RPKI uptake in the region Key Insights

vivek@apnic.net
Regional Manager
Member and Registry Services

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 dop RPKI invalid routes
  - Default/Partial feed
    - Encourage up-streams to drop RPKI invalid routes

RPKI Initiatives

Initial challenge was to get APNIC Members to create ROAs

face-to-face and eLearning RPKI training courses

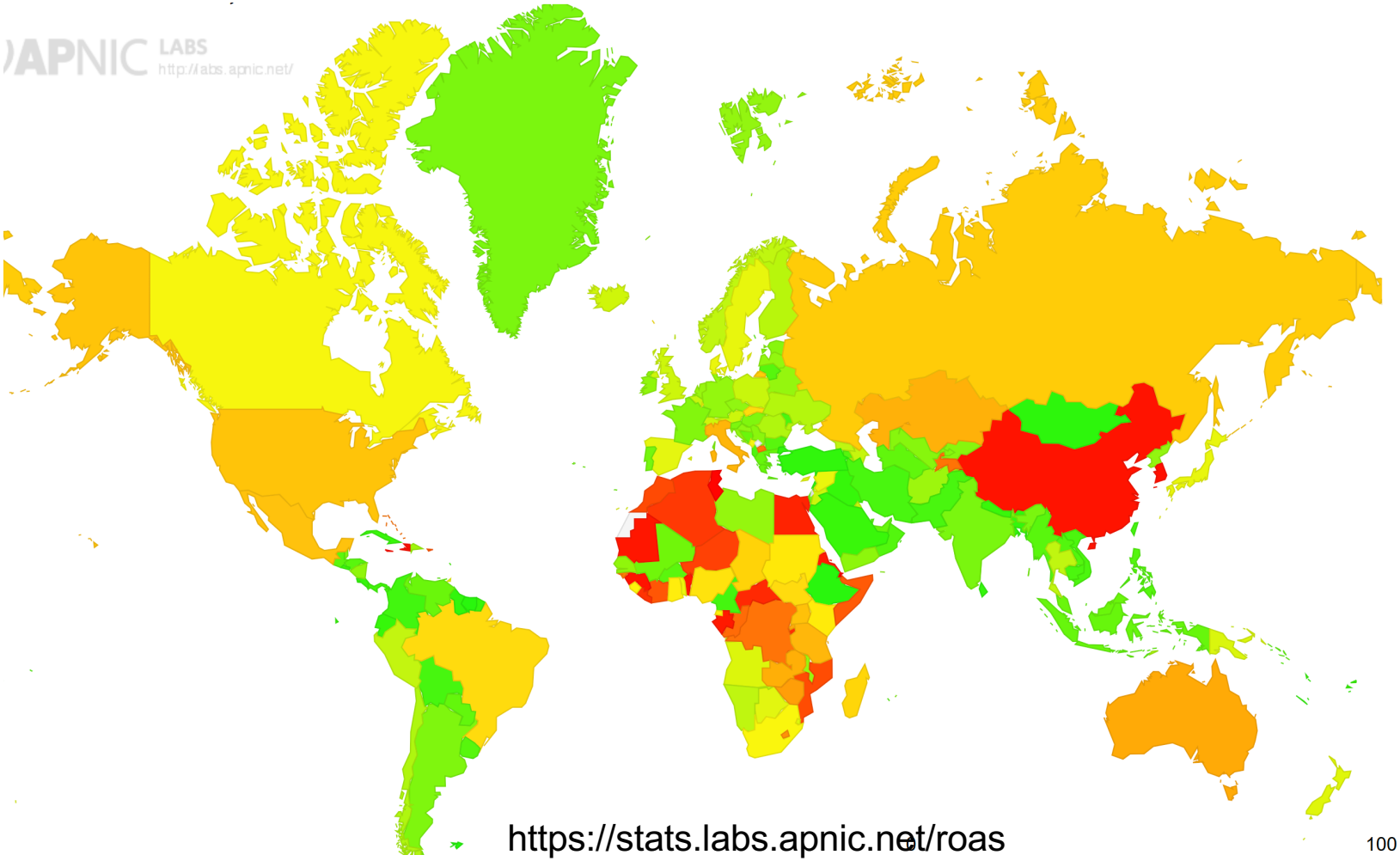
RPKI presentations to NOGs and conferences

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



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

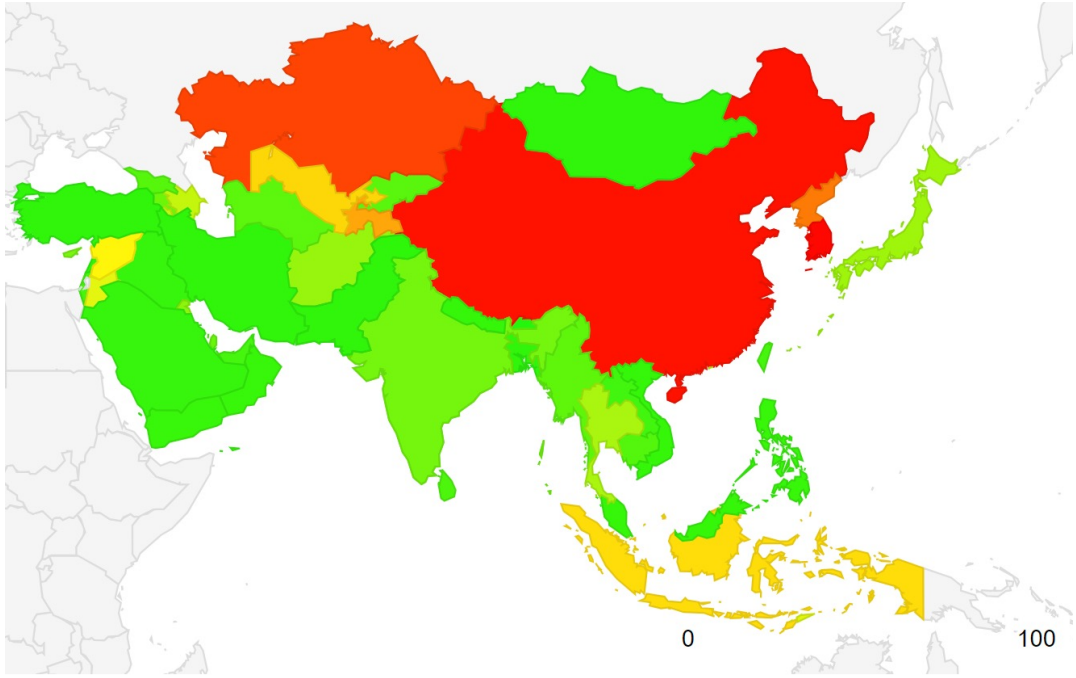
RPKI ROA – Global Snapshot

- Global IPv4 Signed 59.7% (1,214,120 routes)
- Europe 72.4% (260,201 routes)
- Asia 64.4% (366,057 routes)
- South America 62.8% (142,084 routes)
- North America 47.7% (319,177 routes)
- Africa 43.6% (51,182 routes)
- Oceania 40.5% (18,416 routes)

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

RPKI ROA – Asia

- 3 Sub-regions
  - 89.1% South Asia
    - IN,LK,NP,BT,PK,BD,AF,MV
  - 30.8% East Asia
    - TW,JP,MN,CN,MO,KR,HK,KP
  - 90.6% South-East Asia
    - MY,VN,TH,SG,PH,ID,MM,LA,BN,KH,TL



https://stats.labs.apnic.net/roa/XD

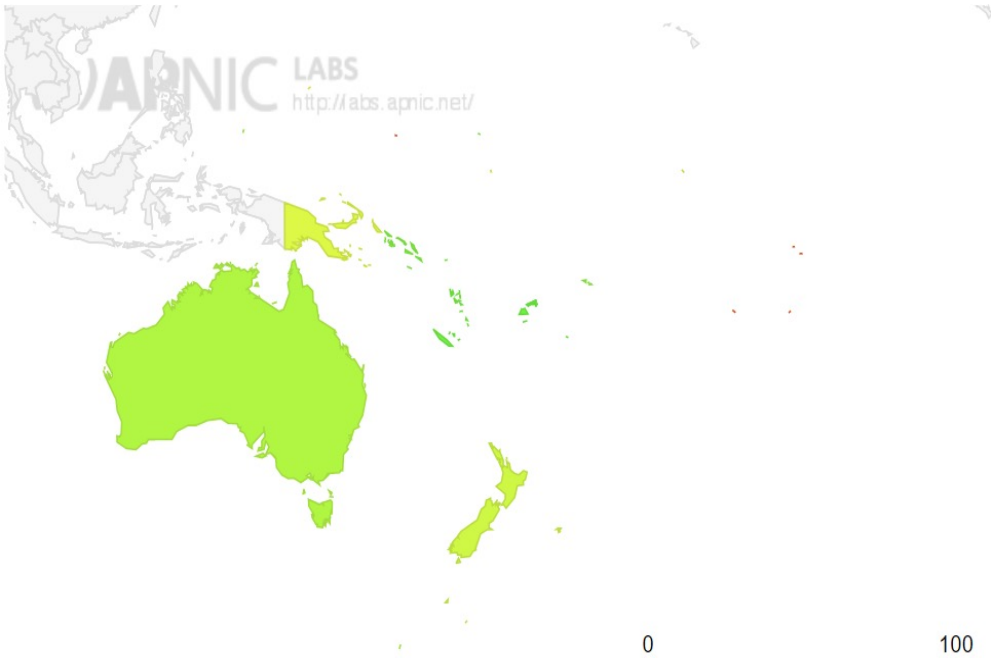
RPKI ROA – East Asia Sub-Region

Code	Region	V4 Valid	Pc	V4 Unknown	Pc	Total IPv4
MN	Mongolia	166,364	96.4%	5,888	3.4%	172,544
TW	Taiwan	32,625,745	94.7%	264,704	0.8%	34,466,560
MO	Macao Special Administrative Region of China	343,296	88.9%	42,752	11.1%	386,048
HK	Hong Kong Special Administrative Region of China	16,614,242	79.0%	4,378,645	20.8%	21,033,621
JP	Japan	128,352,572	74.7%	43,442,816	25.3%	171,826,304
KP	Democratic People's Republic of Korea	1,024	66.7%	512	33.3%	1,536
CN	China	11,103,226	3.9%	273,408,263	95.3%	286,744,072
KR	Republic of Korea	3,125,983	2.8%	106,969,275	97.2%	110,102,971

https://stats.labs.apnic.net/roa/XS

RPKI ROA – Oceania

- 4 Sub-regions
  - Australia and New Zealand – 73.4%
    - AU,NZ,NF
  - Melanesia 89.8%
    - FJ,NC,PG,SB,VU
  - Micronesia – 54.6%
    - FM,GU,KI,MH,MP,NR,PW
  - Polynesia – 32.8%
    - AS,CK,NU,PF,PN,TK,TO,TV,WF,WS



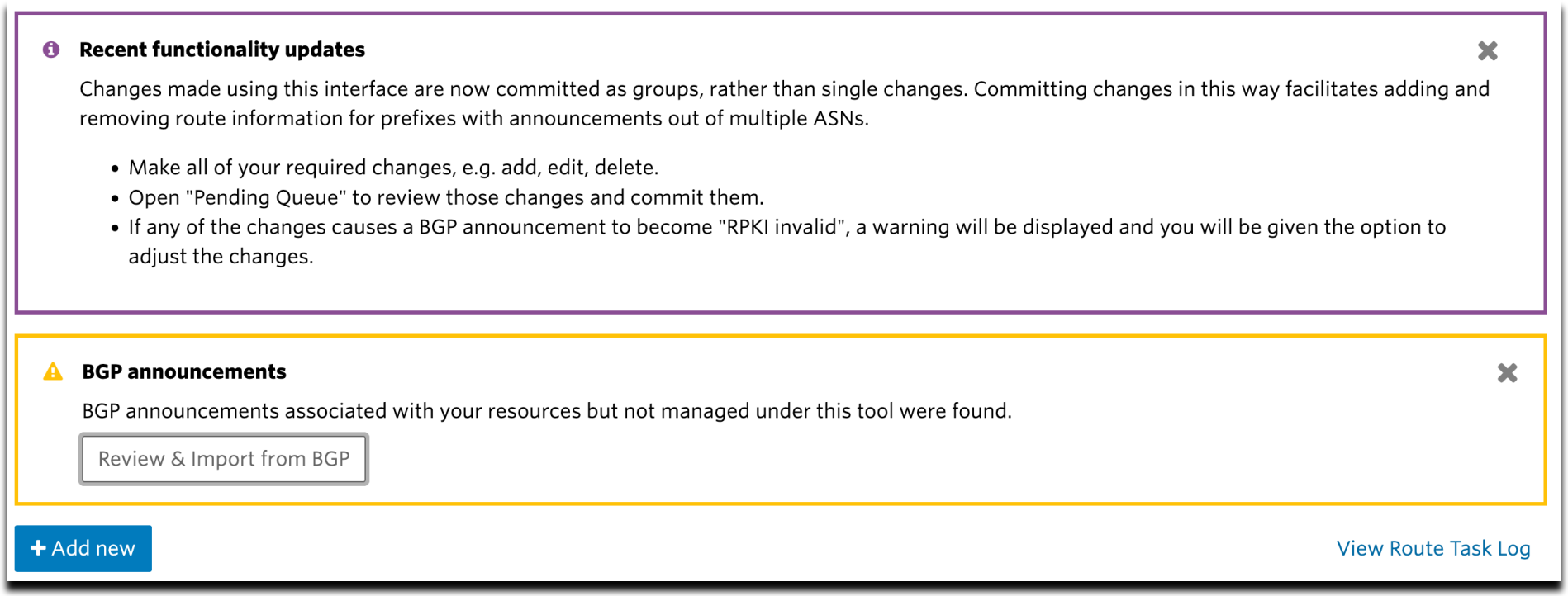
https://stats.labs.apnic.net/roa/XF

RPKI ROA – Polynesia

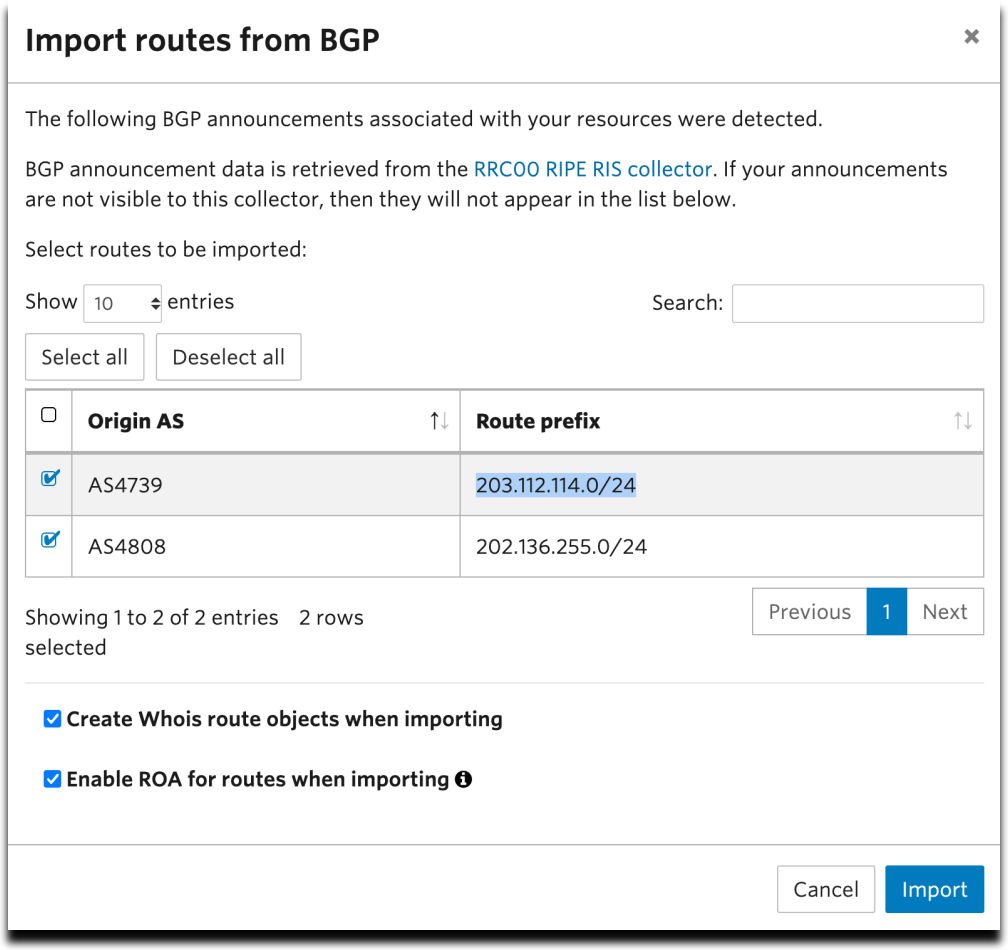
Code	Region	V4 Valid	Pc	V4 Unknwn	Pc	Total IPv4
NU	Niue	512	100.00%	0	0.00%	512
PN	Pitcairn	256	100.00%	0	0.00%	256
TO	Tonga	9,728	97.40%	256	2.60%	9,984
WS	Samoa	18,432	88.9%	2,304	11.1%	20,736
TK	Tokelau	2,048	66.7%	1,024	33.3%	3,072
TV	Tuvalu	4,096	48.5%	4,352	51.5%	8,448
AS	American Samoa	5,376	25.0%	16,128	75.0%	21,504
PF	French Polynesia	9,472	12.4%	66,816	87.6%	76,288
WF	Wallis and Futuna Islands	256	6.70%	3584	93.30%	3,840
CK	Cook Islands	256	2.90%	8,704	97.10%	8,960

https://stats.labs.apnic.net/roa/QS

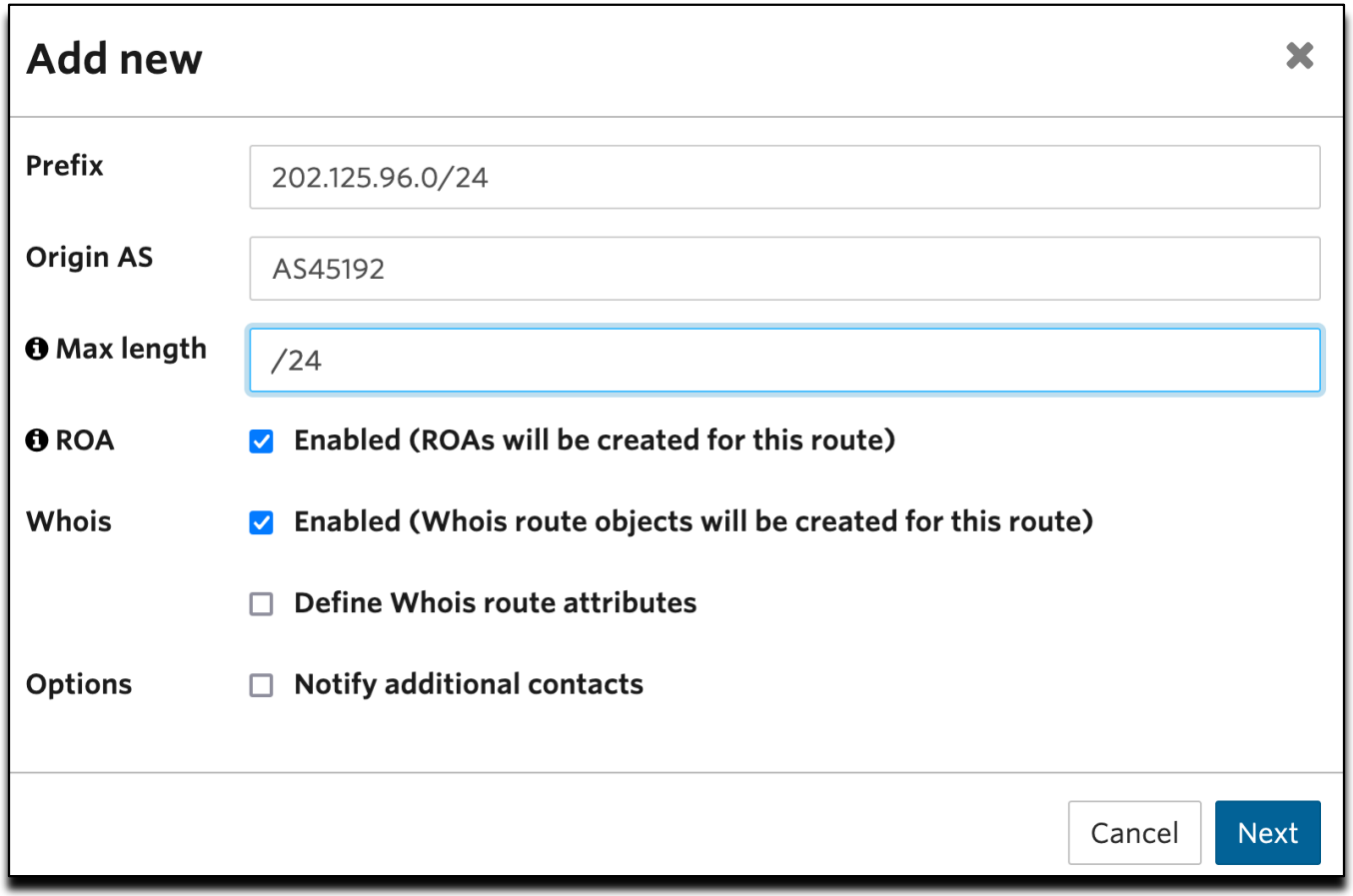
Create your ROA - Import from BGP



Create your ROA - Import from BGP



Create your ROA - Manual creation



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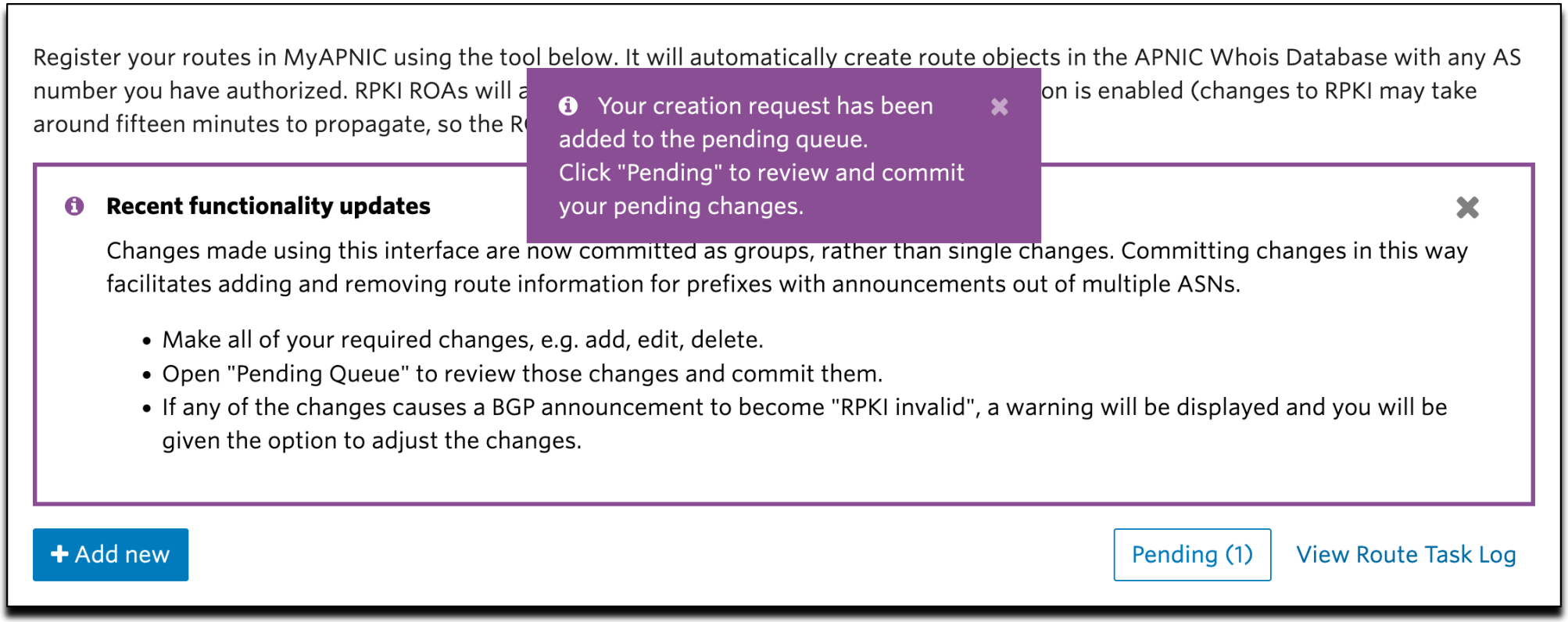
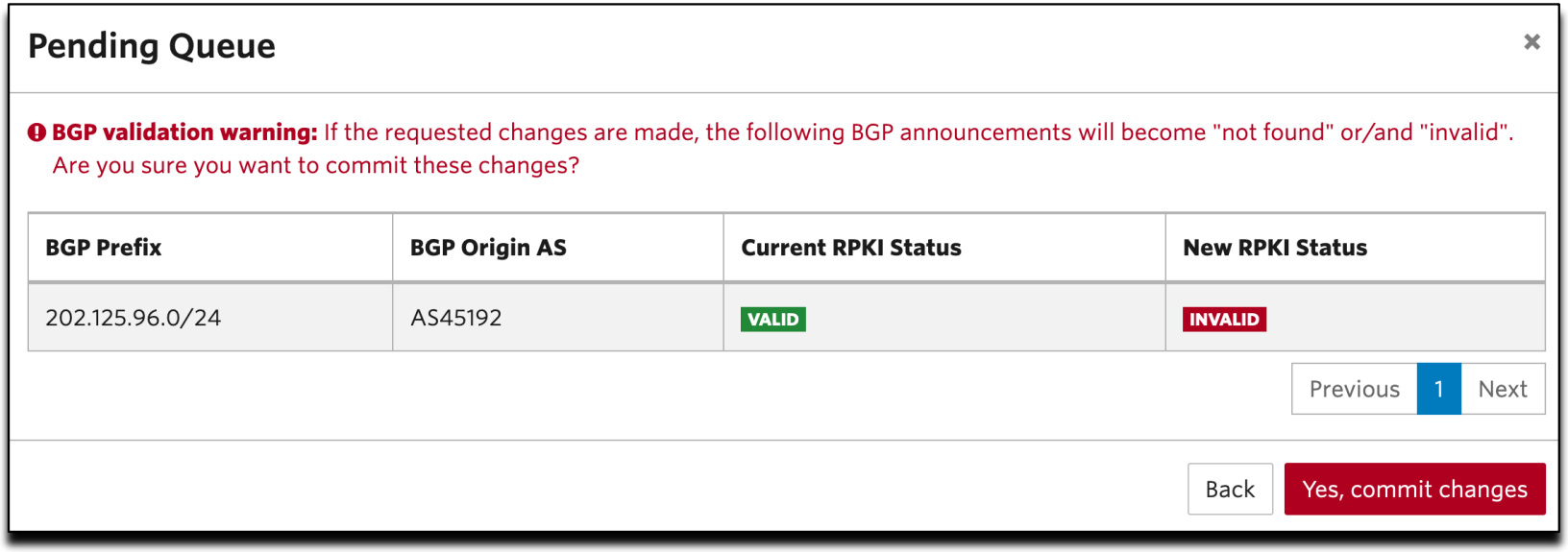


Create your ROA - Manual creation

- Validate changes submitted via MyAPNIC to ensure that they won't cause problems in BGP
- Allows Members to override if necessary

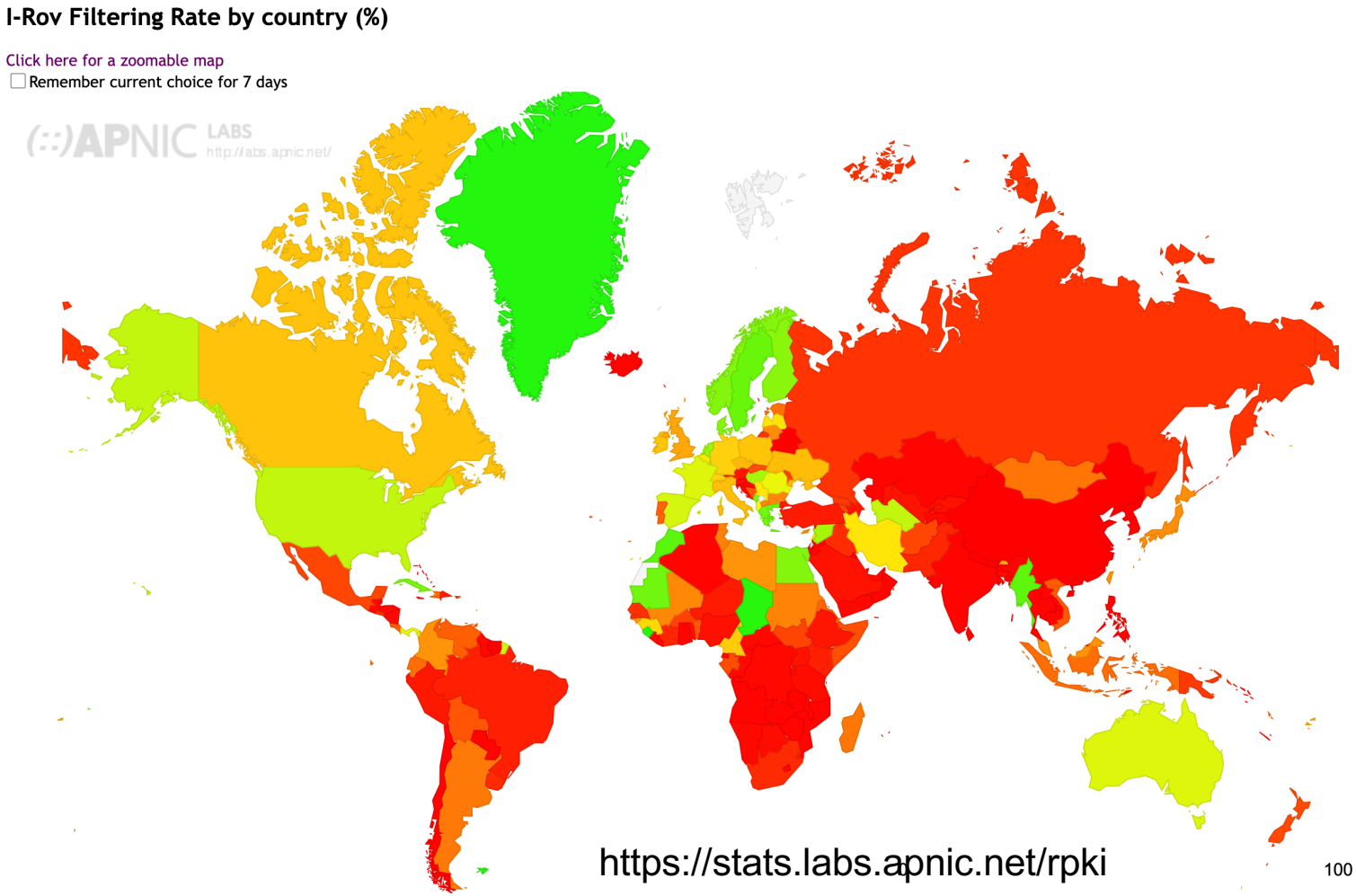


Step 2. Deploy ROV

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

https://isbgpsafeyet.com/

RPKI ROV – 2025 Global Snapshot



RPKI invalids

Region	Total IPv4	IPv4 invalids	Total IPv6	IPv6 invalids
World	1,214,120	37,428 (3.1%)	188,542	18,247 (9.7%)
Asia	366,057	6,929 (1.9%)	99,610	3,876 (3.9%)
Oceania	30,943	183 (0.6%)	4,685	719 (15.3%)

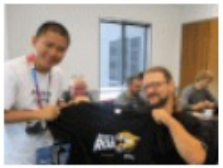
https://stats.labs.apnic.net/roas

Invalids associated with APNIC prefixes

Validation result	IPv4 count	IPv6 count
Invalid origin ASN	341	293
Invalid ASN and Max Length	66	75
Invalid Max Length	377	1031
Total	784	1399

Routeviews and RIS collectors

Cleaning up RPKI invalids



Rise of the invalids

By Tashi Phuntsho on 10 Apr 2020

Cleaning up your RPKI invalid routes

By Vivek Nigam on 28 Apr 2021

Fixing your incorrect or outdated ROAs is easy — here's how.

RPKI invalids are not going away

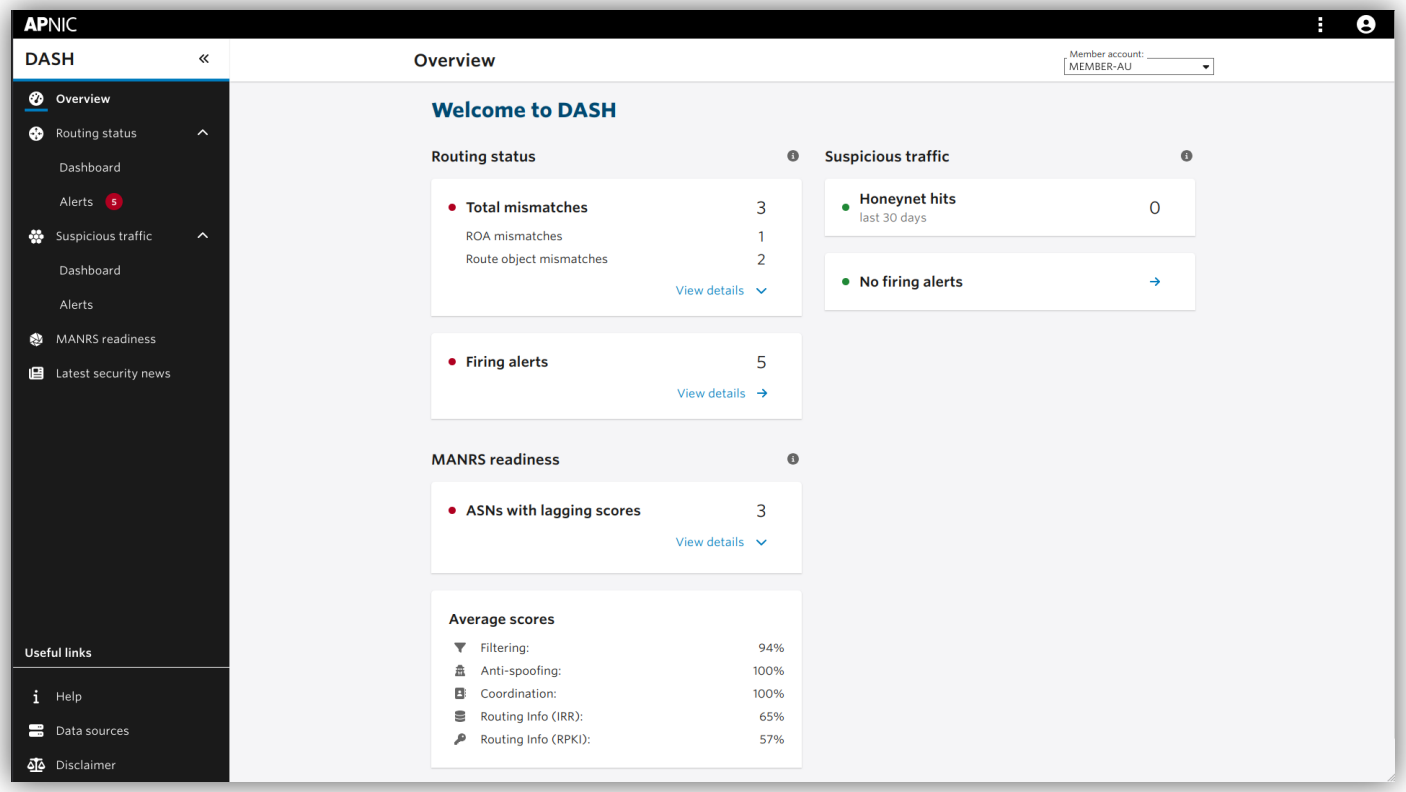
By Md Abdul Awal on 16 Jul 2021

Solo effort to clean up RPKI invalids across a region

By Peter Peele on 26 Jul 2021

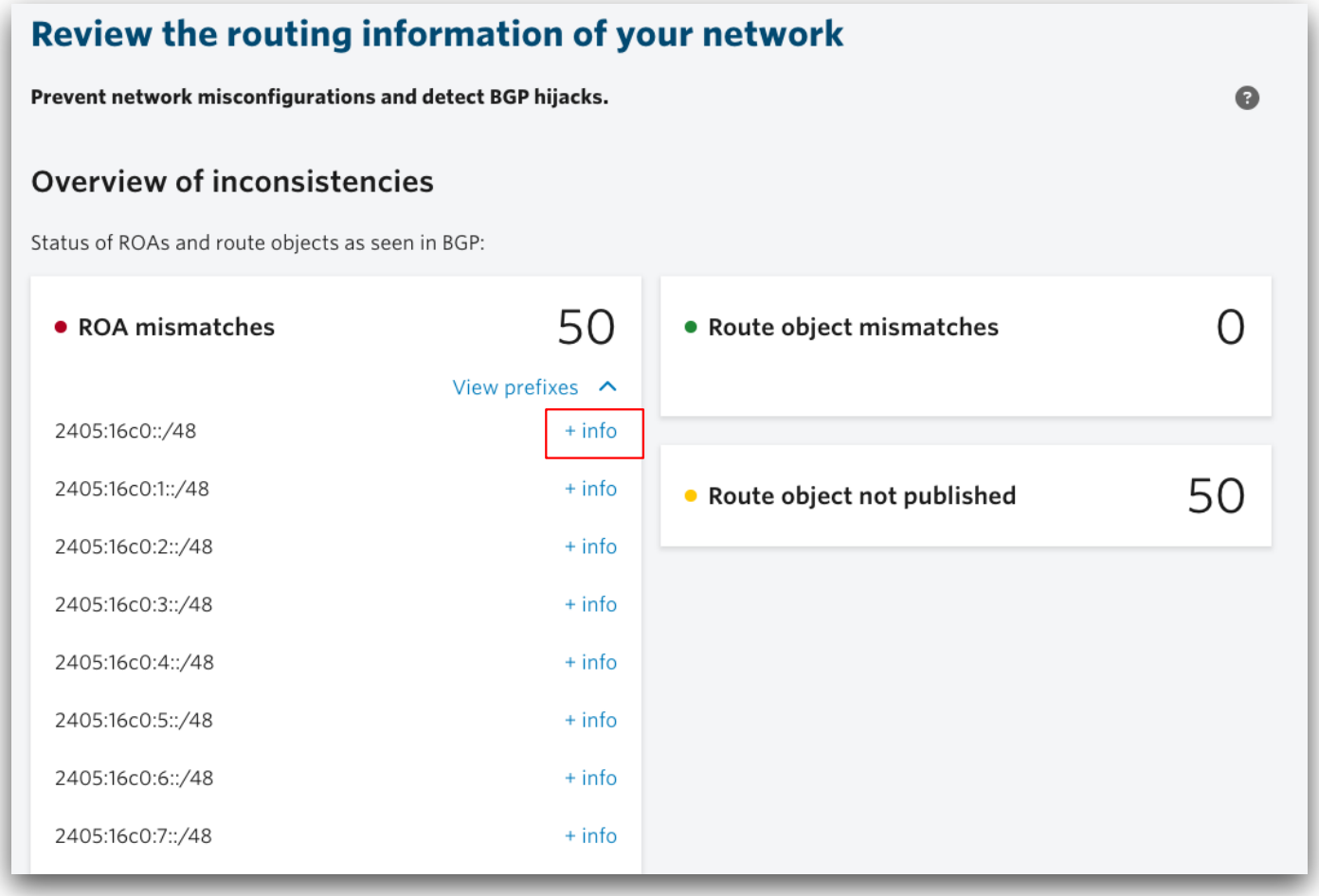
DASH

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

ROA mismatch for 2405:16c0::/48

Reason: The prefix length seen in BGP does not match with the ROA maxlength.

Length in **BGP**:
/48

Scope in **ROA** :
/32 - /32 (2405:16c0::/32 - AS134781)

Required actions:

- If you did not expect a route with this length, review your routing configuration to evaluate if there is a misconfiguration or a BGP prefix hijack.
  Learn more about BGP hijacking.
- If you did not expect this max length, review the ROAs for this prefix.

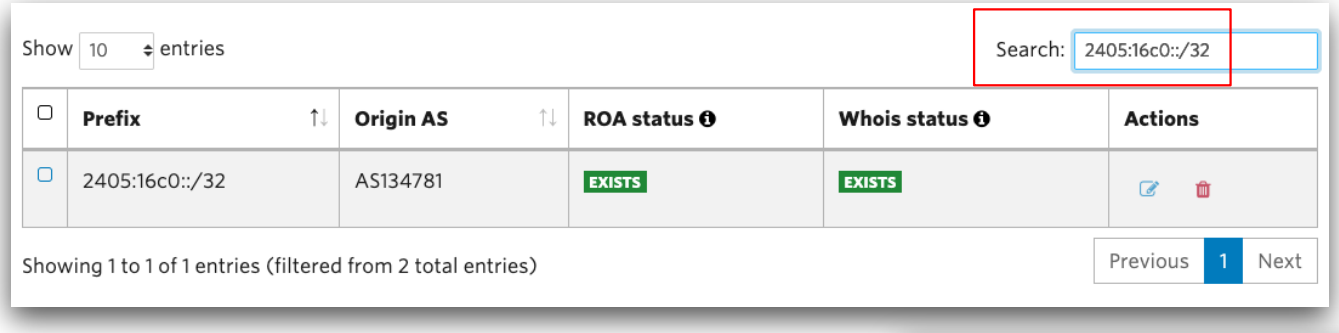
Close

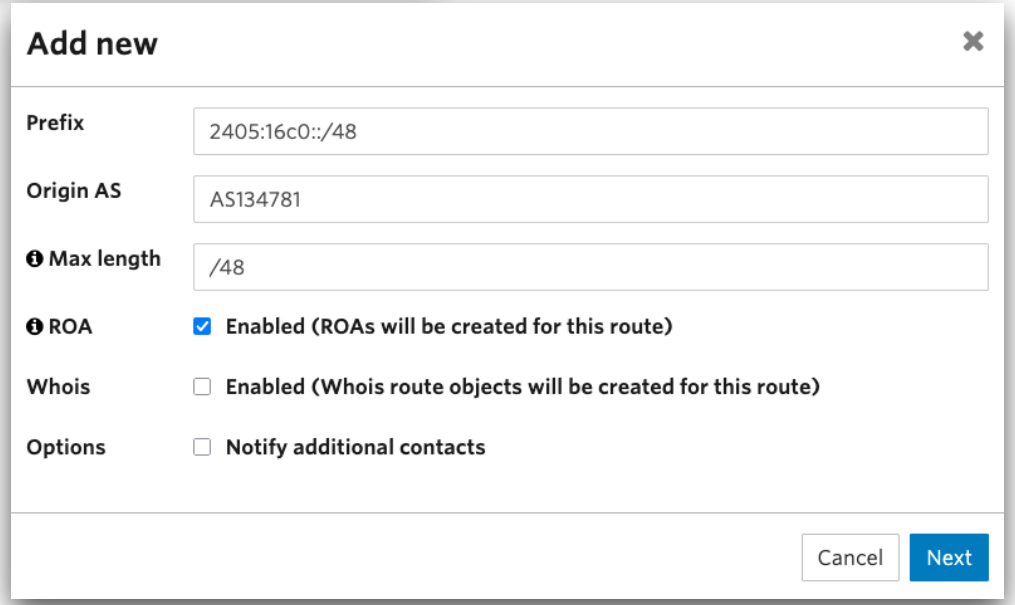
Routing Status

⚠ At **2025-10-07 16:00:00 UTC, 2405:16c0::/48** was **11%** visible (by 37 of **335** RIS full peers).

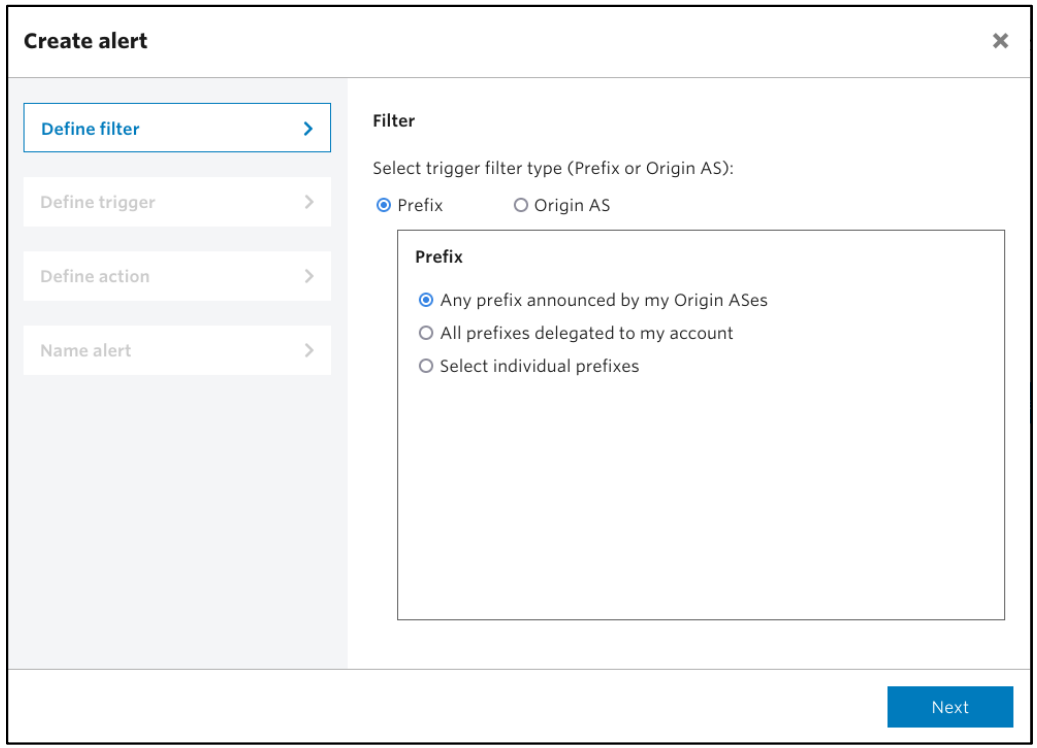
https://stat.ripe.net

Fix your ROA in MyAPNIC





Create alerts in DASH



- Email
- SMS
- Slack
- WhatsApp
- Webhooks

Questions?