RIPE NCC
RIPE NETWORK COORDINATION CENTRE

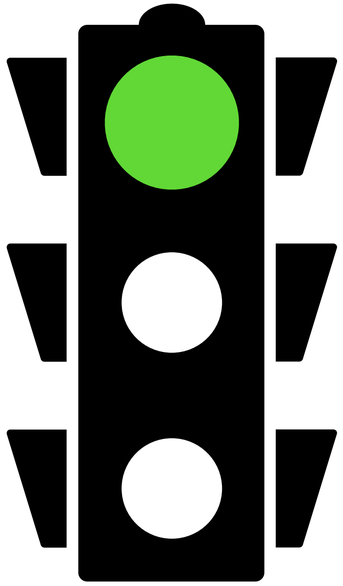
RIPE NCC Open House:

Internet in Turkey

RIPE NCC Open House | 12 September 2024

Welcome to our Open House!

Please keep your microphone on mute!



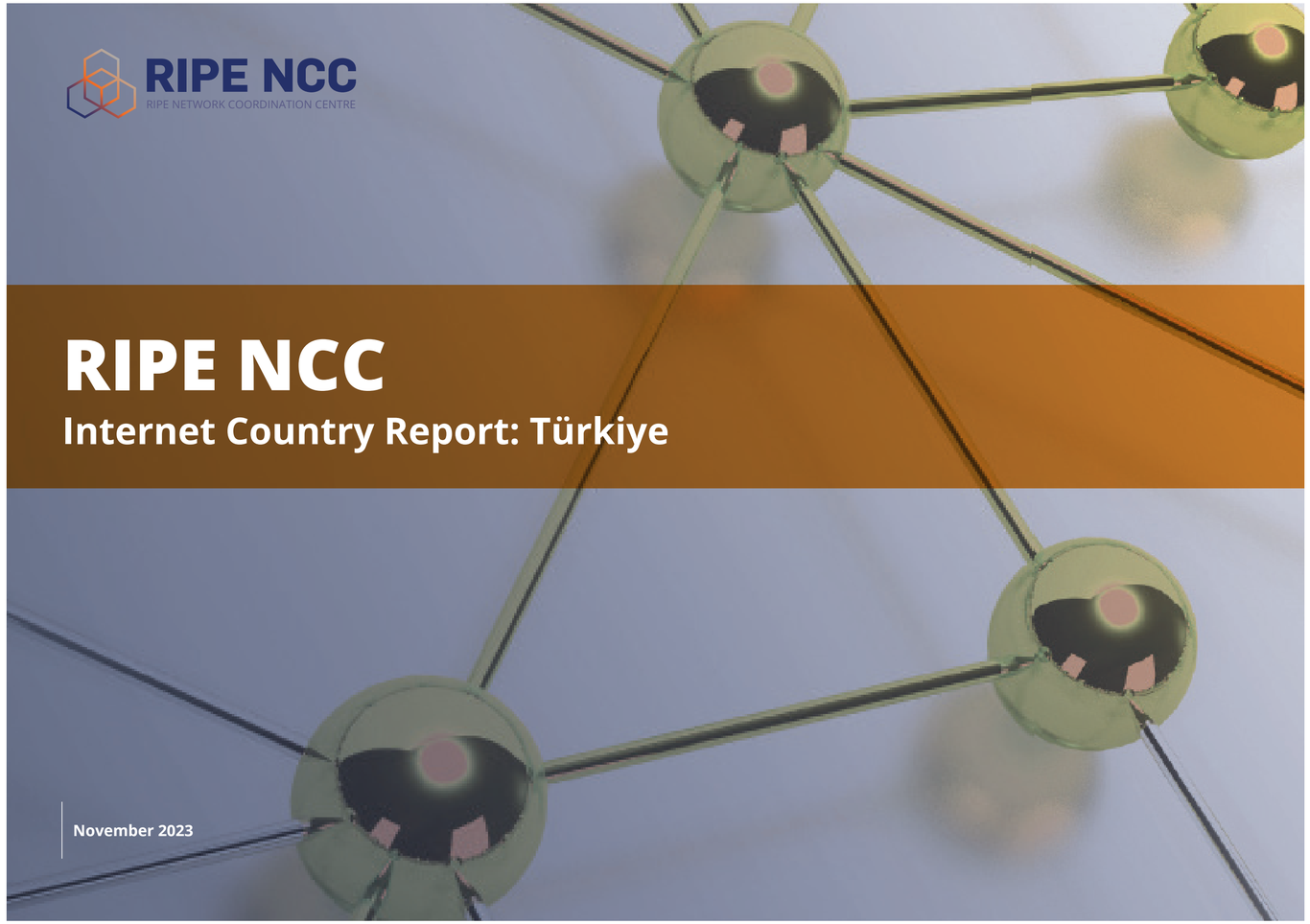
There will be an open Q&A at the end of the session

Agenda

- Housekeeping and Introductions
- Alastair Strachan - Country Report
- TURKNOG - an update
- Open Discussion

RIPE NCC Internet Country Report: Türkiye

- Published last year
- Analysed the Country internet landscape
- Focused on market dynamics
- Connectivity
- IPv4/IPv6 Adoption
- Routing Security

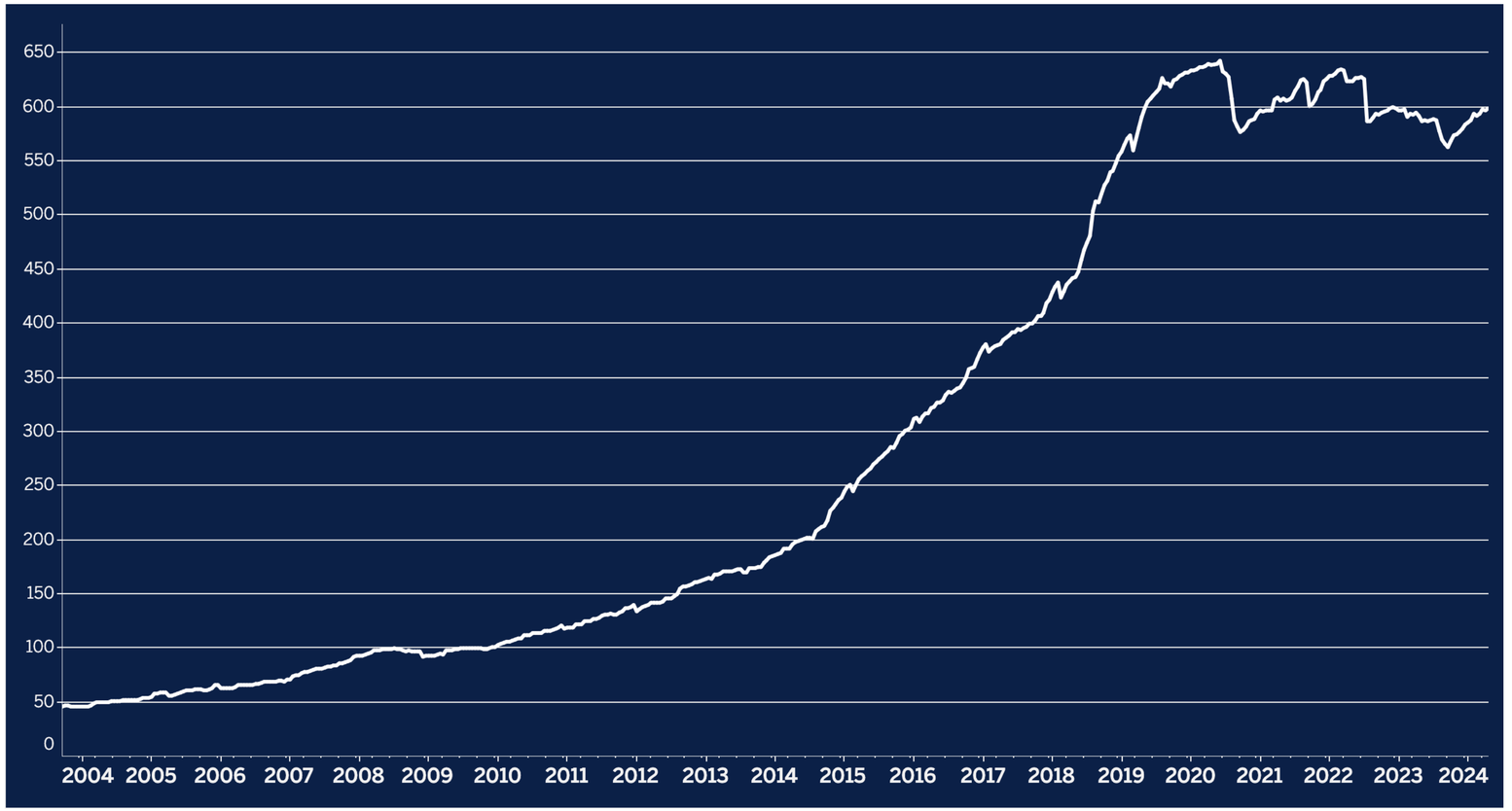


Highlights

- The market in Türkiye is heavily dominated by the local incumbent, making widespread competition somewhat difficult
- Despite only small amounts of IPv4 in the country, IPv6 capability is extremely low
- The influence of a small number of large providers is evident in the country's domestic connectivity, although international connectivity shows a good level of diversity
- Local traffic exchange could likely be improved if local Internet exchange points were more heavily used
- RPKI uptake, which is related to routing security, is extremely high in the region

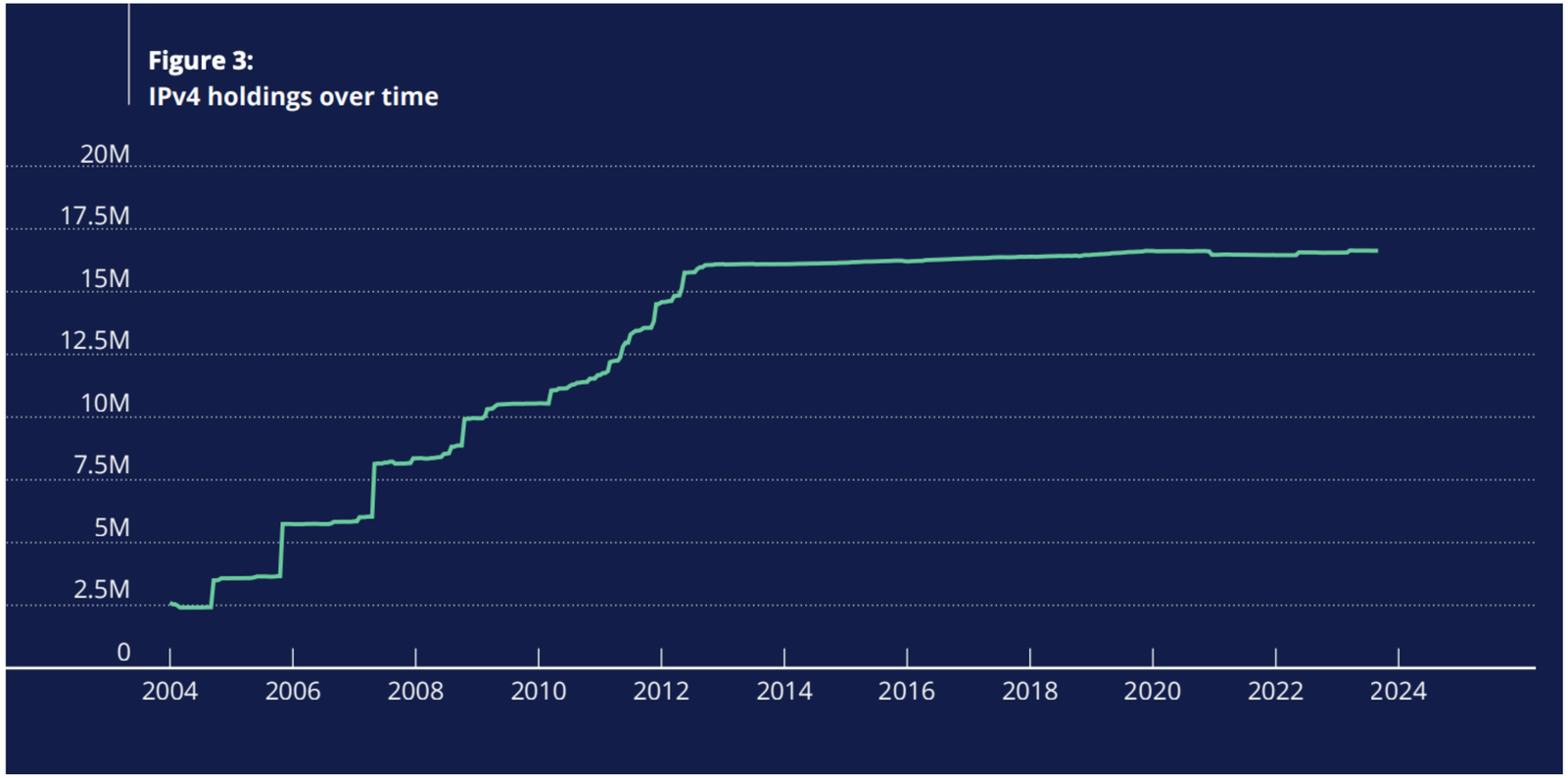
LIR - Accounts

- Steading growth between 2004 and 2012
- Increased faster up until 2020
- Drops were due to merging of multiple LIR accounts



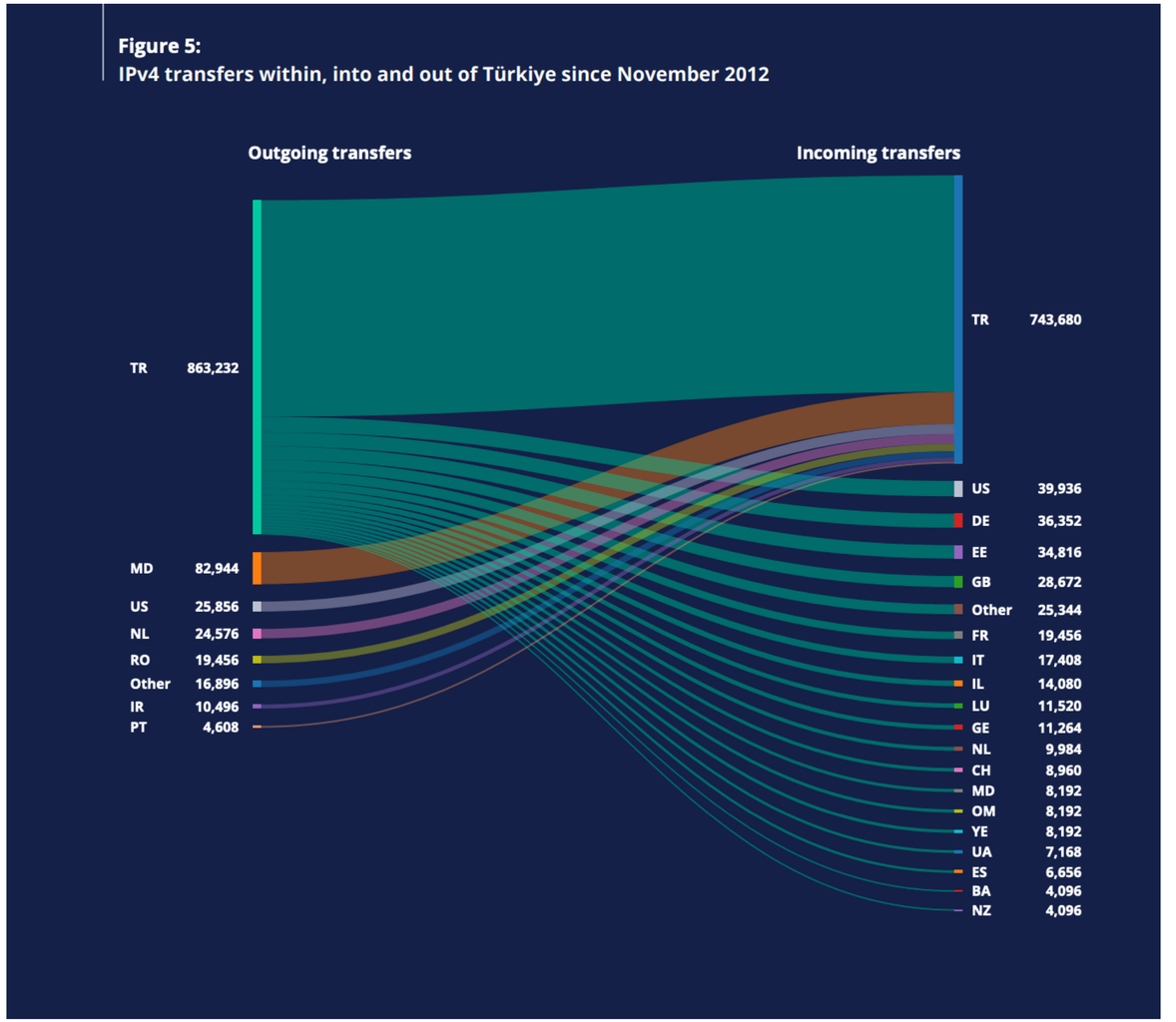
IPV4

- A policy change in 2012 led to a sharp plateau in IPv4 acquisition in Türkiye
- 0.2 IPv4 addresses per capita, similar to some Middle Eastern countries but much lower than in most of Europe.
- Türk Telekom holds more IPv4 address space than the next six largest companies combined

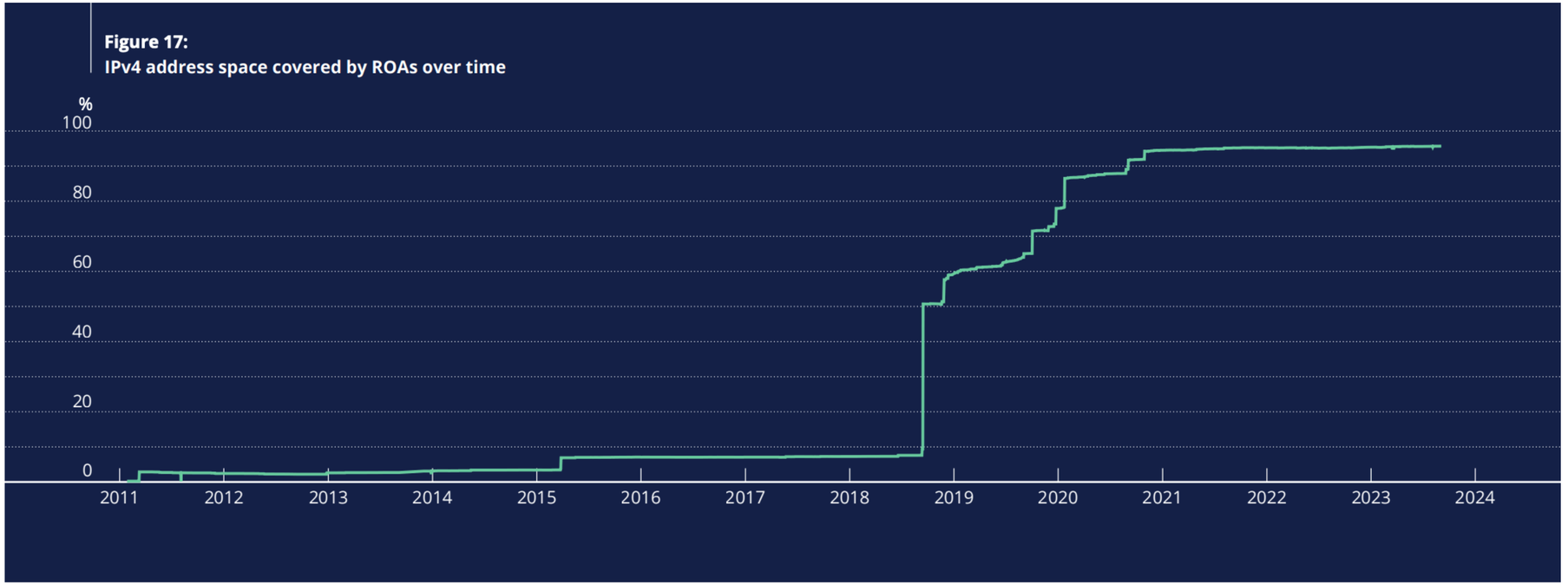


IPV4 Transfers

- Majority of transfers are domestic
- Despite its relatively low amount of IPv4 per capita, Türkiye has exported much more IPv4 address space out of the country than it imported from abroad: 304,384 addresses exported compared to 184,832 imported.



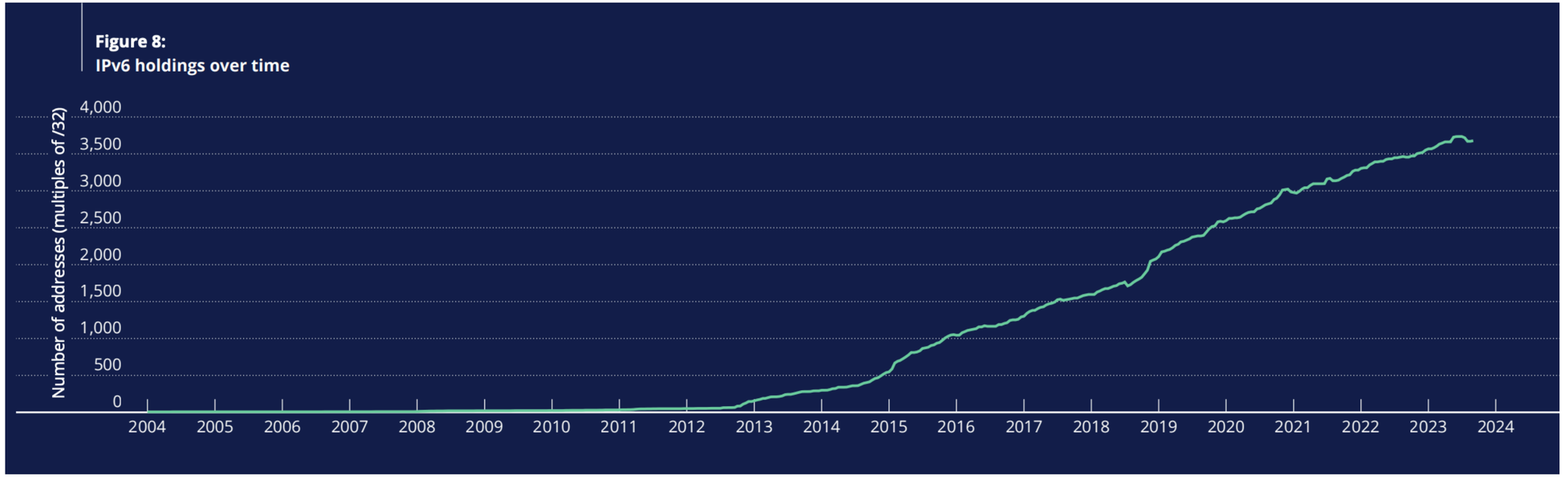
RPKI - IPv4



- High ROA Coverage
- Key Milestones

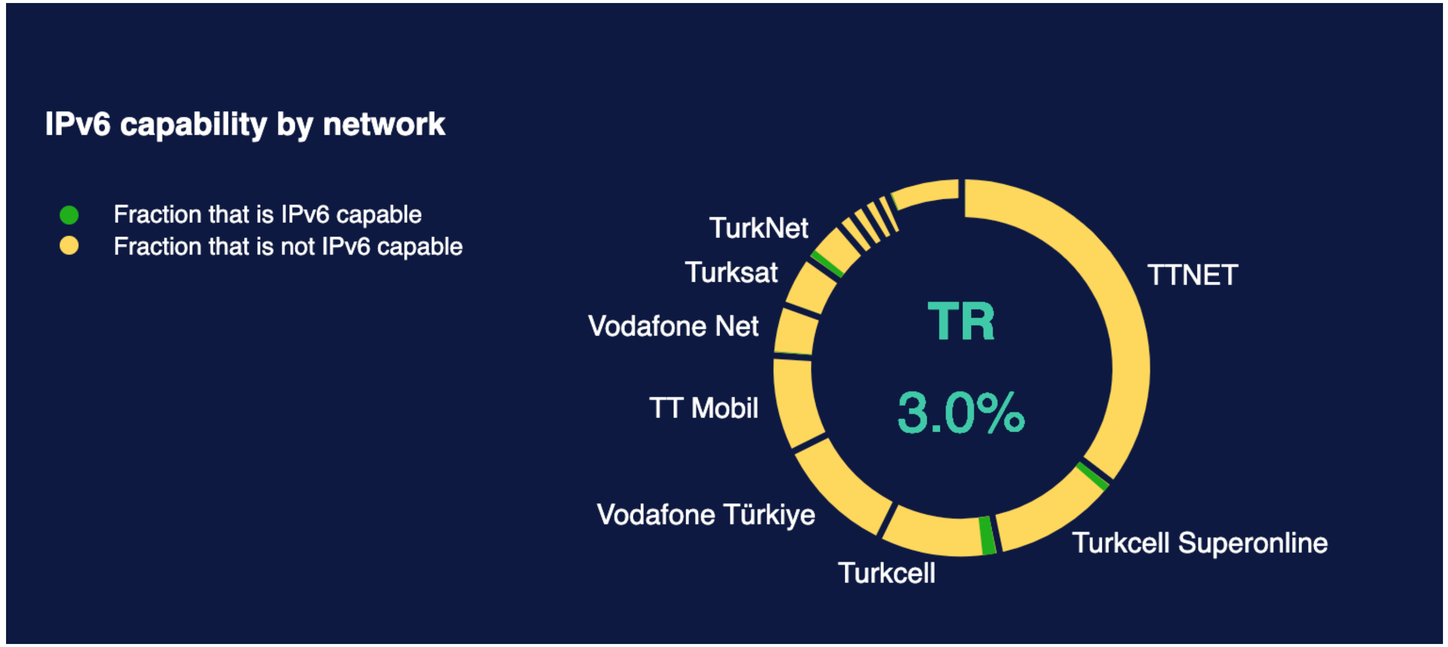
IPV6

- Low IPv6 Deployment
- Impact of Policy Change rather than deployment
- Low IPv6 Capability



IPV6 Capability

- APNIC measurements (averaged over 90 days) display each network's IPv6 capability, with green segments indicating IPv6-ready users and yellow showing those not IPv6 capable.
- IPv6 capability is visible only in TurkNet, Turkcell, and Turkcell Superonline, with 14%, 11%, and 7% of users capable of IPv6, respectively.

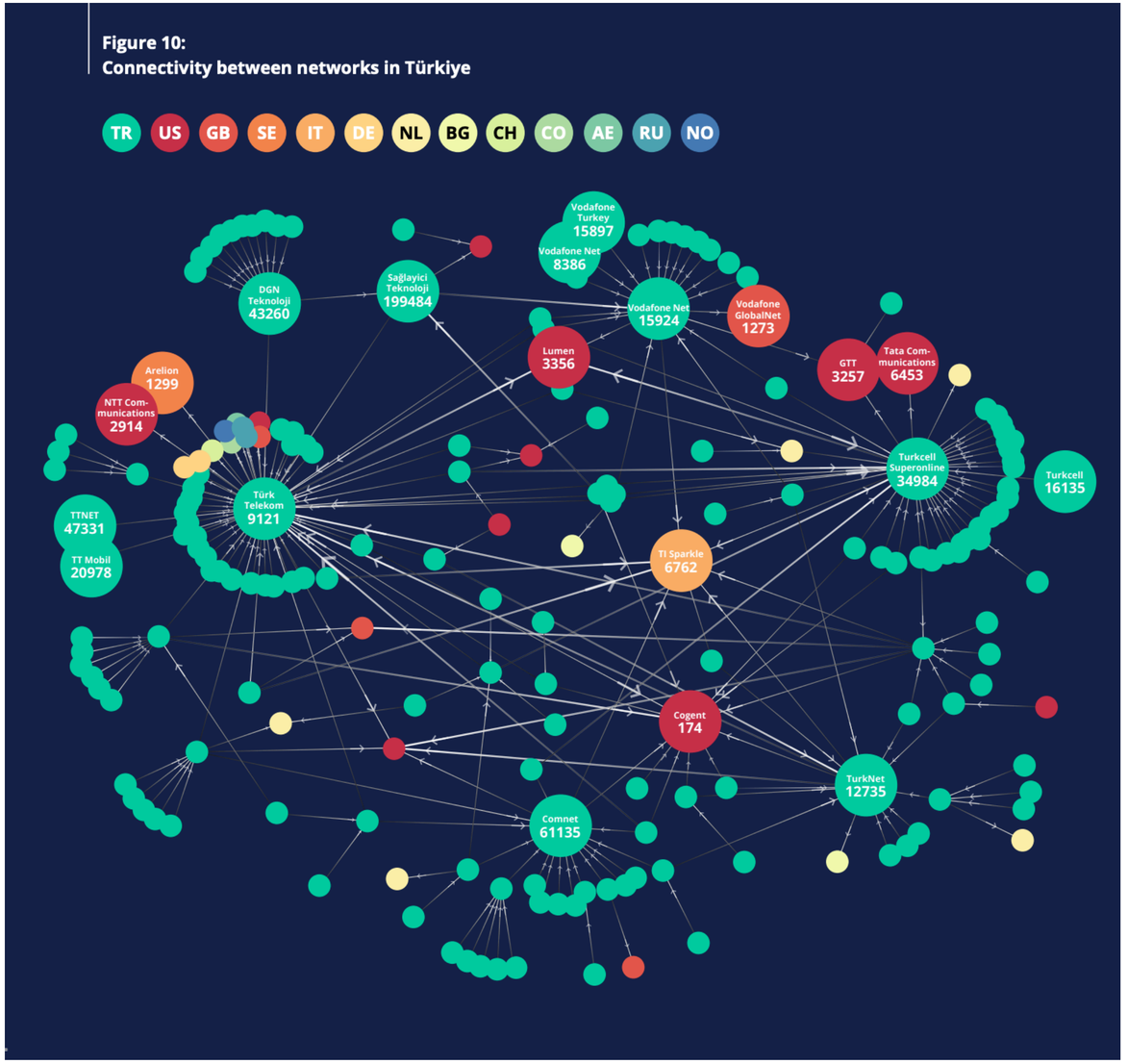


RPKI - IPv6

- Pv6 ROA Coverage
- Lower RPKI Rates

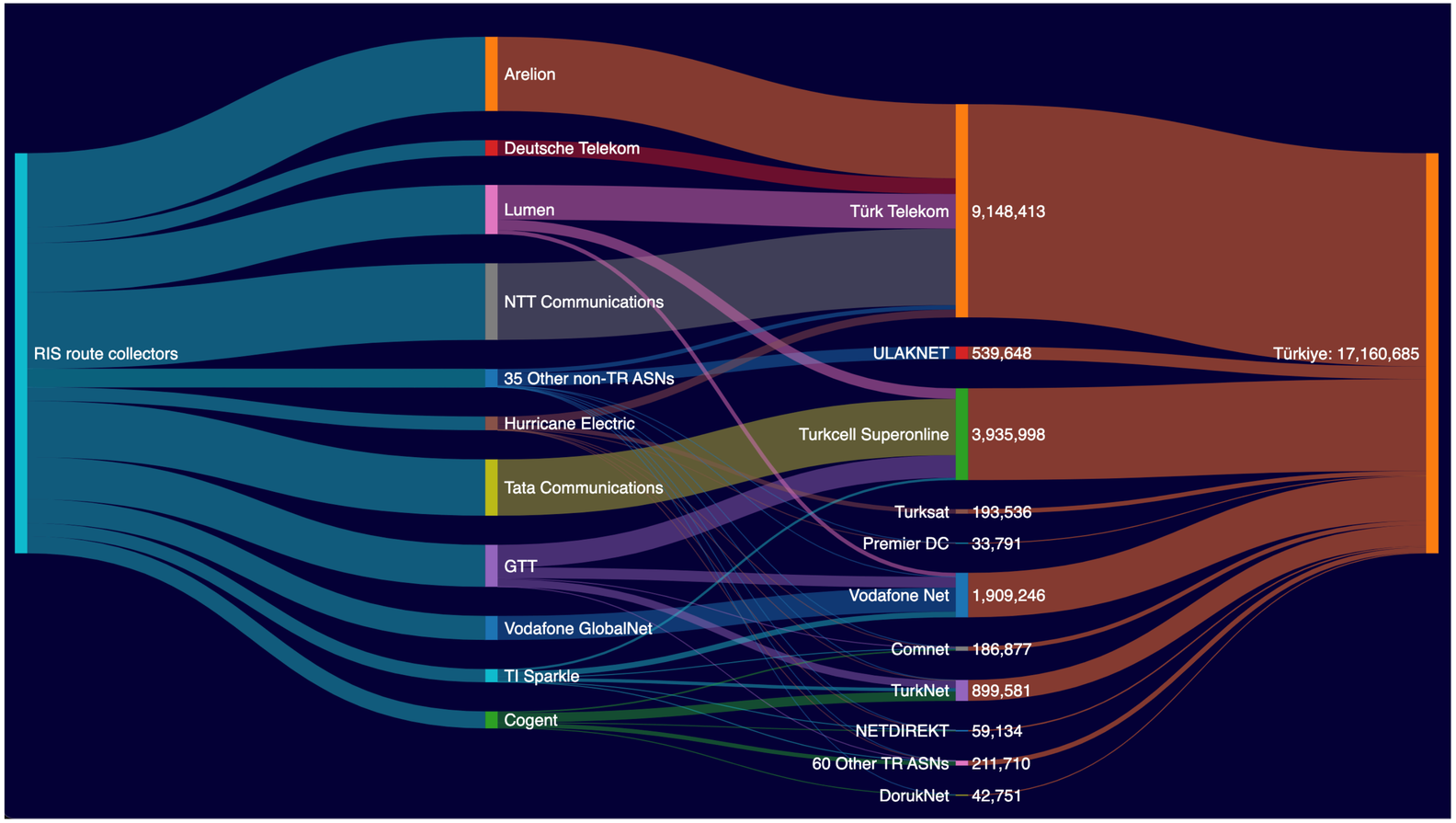
Connectivity between networks

- Türk Telekom (AS9121) and Turkcell Superonline (AS34984) are the main providers connecting Turkish networks to the global Internet
- Türk Telekom, Vodafone Turkey, and Turkcell each operate multiple networks; for Türk Telekom, AS9121 is the primary network providing connectivity to TT Mobil (AS20978), TTNET (AS47331), and over 200 other networks.



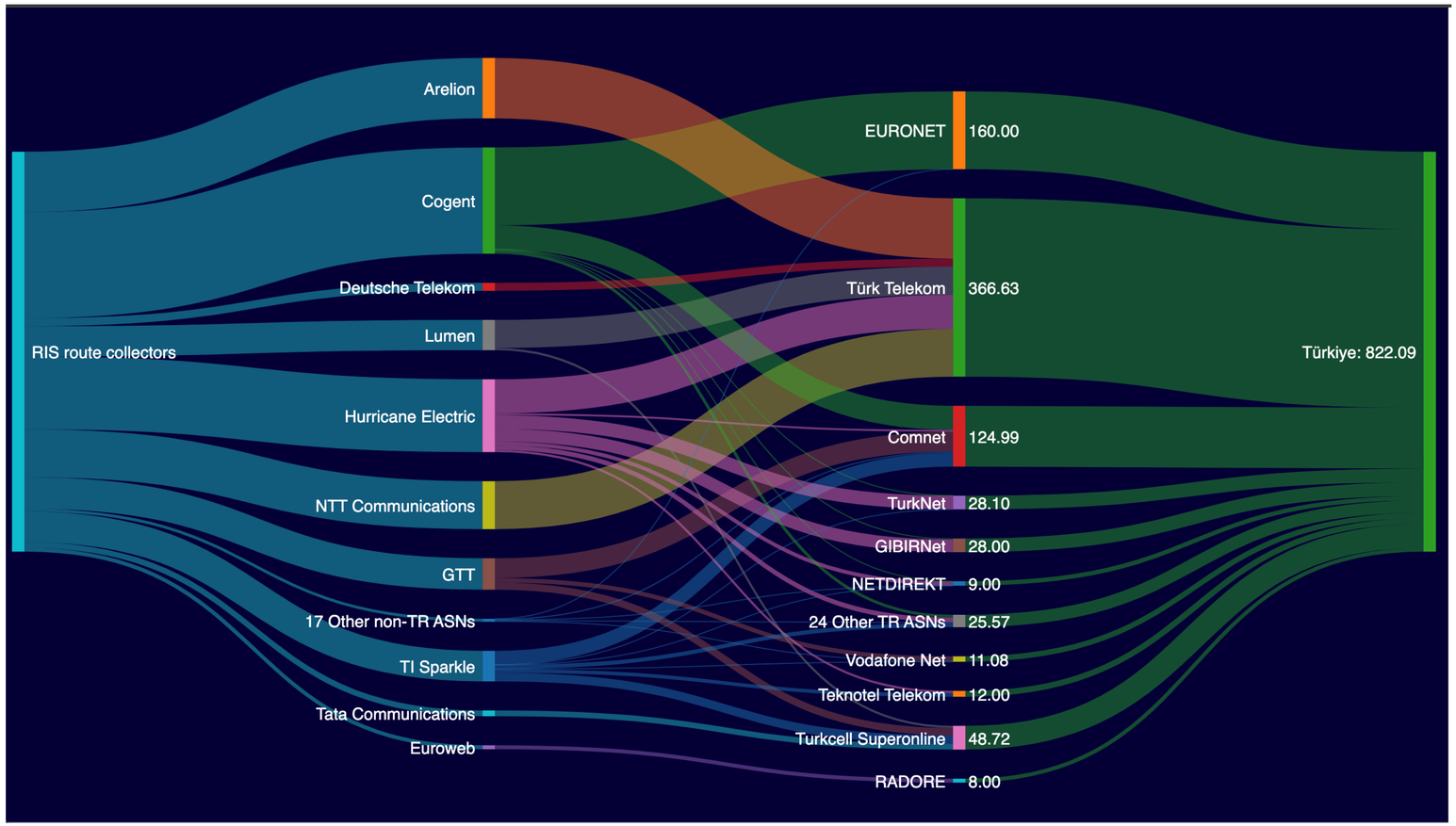
International Connectivity - IPv4

- Türk Telekom's Dominance
- Turkcell Superonline and Vodafone Net
- Other Key Networks



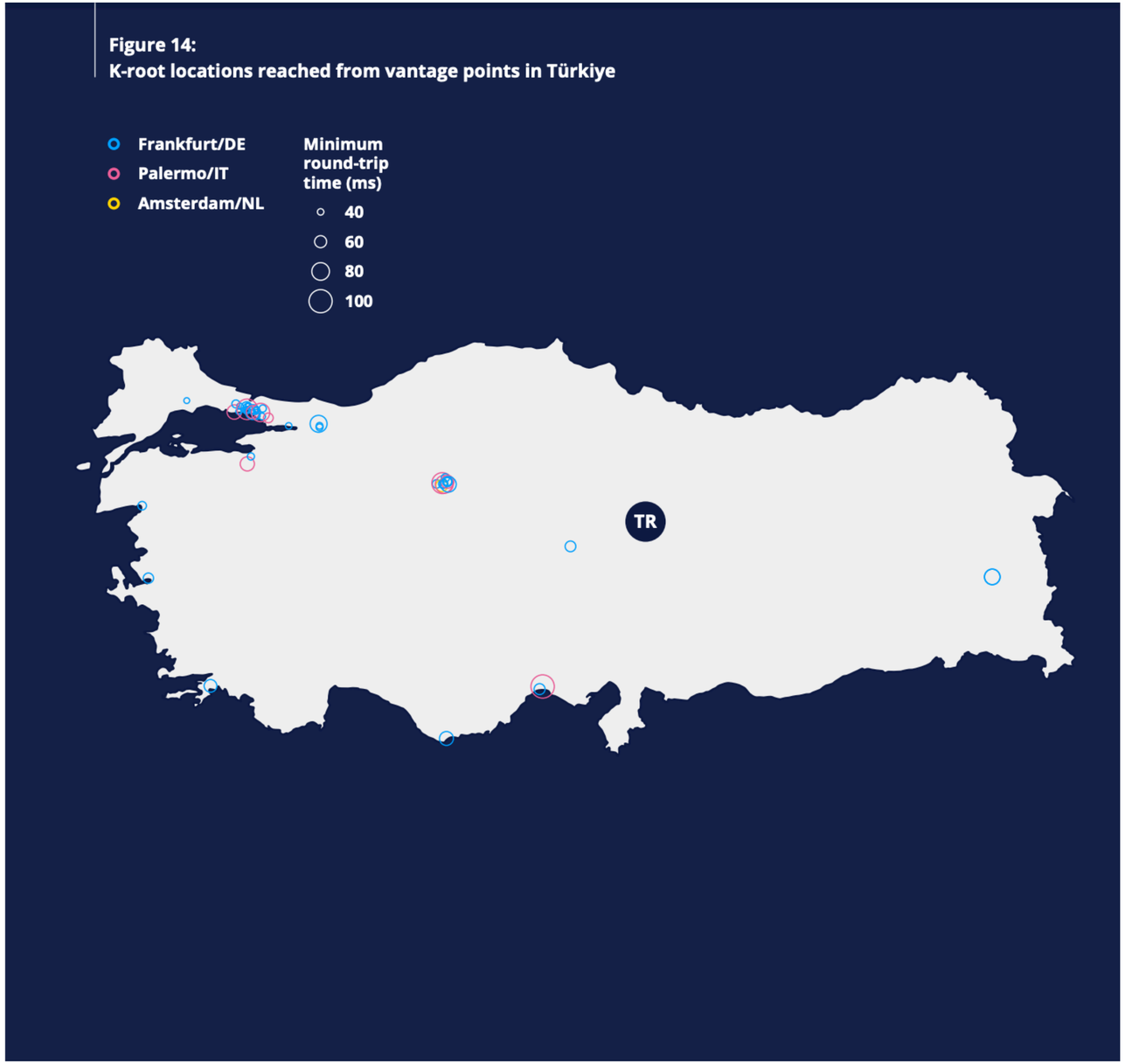
International Transit - IPv6

- IPv6 Adoption
- Domestic IPv6 Connectivity
- International IPv6 Connectivity



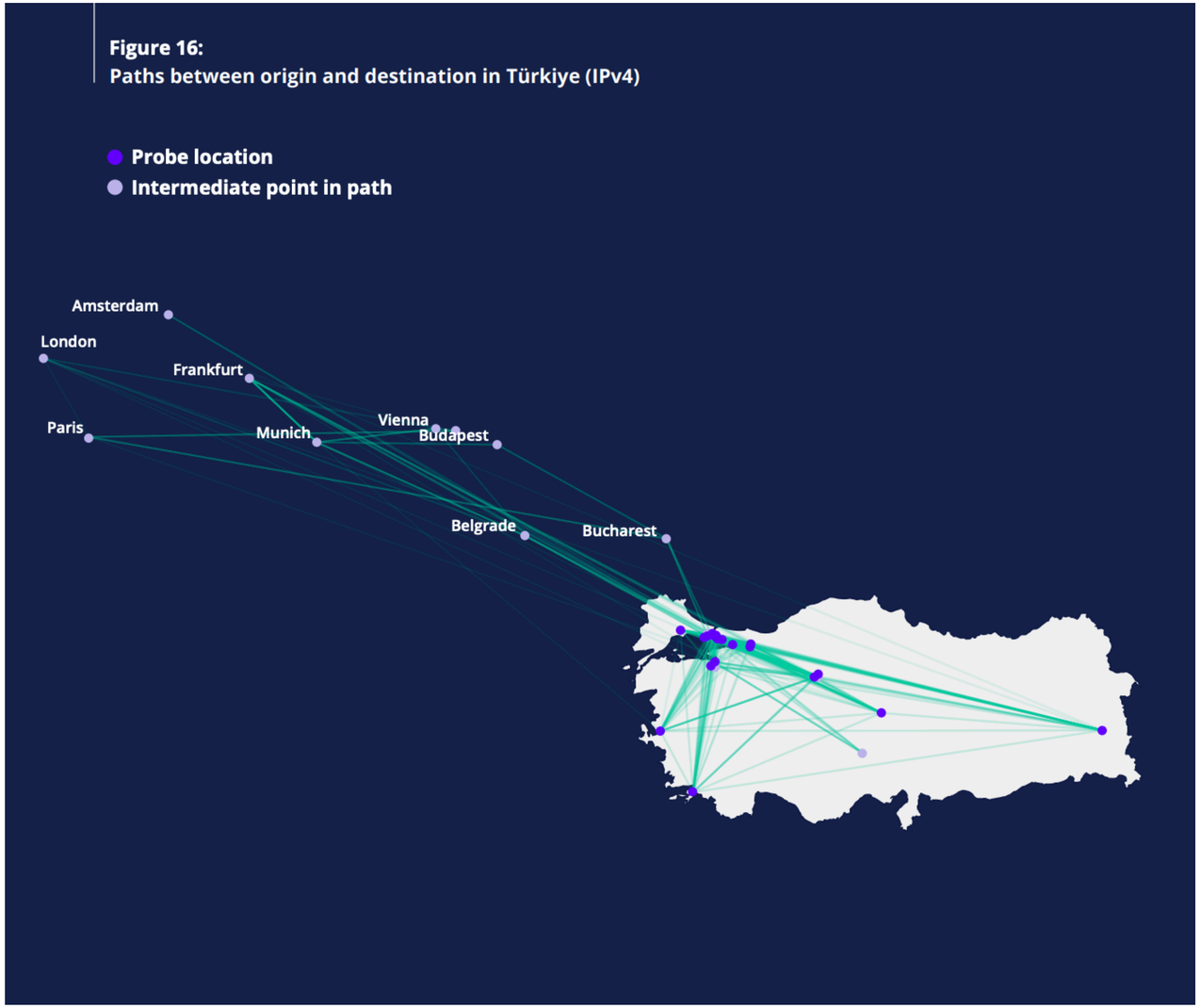
K-Root

- K-root Query Analysis
  - RIPE Atlas probes in Türkiye predominantly query K-root instances in Frankfurt, Amsterdam, and Palermo
- Round-Trip Times (RTTs)
  - The round-trip times to K-root instances are acceptable with a median of 40ms to Frankfurt, 60ms to Amsterdam, and 80ms to Palermo, which is on the higher end of optimal performance.



Regional Traffic Exchange

- Traceroute Paths
- Local Traffic Exchange
- IXP Impact



Conclusion

- Market Structure and Competition
- Growth of Smaller Providers
- Need for IPv6 Deployment
- Network Interconnectivity and Stability
- DNS Optimization and Local Instances
- Routing Efficiency and Use of Local IXPs
- High RPKI Adoption for Security