



RIPE NCC

RIPE NETWORK COORDINATION CENTRE

The Internet Landscape in Central Europe

As Seen by the RIPE NCC

Suzanne Taylor | 29 June 2023 | RIPE NCC Open House

RIPE NCC



- One of five **Regional Internet Registries** in the world
- Also provide a number of **technical services** and **tools**:
 - K-root
 - RIPE Atlas
 - RIPEstat
 - RIS
- Involved in **public policy** discussions and **Internet governance**

RIPE NCC Internet Country Reports



- Showcase RIPE NCC **data** and **measurement platforms**
- Bring value to **local technical communities**
- Support **Internet development** throughout service region
- Inform **public policymaking**

RIPE NCC Internet Country Report



- Central Europe report published 20 June
<https://labs.ripe.net/country-reports/>
- Covers Czechia, Hungary, Poland and Slovakia
- Translations are coming



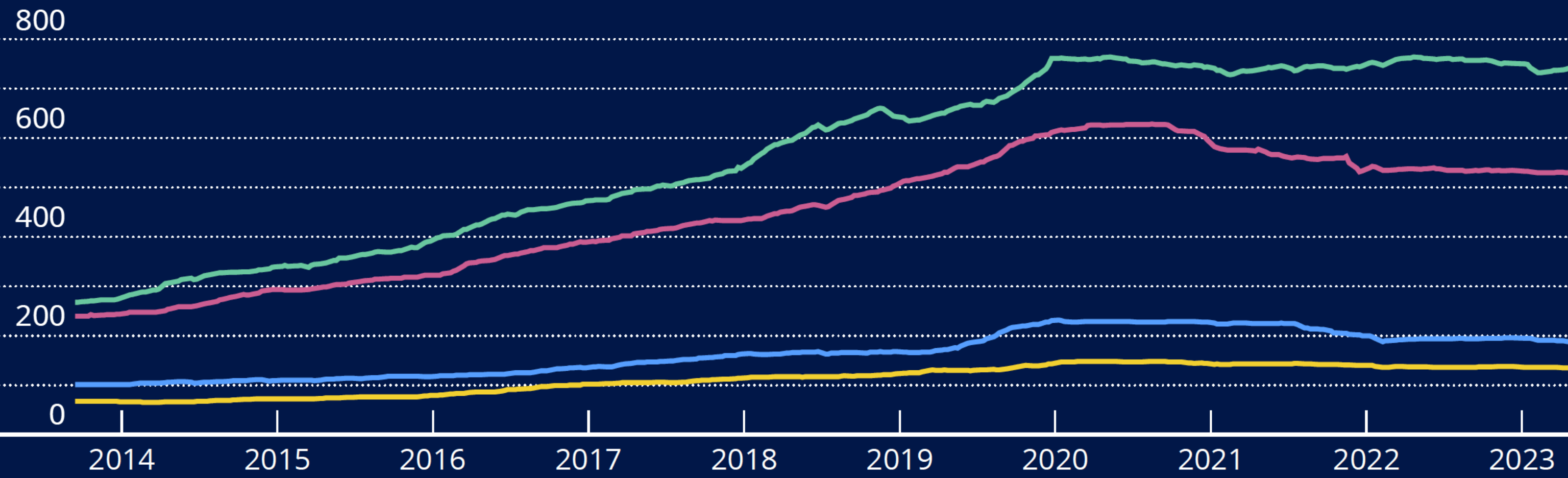
Highlights



- Well developed, **competitive markets**
- Despite IPv4 scarcity, **IPv6** capability is low (except Hungary)
- Access to DNS via **K-root** is very well optimised
- **Routing** is quite efficient
- **Domestic connections** are resilient
- **International connectivity** is quite diverse



Figure 1:
Number of Local Internet Registries over time



CZ Czechia **HU** Hungary **PL** Poland **SK** Slovakia

Figure 2:
Number of networks over time

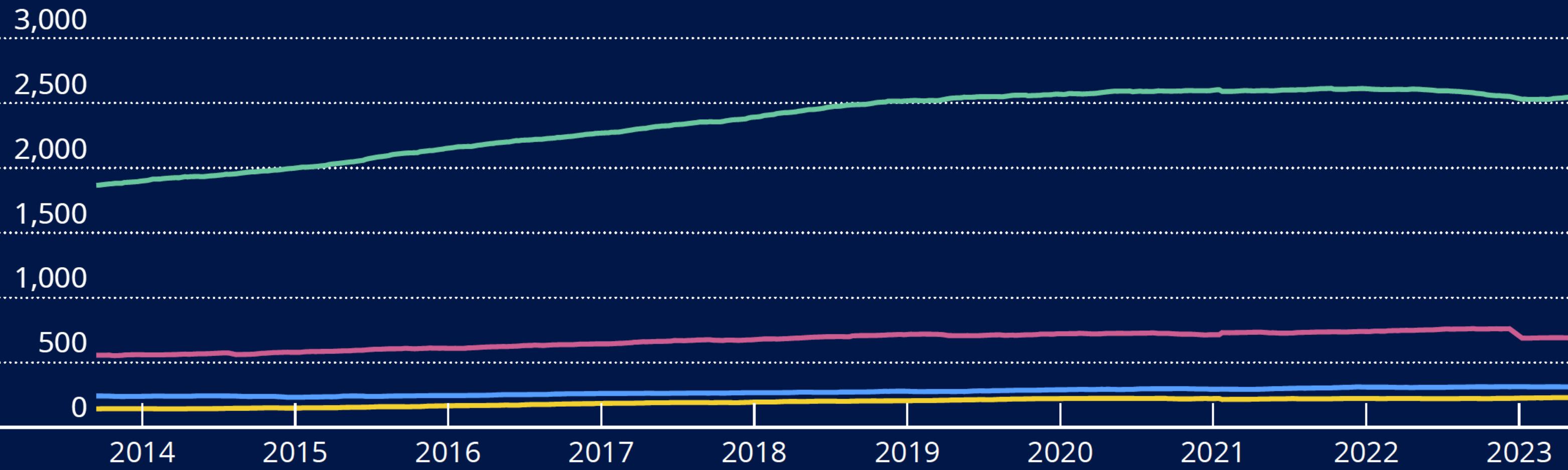




Figure 3:
IPv4 holdings

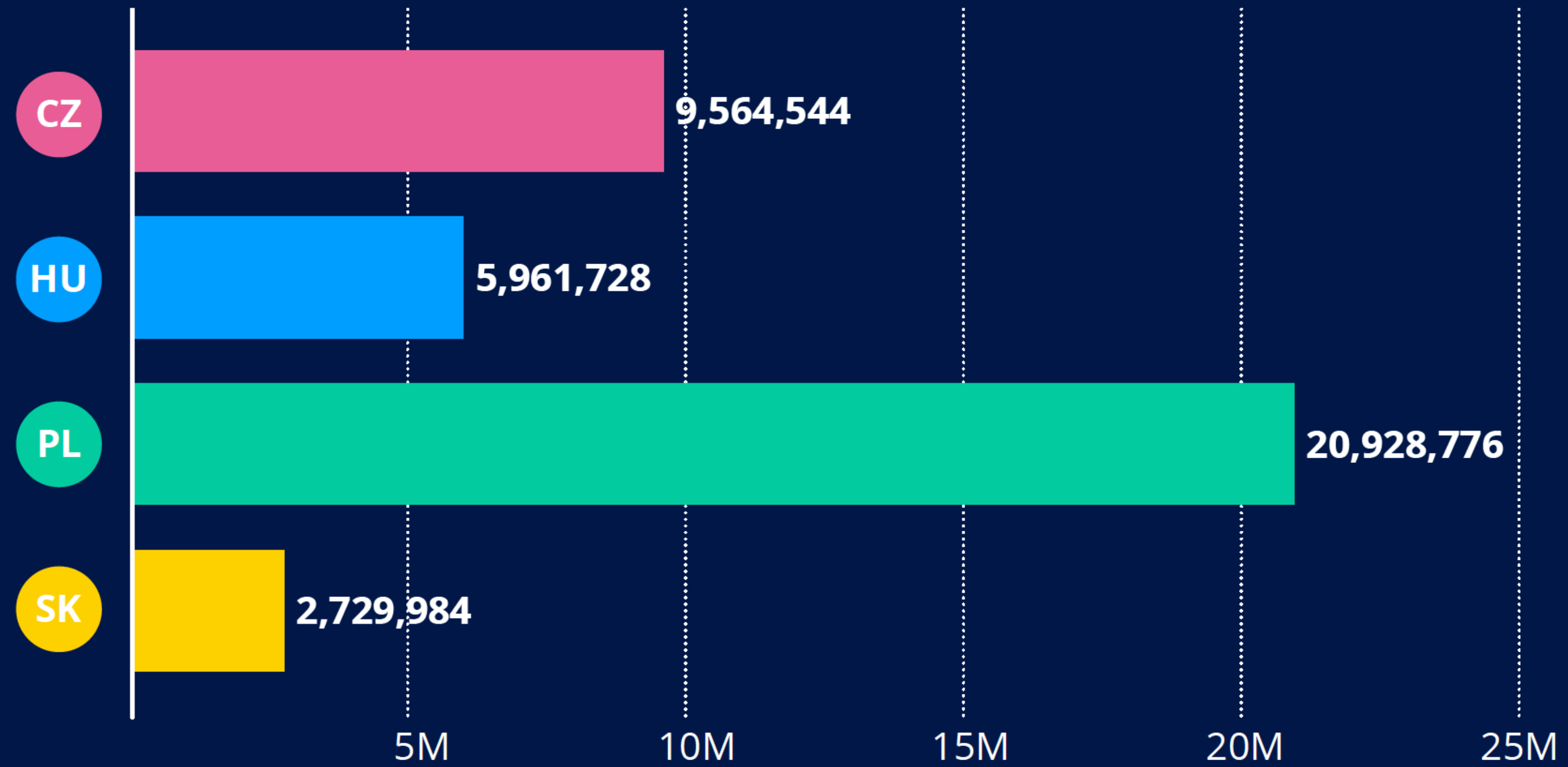


Figure 5:
IPv4 transfers within, into and out of Central Europe between October 2012 and April 2023

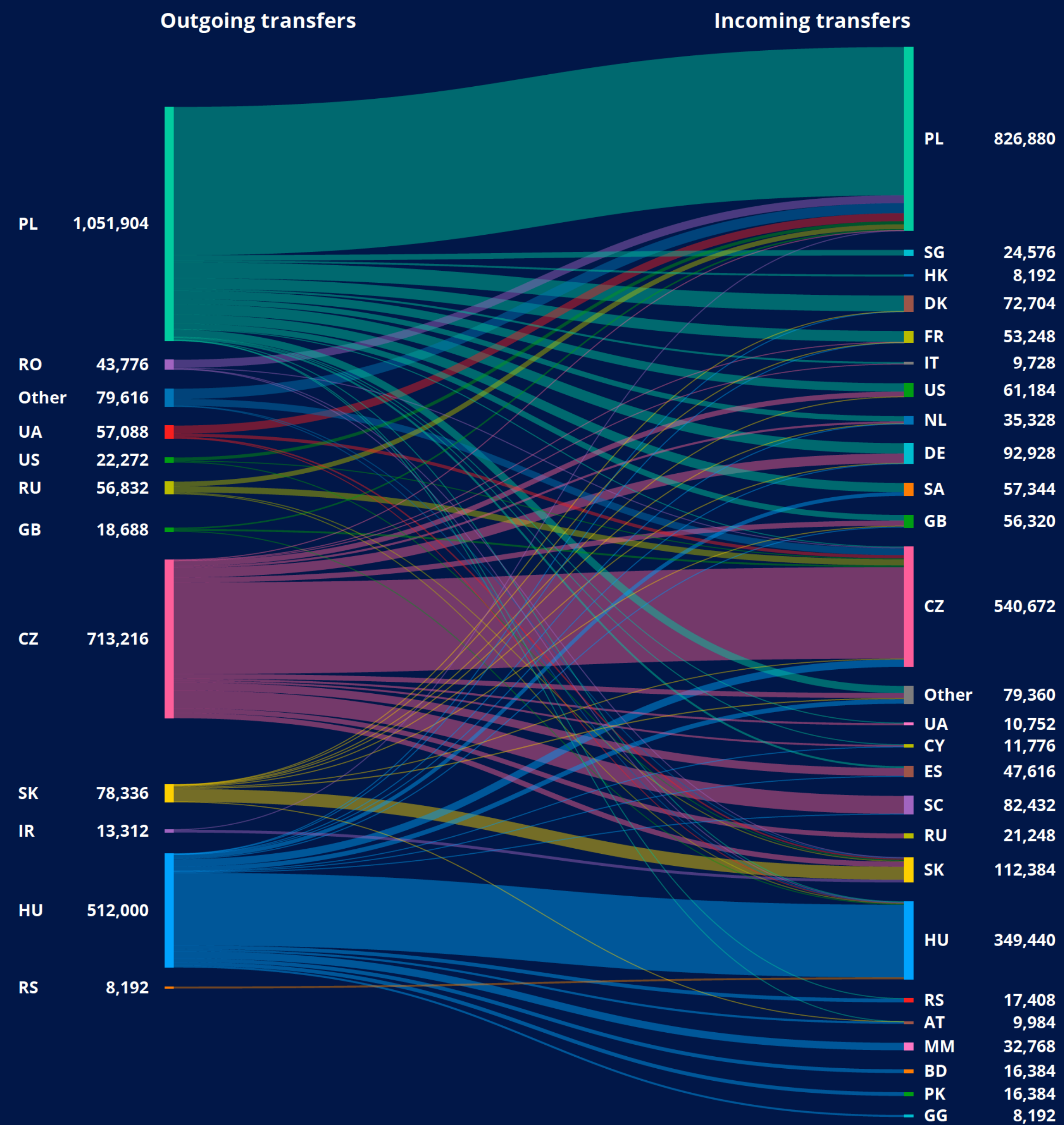




Figure 8:
IPv6 holdings

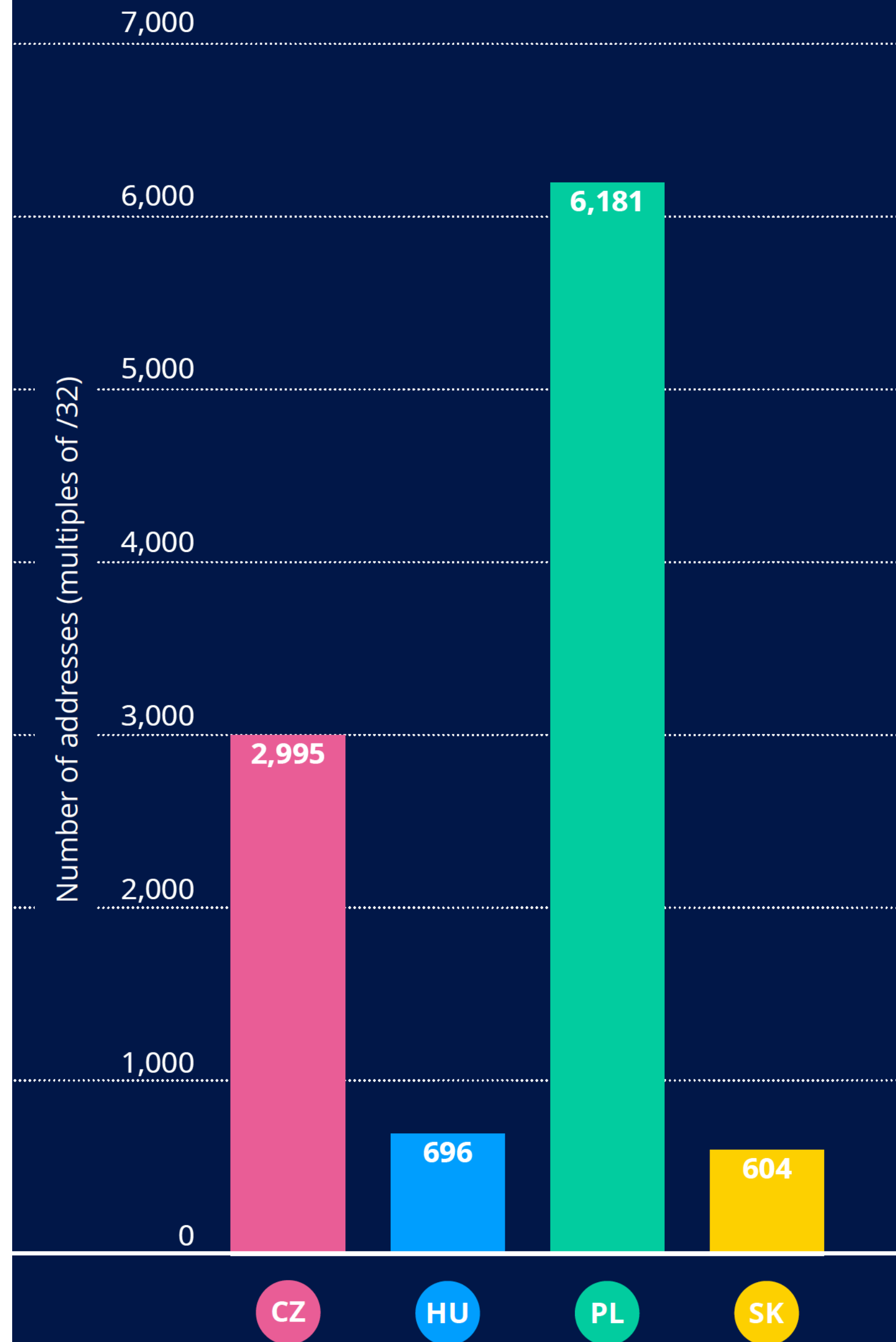
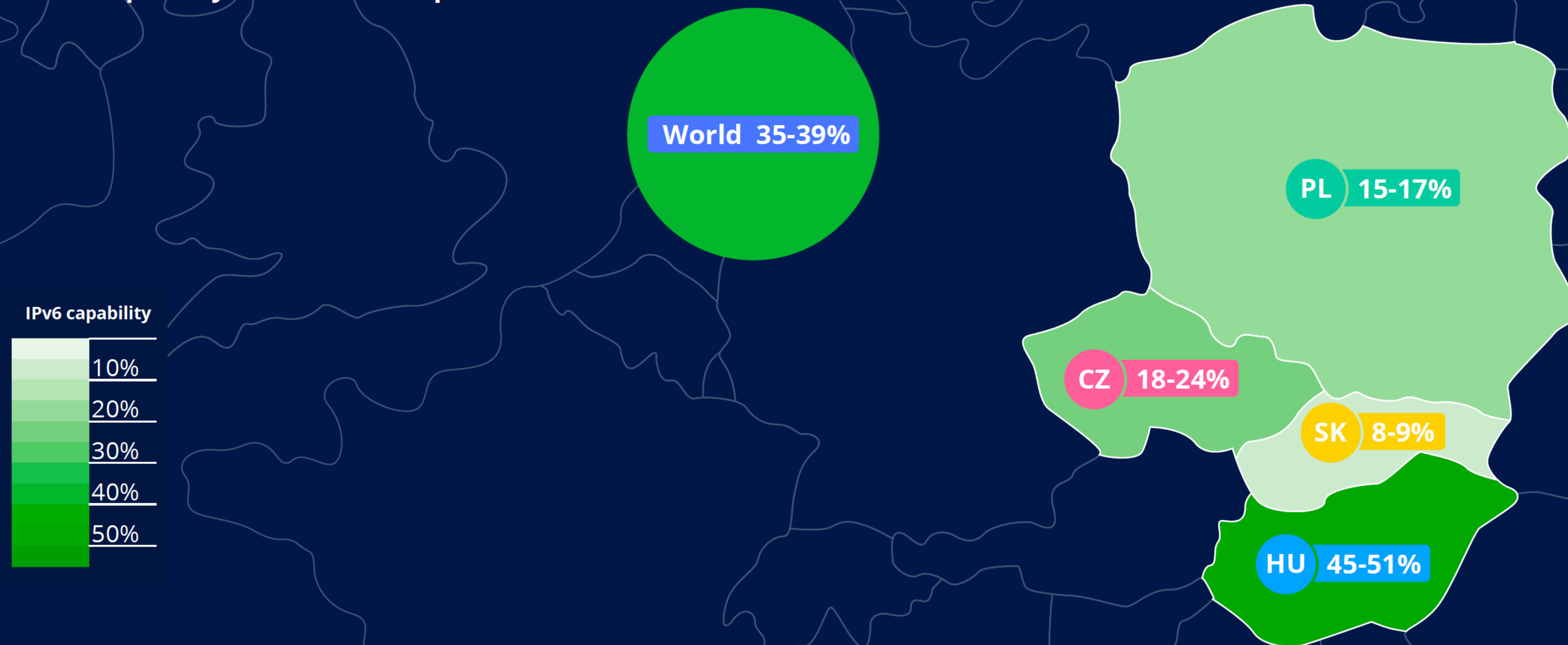




Figure 9:
IPv6 capability in Central Europe



Sources:
https://www.facebook.com/ipv6/?tab=ipv6_country
<https://www.google.com/intl/en/ipv6/statistics.html#tab=per-country-ipv6-adoption>
<https://stats.labs.apnic.net/ipv6/>
<https://www.akamai.com/internet-station/cyber-attacks/state-of-the-internet-report/ipv6-adoption-visualization>



Figure 10:
IPv6 capability by network

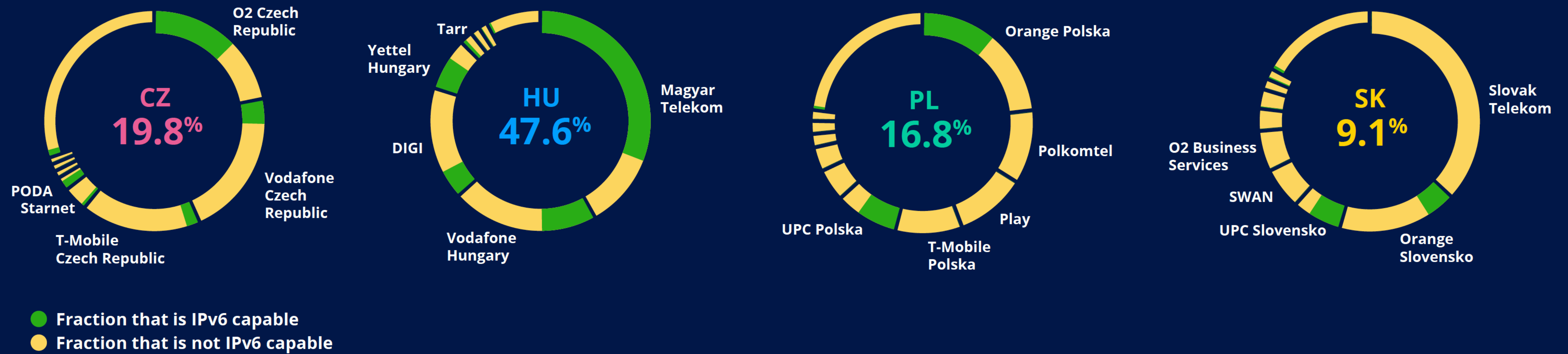


Figure 13:
Connectivity between networks in Poland





Figure 16:
Hungary's international connectivity

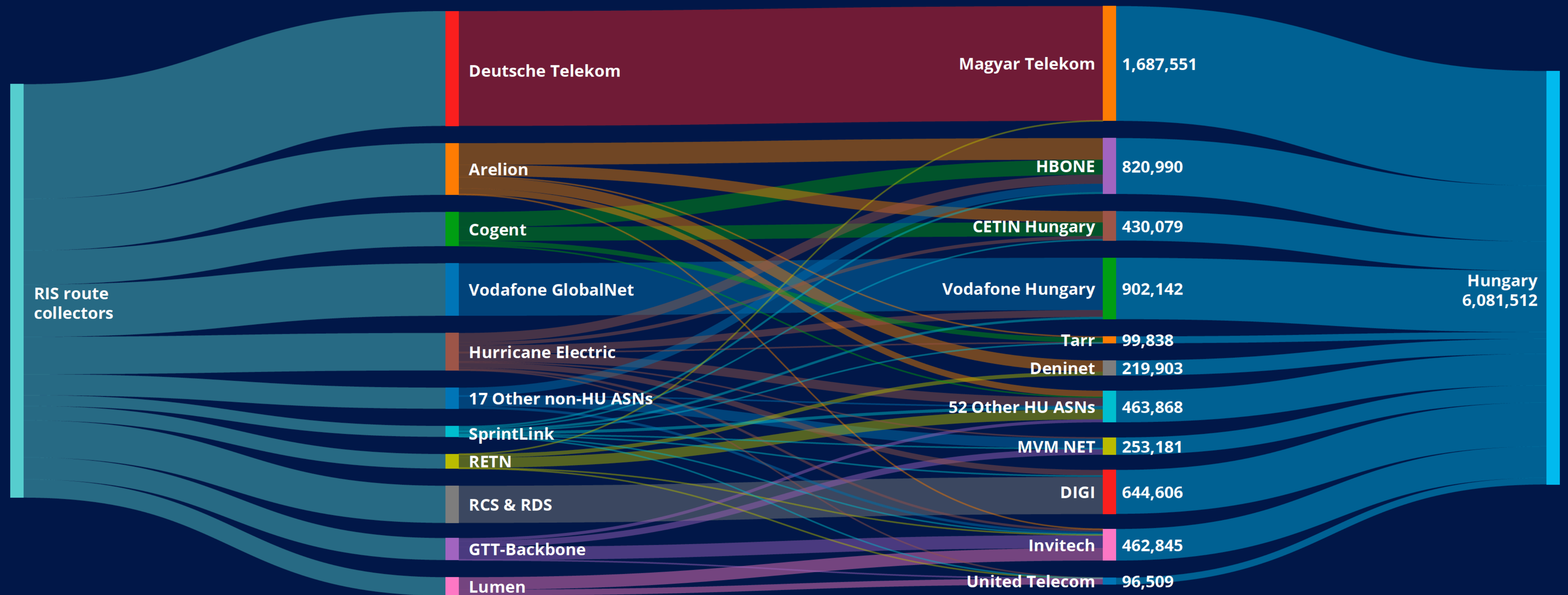


Figure 20:
K-root locations reached from vantage points in Central Europe

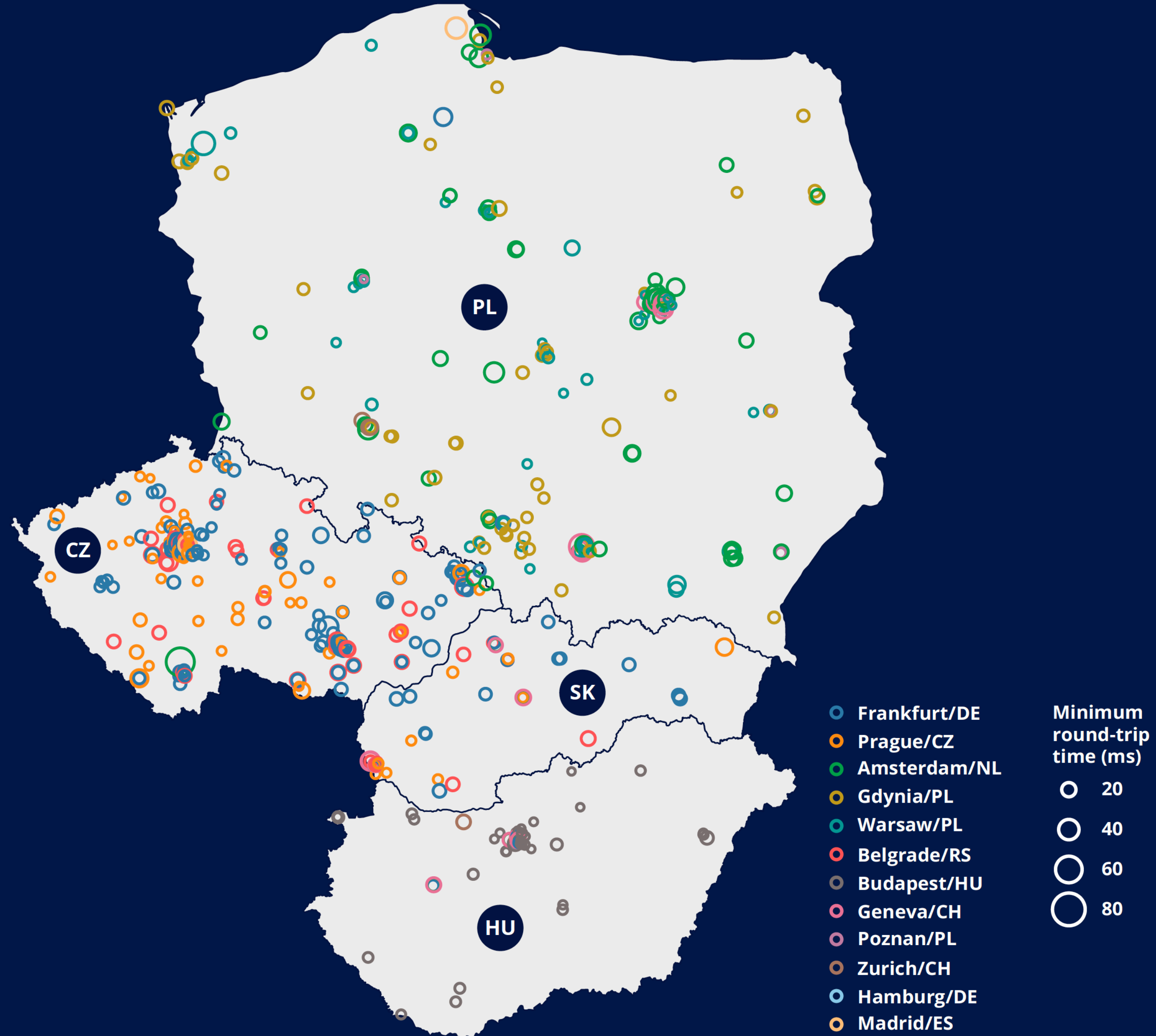


Figure 21:
Paths between origin and destination in the same country for Central Europe (IPv4)

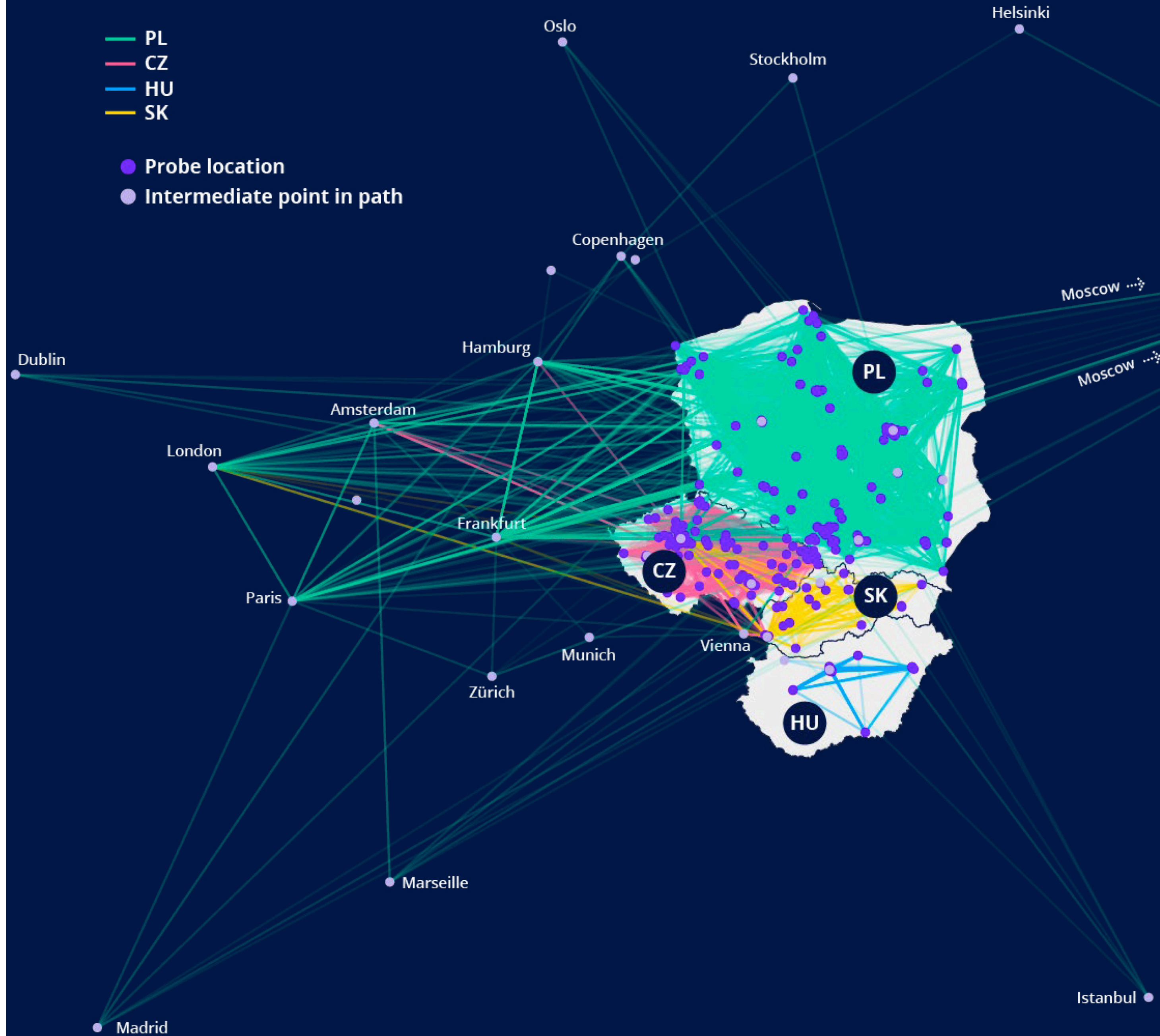
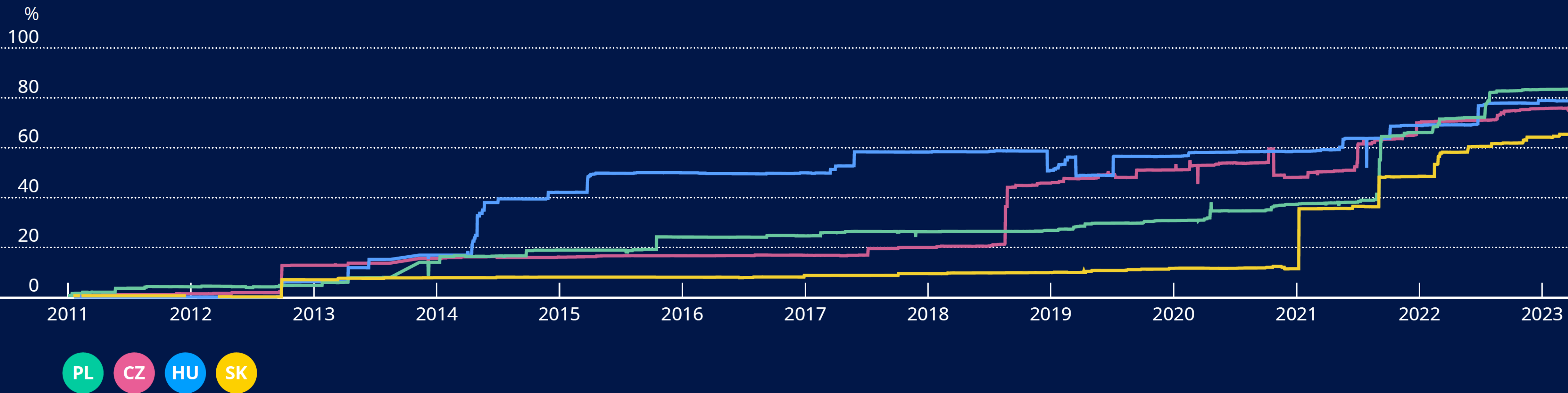




Figure 22:
IPv4 address space covered by ROAs over time



Central Europe: Conclusions



- **Developed Internet landscape that continues to make gains**
 - Rural infrastructure is a challenge (especially in Poland)
 - Moderate amounts of IPv4 address space
 - Open market with lots of small players despite large multinational corporations
- **Good level of interconnection with few dependencies**
 - Both domestically and internationally > stable, resilient Internet
- **BUT: Central Europe is falling behind on IPv6 deployment**
 - IPv6 is the only long-term solution to support future growth and new technologies
 - Everyone has a role to play (ISPs, NOGs, IXPs, government...)

Data Sources



- **RIPE Registry**
 - Record of all IP address and ASN allocations and resource holders
 - Public information available via the RIPE Database: <https://www.ripe.net>
- **RIPE Atlas**
 - Globally distributed network of thousands of probes collecting information about Internet connectivity
 - Public data available via maps, visualisations and API: <https://atlas.ripe.net>
- **Routing Information Service (RIS)**
 - Collecting Internet routing data from locations around the world since 2001: <https://www.ripe.net/ris>

A few last thoughts...



- These reports are always evolving
- Please get in touch and tell us what you want!
ppig@ripe.net
- YOU can use this data, too
<https://labs.ripe.net>



Questions



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