



RIPE NCC

RIPE NETWORK COORDINATION CENTRE

It Runs in the Family

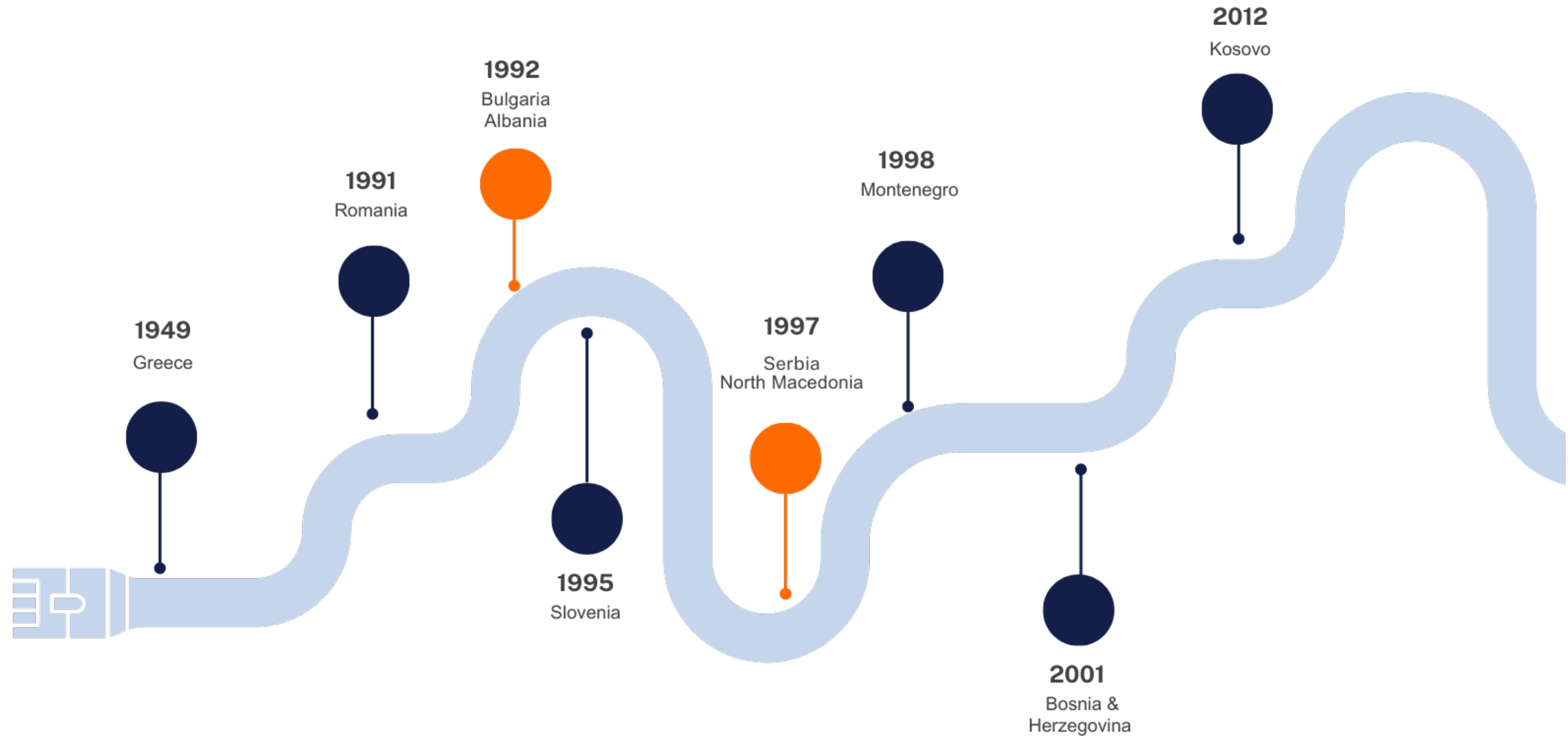
SEE Telco Market Evolution and Trends

Jelena Ćosić | SEE 11 | 4 April 2023



Historical Overview

Founding of National Telecoms



2000s: Liberalisation and Privatisation



- EU accession process played a key role
- New players entering the market
- Increased foreign investment
- Strengthening of independent regulatory authorities

2010s: Market Characteristics



- Increased competition (MVNOs and OTTs)
- Change in consumer behaviours and preferences (mobile data as a key driver of growth)
- Growing demand for high-speed internet
- Changes in regulatory environment (customer focused)
- Market consolidation

Trends



- Restructuring of telecom companies (divestitures like spin-offs and carved-outs, outsourcing, mergers and acquisitions)
- Convergence and vertical integration
- Expansion of 5G Networks



Telecom Serbia

HQ:

Belgrade, Serbia

Size:

12,000+ employees

Market share across SEE region:

- Bosnia and Herzegovina - 26.5%
- North Macedonia - 0.05%
- Montenegro - 44%
- Serbia - 48%



A1

HQ:

Vienna, Austria

Size:

17,000+ employees

Market share across SEE region:

- Bulgaria - 22.5%
- Croatia - 32.5%
- North Macedonia - 36%
- Serbia - 9%
- Slovenia - 20%



United Group

HQ:

Amsterdam, The Netherlands

Size:

14,000+ employees

Market share across SEE region:

- Bosnia and Herzegovina - 20%
- Bulgaria - 33.5%
- Croatia - 16%
- Greece - 32%
- Montenegro - 10.5%
- Serbia - 21.5%
- Slovenia - 30.5%



Deutsche Telekom

HQ:

Bonn, Germany

Size:

207,000+ employees

Market share across SEE region:

- Bosnia and Herzegovina - 11%
- Croatia - 47%
- Greece - 51.5%
- Montenegro - 36%
- North Macedonia - 43%
- Romania - 4%

Deutsche Telekom Group



Company	Country	Year of purchase/ foundation	Stake held
Hrvatski Telekom	HR	35% stake in 1999 16% stake in 2001	52.2%
Makedonski Telekom	MK	2001	51% of shares held by Magyar Telekom
HT Eronet	BA	2003	39.1% of shares held by Hrvatski Telekom
Crnogorski Telekom	ME	2005	76,53% of shares held by Hrvatski Telekom
Cosmote	GR	2007	100% of shares held by OTE
OTE	GR	2009	49.22%
Telekom Romania Mobile Communications S.A.	RO	2021	100% of shares held by OTE

United Group



Company	Country	Year of purchase/foundation
Telemach Bosnia and Herzegovina	BA	2005
Serbian Broadband	RS	2007
Telemach Montenegro	ME	2014
Telemach Slovenia	SI	2015
Telemach Croatia	HR	2020
Forthnet	GR	2022
Wind Hellas	GR	2022
Vivacom	BG	2022

A1 Group



Company	Country	Year of purchase/foundation
A1 Croatia	HR	1999
A1 Bulgaria	BG	2005
A1 Serbia	RS	2006
A1 Slovenia	SI	2006
A1 Macedonia	MK	2015

PPF Telekom Group



Company	Country	Year of purchase/foundation
CETIN Serbia	RS	2018
CETIN Bulgaria	BG	2018
Yettel Serbia	RS	2018
Yettel Bulgaria	BG	2018

4iG

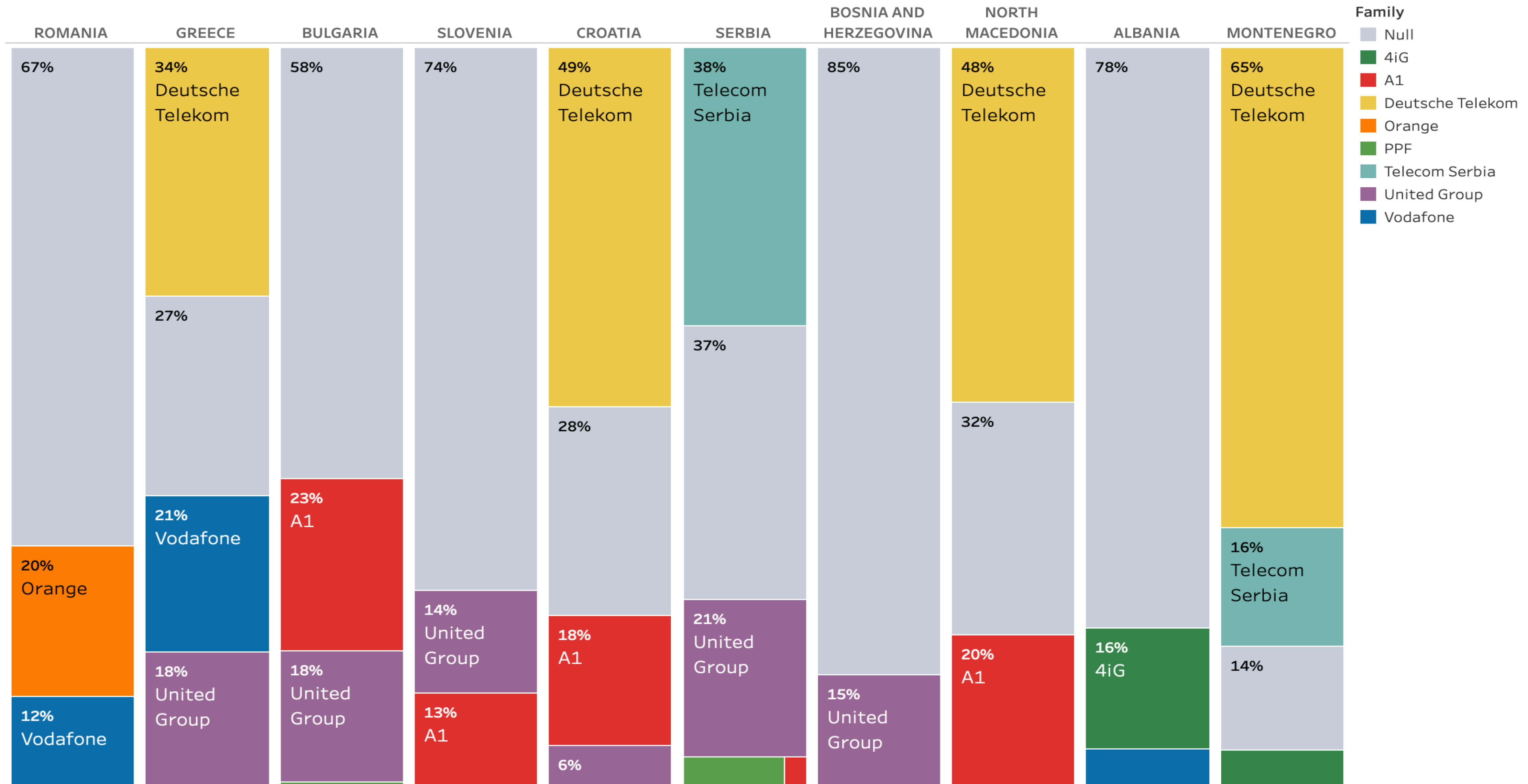
Company	Country	Year of purchase/foundation
ONE	ME	2021
One Albania	AL	2021
ALBtelecom	AL	2021

Telekom Serbia



Company	Country	Year of purchase/foundation
Telekom Serbia	RS	1997
Moja SuperNova	RS	2019
MTS Telekom Srpske	BA	2006
MTEL Montenegro	ME	2007
MTEL N. Macedonia	MK	2022

IP Resource Distribution

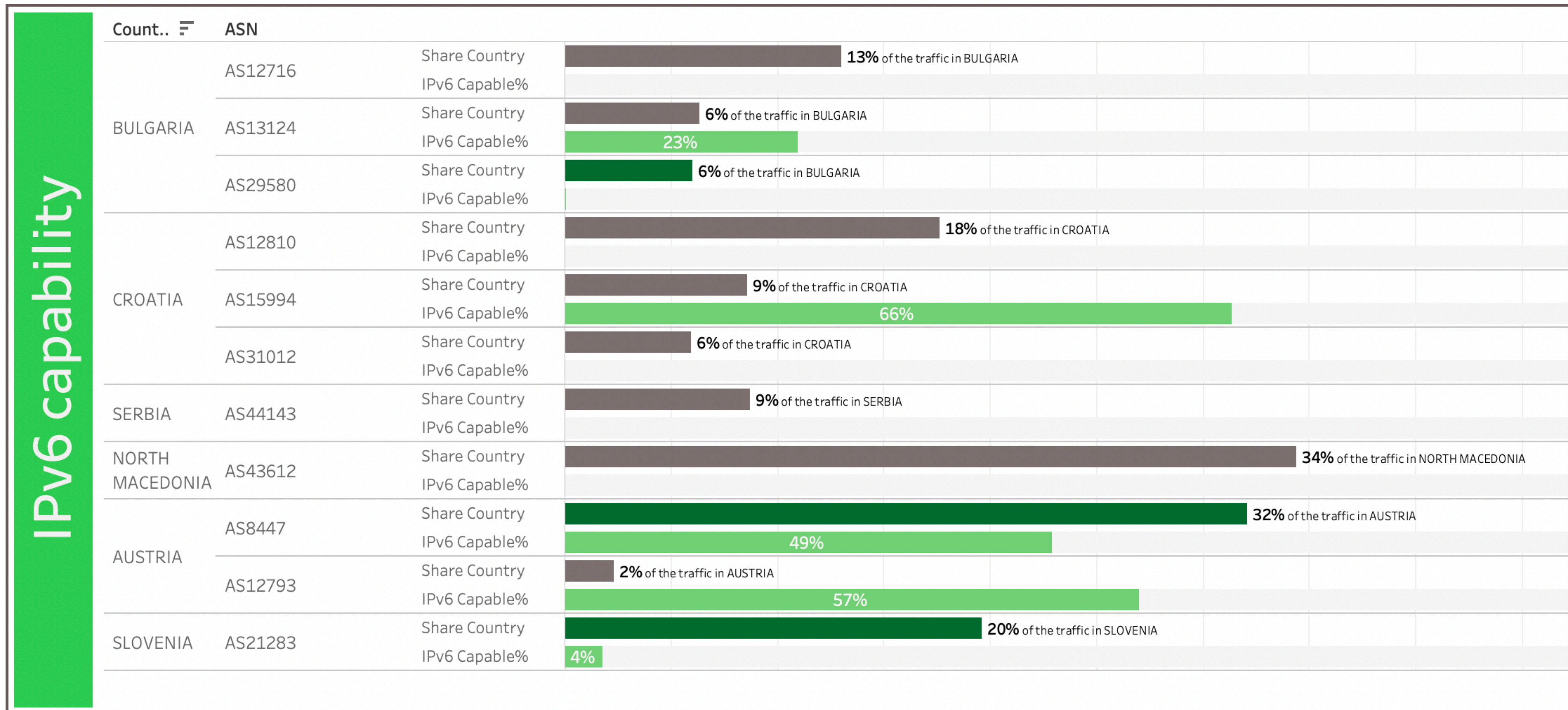


IPv4 holding percentages by networks operating in the SEE region



Technical Analysis

IPv6 Technology Adoption - A1



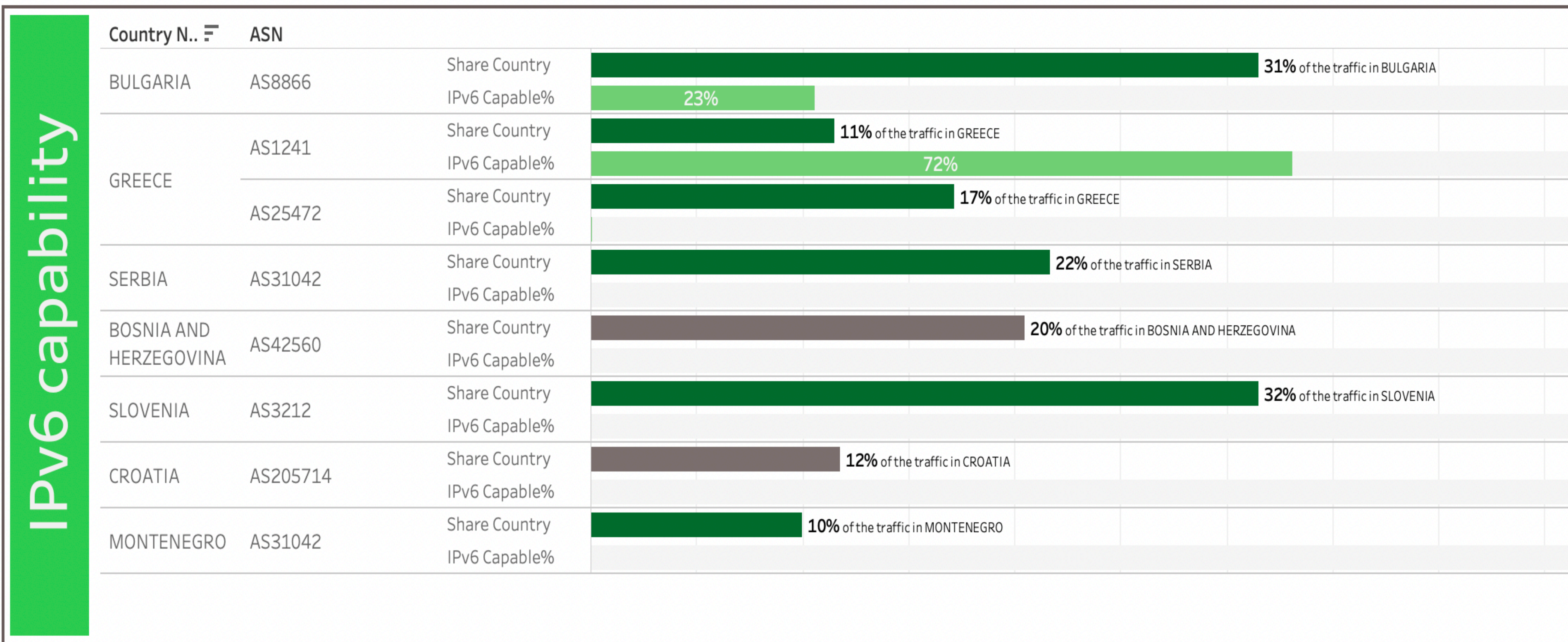
IPv6 Capable?

- Incapable
- Capable

hasConnectedProbe

- False
- True

IPv6 Technology Adoption - United Group



IPv6 Capable?

Incapable

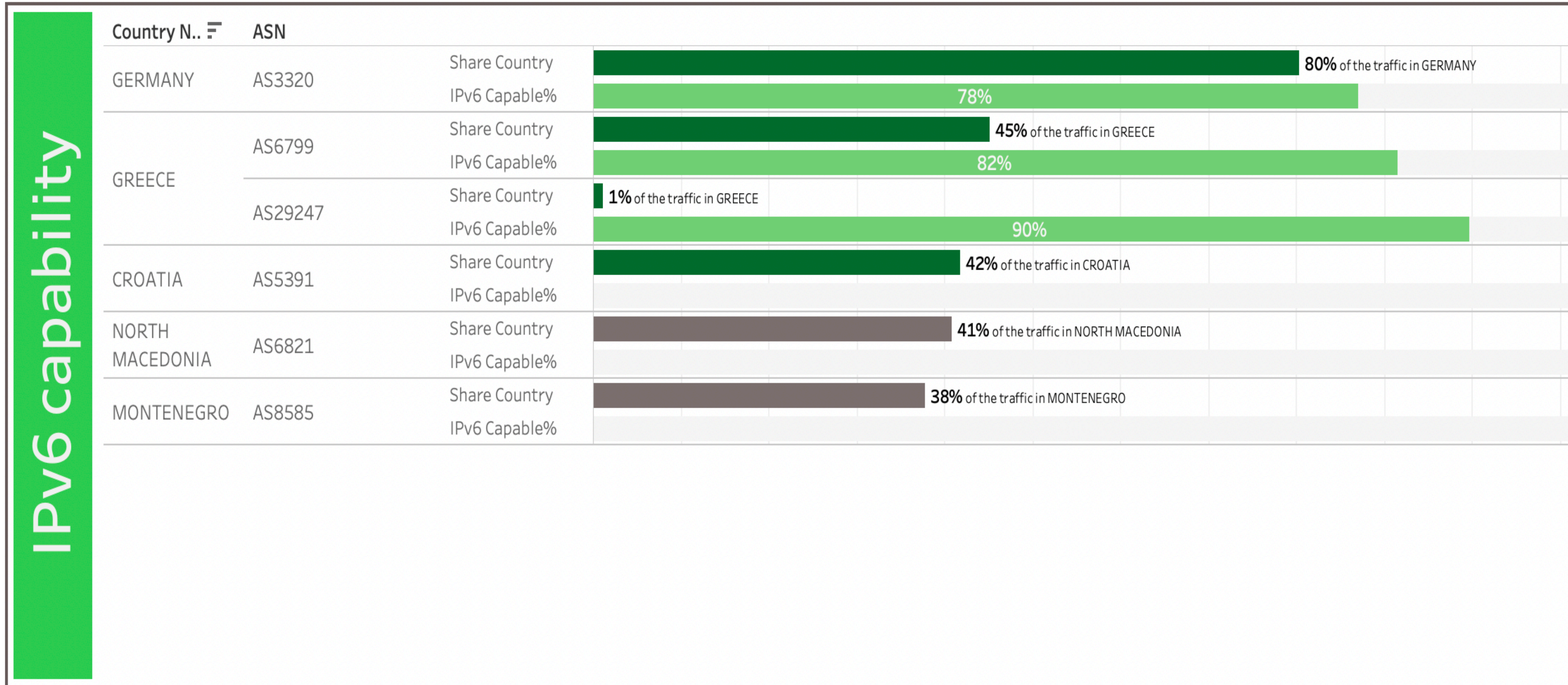
Capable

hasConnectedProbe

False

True

IPv6 Technology Adoption - Deutsche Telekom



IPv6 Capable?

■ Incapable

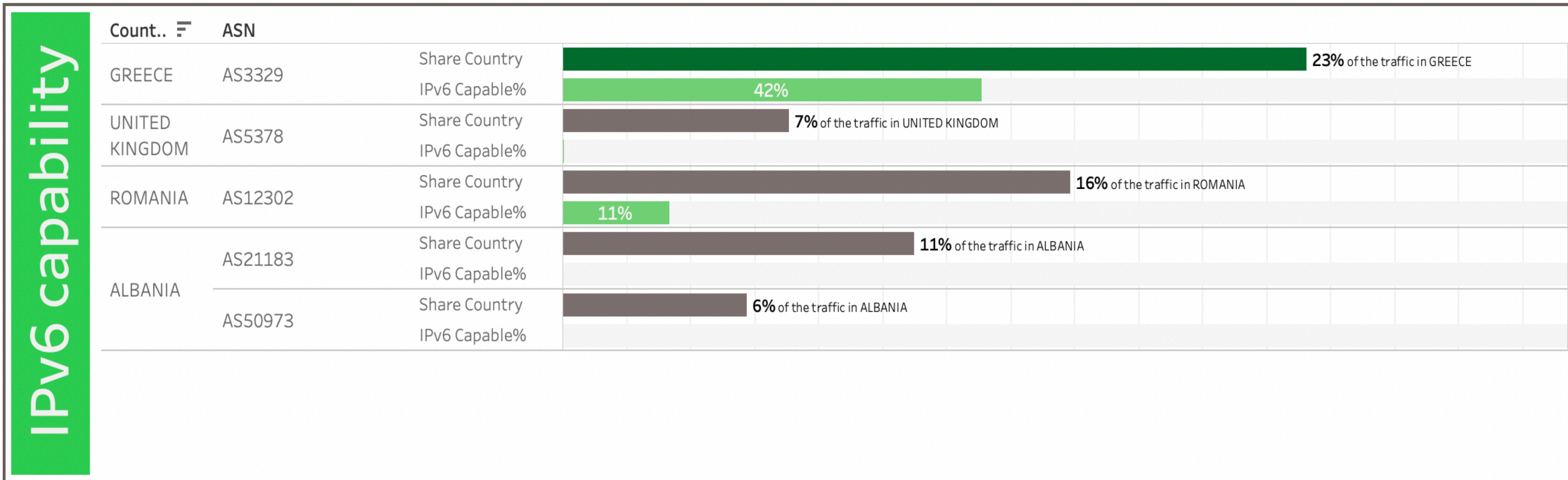
■ Capable

hasConnectedProbe

■ False

■ True

IPv6 Technology Adoption - Vodafone



IPv6 Capable?

- Incapable
- Capable

hasConnectedProbe

- False
- True

RPKI Technology Adoption - A1



RPKI adoption

Count..		Legal Name		
BULGARIA	bg.mt..	A1 Bulgaria EAD	%ofIPv4inCountry ROAcoved%	<div style="display: flex; align-items: center;"> <div style="width: 23%; height: 15px; background-color: #663366; margin-right: 5px;"></div> <div style="margin-right: 5px;">23% of the v4 space in BULGARIA</div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="width: 97%; height: 15px; background-color: #33a696; margin-right: 5px;"></div> <div style="width: 3%; height: 15px; background-color: #cccccc; margin-right: 5px;"></div> </div>
CROATIA	hr.a1	A1 Hrvatska d.o.o.	%ofIPv4inCountry ROAcoved%	<div style="display: flex; align-items: center;"> <div style="width: 18%; height: 15px; background-color: #663366; margin-right: 5px;"></div> <div style="margin-right: 5px;">18% of the v4 space in CROATIA</div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="width: 1%; height: 15px; background-color: #33a696; margin-right: 5px;"></div> <div style="width: 99%; height: 15px; background-color: #cccccc; margin-right: 5px;"></div> </div>
SERBIA	rs.no..	A1 Srbija d.o.o	%ofIPv4inCountry ROAcoved%	<div style="display: flex; align-items: center;"> <div style="width: 1%; height: 15px; background-color: #663366; margin-right: 5px;"></div> <div style="margin-right: 5px;">1% of the v4 space in SERBIA</div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="width: 1%; height: 15px; background-color: #33a696; margin-right: 5px;"></div> <div style="width: 99%; height: 15px; background-color: #cccccc; margin-right: 5px;"></div> </div>
AUSTRIA	at.tel..	A1 Telekom Austria AG	%ofIPv4inCountry ROAcoved%	<div style="display: flex; align-items: center;"> <div style="width: 29%; height: 15px; background-color: #663366; margin-right: 5px;"></div> <div style="margin-right: 5px;">29% of the v4 space in AUSTRIA</div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="width: 97%; height: 15px; background-color: #33a696; margin-right: 5px;"></div> <div style="width: 3%; height: 15px; background-color: #cccccc; margin-right: 5px;"></div> </div>
SLOVENIA	si.a1	A1 Slovenija telekomunikacijsk..	%ofIPv4inCountry ROAcoved%	<div style="display: flex; align-items: center;"> <div style="width: 13%; height: 15px; background-color: #663366; margin-right: 5px;"></div> <div style="margin-right: 5px;">13% of the v4 space in SLOVENIA</div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="width: 99%; height: 15px; background-color: #33a696; margin-right: 5px;"></div> <div style="width: 1%; height: 15px; background-color: #cccccc; margin-right: 5px;"></div> </div>

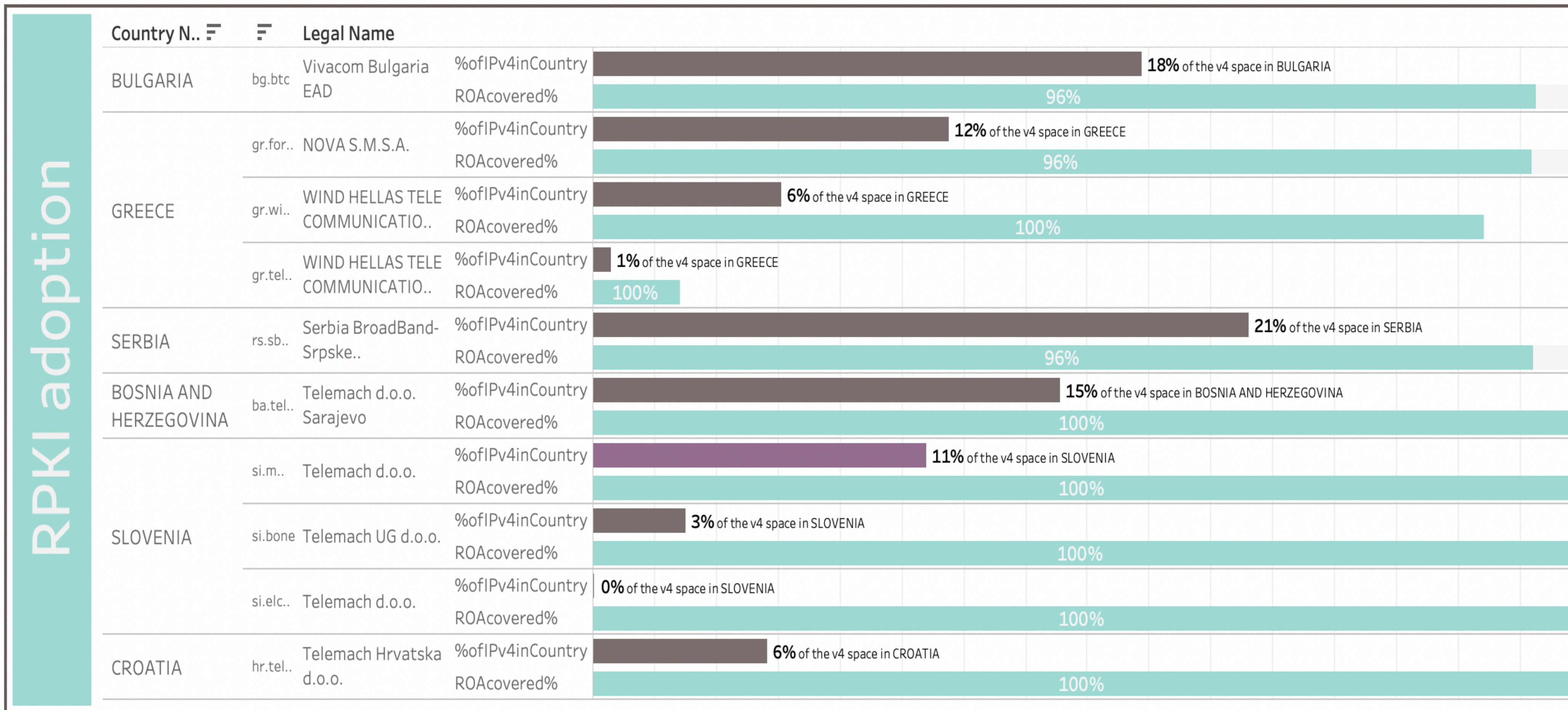
Covered/Uncovered

- uncovered
- covered

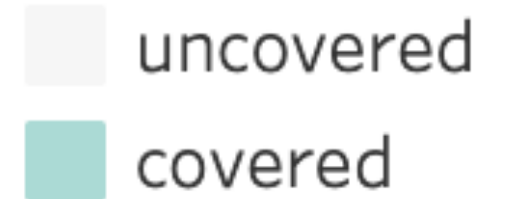
IPv4PI

- NO
- YES

RPKI Technology Adoption - United Group



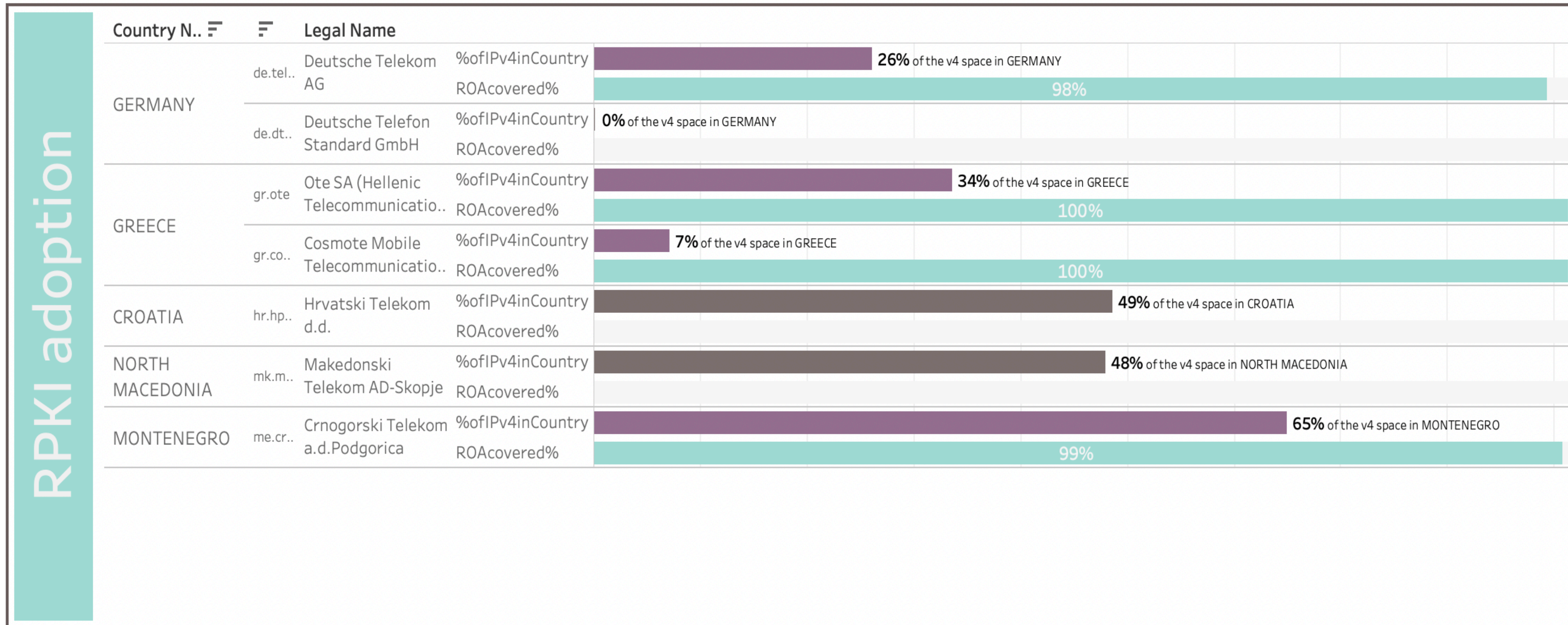
Covered/Uncovered



IPv4PI



RPKI Technology Adoption - Deutsche Telekom



Covered/Uncovered

uncovered

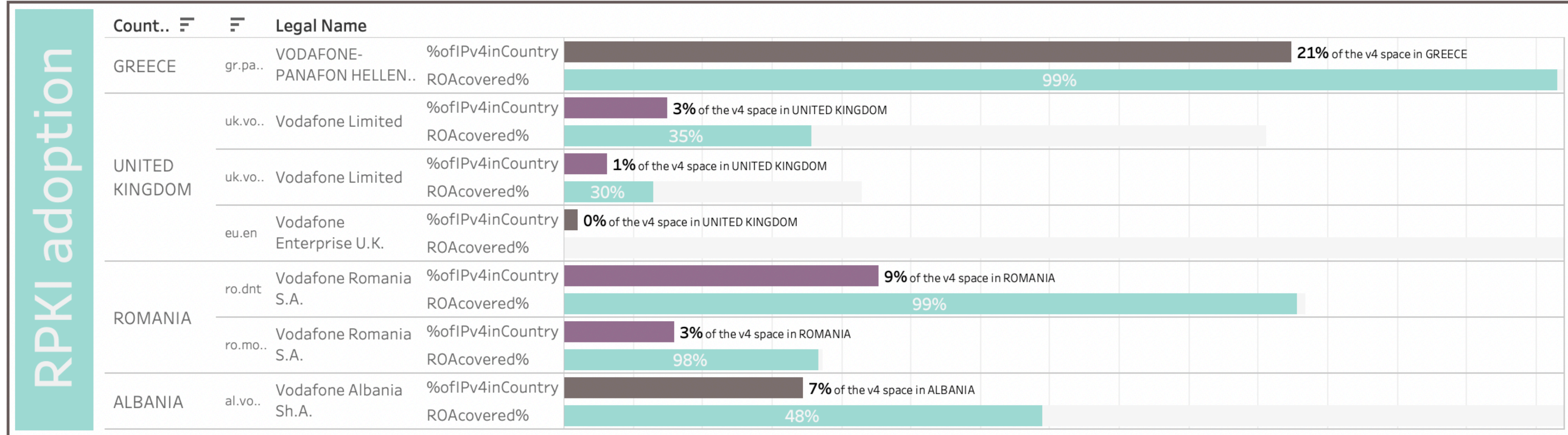
covered

IPv4PI

NO

YES

RPKI Technology Adoption - Vodafone



Covered/Uncovered

- uncovered
- covered

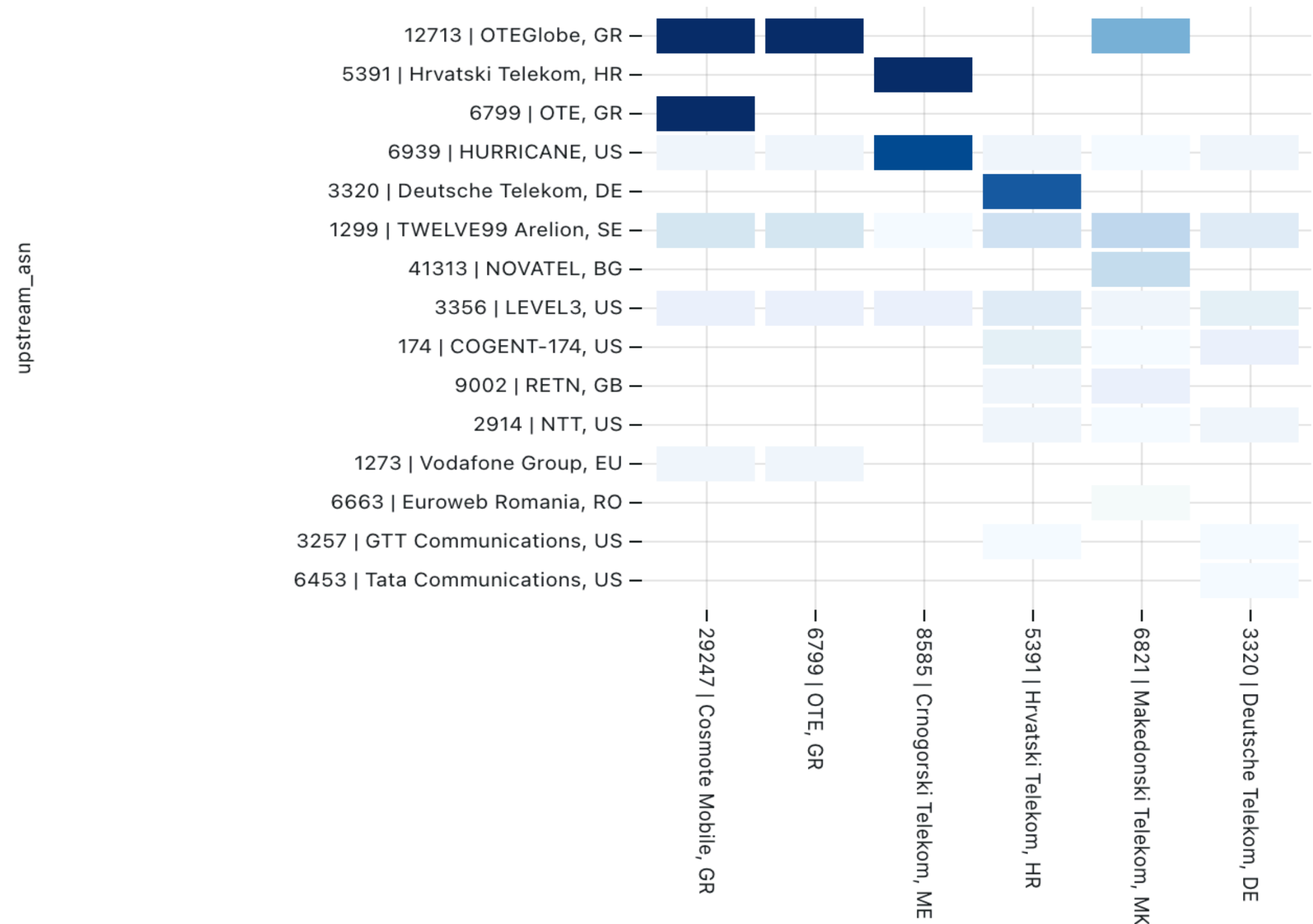
IPv4PI

- NO
- YES

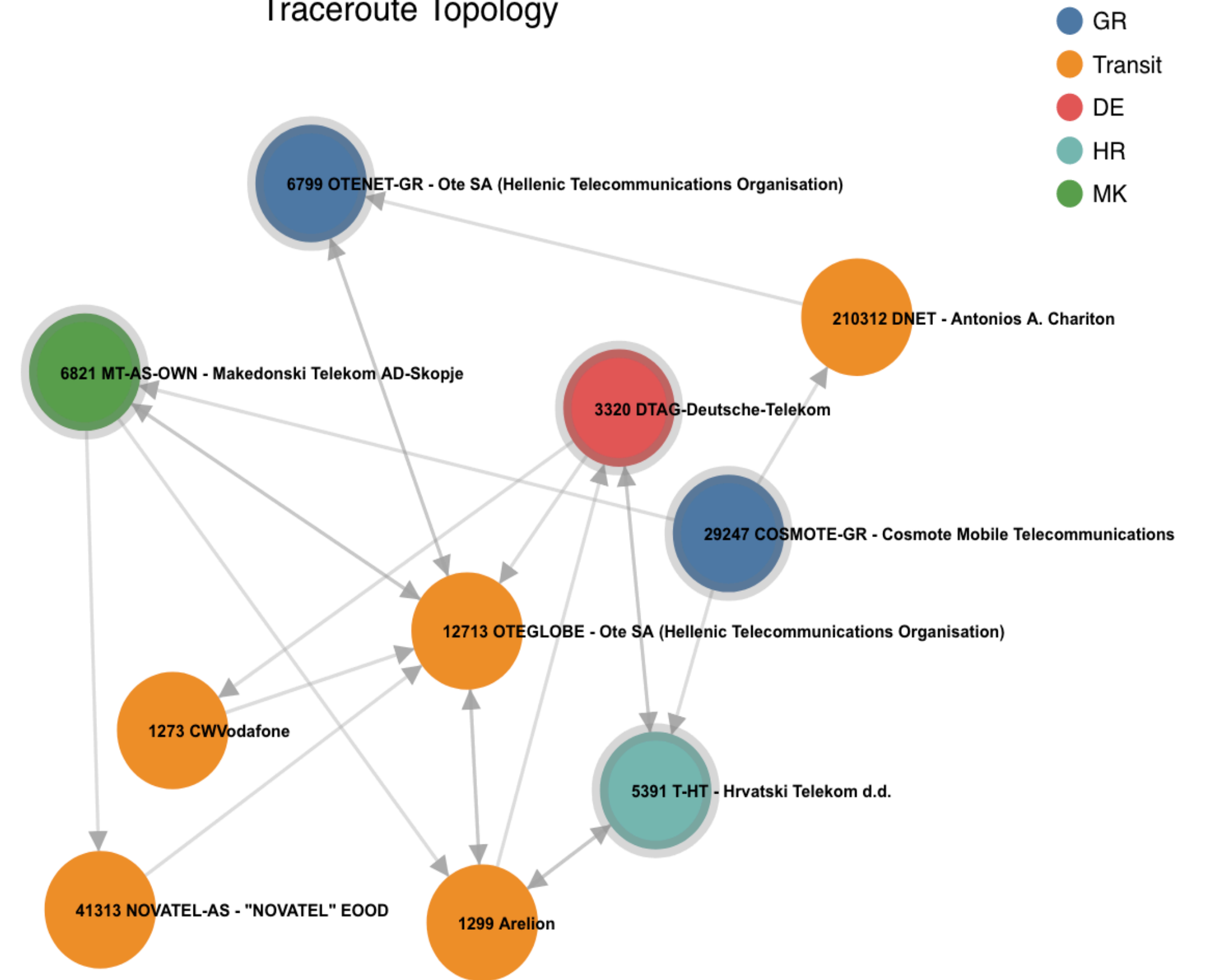
Network Dependencies - Deutsche Telekom



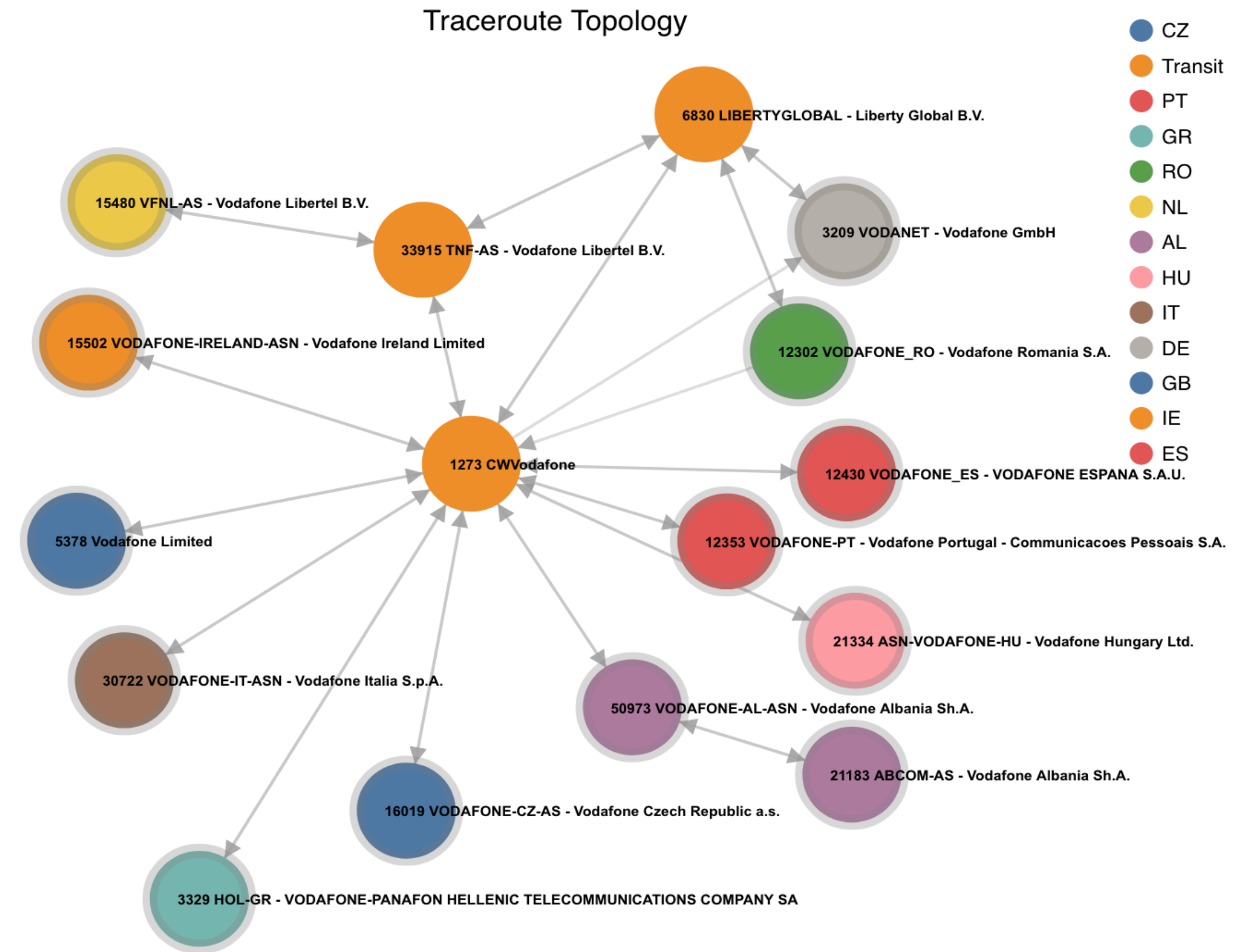
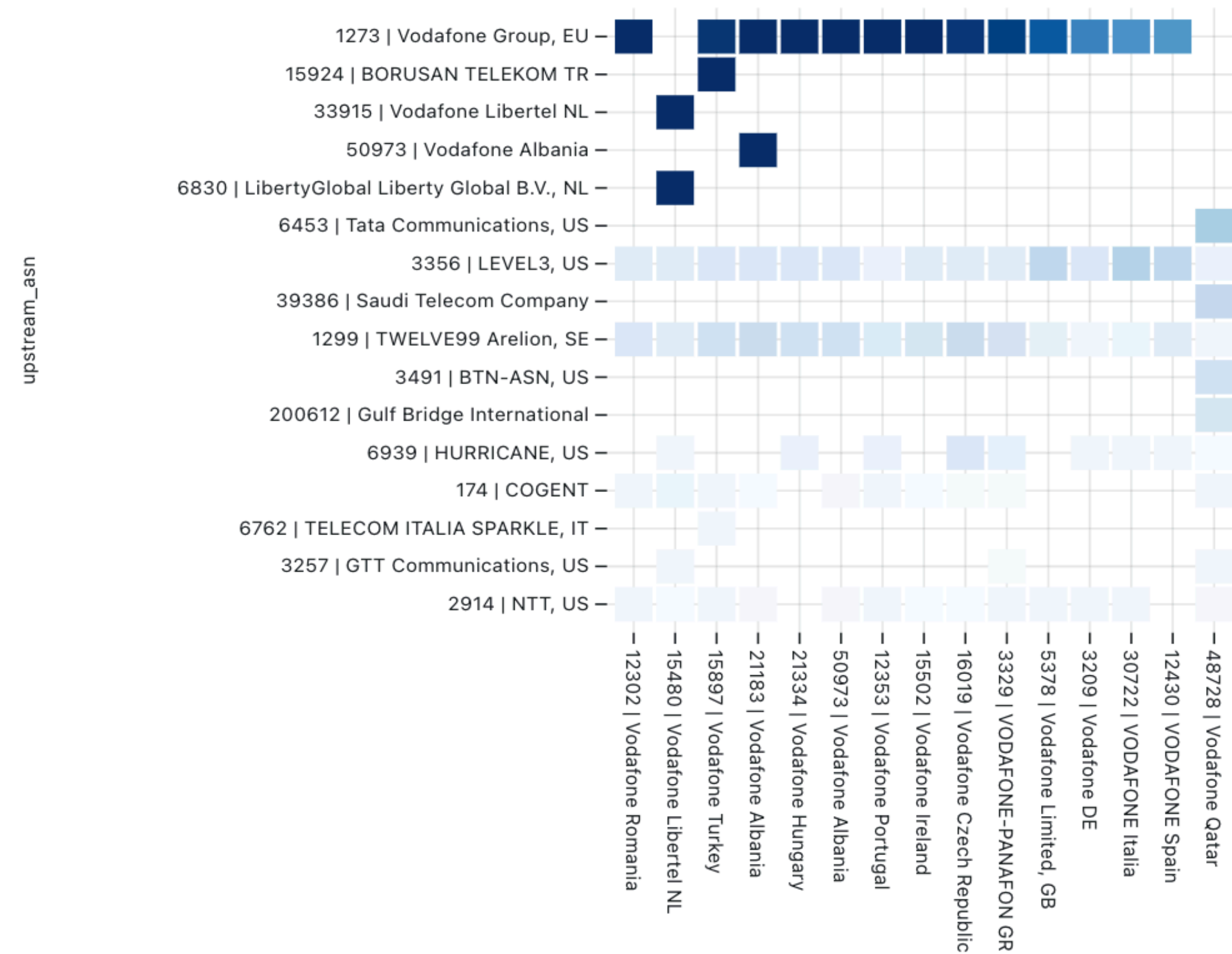
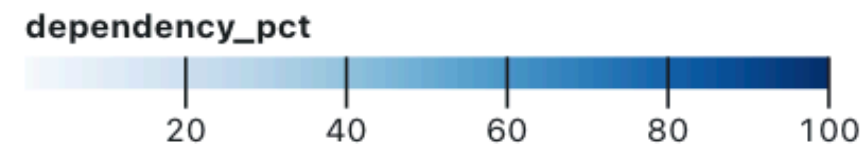
dependency_pct



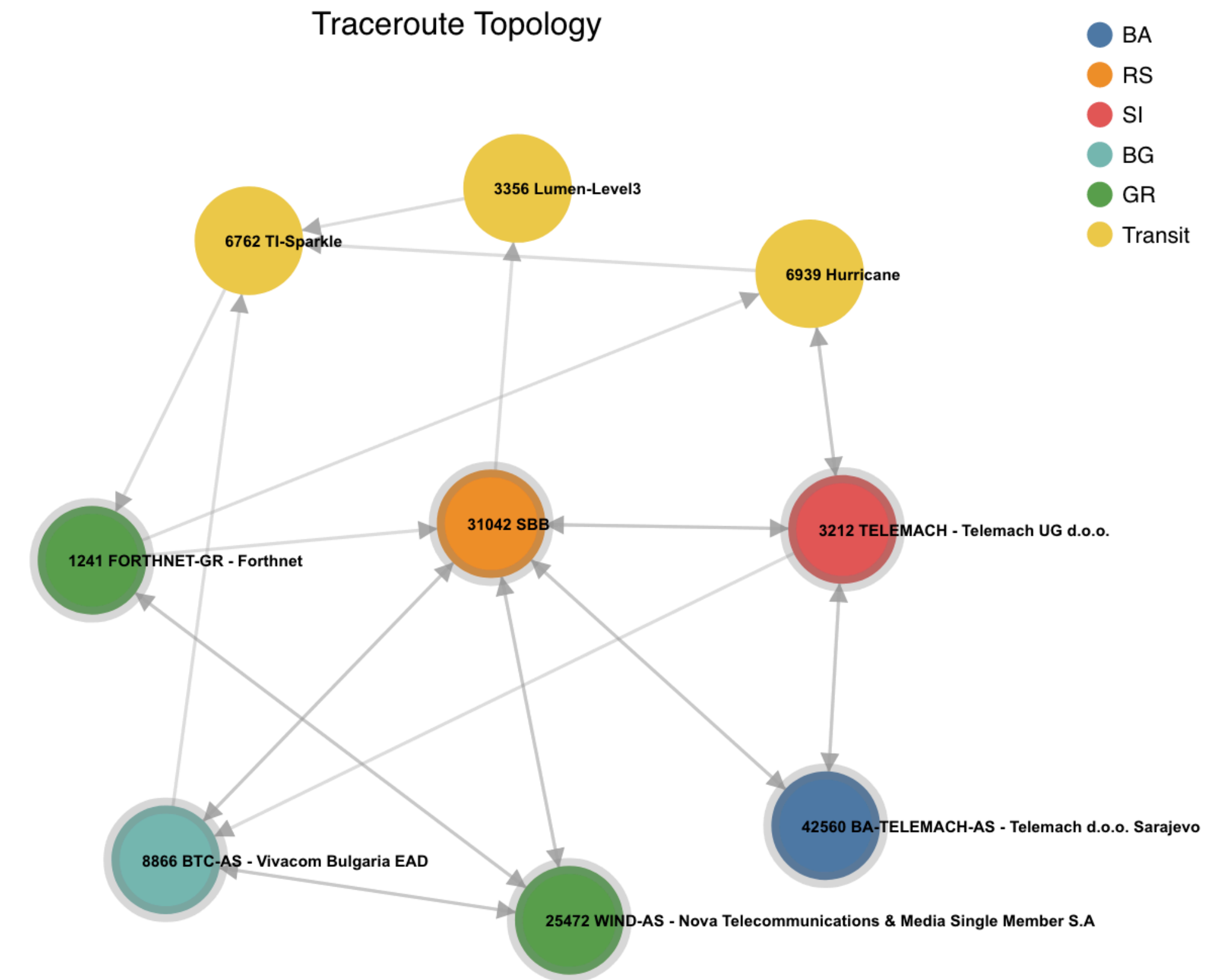
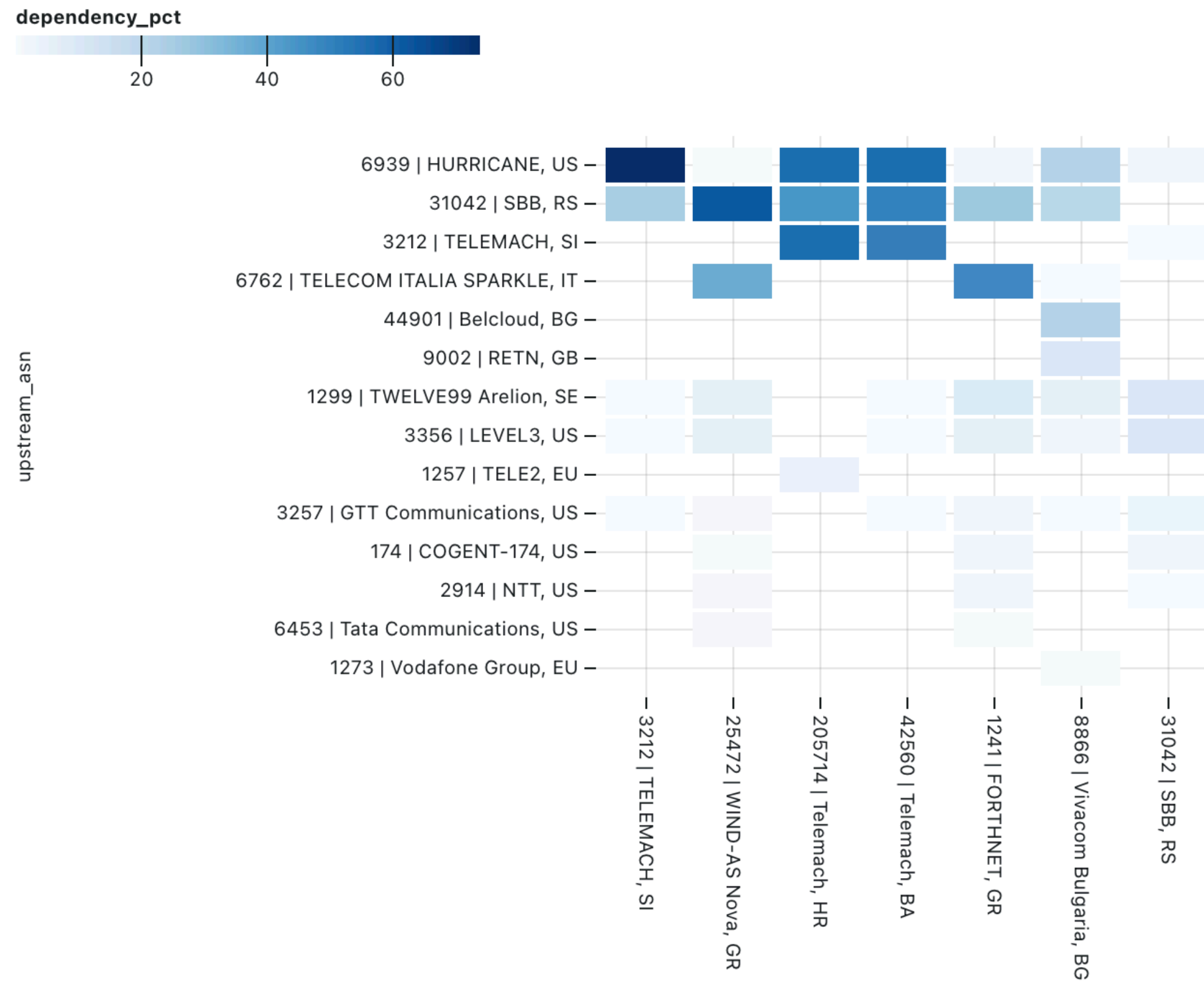
Traceroute Topology



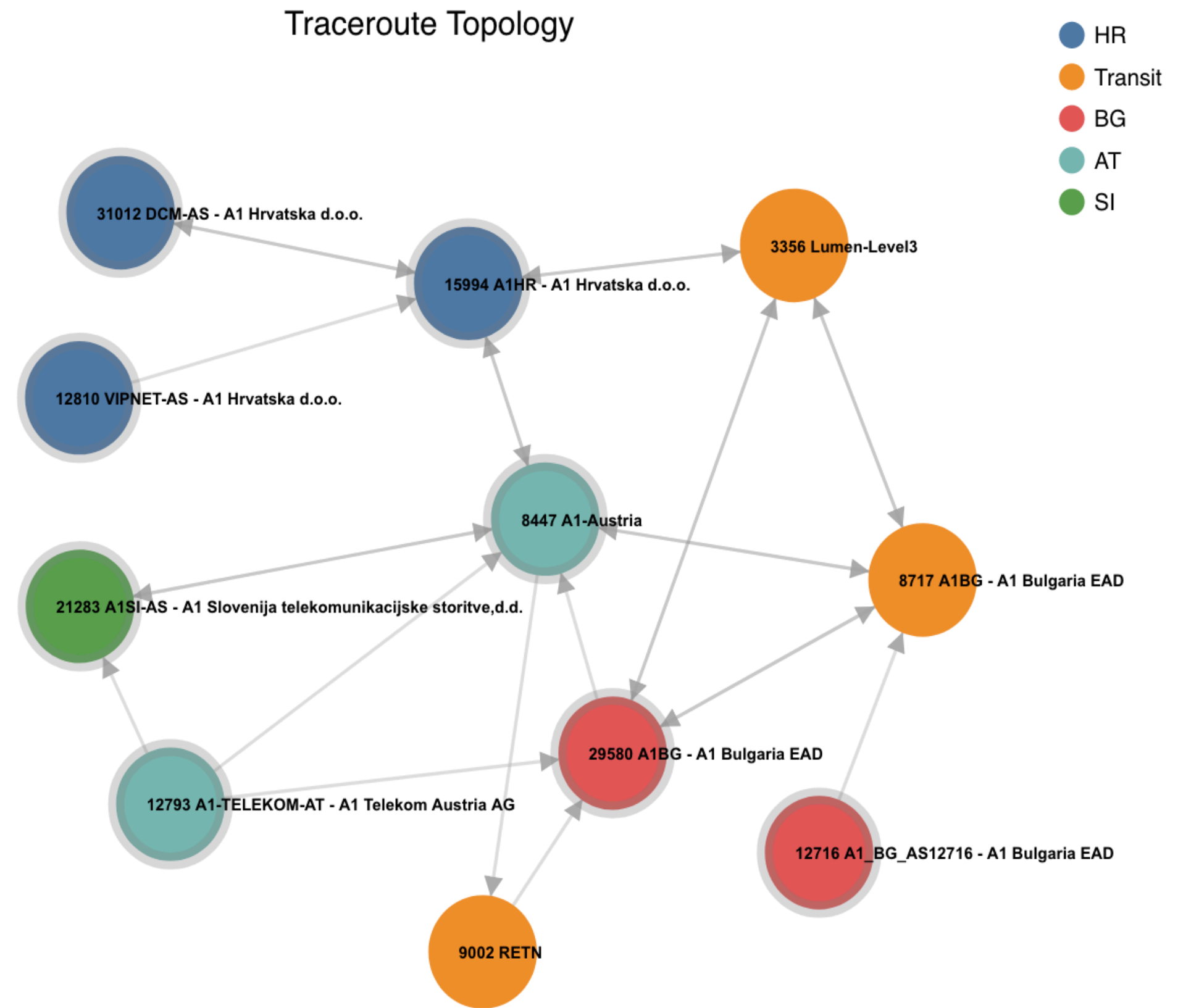
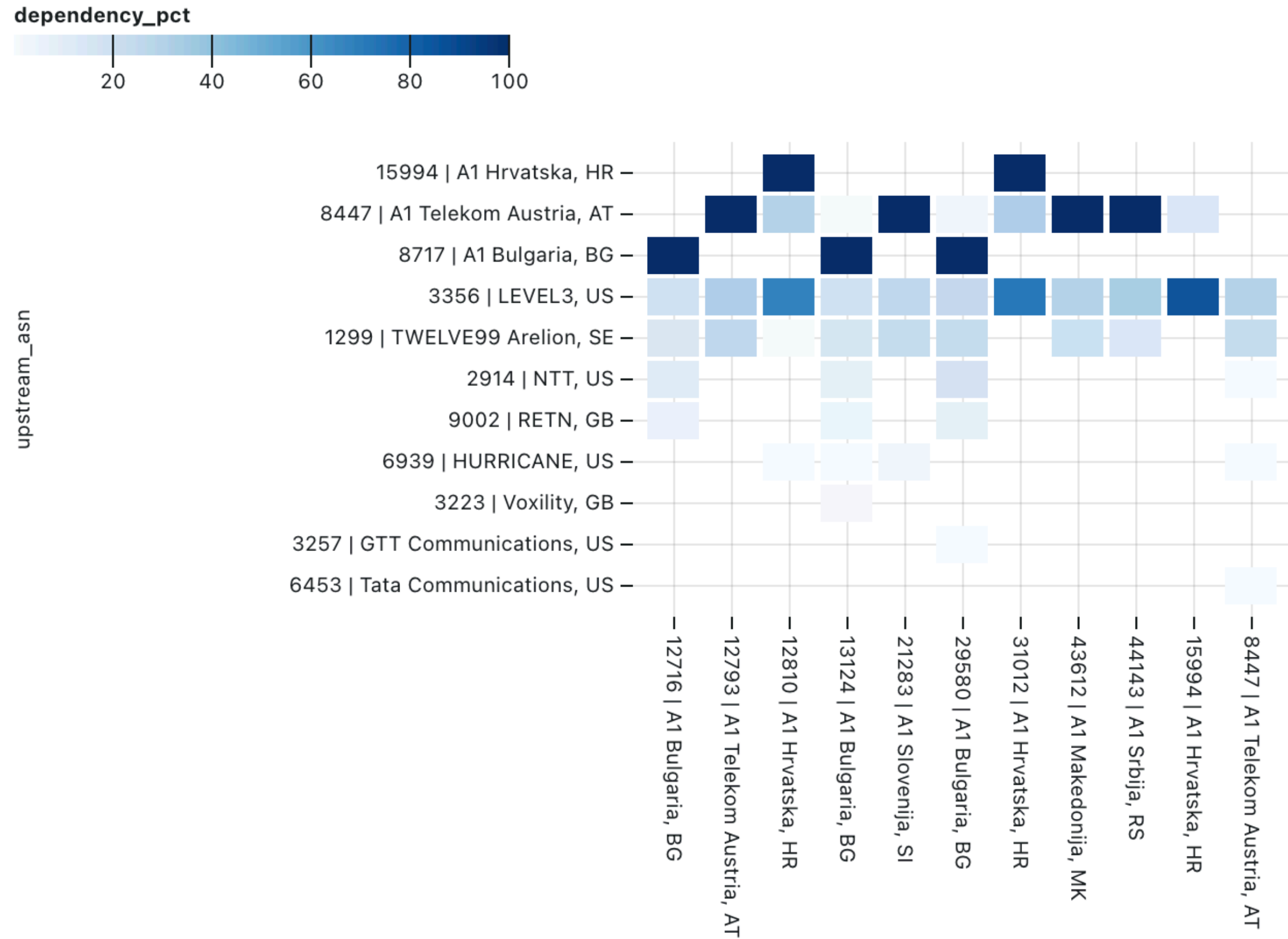
Network Dependencies - Vodafone



Network Dependencies - United Group



Network Dependencies - A1





RIPE Atlas probe coverage

Showing ASNs covering at least 2% of the country's population

- ASN is not covered (please apply!)
- ASN has at least 2 probes





Questions



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Sources



- <https://observablehq.com/d/73ca0d3f2b393aa9>
- <https://observablehq.com/@emileaben/family-hegemony>
- APNIC statistics: <https://stats.labs.apnic.net/aspop>
- United Group: <https://united.group/about/>
- Deutsche Telekom: <https://www.telekom.com/en/company/companyprofile/company-profile-625808>
- Telekom Srbija (via wikipedia): https://en.wikipedia.org/wiki/Telekom_Srbija