Welcome to the APNIC Sub-Regional Forum at SANOG 44

Why are we doing this?

- To make it easier for Members to engage with APNIC closer to home
- Share updates on key operational, technical, and policy developments
- Listen to community feedback to better understand regional priorities and needs

Outline

- Welcome and introductions - Sunny
- Opening remarks - Jia Rong Low
- IRM / Registry Accuracy - Chimi Dorji
- Break (10:50 - 11:00)
- IPv6 / RPKI (+ ASPA) - Pubudu Jayasinghe
- Lunch (12:00 - 13:00)
- Policy Session - Dave Phelan and Bikram Shrestha
- APNIC Foundation Update - Aftab Siddiqui
- Community Listening Session – Sunny
- Afternoon tea (15:00~)

Jia Rong Low
APNIC Director General

Internet Resource Management

How to manage your IP resources effectively using APNIC Tools

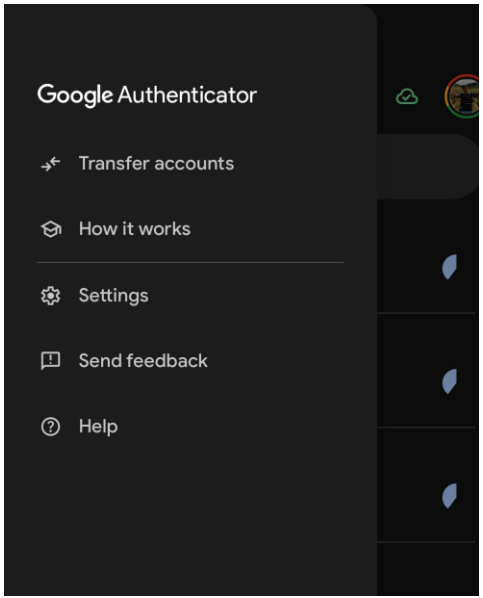
chimi@apnic.net
July 2026

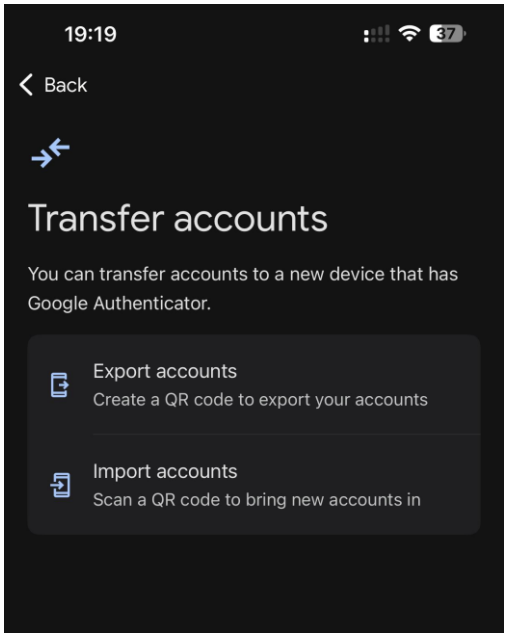
Starting Out

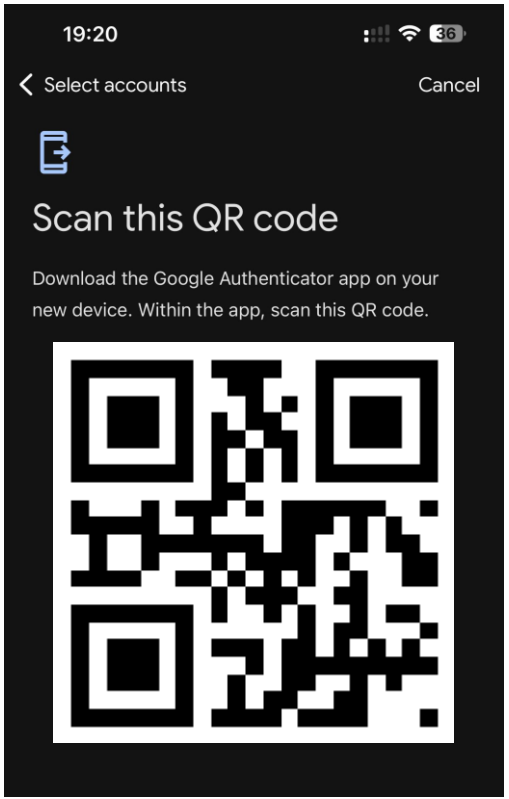
1. Application approved and paid
2. Resources delegated
3. MyAPNIC ready (One portal for everything)
4. Upstream ready

What next?

Setup MFA and create a backup



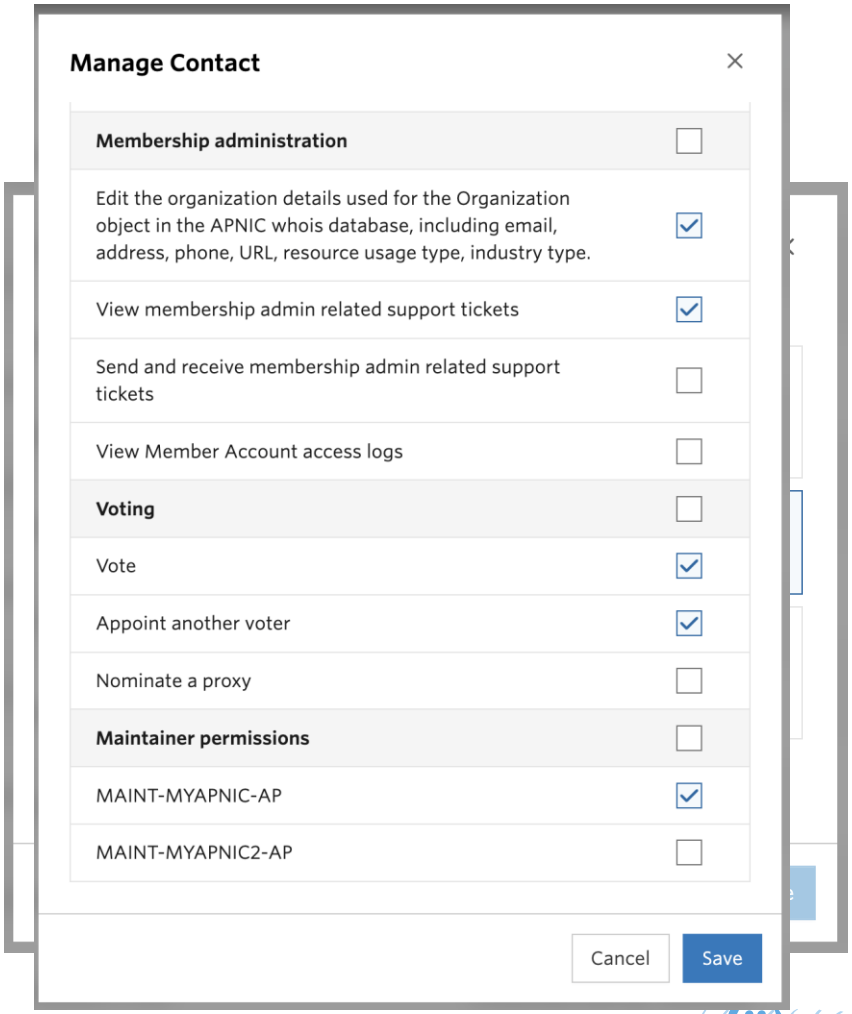




Permission setting

- Corporate Contacts
- Admin/Billing Contacts
- Technical Contacts

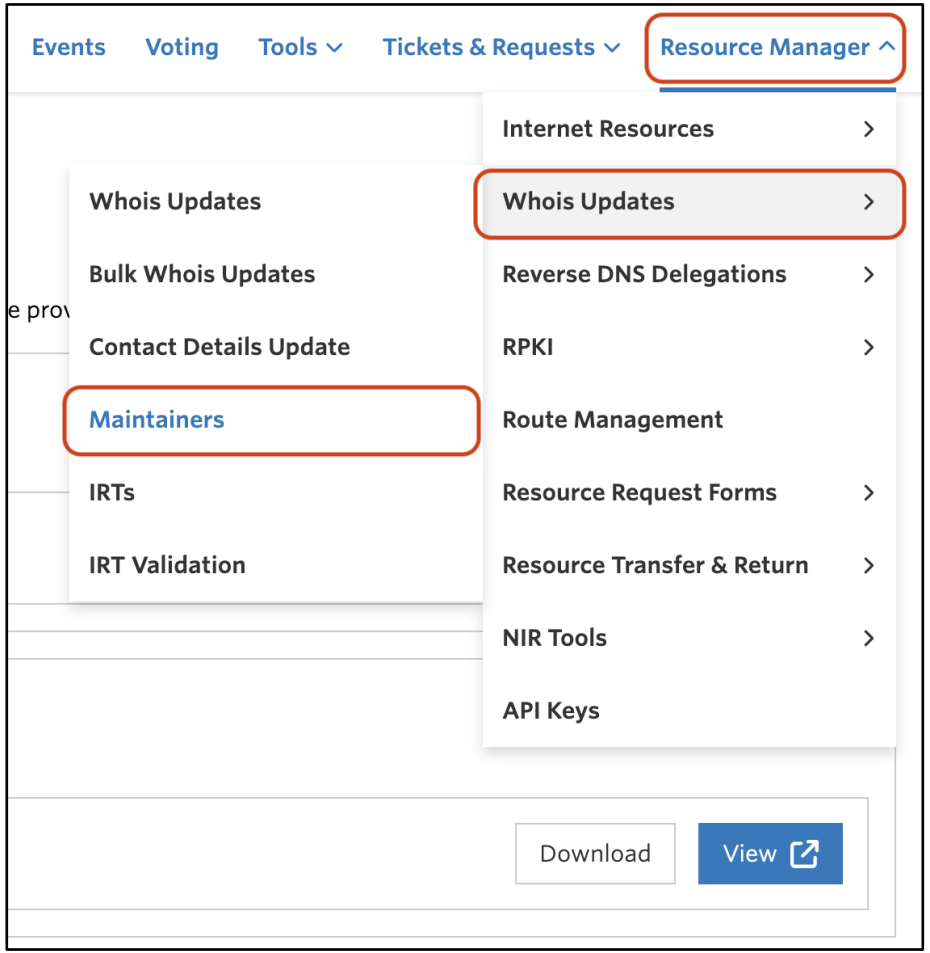
- Advanced permission settings



Maintainers

- Account Maintainers
  - Created by APNIC

- Customer Maintainers
  - Created by members



Deprecating Password Authentication and Migrating to SSO-based Authentication

Password authentication is being deprecated for Whois IRT and maintainer objects. Password auth attributes in these objects will be replaced by SSO auth attributes that contain the APNIC login email of the user who is authorised to use the maintainer.

For invalid maintainers, please reach out to the owner to add your APNIC login email as an SSO auth attribute to the object.

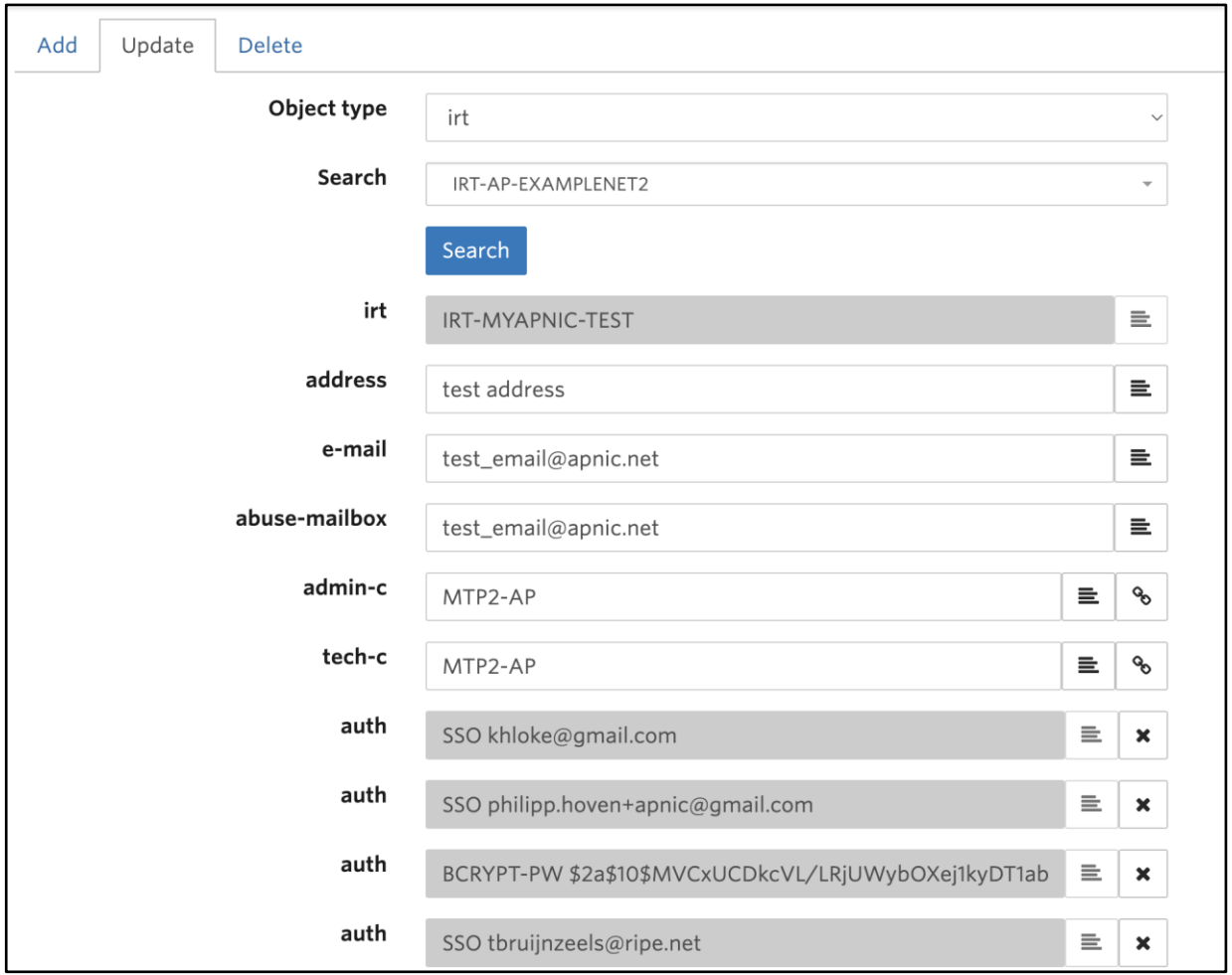
Show 10 entries

Search:

Name	Auth Status	Delete
MAINT-MYAPNIC-AP	Valid	
MAINT-UOM-AP	Valid	Delete

Showing 1 to 2 of 2 entries

Previous 1 Next

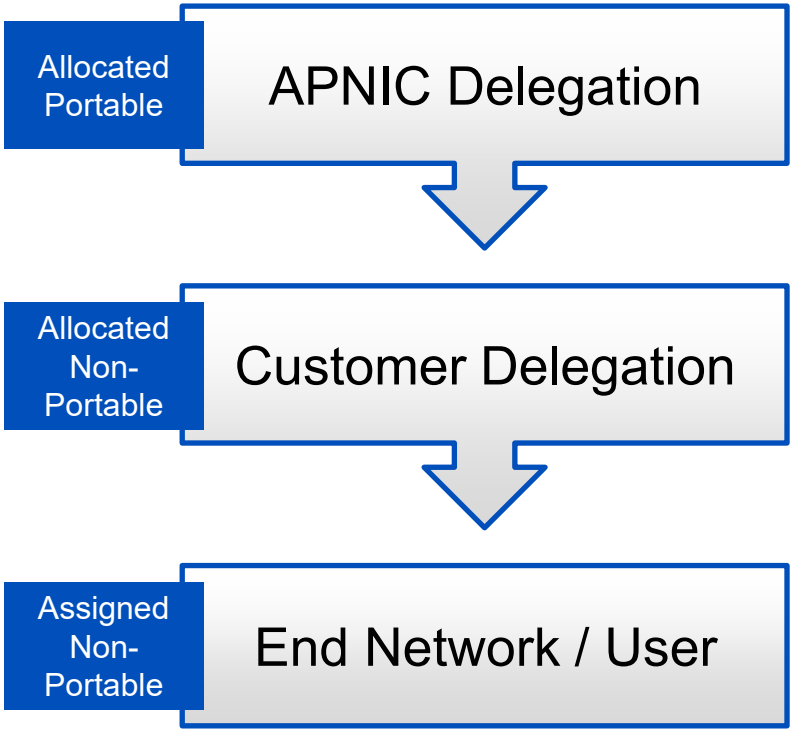

Add
Update
Delete
Object type
irt
Search
IRT-AP-EXAMPLENET2
Search
irt
IRT-MYAPNIC-TEST
address
test address
e-mail
test_email@apnic.net
abuse-mailbox
test_email@apnic.net
admin-c
MTP2-AP
tech-c
MTP2-AP
auth
SSO khloke@gmail.com
auth
SSO philipp.hoven+apnic@gmail.com
auth
BCRYPT-PW $2a$10$MVCxUCDkcVL/LRjUWybOXej1kyDT1ab
auth
SSO tbruijnzeels@ripe.net

IPv4/IPv6 subnetting

- If you have an ‘Allocation’ it has to be subnetted. Why?
  - Policy
  - Registry accuracy
  - Ease of management
  - Granular control
  - Correct utilization figures

- For your customer
  - Recognition in the whois database
  - Can give control

```
inetnum:        203.176.189.0 - 203.176.189.255
netname:         APNIC-SERVICES-V4
descr:          APNIC (Asia Pacific Network Information Centre)
country:         AU
geofeed:         https://geofeeds.packetvis.com/1277c_203.csv
admin-c:         AMS345-AP
tech-c:         AHD543-AP
abuse-c:         AM2320-AP
status:         ALLOCATED PORTABLE
remarks:         ----------------------------------------------------
remarks:         To report network abuse, please contact mnt-irt
remarks:         For troubleshooting, please contact tech-c and admin-
c
remarks:         Report invalid contact via
www.apnic.net/invalidcontact
remarks:         ----------------------------------------------------
mnt-by:         APNIC-HM
mnt-lower:       MAINT-MYAPNIC-AP
mnt-routes:      MAINT-MYAPNIC-AP
mnt-irt:        IRT-MYAPNIC-TEST-AP
source:          APNIC
```



```
inetnum:        203.176.189.32 - 203.176.189.63
netname:         MYAPNIC-TEST-AP
descr:          Training Labs
country:         AU
admin-c:         LJ3958-AP
tech-c:          LJ3958-AP
status:          ALLOCATED NON-PORTABLE
mnt-by:          MAINT-TRAINING-AP
mnt-lower:       MAINT-TRAINING-AP
mnt-irt:         IRT-MYAPNIC-TRAINING
last-modified:   2025-01-09T23:37:31Z
source:          APNIC
```

```
inetnum:        203.176.189.18 - 203.176.189.19
netname:         XYZ-CORP-AU-UPDATED-123
descr:          XYZ Corp Network Test-First
country:         AU
admin-c:         TP137-AP
tech-c:          TP137-AP
abuse-c:         AM2320-AP
status:          ASSIGNED NON-PORTABLE
mnt-by:          MAINT-MYAPNIC-AP
mnt-irt:         IRT-MYAPNIC-TEST
last-modified:   2026-04-28T05:45:52Z
source:          APNIC
```

IRT object

- Incident Response Teams (IRTs) are specialized teams that specifically resolve computer security incidents

- IRT objects must be valid
  - Need to be validated every 6 month
  - If not validated, MyAPNIC access becomes restricted

```
irt:            IRT-APNIC-IS-AP
address:        South Brisbane, Australia
e-mail:         helpdesk@apnic.net
abuse-mailbox:  abuse@apnic.net
admin-c:        AIC1-AP
tech-c:         AIC1-AP
auth:           # Filtered
remarks:        APNIC Infrastructure Services
remarks:        helpdesk@apnic.net was validated on
2023-02-21
mnt-by:         MAINT-APNIC-IS-AP
last-modified:  2025-11-18T00:27:08Z
source:         APNIC
```

IP location accuracy with ‘Geofeed’

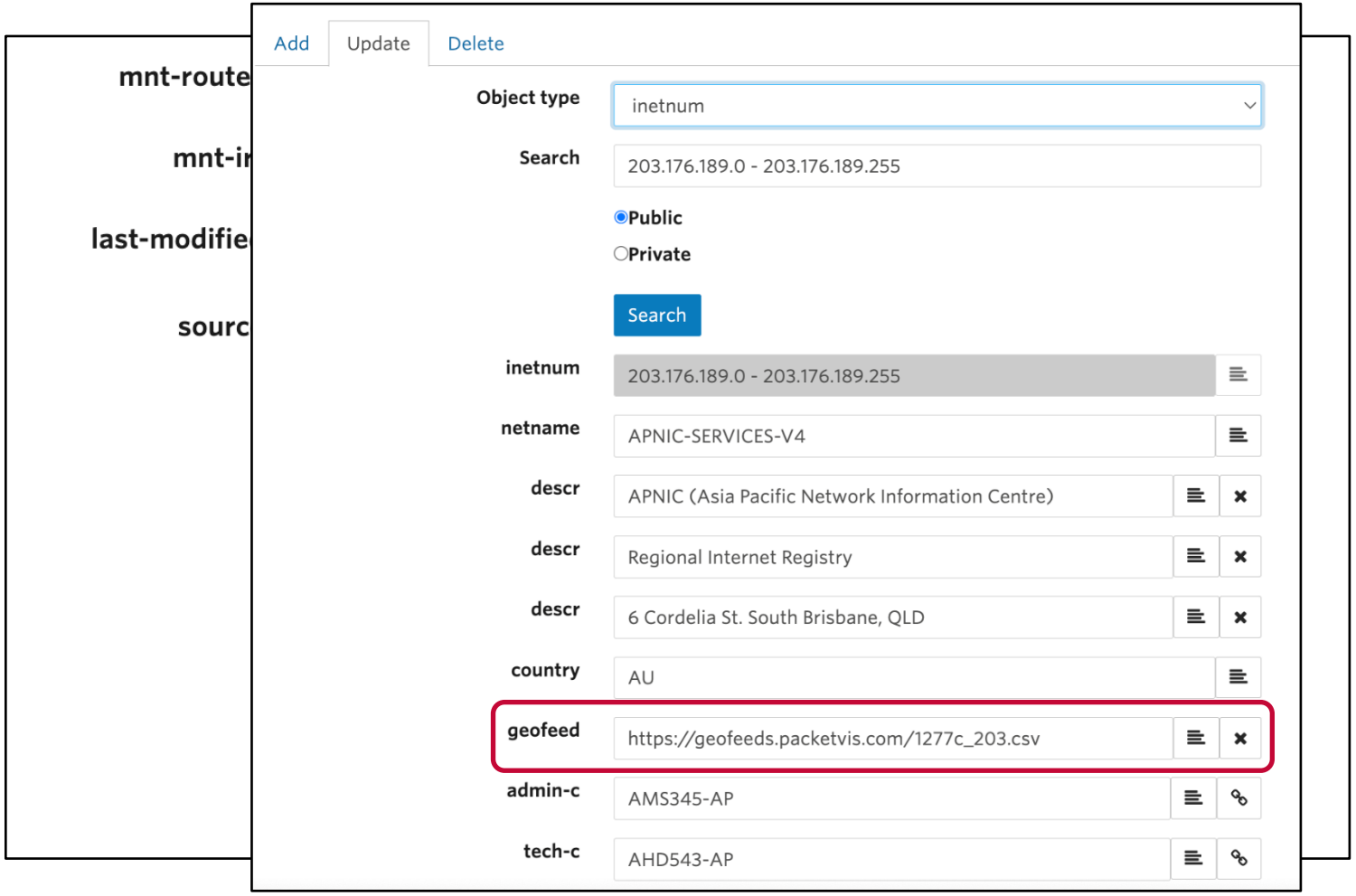
1. Create a CSV file with Geofeed information
2. Host the CSV File over HTTPS
3. Add the Geofeed URL to your APNIC whois record

‘prefix,country,region,city,zip’

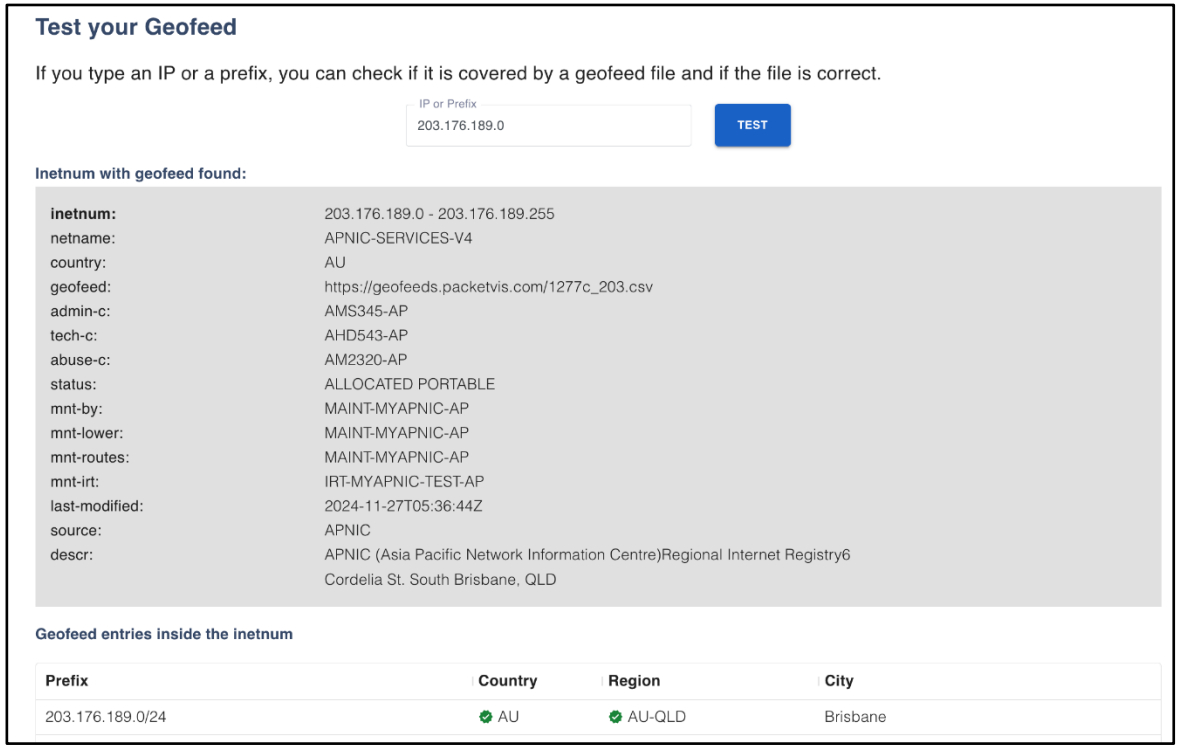
```
203.176.189.0/24,AU,AU-QLD,Brisbane,
This prefix is used in Brisbane, Queensland, Australia

2001:DF0:90::/48,SG,,,
This prefix is used in Singapore

2401:4600::/32,,,,
This prefix should not be geolocated
```


mnt-route
mnt-ir
last-modifie
sourc
Add
Update
Delete
Object type
inetnum
Search
203.176.189.0 - 203.176.189.255
Public
Private
Search
inetnum
203.176.189.0 - 203.176.189.255
netname
APNIC-SERVICES-V4
descr
APNIC (Asia Pacific Network Information Centre)
descr
Regional Internet Registry
descr
6 Cordelia St. South Brisbane, QLD
country
AU
geofeed
https://geofeeds.packetvis.com/1277c_203.csv
admin-c
AMS345-AP
tech-c
AHD543-AP

Check your Geofeed



Test your Geofeed

If you type an IP or a prefix, you can check if it is covered by a geofeed file and if the file is correct.

IP or Prefix: 203.176.189.0 TEST

Inetnum with geofeed found:

inetnum:	203.176.189.0 - 203.176.189.255
netname:	APNIC-SERVICES-V4
country:	AU
geofeed:	https://geofeeds.packetvis.com/1277c_203.csv
admin-c:	AMS345-AP
tech-c:	AHD543-AP
abuse-c:	AM2320-AP
status:	ALLOCATED PORTABLE
mnt-by:	MAINT-MYAPNIC-AP
mnt-lower:	MAINT-MYAPNIC-AP
mnt-routes:	MAINT-MYAPNIC-AP
mnt-irt:	IRT-MYAPNIC-TEST-AP
last-modified:	2024-11-27T05:36:44Z
source:	APNIC
descr:	APNIC (Asia Pacific Network Information Centre)Regional Internet Registry6 Cordelia St. South Brisbane, QLD

Geofeed entries inside the inetnum

Prefix	Country	Region	City
203.176.189.0/24	AU	AU-QLD	Brisbane

geolocatemuch.com

APNIC Routing Registry

There are other IRRs

route: 203.76.192.0/24
descr: Proxy-registered
origin: AS55821
source: NTTCOM

route: 203.76.192.0/24
descr: Proxy-registered
origin: AS17970
source: RADB

route: 203.76.192.0/24
descr: REACH (Customer Route)
origin: AS23944
source: REACH

Stick to APNIC IRR

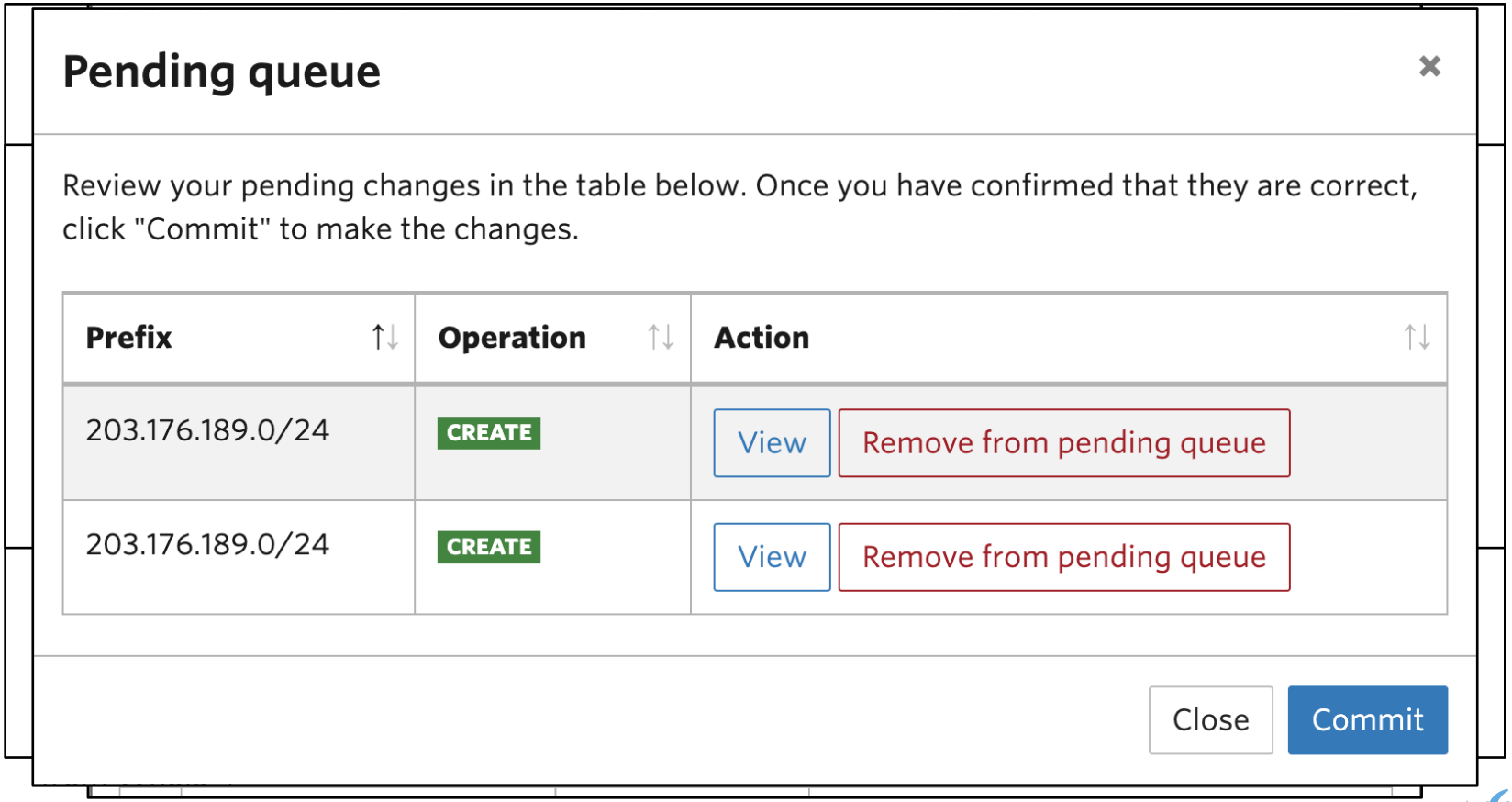
It’s your authoritative database

One place to manage

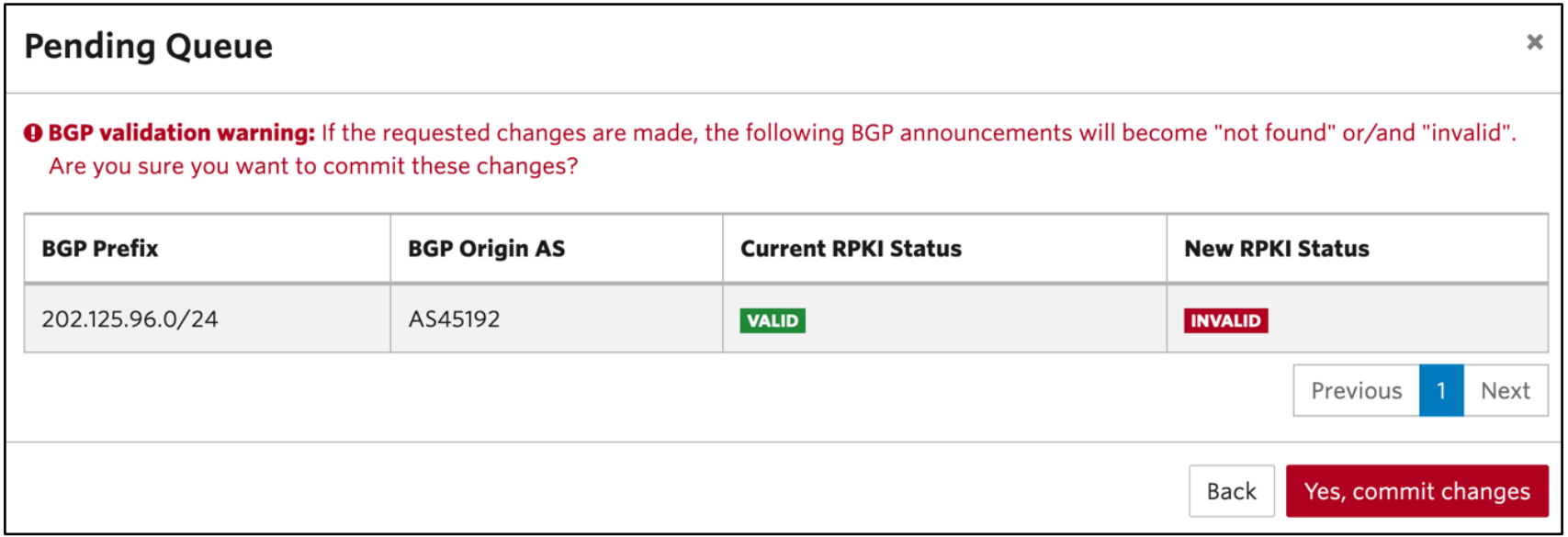
ROAs and Routes in the same place

Other IRRs mirror for free

Route/ROA management: What's new

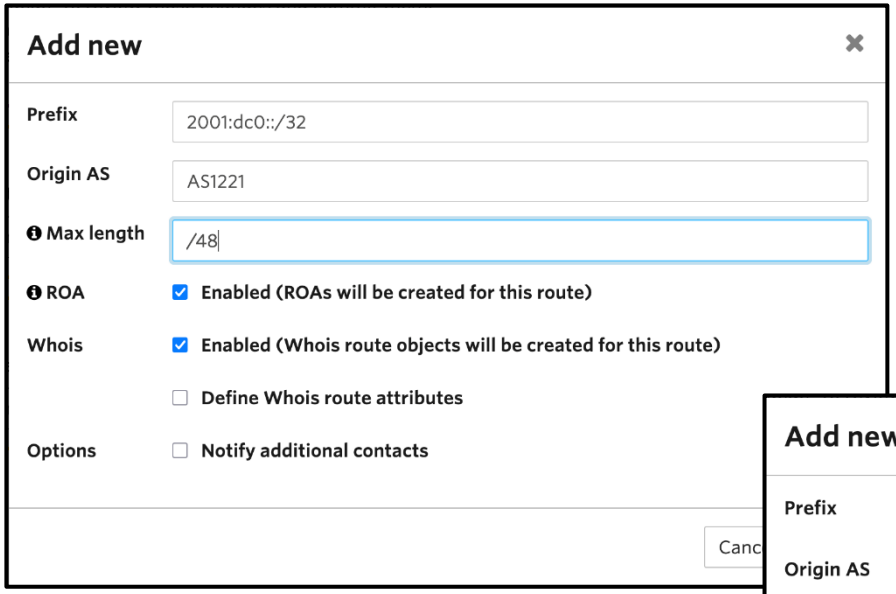


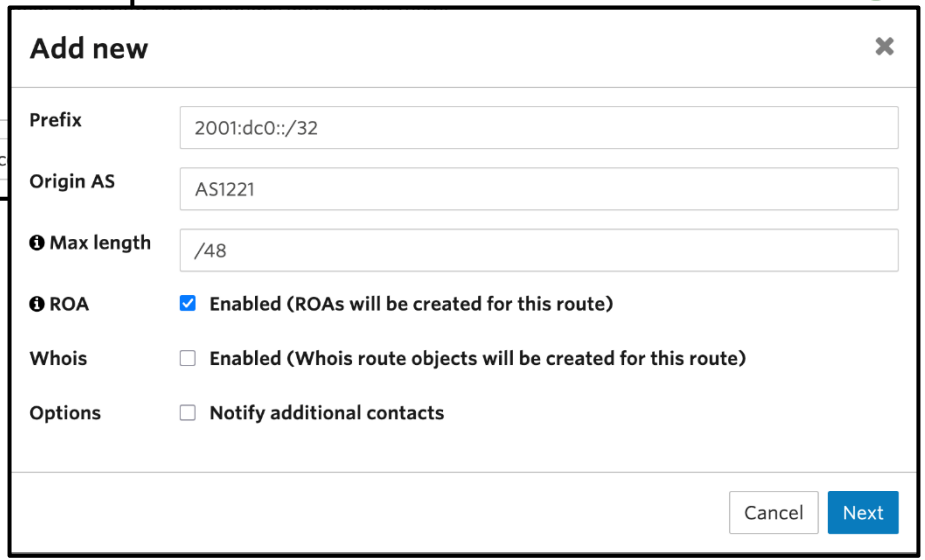
Watch out for warnings…



IPv6 Routes Reminder

- Max length (ML) should be less than or equal to 8
  - If you have a /32 Allocation, you can only create a sub-routes up to /40
- If you are announcing specific /48 assignments, create individual /48 routes
- If you only want to create ROAs, this restriction does not apply





32; ML33 = 3

32; ML34 = 2^3 – 1 = 7

.

.

32; ML48 = 2^17 – 1 = 131071

Transfers: Things to remember

Source Account

- Business entity still live?
- Do you want objects deleted or updated?
- Is it a live transfer?
- Are ROAs needed?
- Account closed after the transfer

Recipient Account

- Business entity still live?
- Do you have a pre-approval?
- Make sure ROAs created in new account, and deleted from old account within two (2) weeks

Whois Advanced Search

Find what you want

Advanced search in the APNIC Whois

Query Options

To query Whois v3, use the following command syntax:

```
whois [-flags [argument]] <lookup-key>
```

- Queries using primary and lookup keys
- IP address lookups
- Inverse queries
- Miscellaneous queries
- Informational queries

Queries using primary and lookup keys

Example:

```
whois -h whois.apnic.net 202.12.29.0
```

Example in web lookup tool

Search for AIC1-AP e.g. 203.119.42.0/24

Search Reset

IP address lookups

- ○ **-l** 1st level less specific
- ○ **-L** All less specific
- ○ **-m** 1st level more specific
- ○ **-M** All more specific
- ○ **-x** Exact match only
- ☐ **-d** Associated reverse domain

Miscellaneous queries

-i Inverse attributes: admin-c,tech-c,zone-c

-T Object types: None

Query hints

- Include "AS" in front of an AS number.
  Example: AS4808
- Include "-t" (template only) or "-v" (template and description) in front of an object name to view the template
  Example: -t inetnum

https://www.apnic.net/static/whowas-ui/#AIC1-AP

Chat

Get IP | Manage IP | Training | Events | Insights | Community | Blog | Help Centre | About | Contact

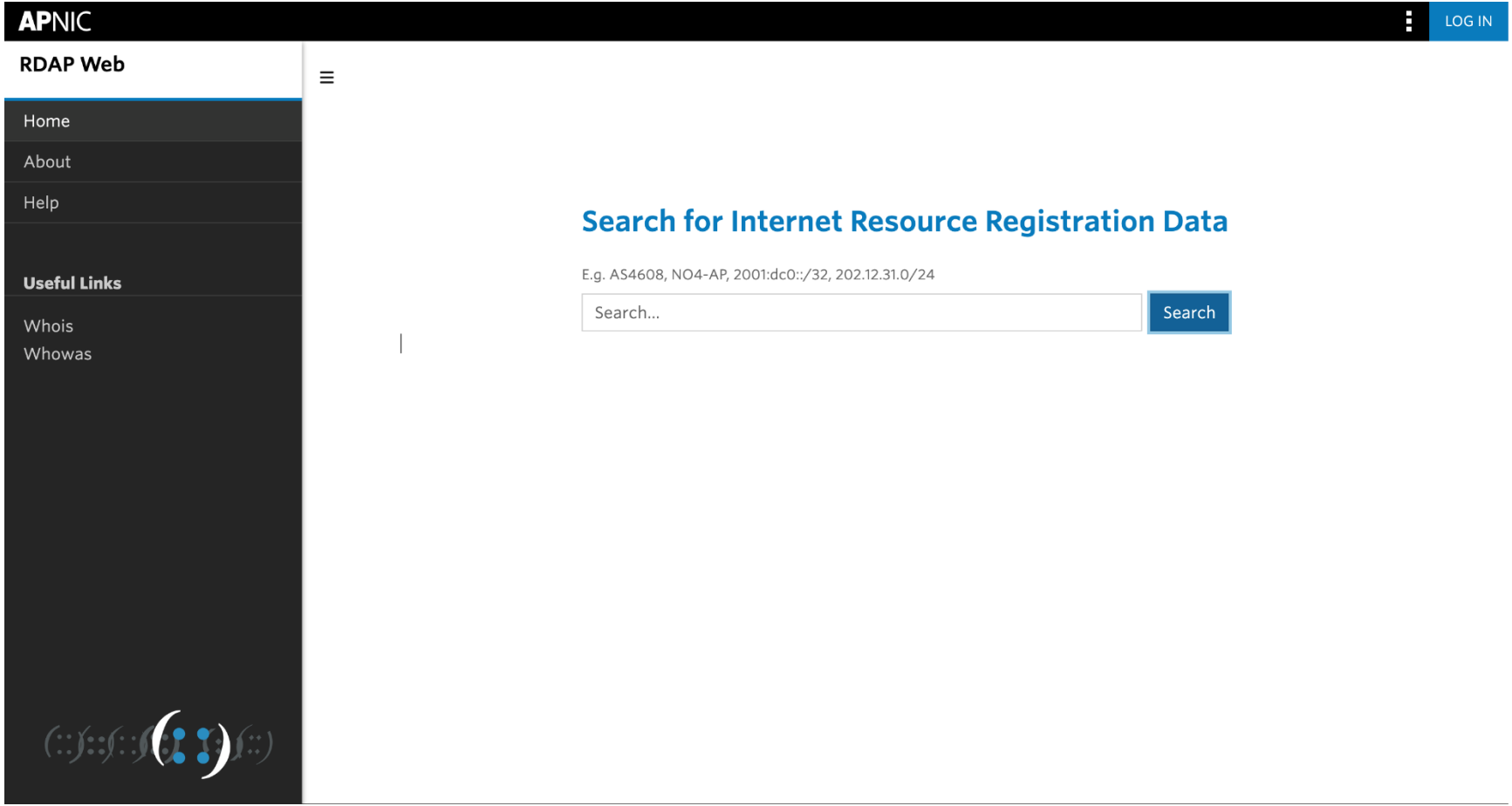
Whowas AIC1-AP

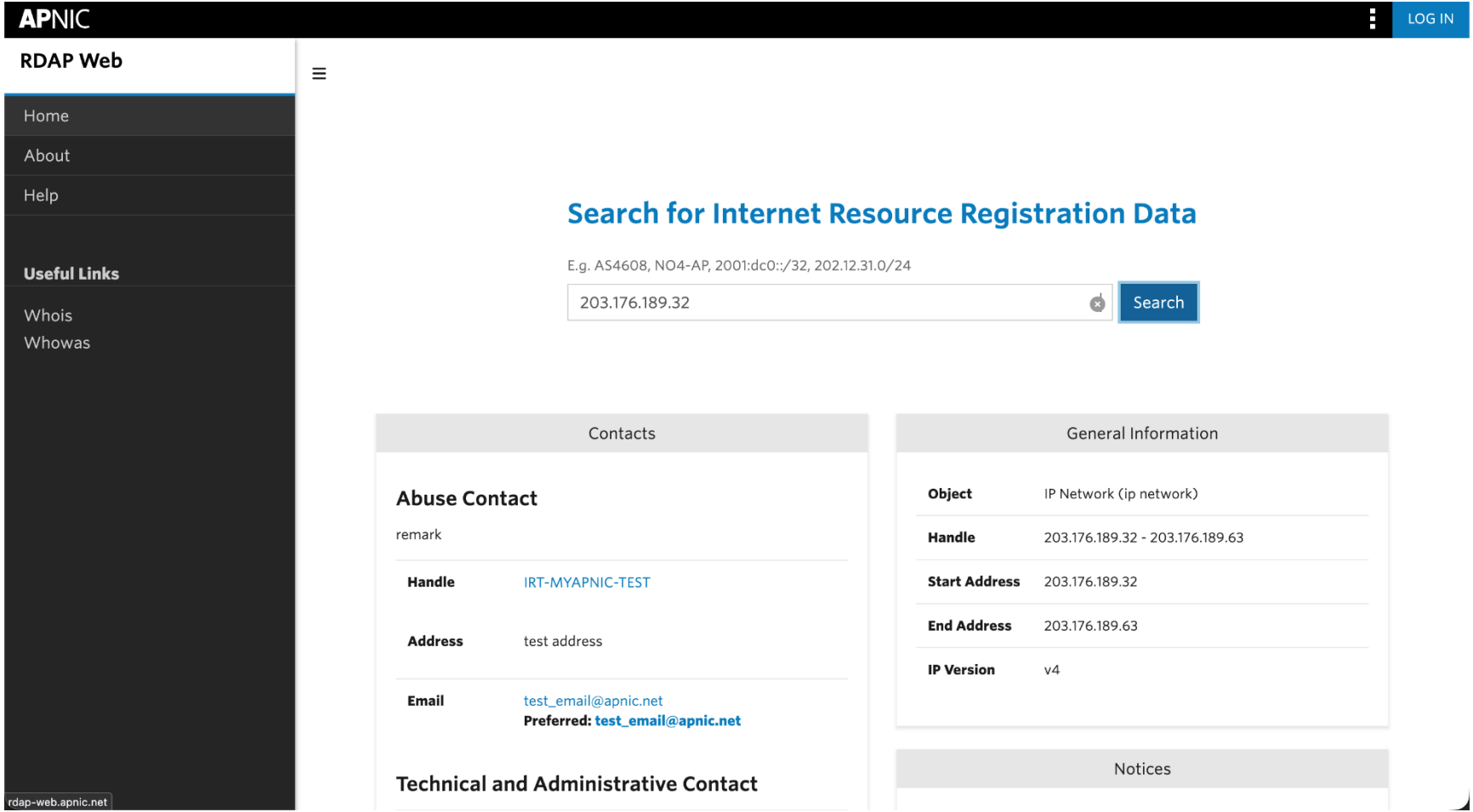
2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026

08/10/2018 02:52 > <29/11/2023 22:52 > <Present

handle
AIC1-AP
name
APNIC Infrastructure Contact
kind
group
address
6 Cordelia Street
South Brisbane
QLD 4101
voice
+61 7 3858 3100
fax
+61 7 3858 3199
! email
~~noc@apnic.net~~
helpdesk@apnic.net

handle
HM20-AP
name
APNIC Hostmaster
kind
group
address
6 Cordelia Street
South Brisbane
QLD 4101
voice
+61 7 3858 3100

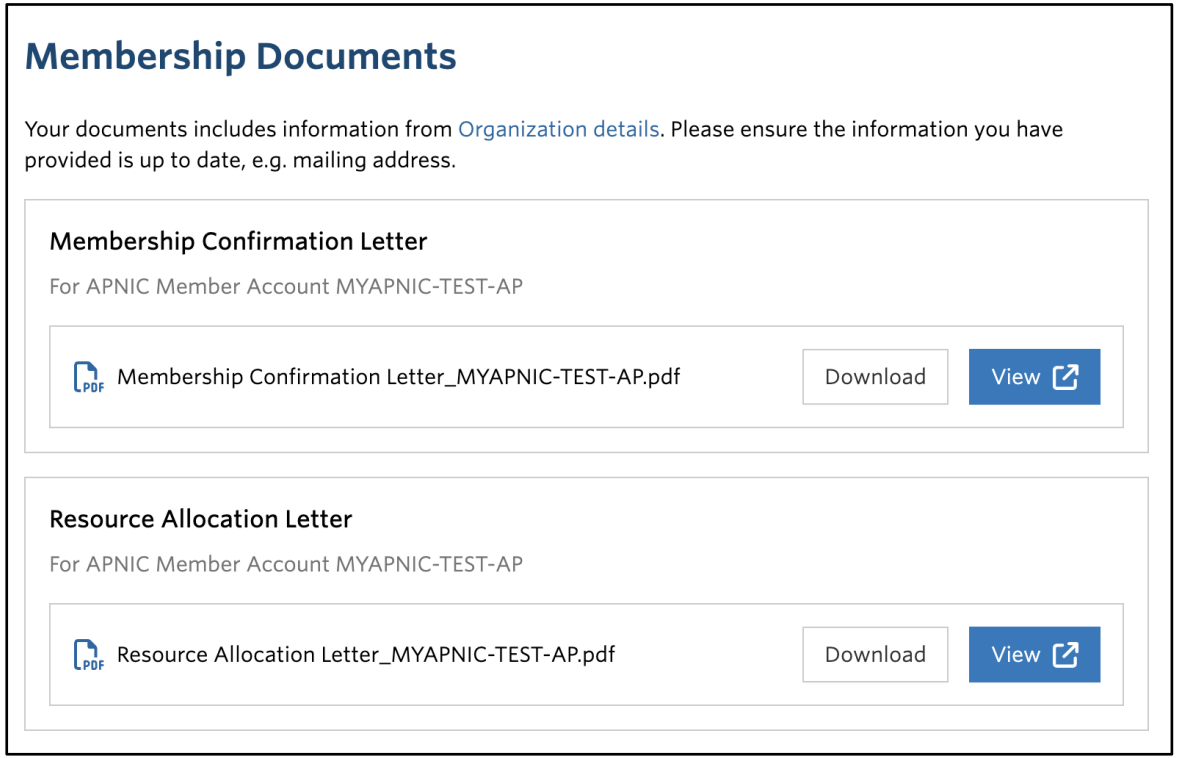

APNIC
LOG IN
RDAP Web
Home
About
Help
Useful Links
Whois
Whowas
Search for Internet Resource Registration Data
E.g. AS4608, NO4-AP, 2001:dc0::/32, 202.12.31.0/24
Search...
Search


APNIC
LOG IN
RDAP Web
Home
About
Help
Useful Links
Whois
Whowas
rdap-web.apnic.net
Search for Internet Resource Registration Data
E.g. AS4608, NO4-AP, 2001:dc0::/32, 202.12.31.0/24
203.176.189.32
Search
Contacts
Abuse Contact
remark
Handle
IRT-MYAPNIC-TEST
Address
test address
Email
test_email@apnic.net
Preferred: test_email@apnic.net
Technical and Administrative Contact
General Information
Object
IP Network (ip network)
Handle
203.176.189.32 - 203.176.189.63
Start Address
203.176.189.32
End Address
203.176.189.63
IP Version
v4
Notices

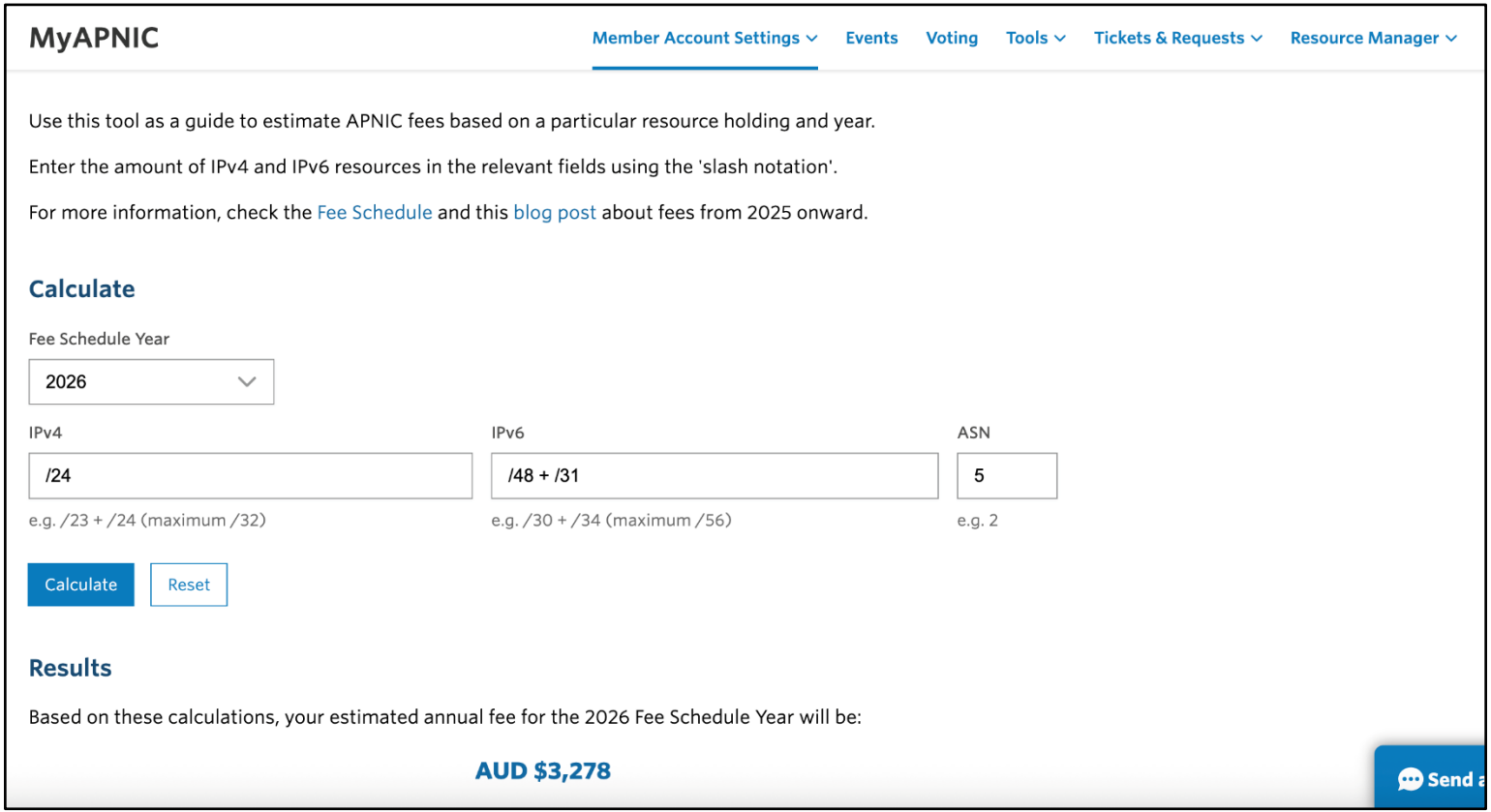
For Admin Contacts

Membership Documents

- Readily Available
  - Resource Allocation Letter
  - Signed Membership Letter

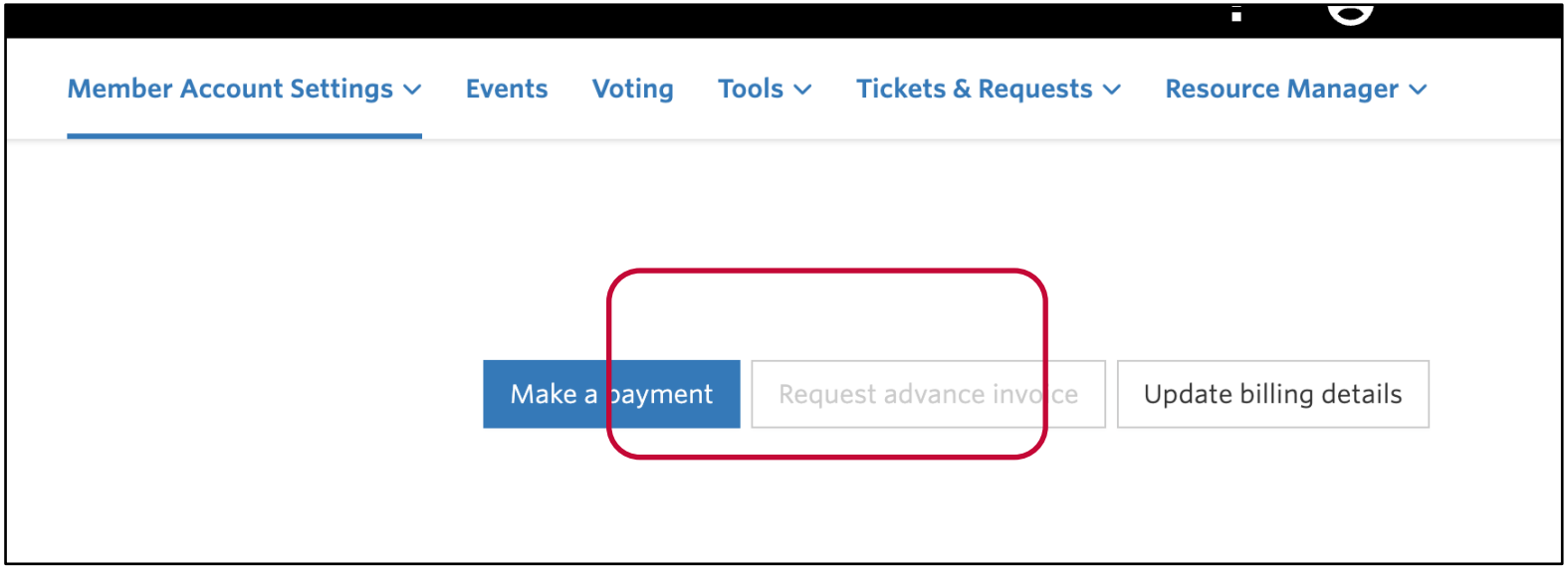


Know your fees and renewal



Invoice in advance

- You can request your invoice in advance via MyAPNIC



APNIC help

- Help Centre – help.apnic.net
- Talk to us – apnic.net/helpdesk
- E-mail for help – helpdesk@apnic.net

Questions


WHEN? WHY? WHERE? WHEN? WHY? WHO? WHAT? HOW? WHY? WHEN? WHO? WHAT? WHERE? HOW? HOW? WHEN? WHERE? WHOSE? WHERE? WHEN? WHERE? WHICH? HOW? WHAT? HOW? WHY? WHO? WHERE? WHAT? HOW? WHY? HOW? WHAT? HOW? WHY? WHO? WHERE? WHAT? HOW? WHERE? WHICH? WHOSE? WHEN? WHY? WHY? HOW? WHERE? WHO? WHOSE? WHERE? WHAT? HOW? WHAT? WHY? HOW? WHERE? WHERE? WHAT? HOW? WHERE? WHICH? WHOSE? WHEN? WHY? HOW? WHERE? WHY? HOW? HOW? WHO? WHO? WHERE? WHAT? HOW? WHAT? HOW? WHY? WHERE? WHAT? HOW? HOW? WHY? WHERE? WHAT? HOW?

10:50 – 11:00

BREAK

IPv6 and RPKI uptake in the region and Nepal

Key Insights

pubudu@apnic.net
Member and Registry Services

28 July 2026

What are we going to talk about?

- Numbers Numbers Numbers!!!
- IPv6 deployment stats
  - *How are we doing and why we need to do better*
- RPKI uptake stats
  - *What are the problems and how to fix it*
- ASPA – the new member of RPKI family

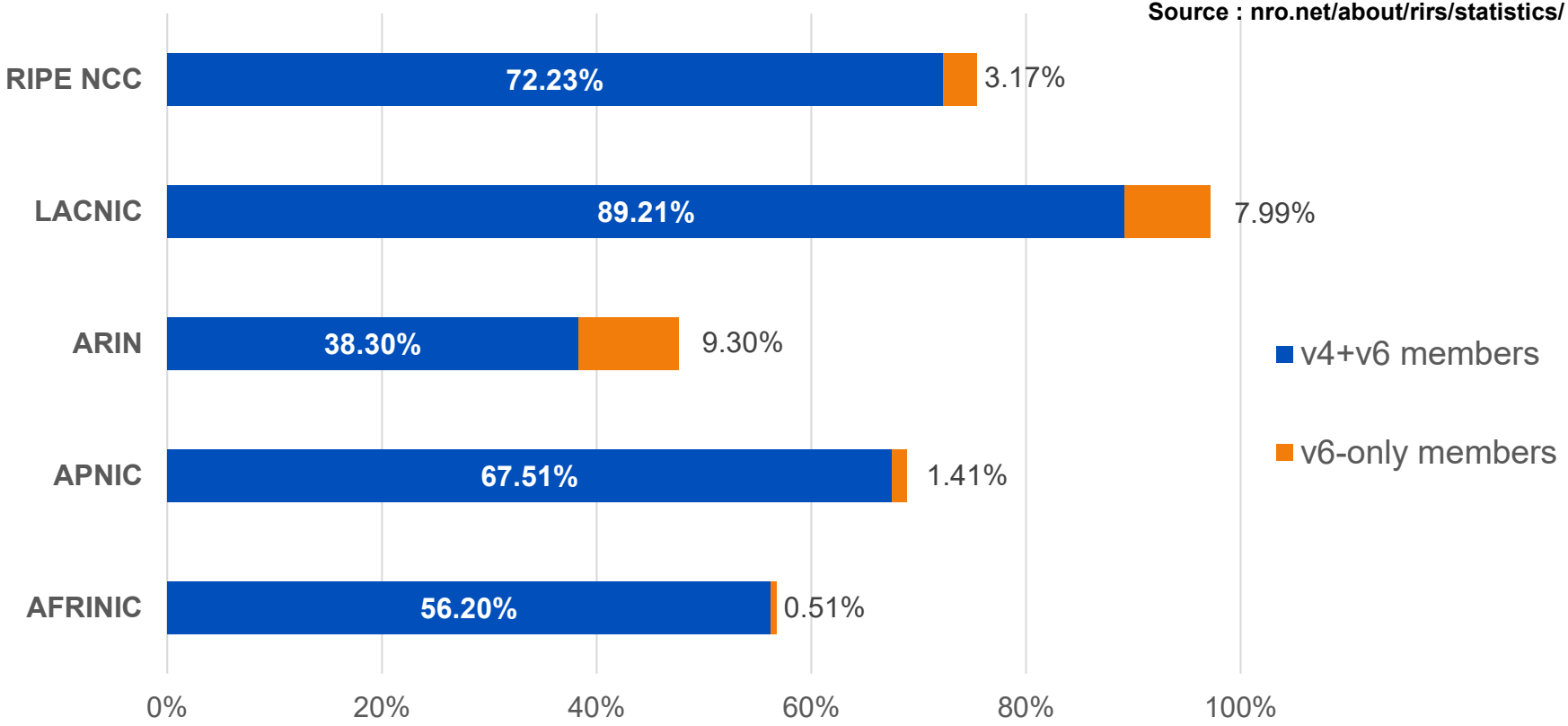
IPv6

Measuring the state of IPv6 deployment

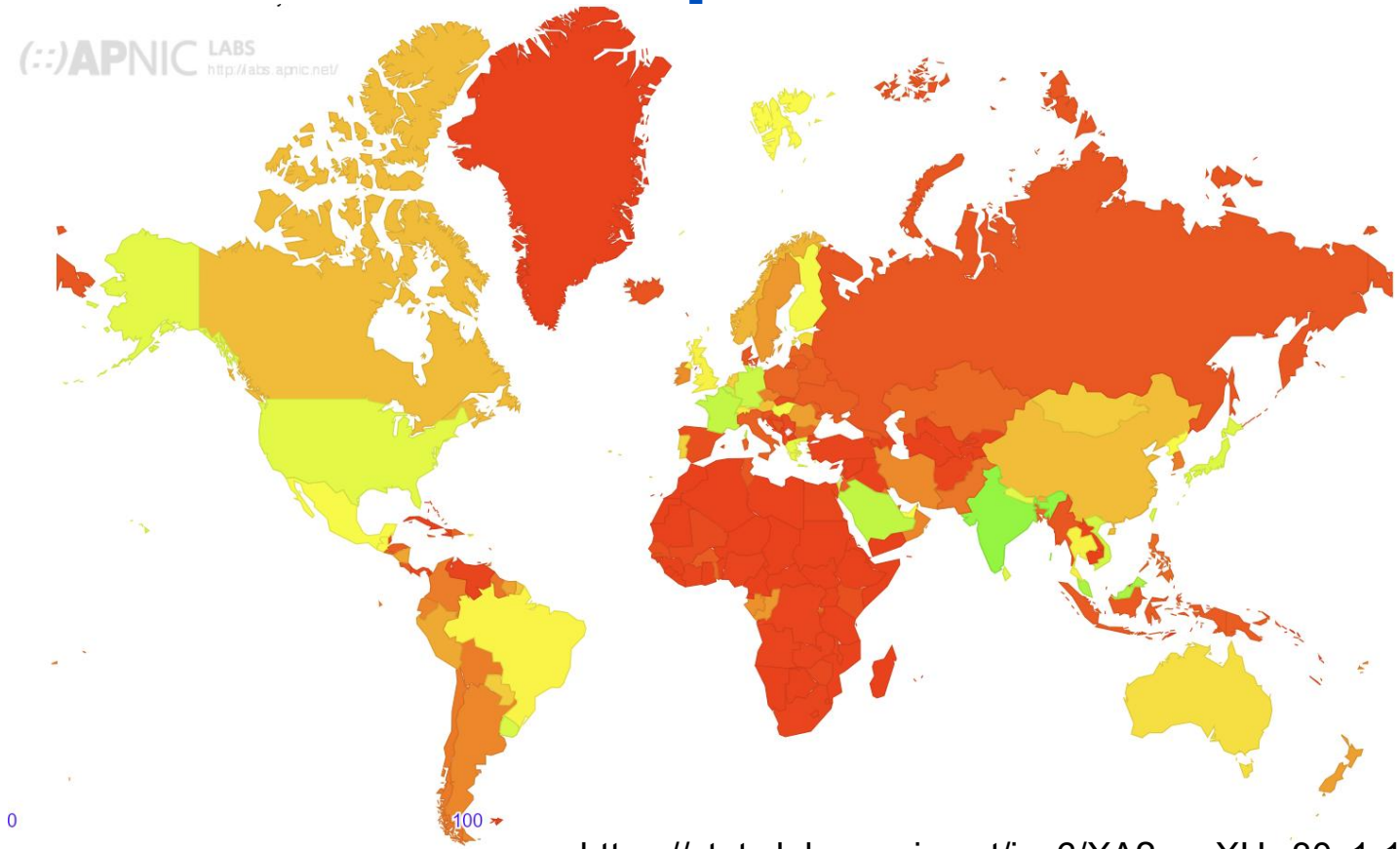
- Address deployment
  - Have the networks got IPv6 addresses
- End users
  - Involves measuring the number of end devices capable of using IPv6 (APNIC Labs)
- Content servers
  - Involves measuring what percentage of users are accessing your content through IPv6. (Google)
- Core
  - This involves measuring the IPv6 BGP peering relationships within an economy. (APNIC VizAS tool)

Percentage of Members with IPv6 in each RIR

Source : nro.net/about/rirs/statistics/

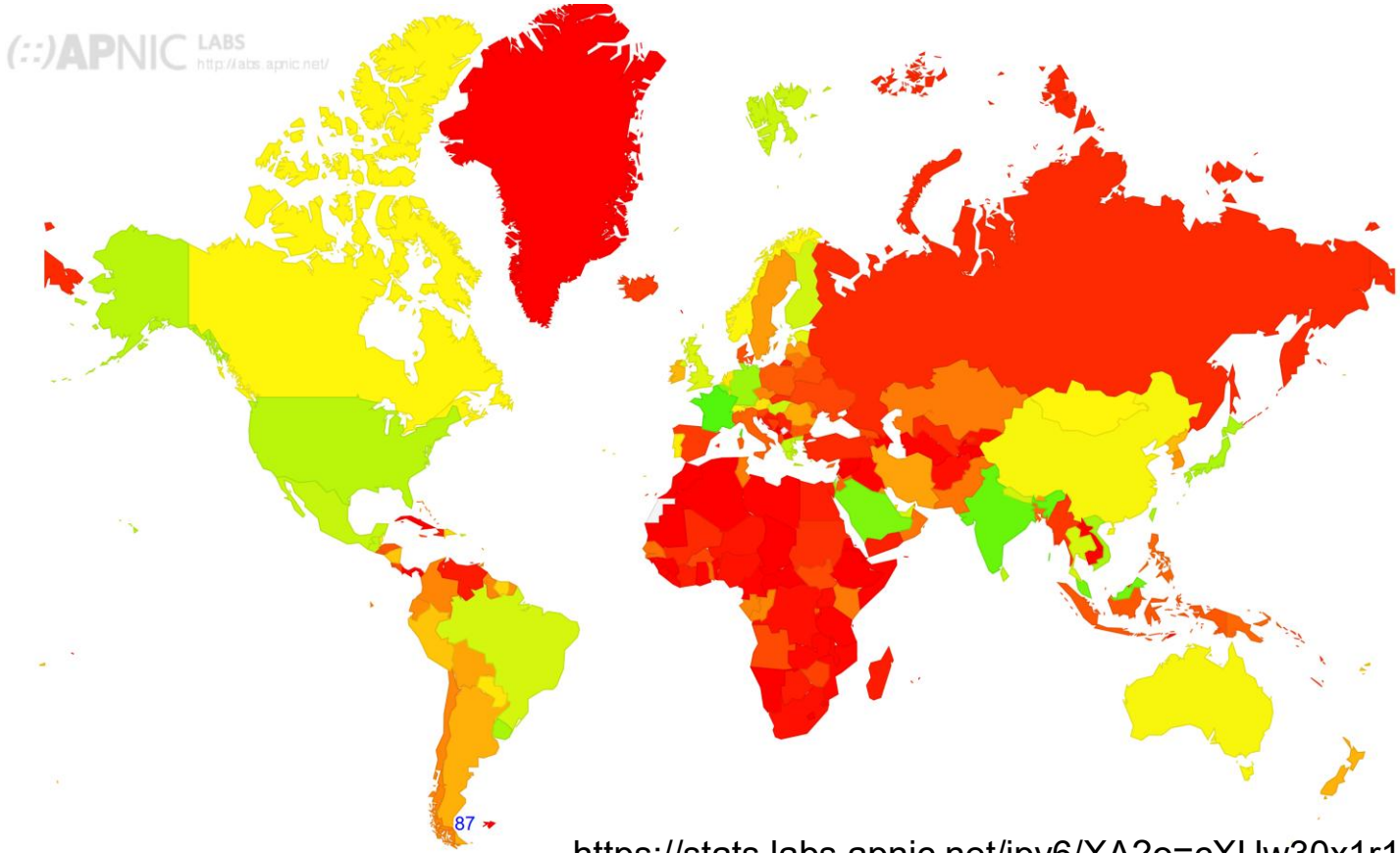


IPv6 – Global Snapshot - 2024



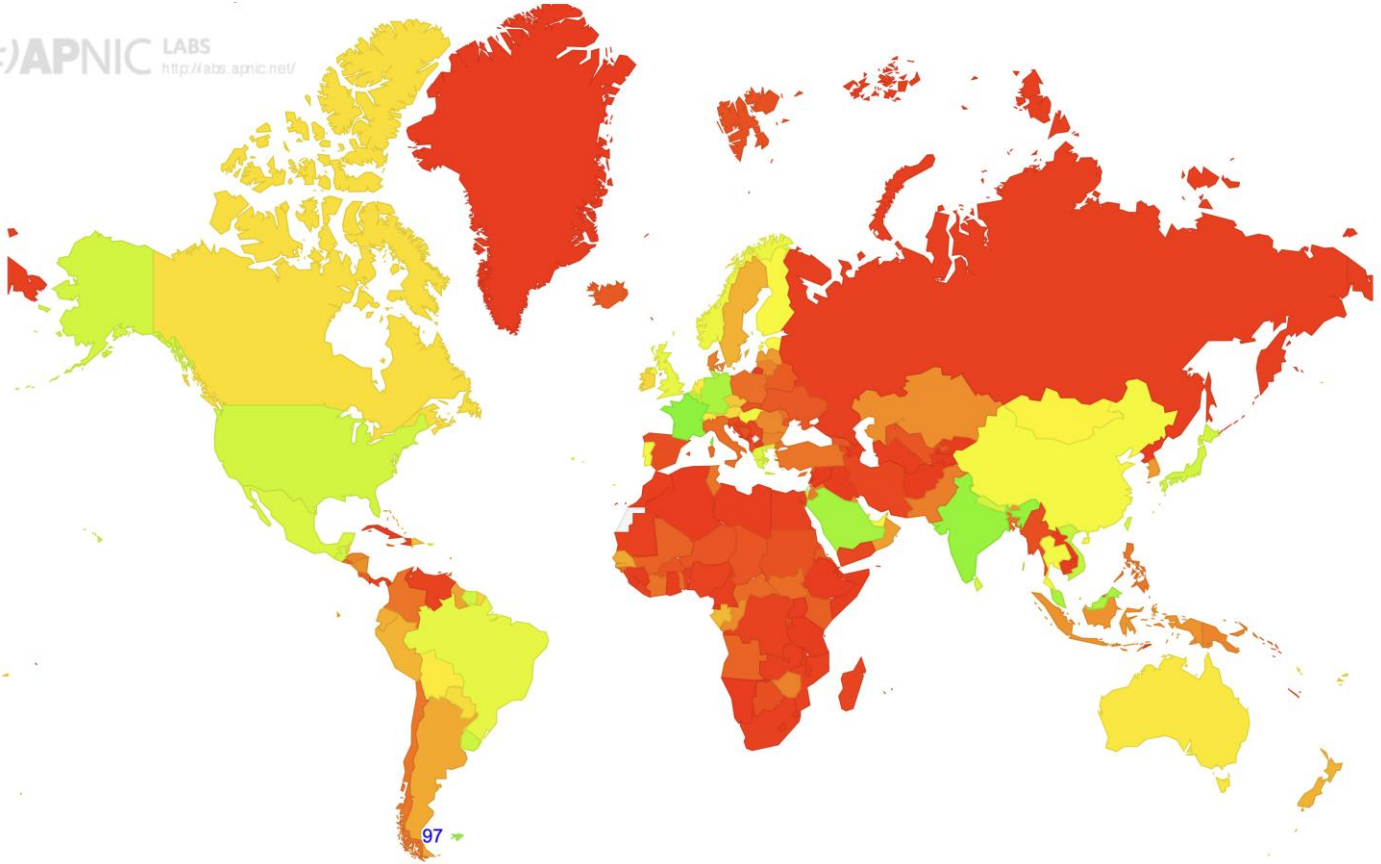
https://stats.labs.apnic.net/ipv6/XA?o=cXUw30x1r1

IPv6 – Global Snapshot - 2025



https://stats.labs.apnic.net/ipv6/XA?o=cXUw30x1r1

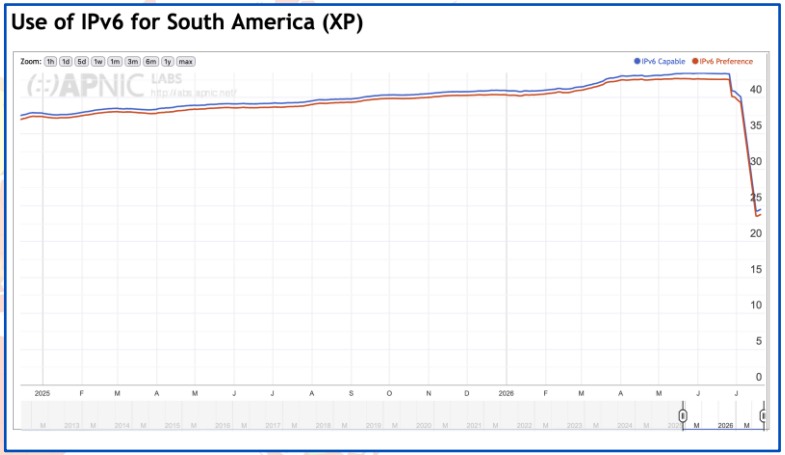
IPv6 – Global Snapshot – 2026 July



IPv6 – Global Snapshot

IPv6 Capability Percentages

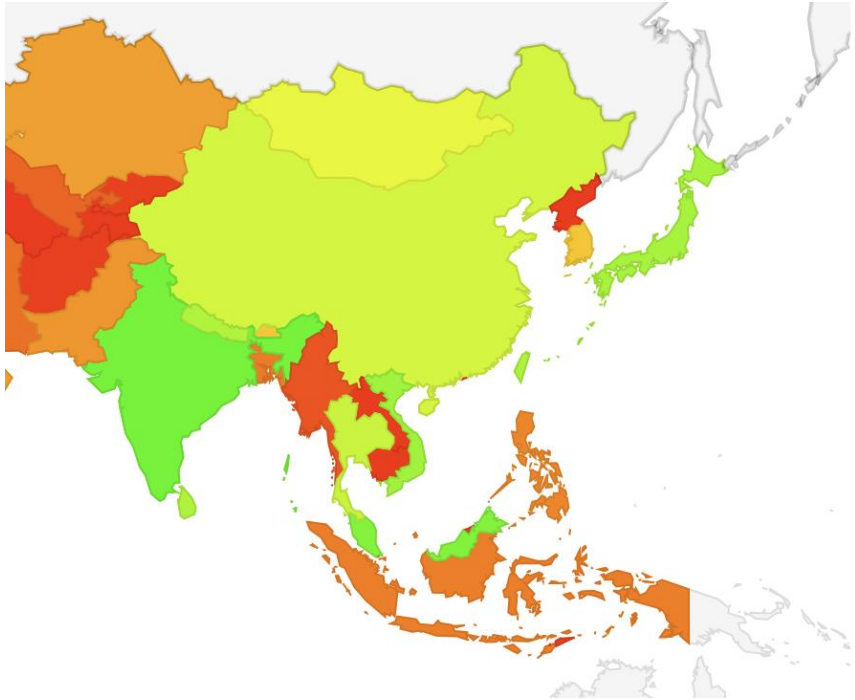
Region	2024	2025	2026 July
World	38	40.84	41.90
Asia	43.14	49.62	50.43
North America	53	56.75	58.09
South America	36	40.71	24.49
Europe	30	32.55	35.37
Africa	2.40	3.79	6.10
Oceania	35.80	37.89	41.22



https://stats.labs.apnic.net/ipv6/XA?o=cXUw30x1r1

IPv6 – Asia Sub-Region

- 3 Sub-regions
  - 66.30 % South Asia
    - IN,LK,NP,BT,PK,BD,AF,MV
  - 50.43 % East Asia
    - TW,JP,MN,CN,MO,KR,HK,KP
  - 36.16 % South-East Asia
    - MY,VN,TH,SG,PH,ID,MM,LA,BN,KH,TL



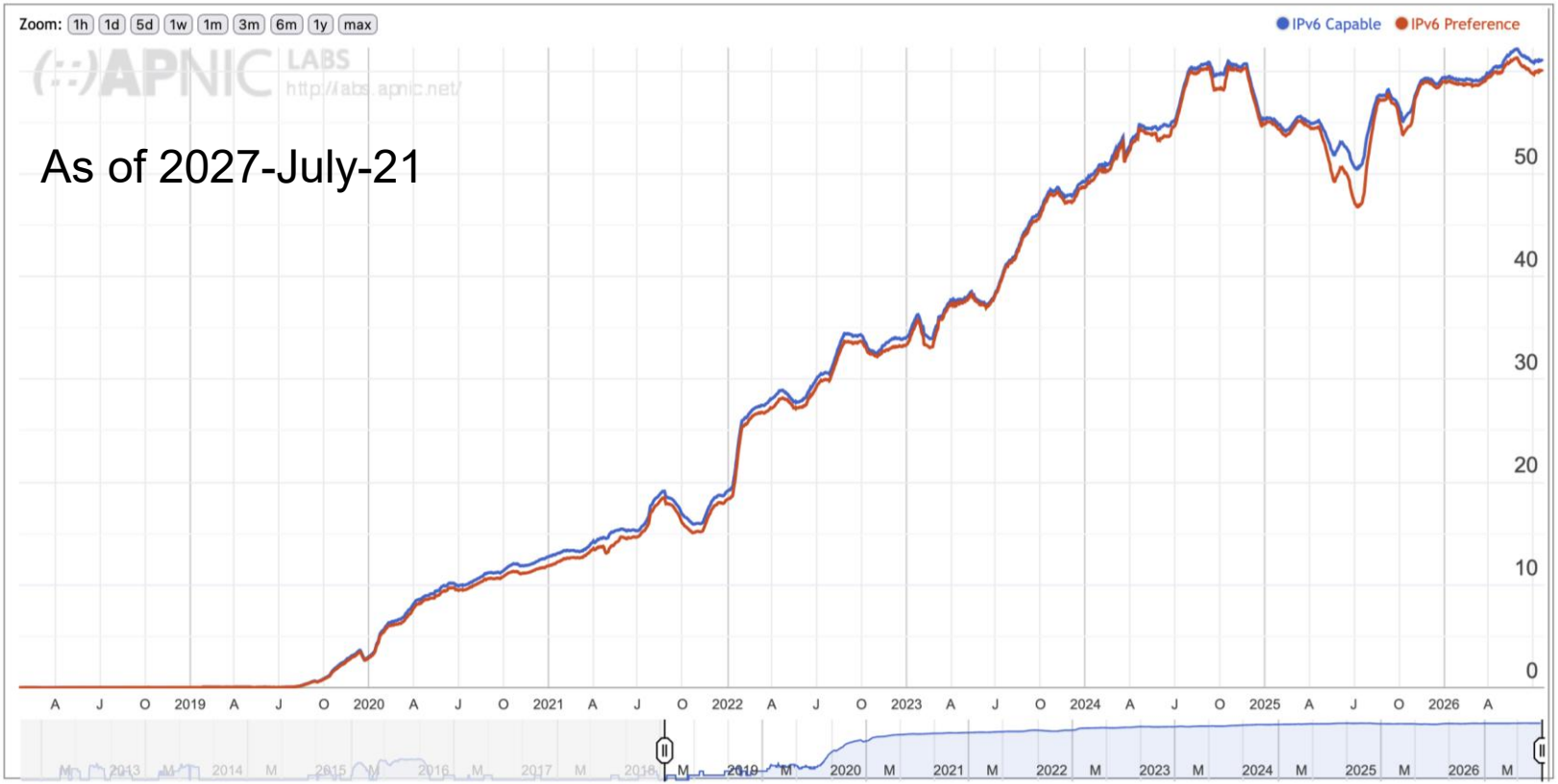
https://stats.labs.apnic.net/ipv6/XD?o=cXAw30x1r1

IPv6 – South Asia Sub-Region

cc	Country	2020-09	2022-11	2023-03	2024-11	2025-11	2026-07
AF	Afghanistan	0.11	0.06	0.23	1.85	7.72	0.92
BD	Bangladesh	0.03	1.87	7.68	20.49	18.85	18.89
BT	Bhutan	6.72	18.35	23.35	37.65	31.99	29.01
IN	India	63.07	78.96	76.19	80.91	78.75	79.18
LK	Sri Lanka	25.10	52.14	47.67	60.19	55.73	58.99
MV	Maldives	3.51	0.08	0.07	7.67	17.63	16.94
NP	**Nepal**	**28.60**	**32.71**	**36.44**	**59.43**	**58.42**	**60.92**
PK	Pakistan	0.03	3.44	5.44	23.87	23.06	22.73

https://stats.labs.apnic.net/ipv6/XT?o=cXDw30x1r1

IPv6 – Nepal


Zoom: 1h 1d 5d 1w 1m 3m 6m 1y max
IPv6 Capable
IPv6 Preference
APNIC LABS
http://labs.apnic.net/
As of 2027-July-21
50
40
30
20
10
0
A J O 2019 A J O 2020 A J O 2021 A J O 2022 A J O 2023 A J O 2024 A J O 2025 A J O 2026 A
M 2013 M 2014 M 2015 M 2016 M 2017 M 2018 M 2019 M 2020 M 2021 M 2022 M 2023 M 2024 M 2025 M 2026 M

IPv6 – Nepal

ASN	AS Name	IPv6 Capable	IPv6 Preferred	Samples
AS17501	WorldLink Communications Pvt Ltd	84.84%	83.96%	938,673
AS23752	Nepal Telecommunications Corporation	28.90%	28.64%	359,057
AS139922	DISH MEDIA NETWORK PUBLIC LIMITED	77.65%	76.78%	233,630
AS38565	Ncell Pvt. Ltd.	72.09%	71.21%	218,756
AS45650	VIA NET COMMUNICATION LTD.	71.97%	68.95%	211,168
AS4007	Subisu Cablenet (Pvt) Ltd,	58.13%	57.20%	155,297
AS24550	Websurfer Nepal	27.34%	26.05%	108,651
AS141767	C G Communications Ltd	75.39%	74.64%	82,059
AS58504	TECHMINDS NETWORKS PVT. LTD.	7.04%	6.98%	75,903
AS142065	Wifi Nepal Private Limited	90.29%	89.52%	64,542
AS55915	Classic Tech Pvt. Ltd.	56.15%	55.25%	56,696
AS151396	Sajilo Net Pvt Ltd	25.94%	25.66%	50,742
AS140072	Fiberworld Communication Pvt.ltd	27.78%	21.97%	45,508
AS55427	Broadlink Nepal	0.13%	0.11%	19,435
AS136380	Web Networks Pvt. Ltd.	12.87%	12.80%	17,664
AS139224	Limpid ICT Solution Pvt. Ltd	30.27%	30.14%	17,153
AS137080	Firstlink Communications Pvt. Ltd.	23.23%	23.13%	16,176
AS152448	Global Trading And IT Solution Pvt. Ltd.	0.04%	0.03%	13,278
AS138388	Pokhara Internet Pvt. Ltd.	17.71%	6.79%	13,135
AS149034	Unite Networks	11.32%	11.28%	8,916

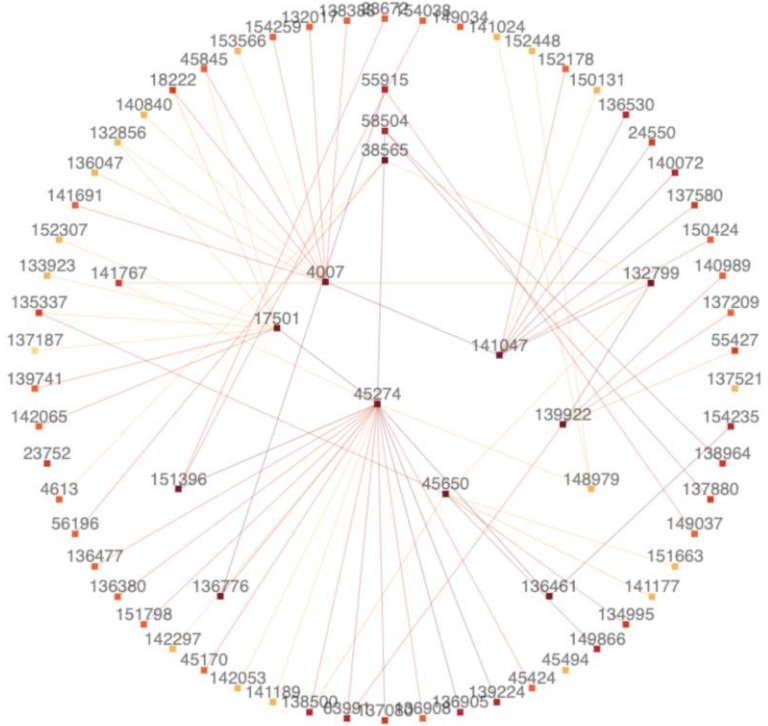
vizAS tool

Visualization of the ASN peering relationships within a single economy, over IPv4 and IPv6.

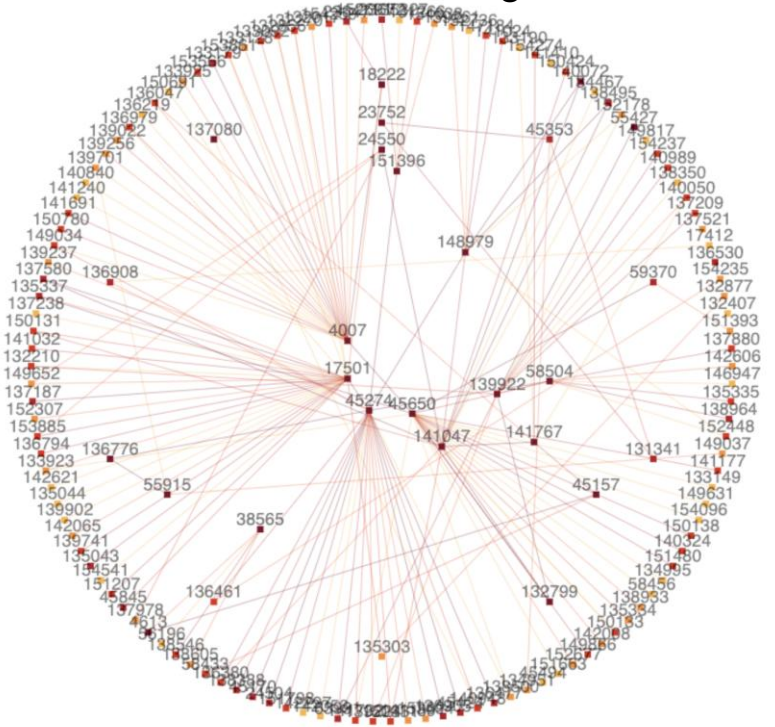
https://rex.apnic.net/as-interconnections?allocationType=ipv4,ipv6

ASN interconnections Nepal

Visible IPv6 interconnections
74 interconnections among 73 ASN

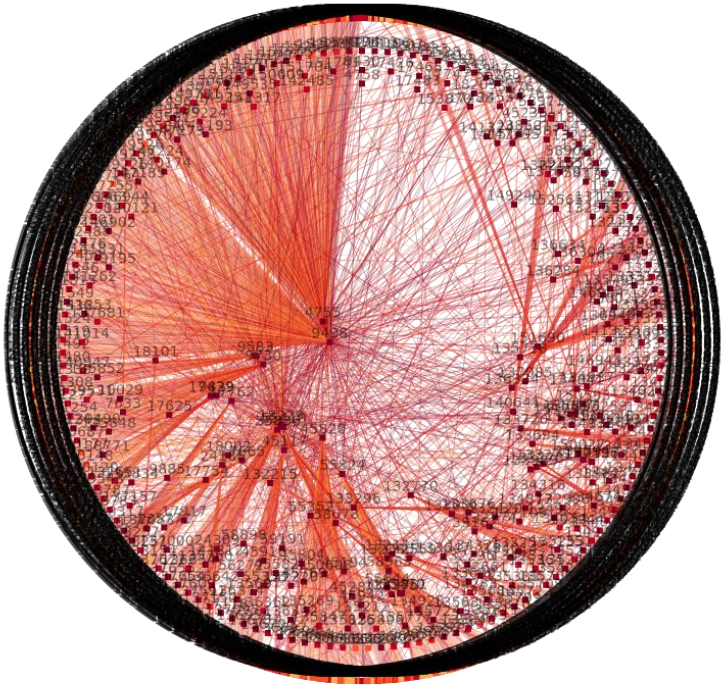


Visible IPv4 interconnections
174 interconnections among 150 ASN

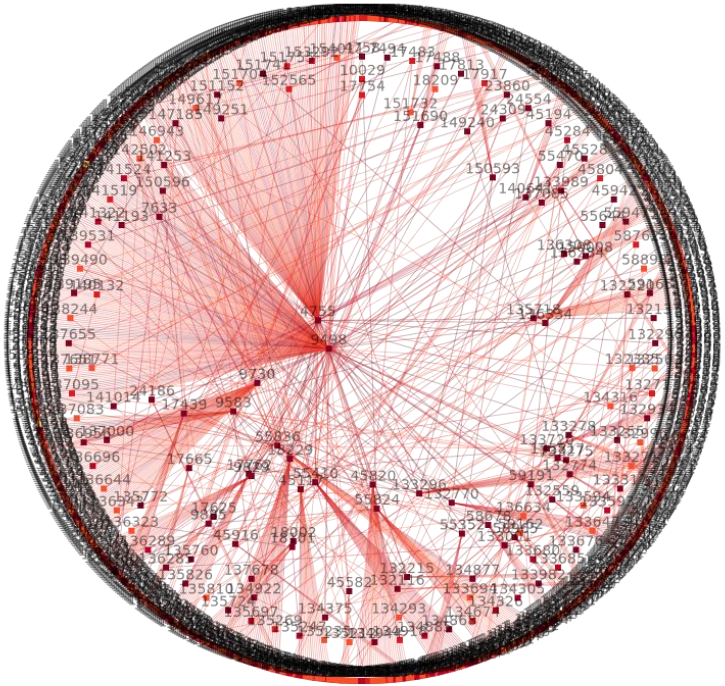


ASN interconnections in India

Visible IPv4 interconnections
3365 interconnections among 2808 ASNs

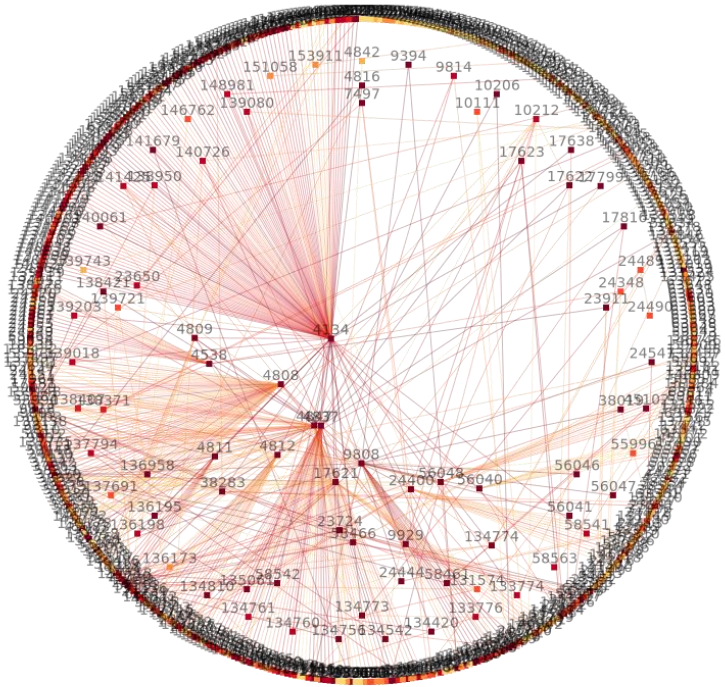


Visible IPv6 interconnections
1066 interconnections among among 1041 ASNs

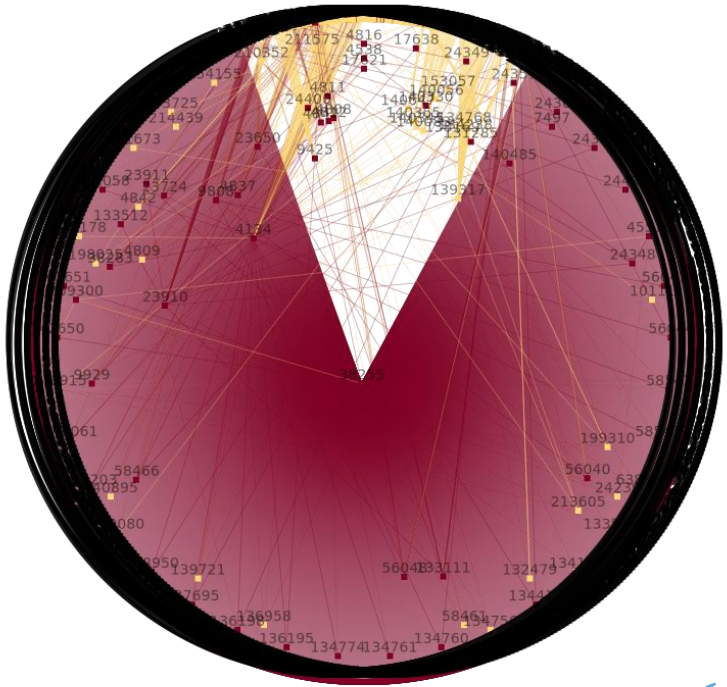


ASN interconnections in China

Visible IPv4 interconnections
623 interconnections among 567 ASNs

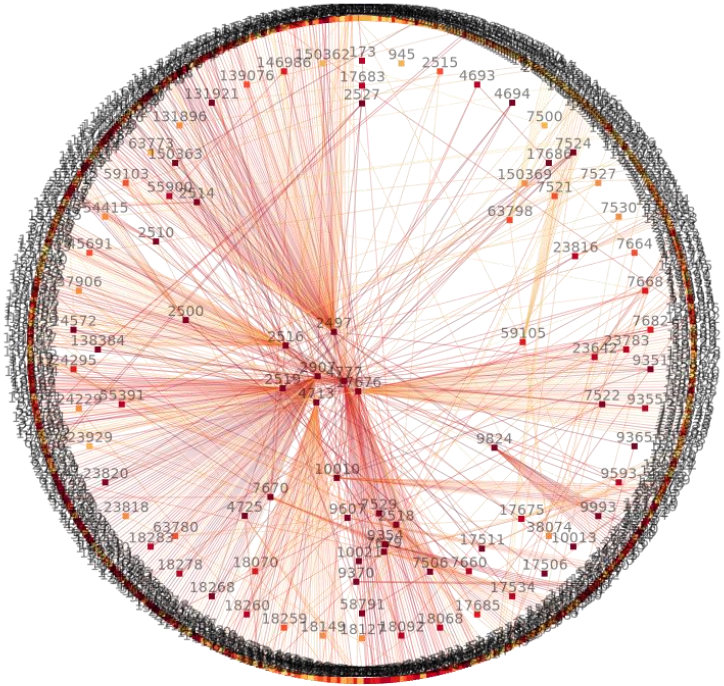


Visible IPv6 interconnections
4815 interconnections among among 4878 ASNs

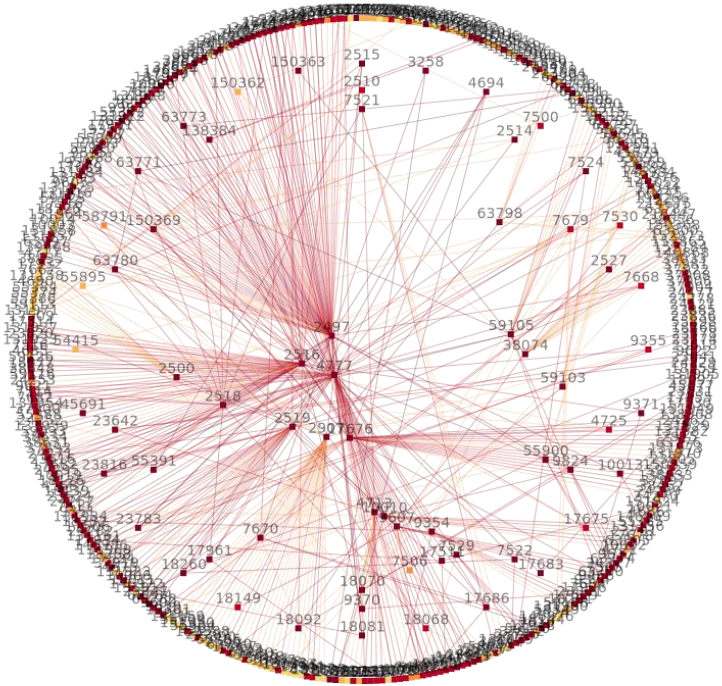


ASN interconnections in Japan

Visible IPv4 interconnections
901 interconnections among 717 ASNs



Visible IPv6 interconnections
537 interconnections among among 422 ASNs

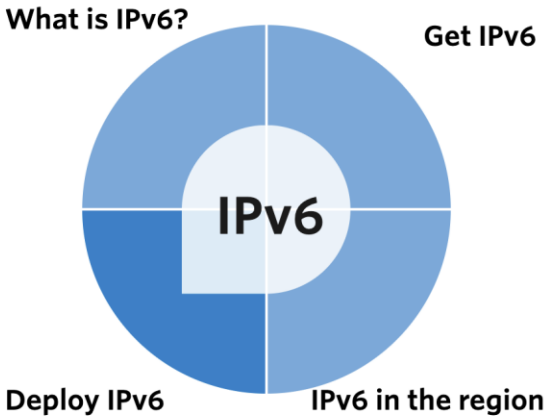


Why Deploy IPv6?

IPv4 on life support…

- IANA IPv4 pool exhausted in 2011
  - RIR regional supplies followed
- Cost
  - IPv4 Address space ~US$30-50 Per IP
  - CGNAT is expensive, needs maintaining
- The world is changing
  - 3 x increase/5 years
  - Most Hyperscalers are already on IPv6
  - IPv6 Tipped over the 50% mark in Asia this year
- IPv6 – scalable, caters for modern needs, and APNIC's evaluation is easier, fees are cheaper

Deploy IPv6



Deploying IPv6 can be a challenge but many organizations around the world have made the transition successfully. Here's some of the elements you'll need to consider for your organization's deployment of IPv6.

10-Step Plan | Transition Technologies | Success Stories | Helpful Resources | Training

https://www.apnic.net/ipv6

RPKI

Resource Public Key Infrastructure

What is RPKI?

A robust security framework for verifying the association between **resource holders** and their **Internet number resources**.

Deploying RPKI

- Step 1. Create your ROA
  - The AS number you have authorized
  - The prefix that is being originated from it
  - The most specific prefix (maximum length) that the AS may announce

- Step 2. Deploy ROV
  - Full routing table
    - Setup a validator and monitor→drop RPKI invalid routes
  - Default/Partial feed
    - Encourage up-streams to drop RPKI invalid routes
- ASPA

RPKI Initiatives

Initial challenge was to get APNIC Members to create ROAs

face-to-face and eLearning RPKI training courses

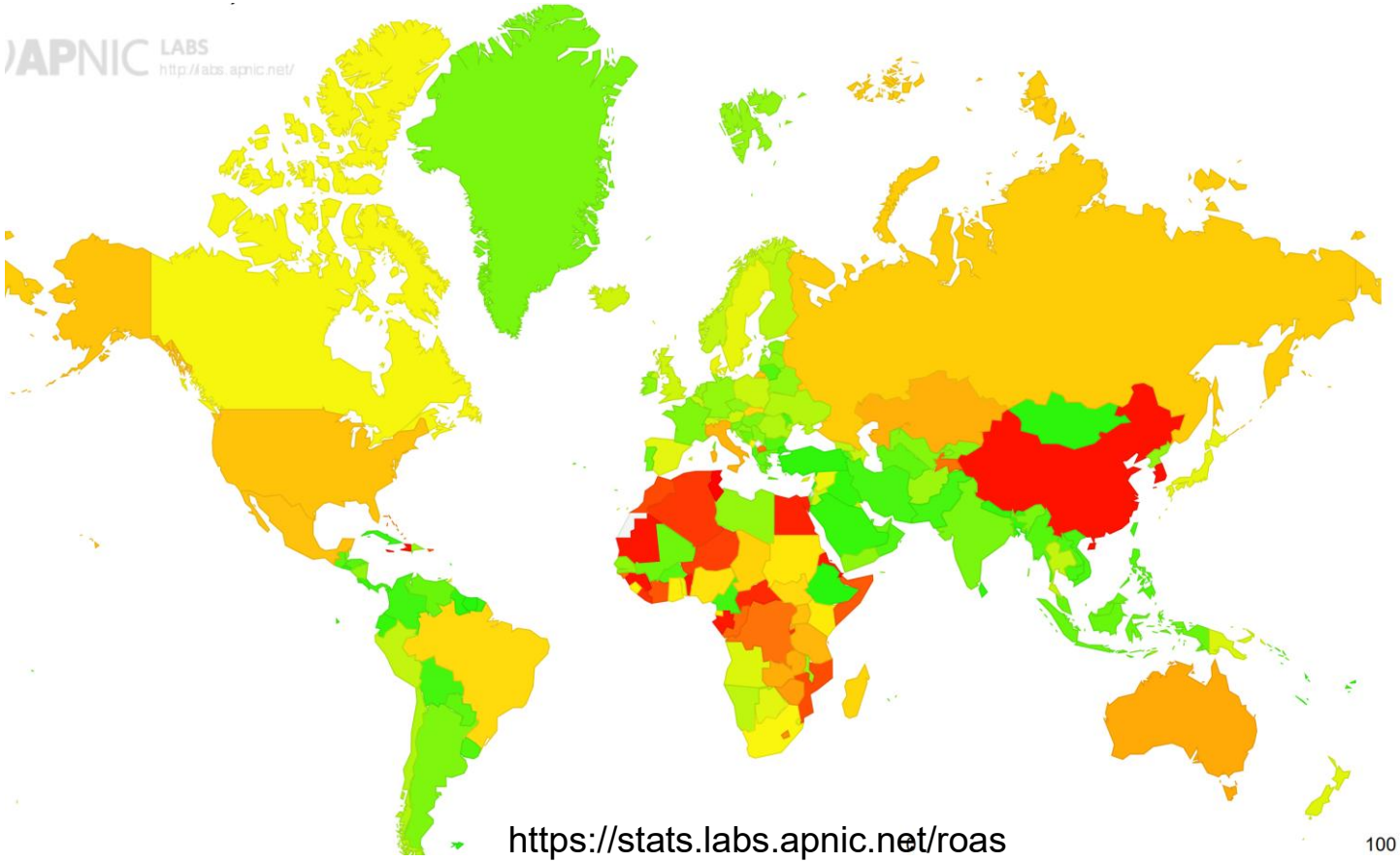
RPKI presentations to NOGs and conferences

Hands on sessions to help Members create ROAs

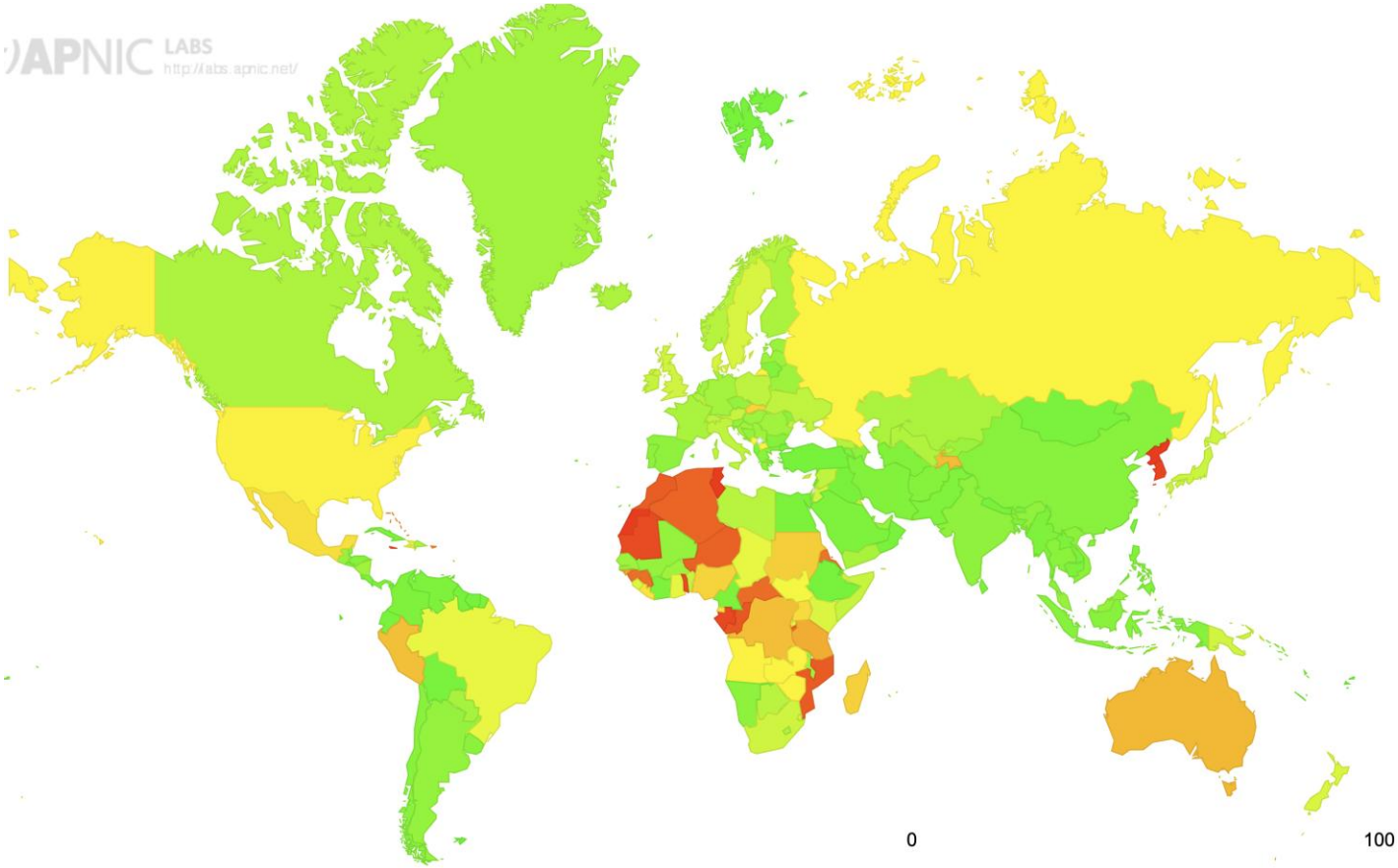
ROA shirts, stickers, web content to promote campaign

Ready to ROA launched in 2015

RPKI ROA – 2025 Global Snapshot



RPKI ROA – 2026 July Snapshot

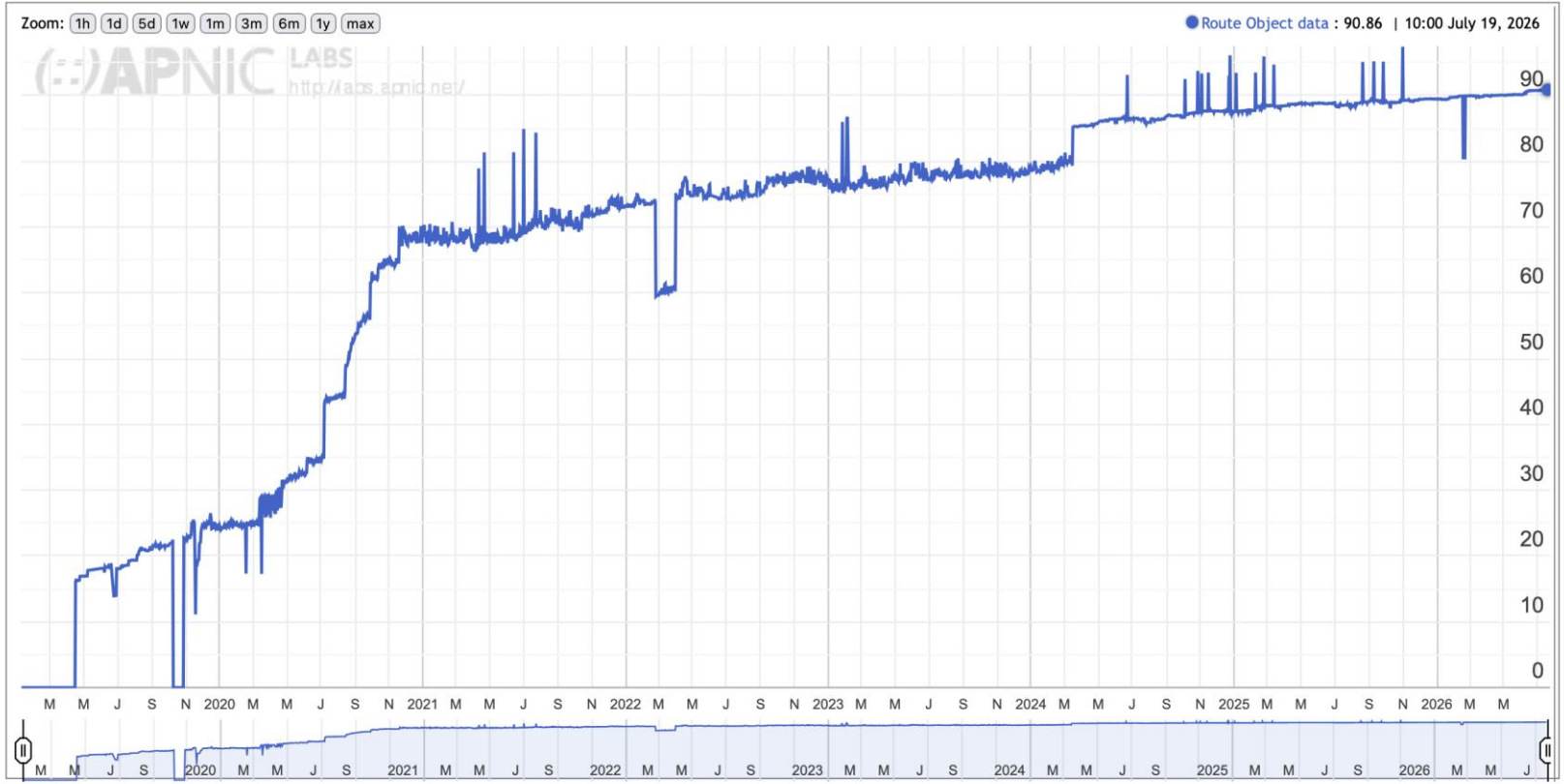


RPKI ROA – Global Snapshot

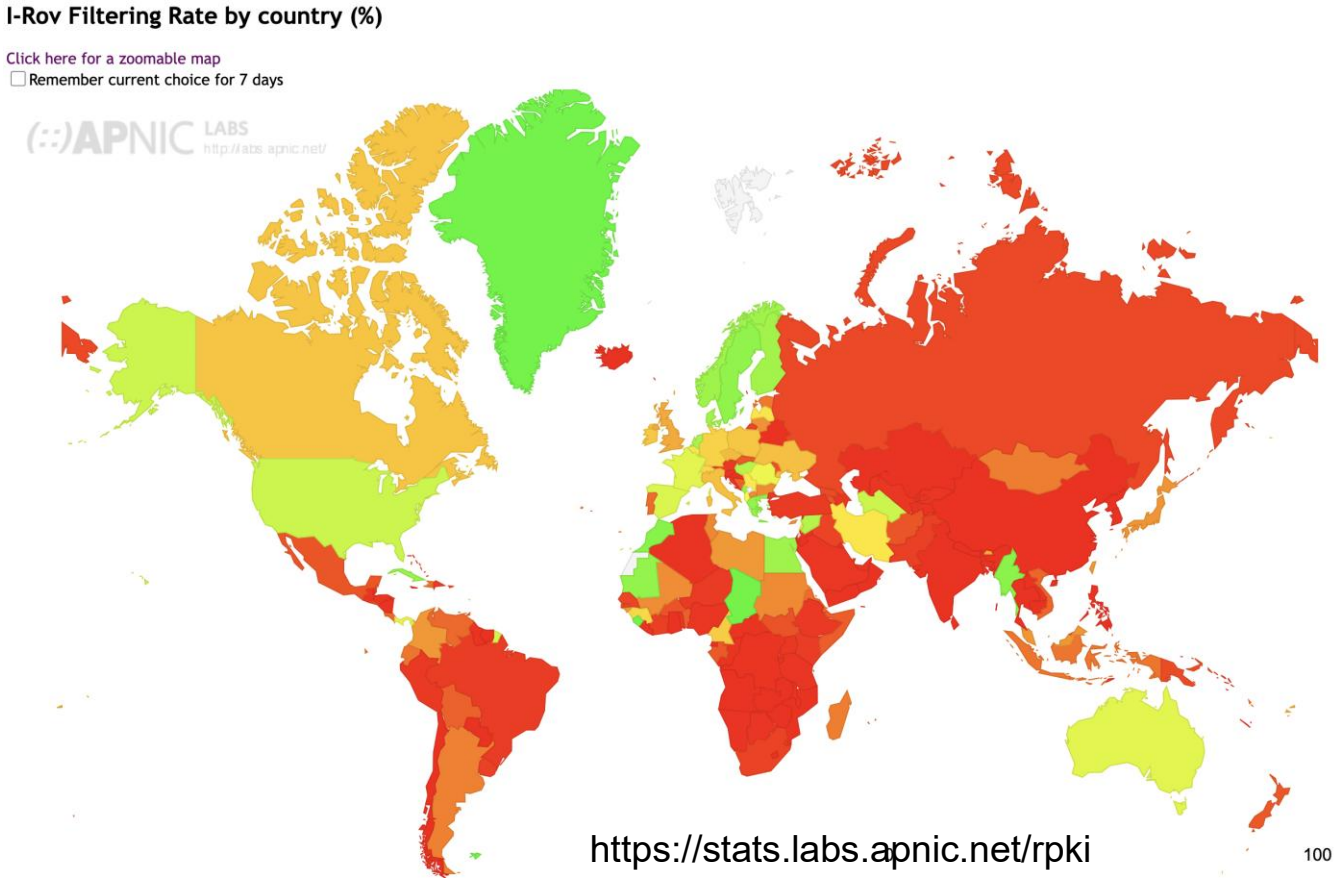
Region	2024	2025	2026 July
World	47.8	54	65.9
Asia	57.9	62.1	80.1
North America	34.6	43.2	51.6
South America	54.2	58.9	64.6
Europe	53.7	61.4	69.3
Africa	29.7	36.5	55.6
Oceania	69.4	71.1	74.8

https://stats.labs.apnic.net/roas

RPKI ROA – Nepal (90.86)



ROV stats



https://stats.labs.apnic.net/rpki

Route Origin Validation (ROV) Uptake

Status

Displaying 31 major operators

NAME	TYPE	DETAILS
Lumen	transit	signed + filtering
Arelion (formerly Telia)	transit	signed + filtering
Cogent	transit	signed + filtering
NTT	transit	signed + filtering
Hurricane Electric	transit	signed + filtering
GTT	transit	signed + filtering
TATA	transit	signed + filtering
Zayo	transit	signed + filtering
PCCW	transit	signed + filtering
Vodafone	transit	signed + filtering
RETN	transit	partially signed + filtering
Orange	transit	signed + filtering
Telstra International	transit	signed + filtering
Telefonica/Telxius	transit	signed + filtering
Comcast	ISP	signed + filtering
AT&T	ISP	signed + filtering
Verizon	ISP	signed + filtering
Liberty Global	transit	signed + filtering
Cloudflare	cloud	signed + filtering
Microsoft	cloud	signed + filtering
Amazon	cloud	signed + filtering
Netflix	cloud	signed + filtering
Wikimedia Foundation	cloud	signed + filtering
Scaleway	cloud	signed + filtering

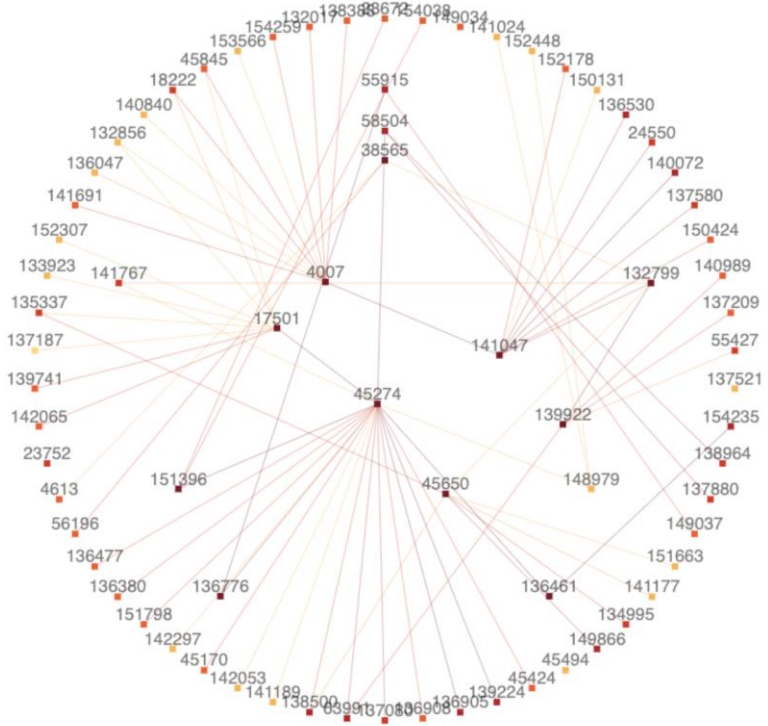
https://isbgpsafeyet.com/

ROV in Nepal

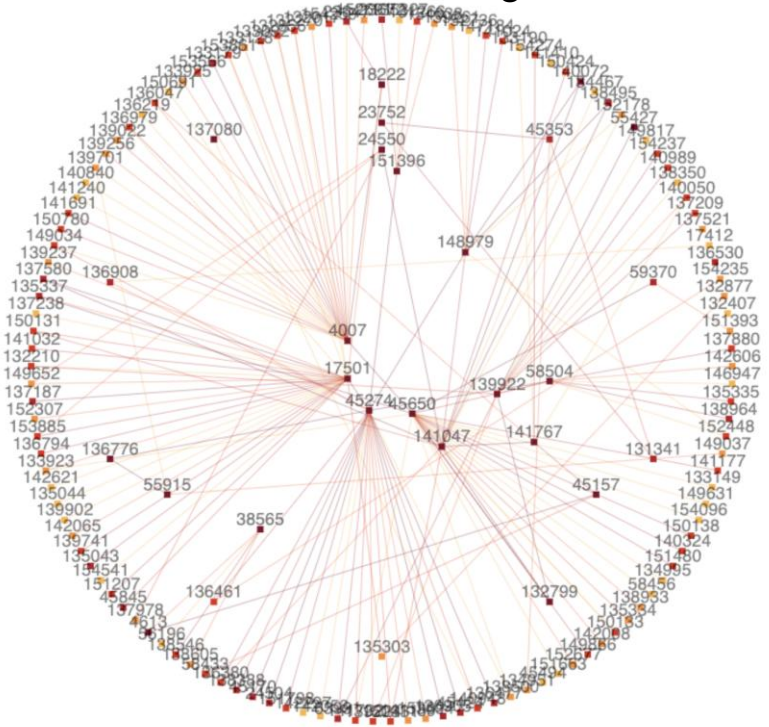
ASN	AS Name	RPKI Validates	Samples
AS17501	WorldLink Communications Pvt Ltd	0.17%	120,873
AS23752	Nepal Telecommunications Corporation	0.33%	46,633
AS38565	Ncell Pvt. Ltd.	0.88%	30,635
AS139922	DISH MEDIA NETWORK PUBLIC LIMITED	0.69%	30,191
AS45650	VIA NET COMMUNICATION LTD.	0.14%	27,712
AS4007	Subisu Cablenet (Pvt) Ltd	0.61%	21,958
AS24550	Websurfer Nepal Internet Service Provider	0.58%	14,713
AS58504	TECHMINDS NETWORKS PVT. LTD.	0.28%	10,287
AS141767	C G Communications Ltd	0.88%	9,831
AS142065	Wifi Nepal Private Limited	0.18%	9,243
AS151396	Sajilo Net Pvt Ltd	0.21%	7,509
AS140072	Fiberworld Communication Pvt.ltd	0.20%	6,929
AS55915	Classic Tech Pvt. Ltd.	0.36%	6,906
AS55427	Broadlink Nepal	0.32%	2,798
AS139224	Limpid ICT Solution Pvt. Ltd	0.26%	2,732
AS136380	Web Networks Pvt. Ltd.	0.23%	2,607
AS137080	Firstlink Communications Pvt. Ltd.	0.31%	2,246
AS138388	Pokhara Internet Pvt. Ltd.	0.30%	1,992
AS152448	Global Trading And IT Solution Pvt. Ltd.	0.16%	1,841
AS141024	Big Marshyangdi Net Pvt. Ltd.	0.00%	1,315

ASN interconnections Nepal

Visible IPv6 interconnections
74 interconnections among 73 ASN



Visible IPv4 interconnections
174 interconnections among 150 ASN

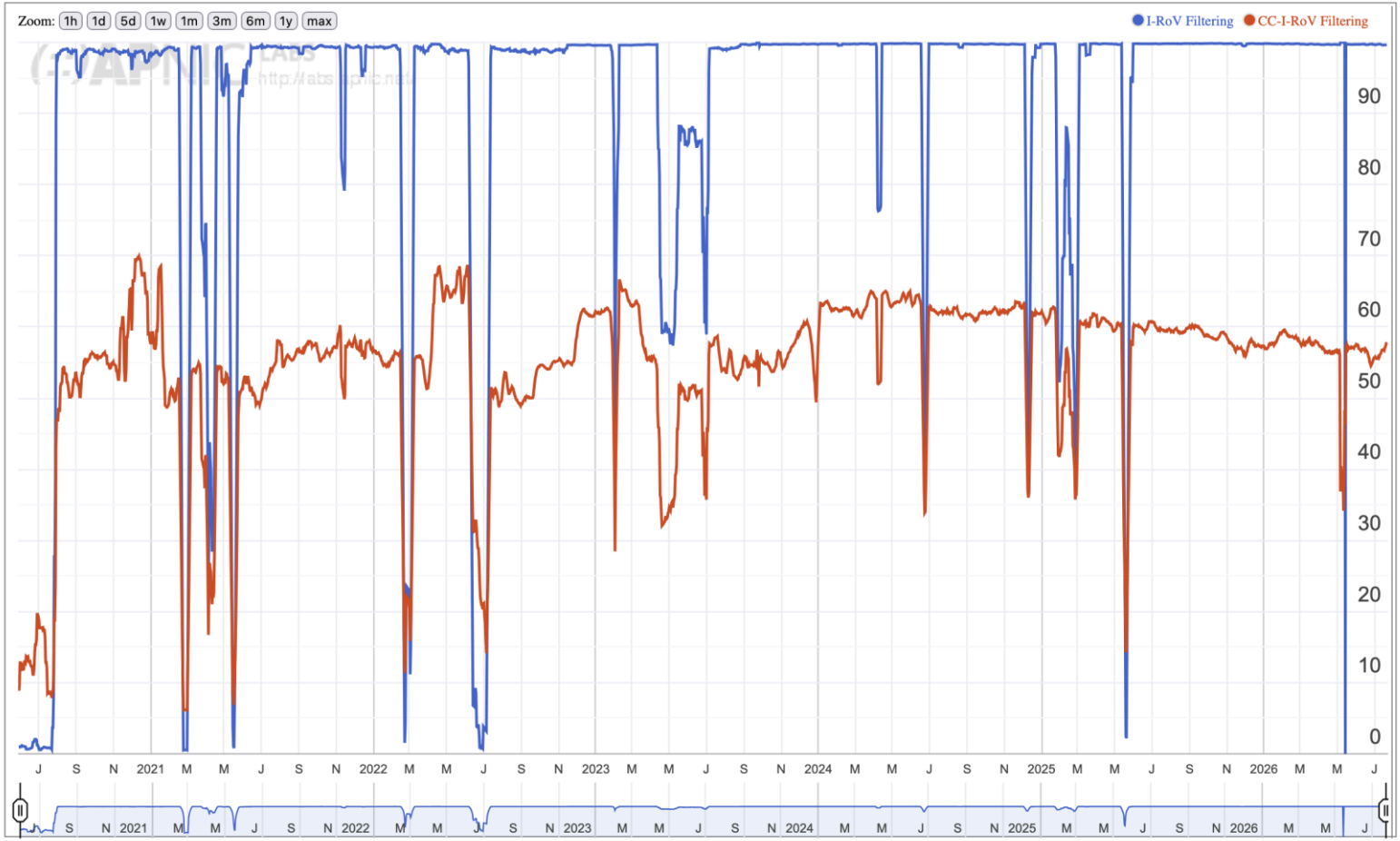


ROV deployment challenges

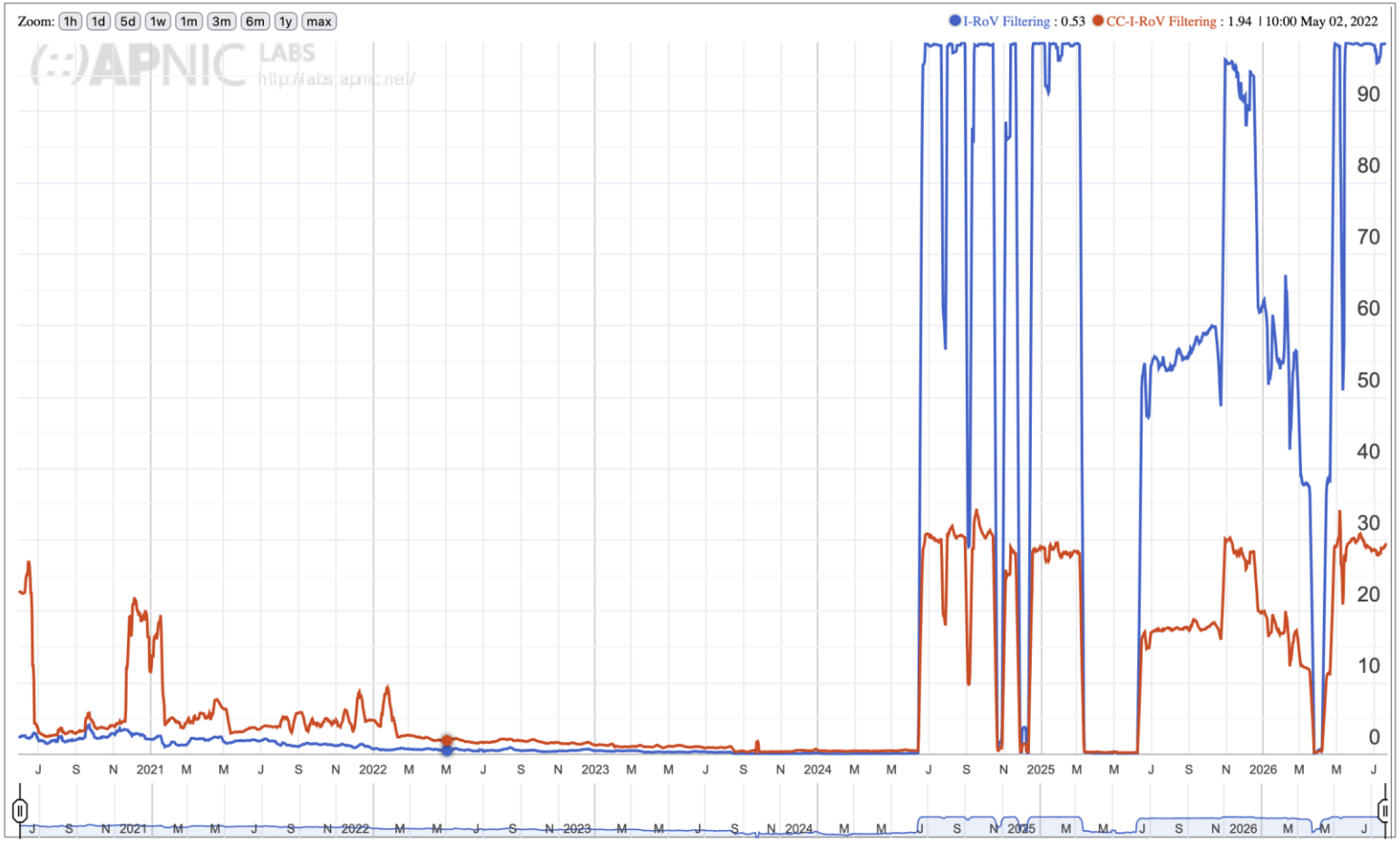
- Requires an investment
- Fear of service interruptions
- Too many invalids in your own network and in down streams

Deploy → Observe → Fix → Filter

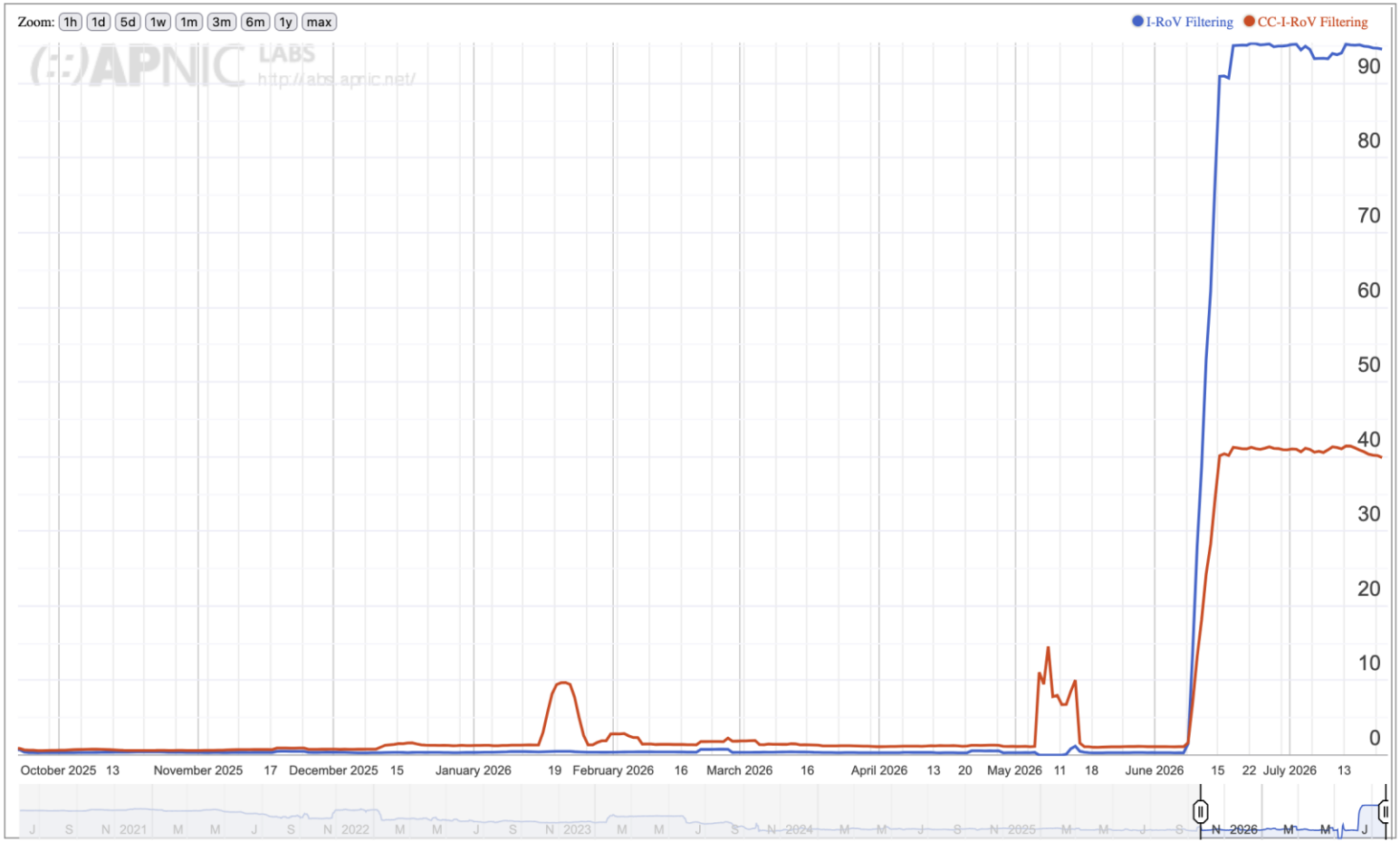
RPKI I-ROV Per-Country filtering for AS1221: ASN-TELSTRA - Telstra Limited, Australia (AU)



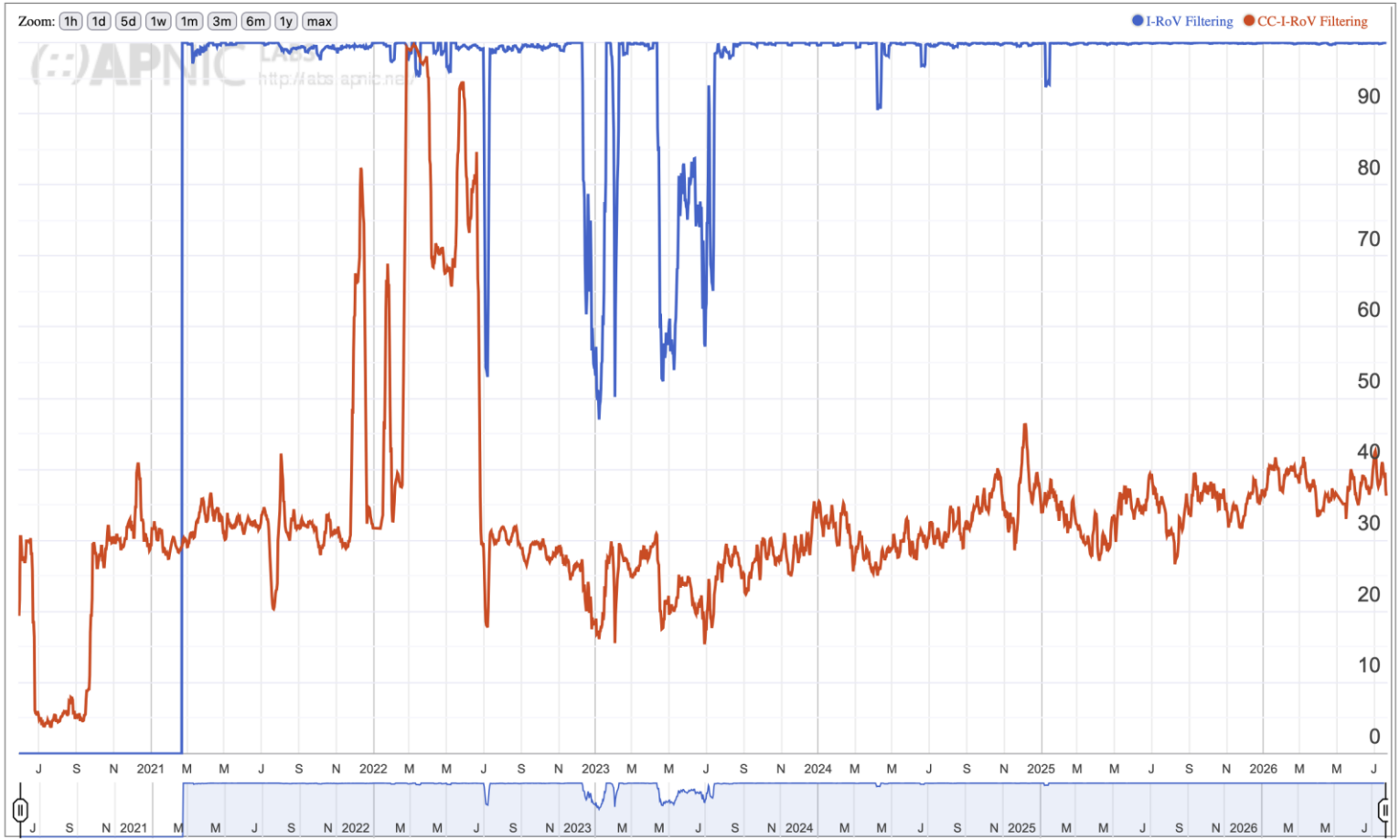
RPKI I-ROV Per-Country filtering for AS4788: TTSSB-MY - TM TECHNOLOGY SERVICES SDN. BHD., Malaysia (MY)



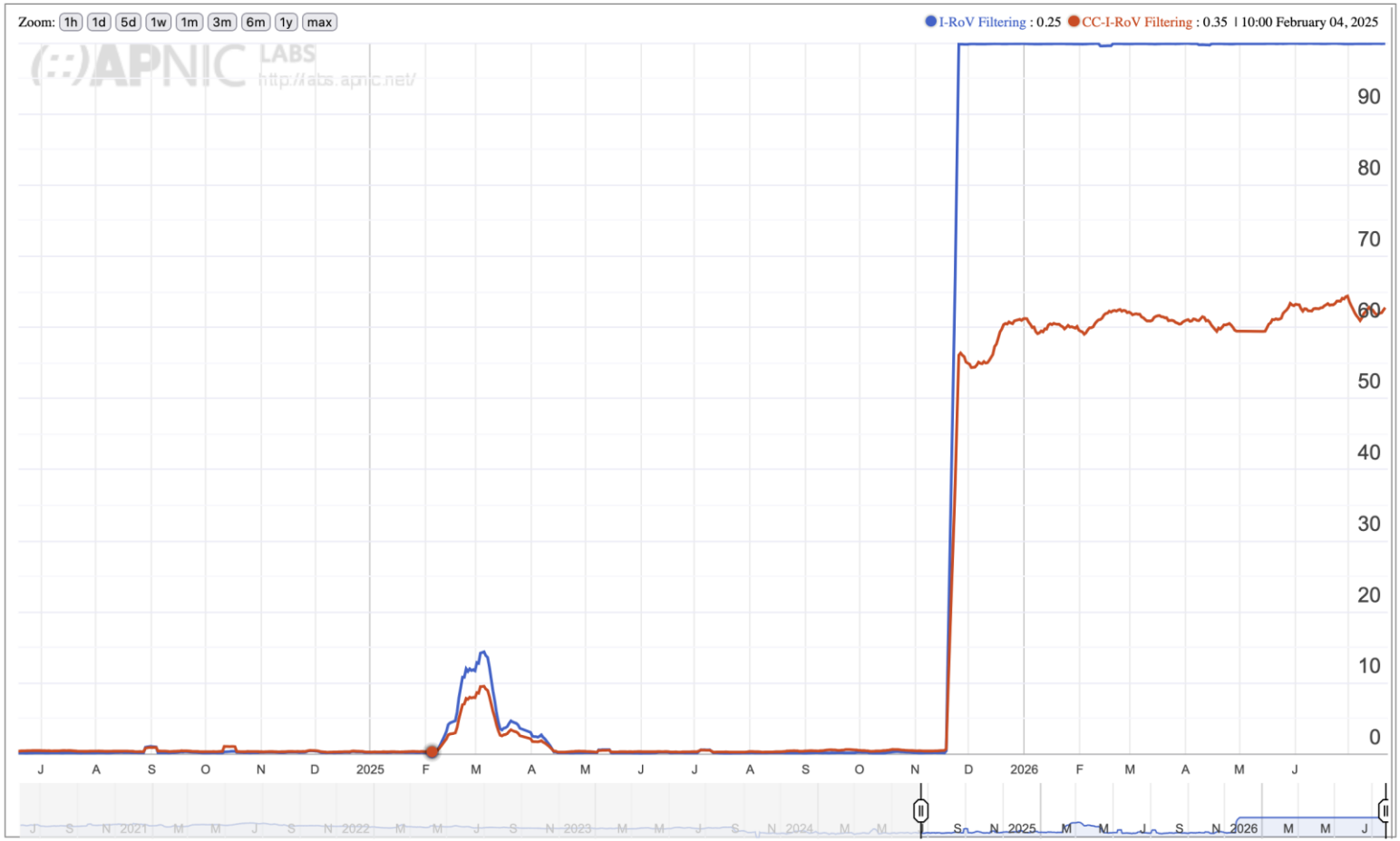
RPKI I-ROV Per-Country filtering for AS9299: IPG-AS-AP - Philippine Long Distance Telephone Company, Philippines (PH)



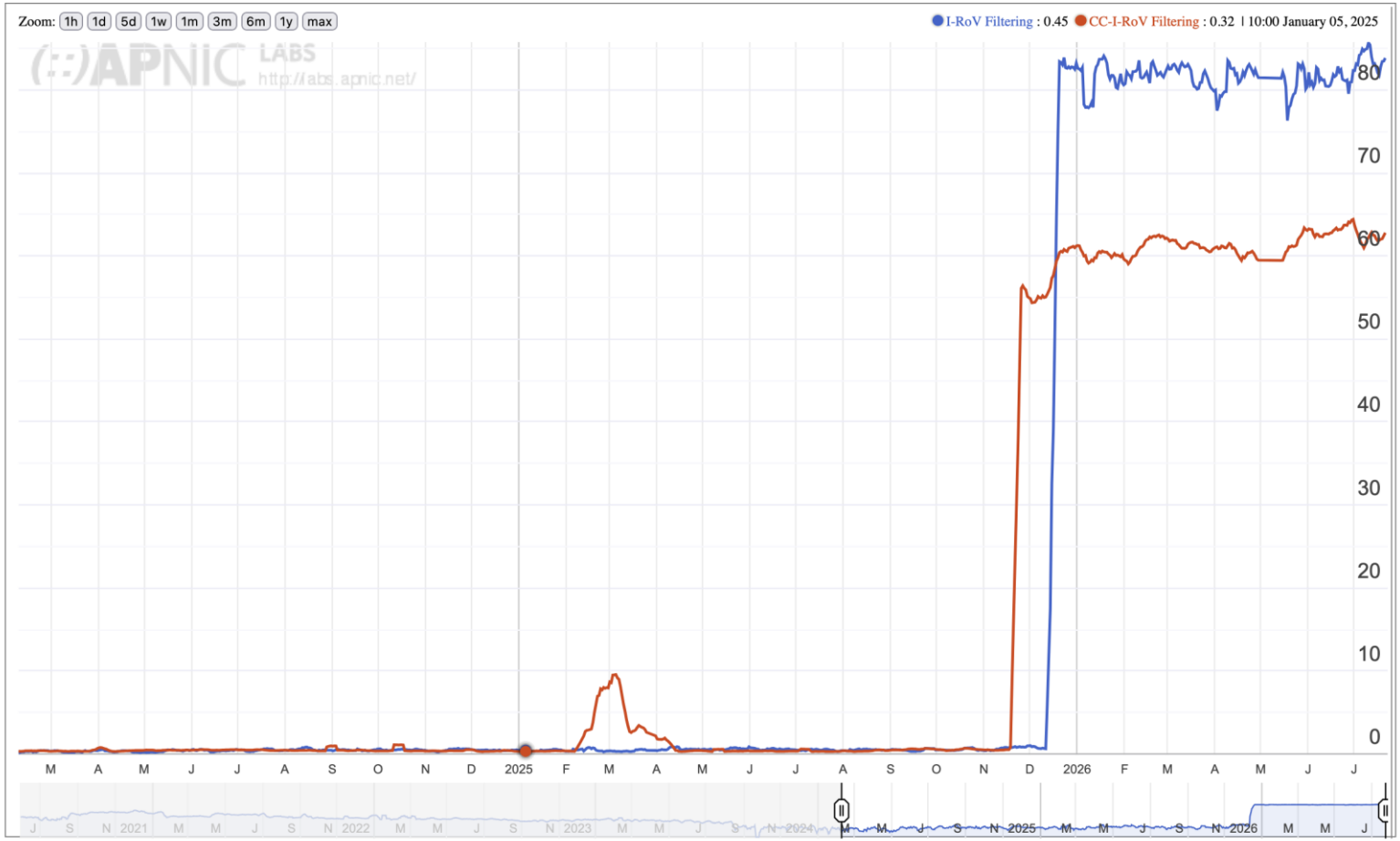
RPKI I-ROV Per-Country filtering for AS137412: TASHICELL-MOBILE-AS - Tashicell Domestic AS Thimphu Bhutan, Bhutan (BT)



RPKI I-ROV Per-Country filtering for AS18001: DIALOG-AS - Dialog Axiata PLC., Sri Lanka (LK)



RPKI I-ROV Per-Country filtering for AS17470: HUTCHISON-LK - Hutchison Telecommunications Lanka (Private) Limited, Sri Lanka (LK)



ASPA – New Member of RPKI family

APNIC

Get IP | Manage IP | Training | Events | Insights | Community | Blog | Help Centre | About | Contact

ASPA at APNIC: Strengthening BGP path validation

By Tom Harrison on 9 Jul 2026

Category: Tech matters

Tags: ASPA, routing, security

Share on LinkedIn

Blog home

The Resource Public Key Infrastructure (RPKI) has helped operators improve the integrity of Internet routing through Route Origin Authorizations (ROAs). These allow networks to verify whether an Autonomous System (AS) is authorized to originate a prefix. This has reduced many accidental routing errors and some forms of hijacking. However, it does not protect against problems related to a route's AS path.

APNIC has now deployed support for Autonomous System Provider Authorization (ASPA) objects in MyAPNIC and the APNIC Registry API. This gives APNIC Members a new way to publish upstream provider relationships and enables operators to verify BGP AS paths.

Get Updates

Email *

Subscribe! Show options

Authors

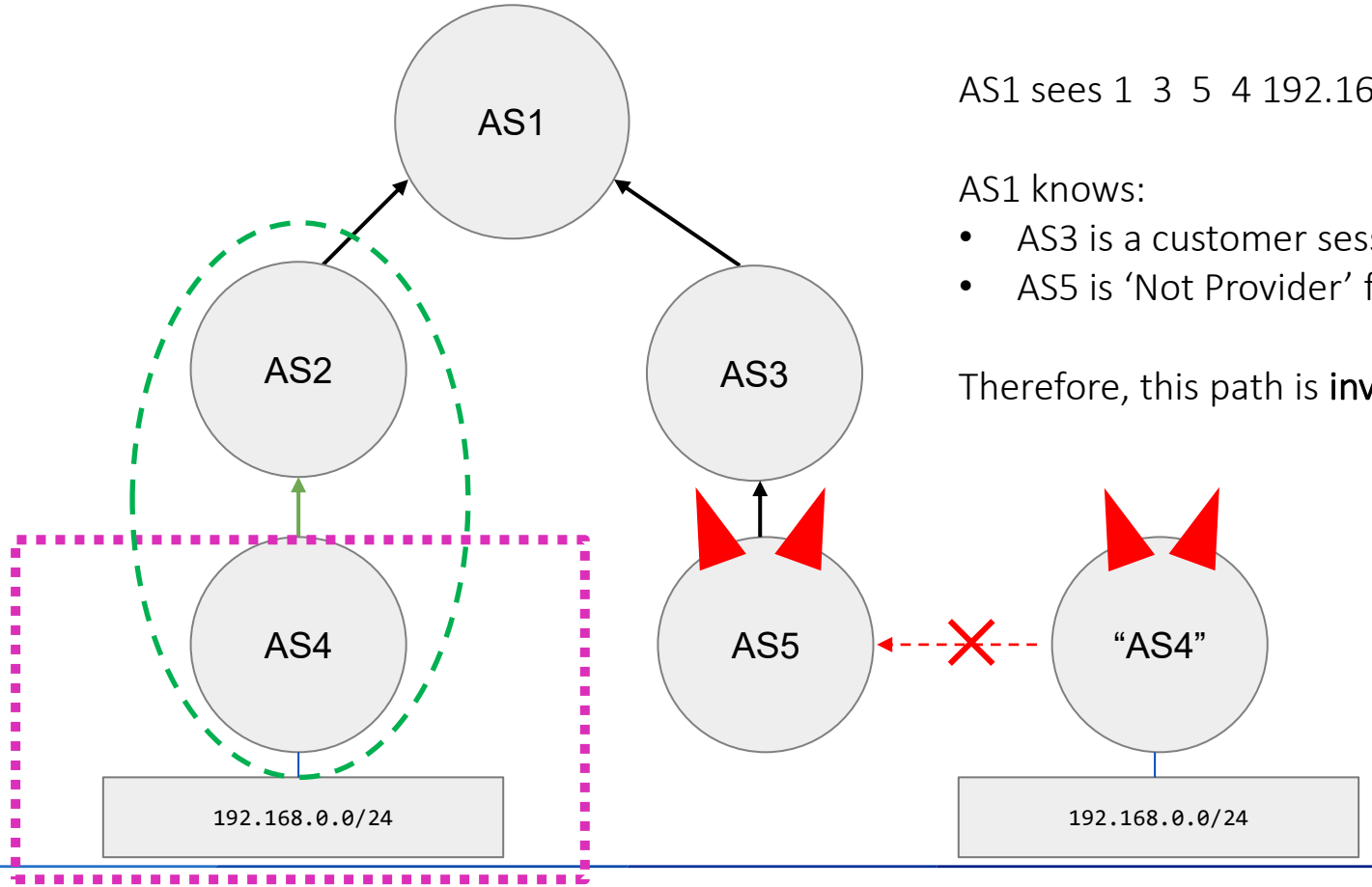
- Adli Wahid
- Aftab Siddiqui
- Geoff Huston
- George Michaelson
- Jen Linkova
- Jia Rong Low

AS Provider Authorization (ASPA)

- Signed by the holder of the ASN (Customer AS)
  - ROA was signed by IP prefix custodian
- Authorizing their transit provider ASNs (Provider AS)
  - The holder of the Customer AS Number declares which AS Numbers may appear as their Providers in BGP paths
  - In ROA, IP custodian decides what ASNs are authorized to announce the IPs
- ASPA helps mitigate:
  - Forged-origin and forged-path attacks/hijacks

  - ROA/ROV; mitigates origin hijacks

Forged-origin attacks



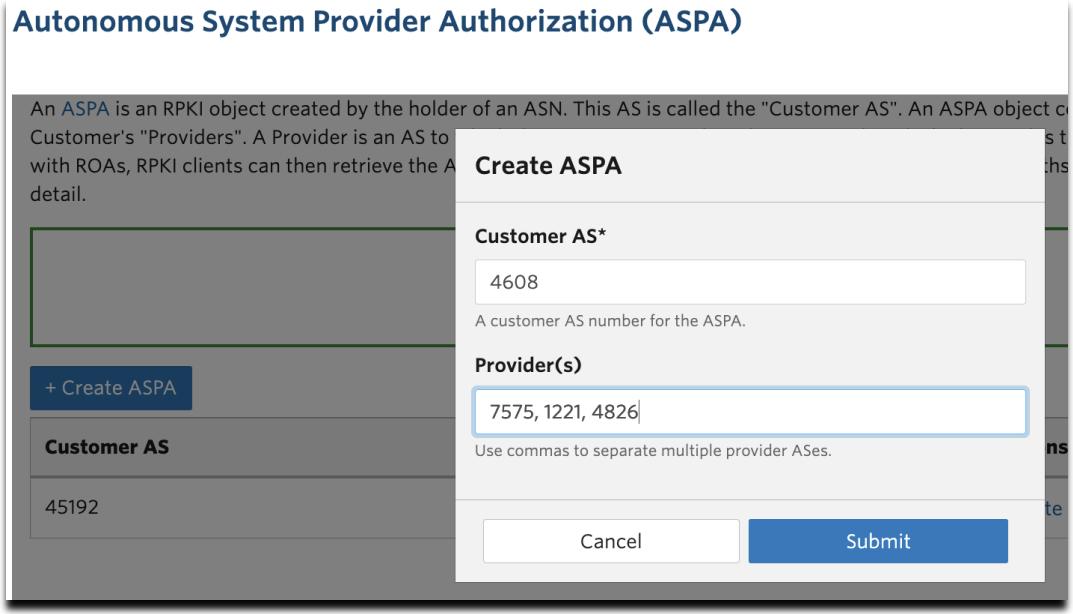
AS1 sees 1 3 5 4 192.168.0.0/24

AS1 knows:

- AS3 is a customer session
- AS5 is ‘Not Provider’ for AS4

Therefore, this path is **invalid**

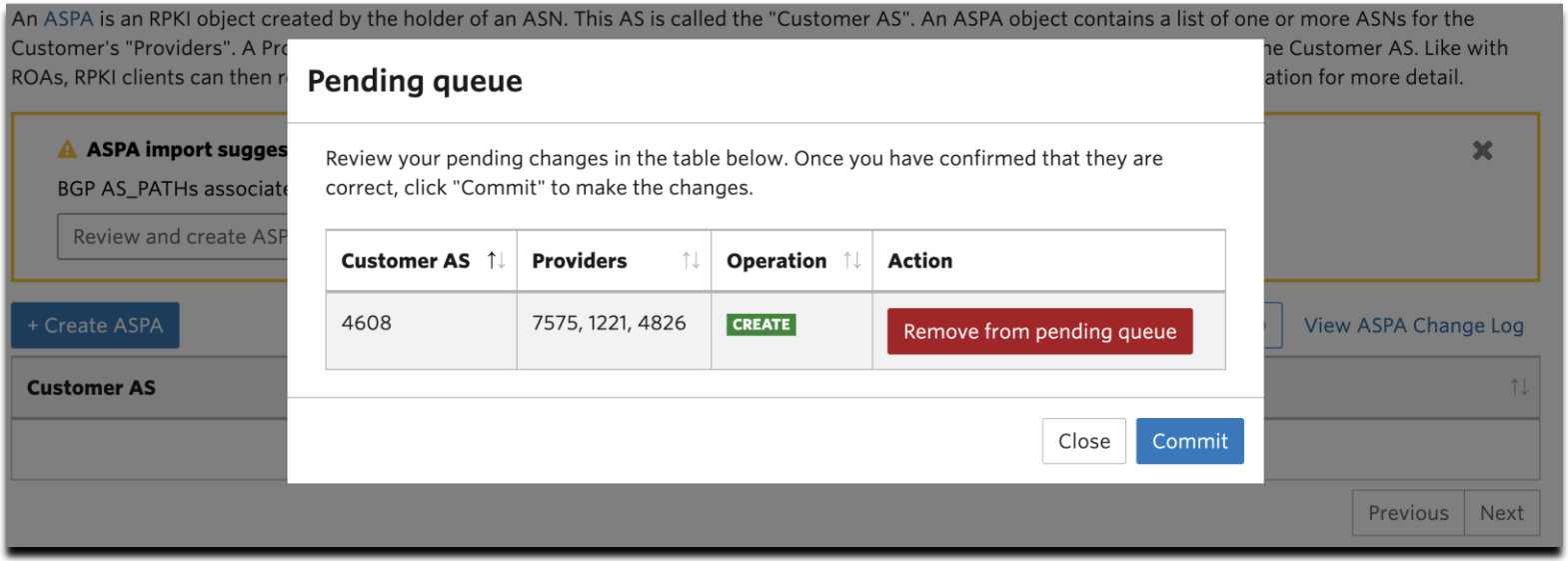
Creating ASPA objects in MyAPNIC (Step 1 of 2)



- Log in to MyAPNIC
- Navigate to Route Management
- Click on **Create ASPA**
- Enter your ASPA details and click **Submit**

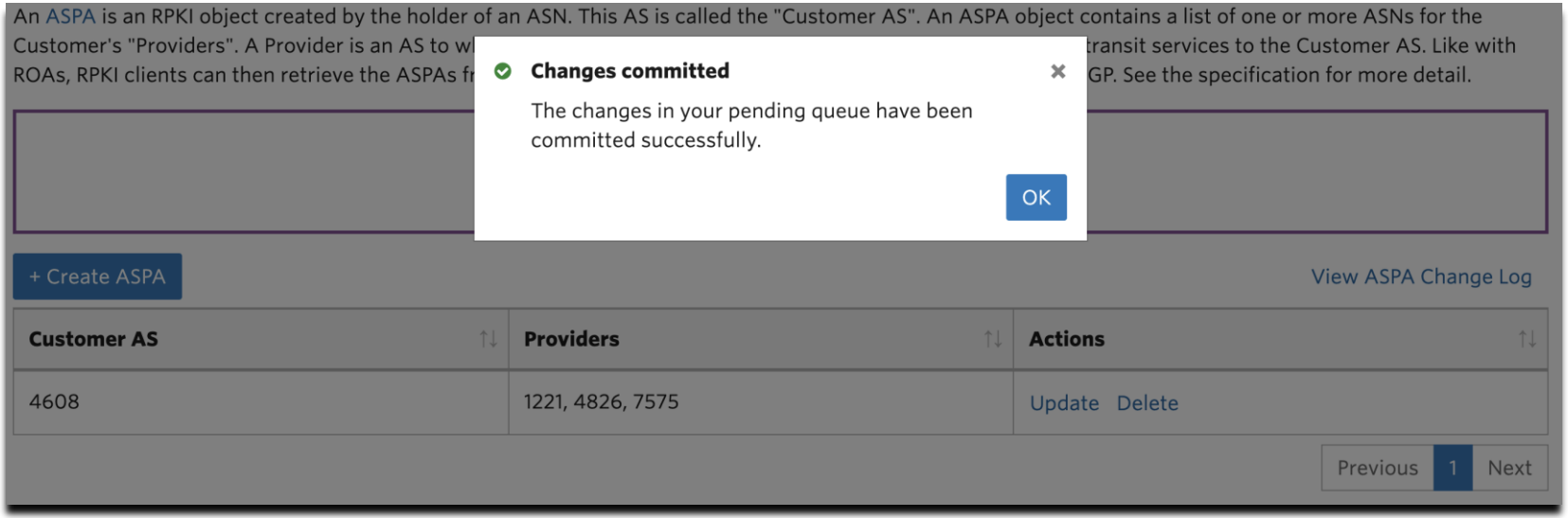
Creating ASPA objects in MyAPNIC (Step 2 of 2)

- Review your pending changes and click on **Commit** once confirmed.

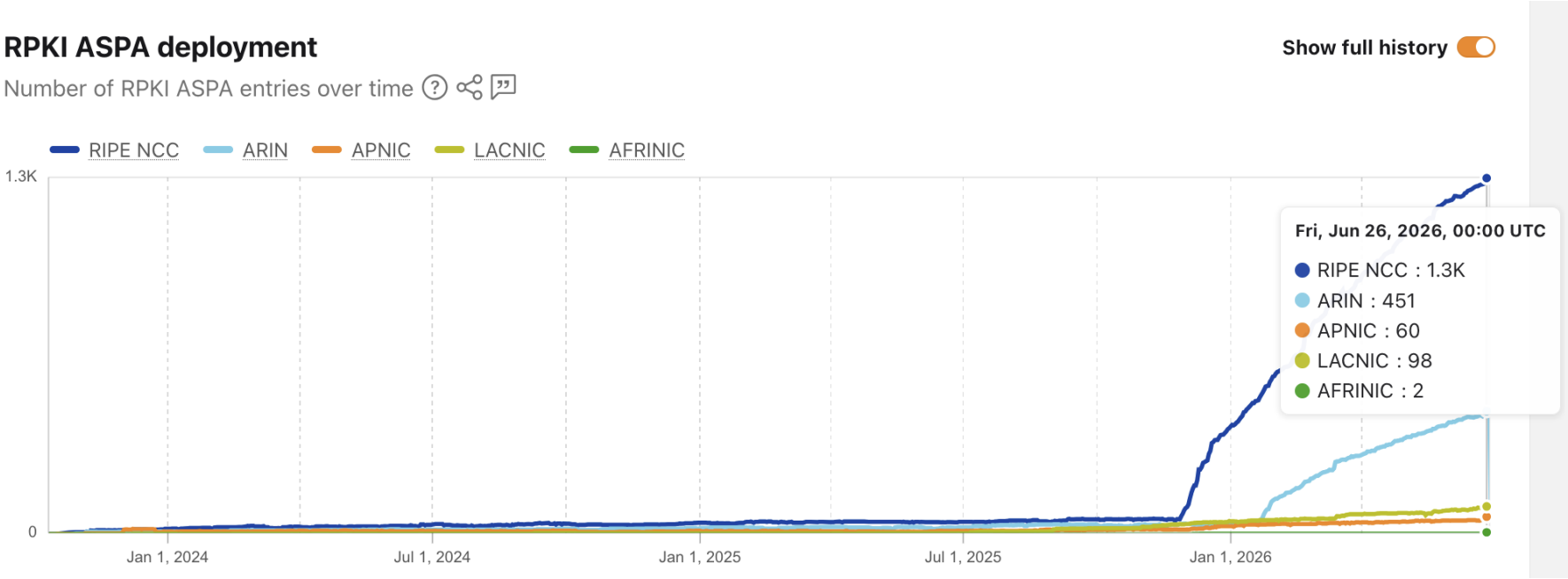


Creating ASPA objects in MyAPNIC

- Your ASPA object is now published



ASPA uptake in the region



https://radar.cloudflare.com/routing/rpki

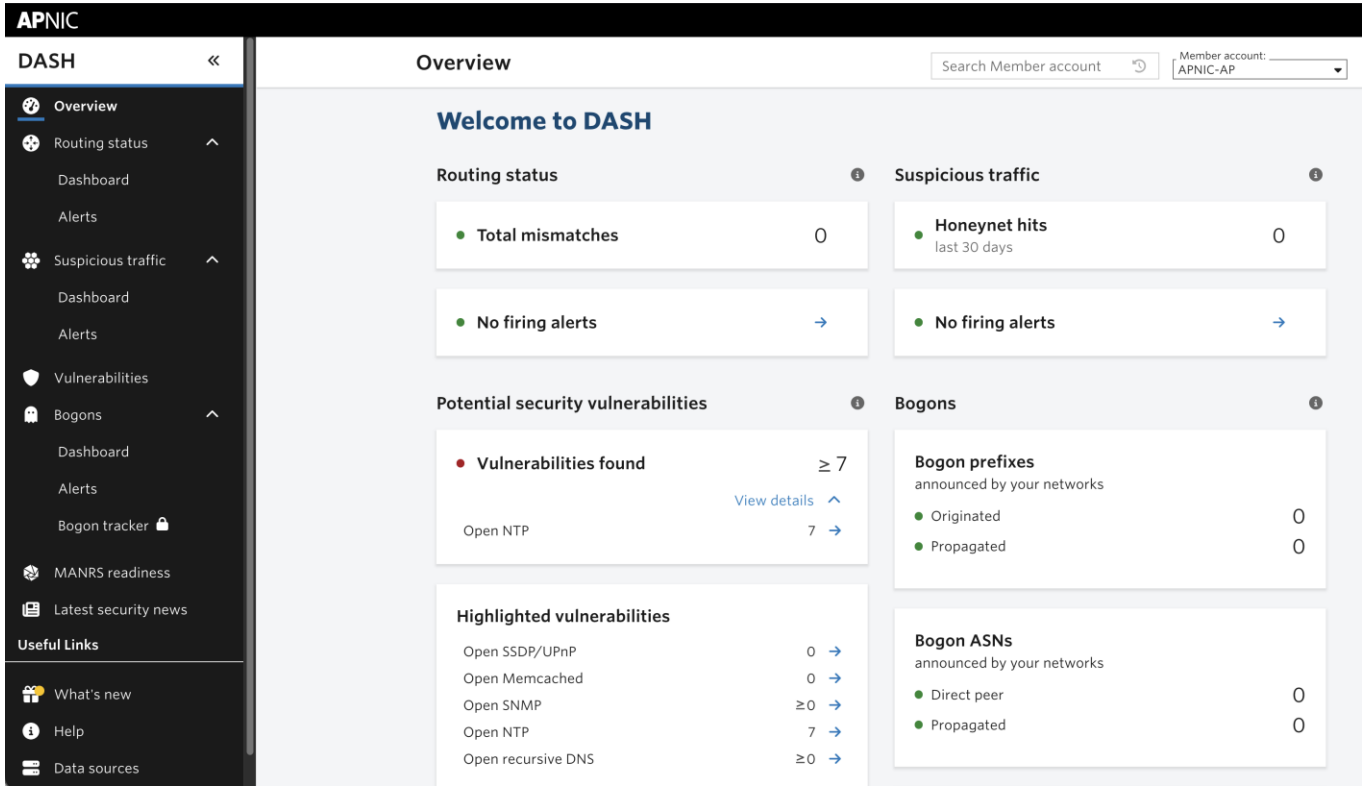
RPKI checklist for operators

1. Check your ROA coverage
2. Check your ROAs are up to date (https://dash.apnic.net/)
3. Deploy ROV or encourage your upstream to do so
4. Create ASPA objects for your AS provider relationships

→ **Improve routing security for the wider Internet**

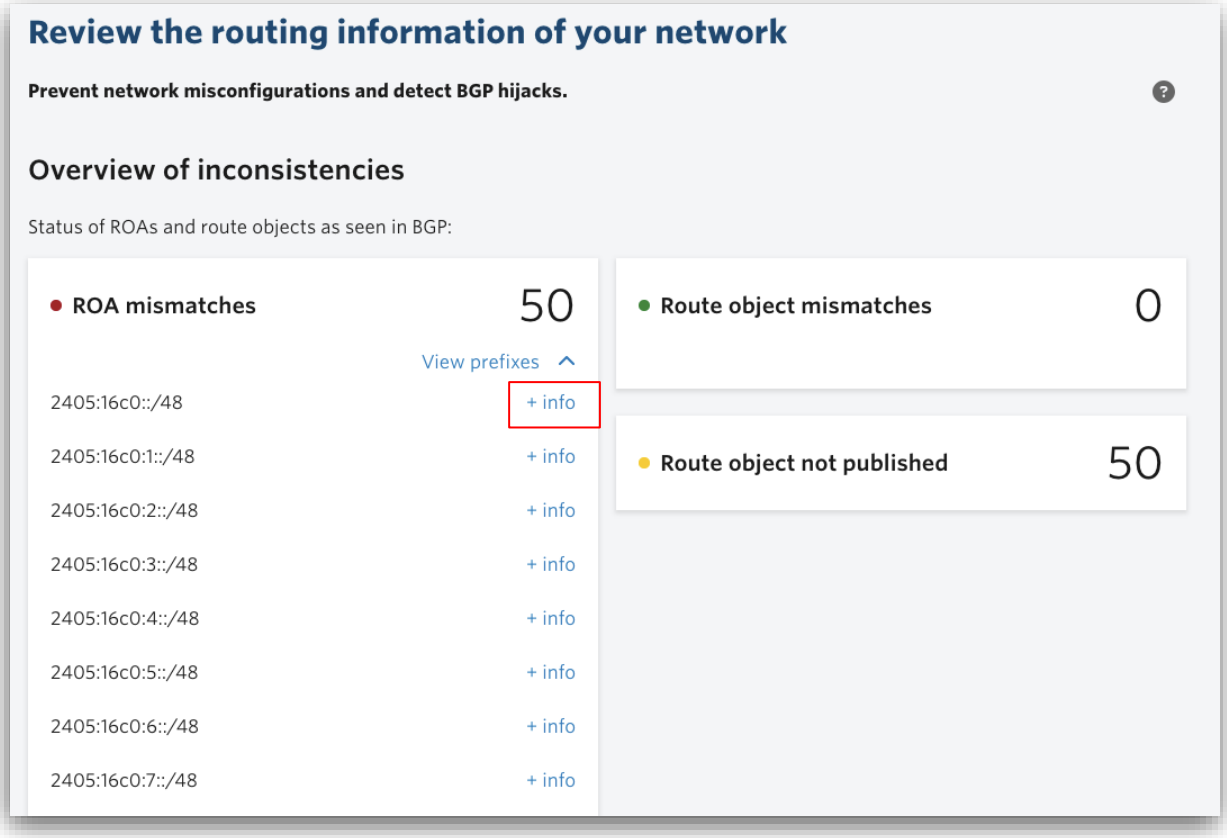
DASH

Provides a full picture of all BGP announcements for your network and track inconsistencies against RPKI ROAs and IRR Route Objects.

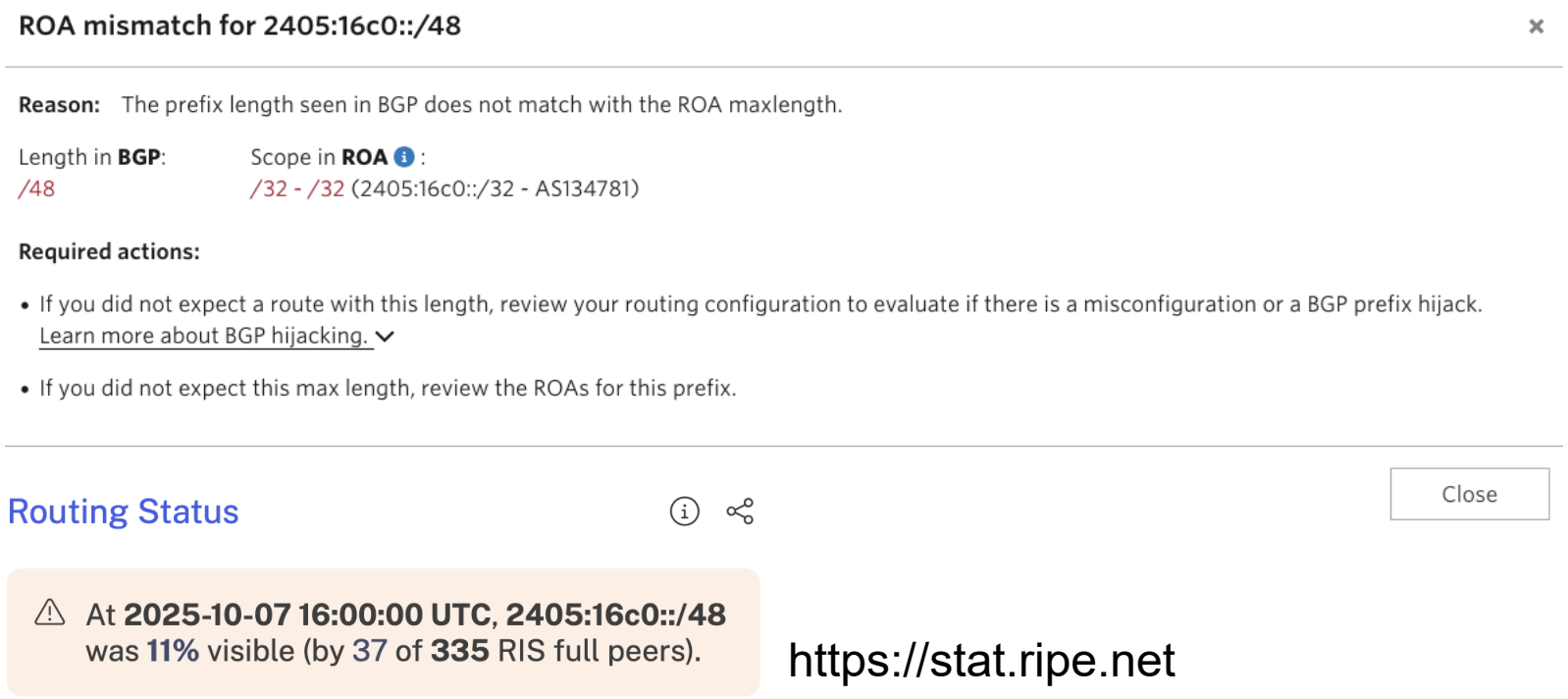


https://dash.apnic.net/

ROA mismatch example

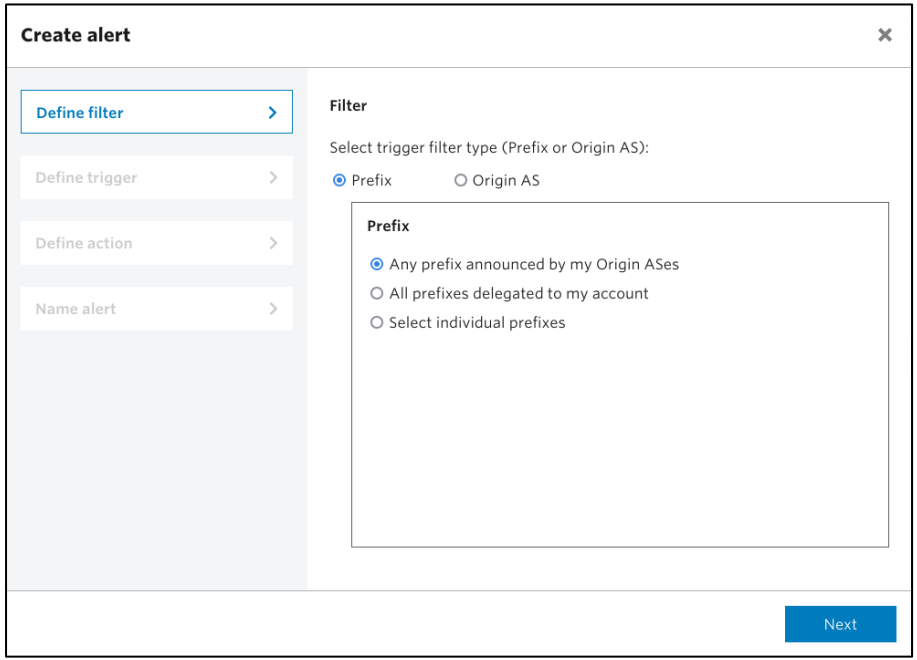


ROA mismatch example



https://stat.ripe.net

Create alerts in DASH



- Email
- SMS
- Slack
- WhatsApp
- Webhooks

Questions


WHEN? WHY? WHERE? WHO? WHAT? HOW? WHY? WHEN? WHO? WHAT? WHERE? HOW? HOW? WHEN? WHERE? WHOSE? WHICH? WHEN? WHERE? HOW? WHAT? HOW? WHY? WHO? WHERE? WHAT? HOW? WHY? HOW? WHAT? HOW? WHY? WHO? WHERE? WHAT? HOW? WHERE? WHICH? WHOSE? WHEN? WHY? WHY? HOW? WHERE? WHO? WHOSE? WHERE? WHAT? HOW? WHAT? WHY? HOW? WHERE? WHERE? WHAT? HOW? WHERE? WHICH? WHOSE? WHEN? WHY? WHERE? HOW? HOW? WHO? WHO? WHERE? WHAT? HOW? WHAT? HOW? WHY? WHERE? WHAT? HOW? HOW? WHERE? WHY?

12:00 – 13:00

LUNCH

Policy: Why Participation Matters

The internet is more than just numbers

Dave Phelan – Policy Manager and Senior Network Analyst
Bikram Shrestha – Policy SIG Chair

Today's Session

- How policy works in practice
- Community participation and engagement
- Recent developments and emerging issues
- Operational impact for members

Why Network Operators Should Care

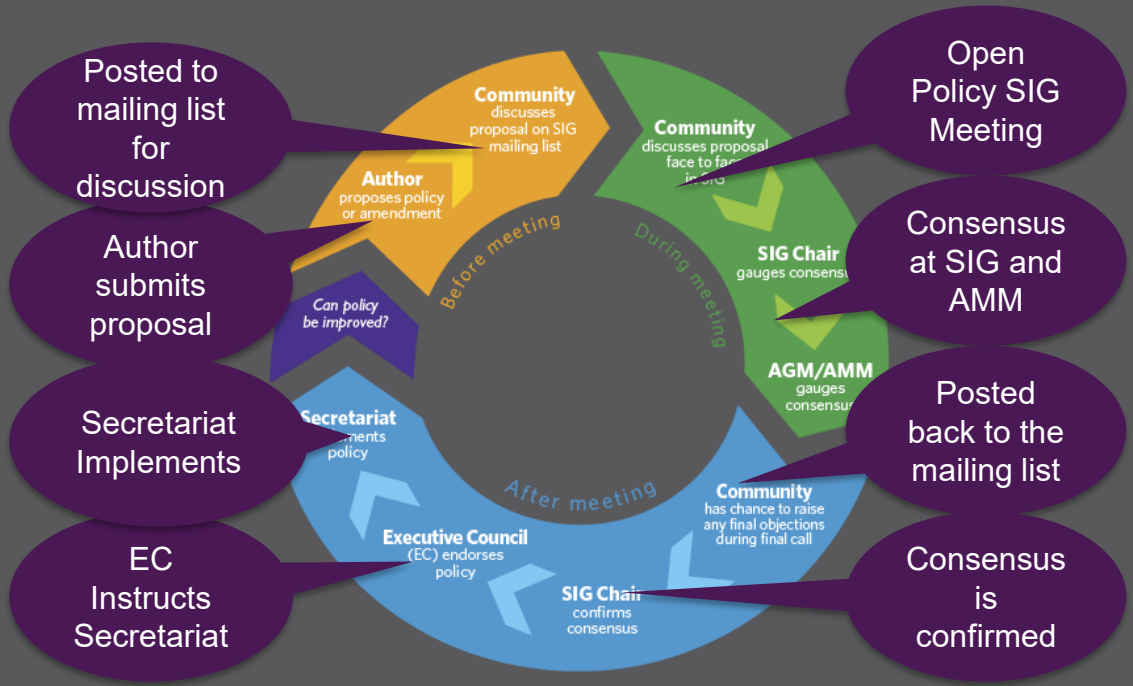
- Policy affects IPv4, IPv6, ASN management and transfers
- Policy decisions become operational procedures
- Community participation influences outcomes

How Policy works in practice

The APNIC Policy Development Process

- Issue identified
- Community discussion
- Proposal development
- Consensus building
- Implementation and review

Policy Development Process



What Makes APNIC Different?

- Bottom-up
- Open participation
- Transparent processes
- Consensus-based decision making

Who Shapes Policy?

- Members
- Network operators
- IXPs and NRENs
- Governments
- Technical community
- Policy SIG

Community participation and pathways for engagement

Why Participation Matters

- Better policy decisions
- Regional perspectives
- Practical operational input
- Shared ownership

Everyone Can Participate

- Join discussions
- Ask questions
- Share experience
- Submit proposals
- Build consensus

Pathways for Engagement

- Observe
- Comment
- Contribute
- Lead

Why SANOG Participants Matter

- Rapidly growing region
- Unique deployment experiences
- Regional voices strengthen policy

Recent developments and upcoming proposals

The Current Policy Landscape

- IPv4 scarcity
- IPv6 adoption
- Routing security
- Registry services

Implementation Update

- Prop-162: Whois Privacy
  - Technical works completed
  - WHOIS AUA to be updated
- Prop-167: Published Statistics on Directory Service Usage
  - Stats now published via APNIC FTP
- Prop-166: Revocation of Persistently Non-functional RPKI Certification Authorities
  - Non-Compliant Self hosted CA are being notified
  - Awaiting updates to RPKI ToC

Upcoming Proposals

- Prop-169: Aligning IPv4 LIR Needs Assessment with Current IPv4 Delegation Policy
- Prop-170: Nibble-Boundary Alignment for IPv6 Allocations
- Prop-168: Increase to maximum IPv4 delegations
- Prop-164: Allocations of IPv6 Resources longer than a /32 with a nibble boundary alignment

Emerging Themes and Topics

- WHOIS Data Access
  - Improper use of WHOIS data for Marketing
- Abuse Contact
  - Non-responsive abuse contacts
  - IRT Validation
- IPv4 Allocations

What Members Should Watch

- High impact changes
- Strategic planning items
- Administrative updates
- Future considerations

Key Takeaways

Key Takeaways

- Policy is community-driven
- Participation influences outcomes
- Operational experience is valuable
- SANOG voices matter

Call To Action

- Join the Policy Sig Mailing list today
  - sig-policy-join@lists.apnic.net
  - https://orbit.apnic.net/mailing-list/sig-policy@lists.apnic.net/
- Review the current proposals
  - https://www.apnic.net/community/policy/proposals/
- Make your voice heard!

Questions?

APNIC Foundation

UPDATE

APNIC Community Listening Session

Community Listening Session

Send through your feedback or questions:

- Any feedback or questions for APNIC
- Suggestions on how APNIC can improve
- How can APNIC engage in South Asia?
- Ideas on how South Asia community can participate more in APNIC activities


APNIC 62
MUMBAI, INDIA
4 – 10 September 2026
#apnic62

APNIC 62 at a glance

- Shape the future of the Internet at APNIC's regional conference for the Asia Pacific Internet community!
- 4 to 10 September 2026 in Mumbai, India, featuring workshops, technical talks, policy discussions, and networking opportunities
- Who should attend:
  - Network operators and engineers
  - Policy participants
  - APNIC Members and the Internet community
- Learn, share, and connect with the Asia Pacific Internet community

Key dates:

- Call for policy proposals open until Friday, 07 August 2026
- Registration open from Wednesday, 27 May 2026
- Early bird discount until Friday, 31 July 2026

Join the APNIC WhatsApp Community

The APNIC WhatsApp Community offers a direct way to stay informed and connected, delivering timely updates, discussions, and event information directly to your phone.

Sub-Regional Forum Survey

- Let us know how today went
- Suggestions on how we can improve
- Other topics for us to consider
- Take two minutes to complete

APNIC: By Members, for Members

THANK YOU