RIPE NCC
RIPE NETWORK COORDINATION CENTRE

IPv6 in the RIPE Database

1-Hour Webinar

RIPE NCC Learning & Development


This session is
being recorded

Overview

IPv6 Address Distribution

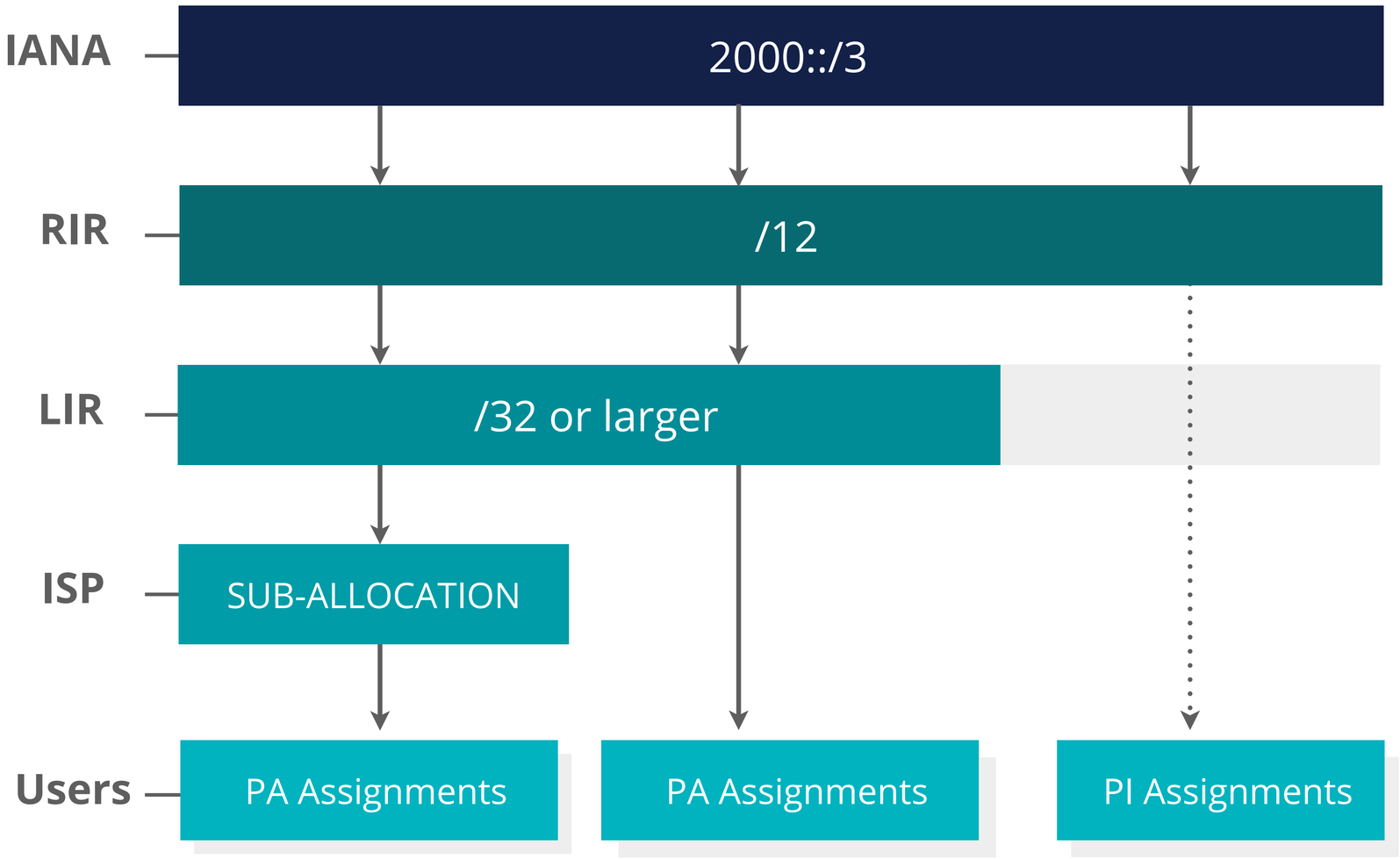
IPv6 Objects

route6 and domain Objects

IPv6 Address Distribution

From allocation to assignment

IPv6 Address Distribution



IPv6 Subnets

- **Minimum allocation size /32**
  - Up to /29, no extra documentation needed
  - 65,536 x /48s
  - 16,777,216 x /56s
  - 4 billion x /64s
- **Every subnet should be a /64**
- **Customer assignments (sites) should be "n" x /64**
  - *"How many /64s do they need?"*

Customer Assignments

- Give your customers **enough** address space
  - Consider future growth and new technologies

- Typical assignment **sizes** are:
  - Residential: /56 or /48
  - Business: /48

- **Every** assignment **must** be registered in the RIPE Database

Take the poll!

What is the **recommended size** of an IPv6 subnet?

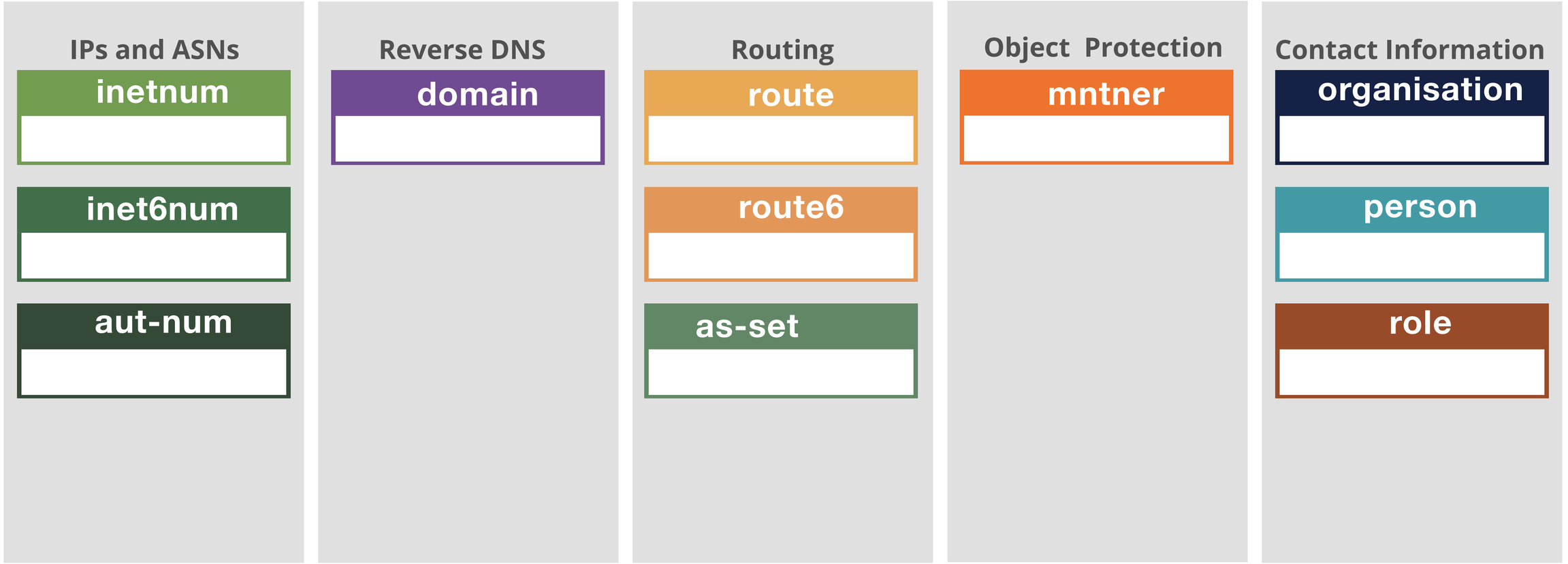
1 min.

Take the poll!

What size assignment would you give to a **home user**?

1 min.

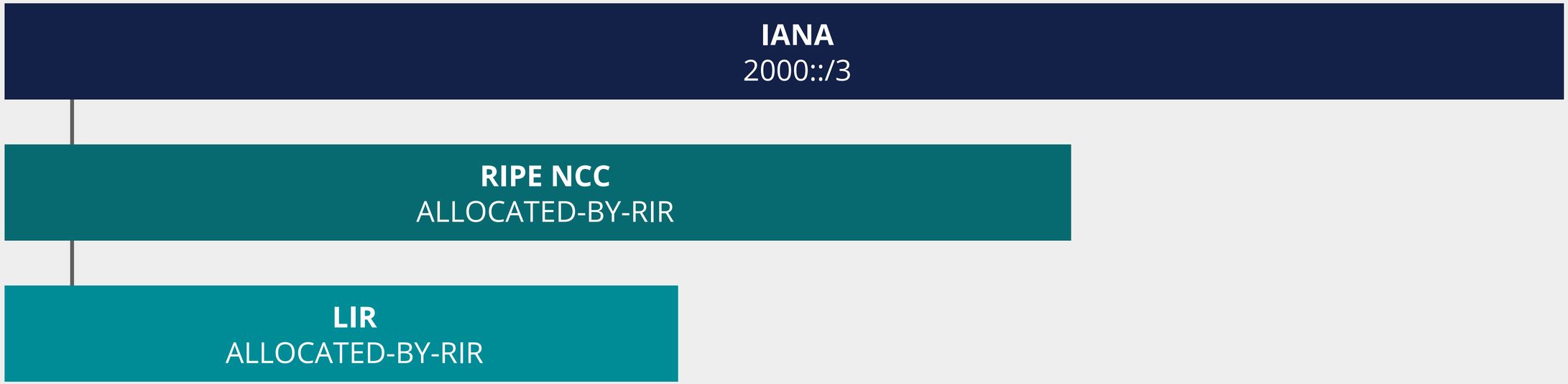
RIPE Database Objects



Comparison IPv4 and IPv6 status

IPv4		IPv6
ALLOCATED PA	Allocation	ALLOCATED-BY-RIR
ASSIGNED PA	Assignment	ASSIGNED
	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 to register allocations
- Minimum size is /32
- LIR is the “mnt-by:” of their own allocation

ALLOCATED-BY-RIR - Example object

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

IPv6 prefix allocated to the LIR

Organisation object of the LIR

Represents an allocation

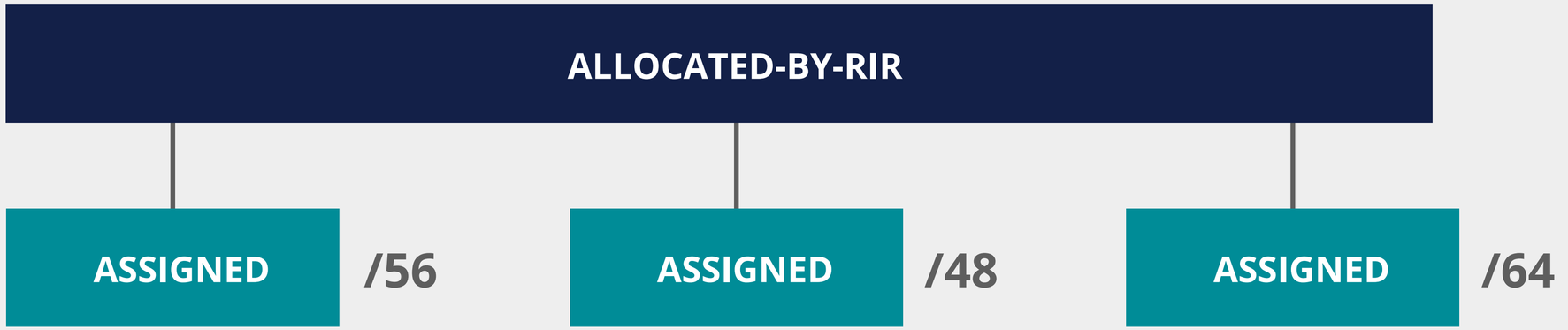
LIR partially maintains this object

Take the poll!

For whom would you register an **inet6num** with the status: **’ALLOCATED-BY-RIR’**?

1 min.

ASSIGNED



- Use ‘ASSIGNED’ for single assignments
- Minimum assignment size is a /64
- Document the justification for any assignment larger than /48

ASSIGNED - Example object

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

IPv6 prefix assigned to network

Name of the network

Represents one assignment

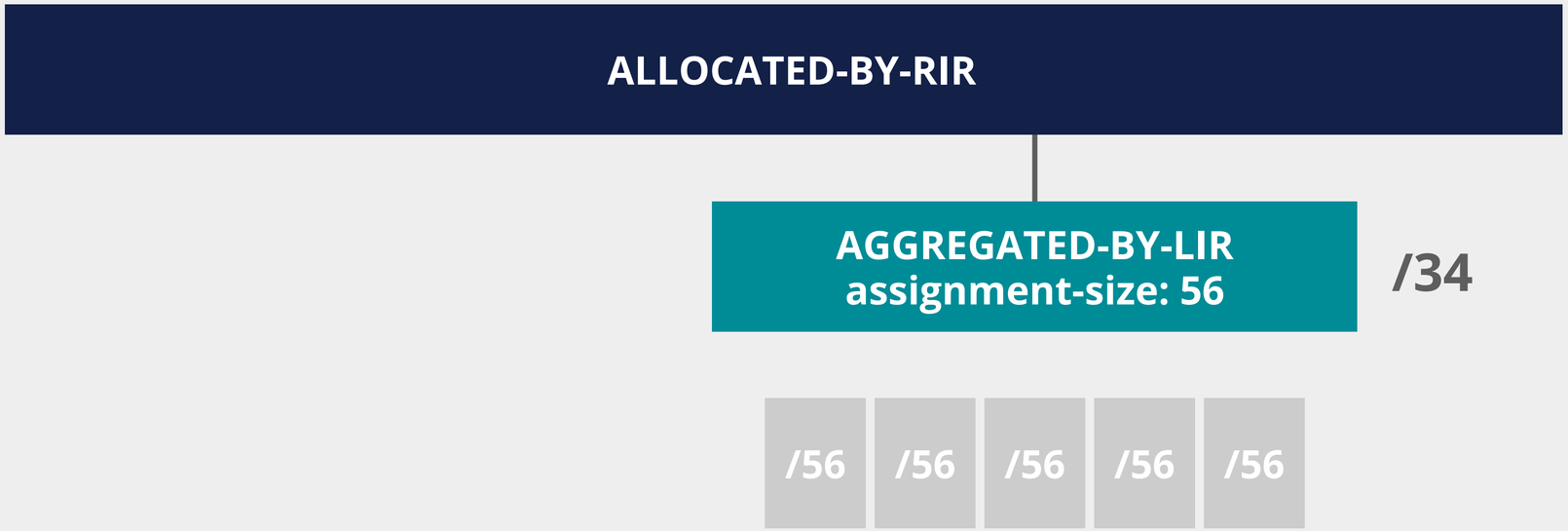
Take the poll!

You want to register one object with the status **‘ASSIGNED’** to represent ten different users.

Is this correct?

1 min.

AGGREGATED-BY-LIR



- Can be used to group customers
  - Broadband pool, for example
- “assignment-size:” = assignment size for every customer

AGGREGATED-BY-LIR - Example object

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

Block of IPv6 address space

Name for the block

Represents a group of assignments

Size of each assignment in block

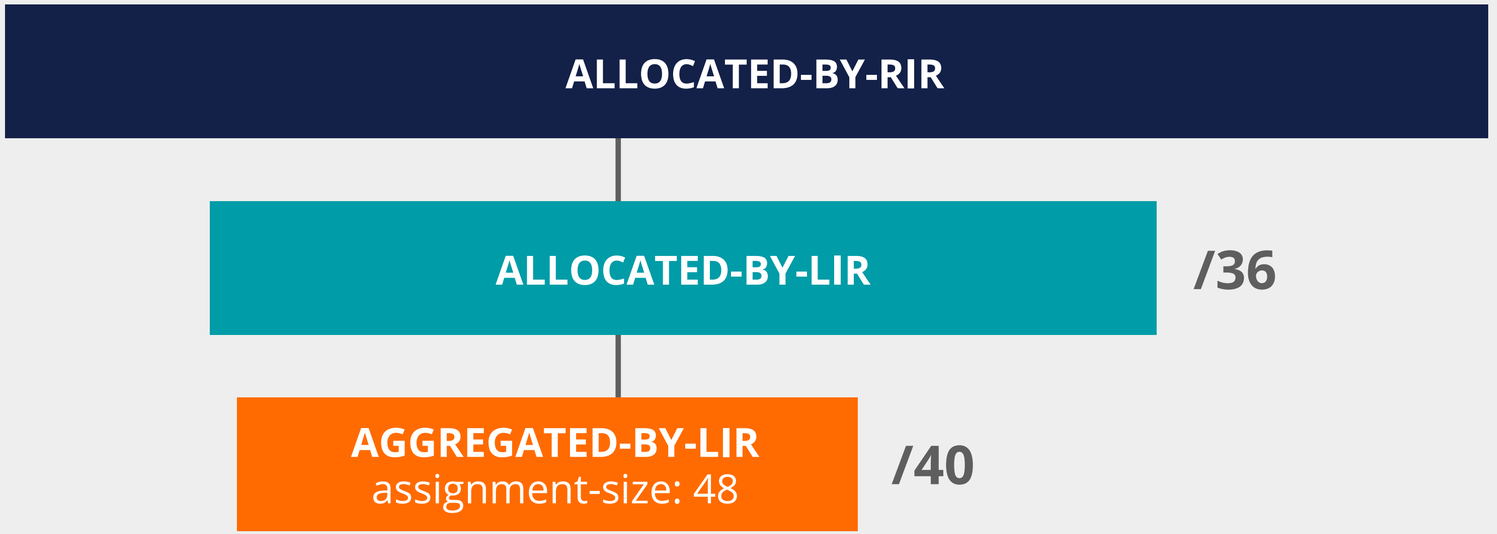
Take the poll!

You want to register an **inet6num** object for a large customer that is an ISP. They will register assignments to their customers.
You want to use **‘AGGREGATED-BY-LIR’**.

Is this correct?

1 min.

ALLOCATED-BY-LIR



- Partition of a larger address block
- Can be used for the LIR infrastructure
  - i.e., branch offices or departments
- Reserve a block for a large customer

ALLOCATED-BY-LIR - Example object

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

Block of IPv6 address space

Name for the block

Represents a sub-allocation/partition

Can be delegated to someone else

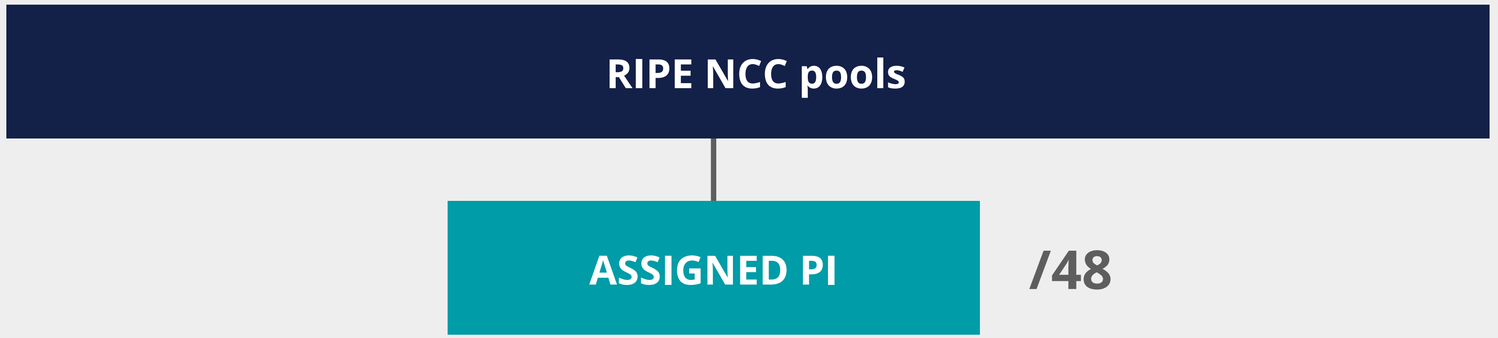
Take the poll!

You want to register an **inet6num** object with the status **‘ALLOCATED-BY-LIR’.**

Do you need to request an approval from the RIPE NCC?

1 min.

ASSIGNED PI



- Represents a PI assignment
- Only used by the RIPE NCC
- Minimum assignment size is a /48
- Address space comes directly from RIPE NCC pools

ASSIGNED PI - Example object

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 prefix assigned to network

Name of the network

Represents a PI assignment

End User maintains the object and can create route6 and domain objects

Take the poll!

Can you register an **inet6num** object with status **’ASSIGNED PI’**?

1 min.

IPv6 in the Routing Registry

Register a route

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

Register your routing policies

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

Requesting Reverse Delegation

1 2001:db8:3e:ef11::c100:4d

Requesting Reverse Delegation

1 2001:db8:3e:ef11::c100:4d

2 2001:0db8:003e:ef11:0000:0000:c100:004d

Requesting Reverse Delegation

1 2001:db8:3e:ef11::c100:4d

2 2001:0db8:003e:ef11:0000:0000:c100:004d

3 2001:0db8:003e:ef11:0000:0000:c100:004d

Requesting Reverse Delegation

1. 2001:db8:3e:ef11::c100:4d
2. 2001:0db8:003e:ef11:0000:0000:c100:004d
3. 2001:0db8:003e:ef11:0000:0000:c100:004d
4. 8.b.d.0.1.0.0.2.ip6.arpa

Domain object example

domain:	**8.b.d.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

Reverse DNS zone

Contact for the DNS zone

Minimum of two name servers

Reverse DNS in IPv6

1 2001:0db8:003e:ef11:0000:0000:c100:004d

Reverse DNS in IPv6

1 2001:0db8:003e:ef11:0000:0000:c100:004d

2 d.4.0.0.0.0.1.c.0.0.0.0.0.0.0.0.1.1.f.e.e.3.0.0.8.b.d.0.1.0.0.2.ip6.arpa

Reverse DNS in IPv6

1 2001:0db8:003e:ef11:0000:0000:c100:004d

2 d.4.0.0.0.0.1.c.0.0.0.0.0.0.0.0.1.1.f.e.e.3.0.0.8.b.d.0.1.0.0.2.ip6.arpa

3 d.4.0.0.0.0.1.c.0.0.0.0.0.0.0.0.1.1.f.e.e.3.0.0.8.b.d.0.1.0.0.2.ip6.arpa. PTR your.domain.tld.

Take the poll!

What is the **smallest block size** for which you can request reverse delegation in IPv6?

1 min.

Questions

We want your feedback!

What did you think about this session? Take our survey at:

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