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PSA: Removing AS-SET Ambiguity

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Which AS-SET?

AS-SET names aren't globally unique

```
$ whois AS-APPLE
as-set:                 AS-APPLE
source:                 RIPE

as-set:                 AS-APPLE
source:                 RADB
```

AS-SET names aren't globally unique

```
$ irrtree -4 -6 -l RIPE AS-APPLE
AS-APPLE (2 ASNs, 0 pfxs)

$ irrtree -4 -6 -l RADB AS-APPLE
AS-APPLE (2 ASNs, 244 pfxs)
```

AS-SET names aren’t globally unique

- A peer might generate an empty prefix filter, rejecting all prefixes
- A peer might generate a prefix filter with unexpected prefixes

Hierarchical AS-SET

AS-FOO → AS65000:AS-FOO

Hierarchical AS-SET

```
AS-FOO:
    member: AS-BAR
```



```
AS-FOO:
    member: AS65000:AS-FOO
    member: AS-BAR
```

What's Changed?

Heirarchical AS-SET Enforcement

RIR	Enforced	Source
AFRINIC	**Soon***	https://lists.afrinic.net/pipermail/rpd/2026/015487.html
APNIC	**Yes**	https://www.apnic.net/community/policy/proposals/prop-151/
ARIN	**Soon***	https://www.arin.net/participate/community/acsp/consultations/2025/2025-1/
LACNIC	**Yes**	LACNIC did it themselves, no extrenal request
RIPE	**Yes**	https://www.ripe.net/ripe/mail/archives/db-wg/2022-November/007680.html

Hierarchical AS-SET

- MANRS is considering to require network participants must have a hierarchical AS-SET name

https://manrs.org/about/network-operators-program-review-working-group/

Which AS-SET?

Where to get AS-SET data from?

```
$ irrtree -4 -6 -l RIPE AS-APPLE
AS-APPLE (2 ASNs, 0 pfxs)

$ irrtree -4 -6 -l RADB AS-APPLE
AS-APPLE (2 ASNs, 244 pfxs)
```

Where to get AS-SET data from?

RIRs:

- AFRINIC
- APNIC
- ARIN
- LACNIC
- RIPE

NIRs:

- JPIRR/PNIC
- NICBR
- TC

3rd Party:

- RADB

DBs in priority order

Where to get AS-SET data from?

- Where Do ASes Keep Their Routes?
  We need to use auth DBs + RADB for legacy space.

- Data Quality - the Good, the Bad, and the Outdated
  Auth DBs are more up to date than non-auth DBs and have fewer DFZ and RPKI conflicts

- What RPKI Can Replace
  Removing non-auth sources of IRR data causes a small drop in prefixes due to missing ROUTE(6) objects but a huge drop in AS-SETs, RADB especially.

Registry Scopped AS-SETs

ASN	714
IRR as-set/route-set ?	AS-APPLE

ASN	15169
IRR as-set/route-set ?	RADB::AS-GOOGLE

ASN	714
IRR as-set/route-set	AS-APPLE

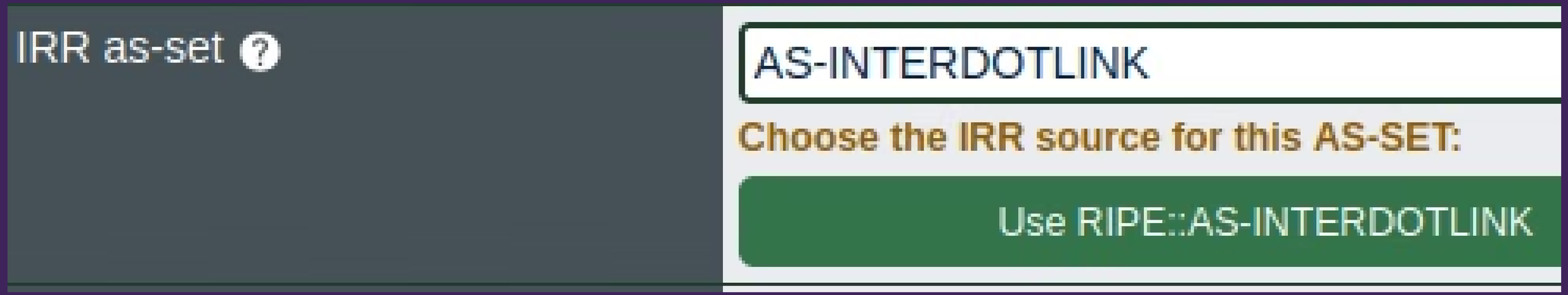
ASN	15169
IRR as-set/route-set	RADB::AS-GOOGLE

ASN	5405
IRR as-set/route-set	RIPE::AS5405:AS-INTERDOTLINK

What's Changed?

Registry Scopped AS-SETs

- PeeringDB requires all AS-SETs to be scoped
- PeeringDB will auto suggest a scope



https://github.com/peeringdb/peeringdb/issues/1973

Registry Scopped AS-SETs

- MANRS is considering to require network participants (who have a PeeringDB page) must specify the source database for their AS-SET

https://manrs.org/about/network-operators-program-review-working-group/

Which AS-SET?

Multiple AS-SETs

- There are 37130 networks in PeeringDB
- 19942 have an AS-SET defined
- 304 have more than one AS-SET
- 0.81% of all networks, 1.5% of those with an AS-SET

From June-2026

```
SELECT count(*) FROM peeringdb_network;
SELECT count(irr_as_set) FROM peeringdb_network WHERE irr_as_set != '';
SELECT count(irr_as_set) FROM peeringdb_network WHERE irr_as_set LIKE '% %';
```

What's Changed?

Multiple AS-SETs

- PeeringDB are limiting networks to one AS-SET only
- MANRS is considering to require network participants (who have a PeeringDB page) must only list their downstream customer cone AS-SET

https://github.com/peeringdb/peeringdb/issues/1974
https://manrs.org/about/network-operators-program-review-working-group/

Which AS-SET?

Registry Scoped Members

RIPE::AS65000:AS-FOO
members: AS-BAR
members: AS-BAZ
src-members: RIPE::AS-BAR
src-members: ARIN::AS-BAZ

https://datatracker.ietf.org/doc/draft-ietf-grow-rpsl-registry-scoped-members/00/

https://github.com/mxsasha/rpsl-registry-scoped-members

https://ripe92.ripe.net/programme/meeting-plan/sessions/95/N7HBNS/

This AS-SET

This AS-SET

But not those ones!

Excluding Members

```
$ irrtree -4 -6 AS5405:AS-INTERDOTLINK
…
AS5405:AS-INTERDOTLINK (76337 ASNs, 1324016 pfxs)
```

Excluding Members

RIPE::AS65000:AS-FOO

members: AS-BAR

members: AS-BAZ

src-members: RIPE::AS-BAR

src-members: ARIN::AS-BAZ

excl-members: AS-IXP-RS

https://datatracker.ietf.org/doc/draft-bensley-rpsl-exclude-members/

https://github.com/jwbensley/rpsl-exclude-members

Thank You

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