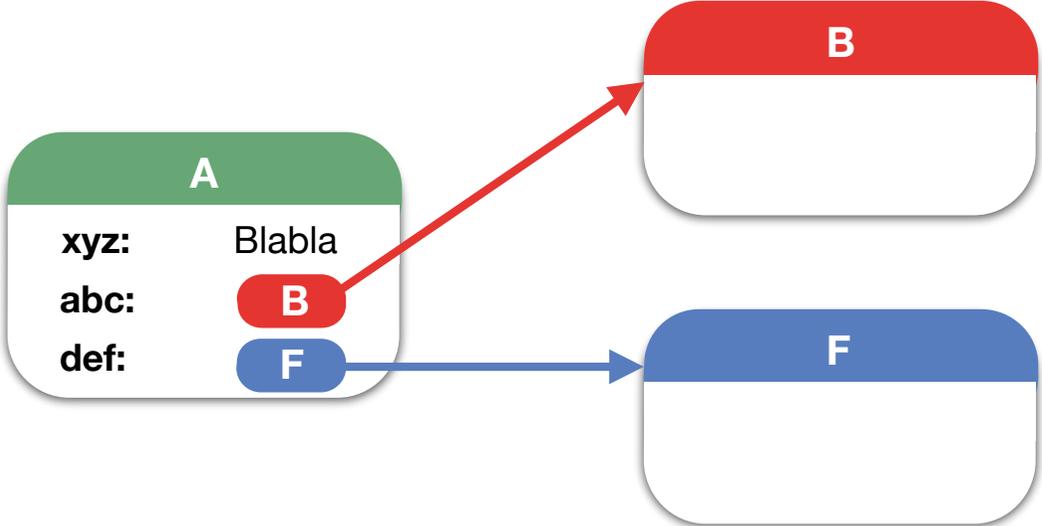


# Notice:



- **Objects have a name**
  - “primary key”
- **Colour**
  - “type of object”

# Objects in the Database

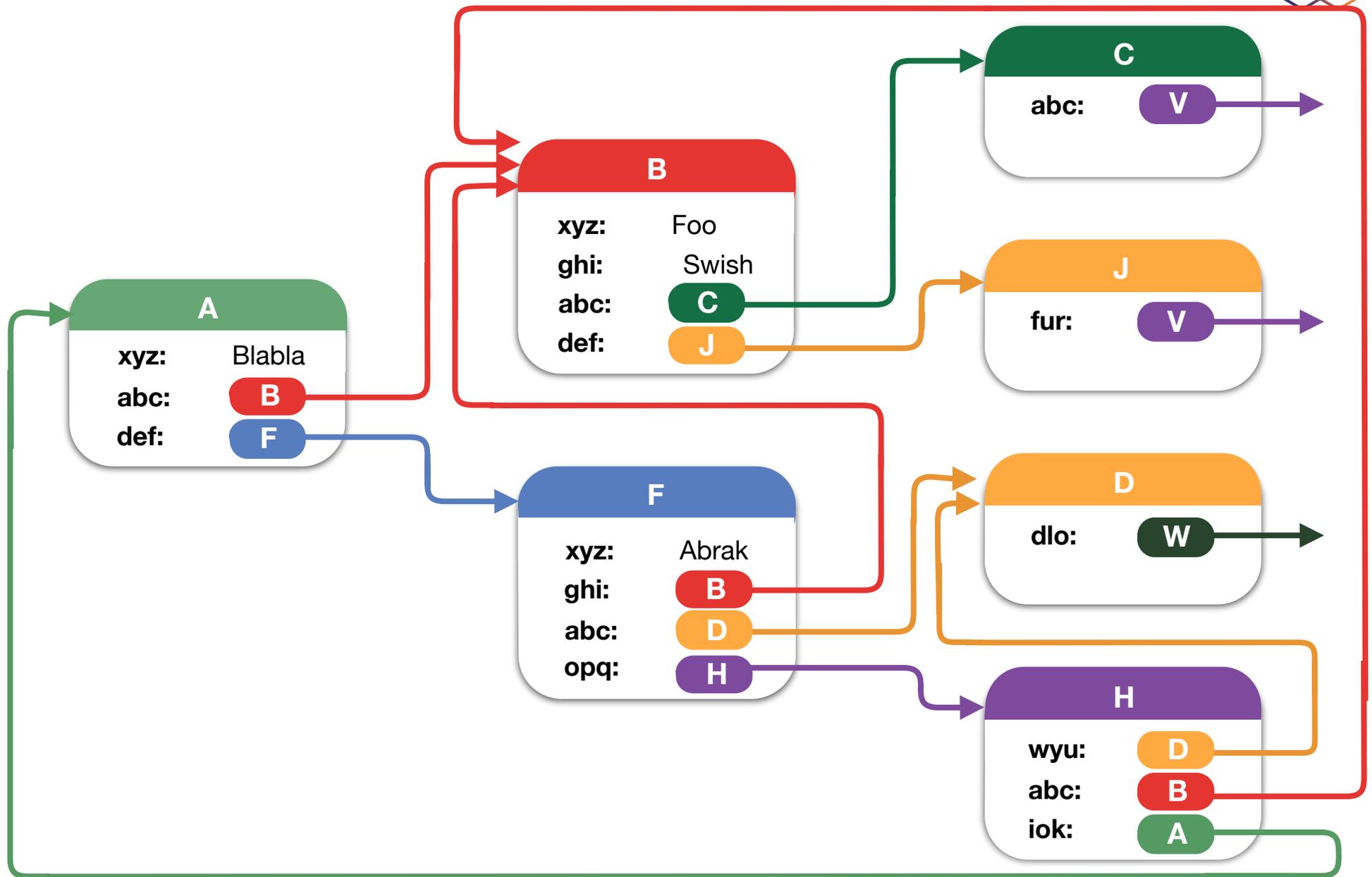




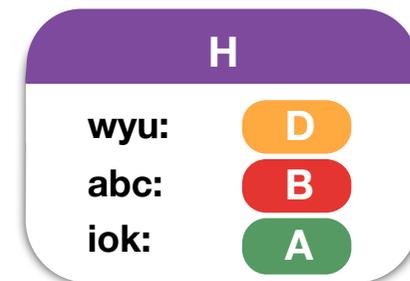
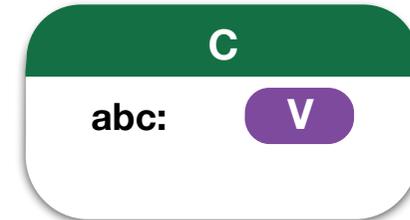
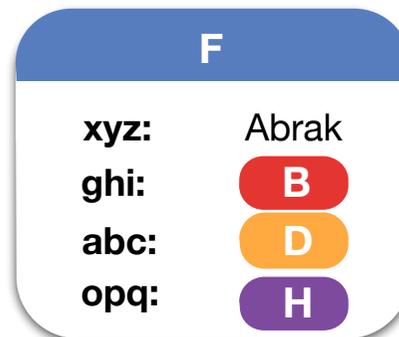
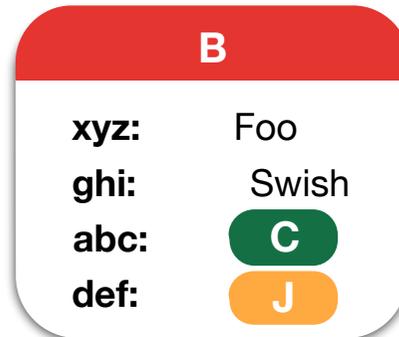
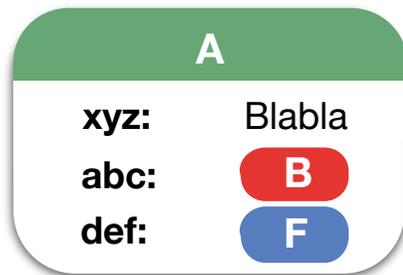
# Objects in the Database

- **Objects have several lines**
- **All look like this**      `yyyyyy: xxxxxx`
- **Two types of lines**
  - `yyyyyy: blablabla`      (**fill out with free text**)
  - `zzzzz: B`      (**fill out with name of another object**)

# Objects in the Database



# Objects in the Database





# Questions

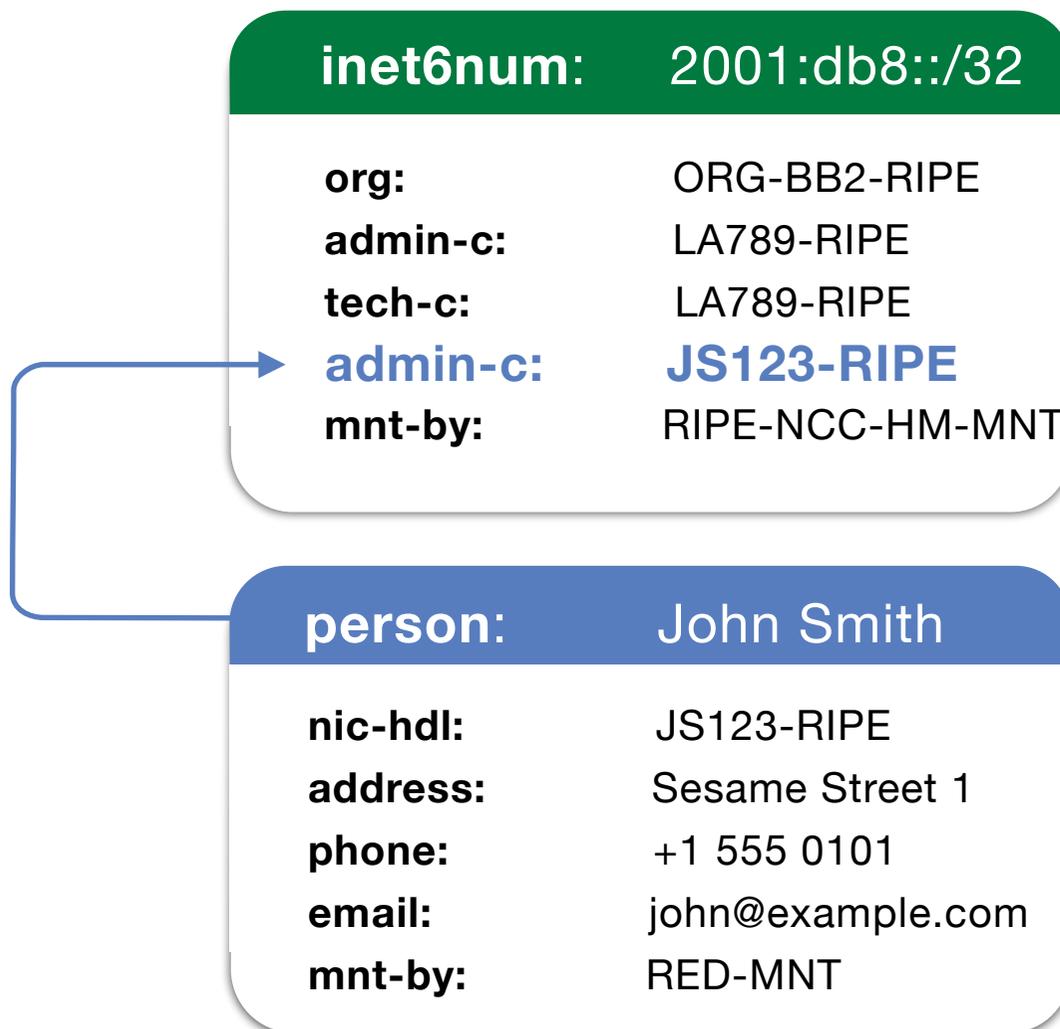


# RIPE Database Objects



- **inetnum** = IPv4 address range
- **inet6num** = IPv6 address range
- **aut-num** = single AS number
- **route, route6** = address range announced by an AS number
- **domain** = reverse domain range
- **organisation** = info on who holds the set of resources
- **person** = contact info for other objects
- **role** = group of persons
- **maintainer** = protects all other objects

# Person object: contact info

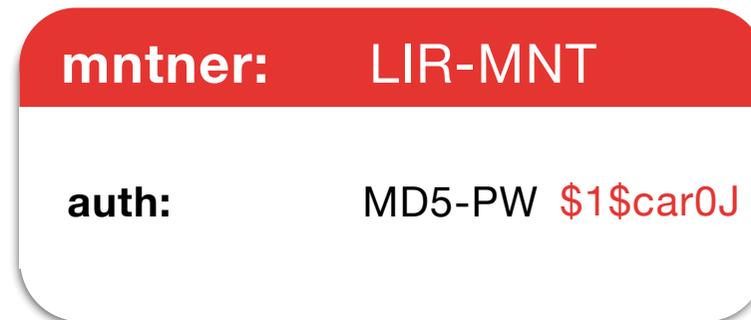


# mntner Object: Protection



**Password:** tiger72

**Hashed Password:** \$1\$car0J

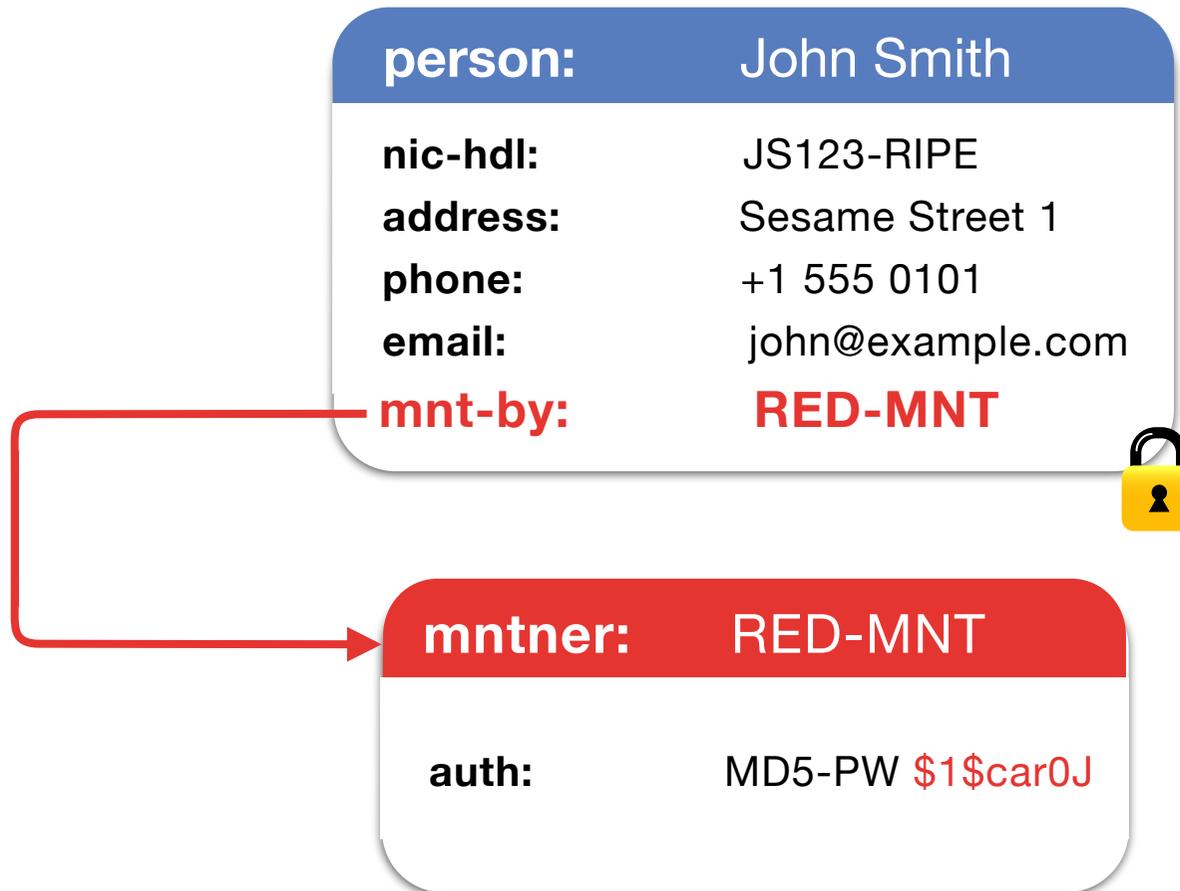


# mntner Object in the RIPE DB



```
mntner:          EXM-MNT
descr:          Maintainer
admin-c:        JE2702-RIPE
auth:           MD5-PW # Filtered
mnt-by:         EXM-MNT
remarks:        Accepted the RIPE Database Terms and Conditions
created:        2013-07-30T09:28:24Z
last-modified:  2013-07-30T09:28:24Z
source:         RIPE # Filtered
```

# Protecting an Object



# Updating an Object



<b>person:</b>	John Smith
<b>nic-hdl:</b>	JS123-RIPE
<b>address:</b>	Sesame Street 1
<b>phone:</b>	+1 555 0101
<b>email:</b>	john@example.com
<b>remarks:</b>	extra remark
<b>mnt-by:</b>	<b>RED-MNT</b>



<b>mntner:</b>	RED-MNT
<b>auth:</b>	MD5-PW \$1\$car0J

## Add passwords

### Session passwords

0 stored password(s)



**tiger72**



# Updating the RIPE Database



- Webupdates

RIPE Database <<  
Query >  
**Update** v  
Create an object  
Update an object  
Syncupdates  
New Organisation Startup  
Abuse Contact >  
Passwords >

---

**Available Credentials**

Session Passwords

0 stored password(s) ?

Add password Add

## Update or delete object

Search for the object you want to modify or delete:

Object type: ?  
select a type

Source Database: ?  
 RIPE Database  
 TEST Database

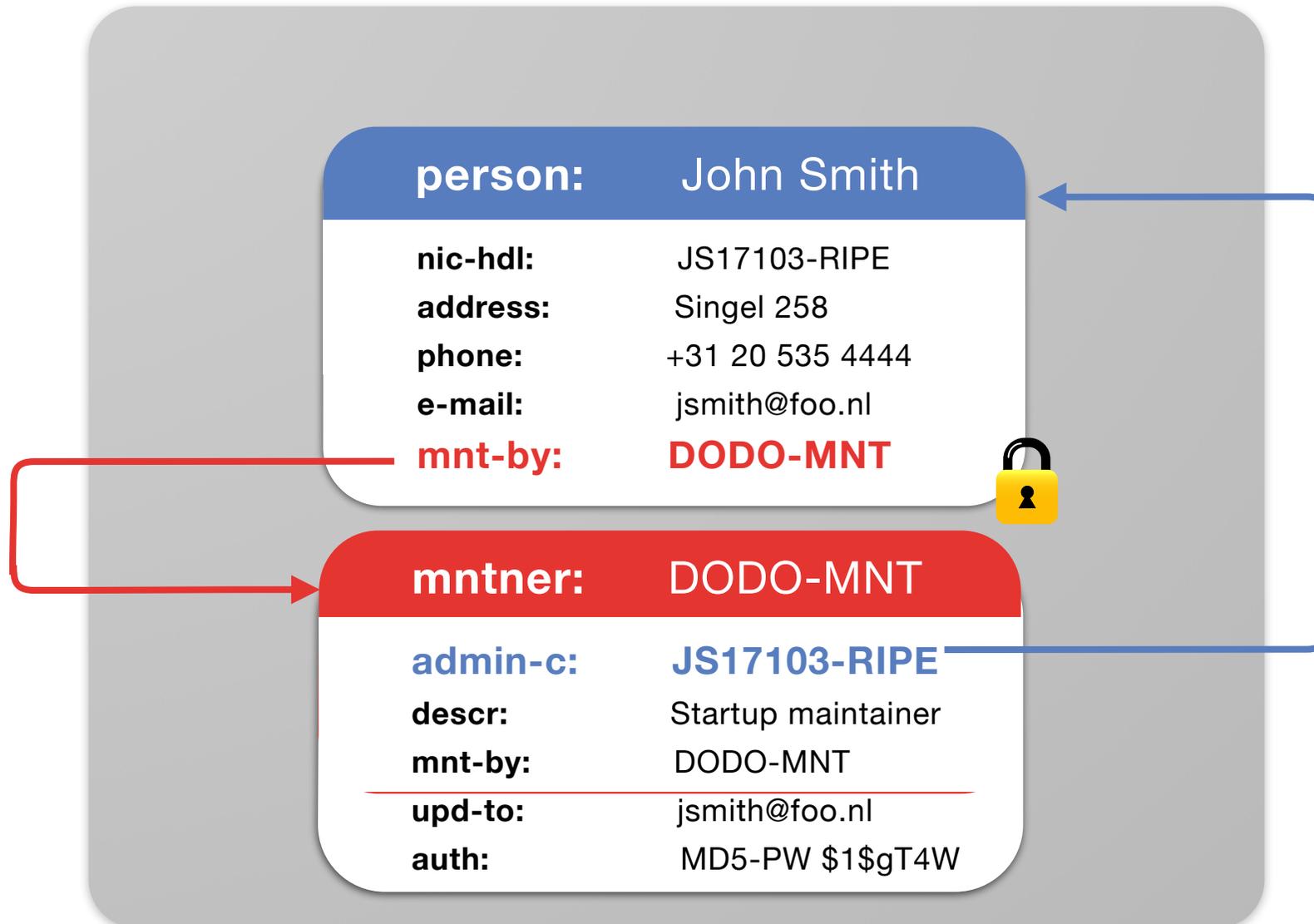
Operation:  
 modify object by individual fields  
 modify object in single text area  
 delete object

Search

# New Organisation Startup Tool



- Creation of first person object - mntner object pair



# DB New Organisation Startup Form



- RIPE Database <<
- Query >
- Update** ▾
- Create an object
- Update an object
- Syncupdates
- [New Organisation Startup](#)
- Abuse Contact >
- Passwords >

## New Organisation Startup Form

This form enables a new organisation to create the first person and maintainer objects in the RIPE Database for this organisation.

Person and maintainer objects that are not referenced by any operational data for 90 consecutive days will be subject to deletion by the automated Database clean up process. It is therefore recommended not to create these objects until you are ready to reference them.

\* Mandatory Information.

**Source: \***

RIPE Database

**Person Object**

**Person: \***

**NIC hdl:**

The NIC hdl has a fixed format. If you are not sure what to enter, leave it blank and it will be generated for you. This NIC hdl cannot be changed after creation. For further details about NIC hdl see [RIPE Database User Manual-Getting Started](#).

**Address: \***

**Phone: \***

**Email: \***

**Maintainer Object**

**Maintainer name: \***

**Password: \***

**Password (again): \***

**Accept Terms and Conditions**

I accept the [RIPE Database Terms and Conditions](#).

**Create**

# DB Startup Form - Filled Out



- RIPE Database <<
- Query >
- Update** v
- Create an object
- Update an object
- Syncupdates
- New Organisation Startup
- Abuse Contact >
- Passwords >

## New Organisation Startup Form

This form enables a new organisation to create the first person and maintainer objects in the RIPE Database for this organisation.

Person and maintainer objects that are not referenced by any operational data for 90 consecutive days will be subject to deletion by the automated Database clean up process. It is therefore recommended not to create these objects until you are ready to reference them.

\* Mandatory Information.

**Source: \***  
RIPE Database

**Person Object**

**Person: \***  
John Smith

**NIC hdl:**  
auto-1

The NIC hdl has a fixed format. If you are not sure what to enter, leave it blank and it will be generated for you. This NIC hdl cannot be changed after creation. For further details about NIC hdl see [RIPE Database User Manual-Getting Started](#).

**Address: \***  
Singel 258  
1016AB Amsterdam  
The Netherlands

**Phone: \***  
+31653534444

**Email: \***  
jsmith@foo.nl

**Maintainer Object**

**Maintainer name: \***  
DODO-MNT

**Password: \***  
\*\*\*\*\*

**Password (again): \***  
\*\*\*\*\*

**Accept Terms and Conditions**  
 I accept the [RIPE Database Terms and Conditions](#).

Create

# DB Startup Tool: Results



## New Organisation Startup Form

Succeeded! Where to go from here...

We have created two RIPE Database objects for you, please make a note of the primary keys (shown in bold letters) for these two objects for future reference:

person nic-hdl: JS17103-RIPE

```
person: John Smith
address: Singel 258 1016AB Amsterdam The Netherlands
phone: +31653534444
e-mail: jsmith@foo.nl
nic-hdl: JS17103-RIPE
mnt-by: DODO-MNT
changed: jsmith@foo.nl 20150713
created: 2015-07-13T12:34:17Z
last-modified: 2015-07-13T12:34:17Z
source: RIPE
```

maintainer name: DODO-MNT

```
mntner: DODO-MNT
descr: Startup maintainer
admin-c: JS17103-RIPE
upd-to: jsmith@foo.nl
auth: MD5-PW $1$oGTcJfIB$wBf96uu9Vb9KMCCcjWv3Y.
mnt-by: DODO-MNT
referral-by: DODO-MNT
changed: jsmith@foo.nl
source: RIPE
```

# Creating Additional Objects?



- **Webupdates!**

# Creating Objects



RIPE Database <<

Query >

**Update** v

→ Create an object

Update an object

Syncupdates

New Organisation Startup

---

Abuse Contact >

Passwords >

---

**Available Credentials**

Session Passwords

0 stored password(s) ?

Add password Add

## Create object

Object type: ?

select a type

Source Database: ?

RIPE Database

TEST Database

Operation:

Create object by individual fields

Create object in single text area

Create

If your organisation does not have a mntner object yet, you need to use the [New Organisation Startup](#) form.

# Webupdates: Using Individual Fields



- RIPE Database <<
- Query >
- Update** v
- Create an object
- Update an object
- Syncupdates
- New Organisation Startup
- Abuse Contact >
- Passwords >

**Available Credentials**

Session Passwords

0 stored password(s) ?

..... [Add](#)

## Create a new person object

**person**

James Example [down] [+] [trash] [?]

**address**

Singel 258, 1016AB Amsterdam [down] [+] [trash] [?]

**phone**

+31 20 535 4444 [down] [+] [trash] [?]

**nic-hdl**

auto-1 [down] [+] [trash] [?]

**mnt-by**

EXAMPLE-MNT [down] [+] [trash] [?]

**source**

RIPE [down] [+] [trash] [?]

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

# Webupdates: Using Individual Fields



- RIPE Database <<
- Query >
- Update** v
- Create an object
- Update an object
- Syncupdates
- New Organisation Startup
- Abuse Contact >
- Passwords >

---

**Available Credentials**

Session Passwords

0 stored password(s) ?

..... Add

## Create a new person object

The mandatory attributes in a template are shown in upper case for convenience. The final submission to the database is case insensitive. Any optional attributes not required must be removed. Blank values (except for remarks) will cause errors.

```
PERSON: James Example
ADDRESS: Singel 258, 1016AB Amsterdam
PHONE: +31 20 535 4444
e-mail: jexample.foo.nl
NIC-HDL: auto-1
MNT-BY: EXAMPLE-MNT
SOURCE: RIPE
```

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Cancel Create



# New Organisation Startup Form

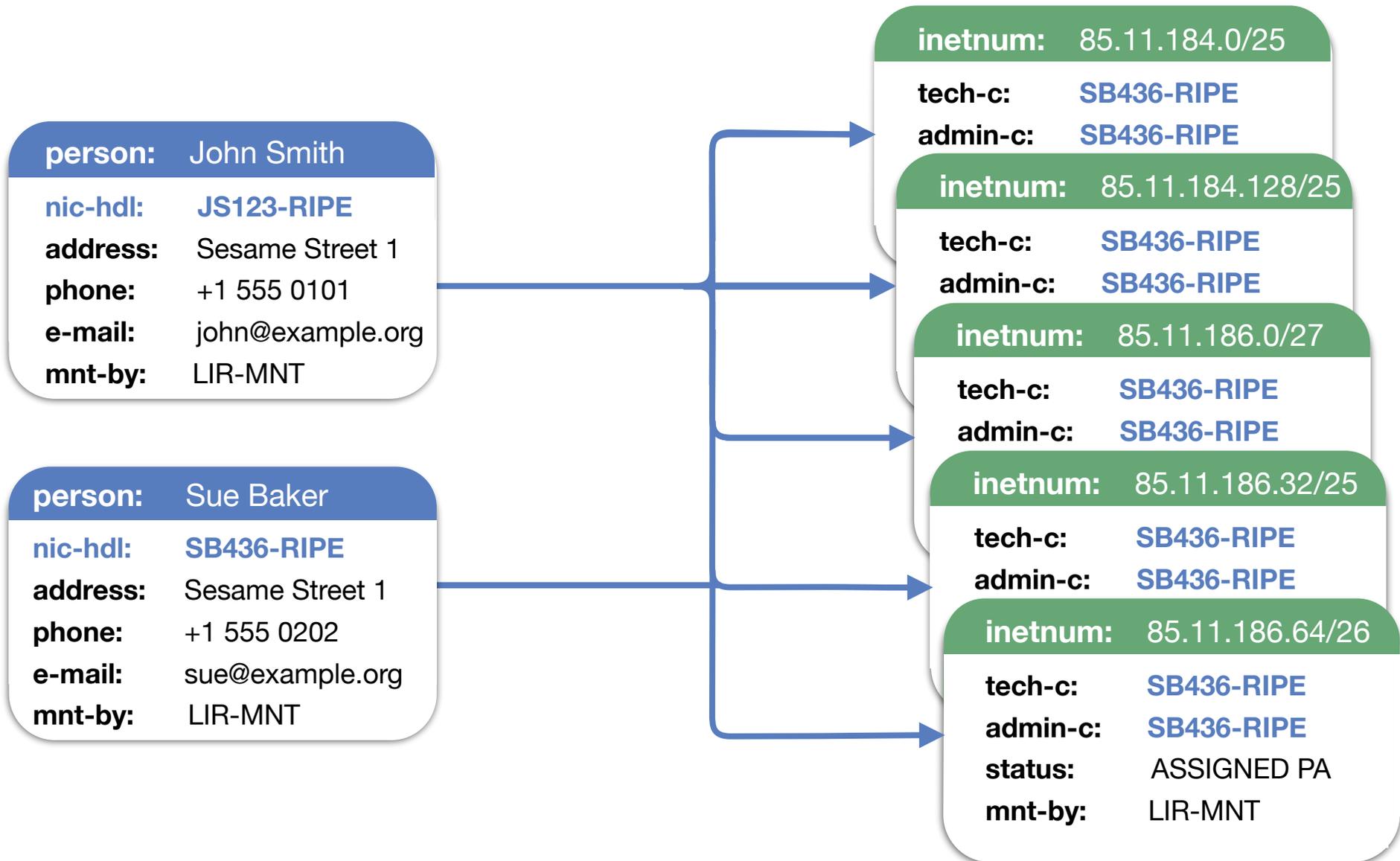
Exercise 1



# Role Objects

## Section 2

# Not Using a role Object



# role Objects

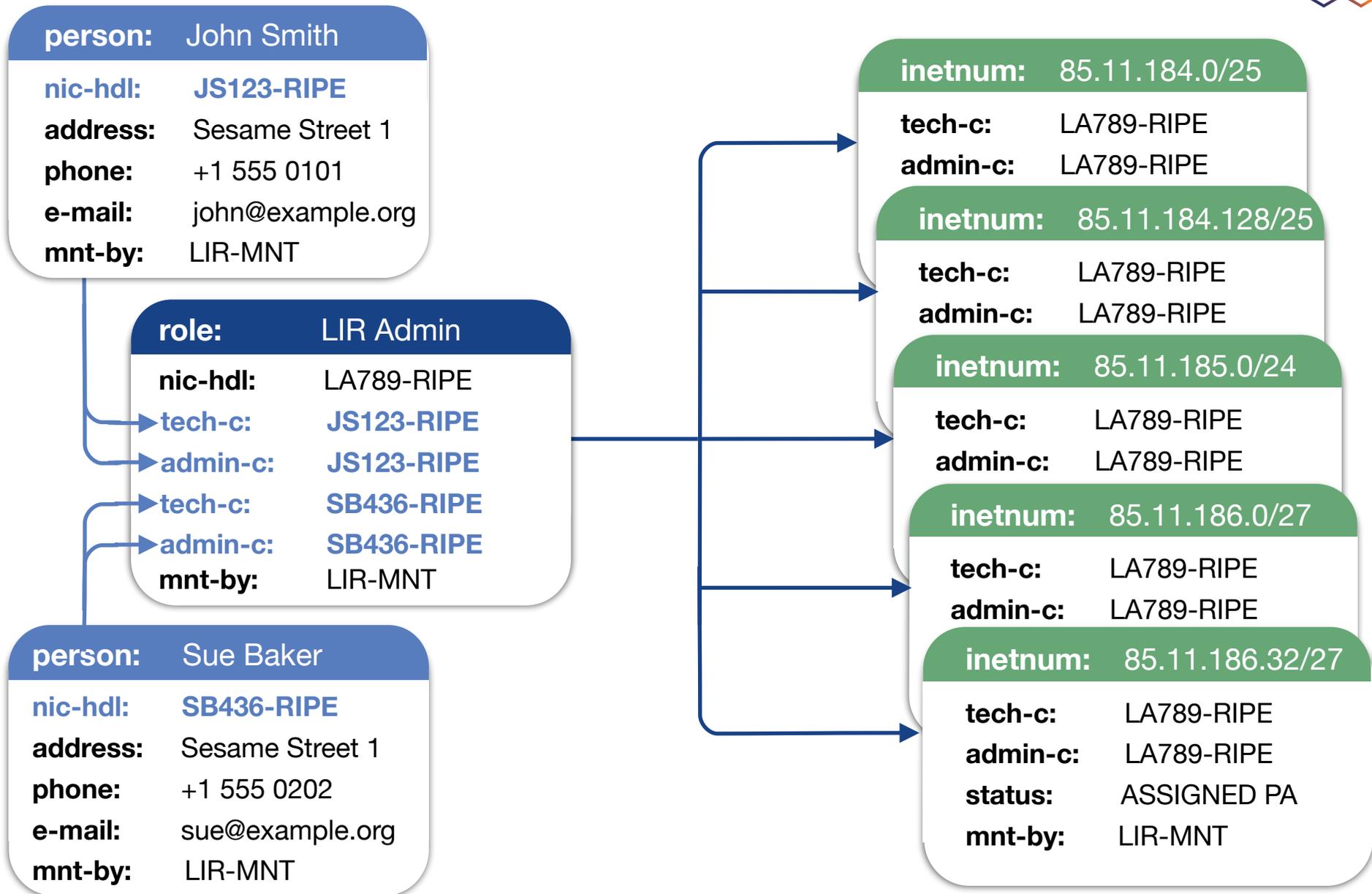


**person:** John Smith  
**nic-hdl:** JS123-RIPE  
**address:** Sesame Street 1  
**phone:** +1 555 0101  
**e-mail:** john@example.org  
**mnt-by:** LIR-MNT

**person:** Sue Baker  
**nic-hdl:** SB436-RIPE  
**address:** Sesame Street 1  
**phone:** +1 555 0202  
**e-mail:** sue@example.org  
**mnt-by:** LIR-MNT

**role:** LIR Admin  
**nic-hdl:** LA789-RIPE  
**tech-c:** JS123-RIPE  
**admin-c:** JS123-RIPE  
**tech-c:** SB436-RIPE  
**admin-c:** SB436-RIPE  
**mnt-by:** LIR-MNT

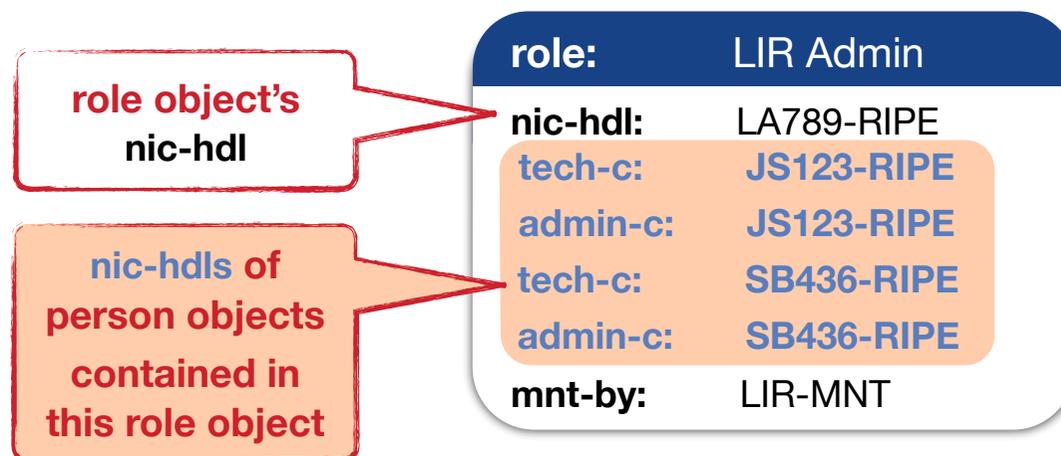
# Using a role Object



# role Objects



- **role** objects can group **person** objects together





# Create a role Object

## Exercise 2



# Querying the RIPE Database

Section 3

# Querying the RIPE Database



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

A vertical navigation menu for the RIPE Database. It includes a 'RIPE Database' link with a double-left arrow, a 'Query' link with a dropdown arrow, and a 'Query the RIPE Database' link. Below these are 'Full Text Search' and 'Geolocation Finder'. At the bottom, there are links for 'Update', 'Abuse Contact', and 'Passwords', each with a right-pointing arrow.

## RIPE Database Query

A screenshot of the RIPE Database Query form. It features a search input field labeled 'Search term'. Below the input are two checkboxes: 'Show full object details ?' and 'Do not retrieve related objects ?'. A note states: 'You can search up to 5 terms at once in the search box above, separating them with a semicolon.' There are four tabs: 'Sources', 'Types', 'Hierarchy Flags', and 'Inverse lookup'. Under the 'Sources' tab, there are three radio button options: 'RIPE Database ?' (selected), 'TEST Database ?', and 'Global Resource Service (GRS) ?'. At the bottom, there is a disclaimer: 'By submitting this form you explicitly express your agreement with the RIPE Database Terms and Conditions' and a 'Search' button.

# Query Web Interface



## RIPE Database Query

- Show full object details ?
- Do not retrieve related objects ?

You can search up to 5 terms at once in the search box above, separating them with a semicolon.

Sources   Types   Hierarchy Flags   Inverse lookup

- RIPE Database ?
- TEST Database ?
- Global Resource Service (GRS) ?

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

Search

# Query Result



Abuse contact info: [abuse@ripe.net](mailto:abuse@ripe.net)

Update Delete RIPEstat

```
inetnum:          193.0.24.0 - 193.0.30.255
netname:          RIPENCC-MEETING-PUBLIC
descr:           Reseaux IP Europeens Network Coordination Centre (RIPE NCC)
remarks:         RIPE NCC Training Services & RIPE Meetings
remarks:         This space is used as public space during RIPE meetings
country:         NL
admin-c:         JDR-RIPE
admin-c:         BRD-RIPE
tech-c:          OPS4-RIPE
status:          ASSIGNED PA
mnt-by:          RIPE-NCC-MNT
mnt-routes:     RIPE-NCC-MNT
mnt-domains:    RIPE-NCC-MNT
created:         2013-10-09T14:42:14Z
last-modified:  2013-10-09T14:42:14Z
source:         RIPE # Filtered
```

# Query While Showing All Details



## RIPE Database Query

- Show full object details ?
- Do not retrieve related objects ?

You can search up to 5 terms at once in the search box above, separating them with a semicolon.

Sources   Types   Hierarchy Flags   Inverse lookup

- RIPE Database ?
- TEST Database ?
- Global Resource Service (GRS) ?

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Search

# Query Result



Abuse contact info: [abuse@ripe.net](mailto:abuse@ripe.net)

Update Delete RIPEstat

```
inetnum:          193.0.24.0 - 193.0.30.255
netname:          RIPENCC-MEETING-PUBLIC
descr:           Reseaux IP Européens Network Coordination Centre (RIPE NCC)
remarks:         RIPE NCC Training Services & RIPE Meetings
remarks:         This space is used as public space during RIPE meetings
country:         NL
admin-c:         JDR-RIPE
admin-c:         BRD-RIPE
tech-c:          OPS4-RIPE
status:          ASSIGNED PA
mnt-by:          RIPE-NCC-MNT
mnt-routes:     RIPE-NCC-MNT
mnt-domains:    RIPE-NCC-MNT
created:         2013-10-09T14:42:14Z
last-modified:  2013-10-09T14:42:14Z
source:         RIPE
changed:        mvantol@ripe.net 20131009
```

# Avoid Being Blocked



## RIPE Database Query

193.0.24.0/24

Show full object details ?  
 Do not retrieve related objects ?

You can search up to 5 terms at once in the search box above, separating them with a semicolon.

Sources   Types   Hierarchy Flags   Inverse lookup

RIPE Database ?  
 TEST Database ?  
 Global Resource Service (GRS) ?

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## Alternatively:

- - -no-personal
- -r

# Object Templates



- To get the empty template for any object type, query with the 't' flag

## RIPE Database Query

Show full object details ?  
 Do not retrieve related objects ?

You can search up to 5 terms at once in the search box above, separating them with a semicolon.

**Sources** | Types | Hierarchy Flags | Inverse lookup

RIPE Database ?  
 TEST Database ?  
 Global Resource Service (GRS) ?

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

# person Object Template



```
person:      [mandatory] [single] [lookup key]
address:    [mandatory] [multiple] [ ]
phone:      [mandatory] [multiple] [ ]
fax-no:     [optional] [multiple] [ ]
e-mail:     [optional] [multiple] [lookup key]
org:        [optional] [multiple] [inverse key]
nic-hdl:    [mandatory] [single] [primary/lookup key]
remarks:    [optional] [multiple] [ ]
notify:     [optional] [multiple] [inverse key]
abuse-mailbox: [optional] [multiple] [inverse key]
mnt-by:     [mandatory] [multiple] [inverse key]
changed:    [optional] [multiple] [ ]
created:    [generated] [single] [ ]
last-modified: [generated] [single] [ ]
source:     [mandatory] [single] [ ]
```

# Lookup Keys



<b>person:</b>	<b>John Smith</b>	←
<b>address:</b>	Sesame Street 1	
<b>phone:</b>	+1 555 0101	
<b>fax:</b>	+1 556 8989	
<b>email:</b>	<b>john@example.com</b>	←
<b>remarks:</b>	extra remark	
<b>nic-hdl:</b>	<b>JS123-RIPE</b>	←
<b>mnt-by:</b>	RED-MNT	
<b>source:</b>	RIPE	

# Full Text Search



RIPE Database <<

**Query** ▾

- Query the RIPE Database
- [Full Text Search](#)
- Geolocation Finder

---

Update >

Abuse Contact >

Passwords >

---

**Results per object type**

Click to filter results

- [key-cert \(6\)](#)
- [mntner \(5\)](#)
- [domain \(4\)](#)
- [person \(4\)](#)
- [inetnum \(2\)](#)
- [inet6num \(1\)](#)
- [role \(1\)](#)
- [route \(1\)](#)
- [organisation \(1\)](#)
- [all \(25\)](#)

## 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 results

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

[1] 2 3

[domain: 210.149.82.in-addr.arpa](#)  
descr=Reverse delegation for [Bluelight 2nd/24](#)

[domain: 205.149.82.in-addr.arpa](#)  
descr=Reverse delegation for [Bluelight 2nd/24](#)

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

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

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

# Querying with Flags

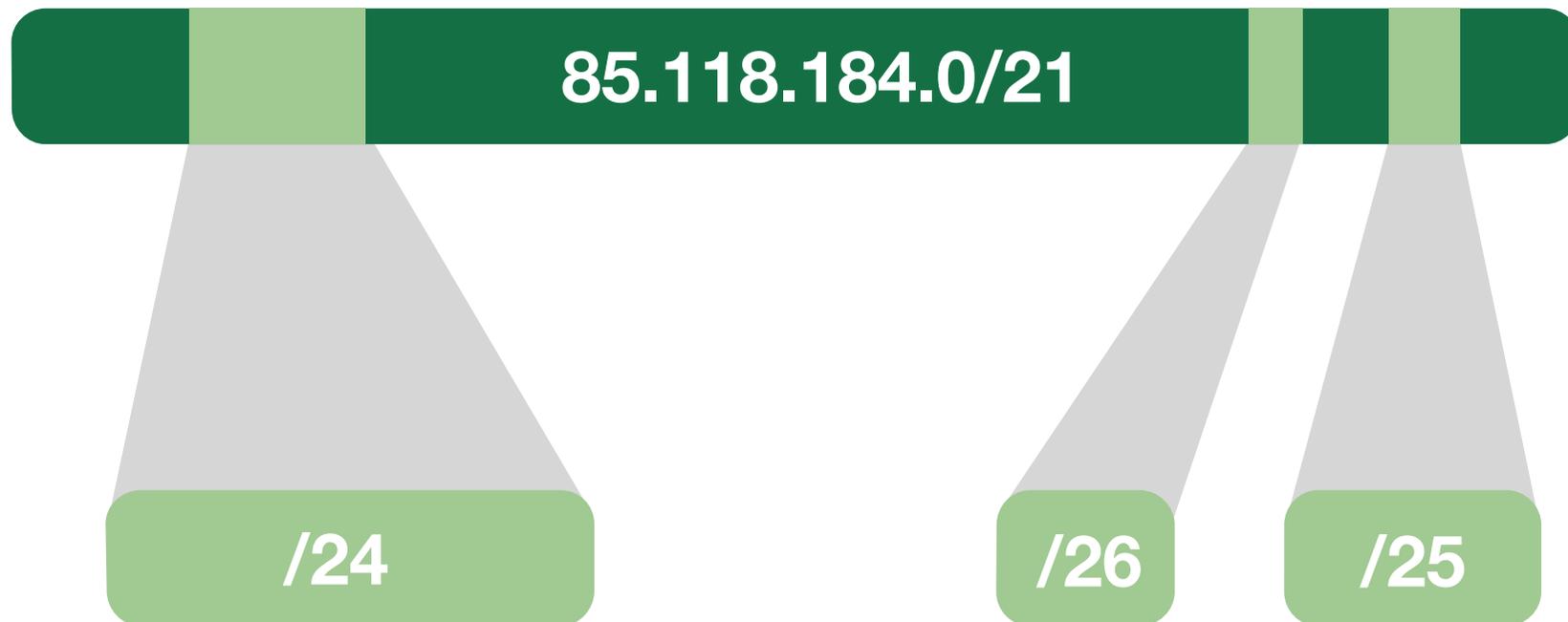


- **For finding additional information**
  - Insert flag in front of the query:
    - -m
  - Or check appropriate box in “Hierarchy Flags” tab

# More Specific inetnums



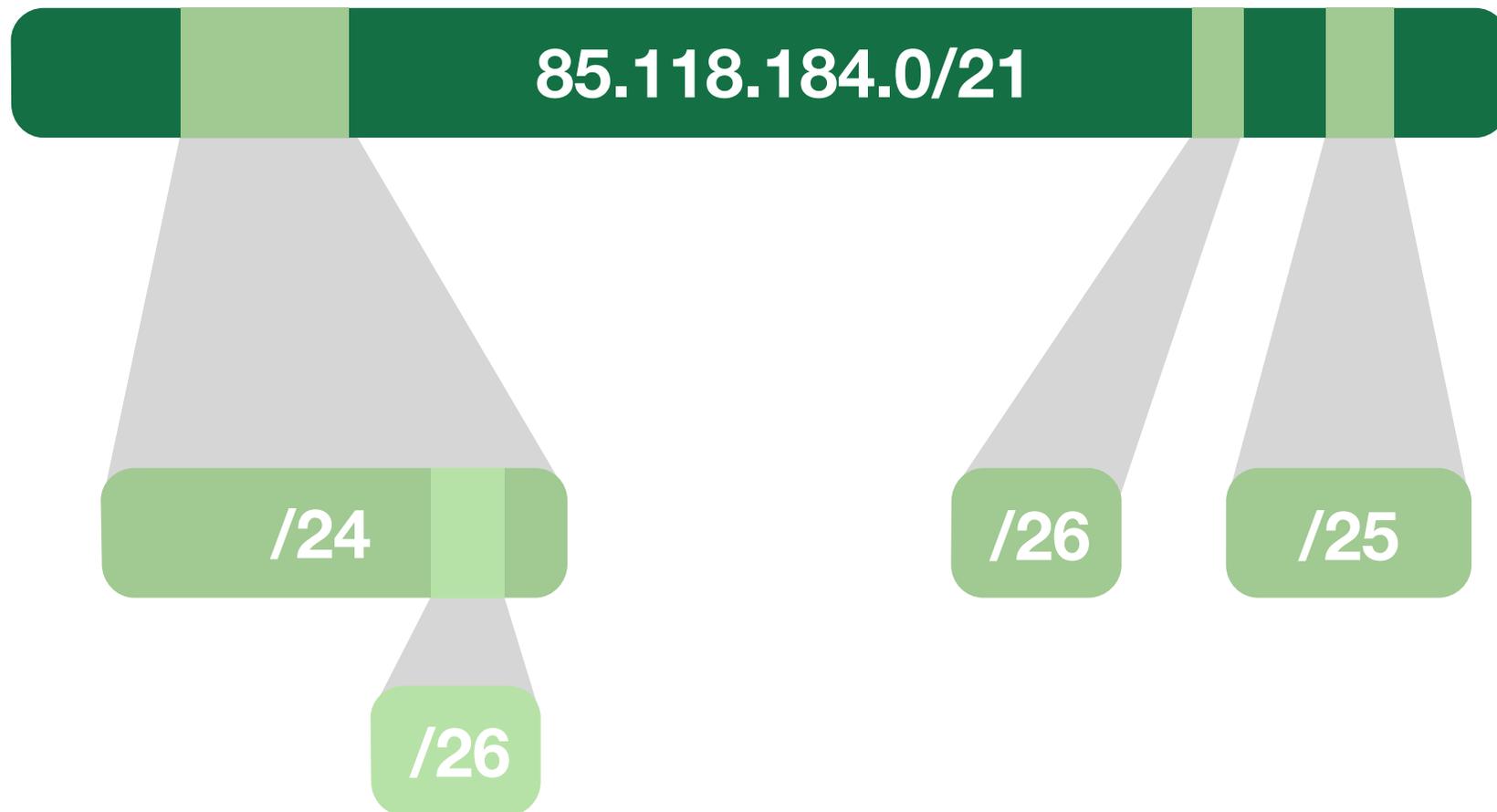
-m 85.118.184.0/21



# More Specific inetnums: -M



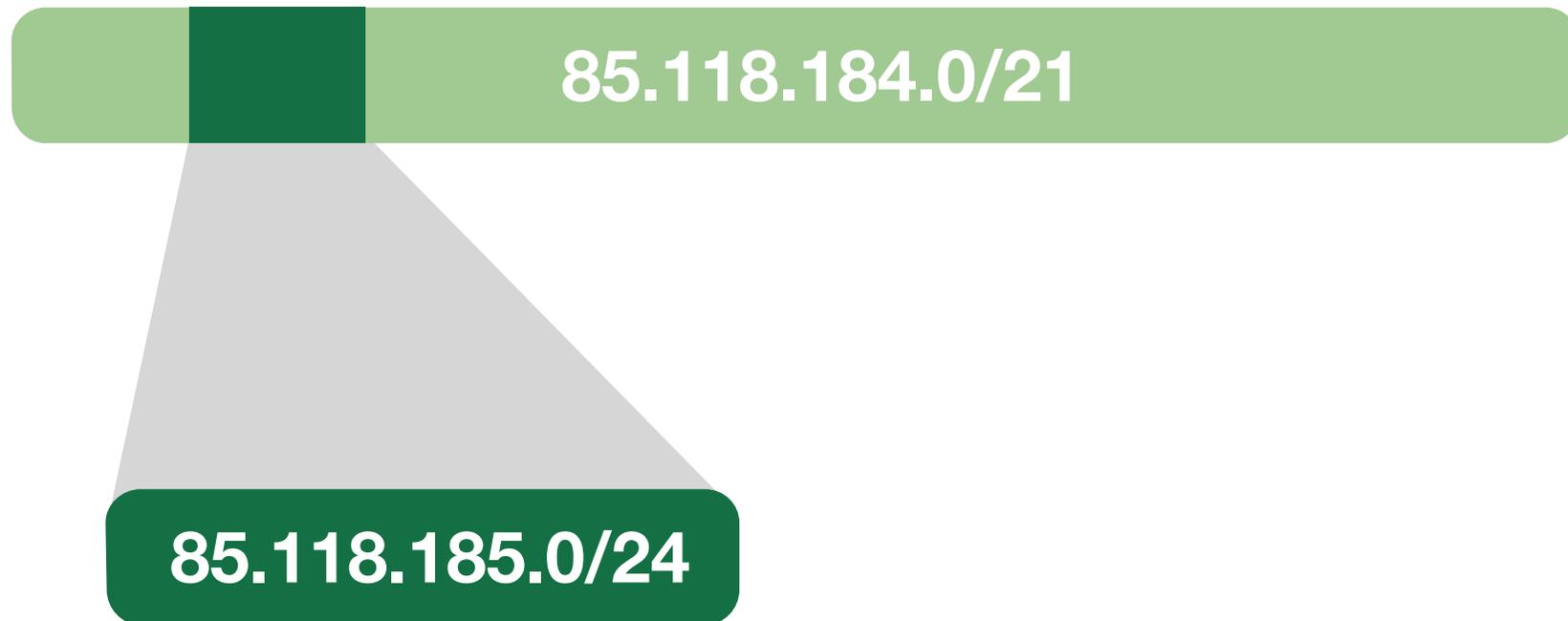
-M 85.118.184.0/21



# Less Specific intetnums: -l



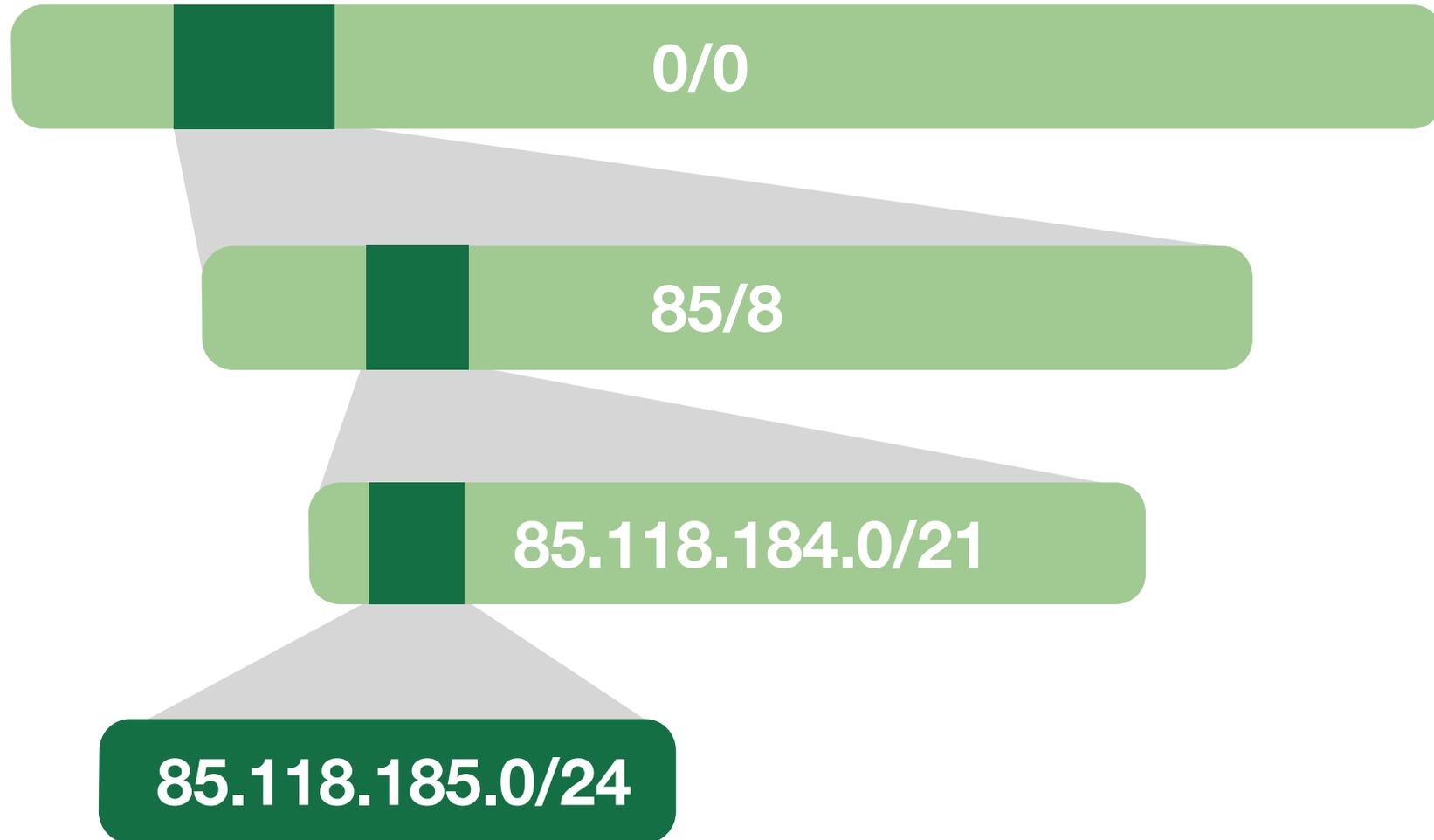
-l 85.118.185.0/24



# Less Specific inetnums: -L



-L 85.118.184.0/24

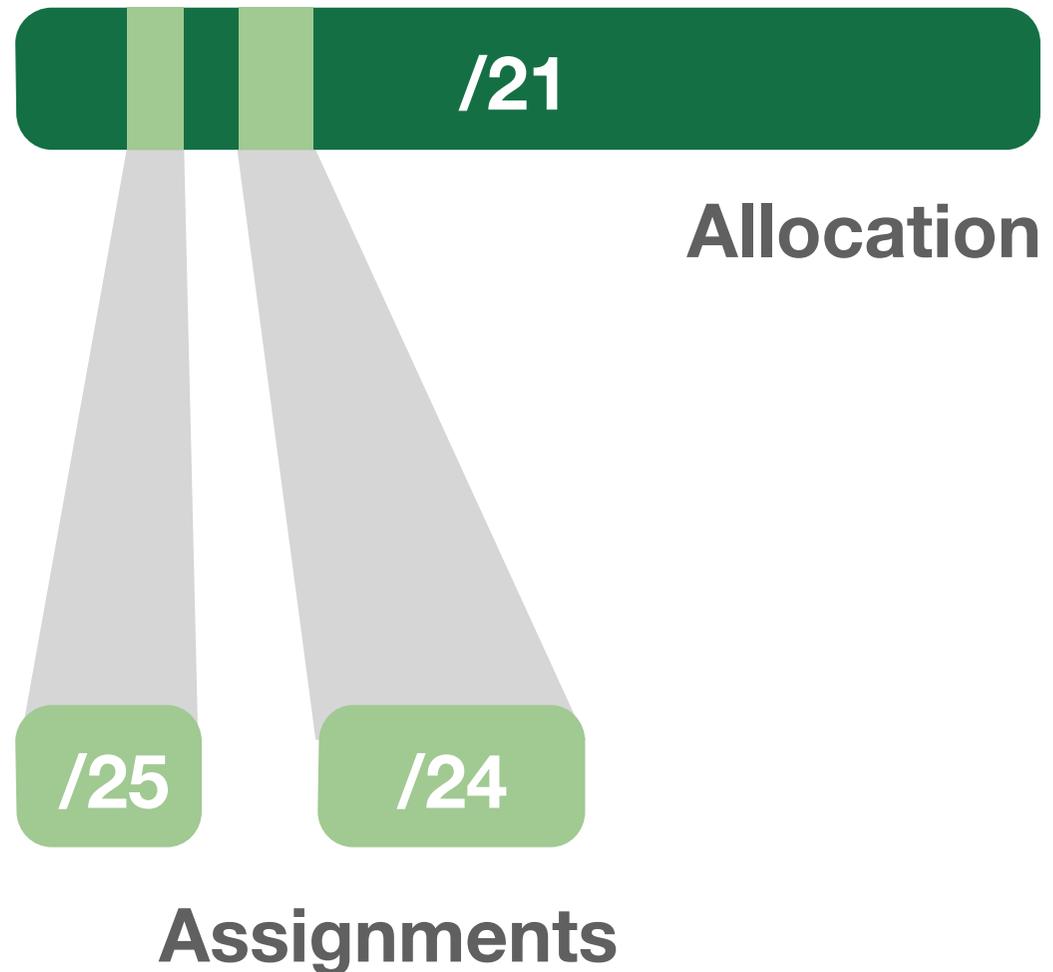


# LIR's Allocations and Assignments



<b>inetnum:</b>	85.11.184.0/21
<b>netname:</b>	NL-EXAMPLE
<b>descr:</b>	LIR's Name
<b>status:</b>	<b>ALLOCATED PA</b>
<b>org:</b>	ORG-BB2-RIPE
<b>mnt-by:</b>	RIPE-NCC-HM-MNT
<b>mnt-lower:</b>	LIR-MNT
<b>mnt-domains:</b>	LIR-MNT
<b>admin-c:</b>	LA789-RIPE
<b>tech-c:</b>	LA789-RIPE

<b>inetnum:</b>	85.11.186.0/25
<b>descr:</b>	My Assignment
<b>status:</b>	<b>ASSIGNED PA</b>
<b>mnt-by:</b>	LIR-MNT
<b>admin-c:</b>	LA789-RIPE
<b>tech-c:</b>	LA789-RIPE



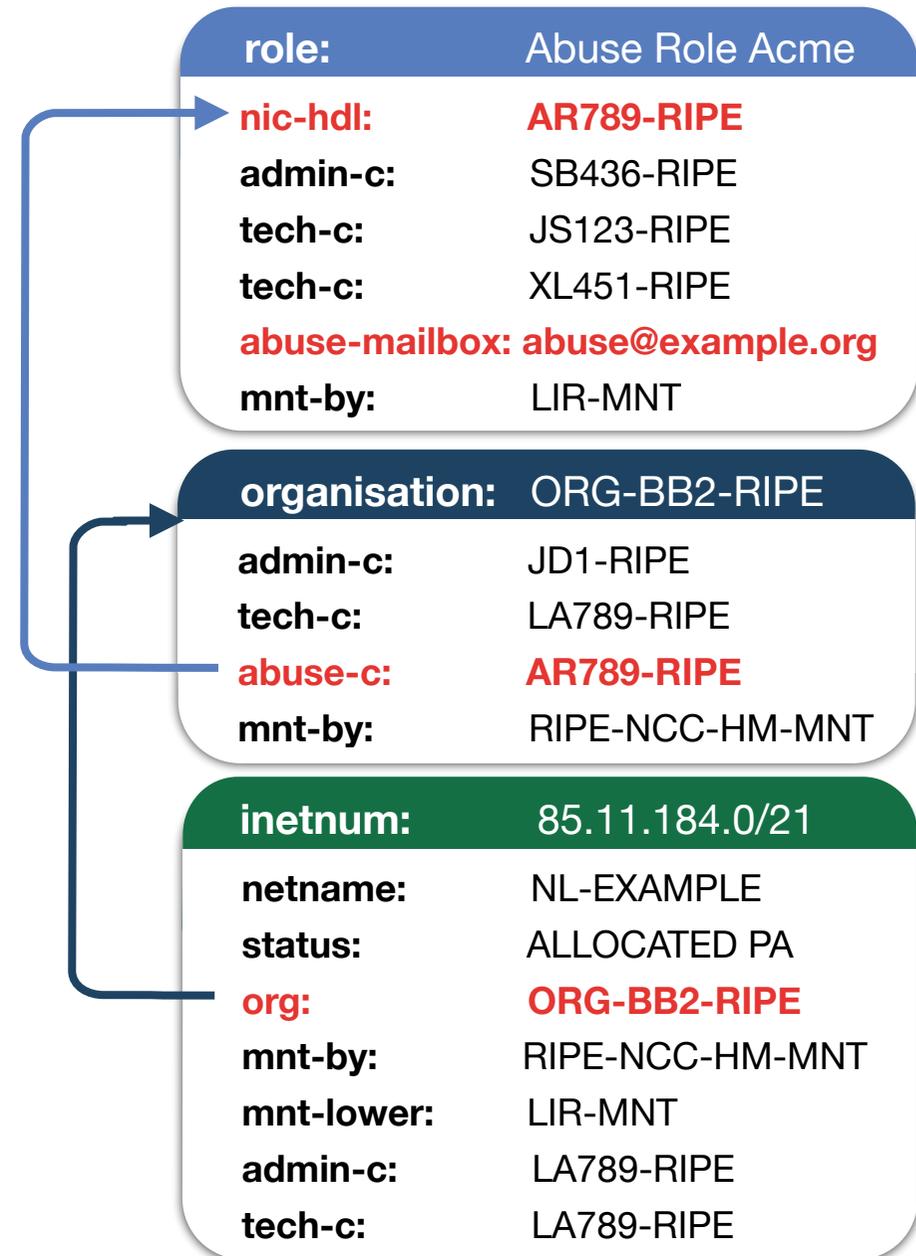
# Add Abuse Contact for Your Allocation



Create “Abuse Role object”  
with “abuse mailbox”

Point the abuse-c in the org  
object to the “Abuse Role  
object”

The allocation points to your  
organisation object





# Inverse Lookups

## Section 4

# Inverse Lookup



- **Finding all objects in which your object is referenced**

# Inverse Lookup



## RIPE Database Query

Show full object details ?  
 Do not retrieve related objects ?

You can search up to 5 terms at once in the search box above, separating them with a semicolon.

Sources    Types    Hierarchy Flags    **Inverse lookup**

?

<input type="checkbox"/> abuse-mailbox	<input type="checkbox"/> member-of	<input type="checkbox"/> nserver
<input type="checkbox"/> admin-c	<input type="checkbox"/> mnt-by	<input type="checkbox"/> org
<input type="checkbox"/> auth	<input type="checkbox"/> mnt-domains	<input type="checkbox"/> origin
<input type="checkbox"/> author	<input type="checkbox"/> mnt-irt	<input type="checkbox"/> person
<input type="checkbox"/> fingerpr	<input type="checkbox"/> mnt-lower	<input type="checkbox"/> ping-hdl
<input type="checkbox"/> form	<input type="checkbox"/> mnt-nfy	<input type="checkbox"/> ref-nfy
<input type="checkbox"/> irt-nfy	<input type="checkbox"/> mnt-ref	<input type="checkbox"/> tech-c
<input type="checkbox"/> local-as	<input type="checkbox"/> mnt-routes	<input type="checkbox"/> upd-to
<input type="checkbox"/> mbrs-by-ref	<input type="checkbox"/> notify	<input type="checkbox"/> zone-c

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# Inverse Lookup



## RIPE Database Query

JD1-RIPE

Show full object details ?  
 Do not retrieve related objects ?

You can search up to 5 terms at once in the search box above, separating them with a semicolon.

Sources    Types    Hierarchy Flags    **Inverse lookup**

?

<input type="checkbox"/> abuse-mailbox	<input type="checkbox"/> member-of	<input type="checkbox"/> nserver
<input checked="" type="checkbox"/> admin-c	<input type="checkbox"/> mnt-by	<input type="checkbox"/> org
<input type="checkbox"/> auth	<input type="checkbox"/> mnt-domains	<input type="checkbox"/> origin
<input type="checkbox"/> author	<input type="checkbox"/> mnt-irt	<input type="checkbox"/> person
<input type="checkbox"/> fingerpr	<input type="checkbox"/> mnt-lower	<input type="checkbox"/> ping-hdl
<input type="checkbox"/> form	<input type="checkbox"/> mnt-nfy	<input type="checkbox"/> ref-nfy
<input type="checkbox"/> irt-nfy	<input type="checkbox"/> mnt-ref	<input type="checkbox"/> tech-c
<input type="checkbox"/> local-as	<input type="checkbox"/> mnt-routes	<input type="checkbox"/> upd-to
<input type="checkbox"/> mbrs-by-ref	<input type="checkbox"/> notify	<input type="checkbox"/> zone-c

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Search

# Inverse Lookup: admin-c



**inet6num:** 2001:db8::/32  
**descr:** my IPv6 range  
**mnt-by:** RIPE-NCC-HM-MNT  
**org:** ORG-BB2-RIPE  
**admin-c:** JE777-RIPE  
**tech-c:** JD1-RIPE

**aut-num:** AS64551  
**descr:** my AS number  
**mnt-by:** RIPE-NCC-HM-MNT  
**org:** ORG-BB2-RIPE  
**admin-c:** JD1-RIPE  
**tech-c:** LA789-RIPE

**mntner:** LIR-MNT  
**admin-c:** JD1-RIPE  
**tech-c:** LA789-RIPE  
**mnt-by:** LIR-MNT

**role:** Bluelight Staff  
**nic-hdl:** BLS77-RIPE  
**admin-c:** JD1-RIPE  
**address:** Sesame Street 1  
**e-mail:** staff@example.org

**-i admin-c JD1-RIPE**

**person:** John Davies  
**nic-hdl:** JD1-RIPE  
**address:** Sesame Street 1  
**phone:** +1 555 0101  
**e-mail:** john@example.org  
**mnt-by:** LIR-MNT

# Inverse Lookup: person



**inet6num:** 2001:db8::/32  
**descr:** my IPv6 range  
**mnt-by:** RIPE-NCC-HM-MNT  
**org:** ORG-BB2-RIPE  
**admin-c:** JE777-RIPE  
**tech-c:** **JD1-RIPE** ←

**aut-num:** AS64551  
**descr:** my AS number  
**mnt-by:** RIPE-NCC-HM-MNT  
**org:** ORG-BB2-RIPE  
**tech-c:** **JD1-RIPE** ←  
**tech-c:** LA789-RIPE

**mntner:** LIR-MNT  
**admin-c:** **JD1-RIPE** ←  
**tech-c:** LA789-RIPE  
**mnt-by:** LIR-MNT

**role:** Bluelight Staff  
**nic-hdl:** BLS77-RIPE  
**admin-c:** **JD1-RIPE** ←  
**address:** Sesame Street 1  
**e-mail:** staff@example.org

## -i person JD1-RIPE

**person:** John Davies  
**nic-hdl:** JD1-RIPE  
**address:** Sesame Street 1  
**phone:** +1 555 0101  
**e-mail:** john@example.org  
**mnt-by:** LIR-MNT

# Inverse Lookup: person



## RIPE Database Query

JD1-RIPE

Show full object details ?  
 Do not retrieve related objects ?

You can search up to 5 terms at once in the search box above, separating them with a semicolon.

Sources    Types    Hierarchy Flags    **Inverse lookup**

?

<input type="checkbox"/> abuse-mailbox	<input type="checkbox"/> member-of	<input type="checkbox"/> nserver
<input type="checkbox"/> admin-c	<input type="checkbox"/> mnt-by	<input type="checkbox"/> org
<input type="checkbox"/> auth	<input type="checkbox"/> mnt-domains	<input type="checkbox"/> origin
<input type="checkbox"/> author	<input type="checkbox"/> mnt-irt	<input checked="" type="checkbox"/> person
<input type="checkbox"/> fingerpr	<input type="checkbox"/> mnt-lower	<input type="checkbox"/> ping-hdl
<input type="checkbox"/> form	<input type="checkbox"/> mnt-nfy	<input type="checkbox"/> ref-nfy
<input type="checkbox"/> irt-nfy	<input type="checkbox"/> mnt-ref	<input type="checkbox"/> tech-c
<input type="checkbox"/> local-as	<input type="checkbox"/> mnt-routes	<input type="checkbox"/> upd-to
<input type="checkbox"/> mbrs-by-ref	<input type="checkbox"/> notify	<input type="checkbox"/> zone-c

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Search

# Inverse Lookup: organisation



**inet6num:** 2001:db8::/32  
**descr:** My IPv6 range  
**org:** **ORG-BB2-RIPE**  
**admin-c:** JE777-RIPE  
**tech-c:** JD1-RIPE

**inetnum:** 85.23.16.0/21  
**descr:** My v4 allocation  
**org:** **ORG-BB2-RIPE**  
**admin-c:** JE777-RIPE  
**tech-c:** JD1-RIPE

**inetnum:** 85.111.185.0/21  
**descr:** Other v4 allocation  
**org:** **ORG-BB2-RIPE**  
**admin-c:** JE777-RIPE  
**tech-c:** JD1-RIPE

**aut-num:** AS64551  
**descr:** my AS number  
**org:** **ORG-BB2-RIPE**  
**admin-c:** JE777-RIPE  
**tech-c:** JD1-RIPE

**-i org ORG-BB2-RIPE**

**organisation: ORG-BB2-RIPE**  
**admin-c:** JD1-RIPE  
**tech-c:** LA789-RIPE  
**abuse-c:** **AR789-RIPE**  
**mnt-by:** LIR-MNT

# Inverse Lookup : mnt-by



**inet6num:** 2001:db8::/32  
**descr:** my IPv6 range  
**mnt-by:** RIPE-NCC-HM-MNT  
**mnt-lower:** LIR-MNT  
**admin-c:** JE777-RIPE  
**tech-c:** JD1-RIPE

**aut-num:** AS64551  
**descr:** my AS number  
**mnt-by:** RIPE-NCC-END-MNT  
**mnt-by:** LIR-MNT  
**org:** ORG-BB2-RIPE  
**tech-c:** LA789-RIPE

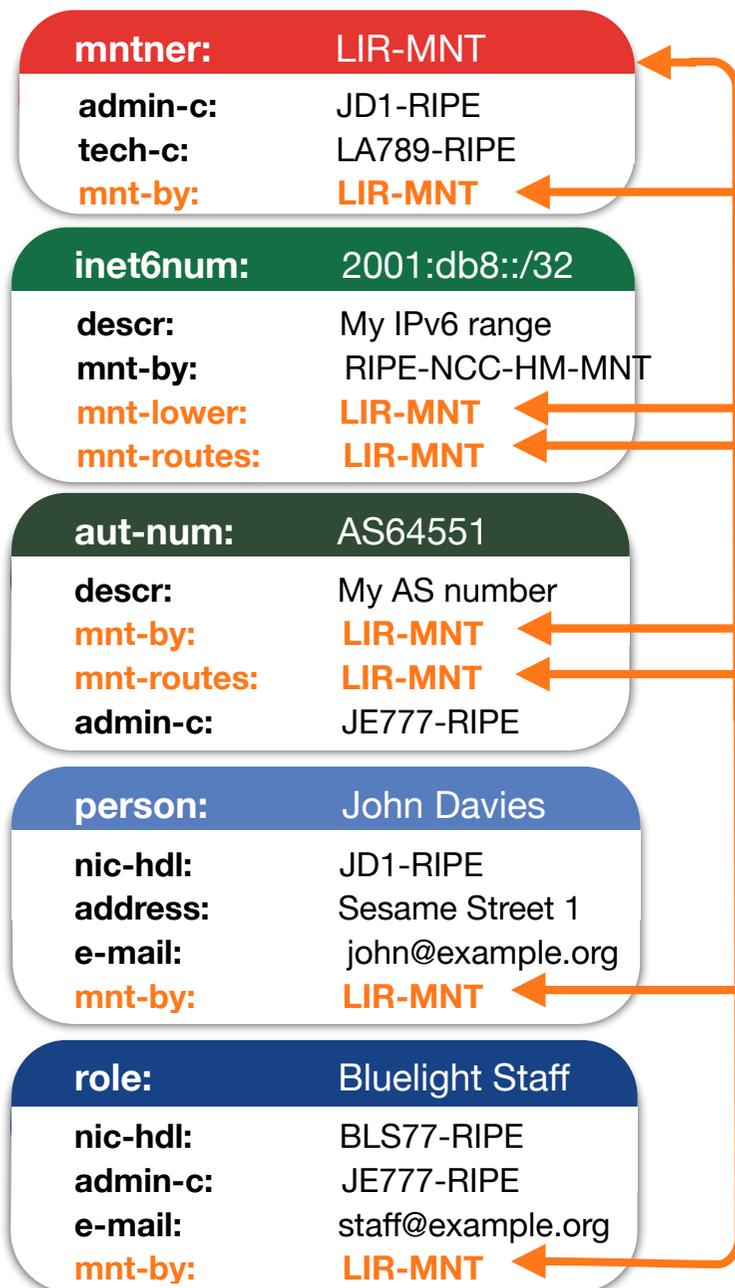
**person:** John Davies  
**nic-hdl:** JD1-RIPE  
**e-mail:** john@example.org  
**mnt-by:** LIR-MNT

**role:** Bluelight Staff  
**nic-hdl:** BLS77-RIPE  
**admin-c:** JD1-RIPE  
**mnt-by:** LIR-MNT  
**e-mail:** staff@example.org

**-i mnt-by LIR-MNT**

**mntner:** LIR-MNT  
**admin-c:** JD1-RIPE  
**mnt-by:** LIR-MNT

# Find All References of a mntner



## Free Text Search

### 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](#)

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# Find the Correct Contact Info

Exercise 3



# Database Protection Mechanisms

Section 5

# Creating a mntner Object



**1. Choose “mntner” in “create object” menu of Webupdates**

**2. Choose password**

- tiger72

**3. Click on (icon) in the auth line to encrypt it**

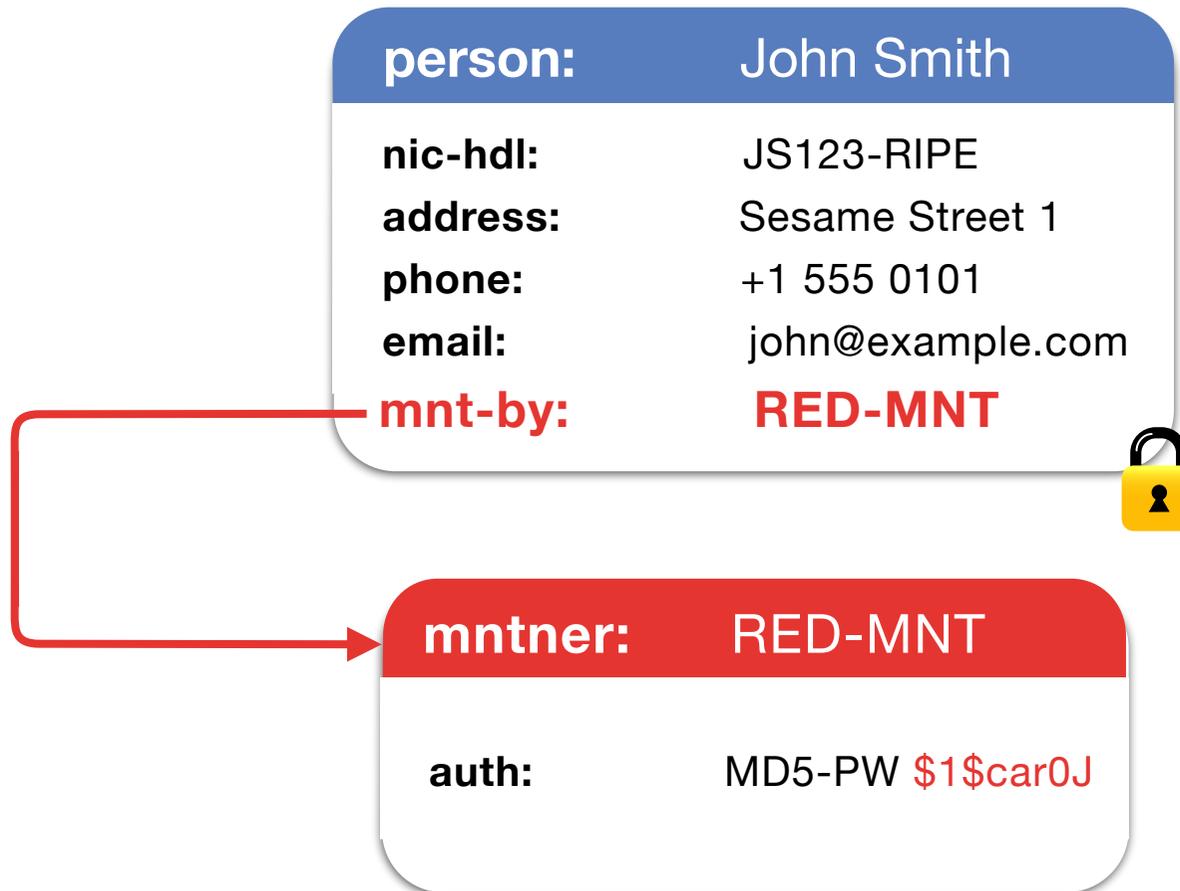
**4. The hashed password is included in the auth line**

- auth: MD5-PW \$1\$WDe5uDBH\$M25JnQIM55Wd/Vjib/Unl01\$o93UxR

**5. Create the mntner object in Webupdates**

- RED-MNT

# Protecting an Object



# PGP Authentication



- **Private key / Public key**
  - PGPKEY-<id>
  - key-cert object



# SSO Authentication - Setting It Up



- Create a RIPE NCC access account
- Add 'SSO email@address' to any mntner object(s)

The diagram illustrates the setup for SSO authentication. On the left, a rounded rectangular box represents a mntner object configuration. The top section has a red header with the text 'mntner: RED-MNT'. Below this, there are two 'auth:' entries: 'MD5-PW \$1\$car0J' and 'SSO jsmith@foo.nl'. Two red arrows point towards the 'SSO jsmith@foo.nl' entry from the left and right. On the right, a screenshot of a web interface titled 'Available Credentials' is shown. It has a dark blue header. Below the header, it says 'Session Passwords' and '0 stored password(s) ?'. There is a text input field containing the password 'tiger72' and an 'Add' button to its right.

# SSO Authentication - Updating Objects



- Log in to your RIPE NCC access account
- You can update any objects that are protected by a mntner having your SSO in the “auth:” line
- No extra password needed

The screenshot shows the RIPE NCC website interface. At the top right, the user's SSO email address, `jsmith@foo.nl`, is displayed next to a profile icon and is circled in red. Below the navigation bar, the breadcrumb trail reads: "You are here: Home > Manage IPs and ASNs > RIPE Database > Whois". The left sidebar contains a menu with "RIPE Database" and "Query" (selected). The main content area is titled "RIPE Database Query" and features a search form with a "Search term" input field. Below the search field are two checkboxes: "Show full object details ?" and "Do not retrieve related objects ?". A note states: "You can search up to 5 terms at once in the search box above, separating them with a semicolon." There are four tabs: "Sources" (selected), "Types", "Hierarchy Flags", and "Inverse lookup". Under the "Sources" tab, there are three radio buttons: "RIPE Database ?" (selected), "TEST Database ?", and "Global Resource Service (GRS) ?". At the bottom of the form, there is a link to "RIPE Database Terms and Conditions" and a "Search" button. The footer of the page indicates "RIPE Database Software Version 1.80".

# Protection



<b>mntner:</b>	LIR-MNT
<b>admin-c:</b>	LA789-RIPE
<b>tech-c:</b>	LA789-RIPE
<b>mnt-by:</b>	LIR-MNT

<b>inetnum:</b>	85.11.184.0/21
<b>descr:</b>	My Assignment
<b>status:</b>	ASSIGNED PA
<b>mnt-by:</b>	LIR-MNT
<b>admin-c:</b>	LA789-RIPE
<b>tech-c:</b>	LA789-RIPE



<b>person:</b>	John Smith
<b>nic-hdl:</b>	JD1-RIPE
<b>mnt-by:</b>	LIR-MNT
<b>address:</b>	Sesame Street 1
<b>phone:</b>	+1 555 0101
<b>e-mail:</b>	john@example.org



<b>aut-num:</b>	AS64551
<b>descr:</b>	my AS number
<b>mnt-by:</b>	RIPE-NCC-END-MNT
<b>mnt-by:</b>	LIR-MNT
<b>admin-c:</b>	JE777-RIPE
<b>tech-c:</b>	JD1-RIPE



# Multiple Protection



mntner: ONE-MNT	
admin-c:	LA789-RIPE
tech-c:	LA789-RIPE
mnt-by:	ONE-MNT
auth:	MD5-PW \$1\$gT4W
auth:	PGPKEY-AE6FBI7

mntner: TWO-MNT	
admin-c:	XY456-RIPE
tech-c:	XY455-RIPE
mnt-by:	TWO-MNT
auth:	MD5-PW \$76\$ytE7

person: John Smith	
nic-hdl:	JS123-RIPE
address:	Sesame Street 1
phone:	+1 555 0101
e-mail:	john@example.org
mnt-by:	ONE-MNT
mnt-by:	TWO-MNT





# Forgot Your mntner's Password?

- Go to <https://apps.db.ripe.net/change-auth/>
- Automated process
  - Recovery link sent to “upd-to:” email address
- Manual process
  - Send statement & registration papers to us
  - We will send you an email with the recovery link
  - We will add your Access account to the maintainer

## Forgotten MNTNER password

Please enter your MNTNER name:

# Reset Old mntner Passwords



- **Pre Nov 2011**
- **With MD5-PW**
- **Email sent to you with link to reset**
- **Didn't get it?**
  - use standard mntner reset



# Finding the Address of an LIR

Section 6



# Hierarchical Authorisation

Exercise 4

# Hierarchical Authorisation



- **Giving someone else some rights to create new objects for you**
- **But not too many rights; you don't want them to be able to delete or edit your objects**
  - mnt-lower - create inetnum objects
  - mnt-routes - create route objects
  - mnt-domains - create (reverse) domain objects

# mnt-lower Explained



- To allow someone to create more specific **inetnum** objects in your range
- Without allowing them to delete or modify your original **inetnum**

# mntner in mnt-by Has Two Functions

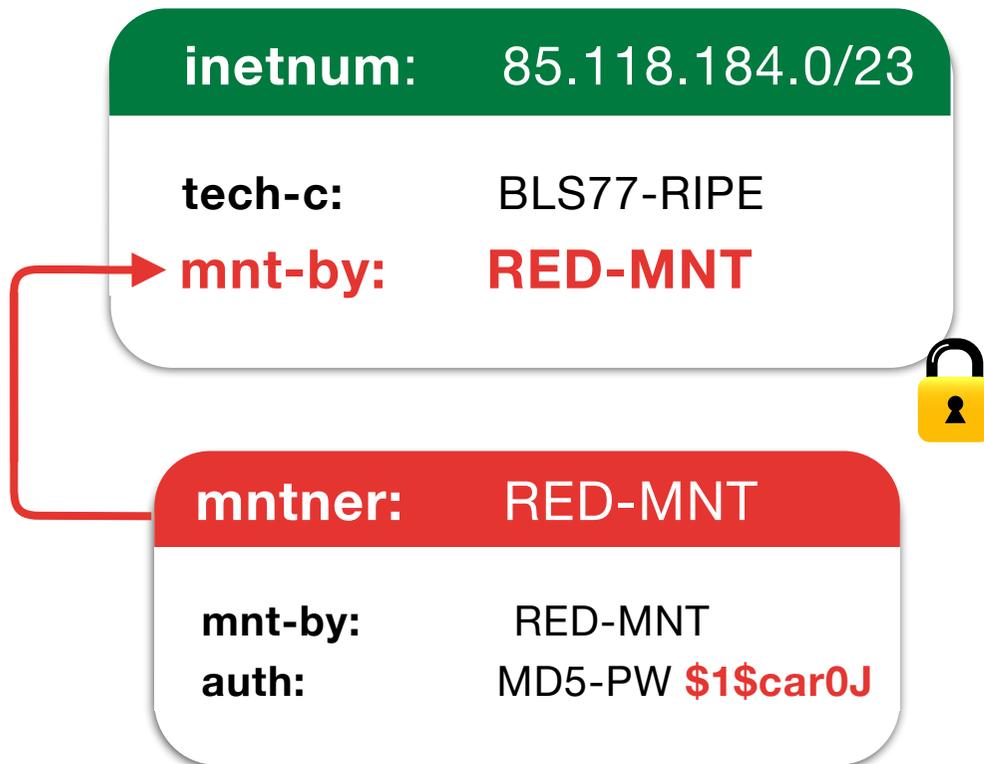


1. Protects the object
2. Guards the address range

**inetnum:** 85.118.184.0/23

**mnt-by:** **RED-MNT**

# 1st Function: Protects the Object



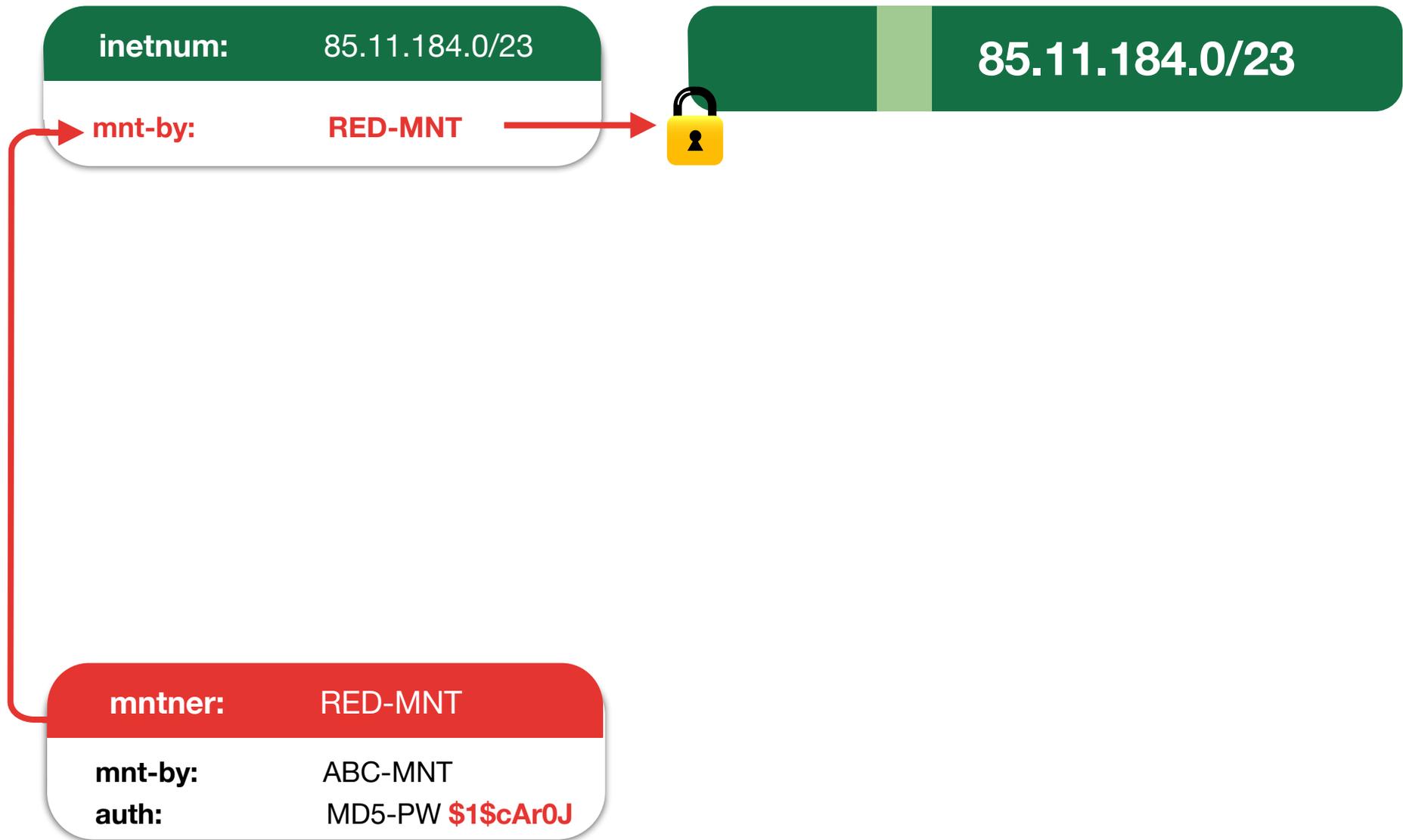
## Add passwords

### Session passwords

0 stored password(s) ?

**tiger72** +

# 2nd Function: Protects the Address Range



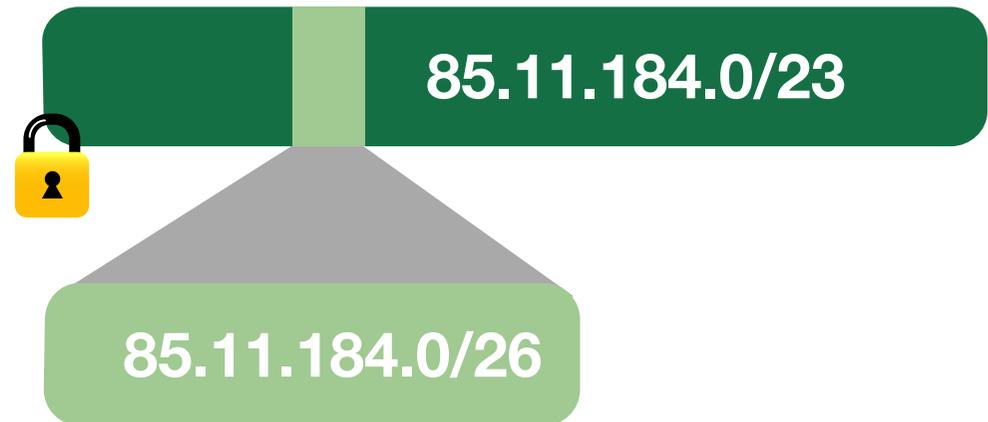
# How Do I Create a More Specific inetnum



**inetnum:** 85.11.184.0/23  
**mnt-by:** RED-MNT

**inetnum:** 85.11.184.0/26  
**netname:** TINY-NET

**mntner:** RED-MNT  
**mnt-by:** ABC-MNT  
**auth:** MD5-PW \$1\$ScAr0J



## Add passwords

Session passwords

0 stored password(s) 



# Password



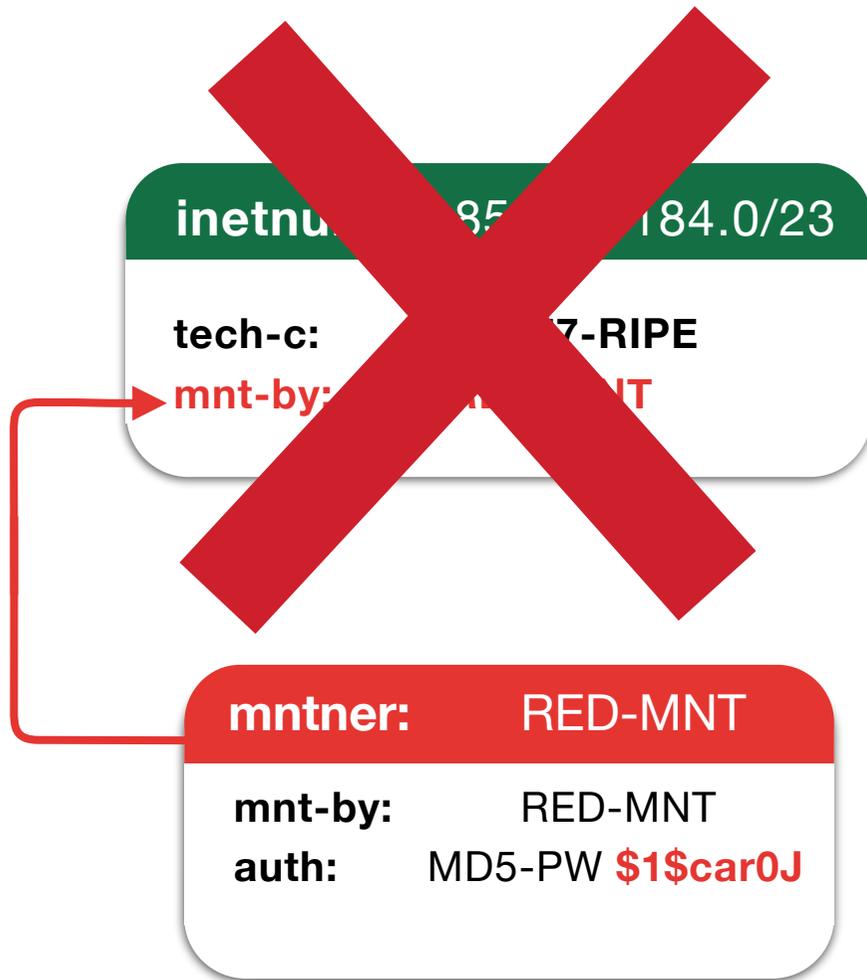
- **Would you tell them the password?**



# Danger!



- original object can be deleted!



## Add passwords

### Session passwords

0 stored password(s)



tiger72



# Solution: Add mnt-lower



- Split the two functions of the maintainer in mnt-by adding a mnt-lower line to the object

# The Two Functions Are Split



1. mntner in **mnt-by** only protects the object
2. mntner in **mnt-lower** guards the address range



# The mntner-s



<b>mntner:</b>	RED-MNT
<b>mnt-by:</b>	RED-MNT
<b>auth:</b>	MD5-PW <b>\$1\$car0J</b>

**Password:** tiger72

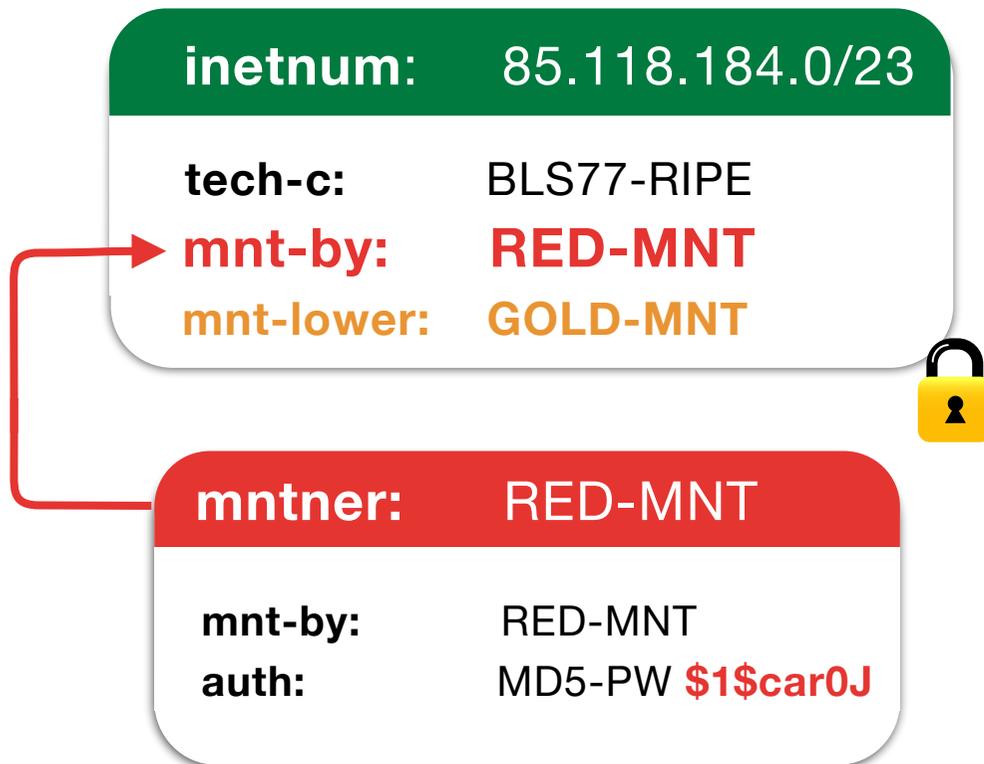
**Hashed Password:** \$1\$car0J

<b>mntner:</b>	GOLD-MNT
<b>mnt-by:</b>	GOLD-MNT
<b>auth:</b>	MD5-PW <b>\$1\$koW4</b>

**Password:** kitty89

**Hashed Password:** \$1\$koW4

# 1st Function: Protects the Object



## Add passwords

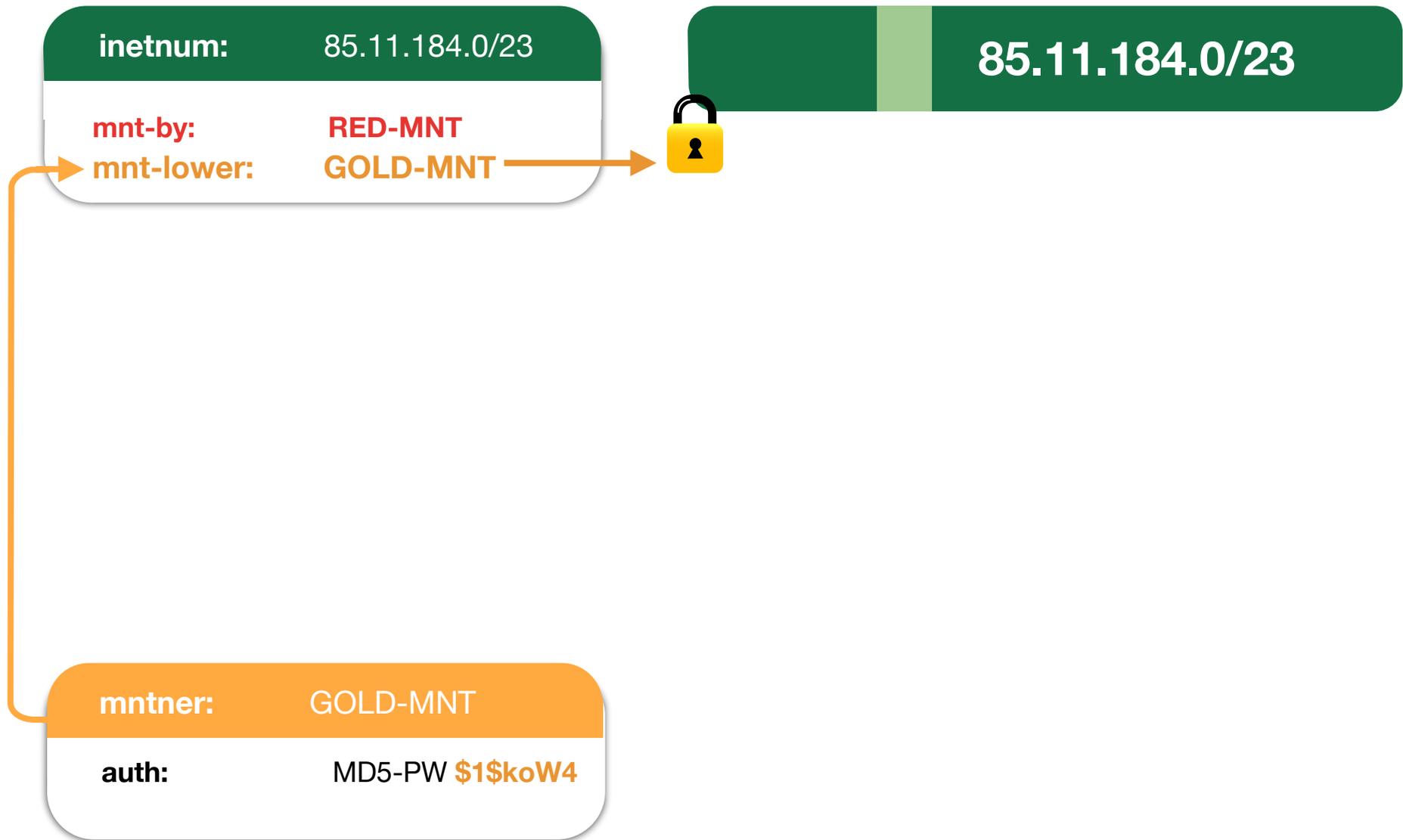
### Session passwords

0 stored password(s) ?

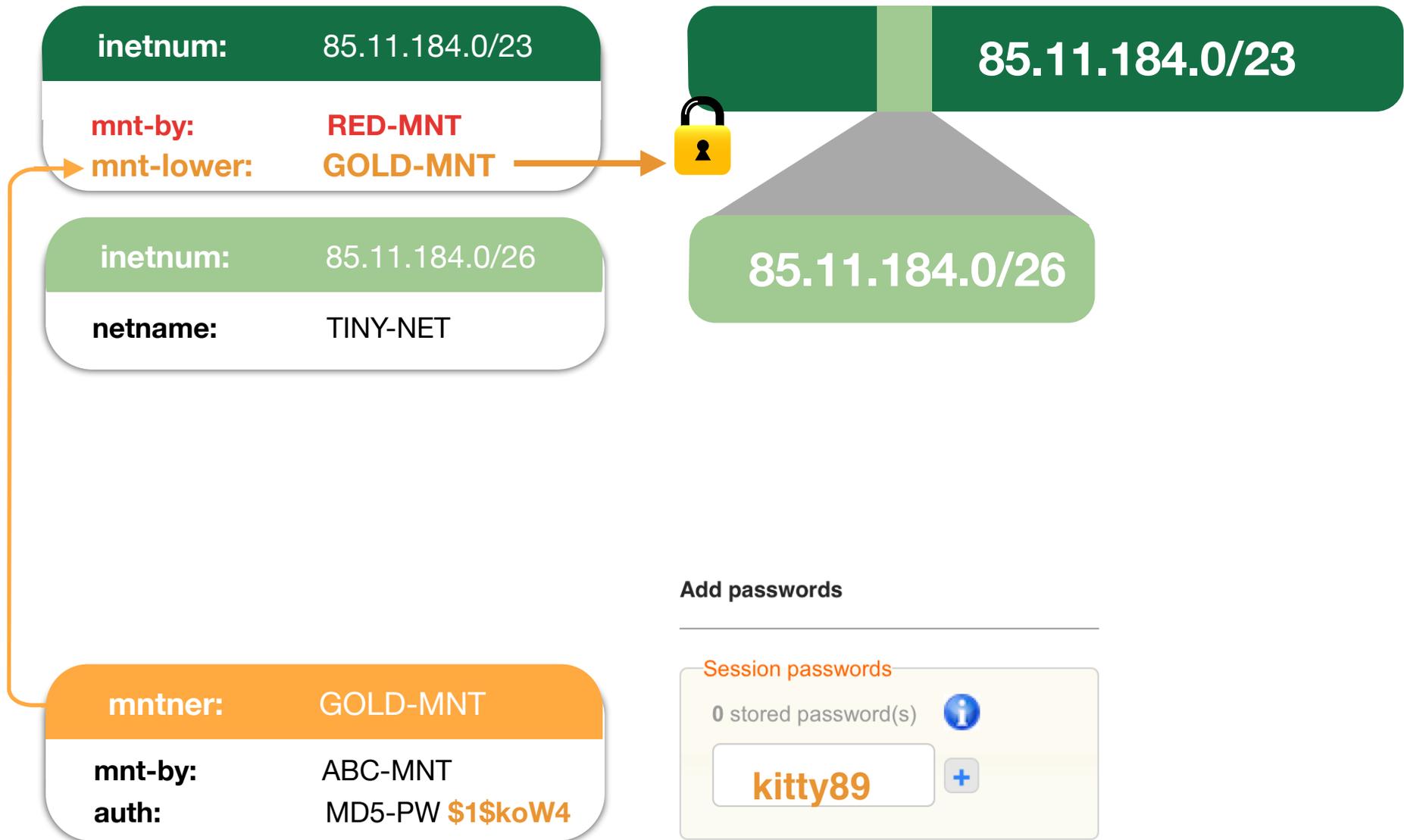
tiger72



# 2nd Function: Guards the Address Range



# How Do I Create a More Specific inetnum?



# mntner in mnt-lower



- **Authenticates only the creation of new more specific objects**
- **Has no authority to edit the objects it created**

# But...Who Can Edit an Object?



- Depends on which maintainer you put in the **mnt-by** of the new object when you create it

```
inetnum: 85.118.184.0/26
netname: tinynet
mnt-by: LILA-MNT
```

# Question



- If you...
  - know the password of **RED-MNT**
  - and don't know the password of **GOLD-MNT**
- ...can you create a more specific object?

**inetnum:** 85.118.184.0/23

**mnt-by:** RED-MNT

**mnt-lower:** GOLD-MNT

- **NO!**

# Finally: The Complete Solution



```
inetnum: 85.118.184.0/23
mnt-by: RED-MNT
mnt-lower: GOLD-MNT
mnt-lower: RED-MNT
```

- Who can update this object?

tiger72

- Who can create more specific inetnums now?

kitty89

tiger72

# Multiple mnt-by and / or mnt-lower Lines



```
inetnum: 85.118.184.0/23
mnt-by: RED-MNT
mnt-by: GREEN-MNT
mnt-lower: GOLD-MNT
mnt-lower: BLUE-MNT
```

- Who can update this object?

tiger72

spot18

- Who can create more specific inetnums now?

kitty89

mitzy9

# Hierarchical Authorisation



- Route and Domain objects

**inetnum:** 85.118.184.0/21

**descr:** My Allocation

**status:** ALLOCATED PA

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

**mnt-lower:** LIR-MNT

**mnt-routes:** LIR-MNT

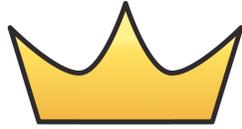
**mnt-domains:** LIR-MNT

**org:** ORG-BB2-RIPE

**admin-c:** LA789-RIPE

**tech-c:** LA789-RIPE

# LIR Can Delete All Object in Their Range!



**inetnum:** 85.11.184.0/21

**descr:** LIR's Allocation

**status:** ALLOCATED PA

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

**mnt-lower:** LIR-MNT

**mnt-routes:** LIR-MNT

**mnt-domains:** LIR-MNT

**org:** ORG-BB2-RIPE

**85.11.184.0/21**

**inetnum:** 85.11.184.0/25

**netname:** TINY-NET

**mnt-by:** LILA-MNT

**domain:** 184.11.85.in-addr.arpa

**mnt-by:** STRANGE-MNT

**mnt-by:** END-USER-MNT

**nserver:** ns1.example.com

**nserver:** ns2.example.com

**route:** 85.11.184.0/21

**origin:** AS2

**tech-c:** LA789-RIPE

**admin-c:** JD1-RIPE

**mnt-by:** SOME-MNT

# Want to create an inetnum or inet6num?



1. Every **inetnum** has a larger **inetnum** above it
2. Make sure that the mnt-lower (or mnt-by) in that larger **inetnum** is a mntner whose password you know. You have to supply it as the second password during the creation of the new inetnum.



# Hierarchical Authorisation

Exercise 5



# Routing Policy Objects

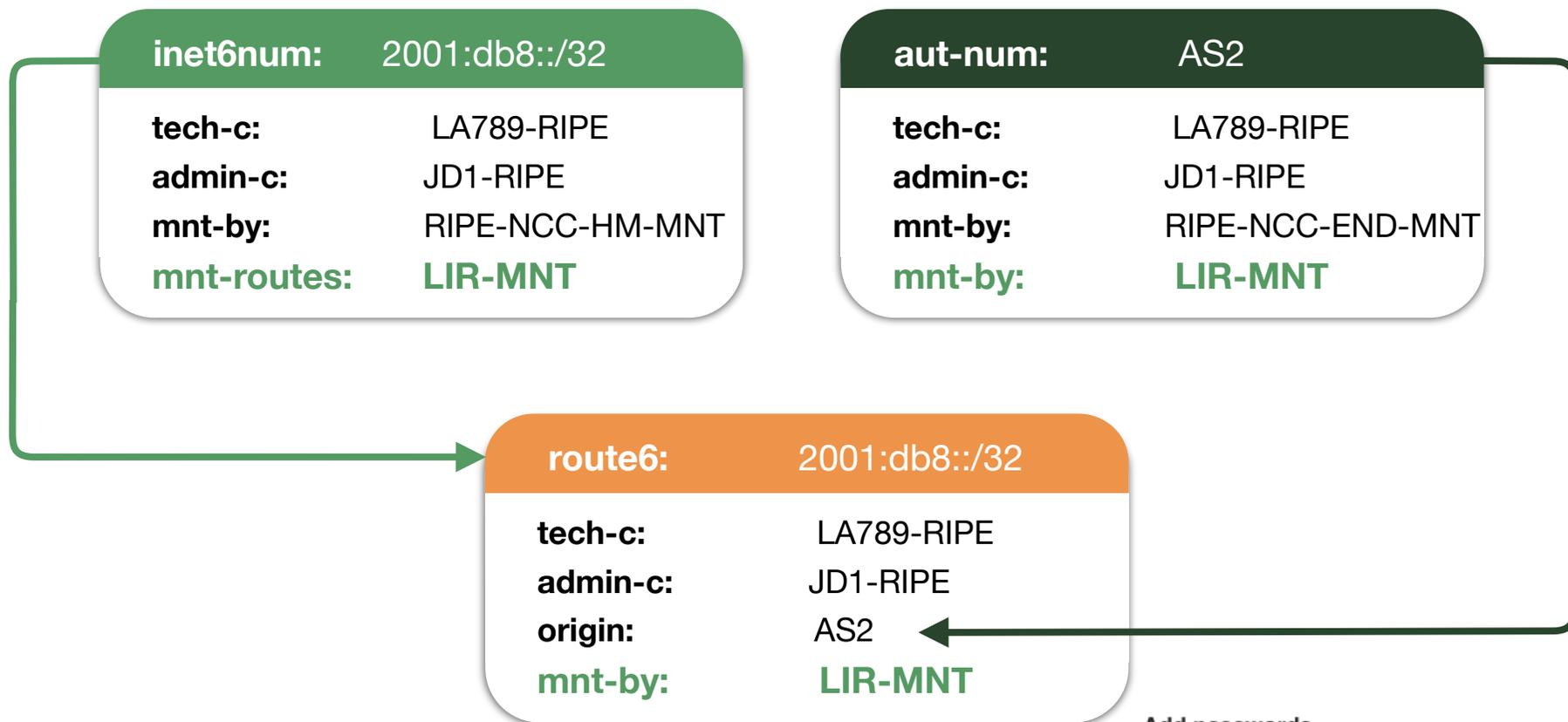
## Section 7



# Which Ones Do You Create?

- **inetnum** - IPv4 address range RIPE NCC LIR
- **inet6num** - IPv6 address range RIPE NCC LIR
- **aut-num** RIPE NCC LIR
  - Registration record of an AS Number
  - Contains the routing policy
- **route** LIR
  - IPv4 prefix announced by an AS
- **route6** LIR
  - IPv6 prefix announced by an AS

# route and route6 Object (1st Scenario)



Add passwords

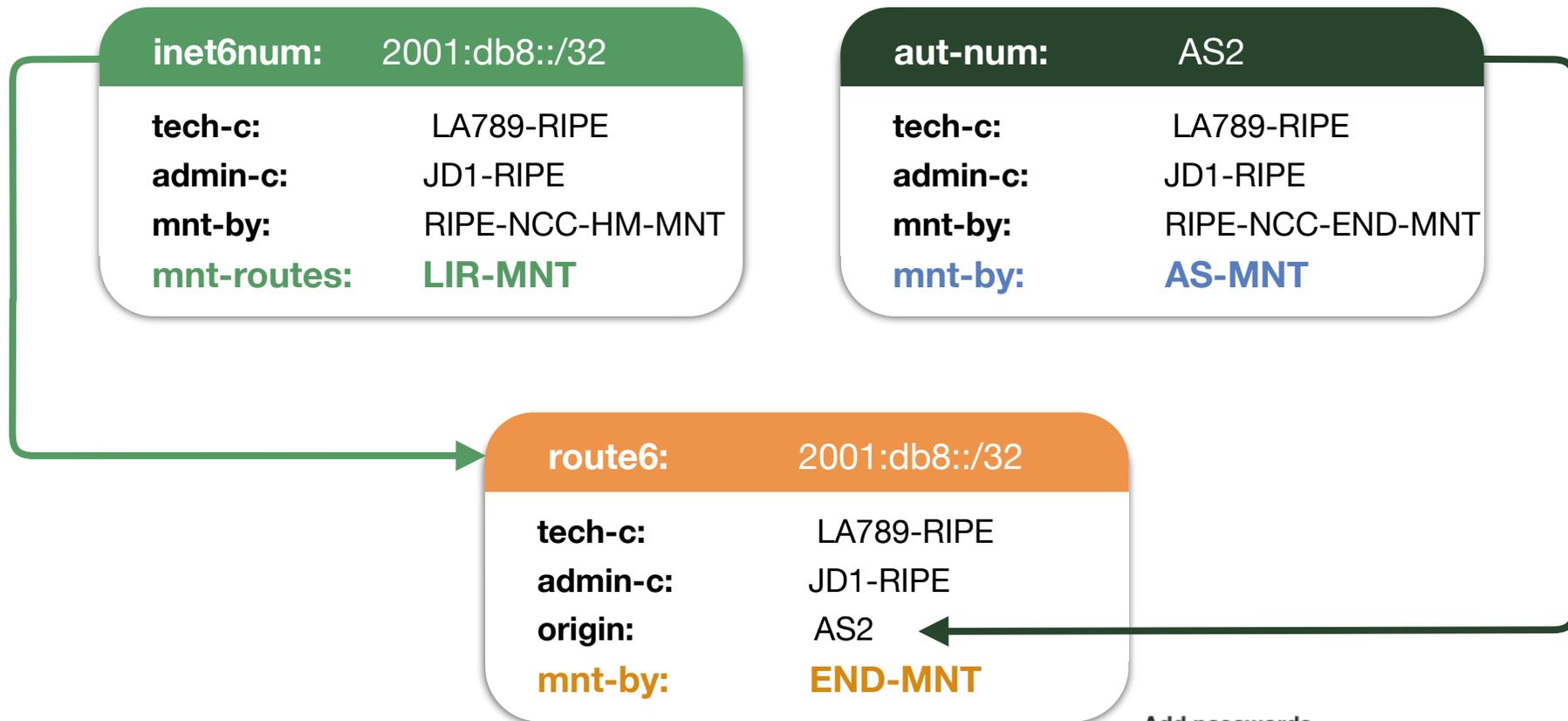
Session passwords

0 stored password(s) ?

12lir +



# route and route6 Object (2nd Scenario)



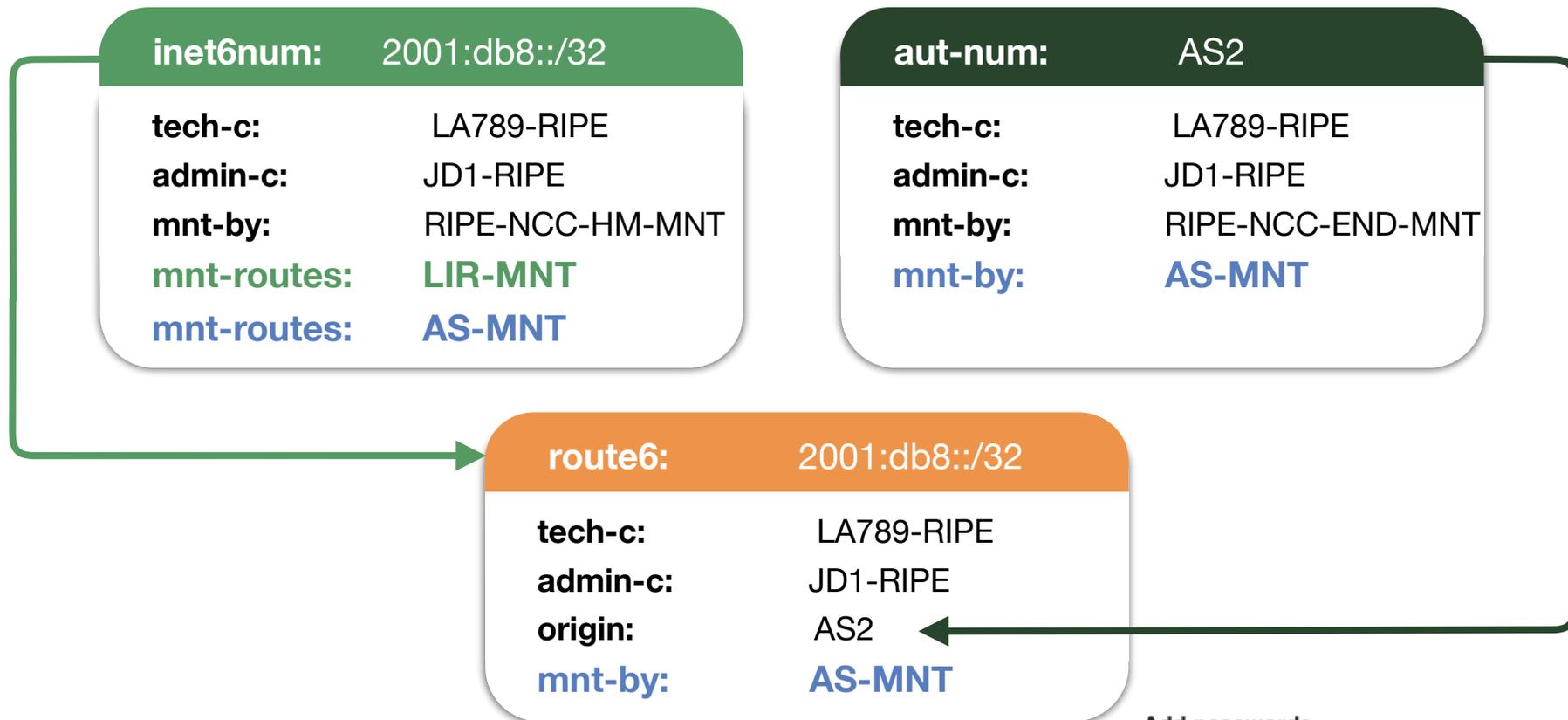
Add passwords

Session passwords

0 stored password(s) ?

- 12lir
- as999
- end72

# route and route6 Object (3rd Scenario)



Add passwords

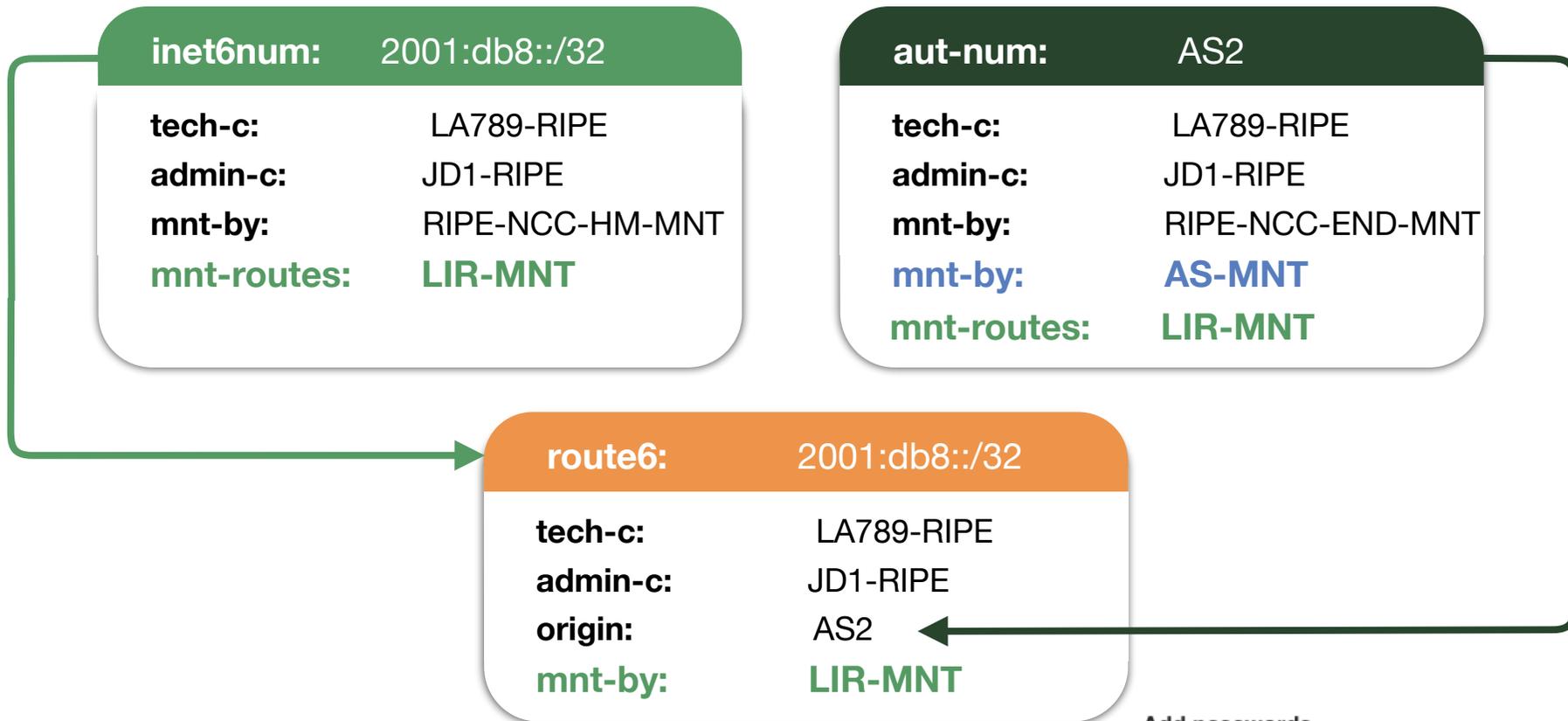
Session passwords

0 stored password(s) ?

as999 +



# route and route6 Object (4th Scenario)



Add passwords

Session passwords

0 stored password(s) ?

12lir +



# inet6num in Real Life



**inet6num:** 2001:db8::/32

**org:** ORG-BB2-RIPE  
**admin-c:** LA789-RIPE  
**tech-c:** LA789-RIPE  
**mnt-by:** RIPE-NCC-HM-MNT  
**mnt-lower:** LIR-MNT  
**mnt-routes:** LIR-MNT  
**mnt-domains:** LIR-MNT

# Registering routes - New Approach



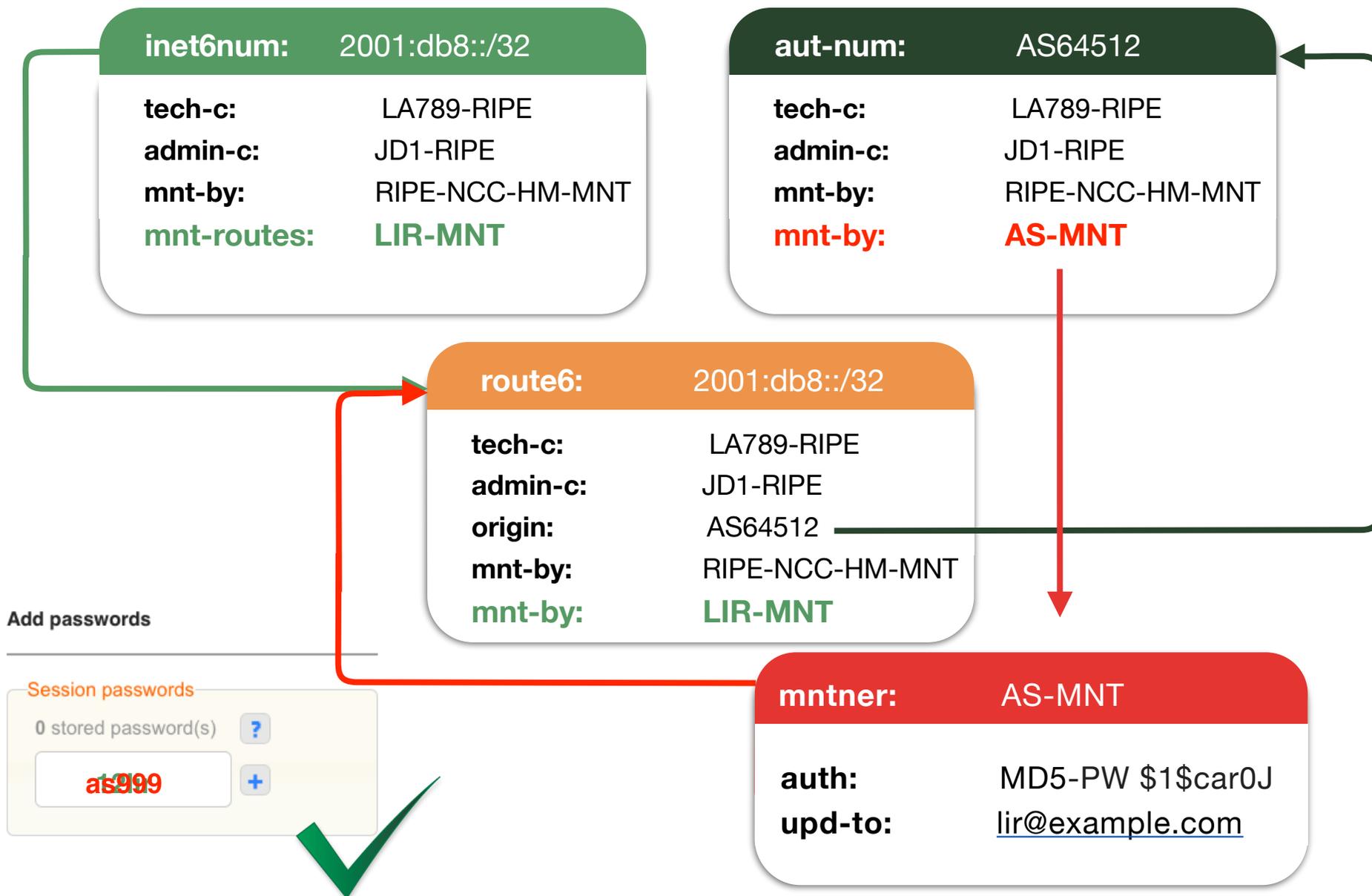
- **Creating route object**
  - Sharing passwords
  - Adding other users' maintainers to your objects
- **New approach**
  - For any missing authorisation, object is queued and notification is sent to the maintainer

**mntner:** LIR-MNT

**auth:** MD5-PW \$1\$car0J

**upd-to:** [lir@example.com](mailto:lir@example.com)

# Registering routes - New Approach





# Reverse Delegation

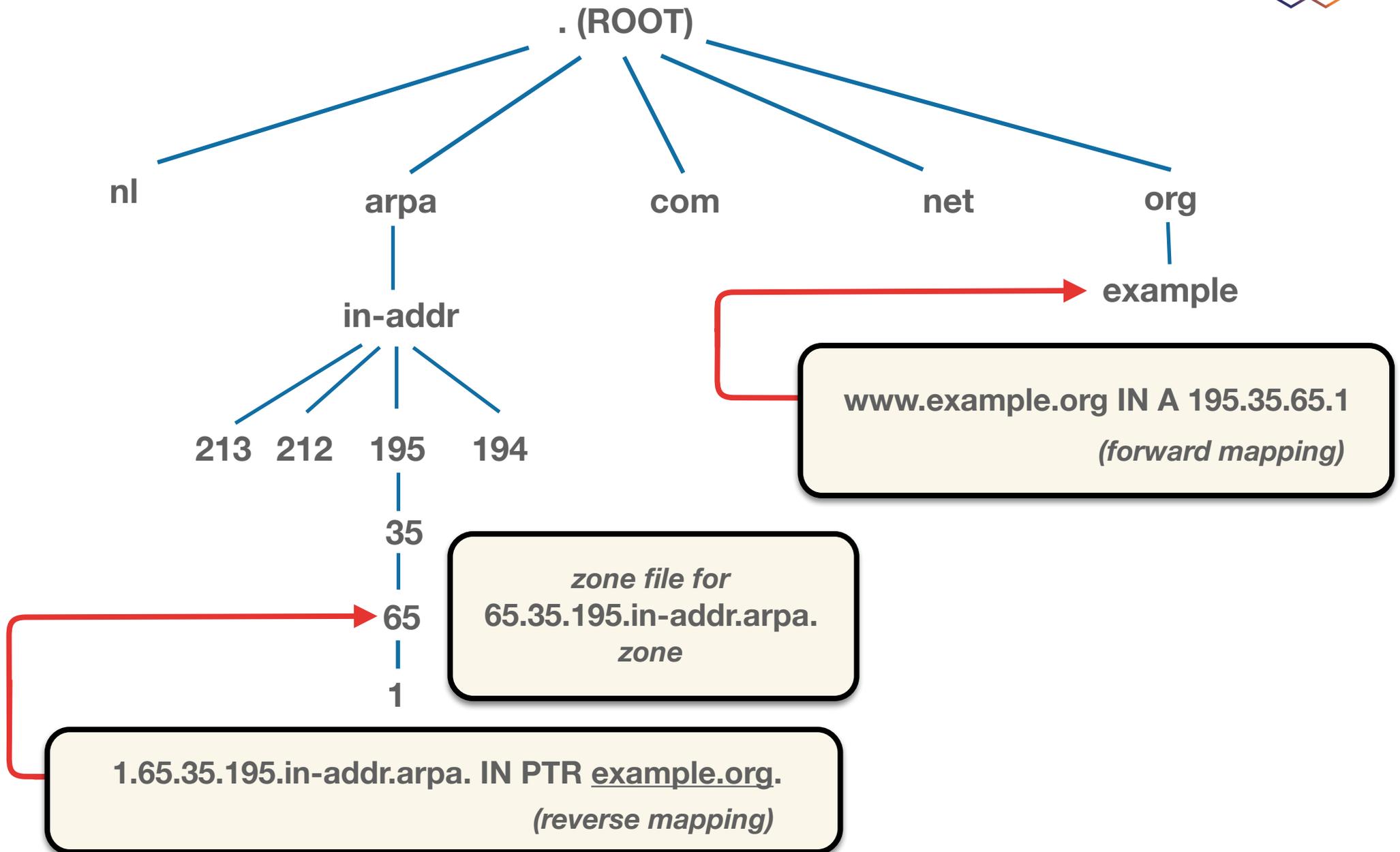
## Section 8

# What is Reverse Delegation?



- Mapping of IP addresses to domain names

# in-addr.arpa Domain (IPv4)



# Reverse DNS for a /24 Domain (IPv4)



- domain object:

195. 4. 0. 1

in-addr.arpa.

- PTR record:

1.0.4.195.in-addr.arpa. IN PTR [you.example.org.](#)

# Reverse DNS (IPv6)



- domain object:

**2001:0db8:003e:ef11:0000:0000:c100:004d**

**. . . . .ip6.arpa.**

- PTR record:

**d.4.0.0.0.1.c.0.0.0.0.0.0.0.1.1.f.e.e.3.0.0.8.b.d.**

**0.1.0.0.2.ip6.arpa. IN PTR yourname.domain.tld.**

**d.4.0.0.0.1.c.0.0.0.0.0.0.0.1.1.f.e.e.3.0.0.8.b.d.0.1.0.0.2.ip6.arpa. IN PTR yourname.domain.tld.**

# Reverse Delegation Basics



- **IPv4**
  - in-addr.arpa
  - /24 or /16 sizes only
- **IPv6**
  - ip6.arpa
  - Sizes: multiples of 4 bits (/32, /36, /48)

# Setting up Reverse Delegation: Preparation



- **Modify the covering inetnum or inet6num**
  - add "mnt-domains: your\_mntner"
  - for allocations: use LIR Portal Object Editor
  - for other objects: use Webupdates
- **Chop up your address range into chunks suitable for reverse delegation**
  - /24 or /16 chunks for IPv4or
  - multiples of 4 bit chunks (/32, /36, /48, etc.) for IPv6

# Setting up Reverse Delegation: Setup



- **Configure your DNS servers**
  - at least two name servers in different subnets
  - create a zone file on each
  - for /16 (v4) and /32 (v6) you can use ns.ripe.net as secondary server
- **Delegation checker**
  - <http://dnscheck.ripe.net>
- **RIPESstat widget**

# Setting up Reverse Delegation: domain Object



- **create a domain object for each of your chunks of**
  - /24 or /16 (for IPv4)
  - /32 or /36 or /*“any multiple of 4”* (for IPv6)
- **Specify name servers:**
  - nserver: your\_1st\_nameserver
  - nserver: your\_2nd\_nameserver
- **Multiple objects:**
  - 192.4.0.0/22 = 192.4.0-3.0/24

# Setting up Reverse Delegation: domain Object



**domain:** 0.4.192.in-addr.arpa

**domain:** 1.4.192.in-addr.arpa

**domain:** 2.4.192.in-addr.arpa

**domain:** 3.4.192.in-addr.arpa

**mnt-by:** LIR-MNT  
**mnt-by:** END-USR-MNT  
**nserver:** ns1.example.com  
**nserver:** ns2.example.com

# Creation



- **domain object creation = request for reverse delegation**
  - asking RIPE NCC to enter NS records pointing to your name servers in RIPE NCC's /8 parent zone
- **Robot checks before successful creation**
  - authentication check
  - RIPE Database syntax check
  - zone delegation check (20 points max!)



# Reverse Delegation

## Exercise 6



# Tools

LIR Portal, RIPEstat

Section 9

# LIR Portal



- LIR's confidential communication channel and interface to the RIPE NCC
- Get an admin account from the RIPE NCC to use it
- Request forms, Object editors

# Editing an Allocation or Organisation Object



- IP allocations and LIR's org object can only be edited in the LIR Portal, not via Webupdates
- You can only edit some of the lines, not all the lines

The screenshot shows the RIPE LIR Portal interface. The navigation menu on the left includes sections for 'My LIR', 'Resources', 'Resource Certification', and 'Tools'. The 'Resources' section is expanded, showing 'Object Editors' with a red arrow pointing to it. The main content area displays a form for editing objects, with a red oval highlighting the 'Object Editors' text. The form has four steps: 1. Select Object(s), 2. Select attribute to edit, 3. Select attribute value(s), and 4. Add/remove attributes to/from selected object(s). The 'admin-c' attribute is selected, and the value 'JDR-RIPE, BRD-RIPE, TS7729-RIPE' is entered. Below the form, a table lists the object's details.

inetnum	193.0.24.0 - 193.0.31.255
netname	NL-RIPENCC-TS-19930901
org	ORG-Bb2-RIPE
descr	Reseaux IP Europeens Network Coordination Centre (RIPE NCC)
remarks	RIPE NCC Training Services & RIPE Meetings Used for RIPE Meetings and demonstration purposes self-published-feed: https://meetings.ripe.net/geo/google.csv
country	NL
admin-c	JDR-RIPE BRD-RIPE TS7729-RIPE
tech-c	OPS4-RIPE
status	ALLOCATED PA
mnt-by	RIPE-NCC-HM-MNT
mnt-lower	RIPE-NCC-MNT MNT-NCCTS

# RIPEstat: <http://stat.ripe.net>



- **One interface for all IP resources related data**
  - Registry data, routing, reverse DNS, active measurements, 3rd party data (blacklist, geolocation)
- **Query: IP address, AS, domain name**

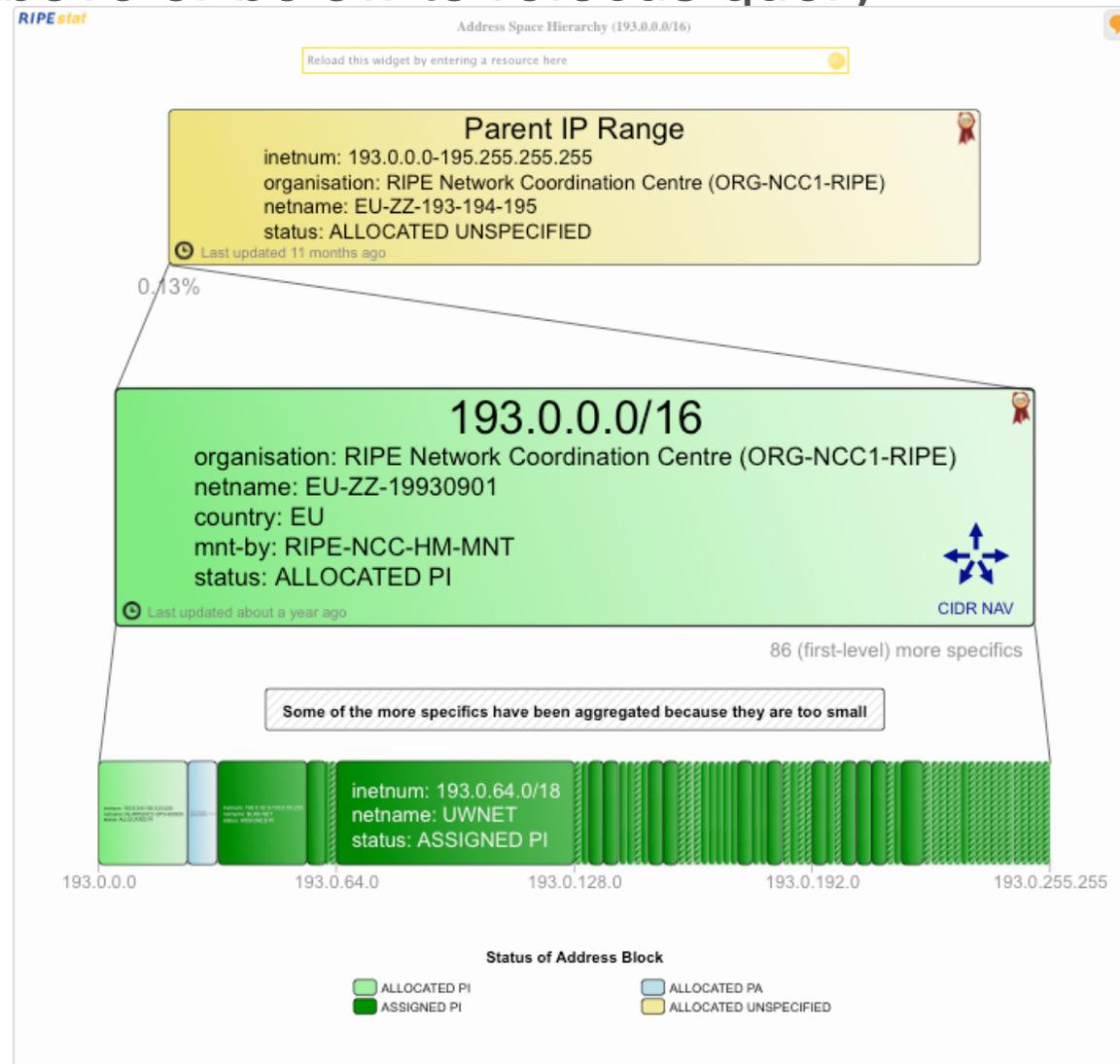
Search RIPE **stat**

Your network: [AS3333](#), [2001:67c:2e8::/48](#) e.g.: [IPv4 prefix/range](#), [IPv6](#), [ASN](#)

# Address Space Hierarchy Widget



- click above or below to refocus query



# Registry Browser Widget



- click on another object to refocus query

Registry Browser (109.110.192.0/19)

Reload this widget by entering a resource here 

🕒 2011-08-04 16:00:28Z to 2012-12-17 14:02:27Z  
Last changed on 2011-08-04 at 16:00:28Z

**inetnum: 109.110.192.0/19** [Show more](#)

**descr** ASTER Sp. z.o.o.  
**netname** PL-ACC-20091113  
**country** PL  
**org** ORG-ACCL1-RIPE  
**status** ALLOCATED PA  
**mnt-by** RIPE-NCC-HM-MNT

↑

**route: 109.110.192.0/19** [route] [Show more](#)

**route: 109.110.192.0/19** [route] [Show more](#)

↓

**organisation: ORG-ACCL1-RIPE** [org] [Show more](#)

**role: ACC TEAM** [admin-c, tech-c] [Show more](#)

**mntner: RIPE-NCC-HM-MNT** [mnt-by] [Show more](#)

**mntner: PL-ASTER-ZG-MNT** [mnt-lower, mnt-routes] [Show more](#)

**mntner: ACC-MNT** [mnt-lower, mnt-routes] [Show more](#)



# Registry Browser Widget



RIPEstat Registry Browser (mntner:ACC-MNT)

Reload this widget by entering a resource here

2013-02-12 15:12:09 UTC to 2013-03-11 13:39:23 UTC  
Last updated on 2013-02-12 at 15:12:09 UTC

**mntner: ACC-MNT** [Show more](#)

**descr** Aster Sp. z o.o. AS Maintainer  
**mnt-by** ACC-MNT

7 × aut-num, 400 × domain<sup>truncated</sup>, 3 × inet6num, 22 × inetnum, 5 × mntner, 6 × organisation, 5 × person, 1 × role, 3 × route

**aut-num: AS31079** [Show more](#)

**aut-num: AS35342** [Show more](#)

**aut-num: AS49785** [Show more](#)

**domain: 0.178.31.in-addr.arpa** [Show more](#)

**domain: 0.179.31.in-addr.arpa** [Show more](#)

**domain: 0.187.31.in-addr.arpa** [Show more](#)

**domain: 0.222.85.in-addr.arpa** [Show more](#)

**domain: 0.5.0.4.1.0.0.2.ip6.arpa** [Show more](#)

**domain: 0.73.178.in-addr.arpa** [Show more](#)

**role: ACC TEAM** [admin-c, tech-c] [Show more](#)

**mntner: ACC-MNT** [mnt-by] [Show more](#)

Showing results for ACC-MNT as of 2013-03-11 13:39:23 UTC

# Travel Back in Time: For RIPE NCC Members



Registry Browser (AS3333)

Reload this widget by entering a resource here

2012-04-17 10:12:15 UTC to 2013-03-13 13:04:15 UTC

2012-04-17 10:12:15 UTC to 2013-03-13 13:04:15 UTC  
2012-04-17 09:55:11 UTC to 2012-04-17 10:12:14 UTC  
2012-03-12 08:40:16 UTC to 2012-04-17 09:55:10 UTC  
2011-03-29 14:57:26 UTC to 2012-03-12 08:40:15 UTC  
2011-02-15 10:48:34 UTC to 2011-03-29 14:57:25 UTC  
2011-02-15 10:30:34 UTC to 2011-02-15 10:48:33 UTC  
2011-02-02 14:06:10 UTC to 2011-02-15 10:30:33 UTC  
2009-01-28 17:46:03 UTC to 2011-02-02 14:06:09 UTC  
2009-01-28 17:27:21 UTC to 2009-01-28 17:46:02 UTC  
2009-01-28 11:14:33 UTC to 2009-01-28 17:27:20 UTC  
2009-01-27 15:44:05 UTC to 2009-01-28 11:14:32 UTC  
2008-12-19 18:38:35 UTC to 2009-01-27 15:44:04 UTC  
2008-12-19 16:51:45 UTC to 2008-12-19 18:38:34 UTC  
2008-11-19 16:31:45 UTC to 2008-12-19 16:51:44 UTC  
2007-08-24 15:04:21 UTC to 2008-11-19 16:31:44 UTC  
2007-07-10 10:24:28 UTC to 2007-08-24 15:04:20 UTC  
2006-10-24 12:47:11 UTC to 2007-07-10 10:24:27 UTC  
2006-10-24 12:44:28 UTC to 2006-10-24 12:47:10 UTC  
2006-10-24 08:21:03 UTC to 2006-10-24 12:44:27 UTC  
2006-05-03 10:29:36 UTC to 2006-10-24 08:21:02 UTC

route: 193.0.0.0/21 [origin] [Show more](#)

route: 193.0.10.0/23 [origin] [Show more](#)

route: 193.0.12.0/23 [origin] [Show more](#)

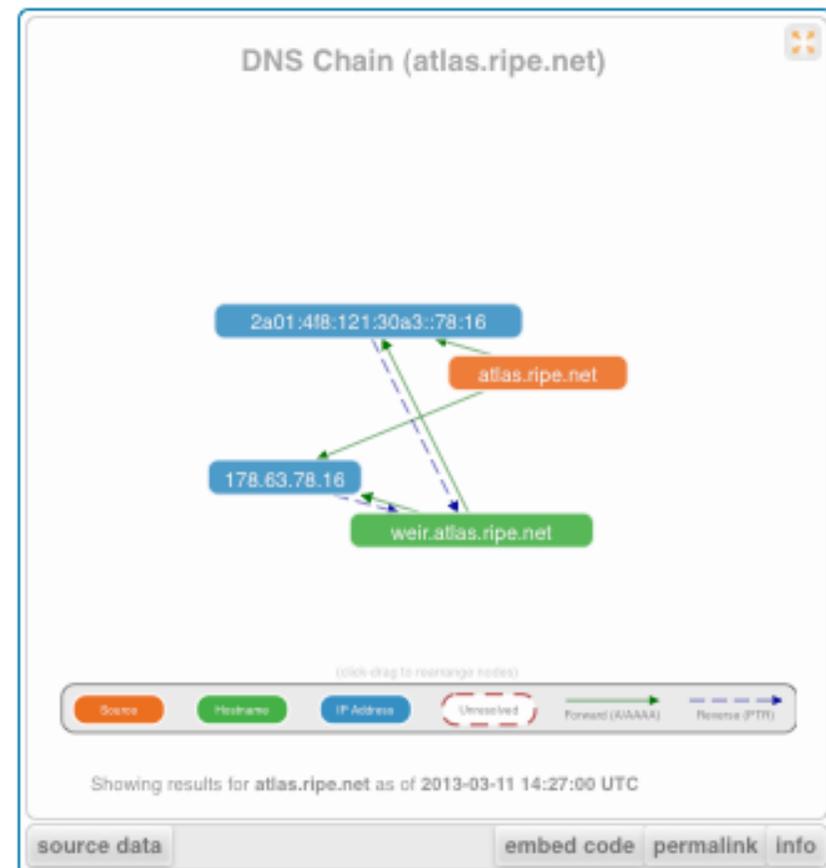
organisation: ORG-NIEN [org]

person: Jochem de Ruig

# Reverse DNS and DNS



- For IP prefixes: reverse DNS whois registration
- For hostnames: resolves A and AAAA records
- DNS chain for both
  - hostnames & IP addresses





# Questions



# RIPE NCC Academy



**RIPE**  
**NCC** ACADEMY

<http://academy.ripe.net>



twitter

@TrainingRIPENCC



<https://www.ripe.net/training/db/feedback>



**The End!**

**Край**

**Y Diwedd**

**النهاية**

**Соңы**

**ჟღერჟ**

**Fí**

**Finis**

**Ende**

**Finvezh**

**Liðugt**

**Кінець**

**Konec**

**Kraj**

**Ěnn**

**Fund**

**پایان**

**Lõpp**

**Beigas**

**Vége**

**Son**

**Край**

**An Críoch**

**הסוף**

**Fine**

**Endir**

**Sfârșit**

**Fin**

**Τέλος**

**Einde**

**Канец**

**Конец**

**Slut**

**Slutt**

**დასასრული**

**Pabaiga**

**Fim**

**Amaia**

**Loppu**

**Tmiem**

**Koniec**