

# Asia Pacific RPKI Update

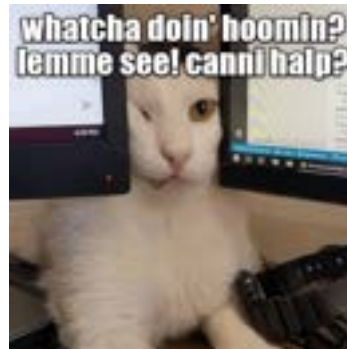
Dave Phelan - APNIC

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# Who Am I?

- Dave Phelan
  - Network and Infrastructure engineer for a LONG time
  - Trainer at APNIC
  - Parent to 2 Human children and 3 Fur Children
  - Likes Cat memes



# What are we going to talk about?

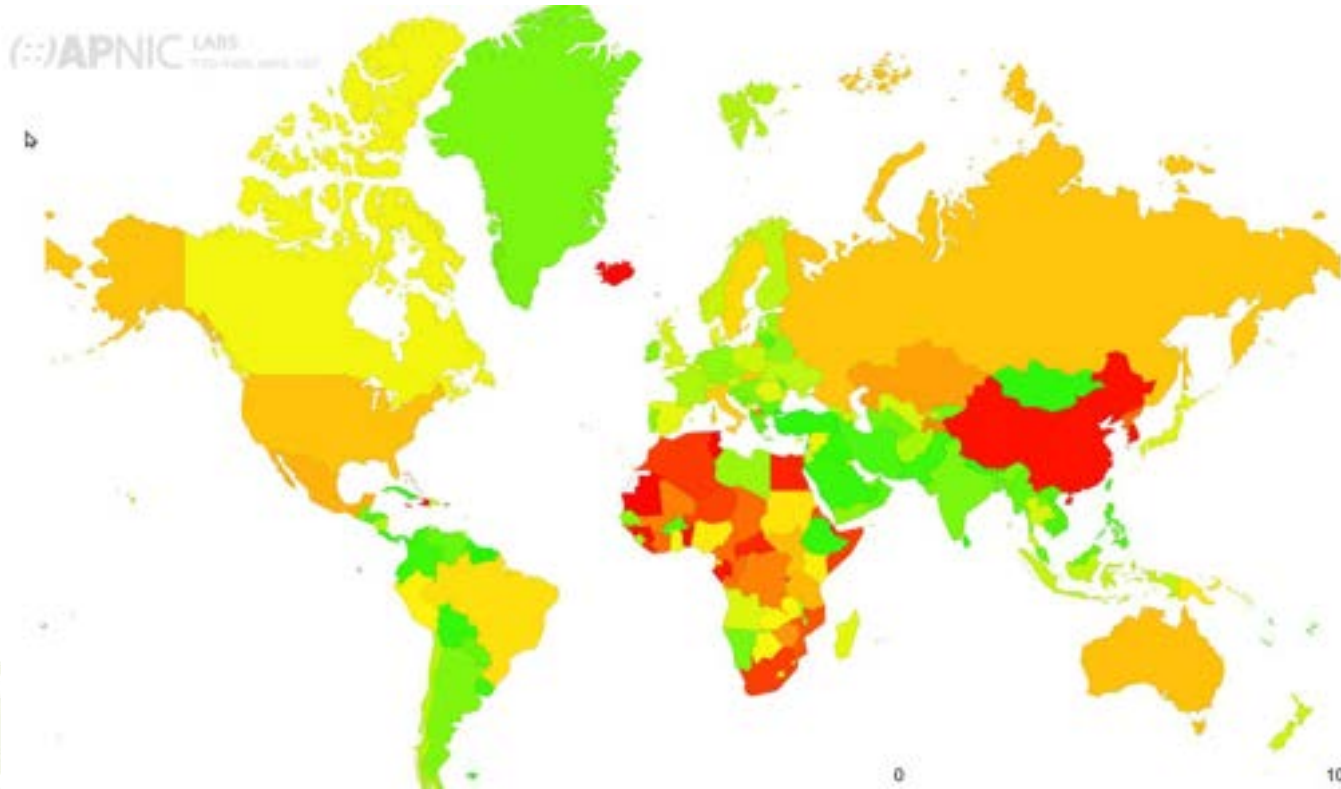
- Numbers Numbers Numbers!!!
- RPKI Stats
  - ROA Coverage
  - ROV
  - Oddities



# ROA Coverage

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# RPKI ROA – Global Snapshot



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

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# RPKI ROA – Global Snapshot

- 52.5 % (Up from 47.8%) Global IPv4 Signed
- 63.7% (Up from 57.9%) Asia
- 45% (Up From 34.6%) North America
- 57.75 (Up From 54.4%) South America
- 56.9% (Up From 53.6%) Europe
- 31.5% (Up from 30.4%) Africa
- 74.0% (Up From 69.6%) Oceania



# RPKI ROA – Oceania

- 4 Sub-regions
  - Australia and New Zealand – 74.1% (69.7%)
    - AU,NZ,NF
  - Melanesia 89.9%
    - FJ,NC,PG,SB,VU
  - Micronesia – 57.9 (51.6%)
    - FM,GU,KI,MH,MP,NR,PW
  - Polynesia – 32.7% (30.1%)
    - AS,CK,NU,PF,PN,TK,TO,TV,WF,WS



# RPKI ROA – Oceania

- Winners:
  - MP Northern Mariana
    - 100% (62.5%)
  - FM Federated States of Micronesia
    - 91.4% (2.8%)





# RPKI ROA – Asia

- 3 Sub-regions
  - 88.4% (86.3%) South Asia
    - IN,LK,NP,BT,PK,BD,AF,MV
  - 29.2% (29.5%) East Asia
    - TW,JP,MN,CN,MO,KR,HK,KP
  - 80% (76.3%) South-East Asia
    - MY,VN,TH,SG,PH,ID,MM,LA,BN,KH,TL



# RPKI ROA – South Asia Sub-Region

Code	Region	V4 Valid	Pc	V4 Invalid	Pc2	V4 Unknwn	Pc3	PoT
BT	Bhutan, Southern Asia, Asia	32000	99.20%	0	0.00%	256	0.80%	0.07%
LK	Sri Lanka, Southern Asia, Asia	422144	98.20%	3840	0.90%	3840	0.90%	0.87%
MV	Maldives, Southern Asia, Asia	68096	98.20%	0	0.00%	1280	1.80%	0.14%
PK	Pakistan, Southern Asia, Asia	4873441	98.10%	10271	0.20%	86528	1.70%	10.04%
BD	Bangladesh, Southern Asia, Asia	1650169	98.00%	9480	0.60%	24832	1.50%	3.40%
NP	Nepal, Southern Asia, Asia	529664	95.90%	256	0.00%	22272	4.00%	1.12%
IN	India, Southern Asia, Asia	35048061	84.20%	199043	0.50%	6365953	15.30%	84.08%
AF	Afghanistan, Southern Asia, Asia	100352	71.70%	1536	1.10%	38144	27.20%	0.28%

# RPKI ROA – East Asia Sub-Region

Code	Region	V4 Valid	Pc	V4 Invalid	Pc2	V4 Unknwn	Pc3	PoT
MN	Mongolia, Eastern Asia, Asia	109,792	97.20%	33	0.00%	3,072	2.70%	0.02%
TW	Taiwan, Eastern Asia, Asia	25,297,329	97.20%	539,215	2.10%	178,432	0.70%	5.21%
MO	Macao Special Administrative Region of China, Eastern Asia, Asia	279,296	95.70%	256	0.10%	12,288	4.20%	0.06%
HK	Hong Kong Special Administrative Region of China, Eastern Asia, Asia	10,948,557	73.00%	56,115	0.40%	3,989,508	26.60%	3.00%
JP	Japan, Eastern Asia, Asia	95,408,595	72.60%	71,469	0.10%	35,912,744	27.30%	26.30%
KP	Democratic People's Republic of Korea, Eastern Asia, Asia	512	25.00%	0	0.00%	1,536	75.00%	0.00%
CN	China, Eastern Asia, Asia	11,980,790	4.90%	153,355	0.10%	233,069,054	95.10%	49.09%
KR	Republic of Korea, Eastern Asia, Asia	2,082,816	2.60%	1,280	0.00%	79,433,096	97.40%	16.32%

# RPKI ROA – South East Asia Subregion

Code	Region	V4 Valid	Pc	V4 Invalid	Pc2	V4 Unknwn	Pc3	PoT
MY	Malaysia, South-Eastern Asia, Asia	751,616	99.00%	0	0.00%	7,680	1.00%	4.16%
VN	Vietnam, South-Eastern Asia, Asia	6,166,555	98.80%	6,117	0.10%	71,168	1.10%	34.20%
SG	Singapore, South-Eastern Asia, Asia	2,757,760	96.20%	1,152	0.00%	106,496	3.70%	15.70%
PH	Philippines, South-Eastern Asia, Asia	326,400	94.90%	512	0.10%	17,152	5.00%	1.88%
LA	Lao People's Democratic Republic, South-Eastern Asia, Asia	83891	92.05%	0	0.00%	7245	7.95%	0.50%
KH	Cambodia, South-Eastern Asia, Asia	52,224	89.90%	512	0.90%	5,376	9.30%	0.32%
TL	Timor-Leste, South-Eastern Asia, Asia	15271	60.87%	0	0.00%	9817	39.13%	0.14%
MM	Myanmar, South-Eastern Asia, Asia	11,776	59.00%	0	0.00%	8,192	41.00%	0.11%
TH	Thailand, South-Eastern Asia, Asia	488,939	58.40%	14,357	1.70%	334,336	39.90%	4.59%
ID	Indonesia, South-Eastern Asia, Asia	2,345,203	34.60%	1,293	0.00%	4,439,552	65.40%	37.17%
BN	Brunei Darussalam, South-Eastern Asia, Asia	65894	29.35%	0	0.00%	158618	70.65%	1.23%

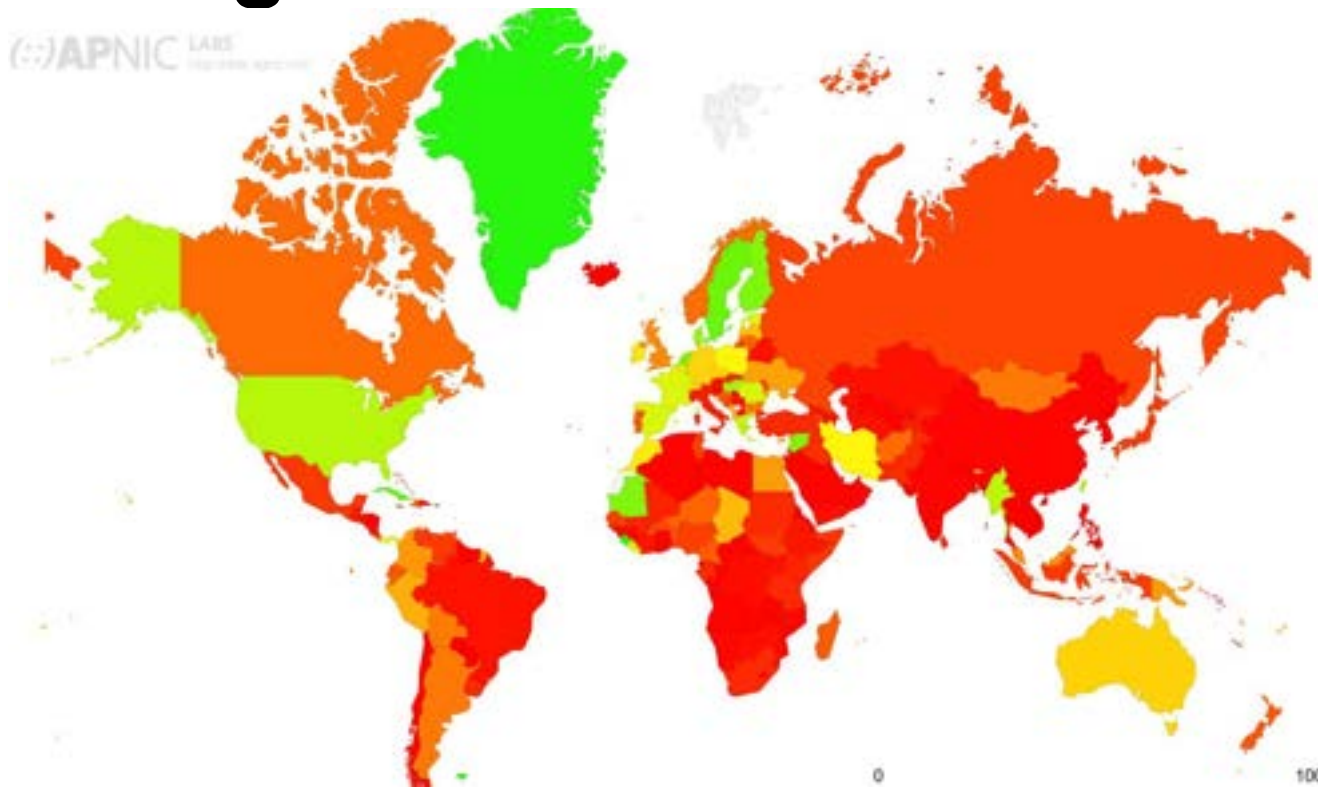


# ROV

# Dropping Invalids

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# Route Origin Validation



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# Route Origin Validation

- Invalid Drop Rates in Asia are LOW
  - South East Asia – 9.3% (Down from 11%)
  - South Asia – 3.2 (Up from 2.8%)
  - East Asia – 5.9% (Down from 10.4%)



# Route Origin Validation

- Oceania are Better (~37%) - BUT
  - Many Economies benefit from “Fortuitous Validation”
    - My Upstream Validates, therefore I Validate
  - Default route exists
    - Invalids fall through to GWoLR





# Malaysia Spotlight!

- The Good:
  - Only 9 Network have not signed ROAs
    - Less than half are local
  - ROV is Ranked #2 in SEA
    - But a Long way Behind #1

# Malaysia Spotlight!

- To Improve:
  - Get the last remaining networks signed
  - Help lift the ROV Numbers!



# RPKI – What do I need to do

- ROA
  - Sign your Routes (RIR/NIR Portal)
  - Make sure your ROA's Match your BGP Routing
    - Routeviews.org
    - radar.cloudflare.com
    - Bgp.tools
    - ....Many other sites



# RPKI – What do I need to do

- ROV
  - Full Routing Table
    - Attend some RPKI Training
    - Setup A Validator and start dropping invalid routes
  - Default/Partial Feed
    - Encourage Up-streams to Drop Invalids.



# Questions?



# 2025 APRICOT APNIC 59

PETALING JAYA, MALAYSIA  
19 – 27 February 2025

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