

RPKI Updates

GFCE Triple-I Workshop, Hyderabad

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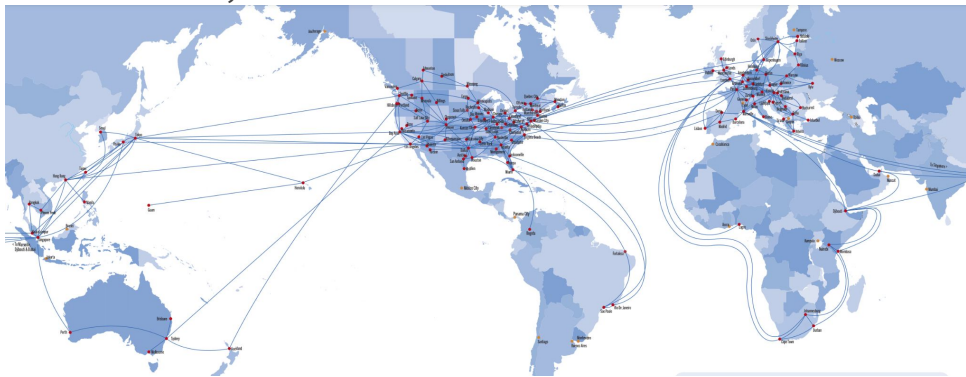
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Introduction

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Working at Global backbone operator & datacenter provider - Hurricane Electric and based in Haryana, India. Spend lot of time in looking at BGP routing tables, traceroutes across the ocean, interesting patterns & tooling around those patterns.

Besides routing I got lot of interest in DNS, root DNS servers, network automation & virtualization.



How global routing works?

The dark theatre example...



Challenges with the BGP “trust model”...

1. One can originate a IP block which does not belong to them i.e **prefix hijack**
2. One can announce a route which they are not supposed to...e.g leaking peer routes to upstream i.e **route leak**



Scope of problem fixing by RPKI...

1. One can originate a IP block which does not belong to them i.e **prefix hijack**
2. One can announce a route which they are not supposed to...e.g leaking peer routes to upstream i.e **route leak**

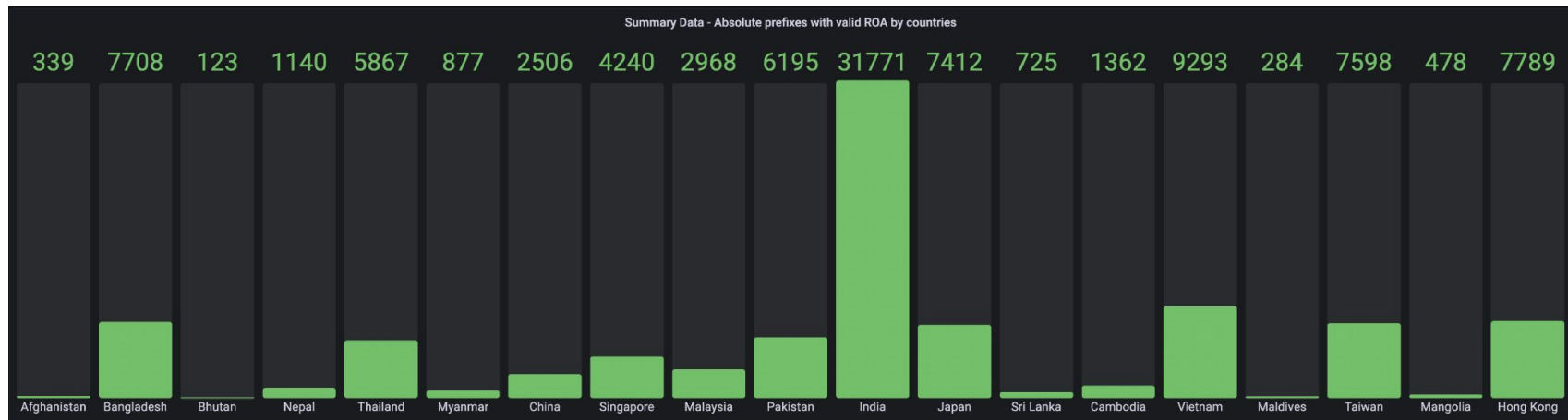


Steps in Global RPKI deployment

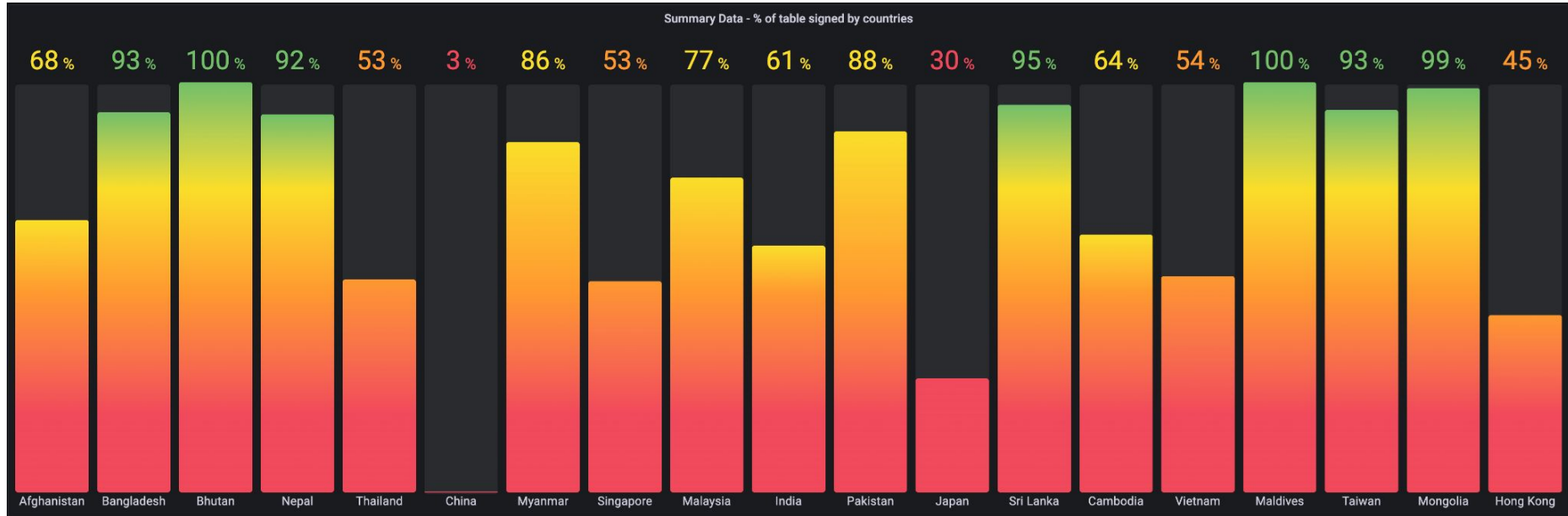
1. Networks sign their prefixes i.e “create ROA”
2. Networks validate other “networks signature”



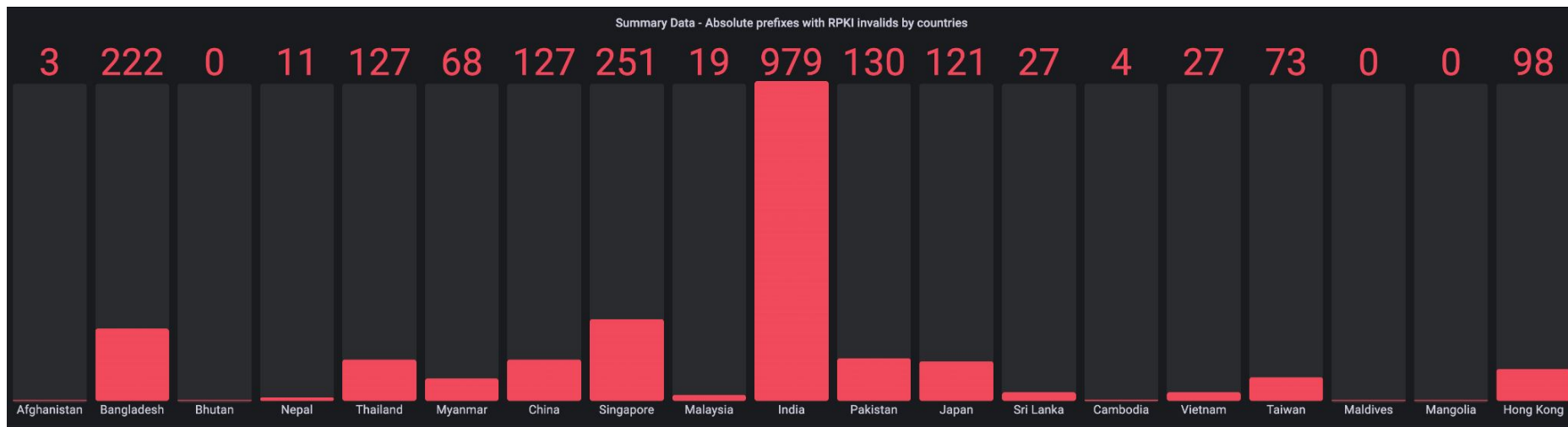
RPKI ROA stats in the region



RPKI ROA stats in the region (cont.)



RPKI ROA stats in the region (cont.)



Latest data on rpki.anuragbhatia.com
(Updated every 24 hrs)



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Stats on Indian Govt. websites

- Out of 818 total domains (with .gov.in & .nic.in), 779 are on signed address space (thanks to NIC!)
- 39 are not signed with an RPKI ROA
- Unsigned list includes some critical websites including Aadhar/UIDAI, CBSE and GST etc.



Govt. websites hosted on unsigned address space

uidai.gov.in
gst.gov.in
bihar.gov.in
mponline.gov.in
maharashtra.gov.in
mahaonline.gov.in
pcmcindia.gov.in
ncs.gov.in
kviconline.gov.in
mahabhumi.gov.in
epfigms.gov.in
cgstate.gov.in
ndmc.gov.in
sssc.gov.in
pmc.gov.in
igrmaharashtra.gov.in
cipet.gov.in
cgibirmingham.gov.in
mcludhiana.gov.in
puda.gov.in
ilearn.gov.in
incometaxmumbai.gov.in
jpsc.gov.in
lgbrimh.gov.in
msrtc.gov.in
nsez.gov.in
vamnicom.gov.in
eoimaniila.gov.in
roiramallah.gov.in

cbse.nic.in
amritmahotsav.nic.in
indiacode.nic.in
icmr.nic.in



Who is validating these ROAs?

Networks rejecting invalids...

NAME	TYPE	DETAILS	STATUS ▲
Lumen	transit	signed + filtering	safe
Arelion (Formally 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
PCCW	transit	signed + filtering	safe
RETN	transit	partially signed + filtering	safe
Orange	transit	signed + filtering	safe
Comcast	ISP	signed + filtering	safe
Cloudflare	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
Telstra International	transit	signed	partially safe
AT&T	ISP	signed + filtering peers only	partially safe
Liberty Global	transit	signed + filtering peers only	partially safe
Google	cloud	signed	partially safe
DigitalOcean	cloud	filtering peers only	partially safe
Sparkle	transit	started	unsafe
Zayo	transit		unsafe
Vodafone	transit		unsafe
Telefonica/Telixius	transit		unsafe
PJSC RosTelecom	transit		unsafe
TransTelecom	transit		unsafe
Verizon	ISP		unsafe
SingTel	transit		unsafe
M247	cloud		unsafe

Source: <https://isbgpsafeyet.com>

Challenges in RPKI rollout in the region...



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Questions/Feedback/Suggestions?

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