HURRICANE ELECTRIC
INTERNET SERVICES

RPKI over IPv6

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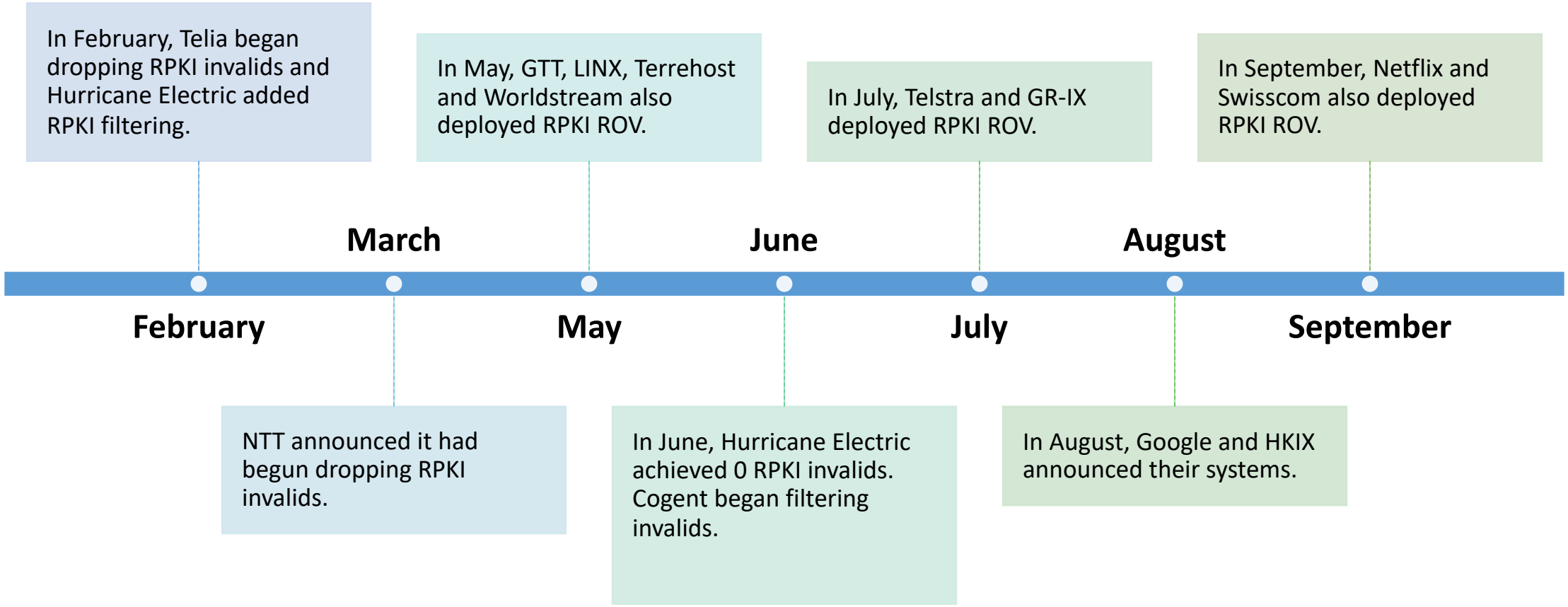
RPKI over IPv6

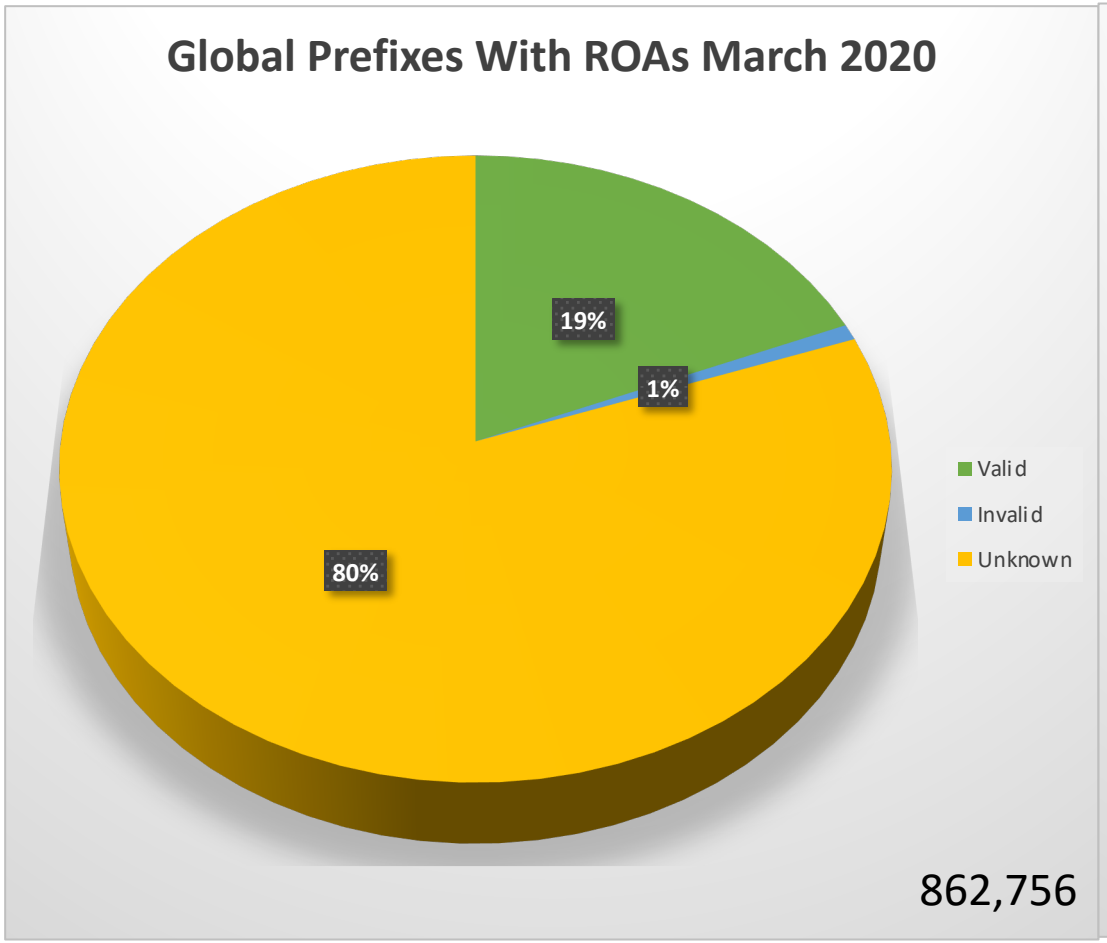
This year we saw significant progress among ISP in deploying RPKI route origin validation, but the attention on RPKI adoption focuses on IPv4 prefixes.

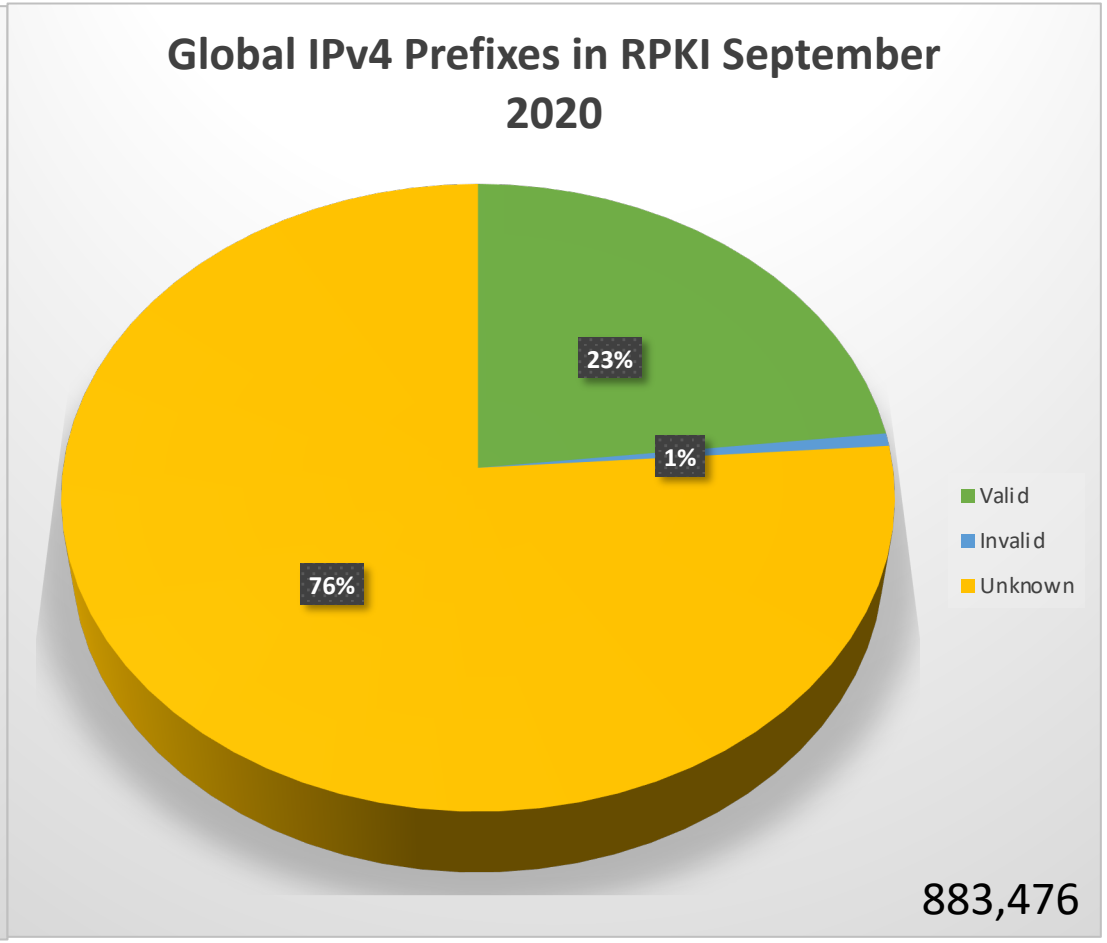
While global adoption of RPKI for IPv4 is important, IPv6 also is worth looking at to see how it stacks up.

ISP RPKI ROV Adoption

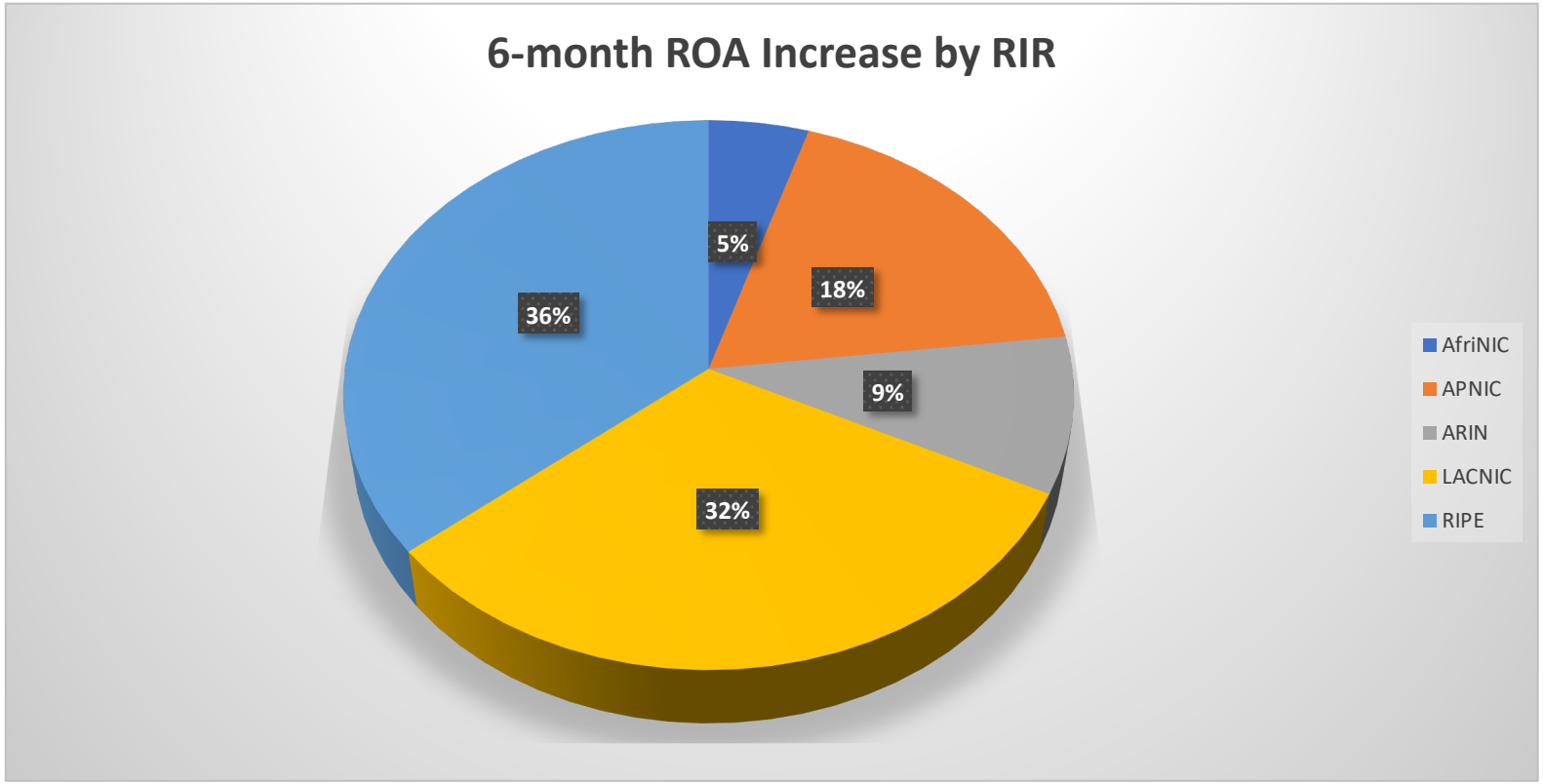


The Current State of RPKI

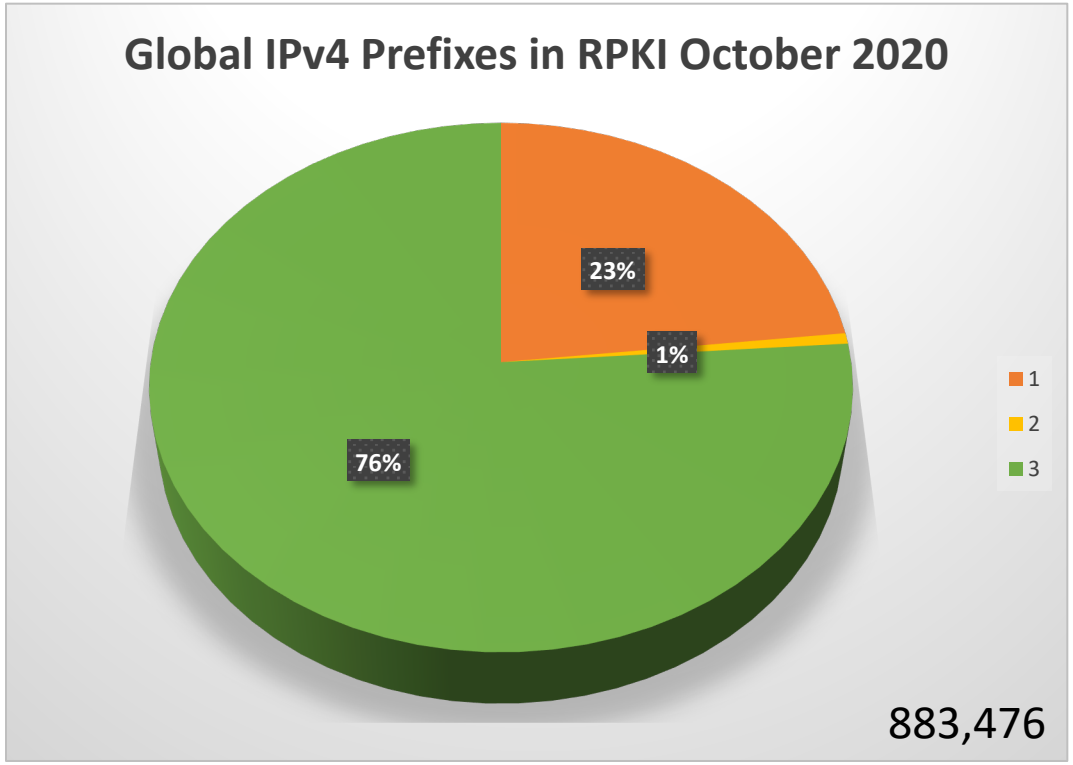


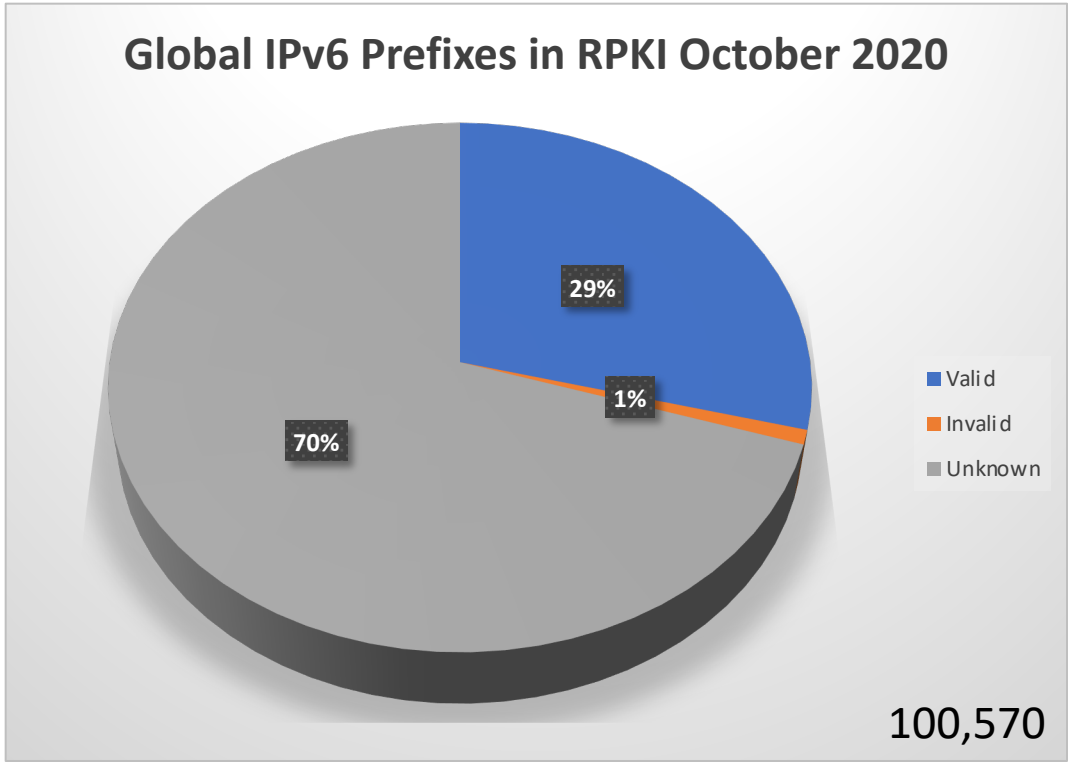


RPKI IPv4 versus IPv6



RPKI IPv4 versus IPv6





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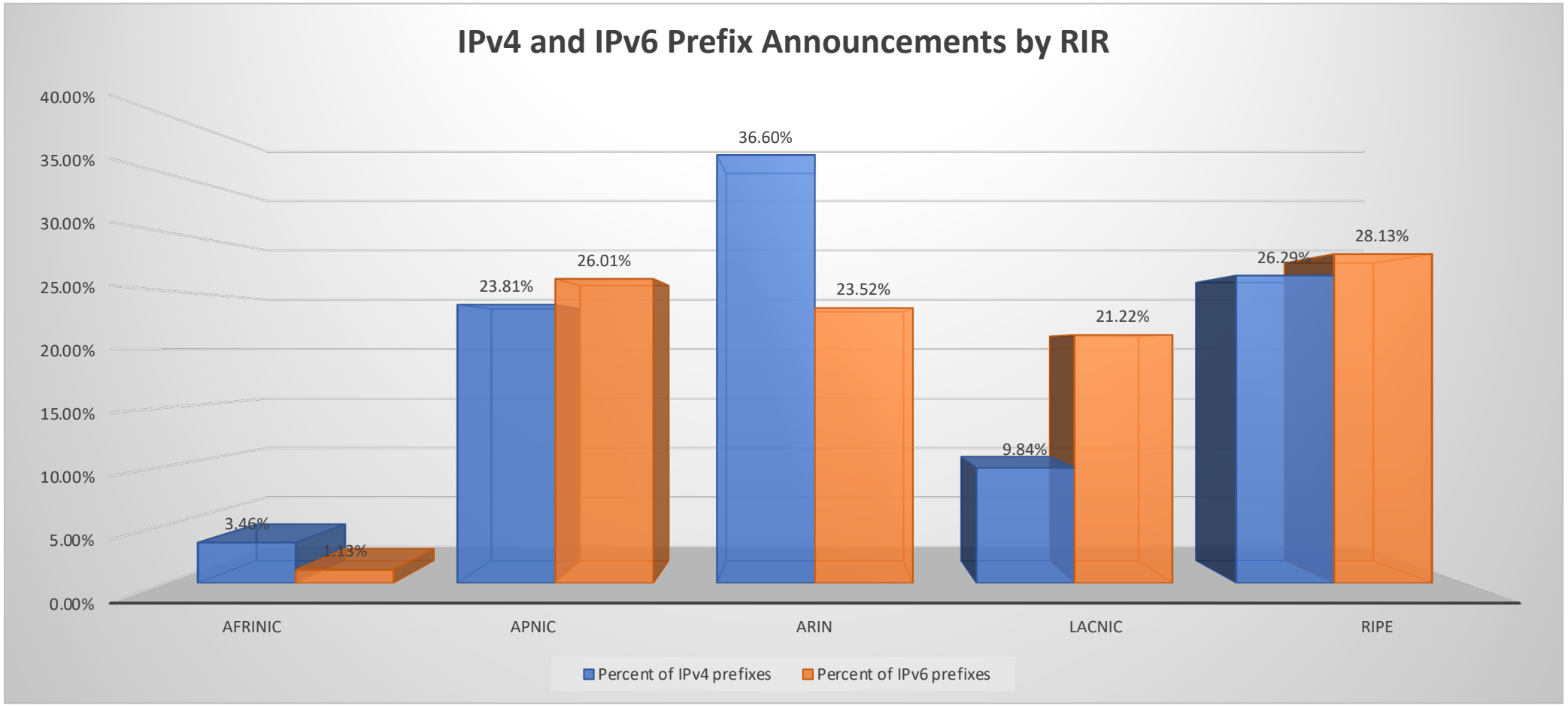

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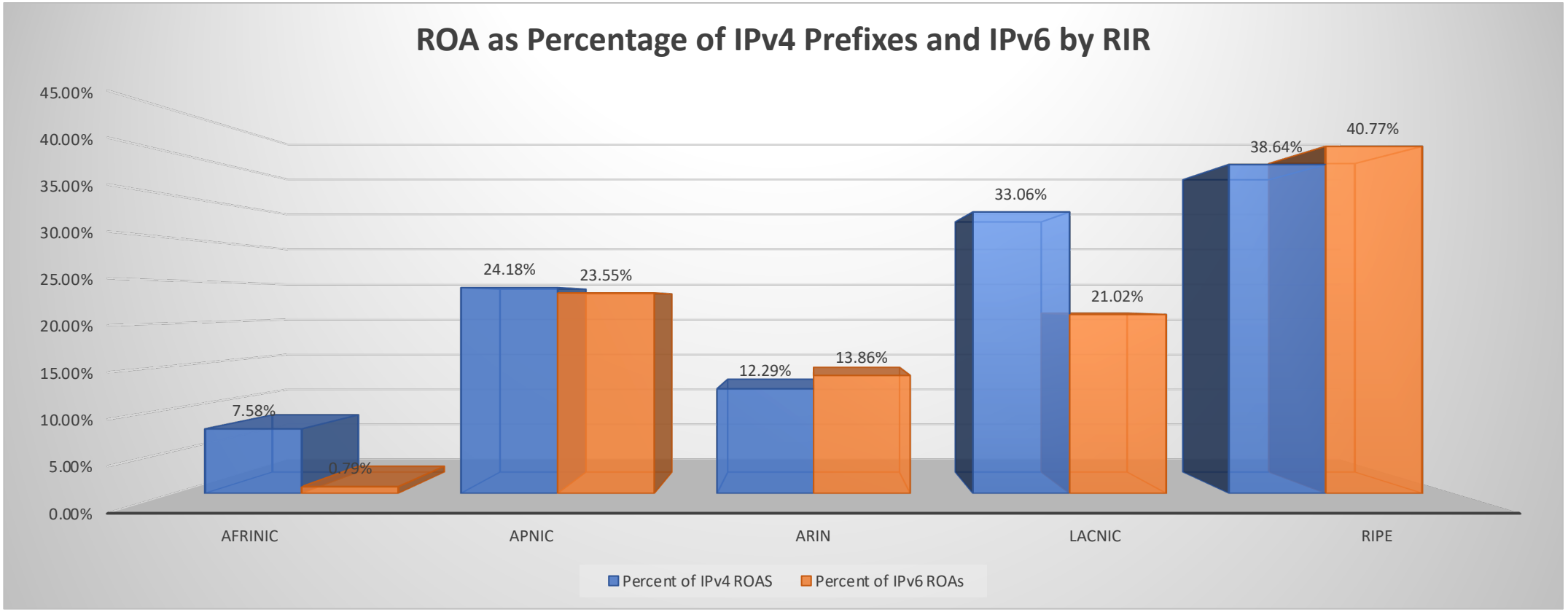

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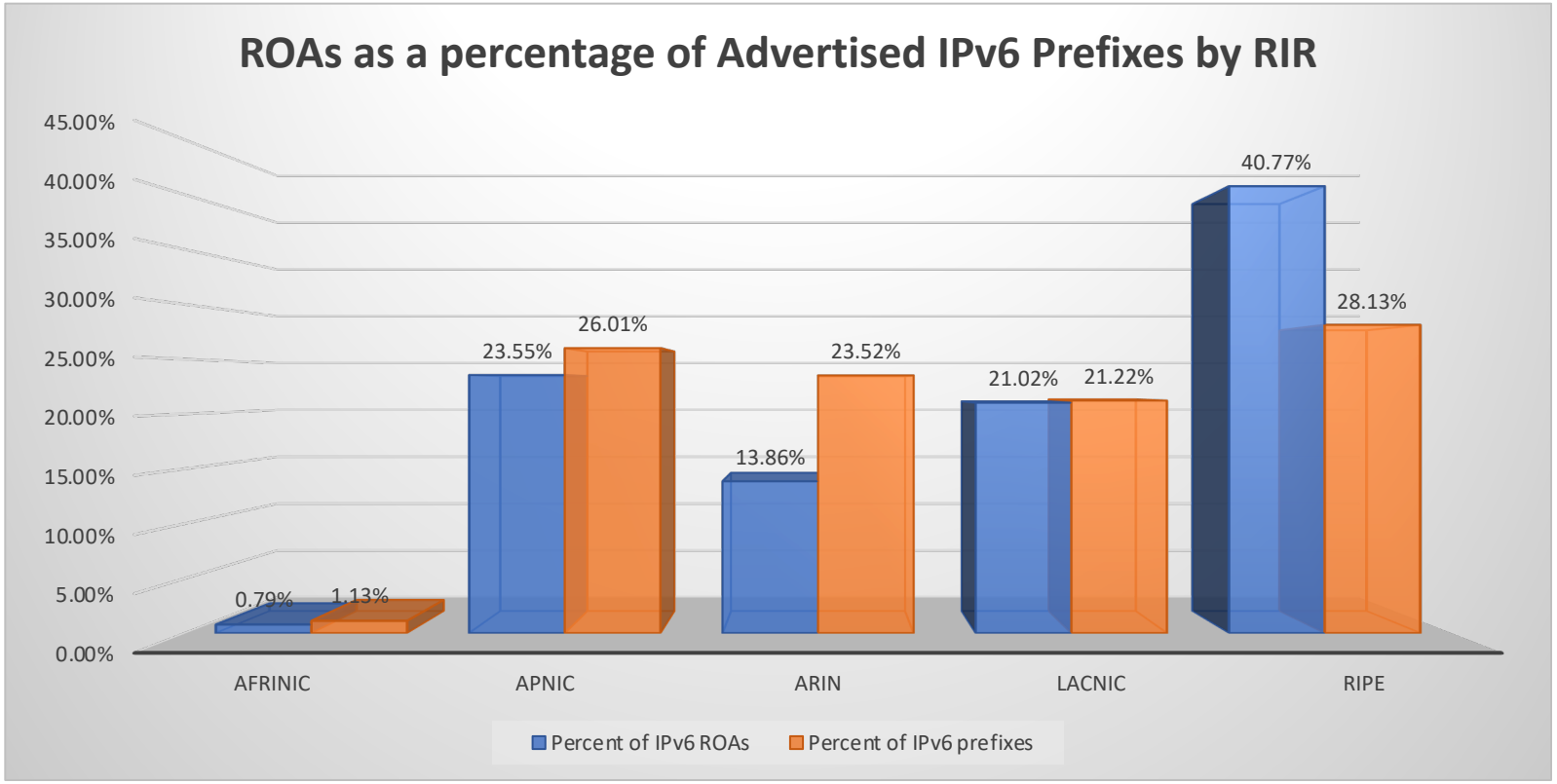
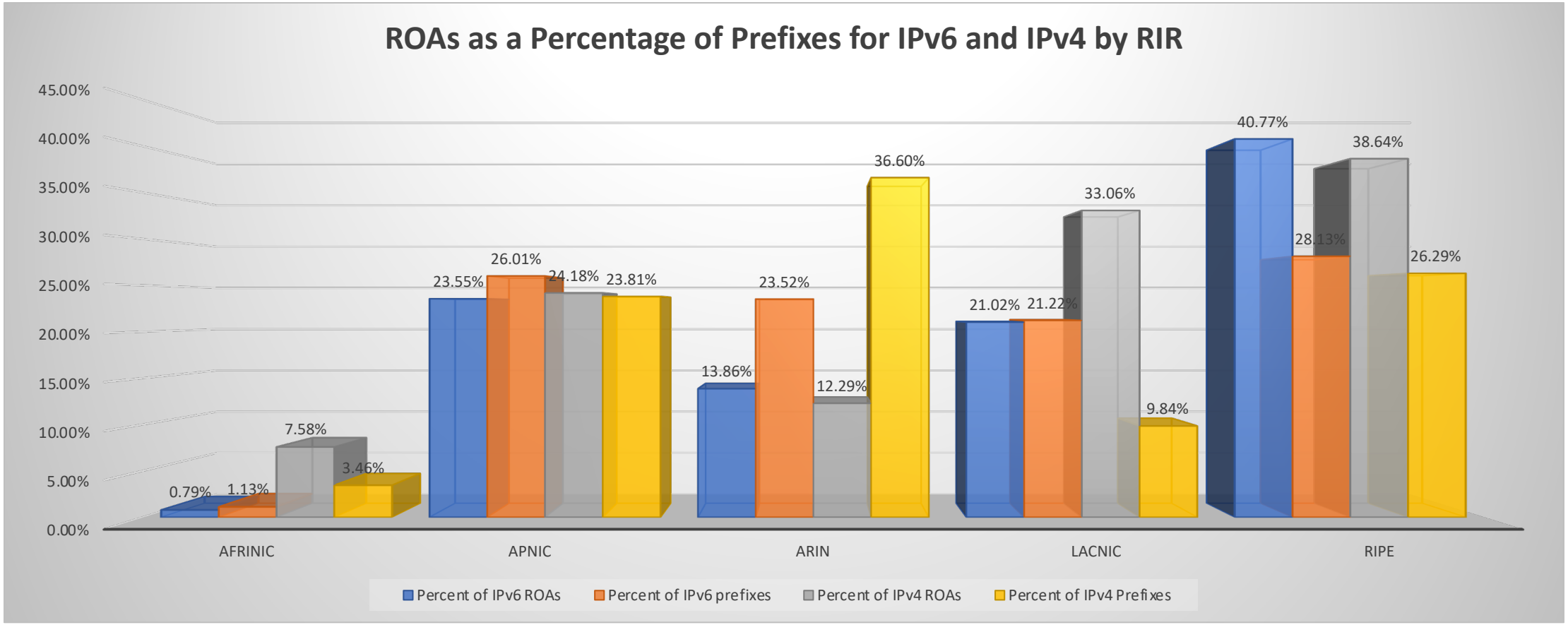


RPKI IPv4 versus IPv6



RPKI over IPv6

Observations:

- RPKI adoption for IPv6 prefixes is making progress.
- RIPE is leading the way.
- Overall the amount of prefixes with ROAs continues to grow.

What RPKI Can't Do for Your Network

RPKI definitely is worth implementing, but don't stop there.

- Maintain your IRR records as accurately as you possibly can.
- Filter for bogons.
- Use AS Path filters or Peer Lock.
- Announce all of your IP space.
- Set prefix limits.

What RPKI Can't Do for Your Network

Let's look at the 12 November 2018 Google Route Leak— Google and a number of other services experienced a 74-minute outage. Due to a configuration mistake, a small ISP re-advertised about 500 Google prefixes that it had learned from an IX route server.

- RPKI can't help here.
- AS Path filters (peer lock) would not have been useful.
- IRR Path filters would have helped.
- Maximum prefix limits might have helped.

What RPKI Can't Do for Your Network

My second example is the June 24, 2019, Verizon outage caused by a route leak. Recall that Verizon listened to routes from a small company in Northern Pennsylvania's route optimizer, making this downstream the preferred path of a large quantity of Internet routes transiting Verizon (AS701).

- RPKI would have dropped any invalid origin routes or prefixes with invalid lengths, possibly more efficiently than the current IRR method.
- The bad paths still would have been a problem.
- Max prefix limits would have shut down the sessions before they could have done any damage.

What RPKI Can't Do for Your Network

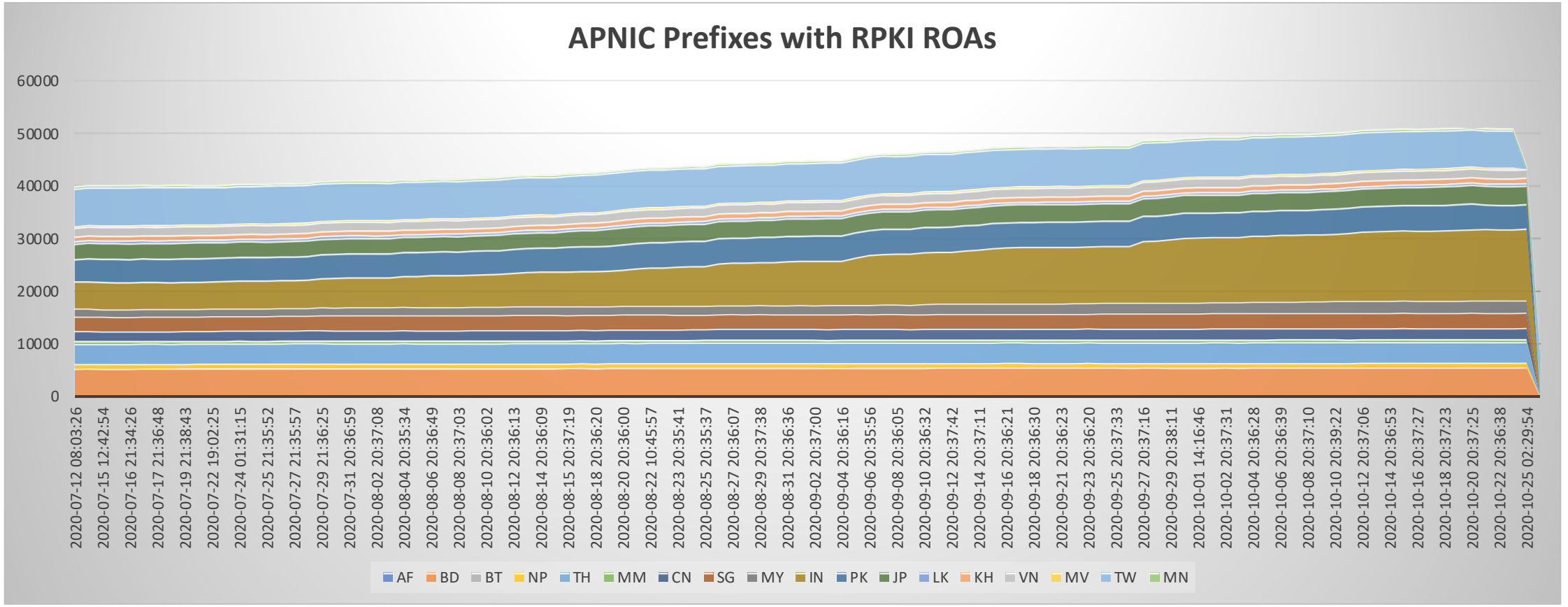
It takes more than RPKI ROV to secure your network.

RPKI needs to be more universally adopted, and progress has been slow.

The need to secure prefixes has not gone away.

So what does it take?

RPKI IPv4 versus IPv6



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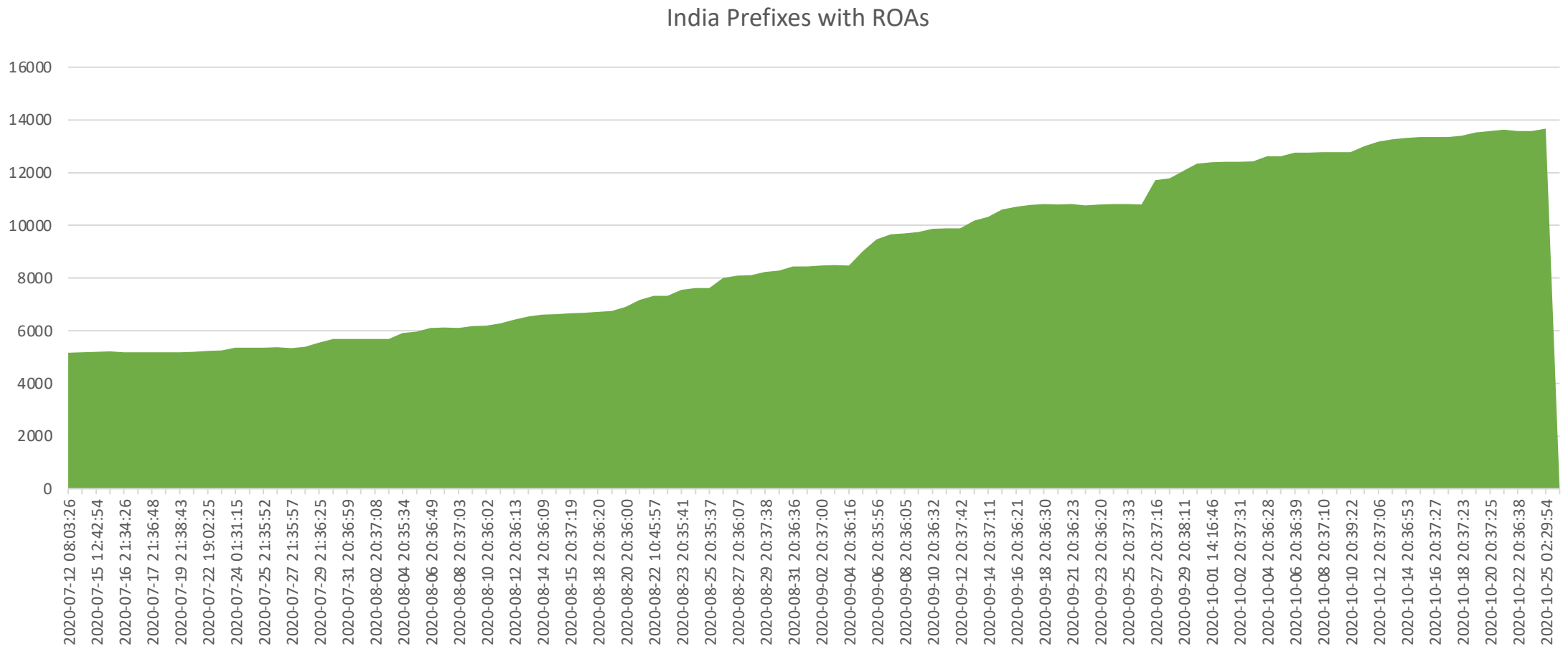

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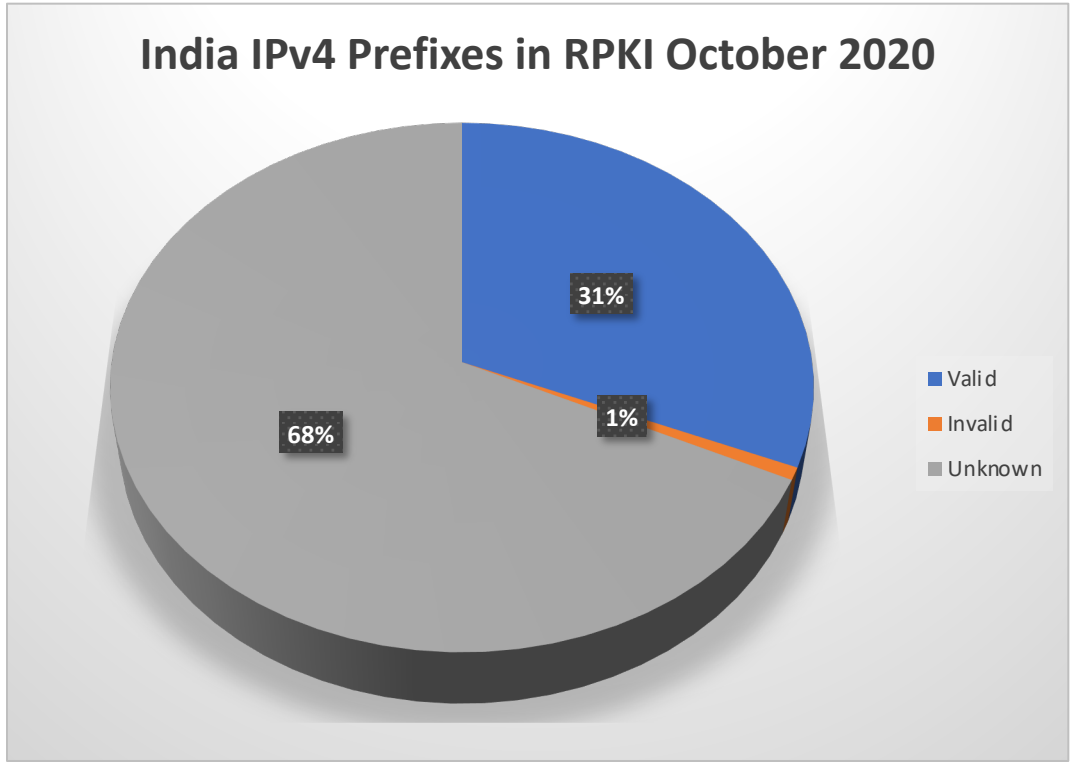

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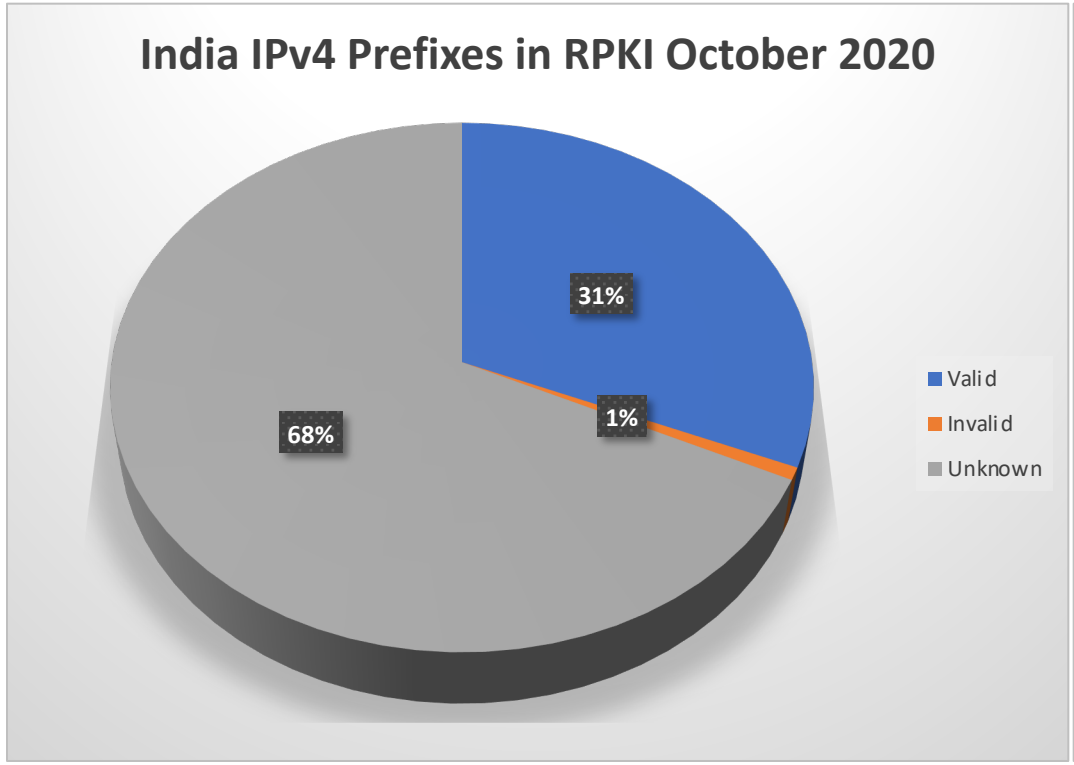

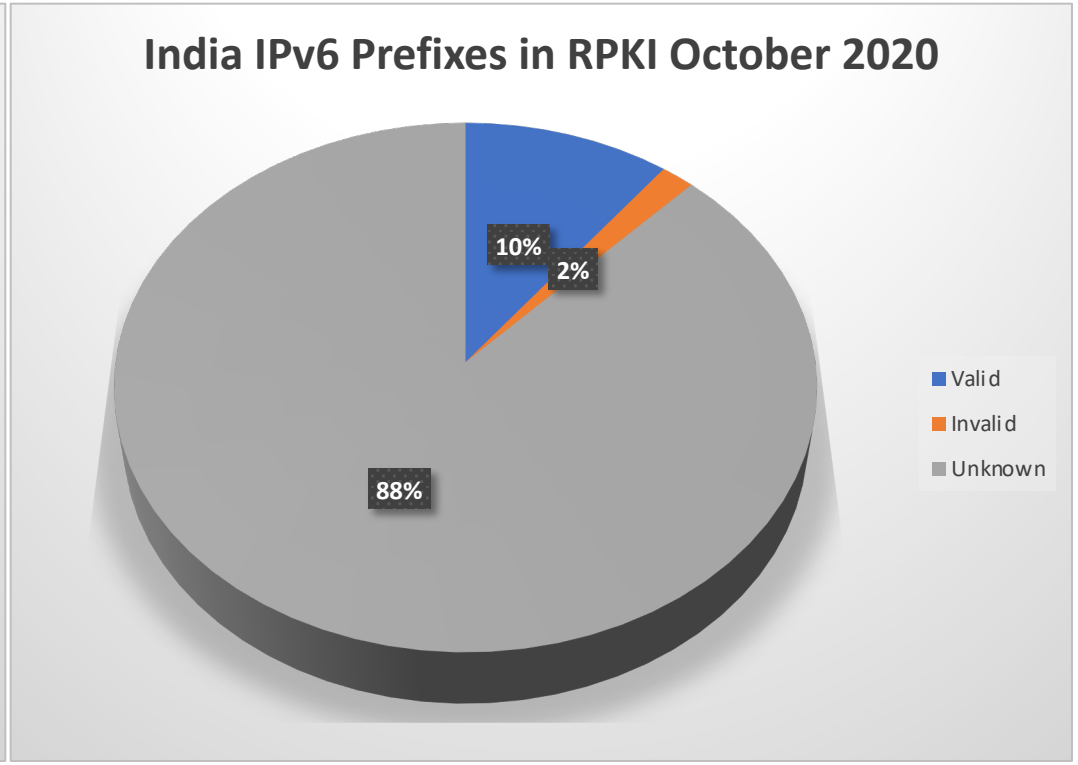

Thank you!

Questions?