

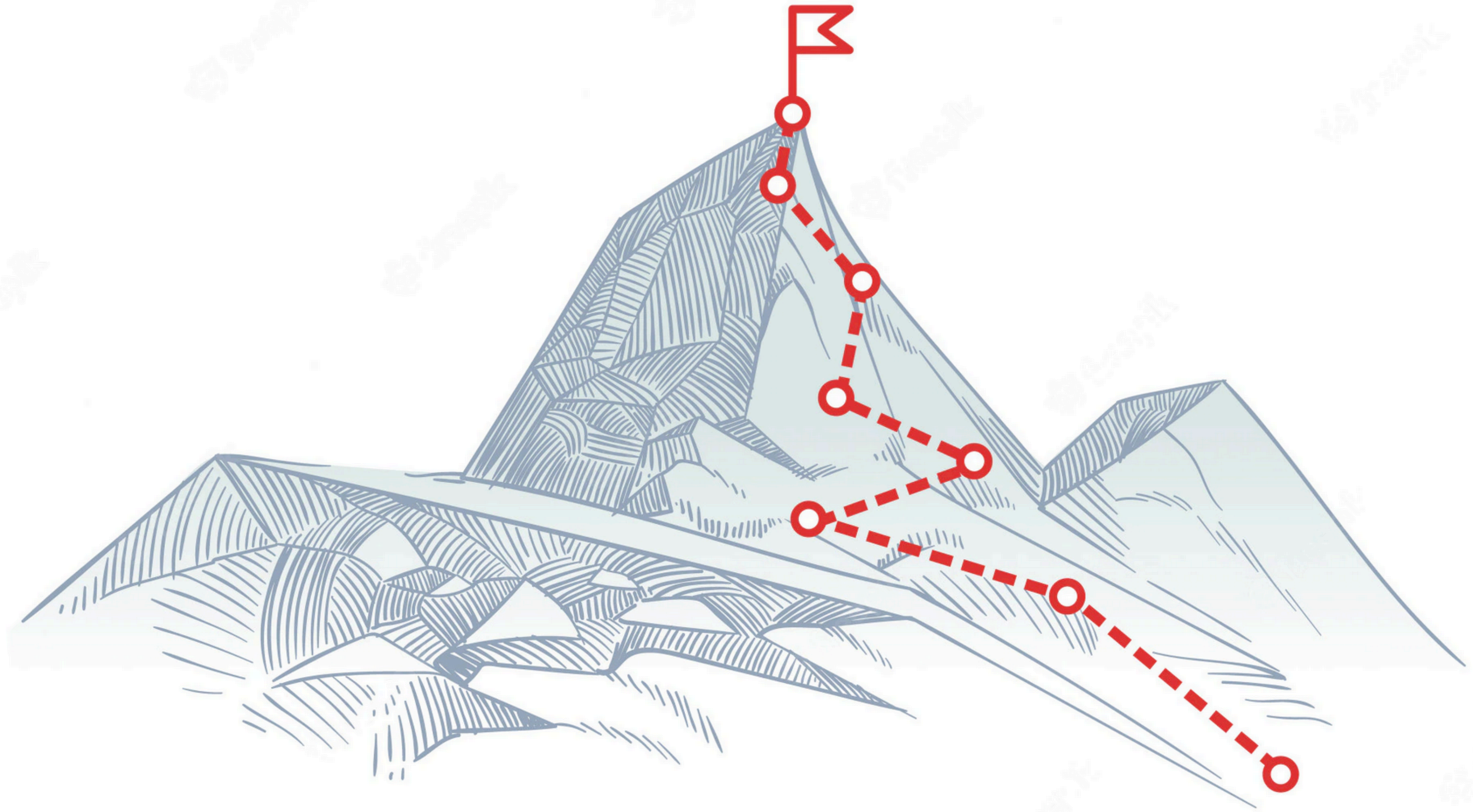


**RIPE NCC**

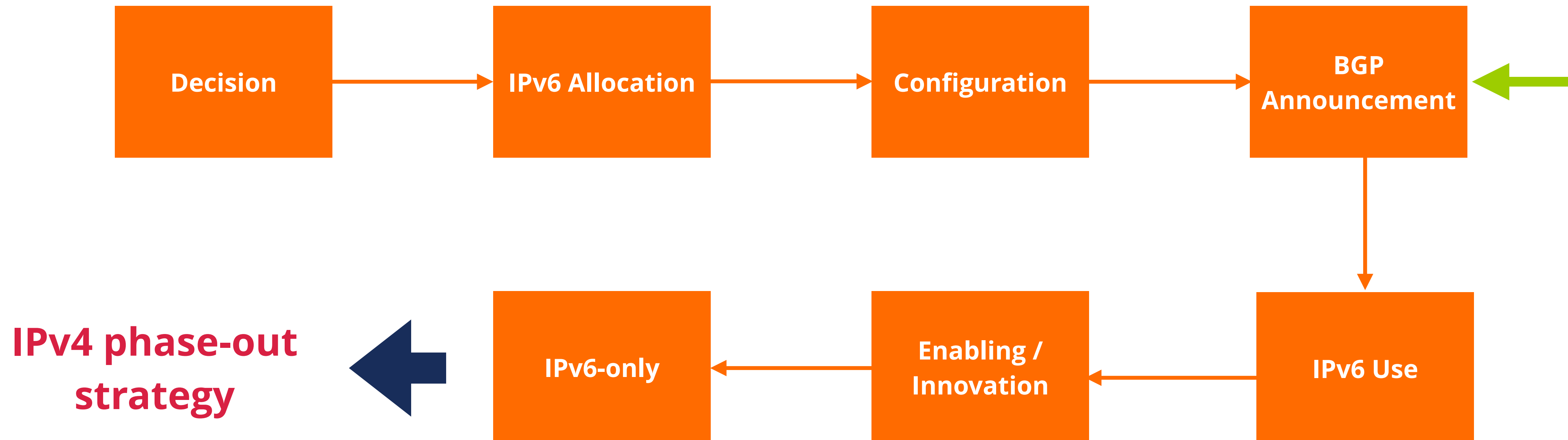
RIPE NETWORK COORDINATION CENTRE

# IPv6 - MENOG Stats

Alvaro Vives | 7 December 2022 | MENOG 22



# IPv6 Deployment

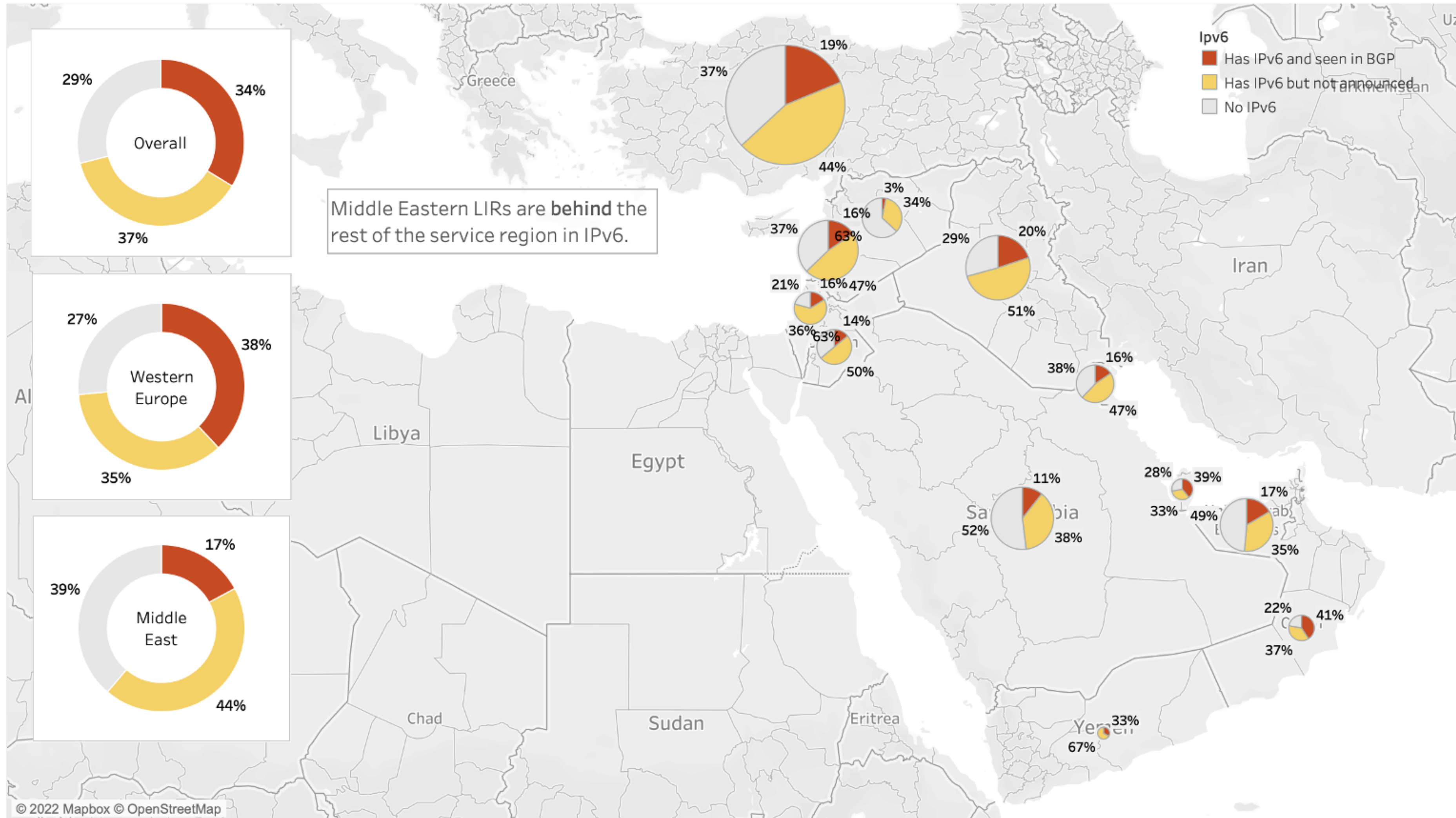




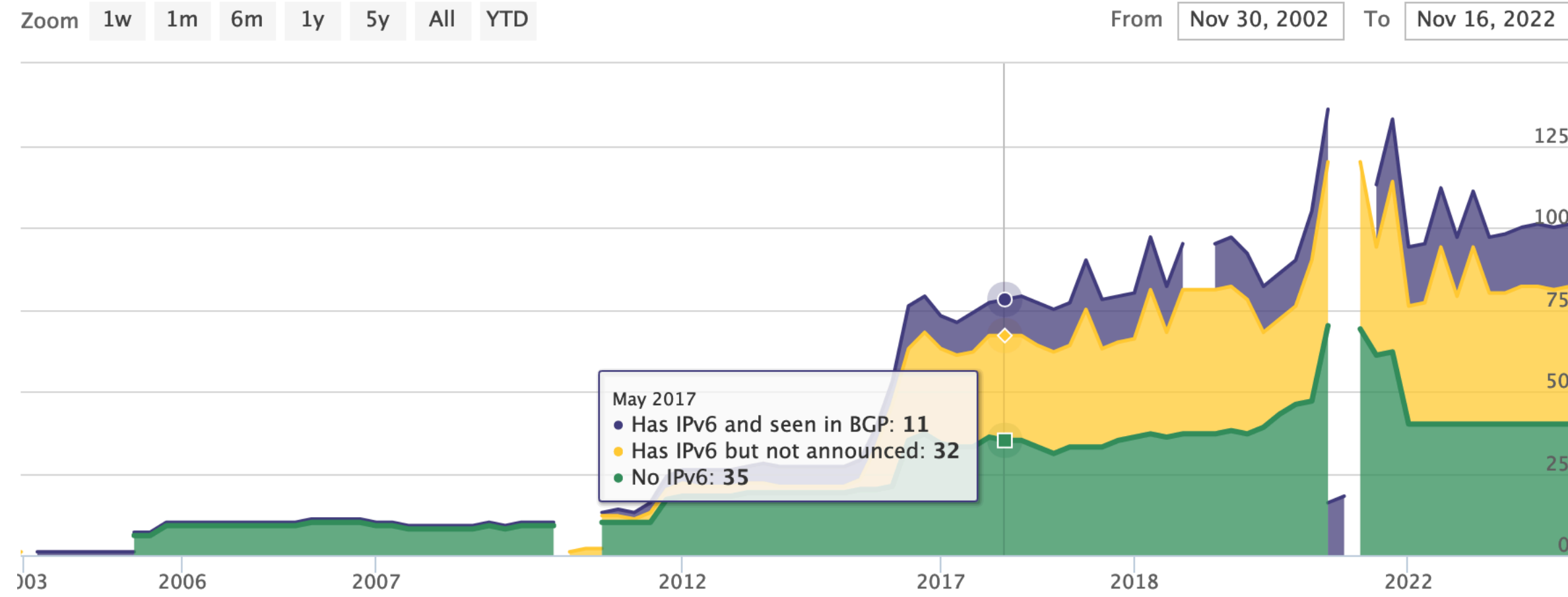
# **LIRs IPv6 Stats**

RIPE NCC's sources (and more)

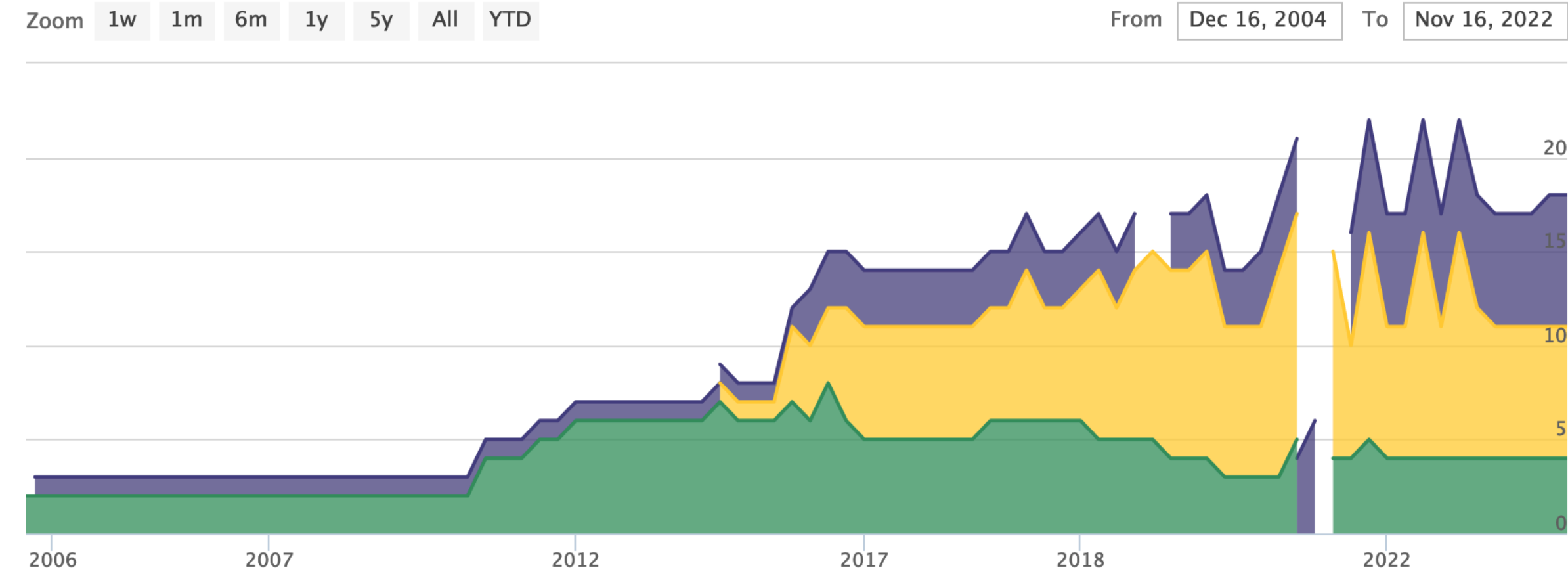
# IPv6 Allocations and Announcements: MENOG



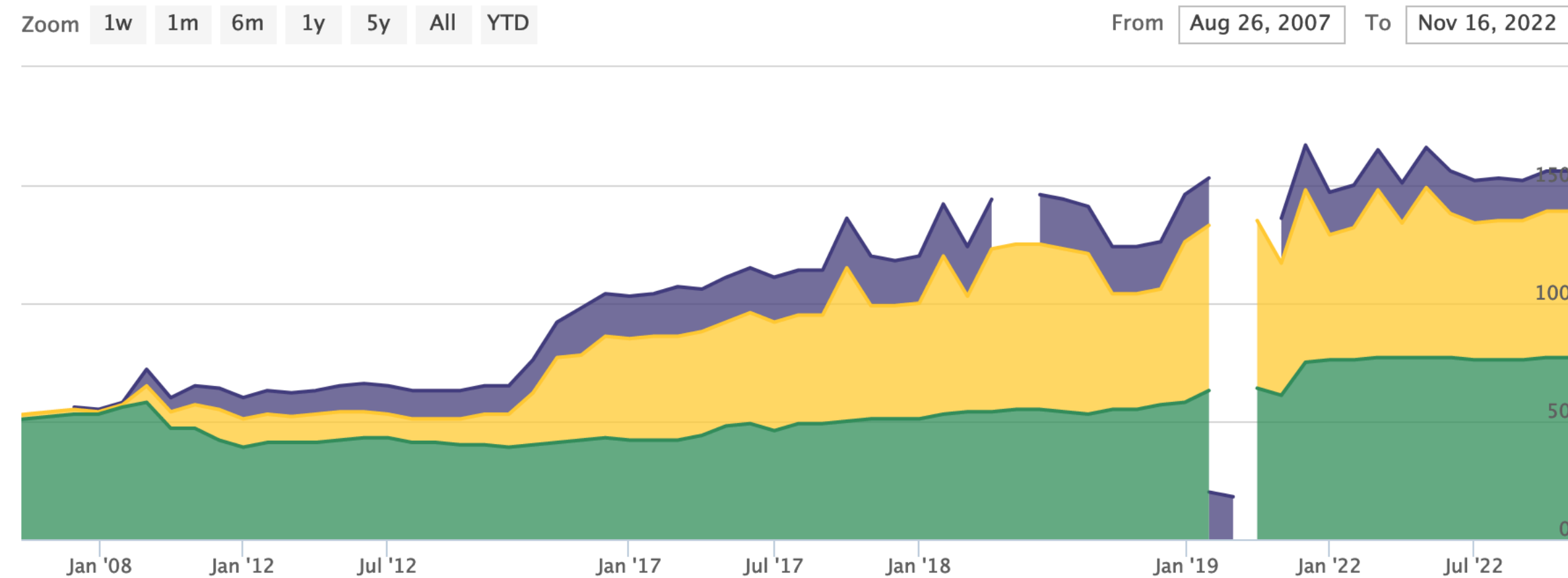
# LIRs IPv6 Allocations and Announcements: MENOG



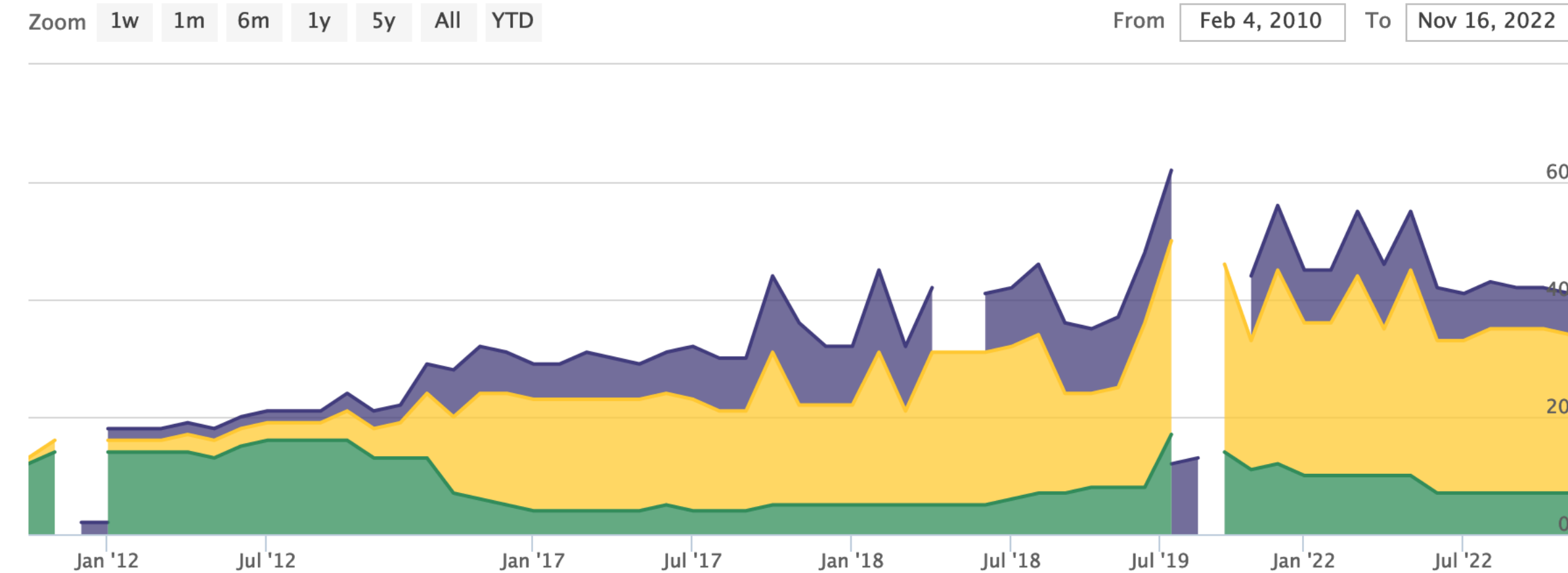
## UAE



## Qatar



## KSA



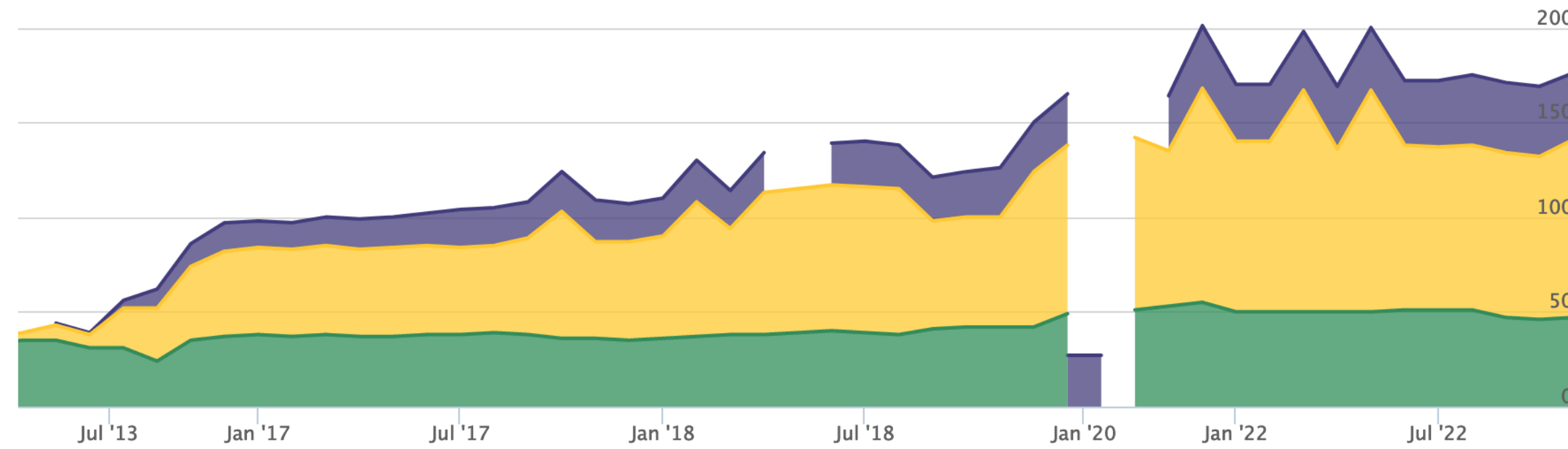
## Palestine

# LIRs IPv6 Allocations and Announcements: MENOG



Zoom 1w 1m 6m 1y 5y All YTD

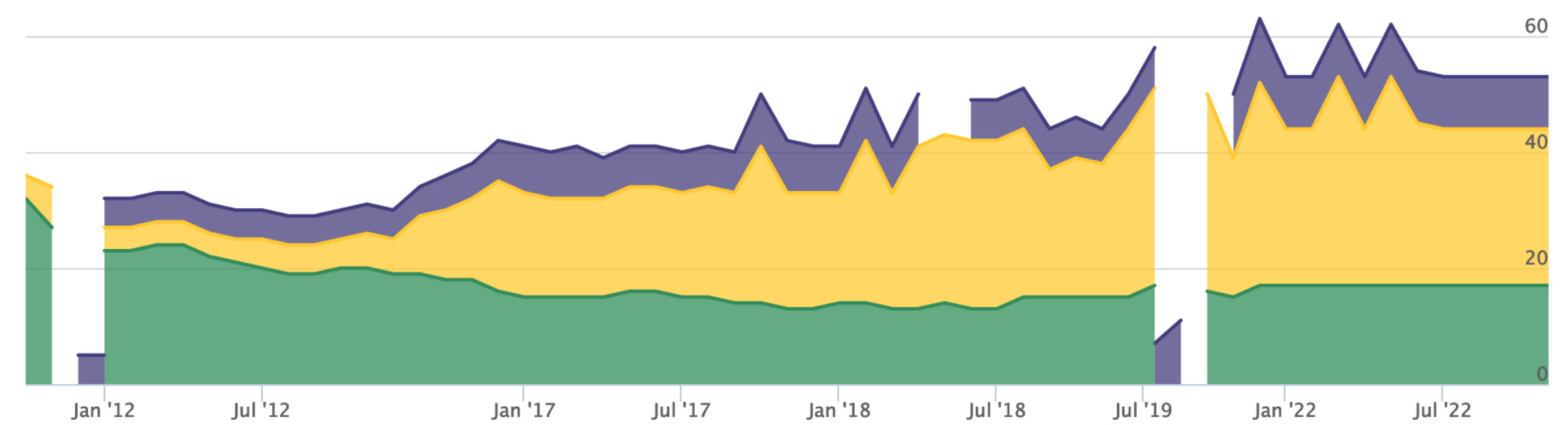
From Sep 27, 2012 To Nov 16, 2022



## Iraq

Zoom 1w 1m 6m 1y 5y All YTD

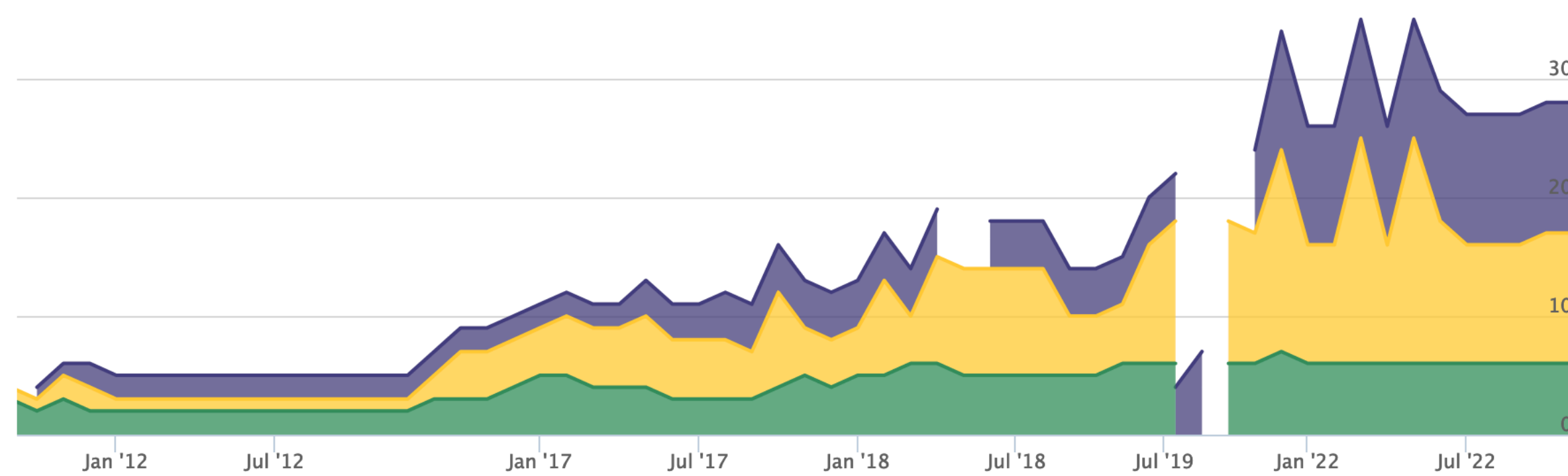
From Feb 1, 2010 To Nov 16, 2022



## Kuwait

Zoom 1w 1m 6m 1y 5y All YTD

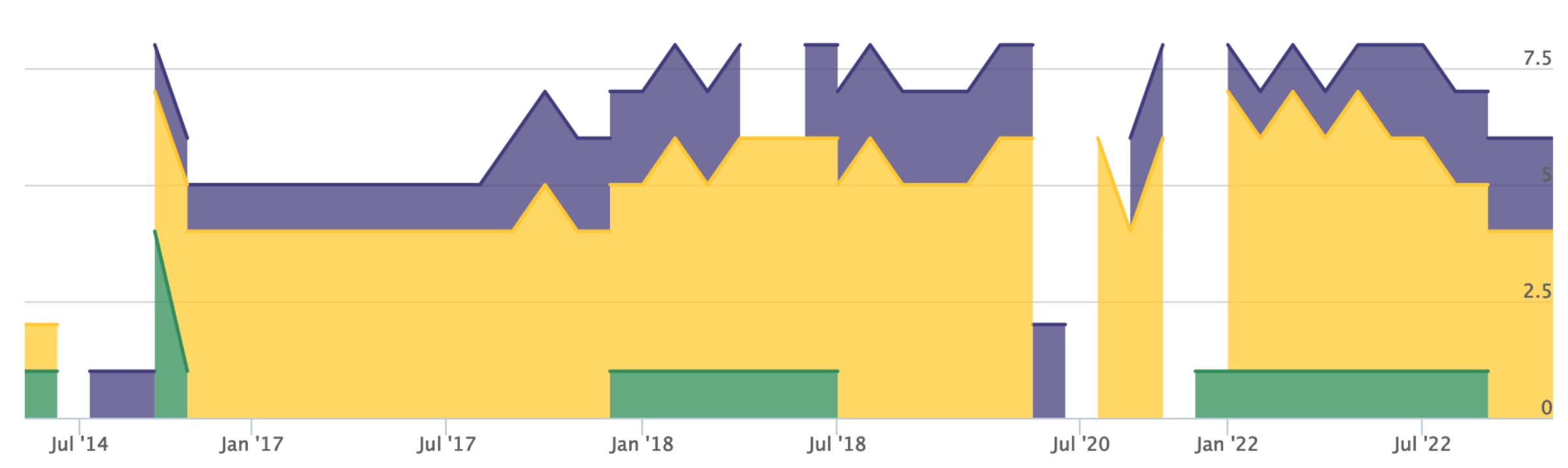
From Dec 8, 2009 To Nov 16, 2022



## Oman

Zoom 1w 1m 6m 1y 5y All YTD

From Dec 1, 2012 To Nov 16, 2022



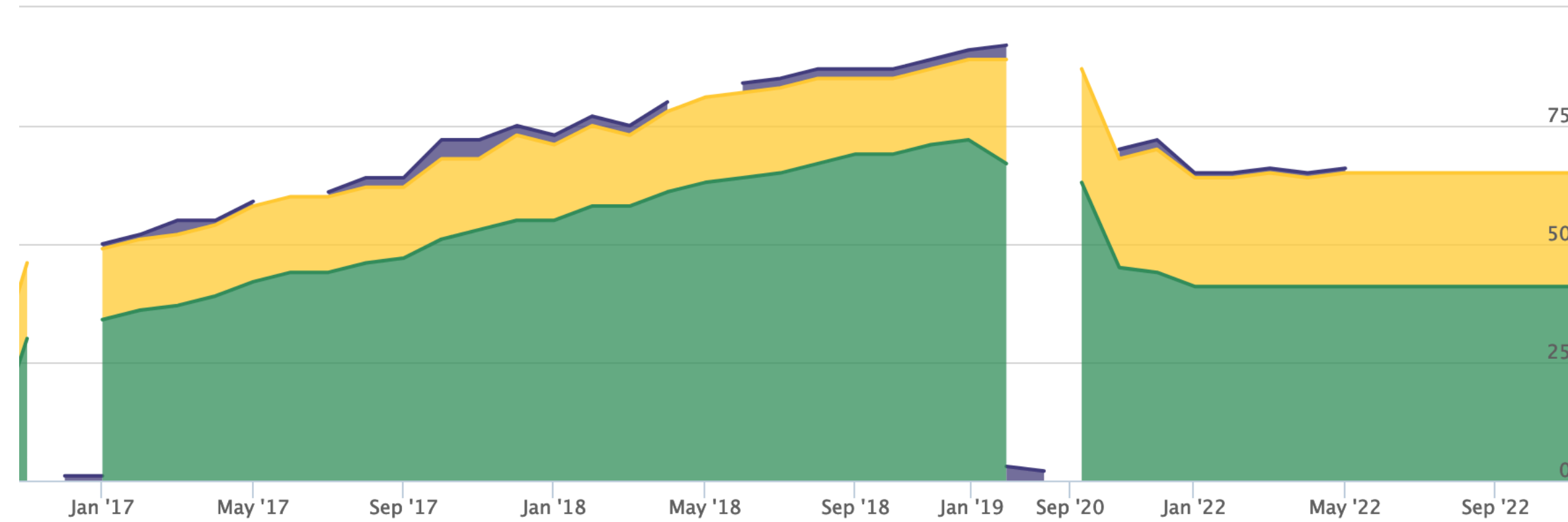
## Yemen

# LIRs IPv6 Allocations and Announcements: MENOG



Zoom 1w 1m 6m 1y 5y All YTD

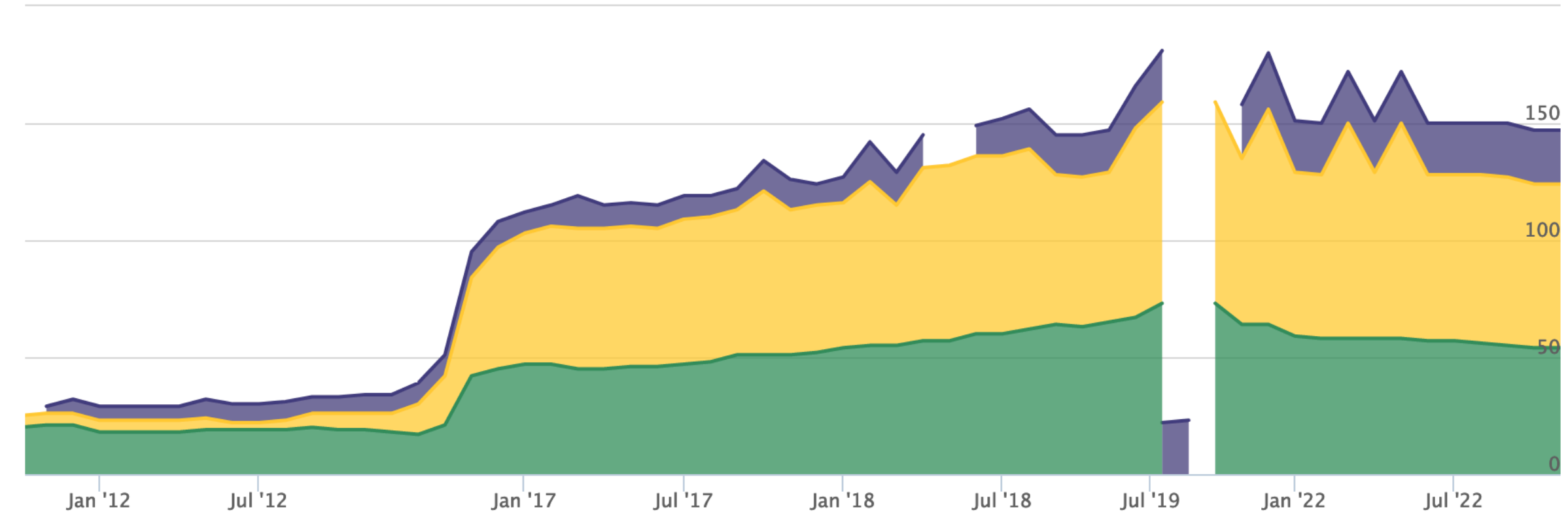
From Dec 25, 2015 To Nov 16, 2022



## Syria

Zoom 1w 1m 6m 1y 5y All YTD

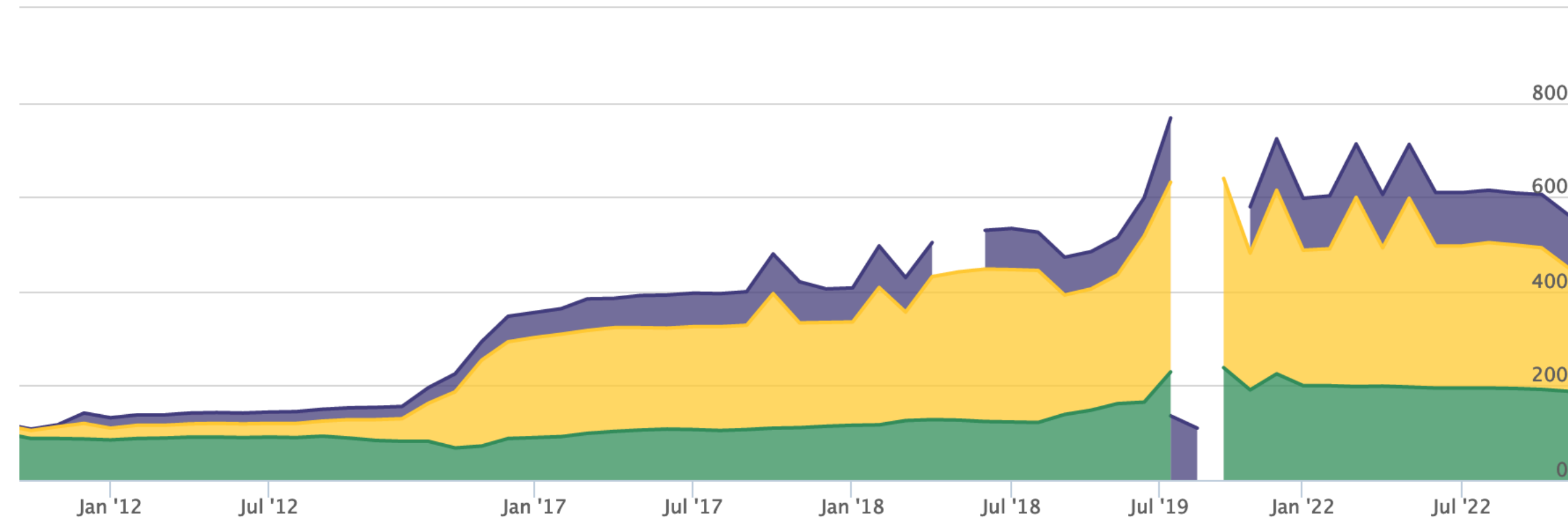
From Jan 7, 2010 To Nov 16, 2022



## Lebanon

Zoom 1w 1m 6m 1y 5y All YTD

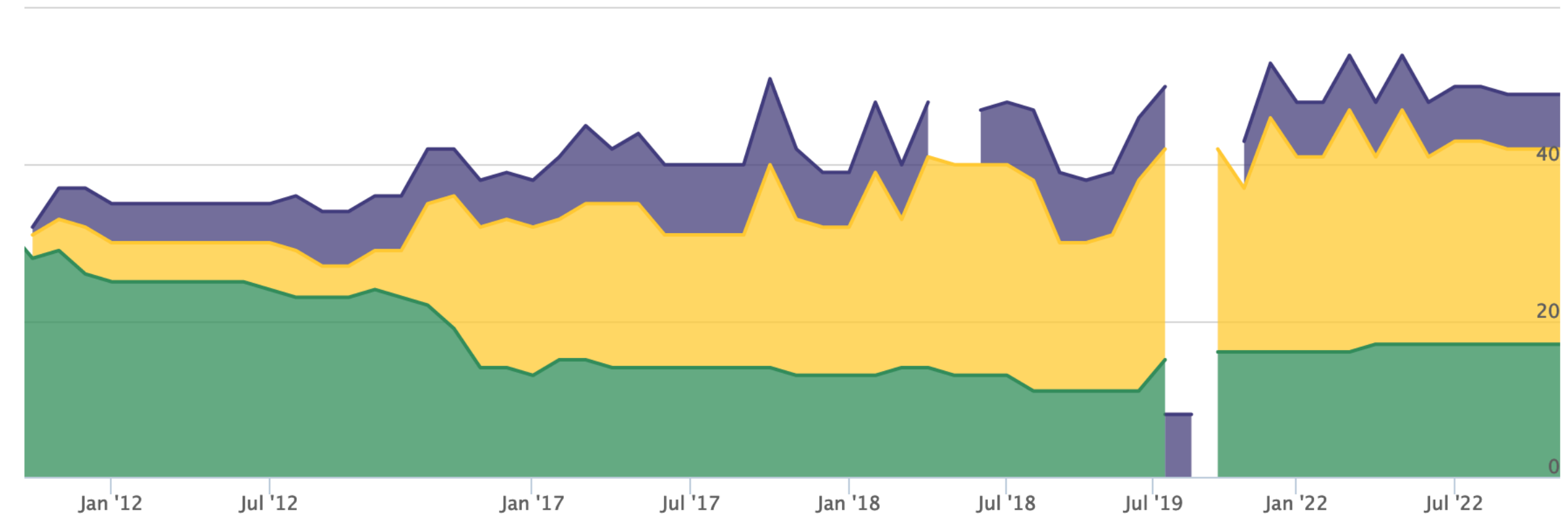
From Dec 18, 2009 To Nov 16, 2022



## Turkey

Zoom 1w 1m 6m 1y 5y All YTD

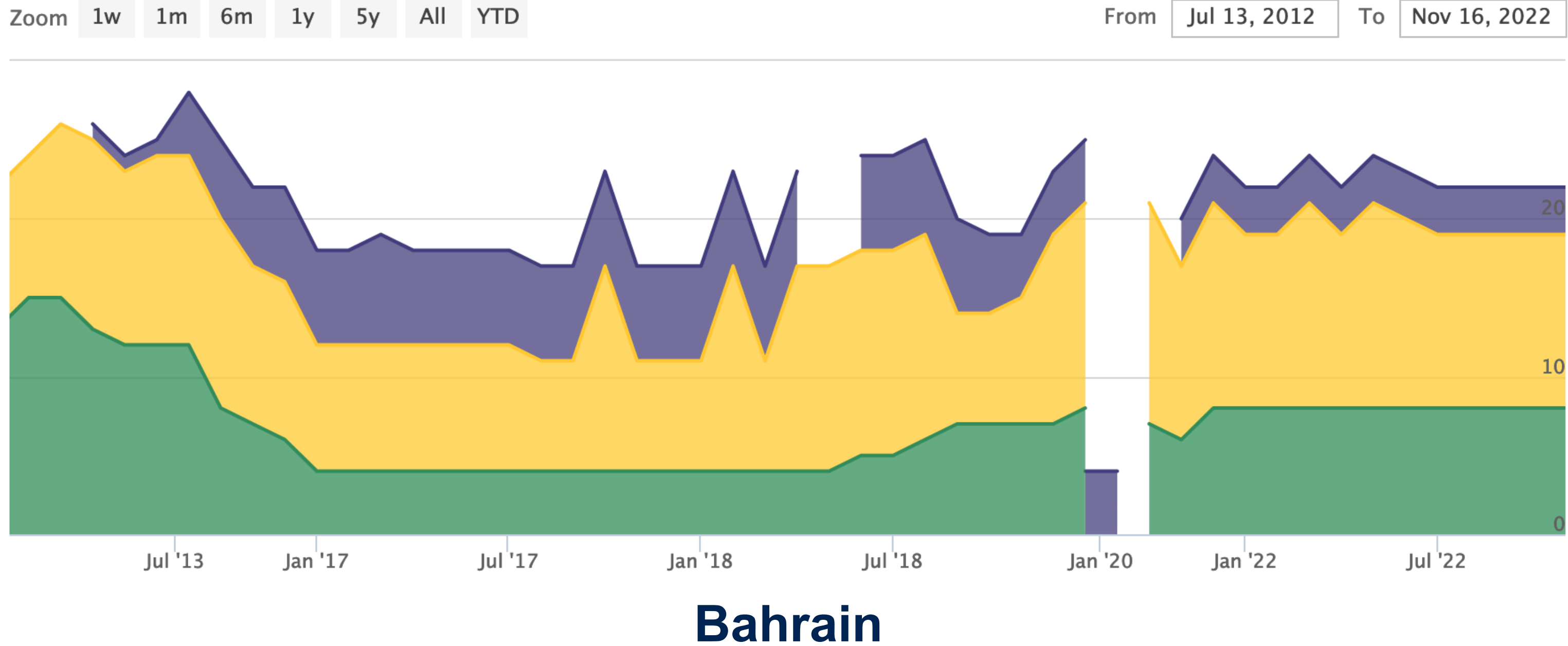
From Dec 22, 2009 To Nov 16, 2022



## Jordan



# LIRs IPv6 Allocations and Announcements: MENOG

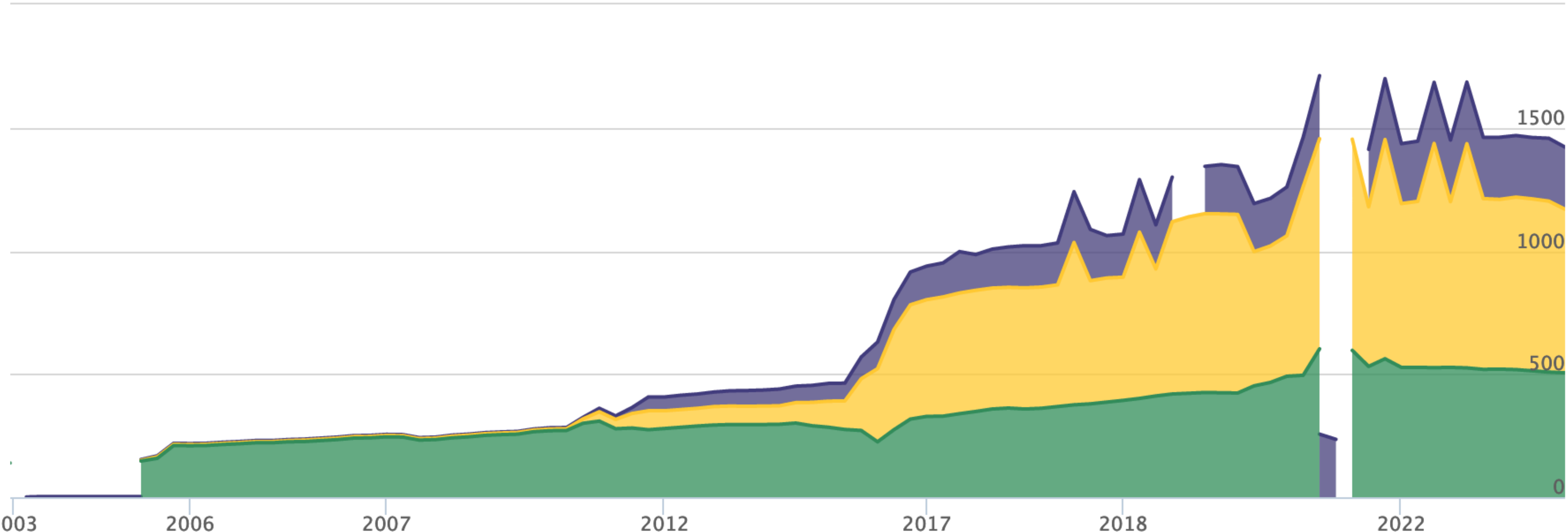


# LIRs IPv6 Allocations and Announcements: MENOG



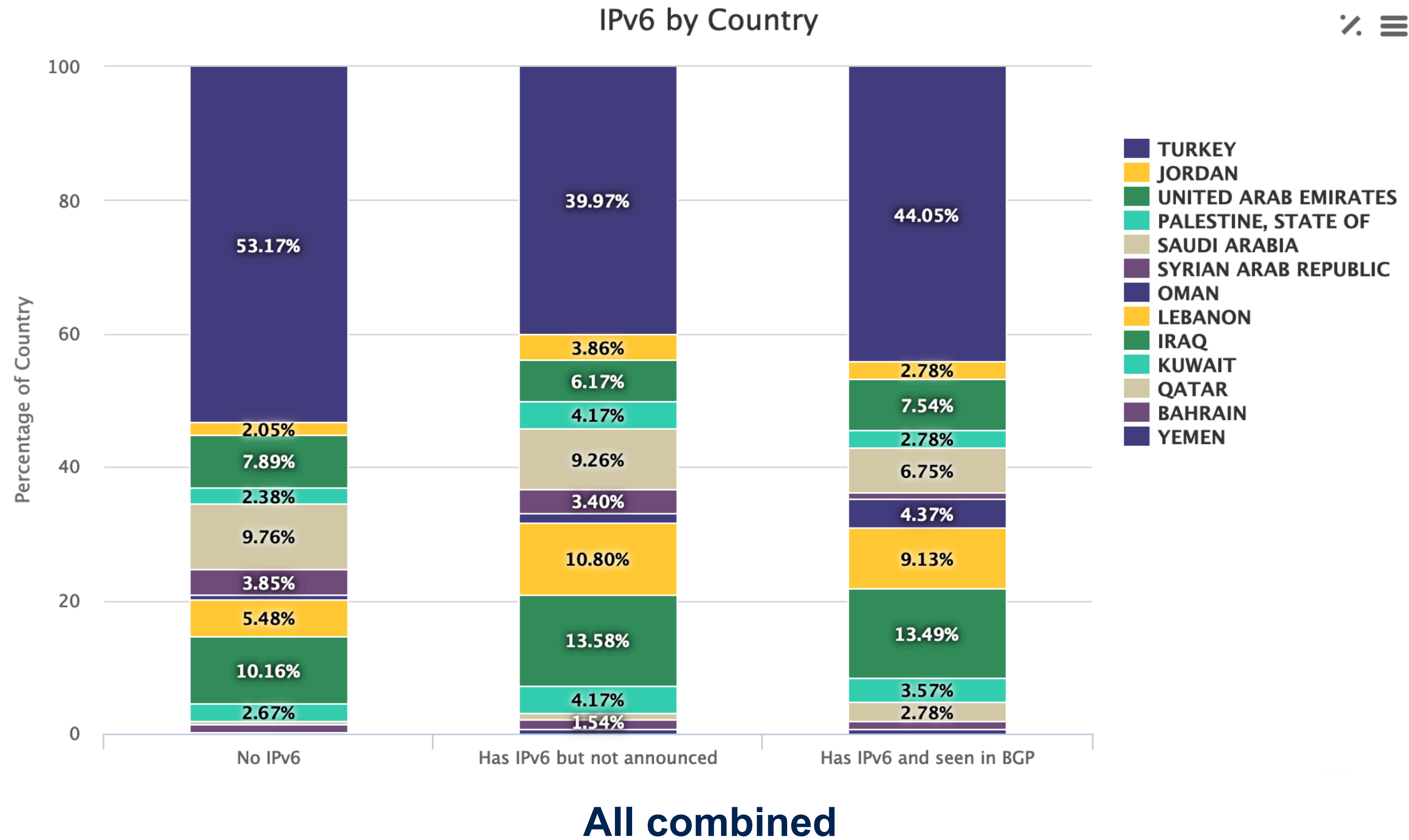
Zoom **1w** 1m 6m 1y 5y All YTD

From **Dec 3, 2002** To **Nov 16, 2022**

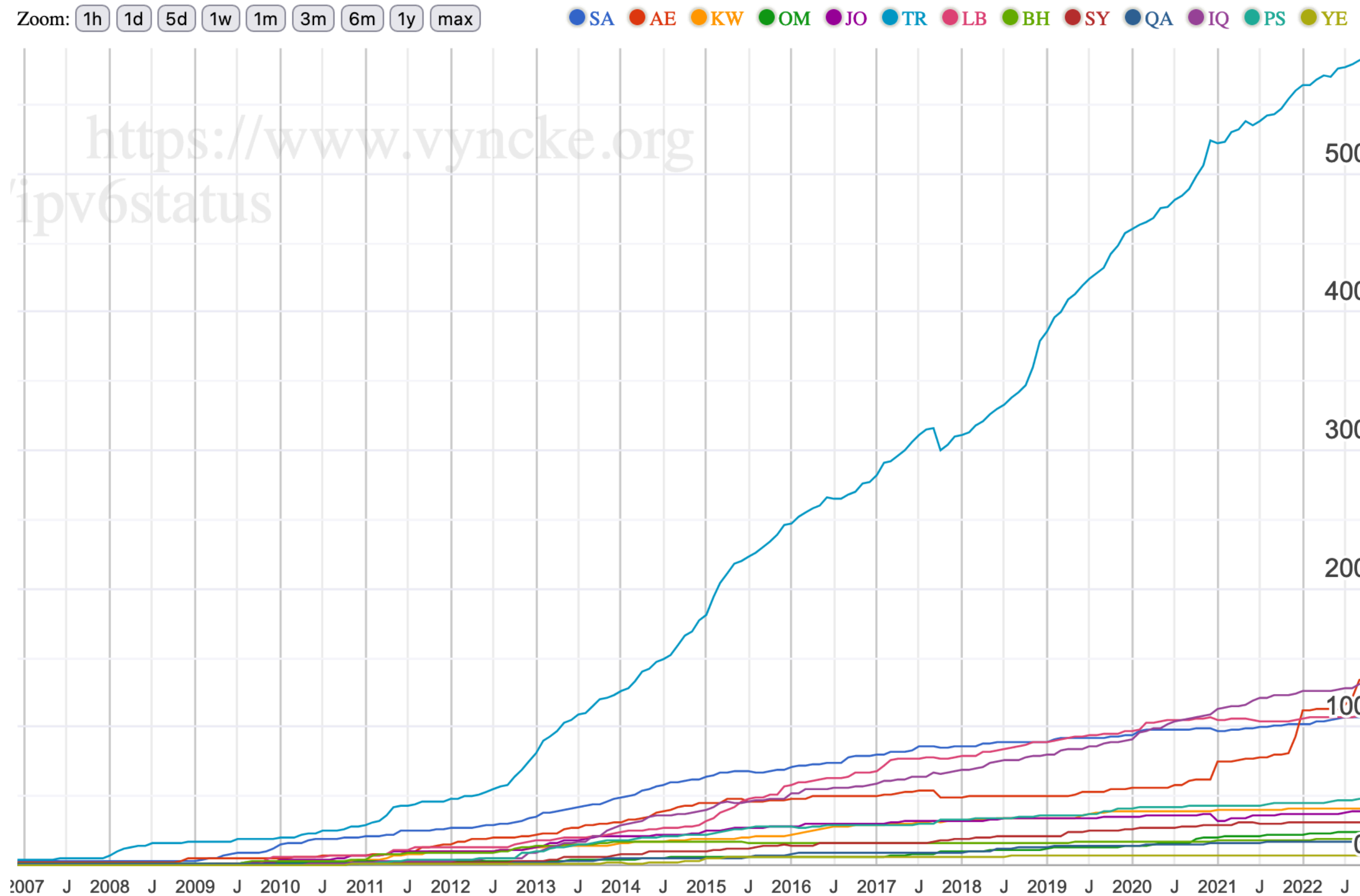


All combined

# IPv6 Allocations and Announcements: MENOG



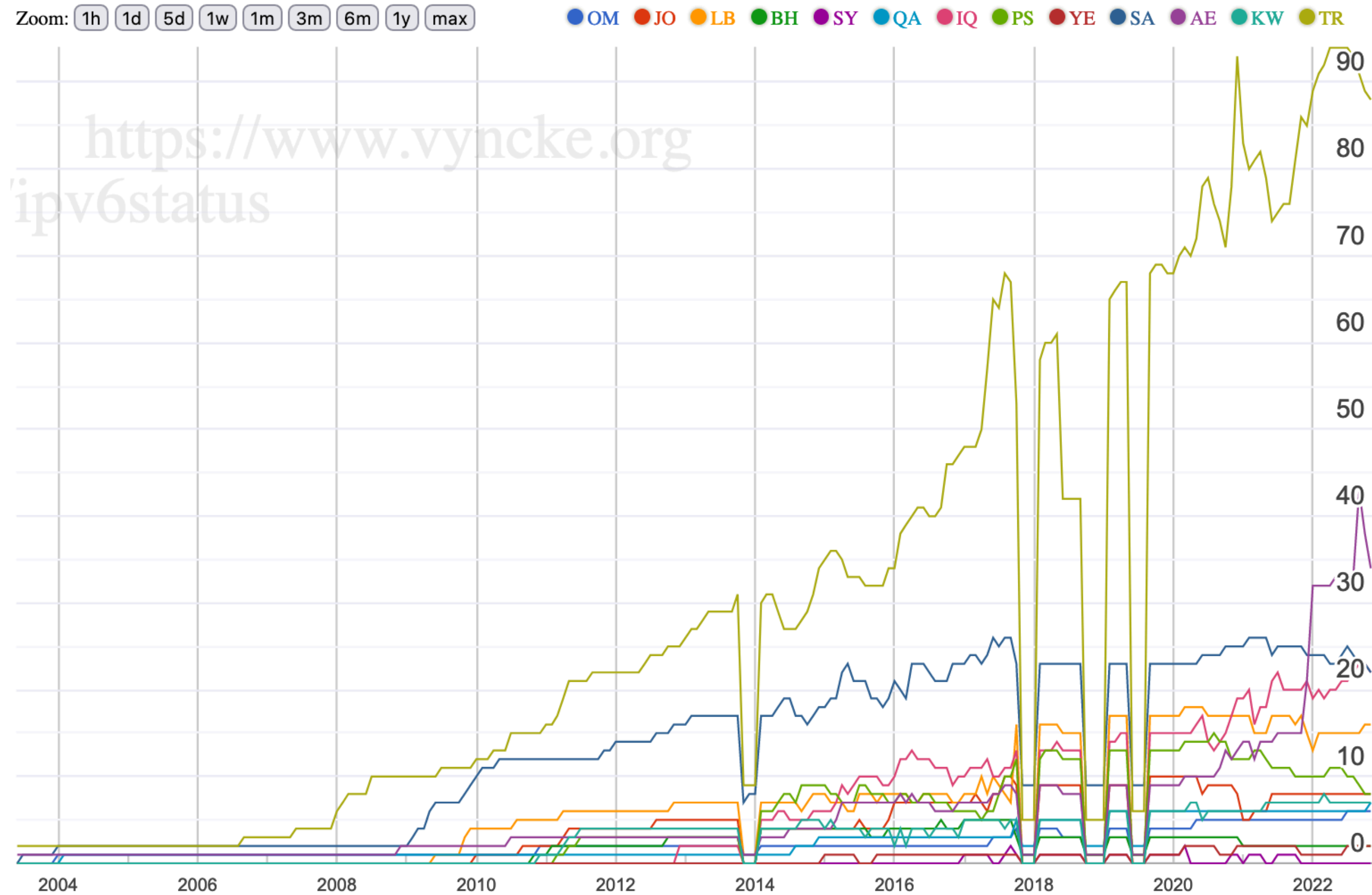
# LIRs vs. Prefixes



CC	Country	Allocated Prefixes
SA	Saudi	107
AE	United Arab Emirates	135
KW	Kuwait	41
OM	Oman	24
JO	Jordan	39
TR	Turkey	584
LB	Lebanon	108
BH	Bahrain	19
SY	Syrian Arab Republic	30
QA	Qatar	17
IQ	Iraq	131
PS	Palestine	47
YE	Yemen	7

Source: <https://www.vyncke.org/ipv6status/compare.php>

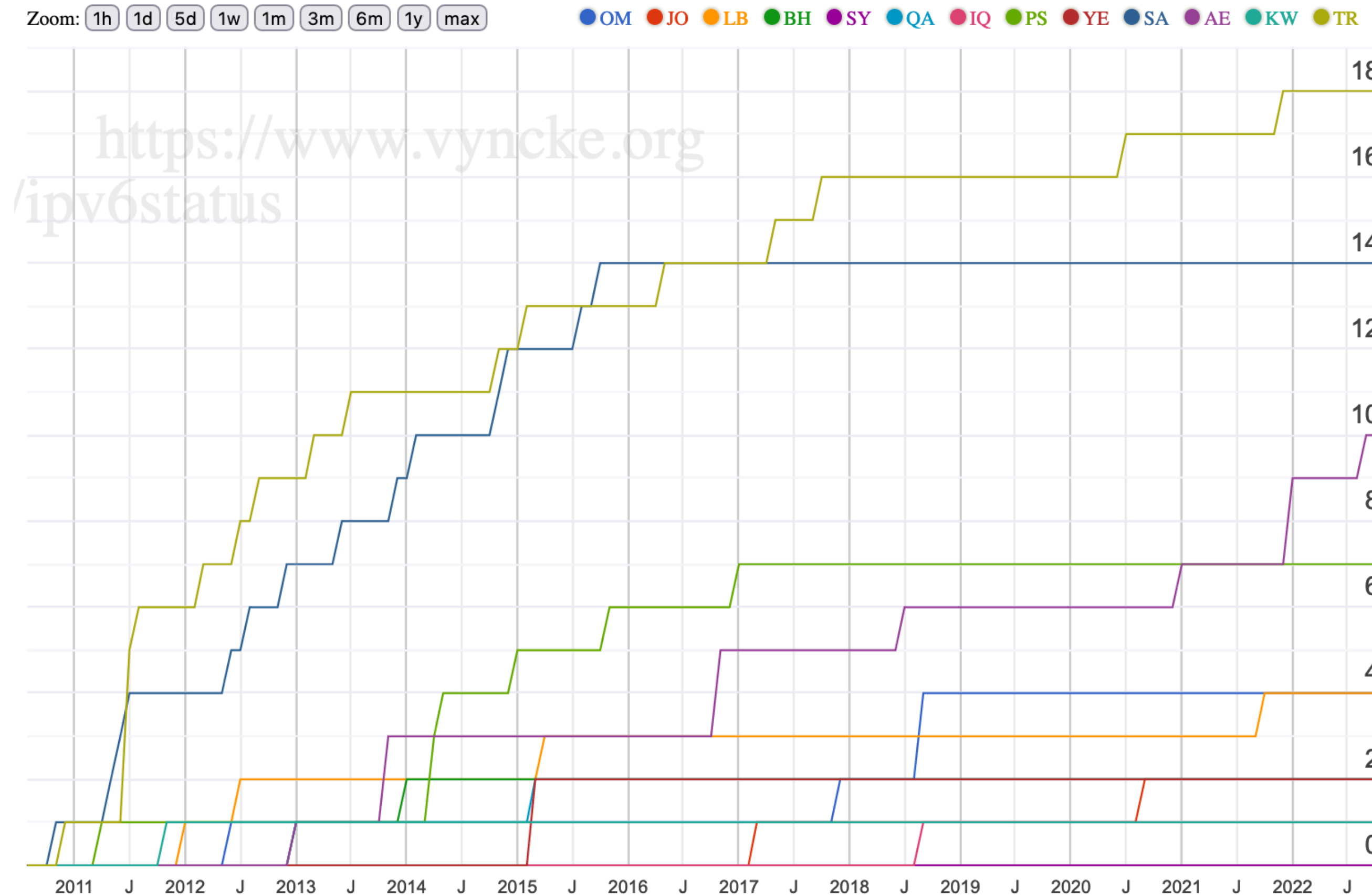
# LIRs vs. Prefixes



CC	Country	Announced Prefixes
SA	Saudi Arabia	22
AE	United Arab Emirates	34
KW	Kuwait	7
OM	Oman	6
JO	Jordan	8
TR	Turkey	88
LB	Lebanon	16
BH	Bahrain	2
SY	Syrian Arab Republic	0
QA	Qatar	7
IQ	Iraq	22
PS	Palestine	8
YE	Yemen	2

Source: <https://www.vyncke.org/ipV6status/compare.php>

# LIRs vs. Prefixes



CC	Country	Alive Prefixes
SA	Saudi	15
AE	United Arab	10
KW	Kuwait	1
OM	Oman	4
JO	Jordan	2
TR	Turkey	19
LB	Lebanon	4
BH	Bahrain	2
SY	Syrian Arab Republic	0
QA	Qatar	2
IQ	Iraq	1
PS	Palestine	7
YE	Yemen	2

Source: <https://www.vyncke.org/ipv6status/compare.php>

# Key Takeaways



- Number of LIRs that have completed the first steps towards IPv6 deployment
  - **BGP announcement** is an important one
  - MENOG region is behind Western Europe and the rest of the world
  - **Recently no big changes** in the number/% of LIRs announcing IPv6 or with IPv6 allocations
  - Exception: Syria, that has now no LIRs announcing IPv6 in BGP

# Key Takeaways



- Numbers go down from allocations to announced (and to “alive”)
  - Allocation: majority of LIRs have and IPv6 prefix
- Number of LIRs stats does not reflect address space allocated, announced or used
- Quantitative stats about LIRs do not reflect usage or quality





# IPv6 Usage Stats

Different Sources

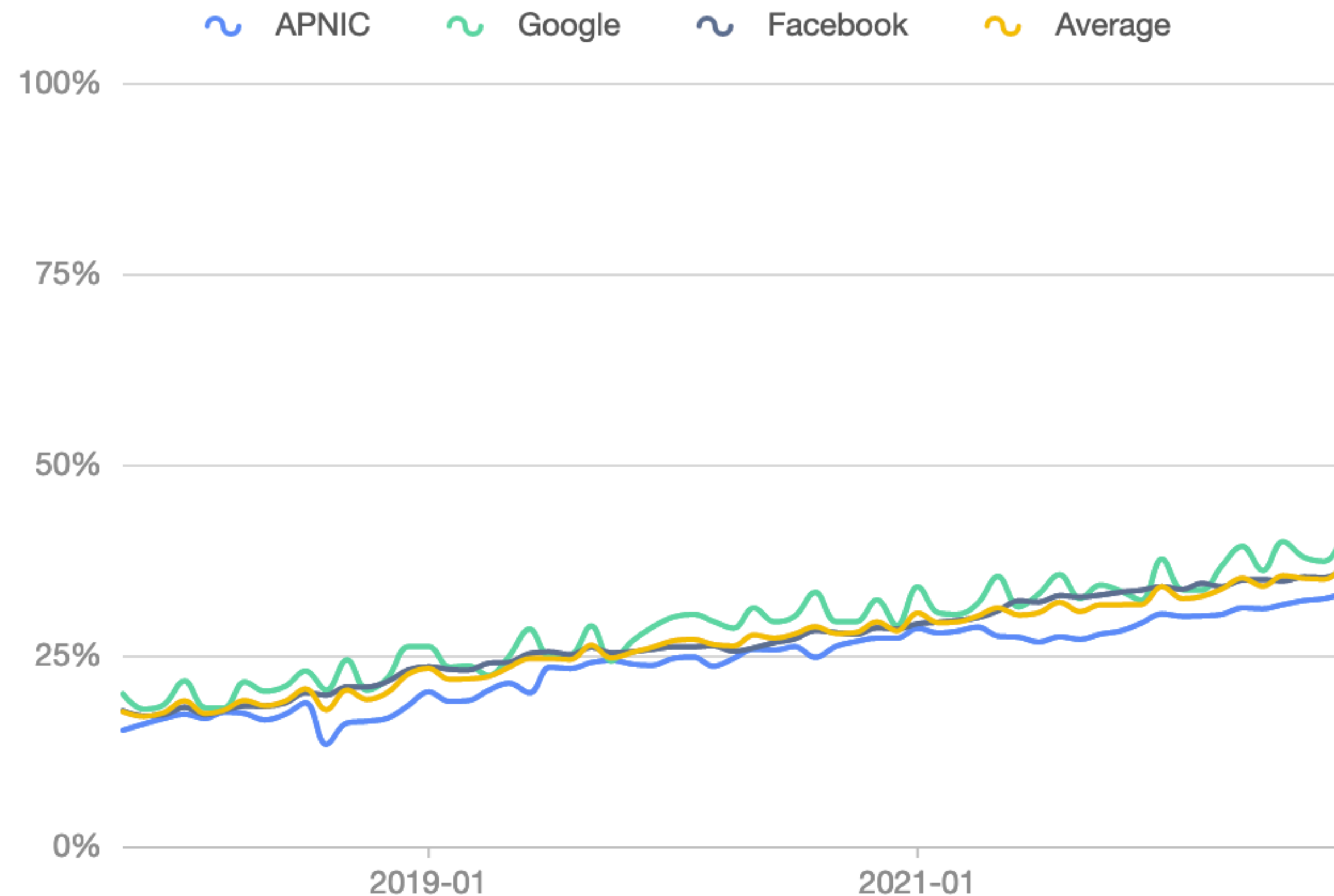
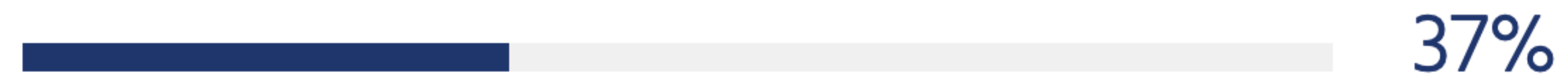
# IPv6 Readiness and Use: Global



 IPv6  
**28%**

Current percentage of top 1000 websites globally that support IPv6.

## IPv6



Global IPv6 deployment (data sources: APNIC, Facebook and Google)

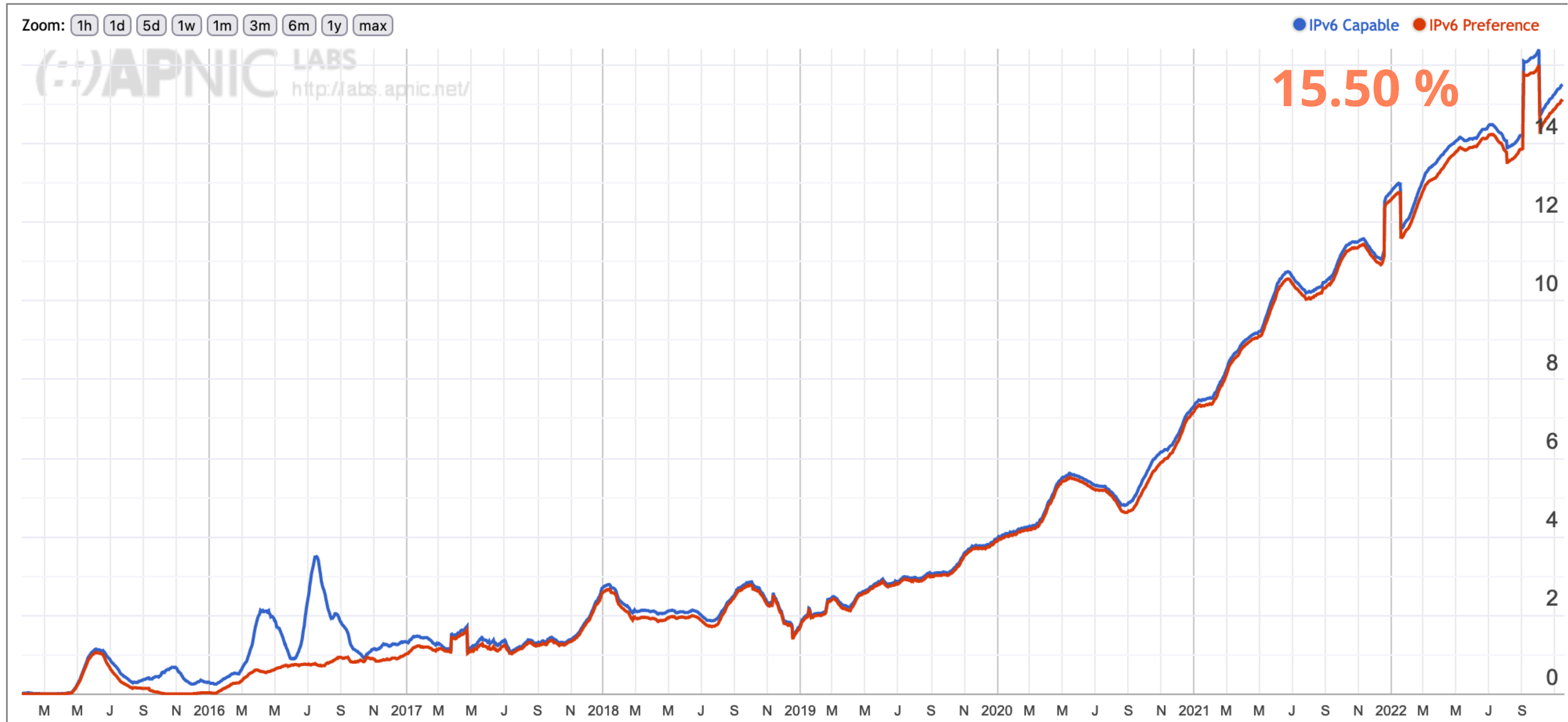
# IPv6 Readiness and Use: MENOG



CC	Country	IPv6
SA	Saudi Arabia	58%
AE	United Arab Emirates	45%
KW	Kuwait	19%
OM	Oman	17%
JO	Jordan	14%
TR	Turkey	1%
LB	Lebanon	1%
BH	Bahrain	0%
SY	Syrian Arab Republic	0%
QA	Qatar	0%
IQ	Iraq	0%
PS	Palestine	0%
YE	Yemen	N/A

13 %

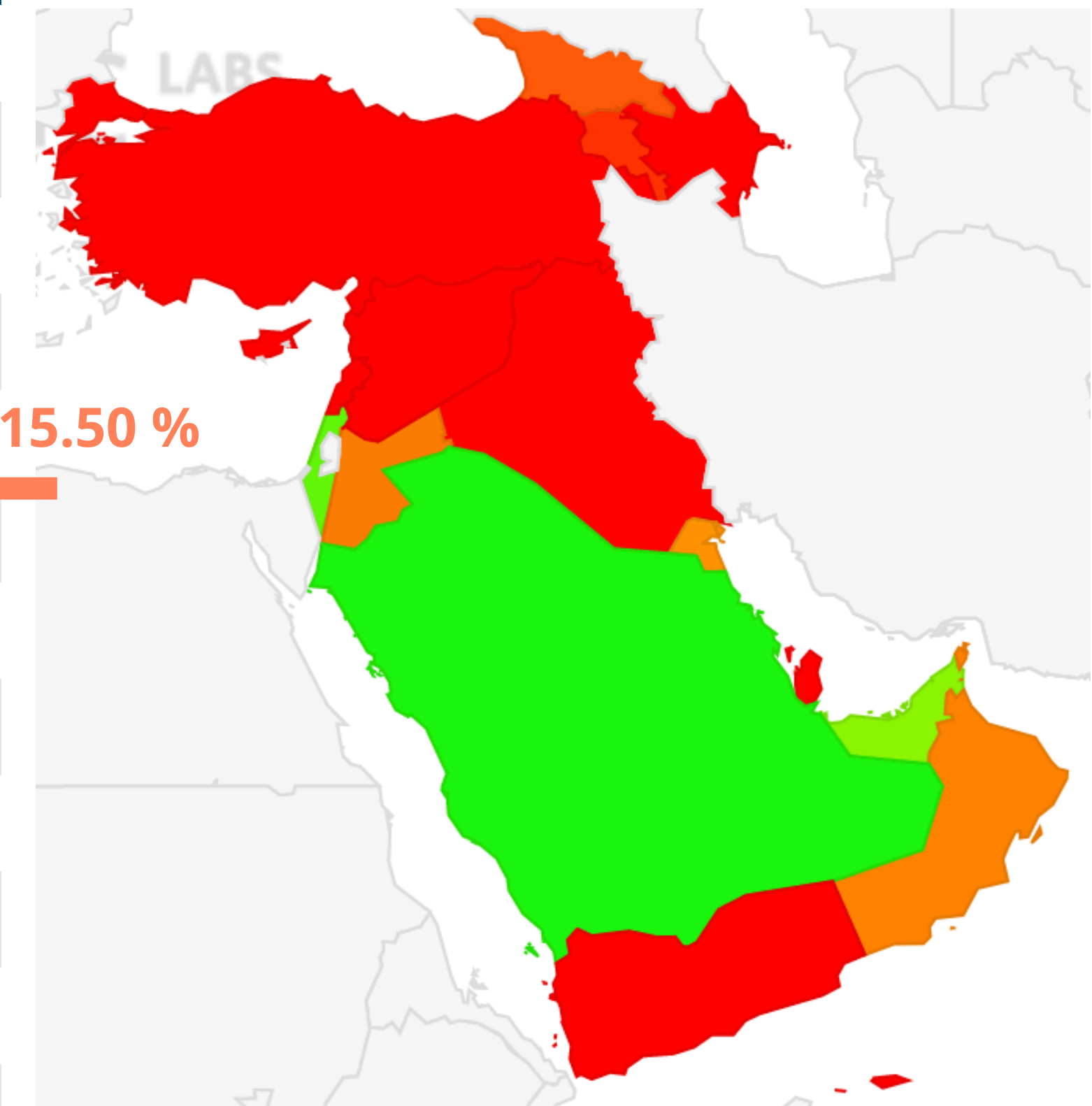
# IPv6 Readiness and Use: MENOG



# IPv6 Readiness and Use: MENOG



CC	Country	IPv6	IPv6 Preferred	Samples
SA	Saudi Arabia	61.64%	60.33%	6,033,009
AE	United Arab	47.35%	46.39%	1,893,521
KW	Kuwait	18.61%	18.31%	1,021,475
OM	Oman	16.88%	16.70%	1,092,707
JO	Jordan	15.65%	15.18%	1,097,361
TR	Turkey	1.24%	1.19%	7,444,677
LB	Lebanon	1.13%	1.11%	2,067,025
SY	Syrian Arab	0.67%	0.60%	171,684
QA	Qatar	0.24%	0.20%	927,573
IQ	Iraq	0.12%	0.11%	2,842,650
PS	Palestine	0.11%	0.08%	384,015
BH	Bahrain	0.09%	0.08%	507,273
YE	Yemen	0.08%	0.07%	231,642

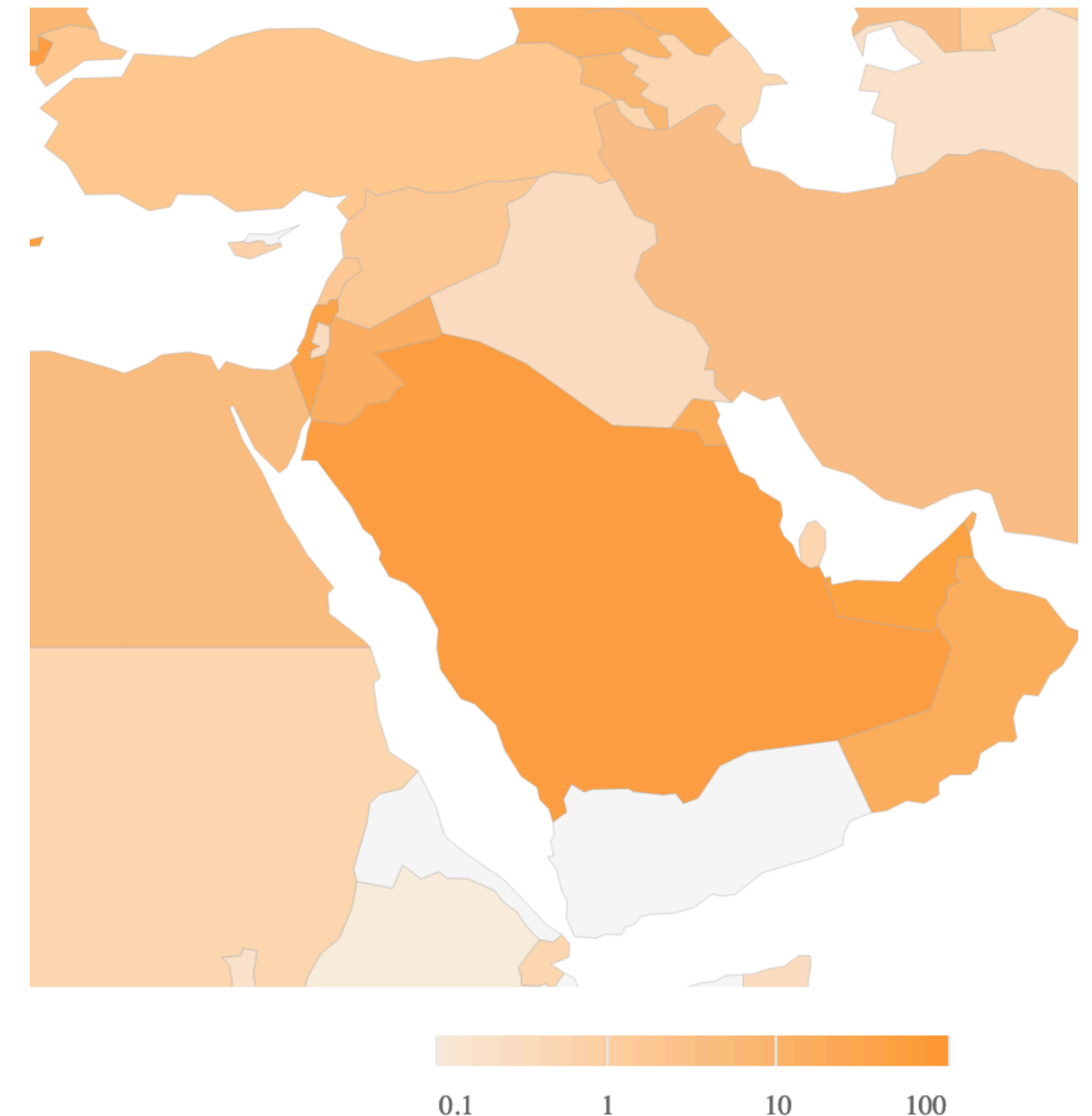


Source: <https://stats.labs.apnic.net/ipv6/XV>

# IPv6 Readiness and Use: MENOG

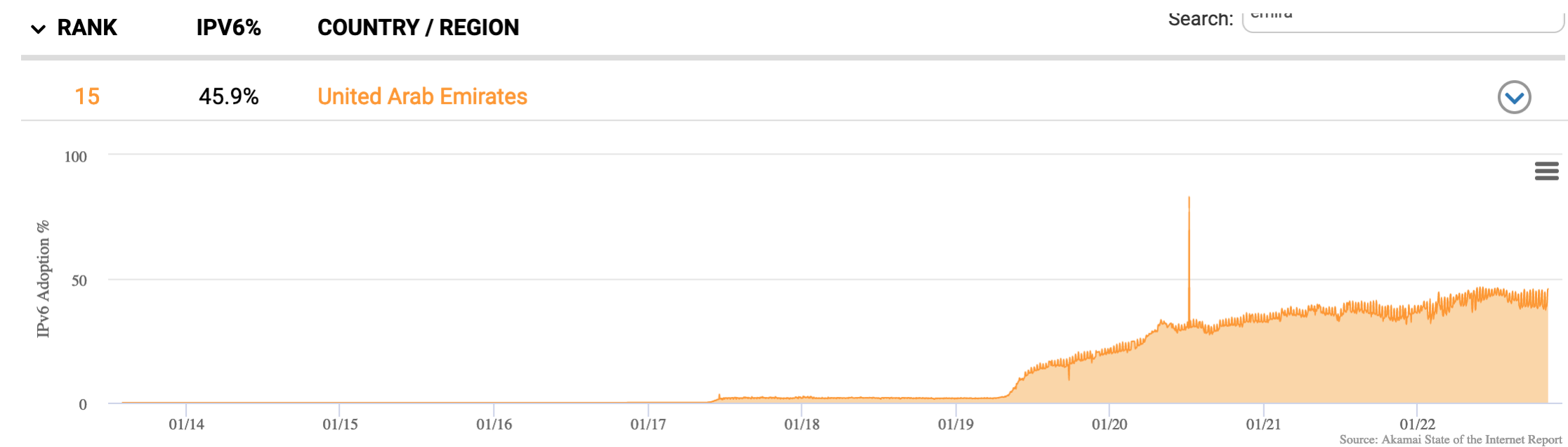
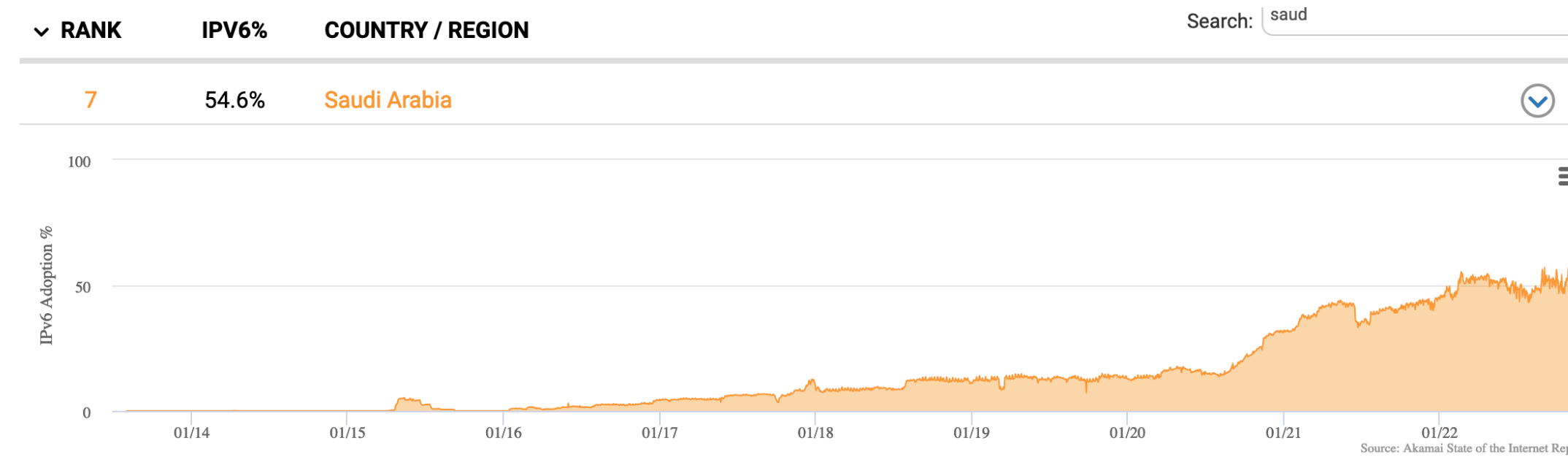
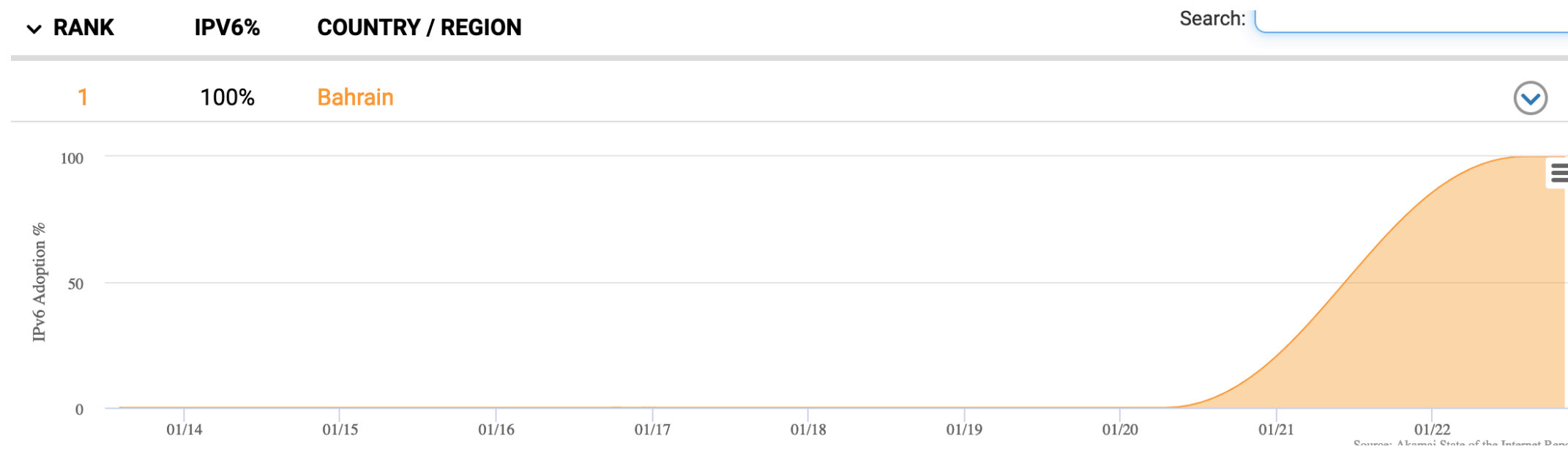


CC	Country	% IPv6 connections	Rank
BH	Bahrain	100%	1
SA	Saudi Arabia	54.6 %	7
AE	United Arab Emirates	45.9 %	15
KW	Kuwait	16.2 %	61
OM	Oman	16.2 %	60
JO	Jordan	15.7 %	62
TR	Turkey	1.9 %	112
LB	Lebanon	1.8 %	115
SY	Syrian Arab Republic	1.6%	117
QA	Qatar	0.6 %	162
IQ	Iraq	0.3%	179
PS	Palestine	0.3 %	189
YE	Yemen	0%	225



Source: <https://www.akamai.com/internet-station/cyber-attacks/state-of-the-internet-report/ipv6-adoption-visualization>

# IPv6 Readiness and Use: MENOG

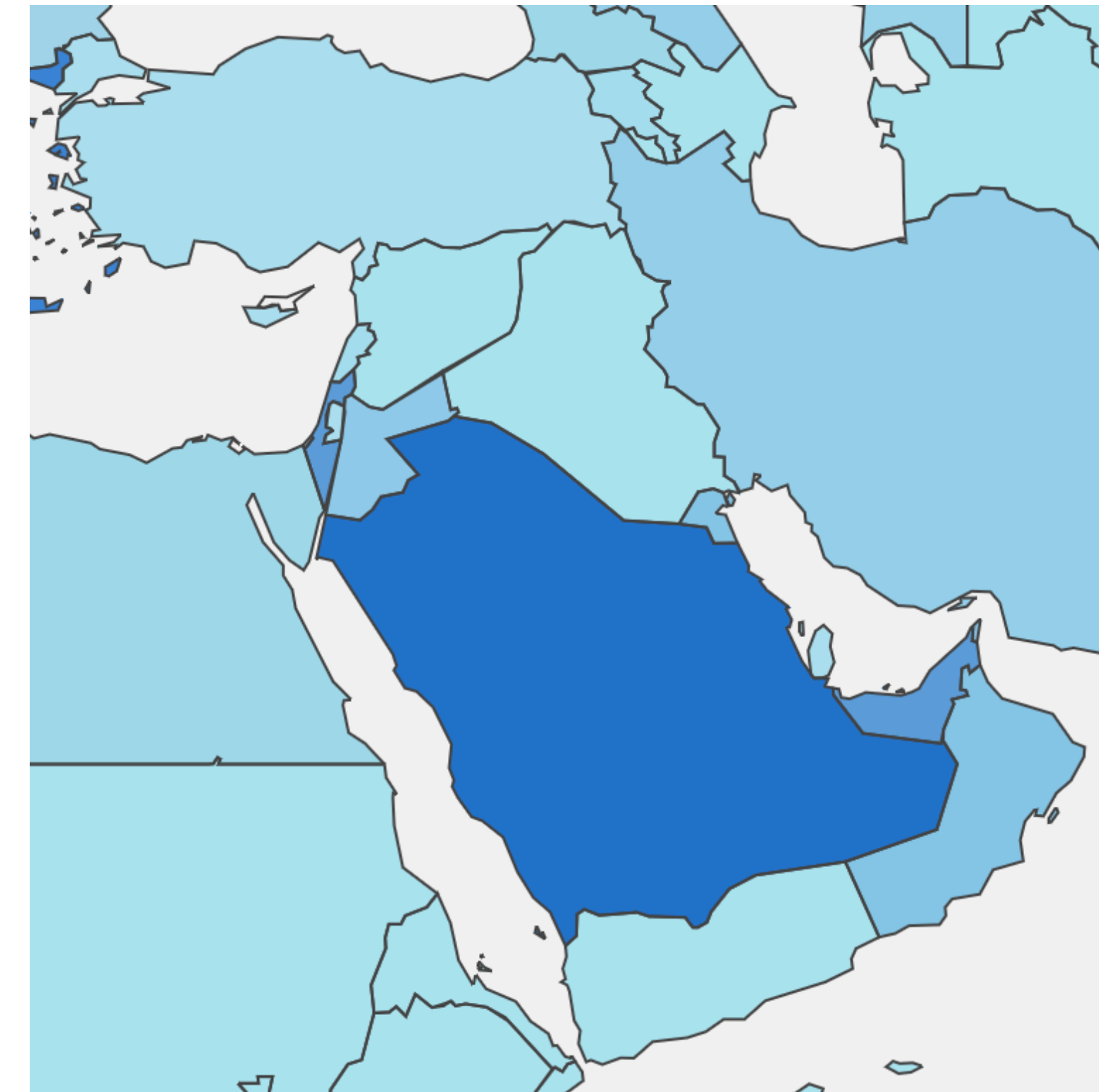
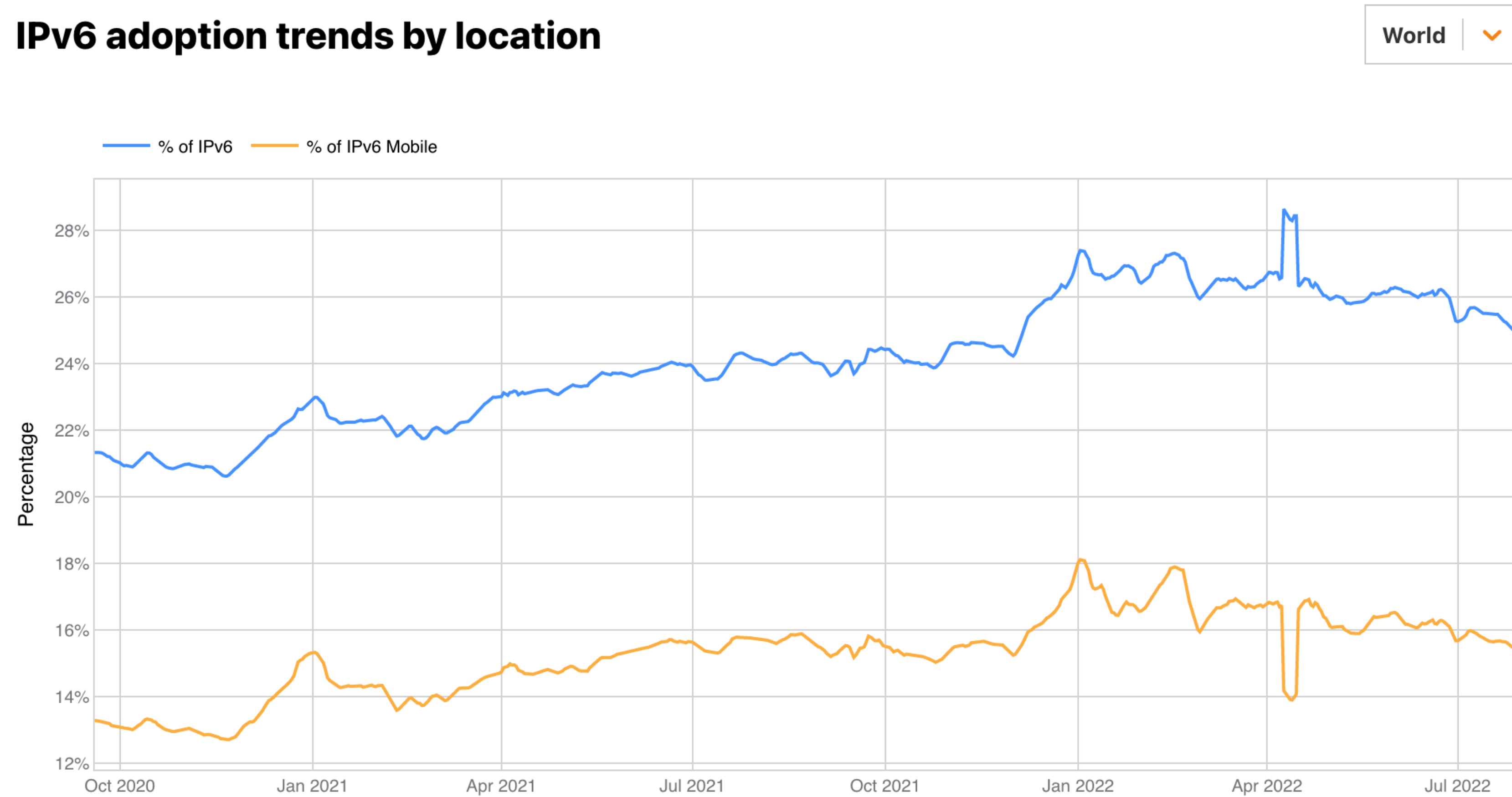


Source: <https://www.akamai.com/internet-station/cyber-attacks/state-of-the-internet-report/ipv6-adoption-visualization>

# IPv6 Readiness and Use: MENOG



## IPv6 adoption trends by location



Source: <https://radar.cloudflare.com/reports/ipv6>



# IPv6 Readiness and Use: MENOG



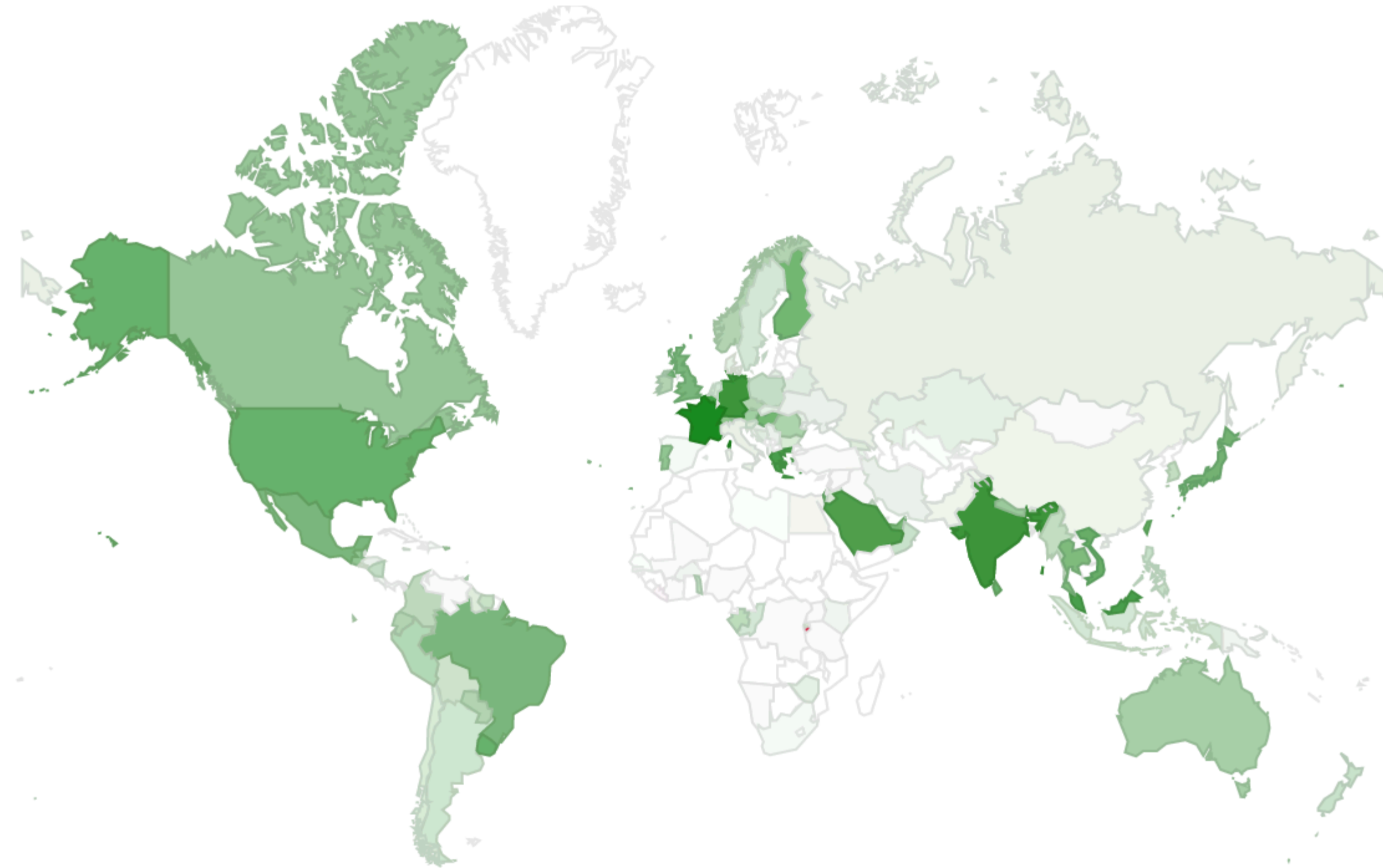
CC	Country	IPv6 %	Mobile IPv6 %
SA	Saudi Arabia	45.64 %	25.96 %
AE	United Arab Emirates	27.63 %	14.36 %
KW	Kuwait	12.08 %	8.23 %
OM	Oman	11.99 %	6.37 %
JO	Jordan	9.82 %	6.35 %
LB	Lebanon	1.83 %	1.14 %
BH	Bahrain	0.37 %	0.27 %
TR	Turkey	0.32 %	0.16 %
QA	Qatar	0.29 %	0.14 %
PS	Palestine	0.22 %	0.20 %
IQ	Iraq	0.12 %	0.10 %
YE	Yemen	0.06 %	0.02 %
SY	Syria	0.01 %	0.01 %




24.83 %

15.43 %

Source: <https://radar.cloudflare.com/reports/ipv6>

# IPv6 Readiness and Use: MENOG



-  Regions where IPv6 is more widely deployed (the darker the green, the greater the deployment) and users experience infrequent issues connecting to IPv6-enabled websites.
-  Regions where IPv6 is more widely deployed but users still experience significant reliability or latency issues connecting to IPv6-enabled websites.
-  Regions where IPv6 is not widely deployed and users experience significant reliability or latency issues connecting to IPv6-enabled websites.

Source: <https://www.google.com/intl/en/ipv6/statistics.html>

# IPv6 Readiness and Use: MENOG

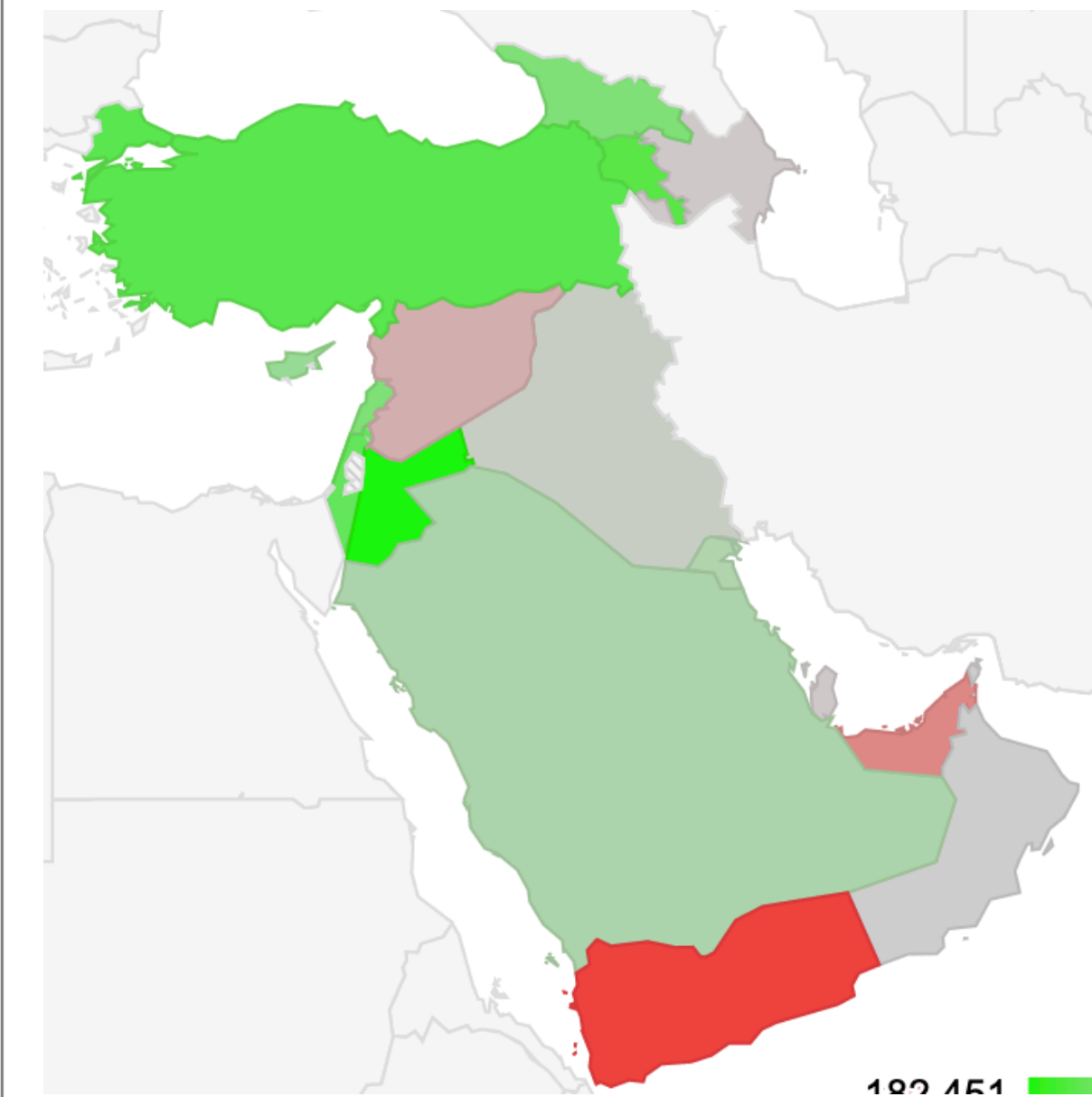
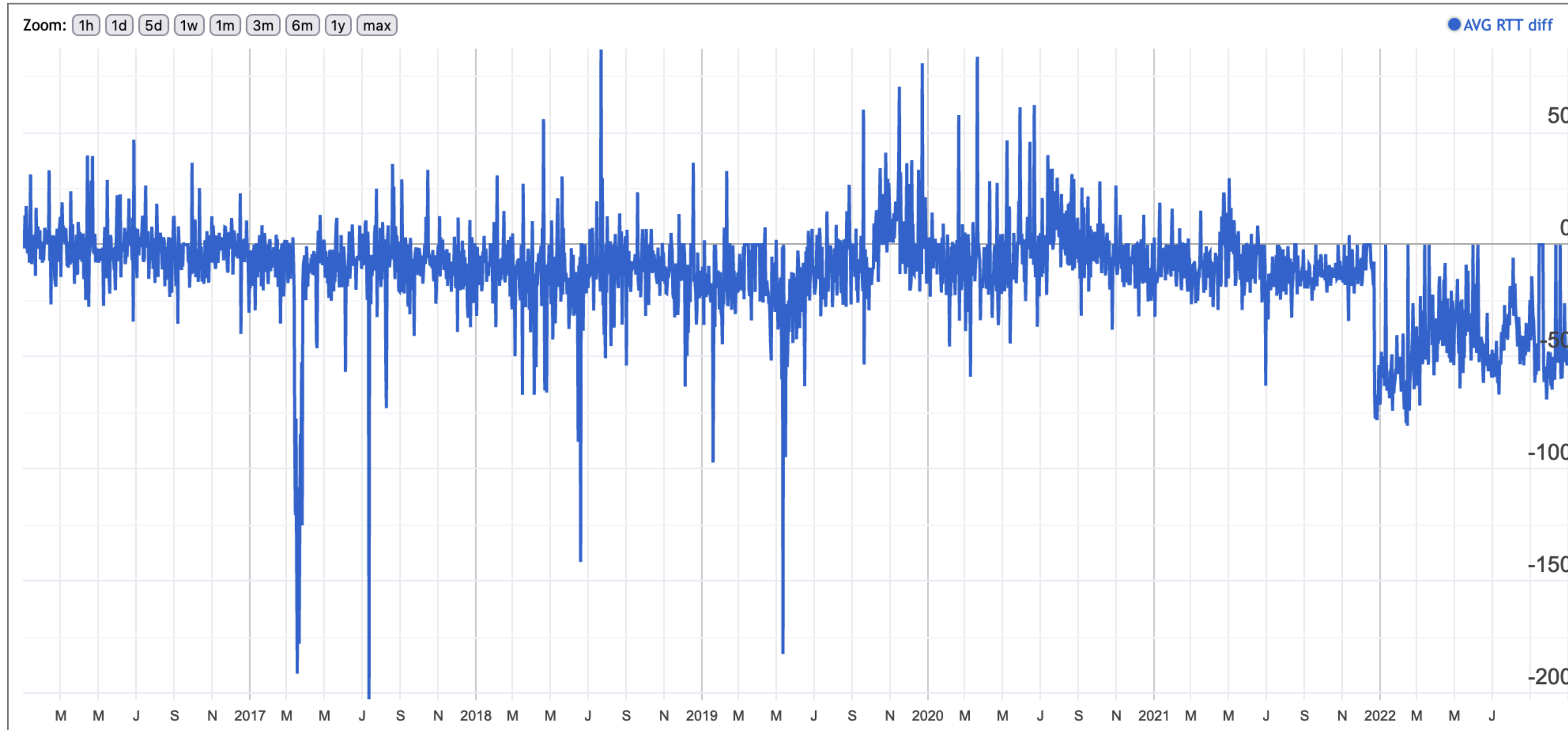


CC	Country	IPv6 Adoption	Latency / impact
SA	Saudi Arabia	59.47 %	- 20 ms / - 0.09 %
AE	United Arab Emirates	45%	10 ms / - 0.05 %
KW	Kuwait	17.39 %	10 ms / 0.01 %
OM	Oman	17.3 %	- 10 ms / 0 %
JO	Jordan	12.48 %	0 ms / 0 %
TR	Turkey	1.59 %	0 ms / 0 %
LB	Lebanon	1.64 %	0 ms / 0.03 %
SY	Syrian Arab Republic	0.32 %	0 ms / 0.03 %
QA	Qatar	0.28 %	0 ms / 0 %
IQ	Iraq	0.35 %	0 ms / 0 %
PS	Palestine	N/A	N/A
BH	Bahrain	0.58 %	0 ms / -0.01 %
YE	Yemen	0.08 %	0 ms / - 0.16 %



Source: <https://www.google.com/intl/en/ipv6/statistics.html>

# IPv6 Readiness and Use: MENOG



Source: <https://stats.labs.apnic.net/v6perf>

# IPv6 Readiness and Use: MENOG



CC	Country	Avg RTT Diff (V6-V4)	Samples
JO	Jordan	<b>-182.45 ms</b>	77,623
TR	Turkey	<b>-121.08 ms</b>	44,544
LB	Lebanon	<b>-81.02 ms</b>	12,185
SA	Saudi Arabia	<b>-34.40 ms</b>	1,967,896
KW	Kuwait	<b>-29.51 ms</b>	91,507
IQ	Iraq	<b>-10.02 ms</b>	2,027
BH	Bahrain	<b>-4.35 ms</b>	280
OM	Oman	<b>-0.06 ms</b>	89,489
QA	Qatar	<b>5.42 ms</b>	1,106
SY	Syrian Arab Republic	<b>27.40 ms</b>	722
PS	Palestine	<b>33.09 ms</b>	272
AE	United Arab Emirates	<b>63.41 ms</b>	441,007
YE	Yemen	<b>125.20 ms</b>	92

Source: <https://stats.labs.apnic.net/v6perf>

# Key Takeaways



- All countries (except Syria now) have several LIRs announcing IPv6
- **KSA** and **UAE** lead the IPv6 deployment in the region (and the world)
- Good percentage but still **room for growth: KW, OM, JO**
- **Early stages** or have **low usage: TR, LB, BH, SY, QA, IQ, PS, YE**
  - Interesting: BH has 100% connections over IPv6 for Akamai (mid 2021 - beg 2022)
  - Interesting: TR has the biggest number of LIRs, allocations and announcements, but usage is very low

# Key Takeaways



- **Mobile operators** are responsible for the majority of IPv6 traffic
- **IPv6 traffic (delay) better or equal to IPv4 on average**
  - This has improved over time
  - Big differences between countries
  - Interesting: UAE lot of IPv6 traffic, slower than IPv4

# Key Takeaways



- Quantity vs. **quality**, target “key” networks
- Identify the “key” networks in each country
  - By number of users
  - Would allow others to have IPv6 (e.g. transit, infrastructure)
- Focus on moving them to the next step(s)
  - Local context, global best practices





# Questions



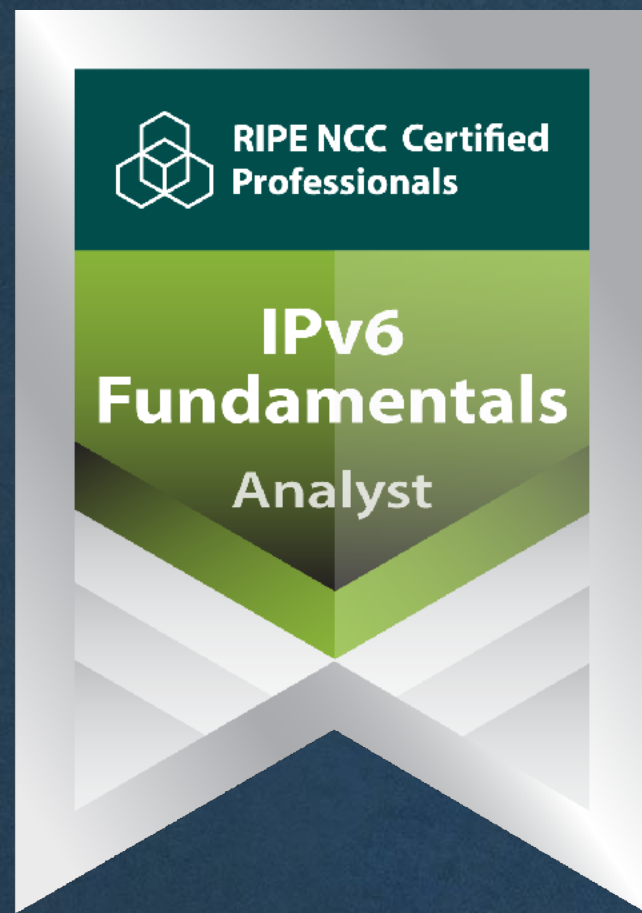


Learn something new today!  
**[academy.ripe.net](https://academy.ripe.net)**





# RIPE NCC Certified Professionals



<https://getcertified.ripe.net/>