



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

IPv6 in the RIPE Database

Webinar

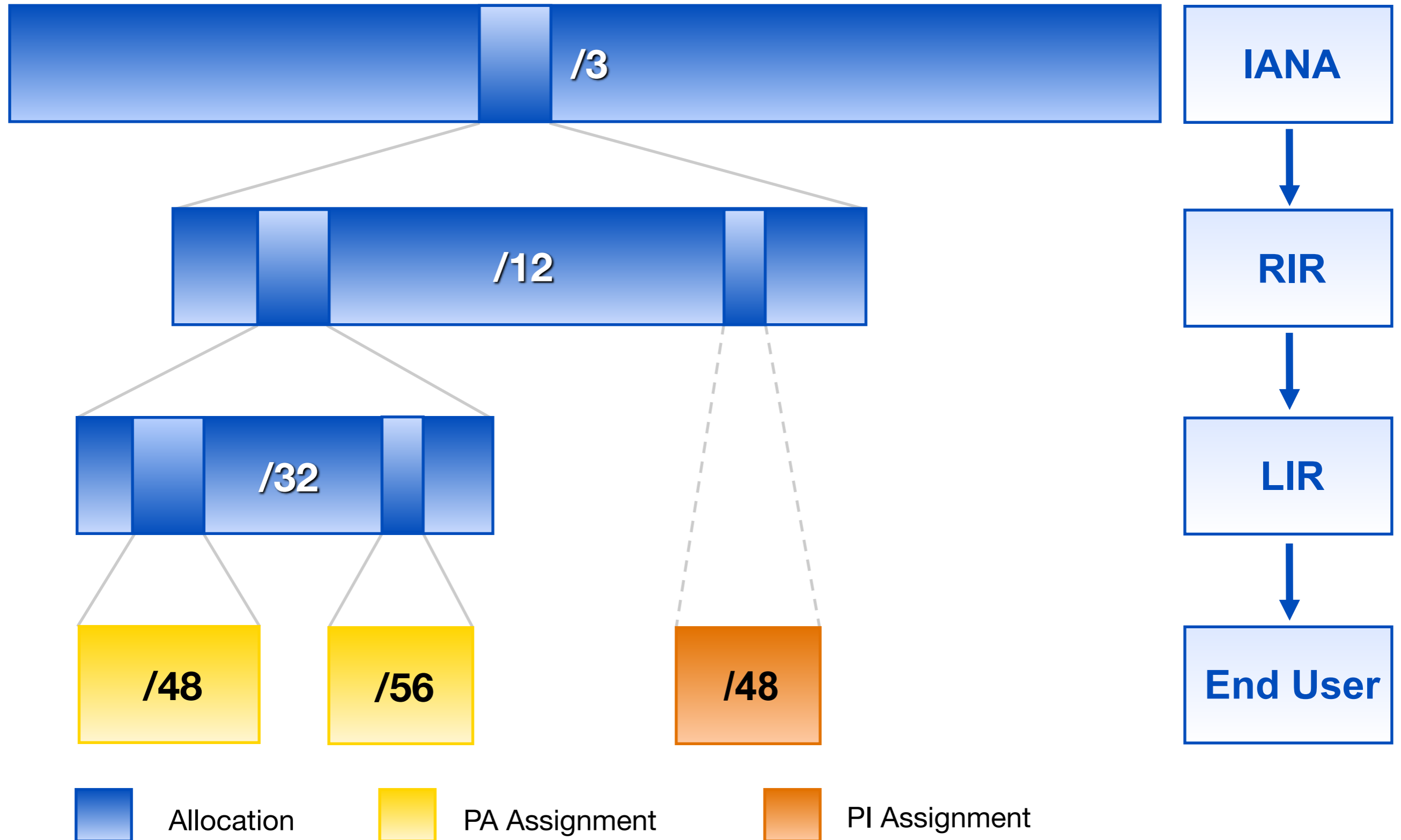
Training Services Dept.

Overview



- IPv6 Address Distribution
- IPv6 assignments
- Objects in the RIPE Database
- route6 and domain objects

IP Address Distribution



IPv6 subnets



- **Every subnet should be a /64**
- **Minimum allocation size /32**
 - Up to /29, no extra documentation needed
 - 65,536 x /48s
 - 16,777,216 x /56s
- **Customer assignments (sites) between:**
 - /64 (1 subnet)
 - /48 (65,536 subnets)

Customer Assignments



- **Give your customers enough addresses**
 - up to a /48, no approval required
- **More than /48: send in request form**
 - alternatively, make a sub-allocation
- **Every assignment must be registered in the RIPE Database**

RIPE Database objects



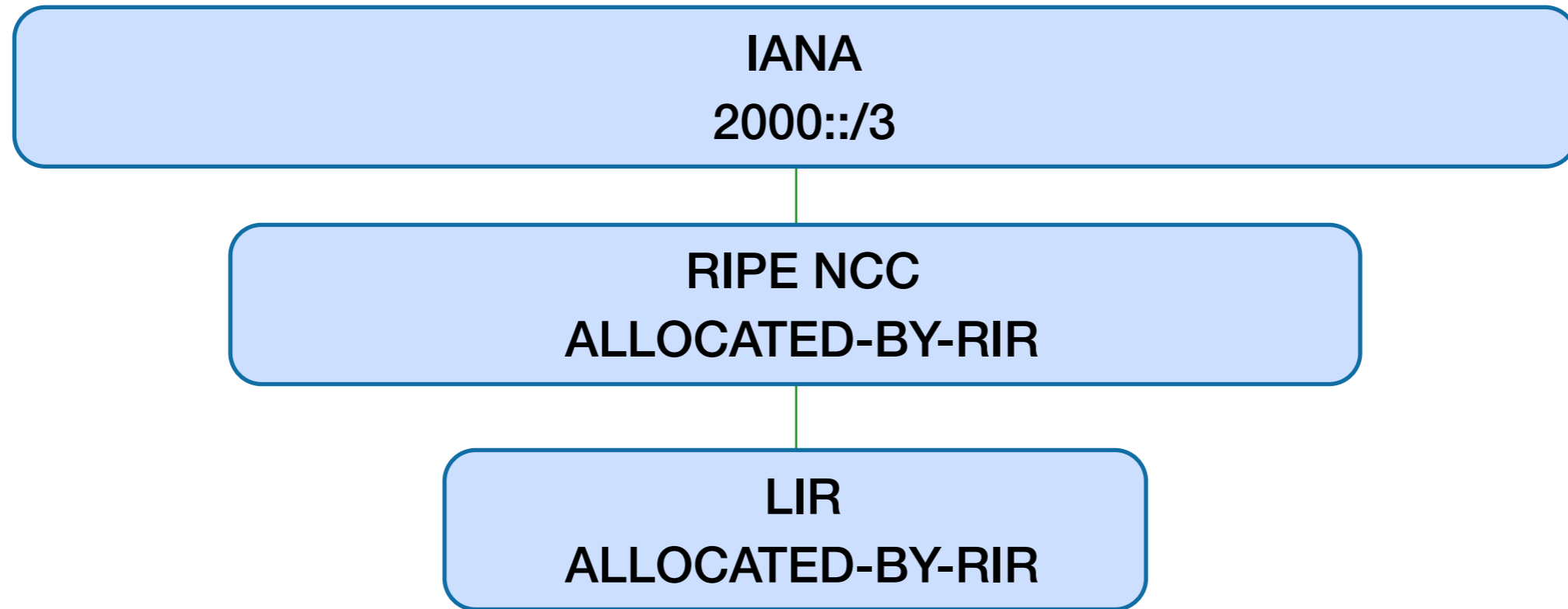
- **inetnum** = IPv4 address range
- **inet6num** = IPv6 address range
- **aut-num** = AS number
- **route6** = IPv6 address space announced by an AS number
- **domain** = sets up reverse DNS
- **maintainer** = protects other objects

Comparison IPv4 and IPv6 status



IPv4		IPv6
ALLOCATED PA	Allocation	ALLOCATED-BY-RIR
ASSIGNED PA	Assignment	ASSIGNED
ASSIGNED PA	Group of Assignments	AGGREGATED-BY-LIR
SUB-ALLOCATED PA	Sub-Allocation	ALLOCATED-BY-LIR
ASSIGNED PI	PI Assignment	ASSIGNED PI

ALLOCATED-BY-RIR



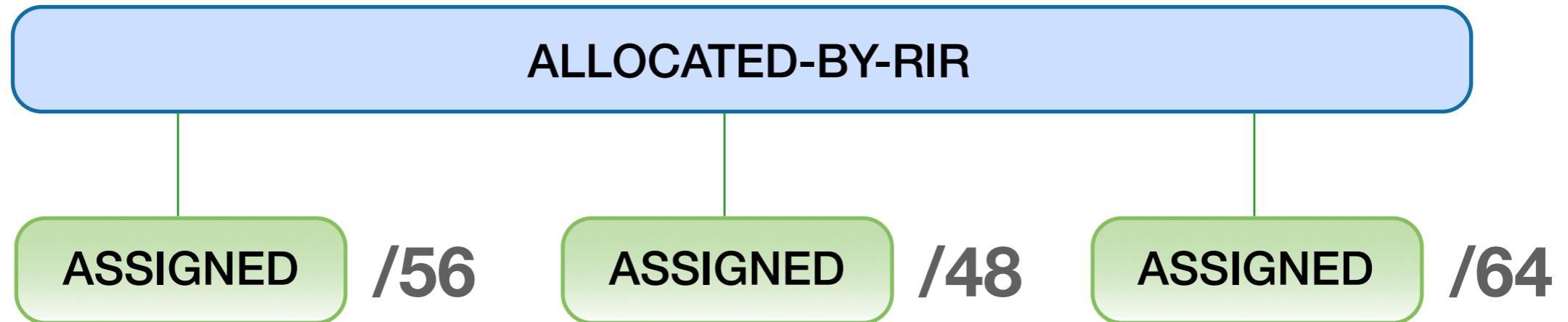
- Used by RIPE NCC for allocations
- Minimum size is /32
- LIR is the “mnt-lower:” of their own allocation

ALLOCATED-BY-RIR



```
inet6num:          2001:db8::/32
netname:           NL-LAIKABV-20150531
country:          NL
org:              ORG-LBV1-RIPE
admin-c:          ADM321-RIPE
tech-c:           NOC123-RIPE
status:           ALLOCATED-BY-RIR
mnt-by:           RIPE-NCC-HM-MNT
mnt-by:           DEFAULT-LIR-MNT
mnt-lower:        BRIGHTLIFE-MNT
mnt-routes:       BRIGHTLIFE-MNT
created:          2015-05-31T08:23:35Z
last-modified:    2015-05-31T08:23:35Z
source:           RIPE
```

Using ASSIGNED



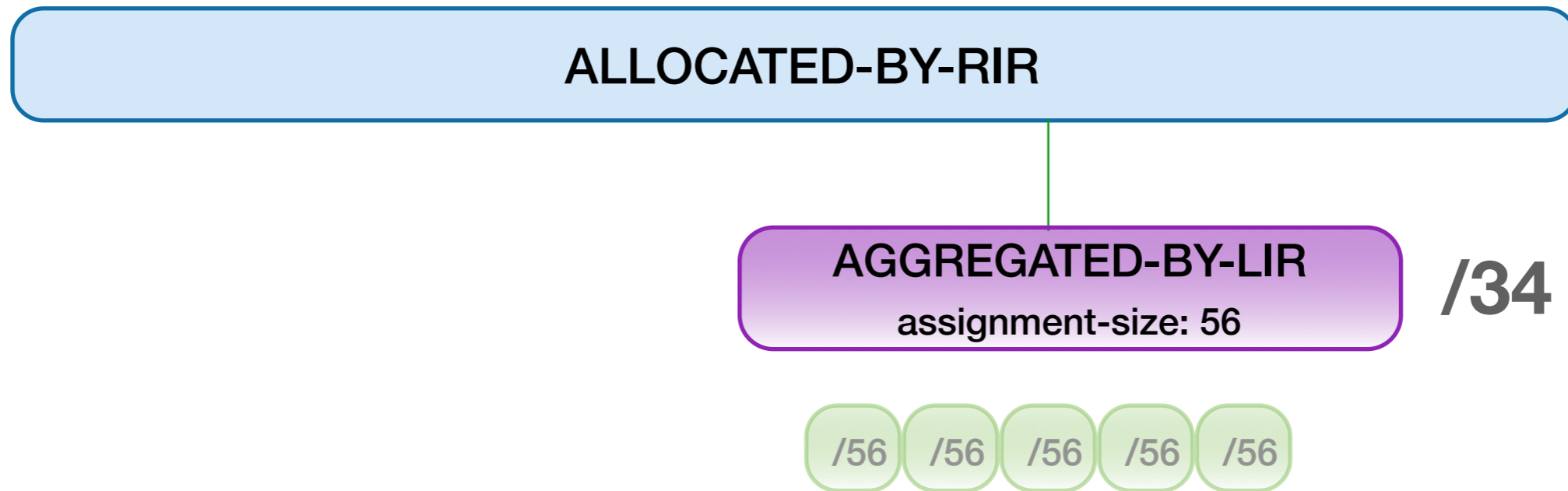
- Status is ASSIGNED
- Minimum assignment size is a /64
- For more than a /48, send a request form

Using ASSIGNED - Example



```
inet6num:      2001:db8:1000::/48
netname:       LAIKA-NET
country:       NL
admin-c:       ADM321-RIPE
tech-c:        NOC123-RIPE
status:     ASSIGNED
mnt-by:        BRIGHTLIFE-MNT
created:       2015-05-31T08:23:35Z
last-modified: 2015-05-31T08:23:35Z
source:        RIPE
```

Using AGGREGATED-BY-LIR



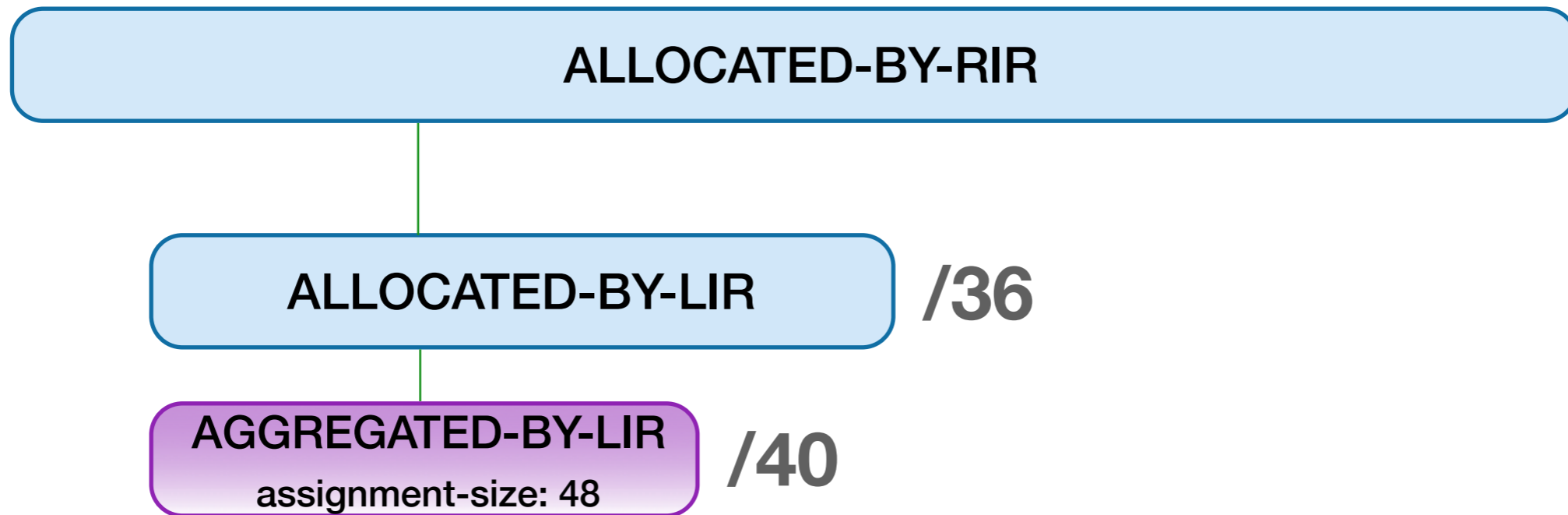
- Can be used to group customers
 - broadband, for example
- "assignment-size:" = assignment of each customer

Using AGGREGATED-BY-LIR - Example



```
inet6num:          2001:db8:1000::/36
netname:           Brightlife-Broadband-Pool
country:          NL
admin-c:          ADM321-RIPE
tech-c:           NOC123-RIPE
status:           AGGREGATED-BY-LIR
assignment-size:  48
mnt-by:           BRIGHTLIFE-MNT
notify:           noc@example.net
created:          2015-05-31T08:23:35Z
last-modified:    2015-05-31T08:23:35Z
source:           RIPE
```

Using ALLOCATED-BY-LIR



- Can be used for customers who expect large growth
- or for your own infrastructure

Using ALLOCATED-BY-LIR - Example



```
inet6num:      2001:db8:50::/44
netname:       Big-Customer-Network
country:      NL
admin-c:       ADM321-RIPE
tech-c:        NOC123-RIPE
status:     ALLOCATED-BY-LIR
mnt-by:        BRIGHTLIFE-MNT
mnt-lower:  BIG-CUSTOMER-MNT
notify:        noc@example.net
created:       2015-05-31T08:23:35Z
last-modified: 2015-05-31T08:23:35Z
source:        RIPE
```

ASSIGNED PI



- Only used by the RIPE NCC to register
PI Assignments
- Status is ASSIGNED PI
- Minimum assignment size is a /48

ASSIGNED PI - Example



```
inet6num:          2001:67c:2e8::/48
netname:           RIPE-NCC-NET
org:              ORG-RIEN1-RIPE
country:          NL
admin-c:          JDR-RIPE
tech-c:           OPS4-RIPE
status:        ASSIGNED PI
mnt-by:       RIPE-NCC-END-MNT
mnt-by:          MNT-ENDUSER
mnt-routes:      MNT-ENDUSER
mnt-domains:     MNT-ENDUSER
created:         2015-05-31T08:23:35Z
last-modified:   2015-05-31T08:23:35Z
source:          RIPE
```

IPv6 in the Routing Registry



Route6 object:

```
route6:      2001:db8::/32
origin:      AS65550
```

Aut-num object:

```
aut-num:     AS65550
mp-import:   afi ipv6.unicast from AS64496 accept ANY
mp-export:   afi ipv6.unicast to AS64496 announce AS65550
```

Reverse DNS



2001:db8:3e:ef11::c100:4d

Reverse DNS



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

.ip6.arpa.

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. 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. PTR yourname.domain.tld.

Reverse DNS



```
domain:          8.e.2.0.c.7.6.0.1.0.0.2.ip6.arpa
descr:          RIPE-NCC Infrastructure
admin-c:        GII-RIPE
tech-c:         GII-RIPE
zone-c:         GII-RIPE
mnt-by:         RIPE-GII-MNT
nserver:        pri.authdns.ripe.net
nserver:        sns-pb.isc.org
created:        2011-01-21T13:52:29Z
last-modified:  2014-11-12T12:30:22Z
source:         RIPE
```

- Domain object per /32 or /48
- Minimum 2 name servers



Questions





RIPE NCC

Academy

Graduate to the next level!

<http://academy.ripe.net>

Follow us!



twitter

@TrainingRIPENCC

The End!

Край

Y Diwedd

النهاية

Соңы

ჟღერჟ

Fí

Finis

Ende

Finvezh

Liðugt

Кінець

Konec

Kraj

Ěnn

Fund

پایان

Lõpp

Beigas

Vége

Son

An Críoch

Kraj

הסוף

Fine

Endir

Sfârșit

Fin

Τέλος

Einde

Конец

Slut

Slutt

დასასრული

Pabaiga

Fim

Amáia

Loppu

Tmíem

Koniec