



VERISIGN®

Ongoing Issues and Anomalies in Existent and Non-Existent Top-Level Query Names

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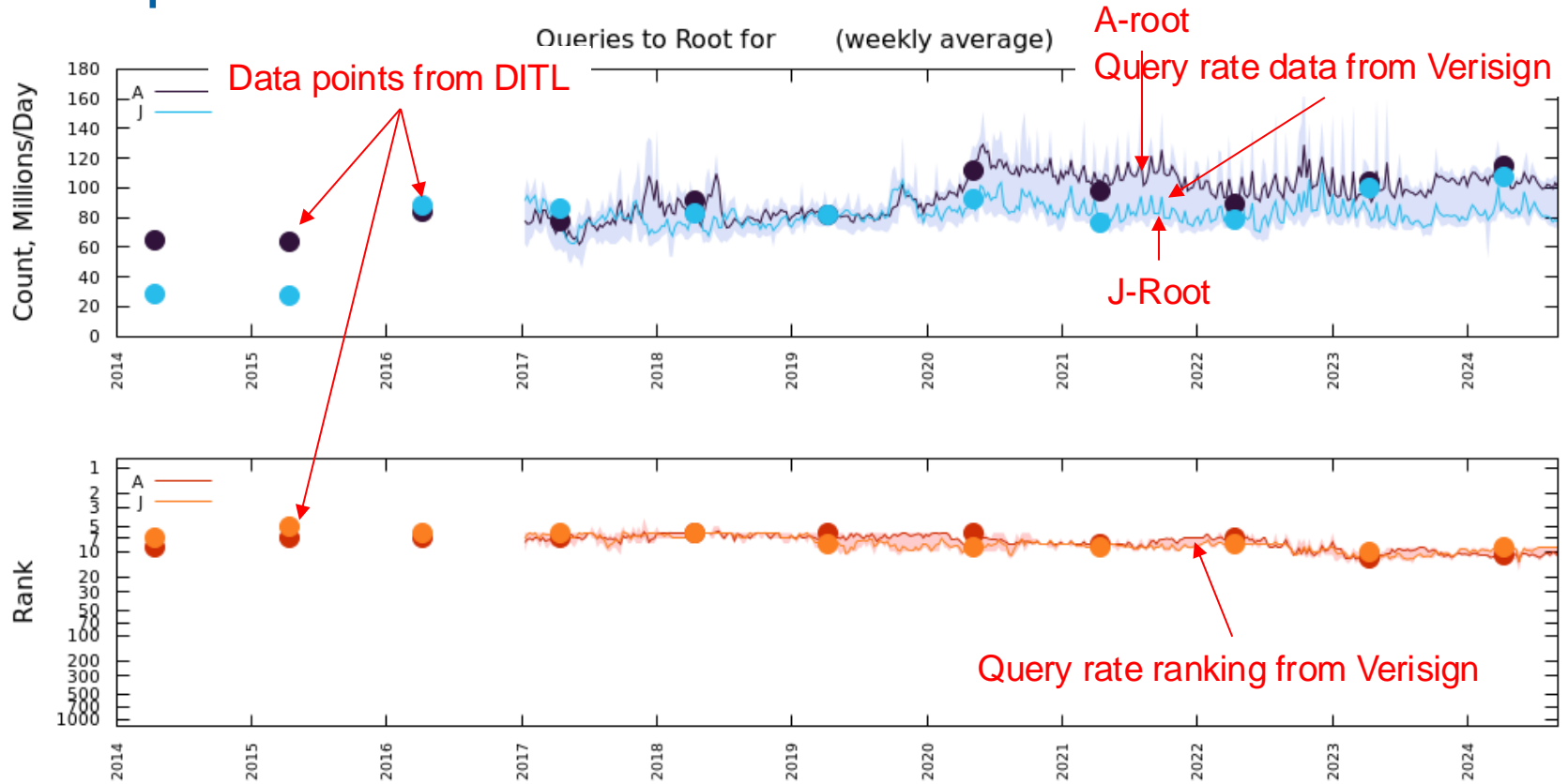
What is this talk about?

- Queries to root name servers!
- Mostly for queries with top-level domains that don't exist.
- Data comes from two sources:
 - A-root & J-root daily summaries
 - DNS-OARC “Day In The Life” (DITL) annual collections*
- This is similar to [ICANN's DNS Magnitude](#) data.
 - Note: here rank is based on query volume, not magnitude.

Get ready to see some graphs

- Two ways of looking at long-term changes in query traffic patterns:
 - rate – queries per day
 - rank – popularity

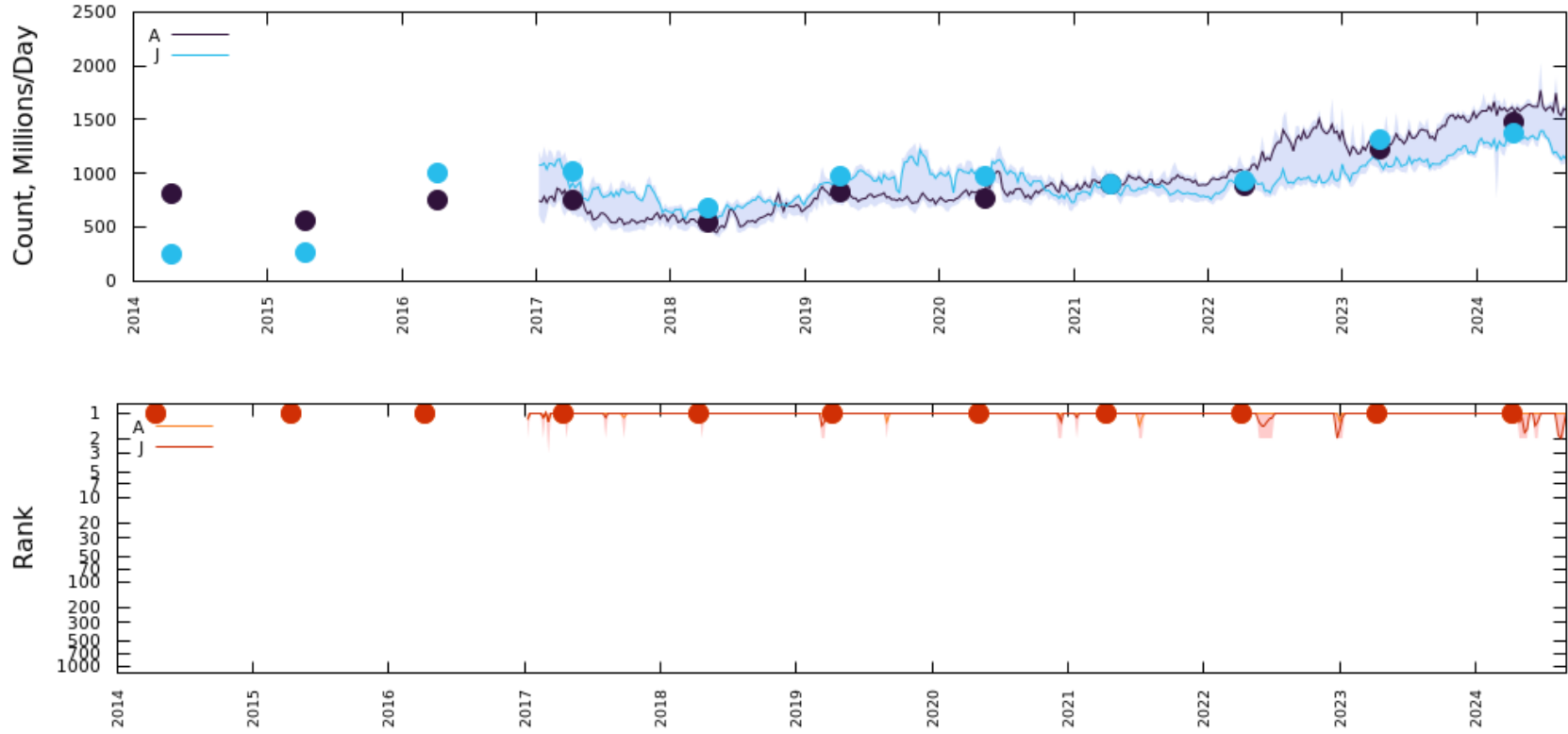
Sample



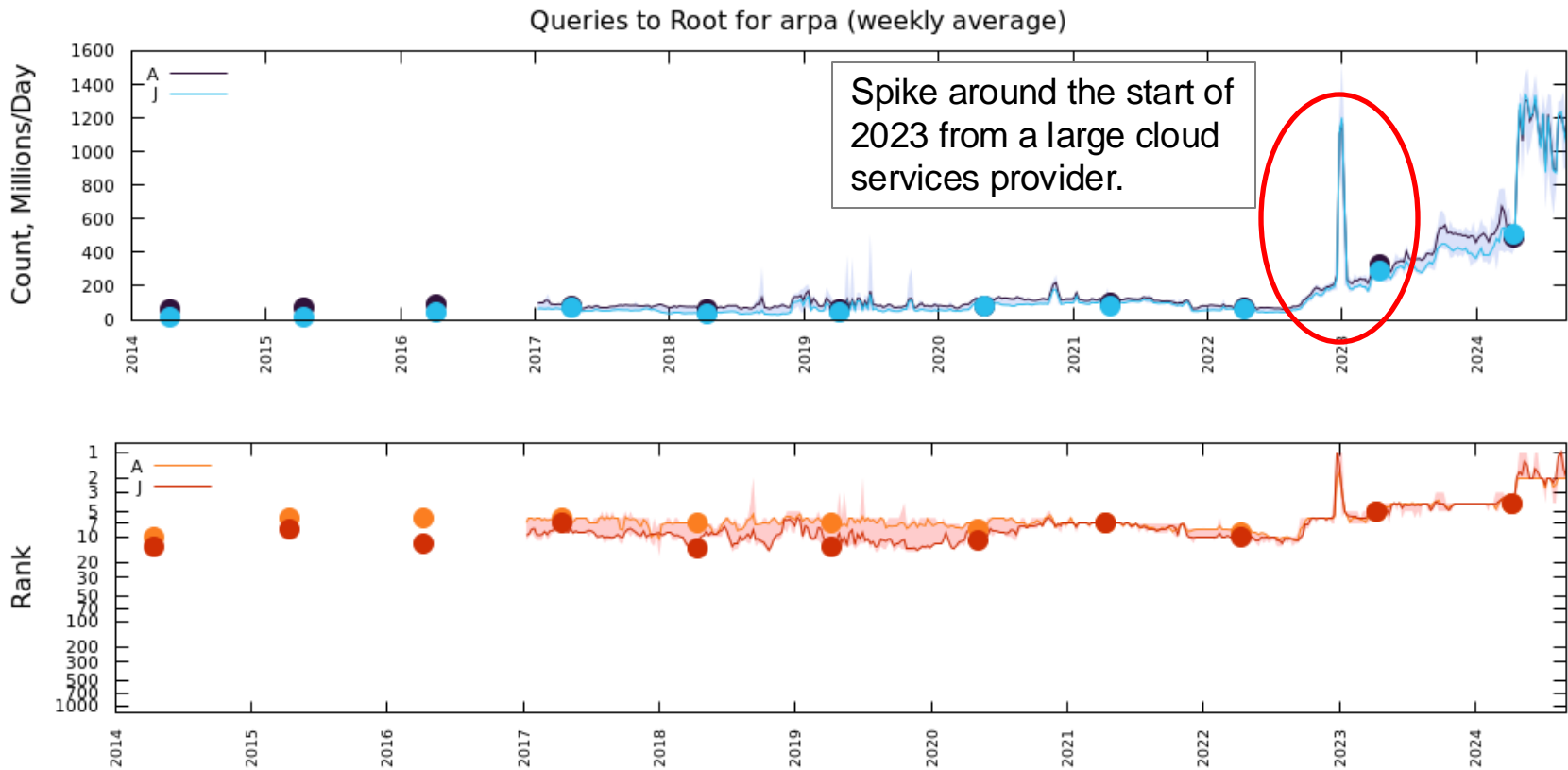
TLDs That Exist

.com

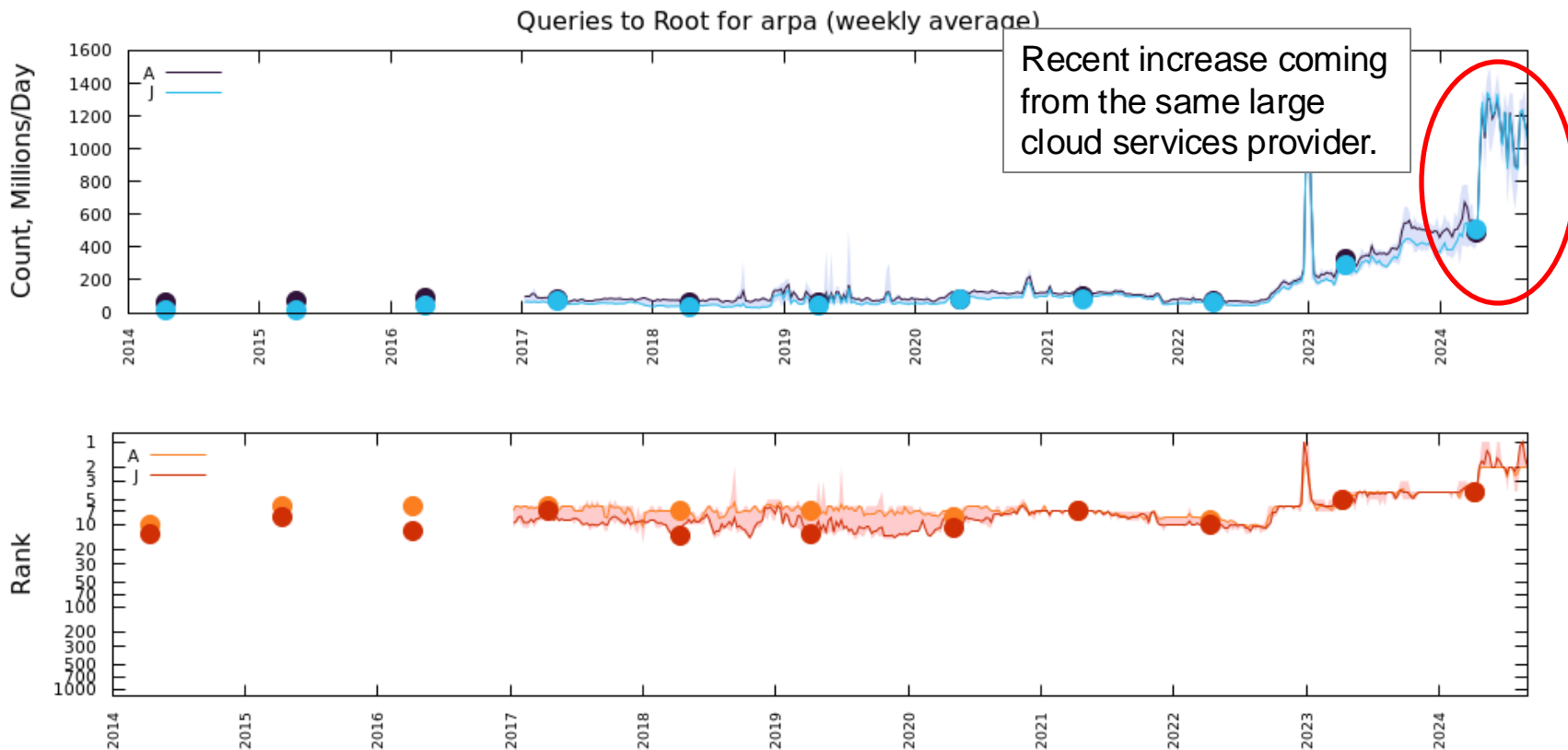
Queries to Root for com (weekly average)

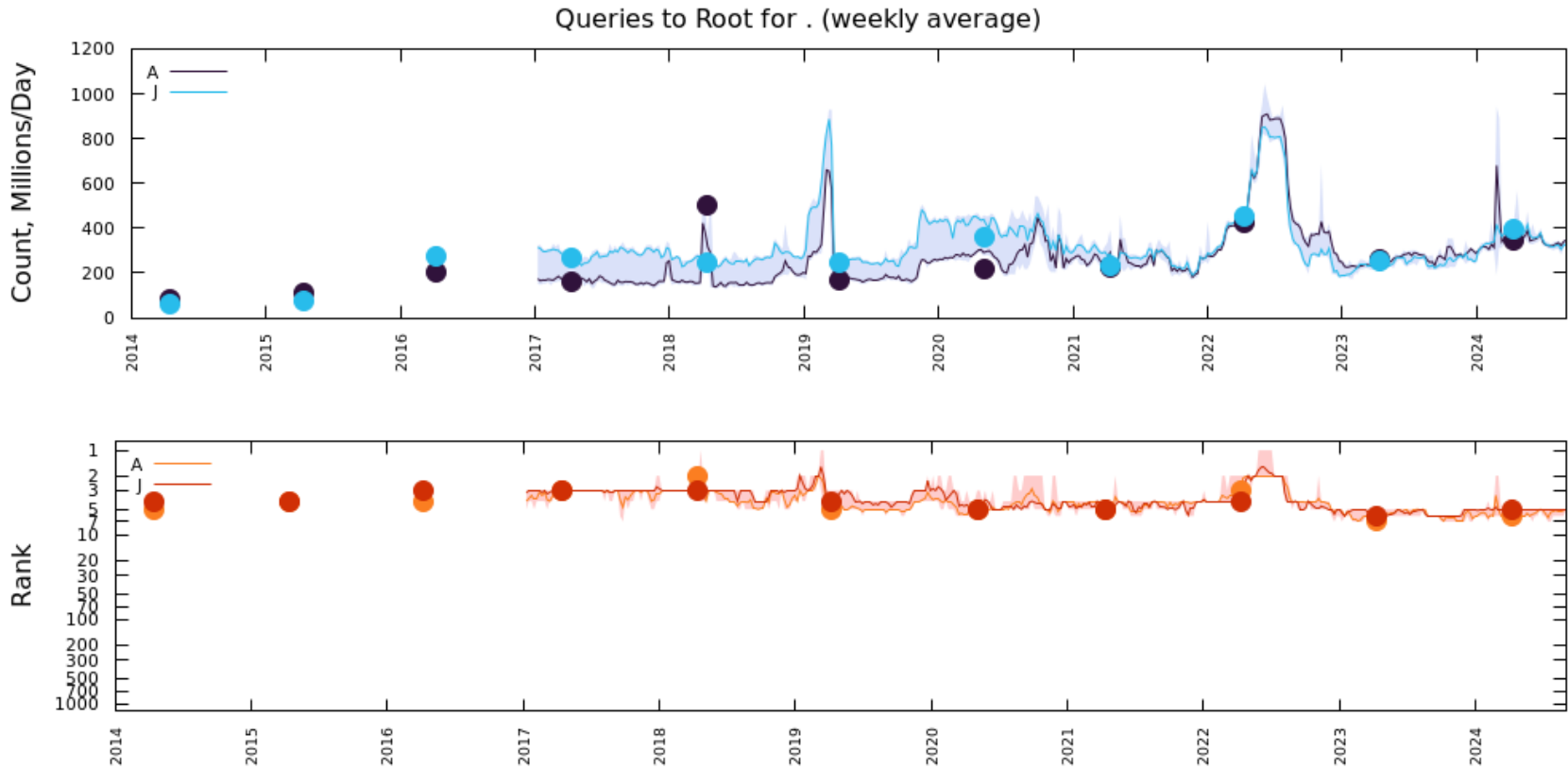


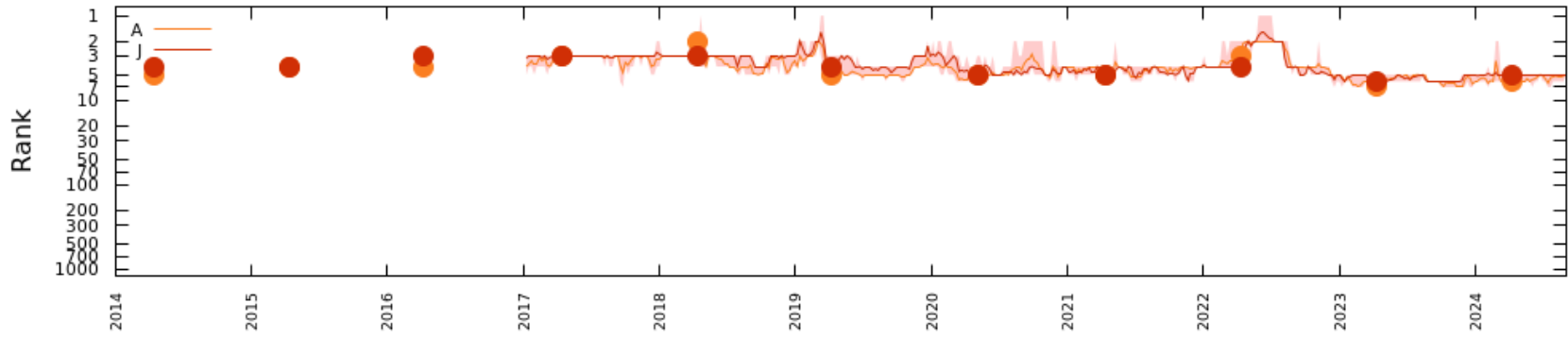
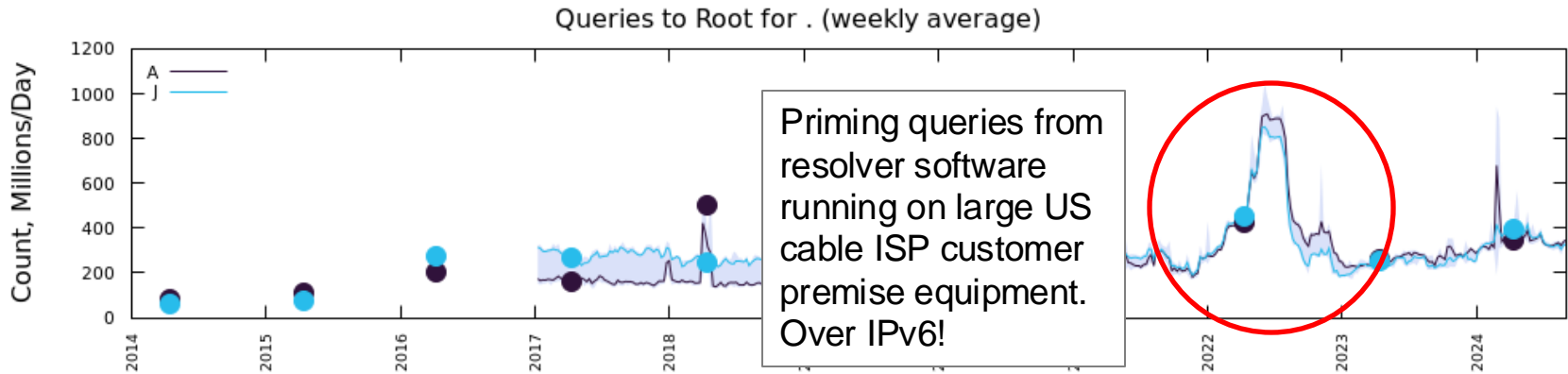
.arpa



.arpa







Of the top 20 most-queried TLDs, 12 are not delegated.

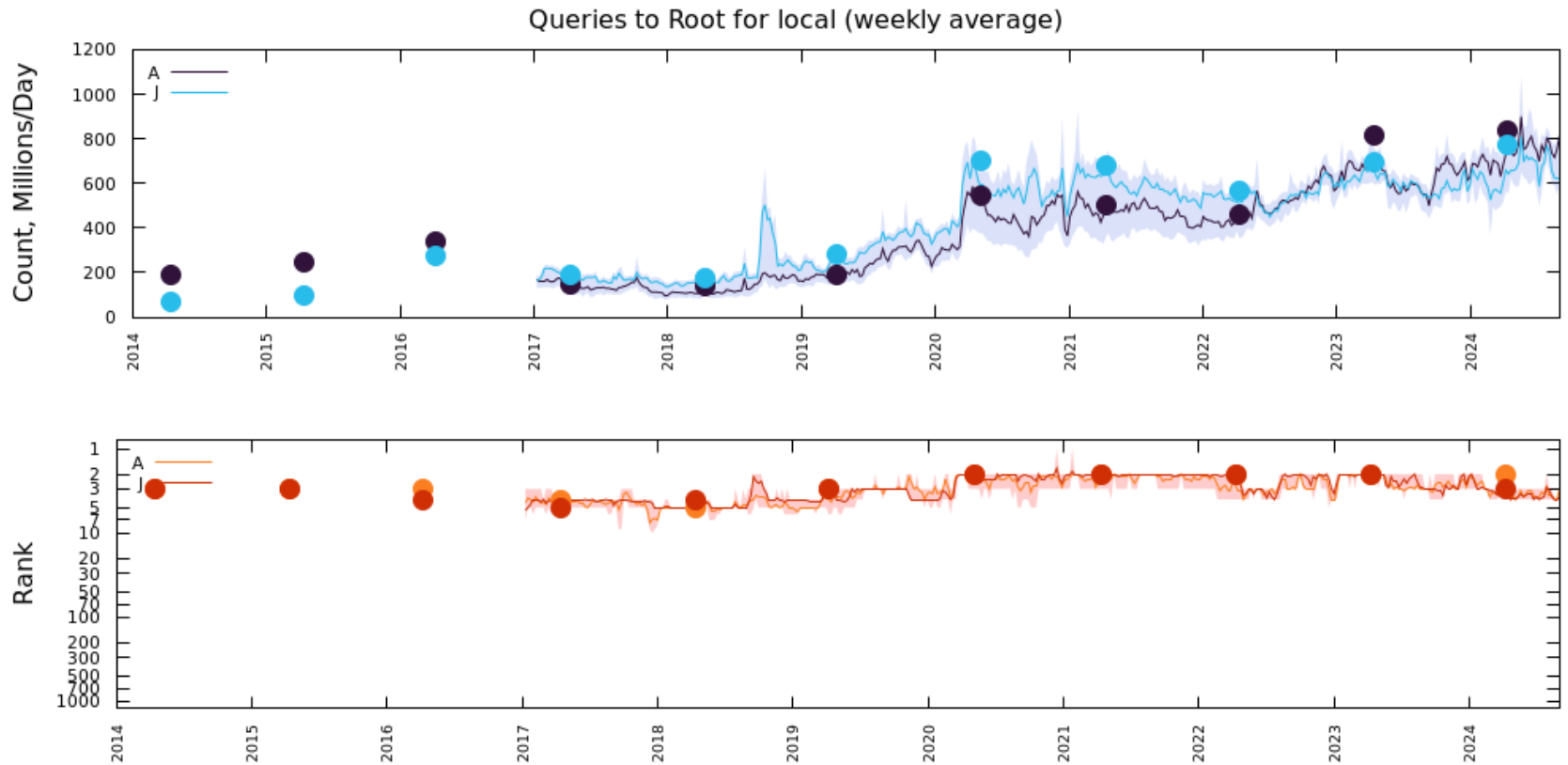
Rank	TLD
1	com
2	arpa
3	net
4	local
5	.
6	test
7	ir
8	home
9	cn
10	localhost

Rank	TLD
11	org
12	internal
13	lan
14	ctc
15	invalid
16	dhcp
17	io
18	js
19	coms
20	wifi

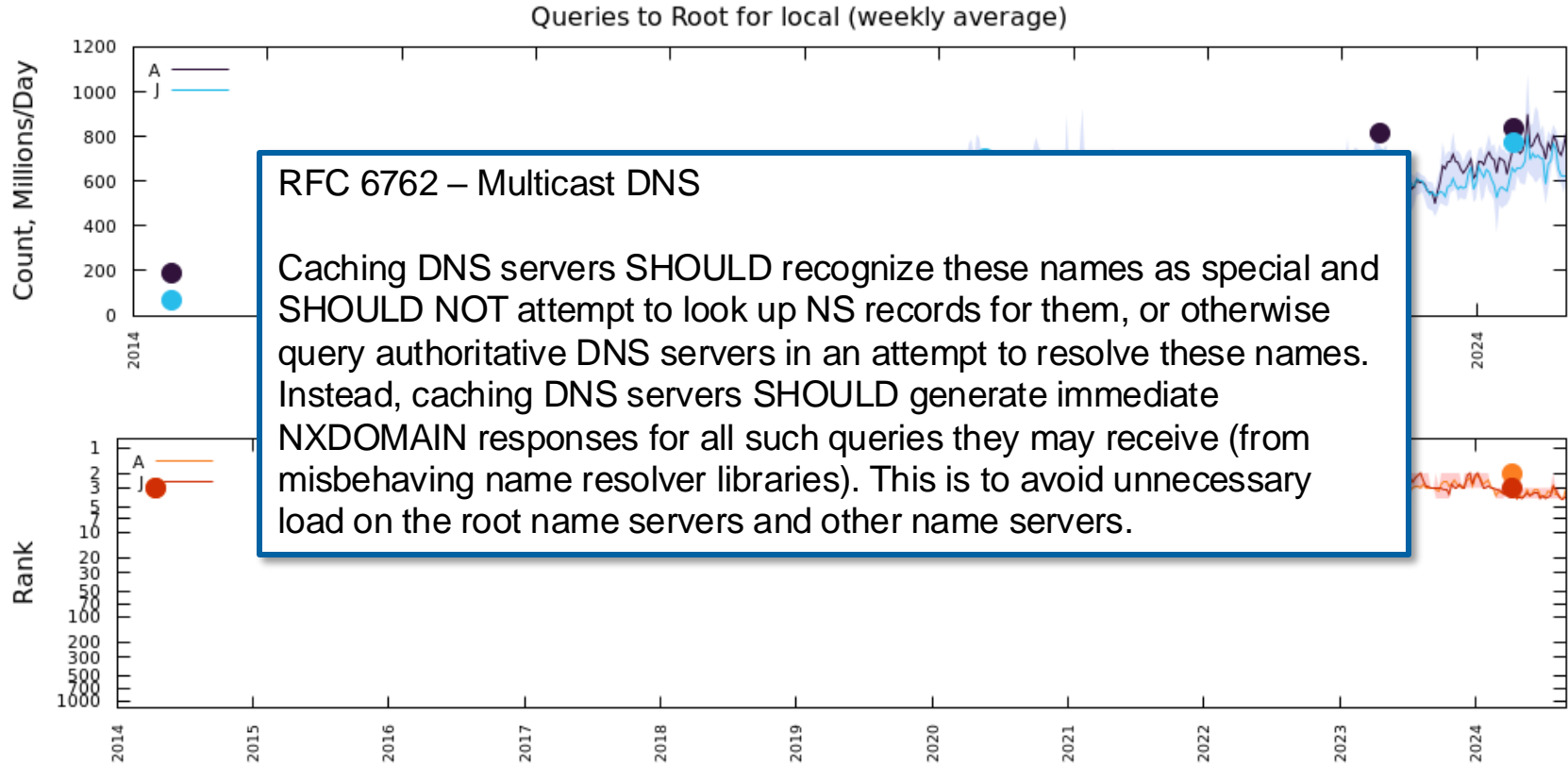
Rank based on query volume. Data from A-root and J-root during August 2024.

Special Use TLDs

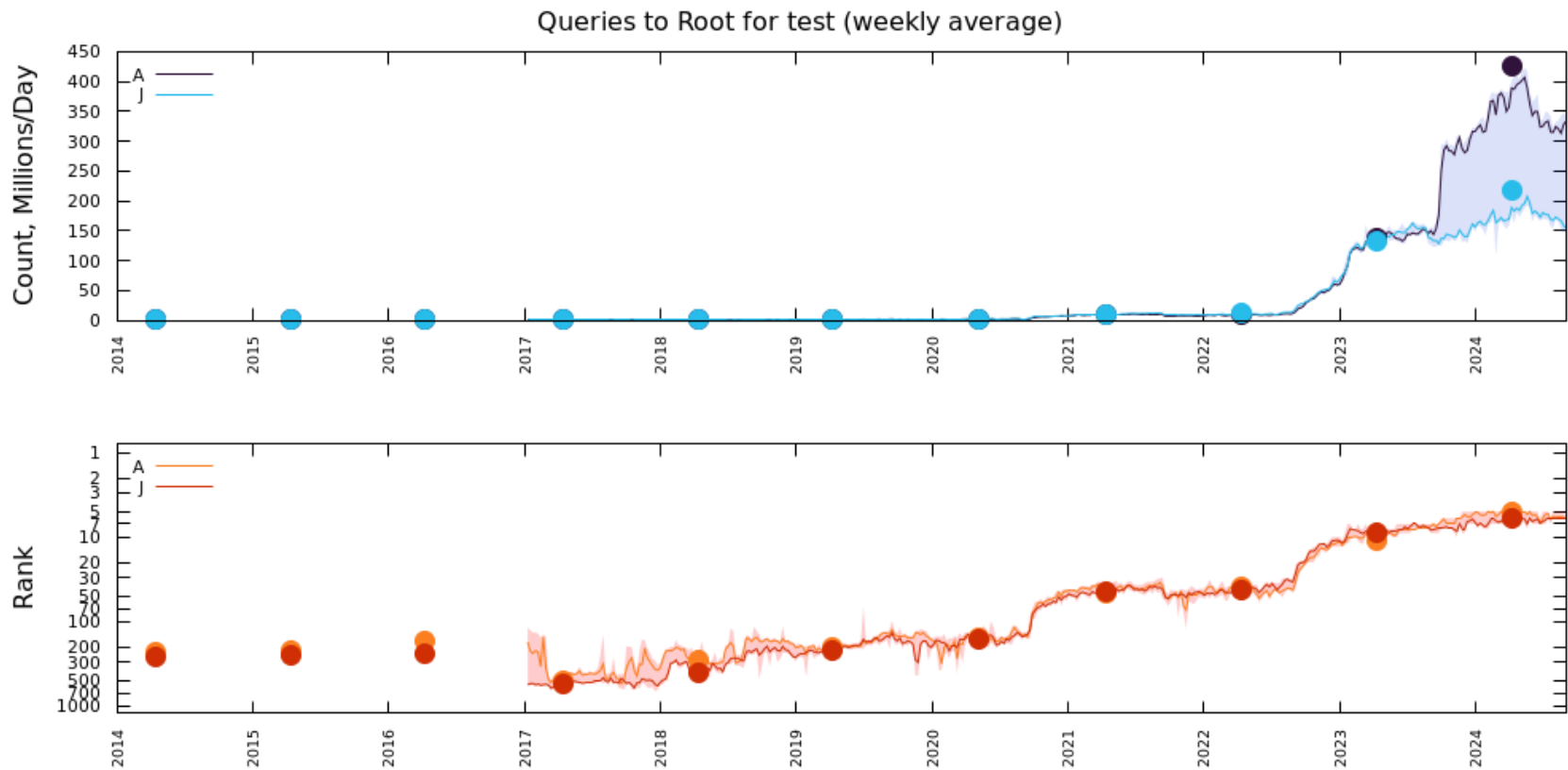
.local



.local

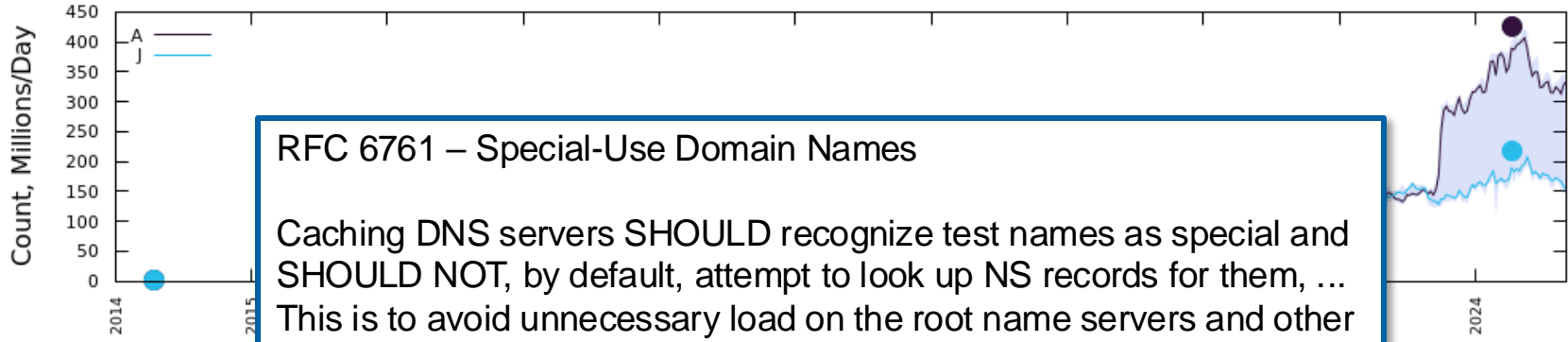


.test



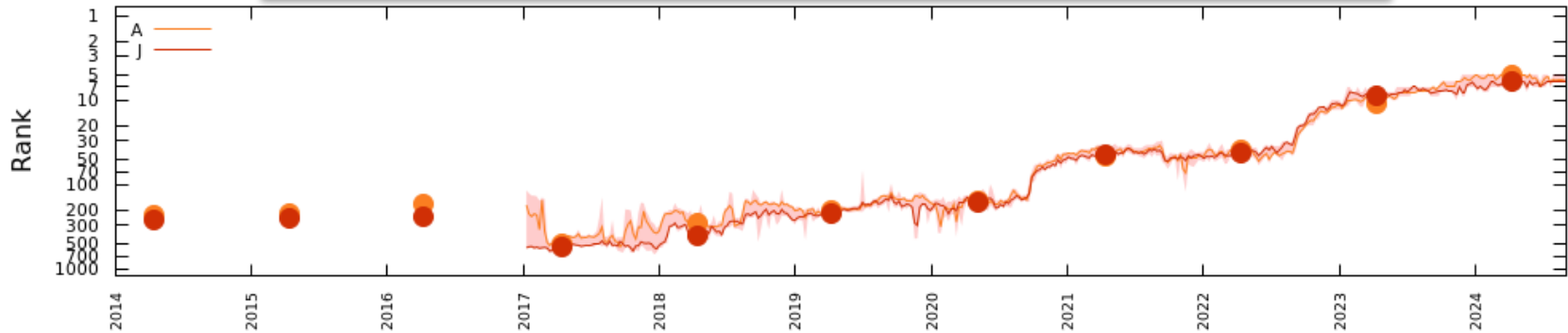
.test

Queries to Root for test (weekly average)



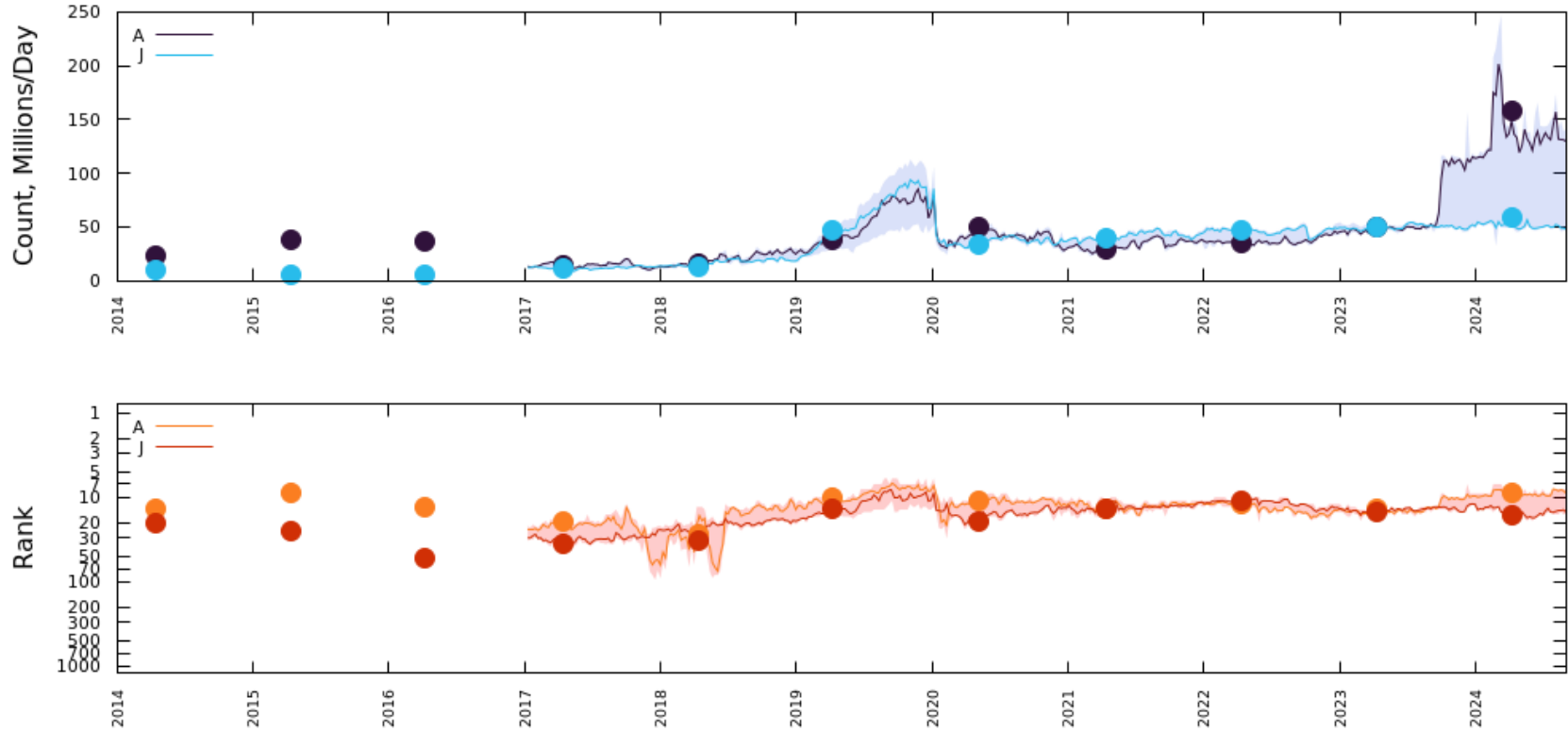
RFC 6761 – Special-Use Domain Names

Caching DNS servers SHOULD recognize test names as special and SHOULD NOT, by default, attempt to look up NS records for them, ... This is to avoid unnecessary load on the root name servers and other name servers.



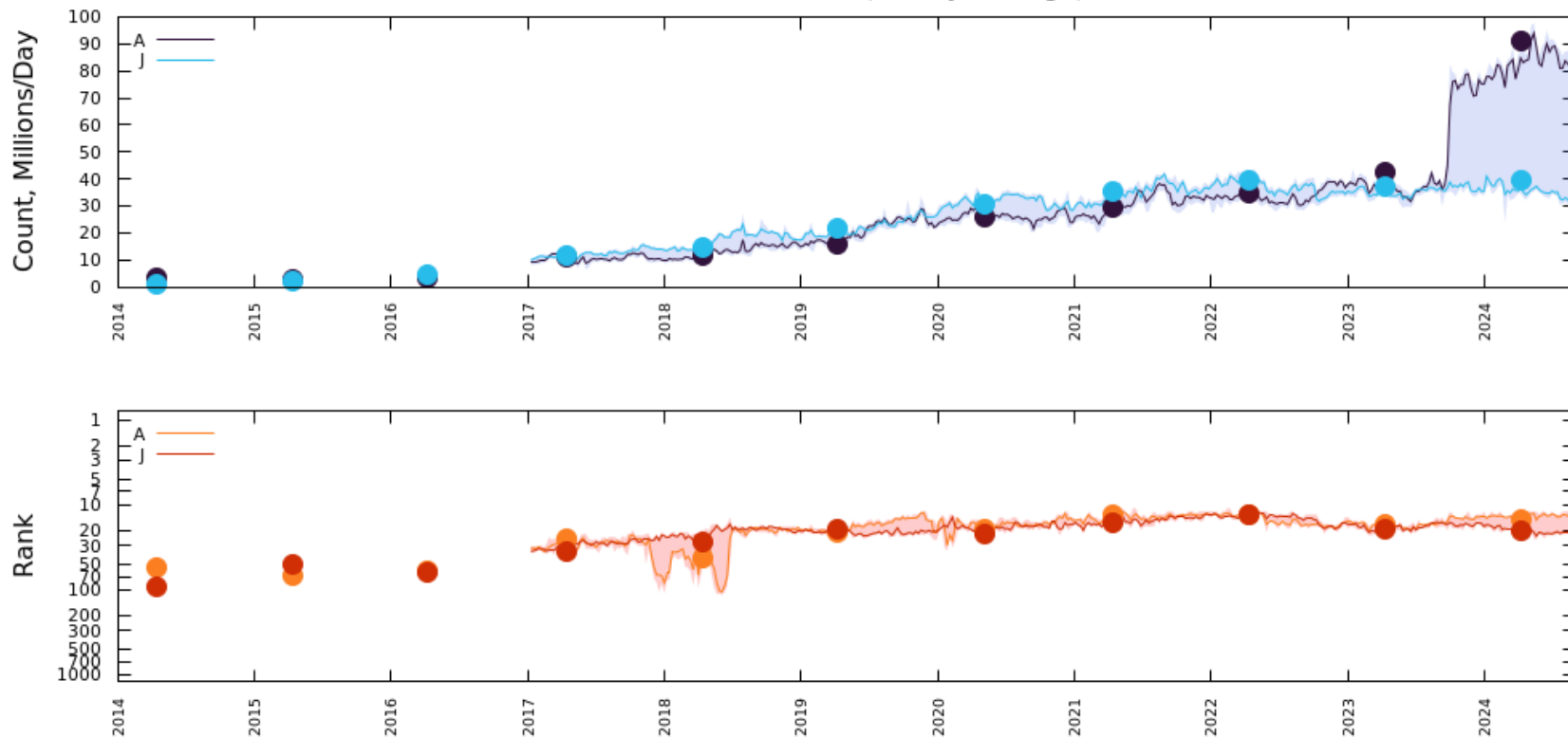
.localhost

Queries to Root for localhost (weekly average)



.invalid

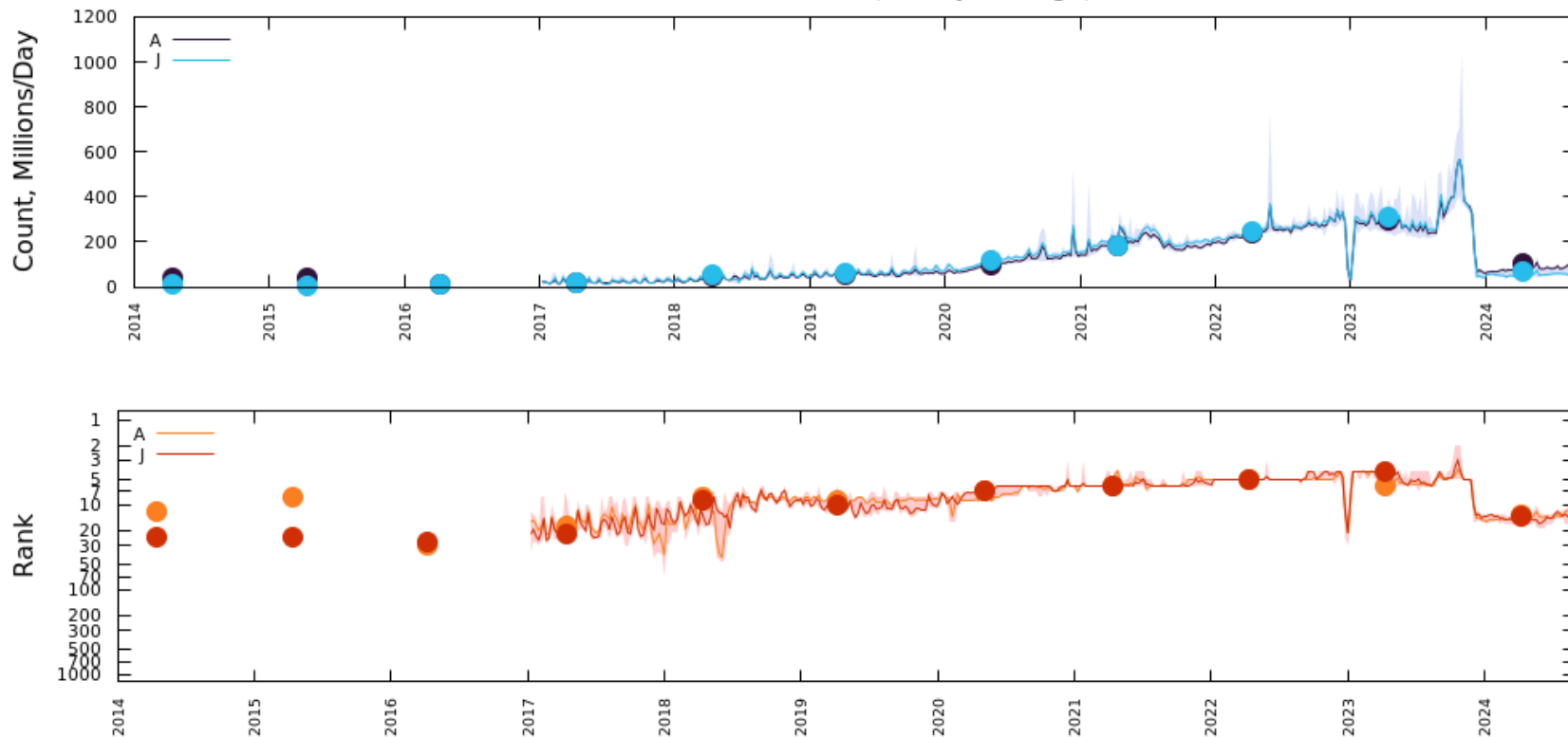
Queries to Root for invalid (weekly average)



.internal*

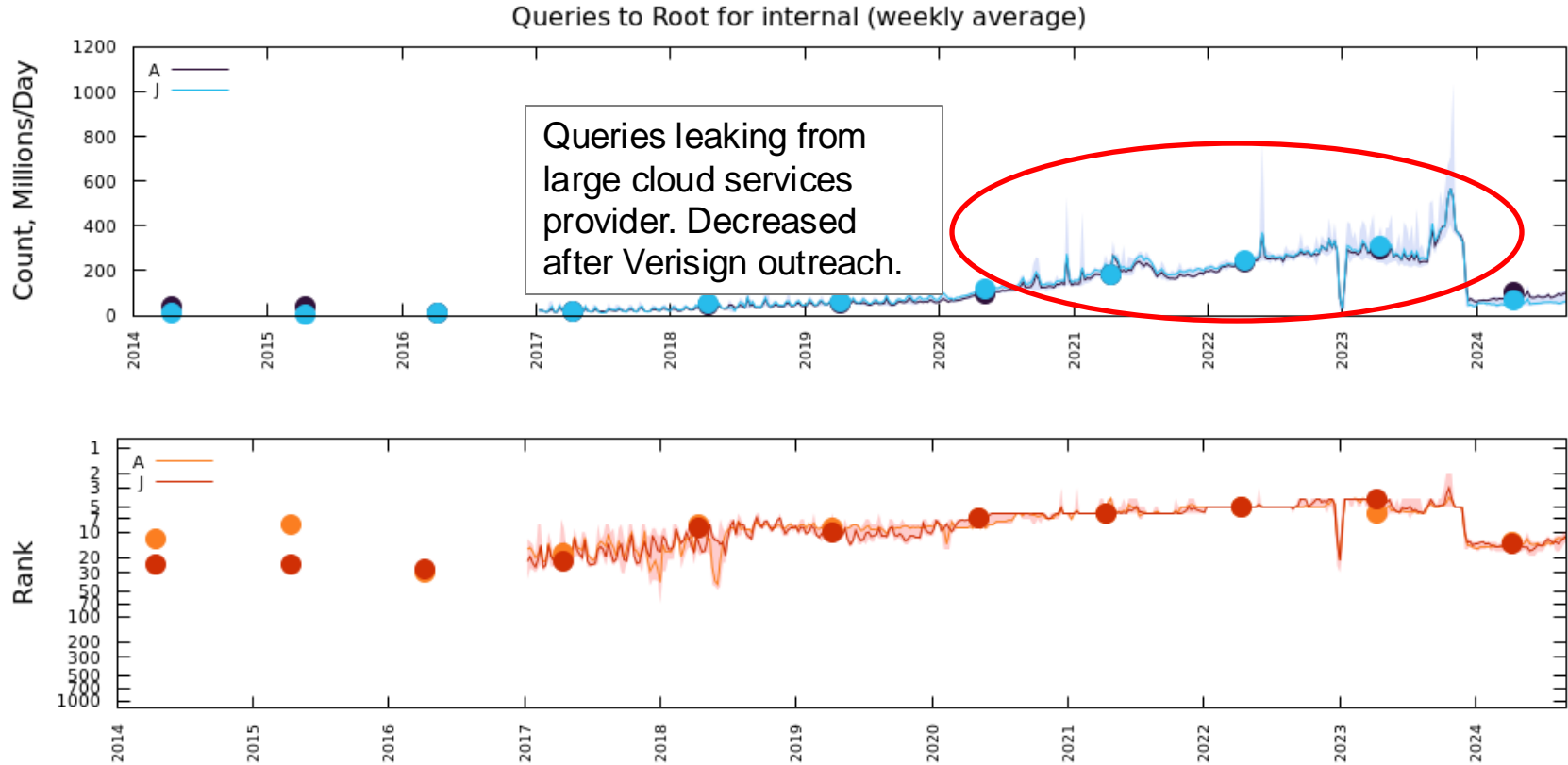
*not (yet?) a special-use TLD

Queries to Root for internal (weekly average)



.internal*

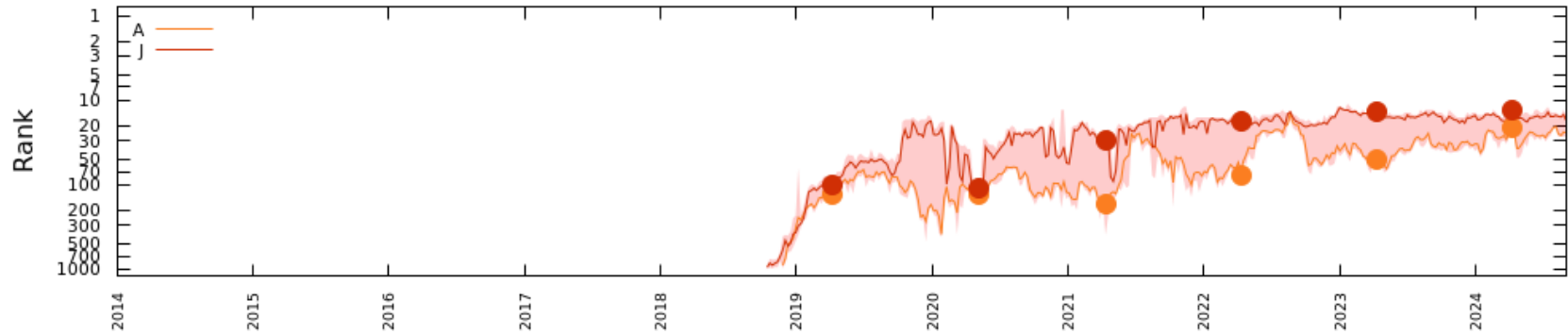
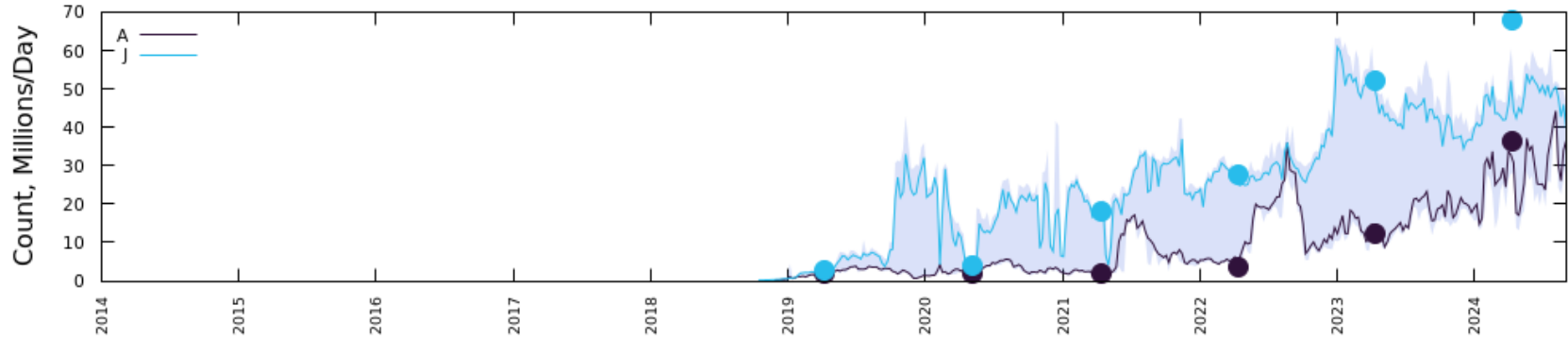
*not (yet?) a special-use TLD



Networking Related

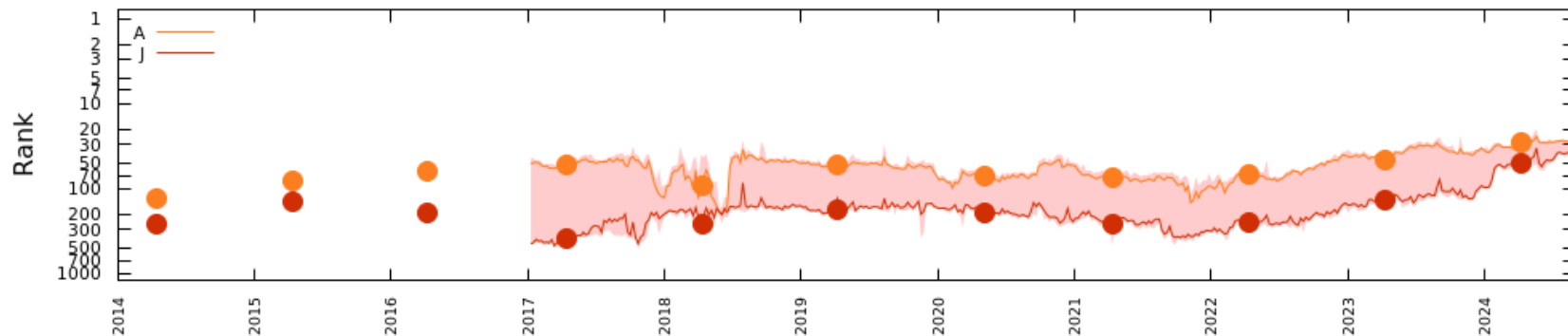
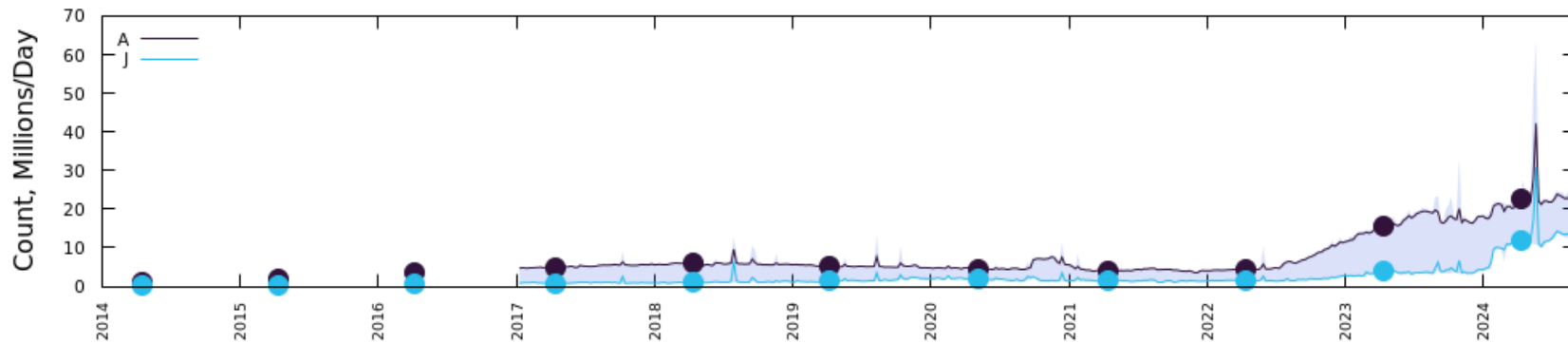
.bbrouter

Queries to Root for bbrouter (weekly average)



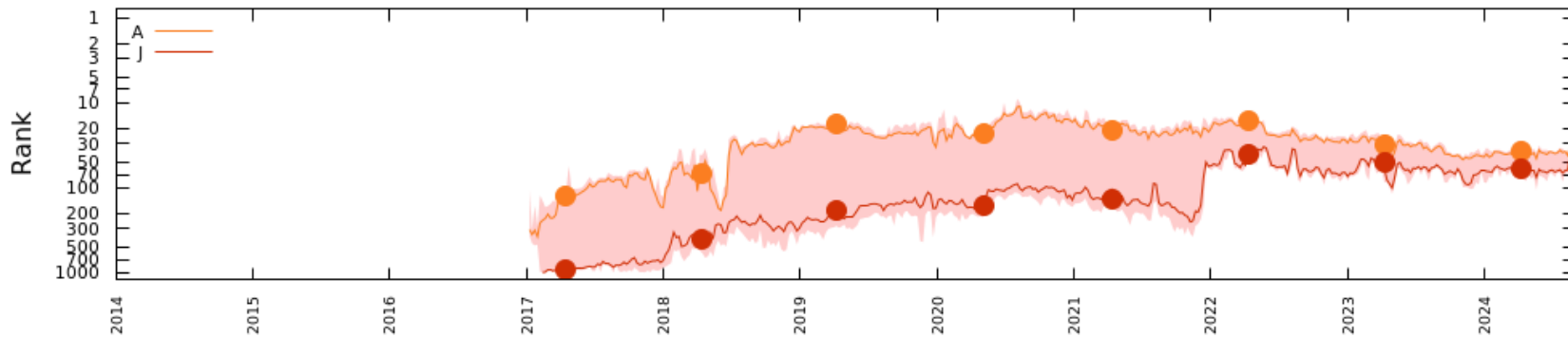
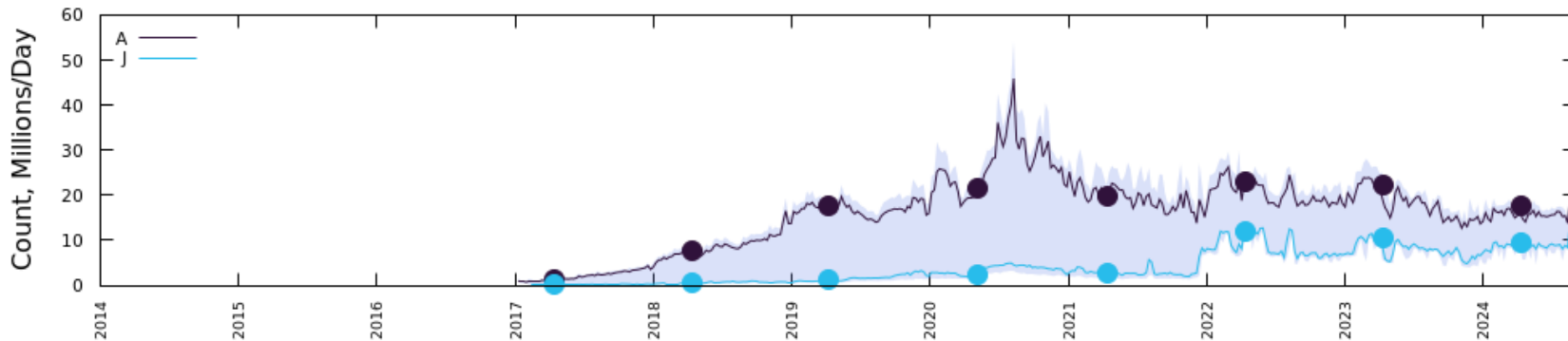
.unifi

Queries to Root for unifi (weekly average)



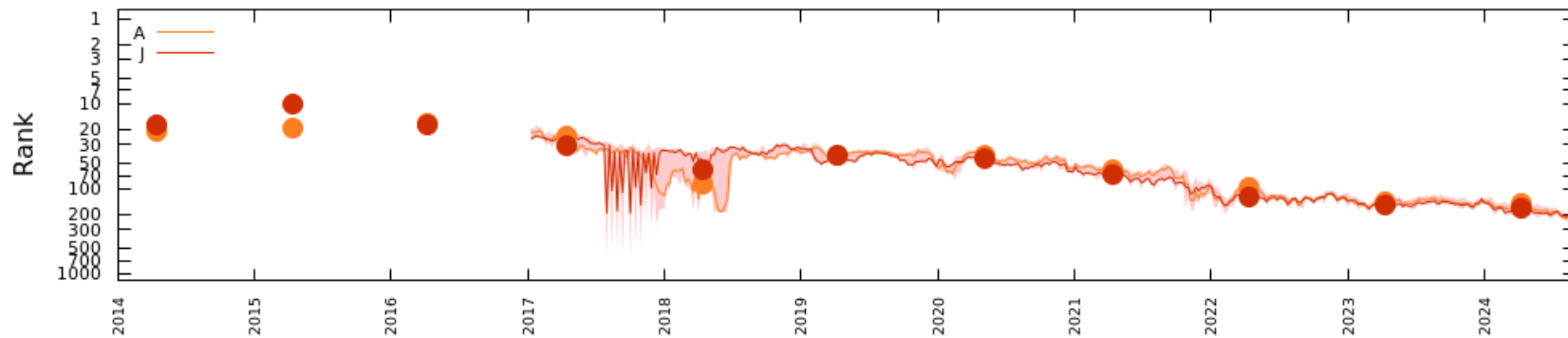
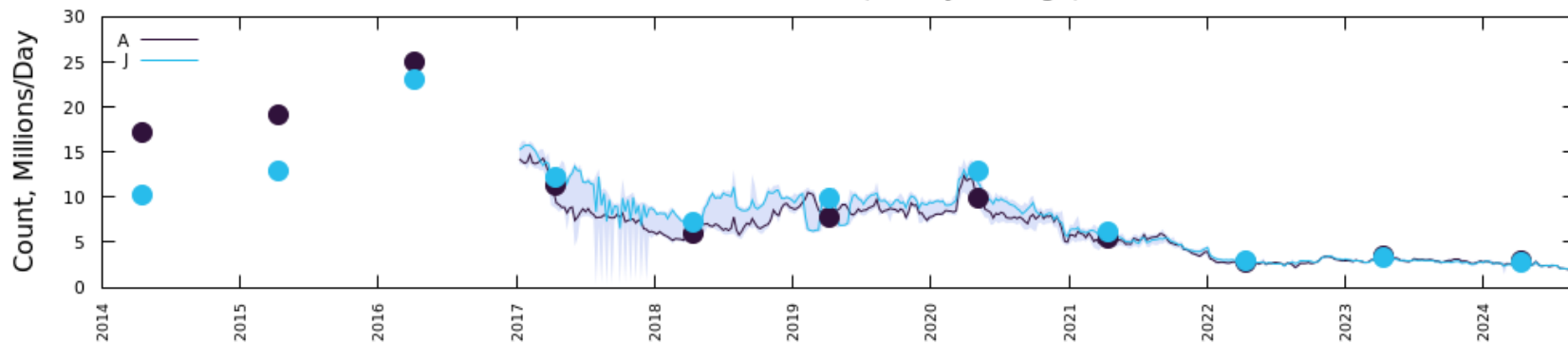
.zyxel-usg

Queries to Root for zyxel-usg (weekly average)



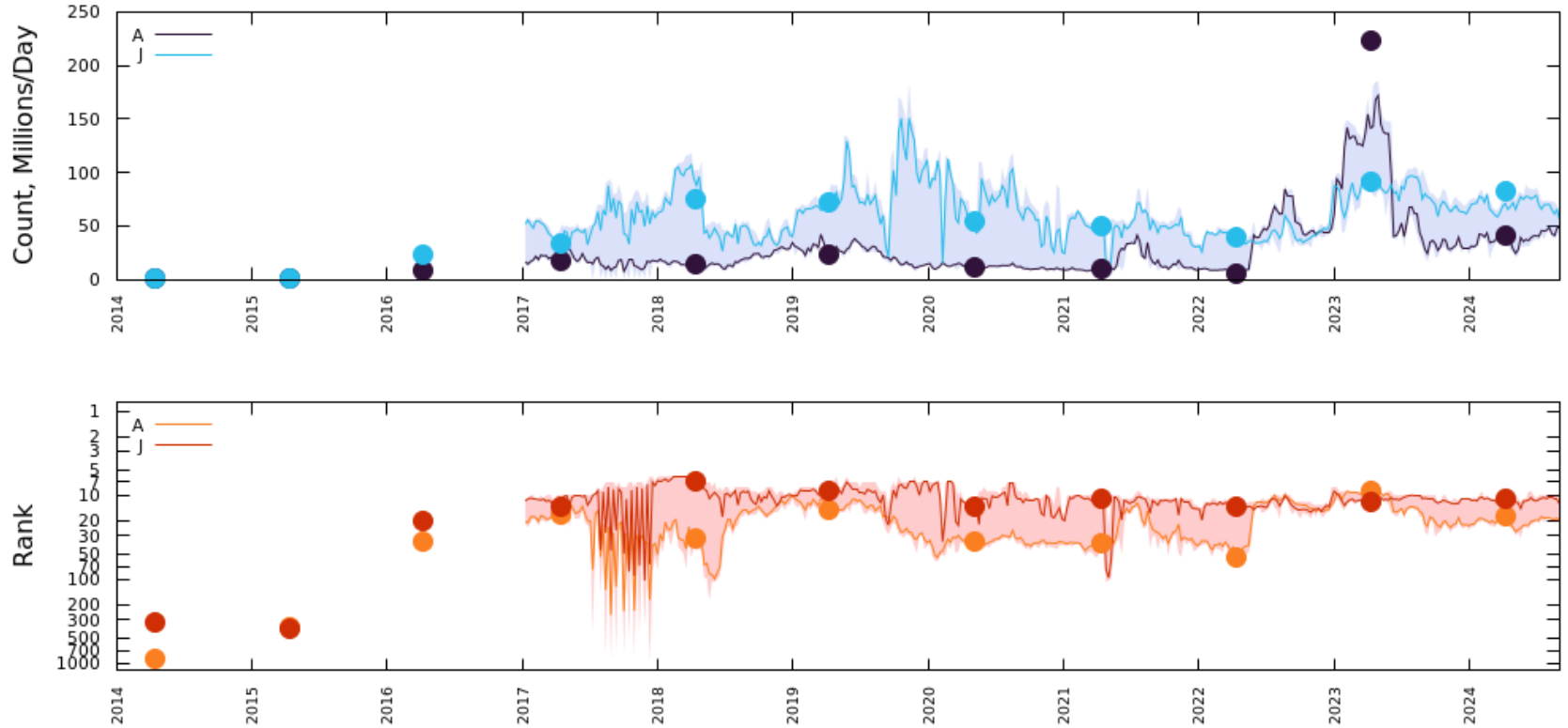
.belkin

Queries to Root for belkin (weekly average)

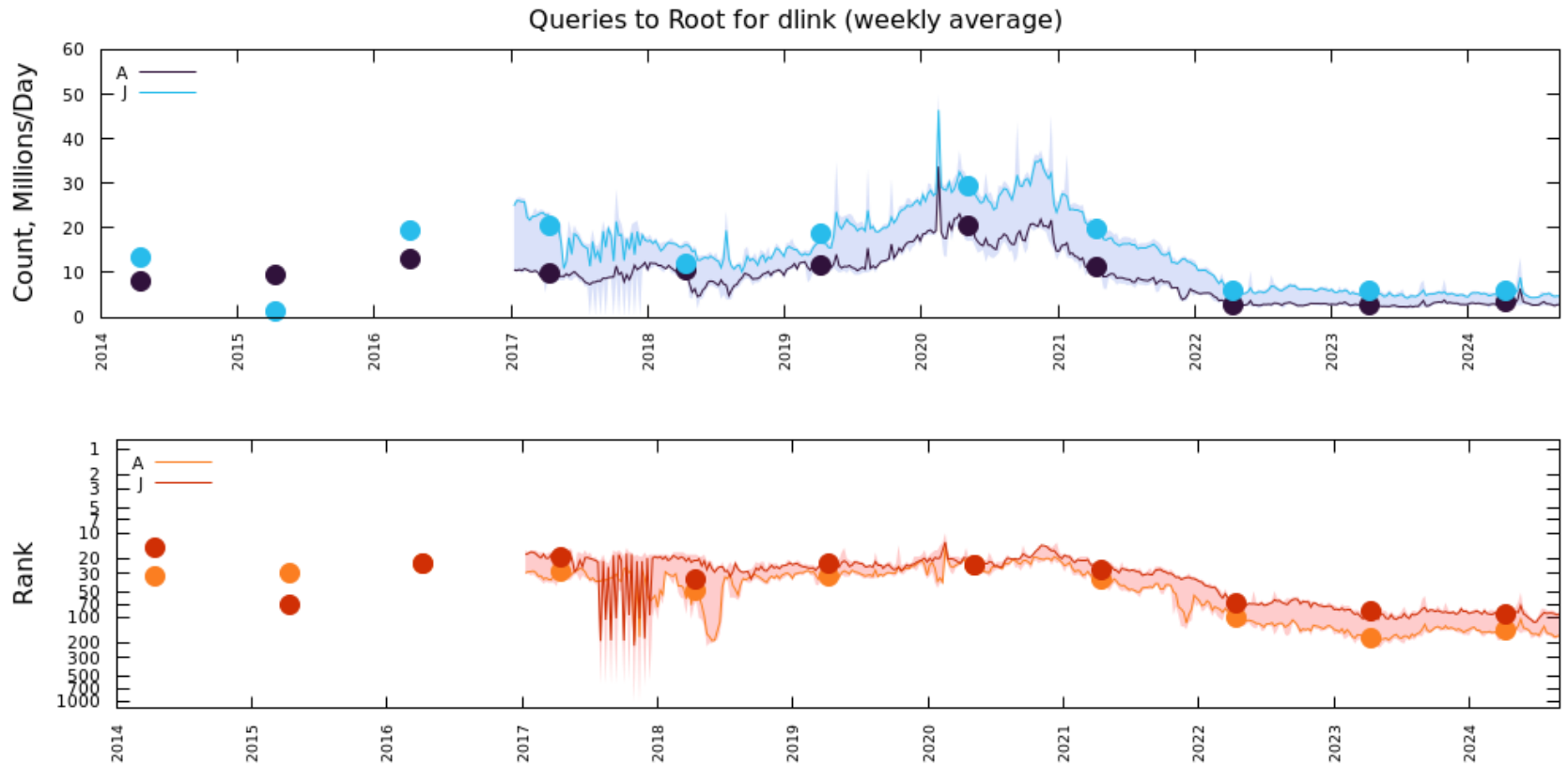


.dhcp

Queries to Root for dhcp (weekly average)

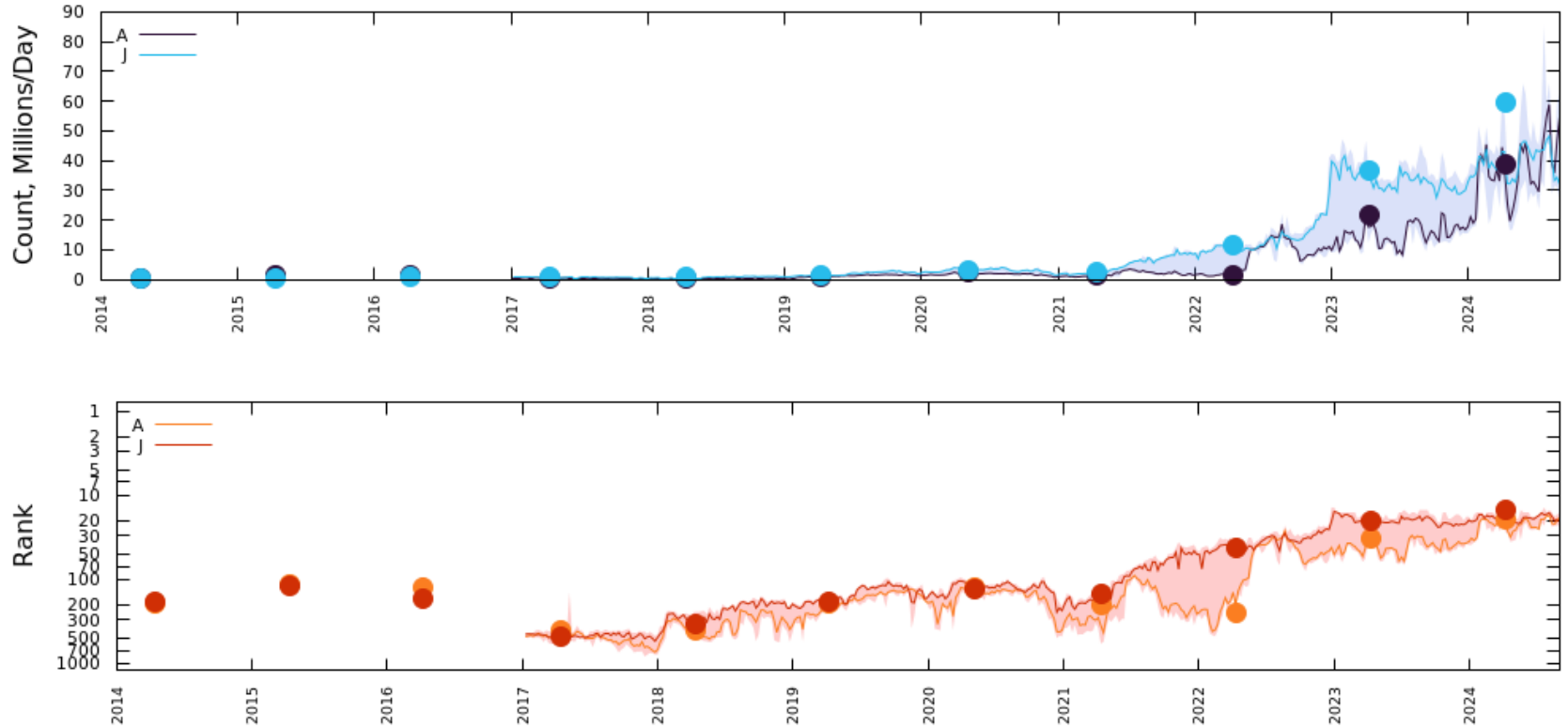


.dlink



.wifi

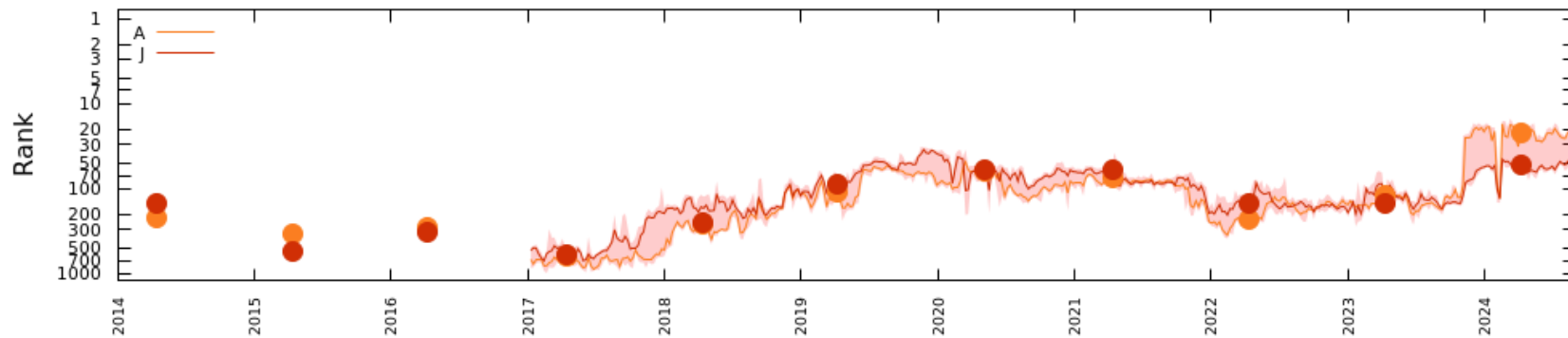
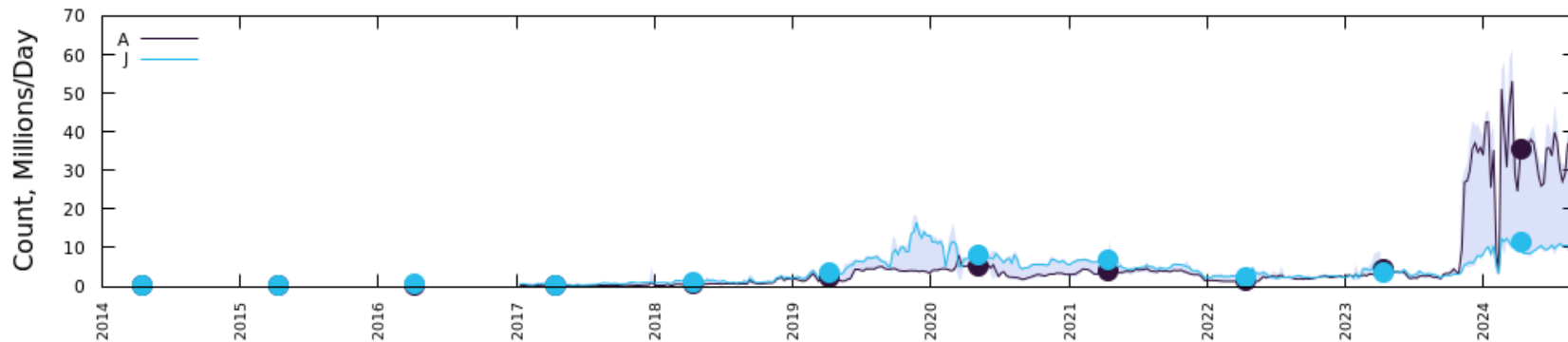
Queries to Root for wifi (weekly average)



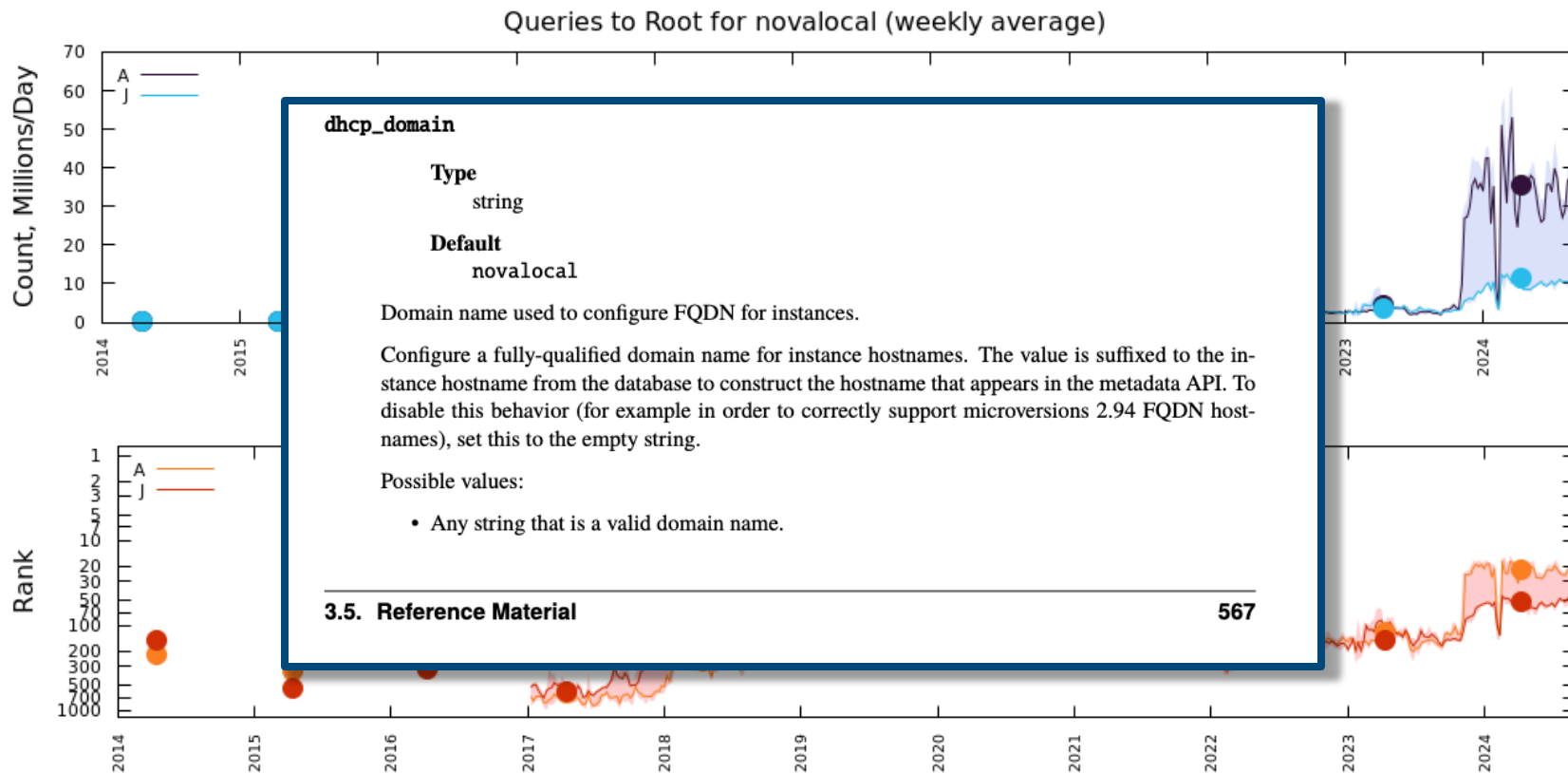
Cloud Related

.novalocal

Queries to Root for novalocal (weekly average)

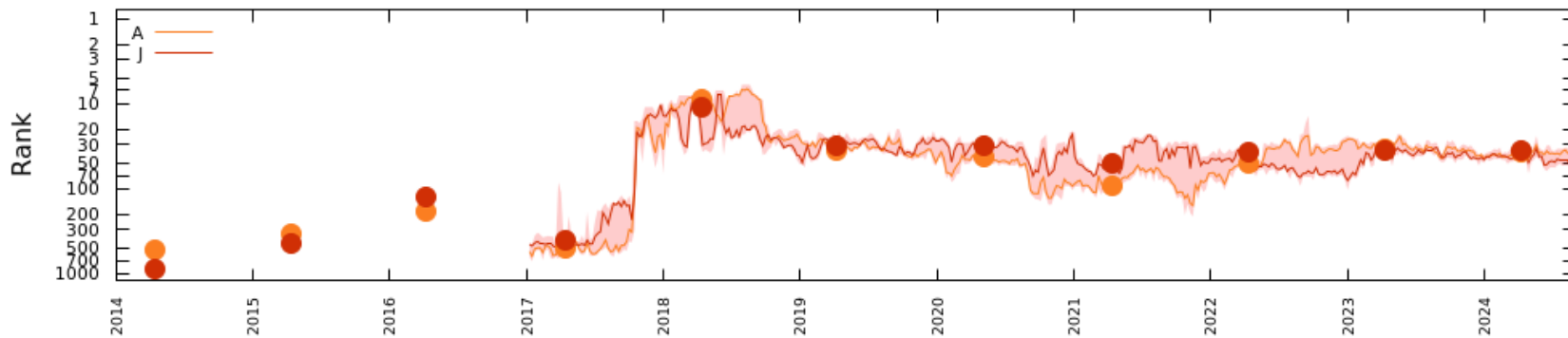
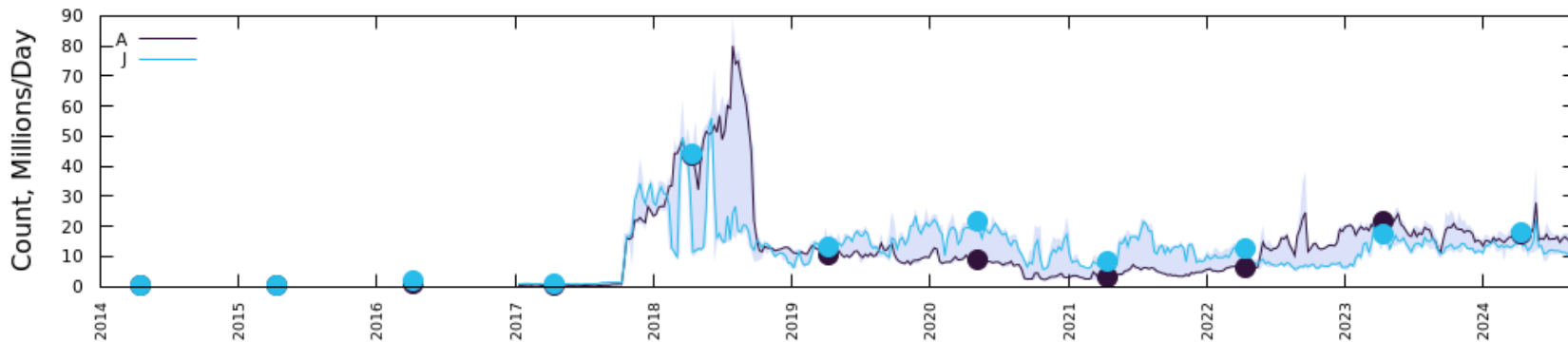


.novalocal



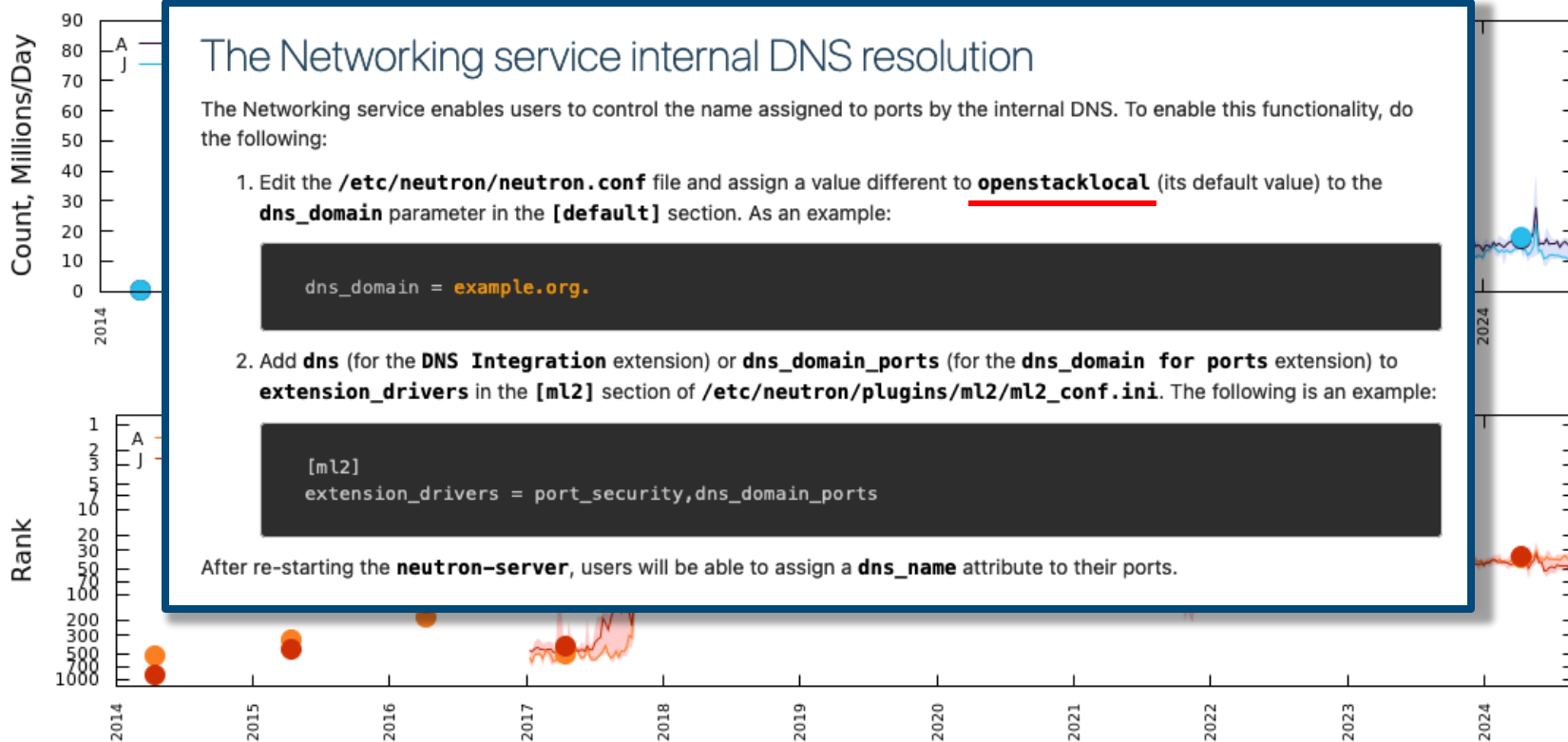
.openstacklocal

Queries to Root for openstacklocal (weekly average)



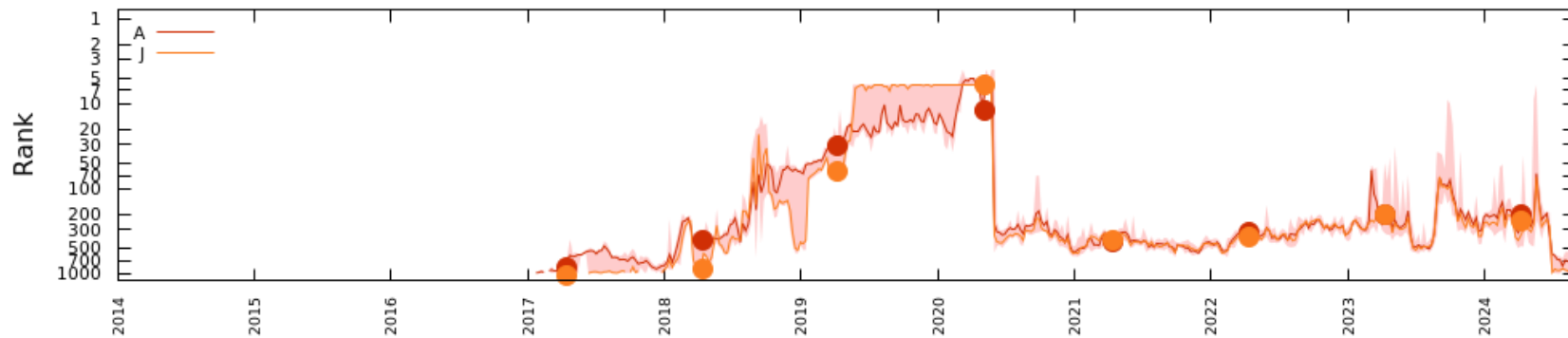
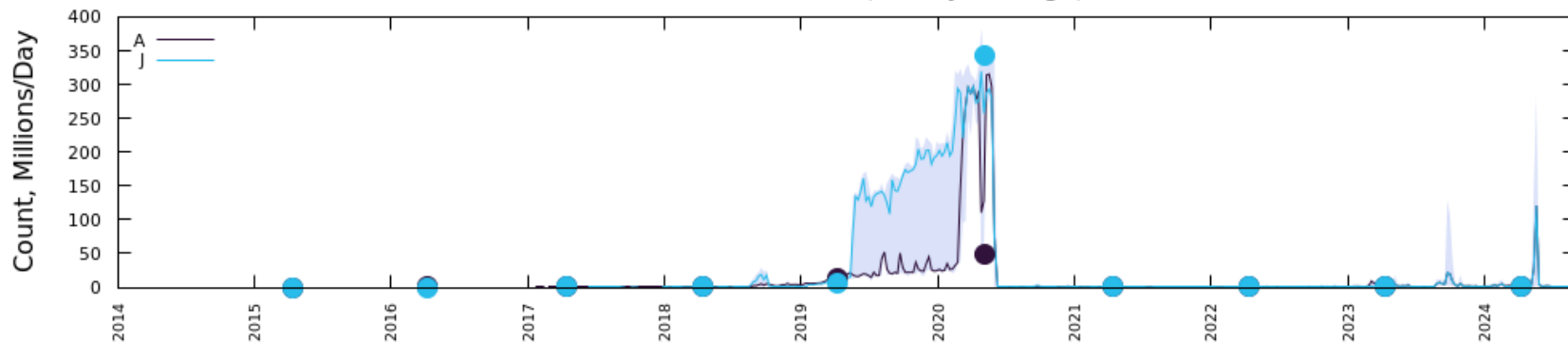
.openstacklocal

Queries to Root for openstacklocal (weekly average)



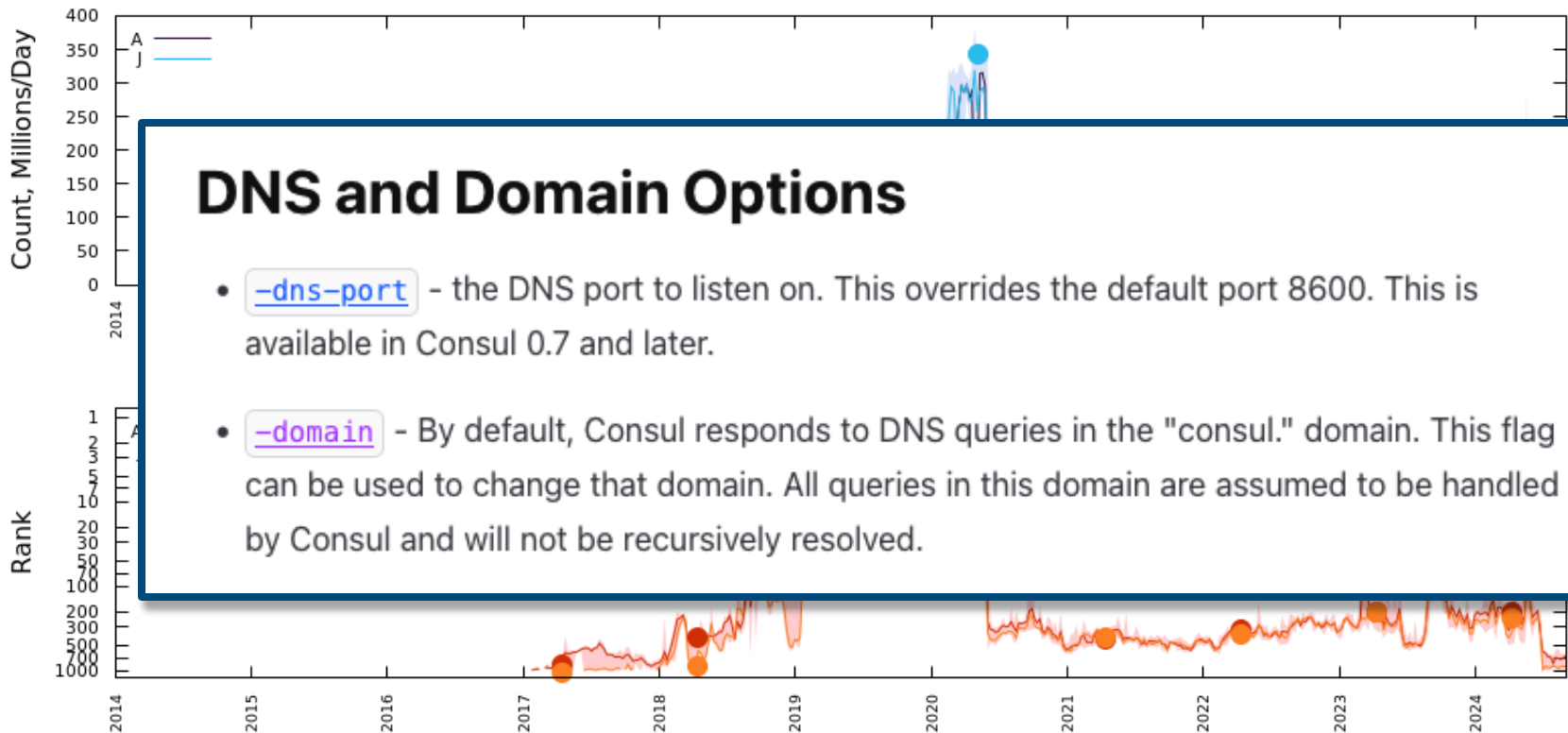
.consul

Queries to Root for consul (weekly average)



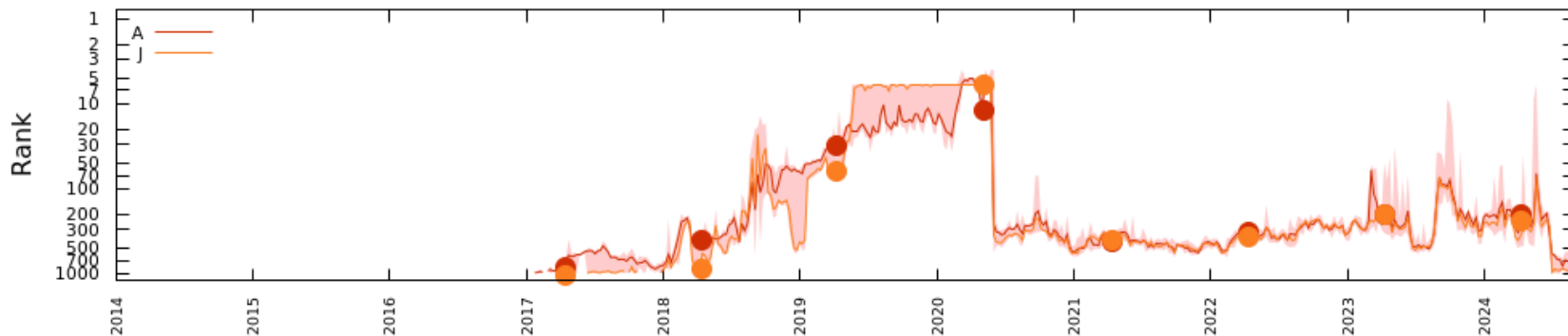
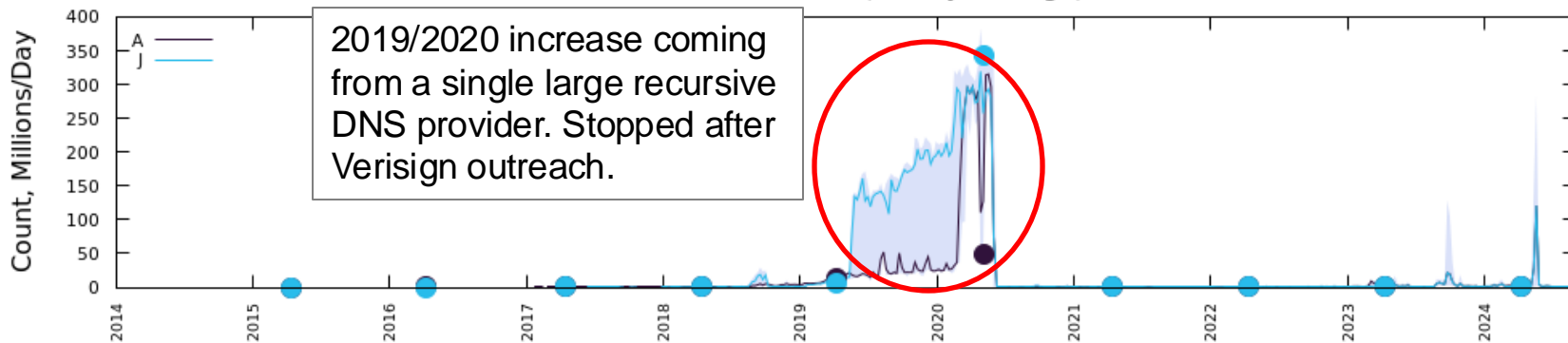
.consul

Queries to Root for consul (weekly average)



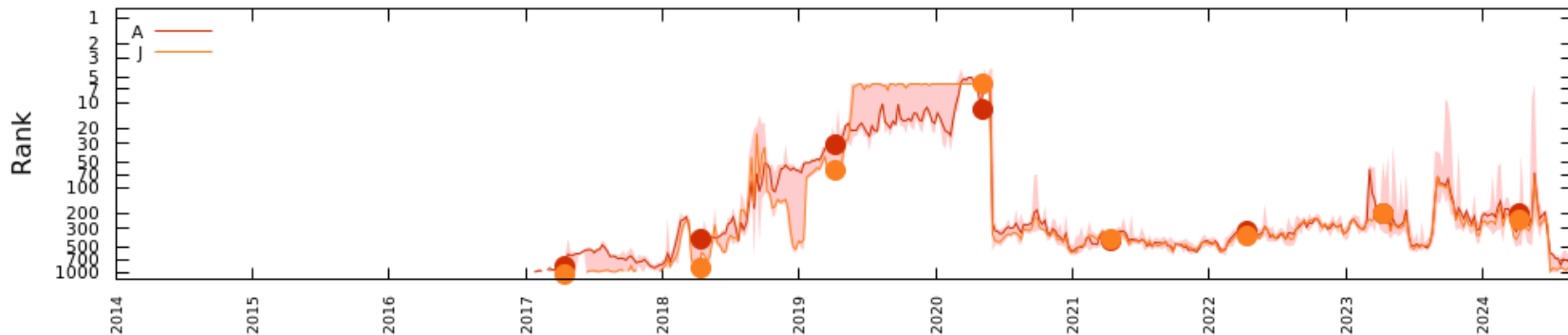
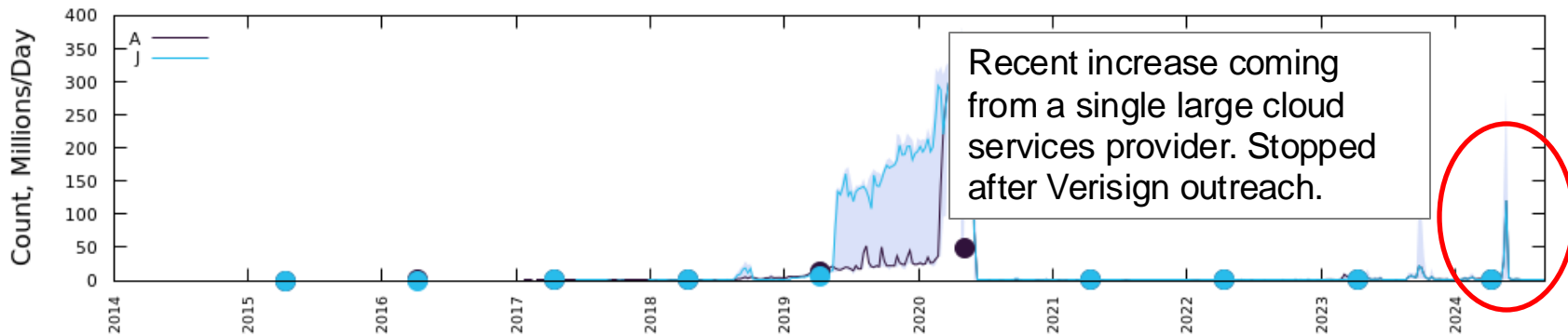
.consul

Queries to Root for consul (weekly average)



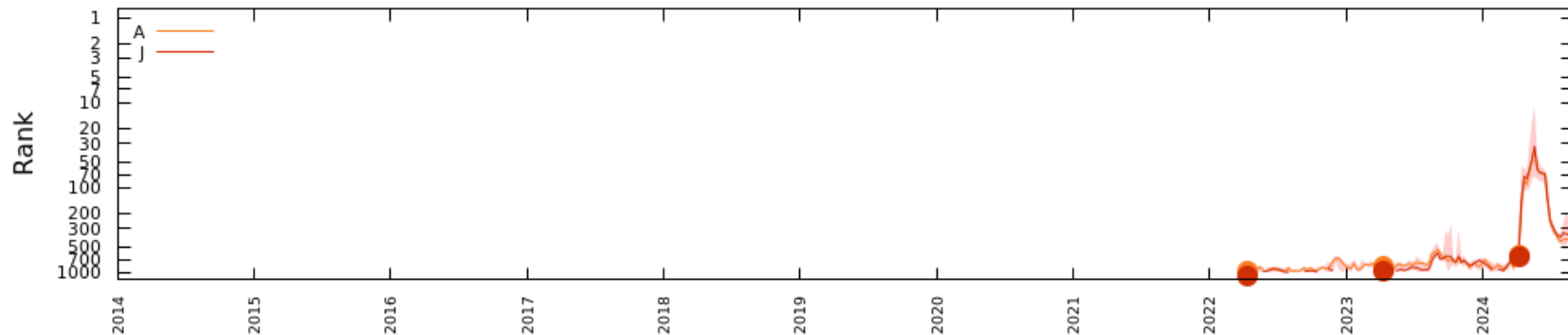
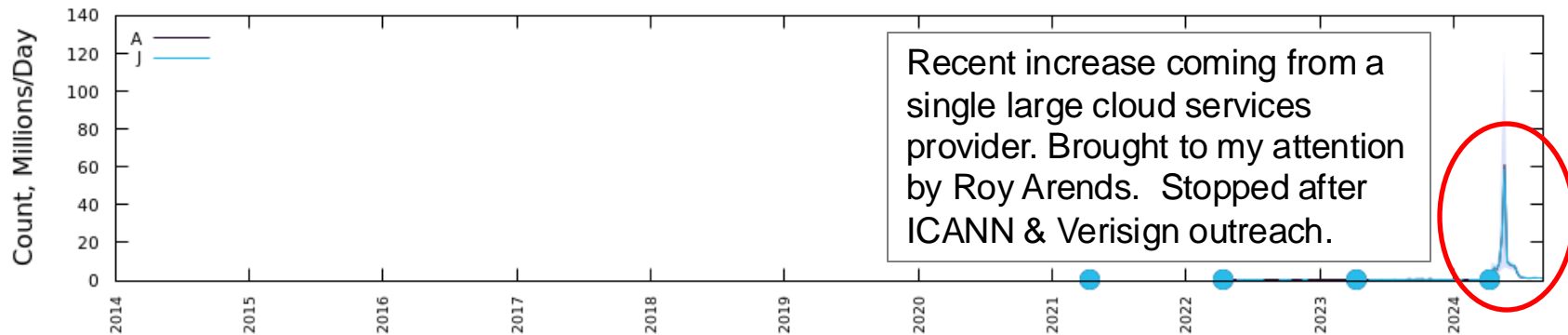
.consul

Queries to Root for consul (weekly average)



.scloud

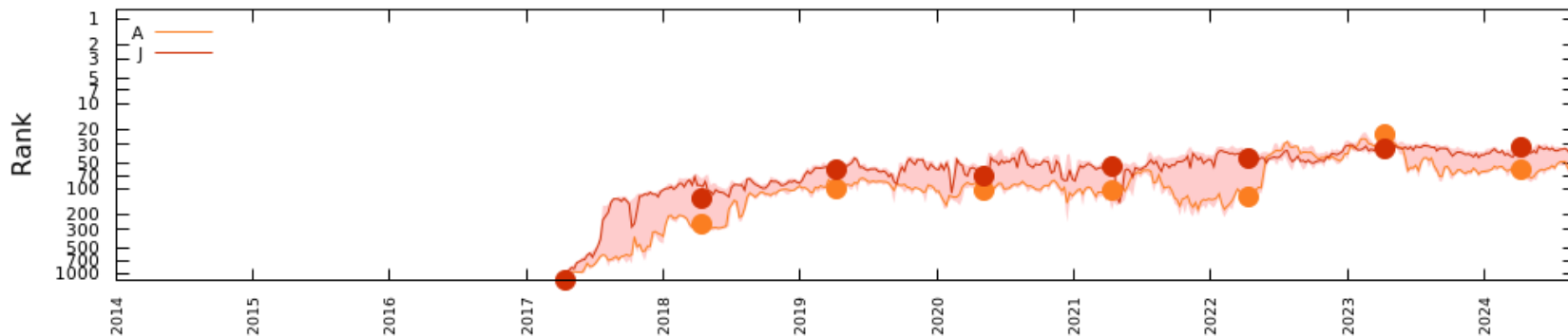
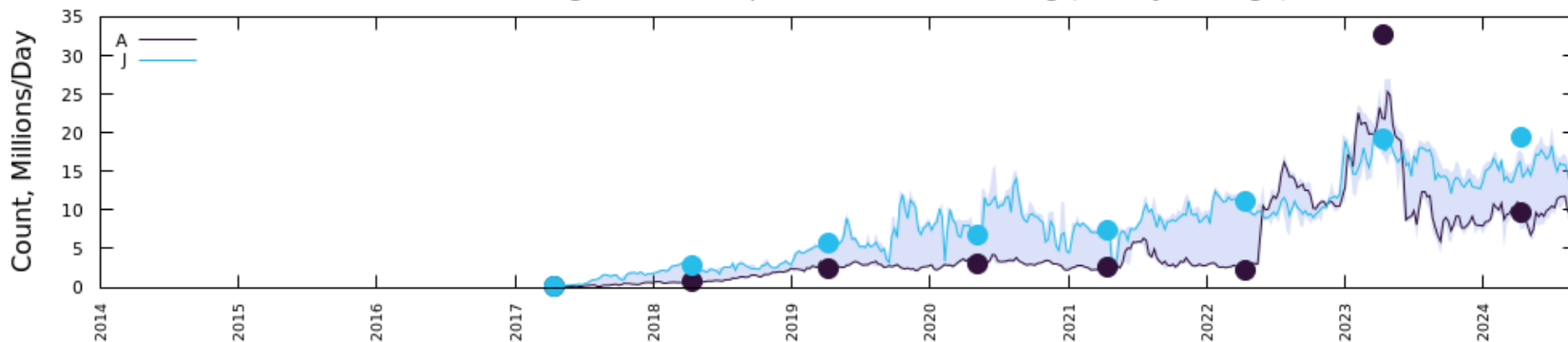
Queries to Root for scloud (weekly average)



Software Related

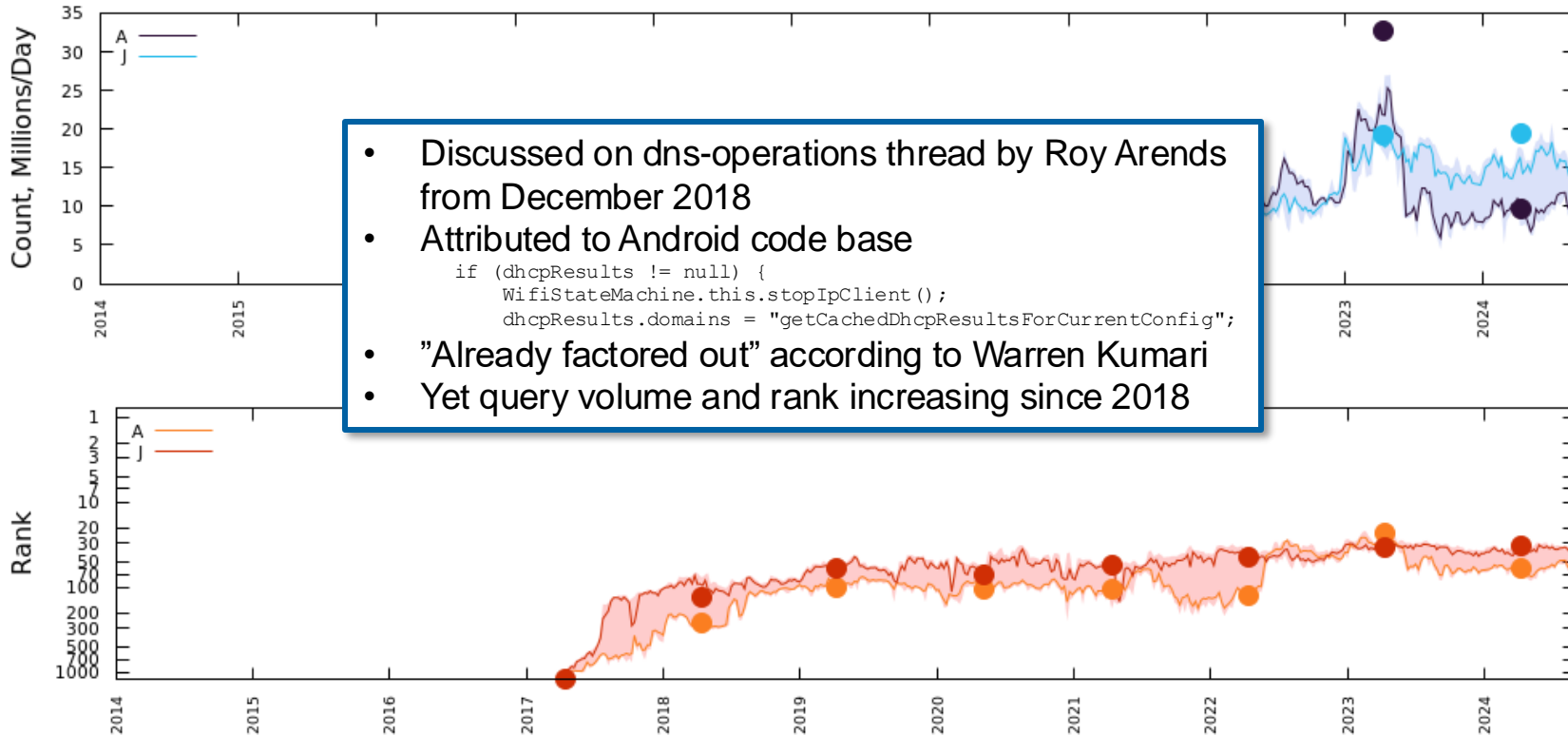
.getcacheddhcpreresultsforcurrentconfig

Queries to Root for getcacheddhcpreresultsforcurrentconfig (weekly average)



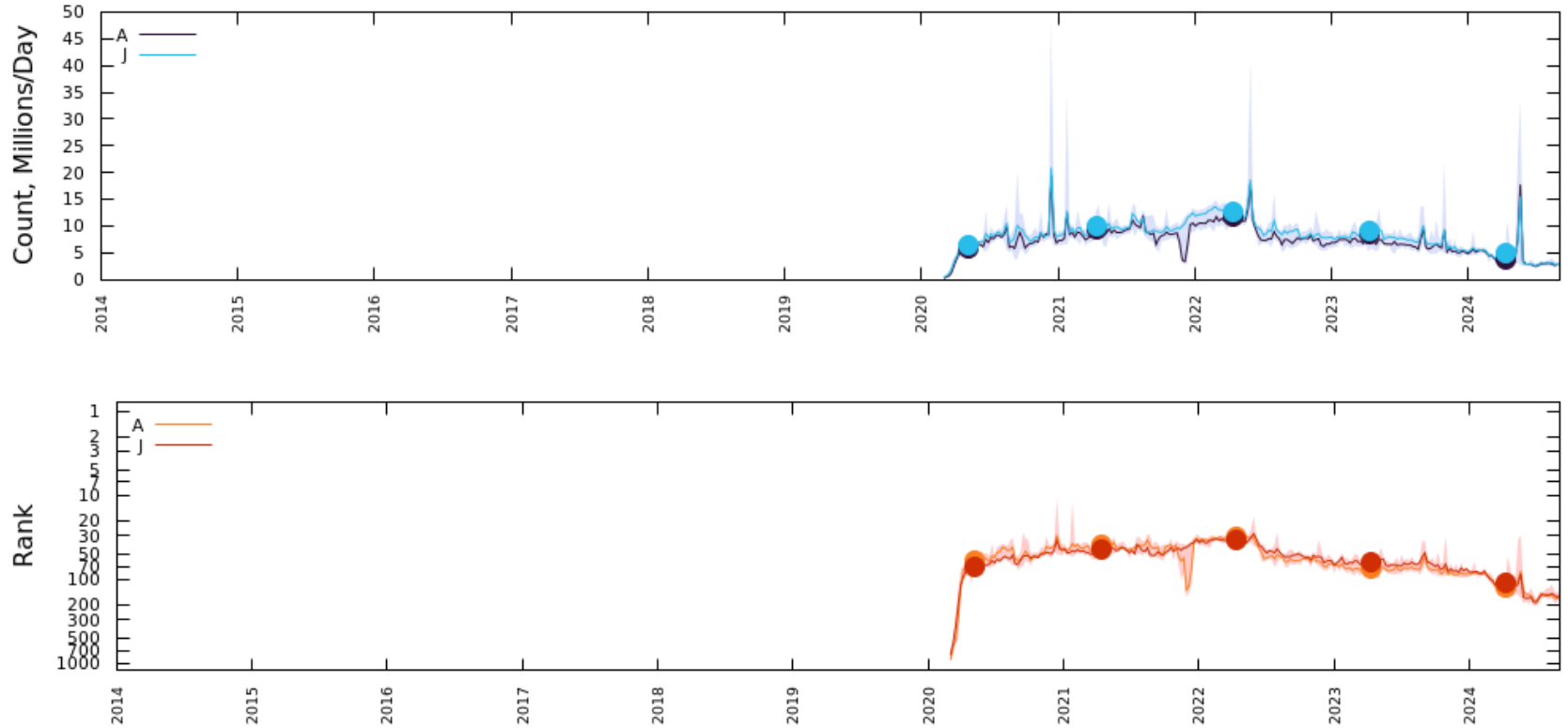
.getcacheddhcpreresultsforcurrentconfig

Queries to Root for getcacheddhcpreresultsforcurrentconfig (weekly average)



.com/sdk-exp

Queries to Root for com/sdk-exp (weekly average)



What Should Happen Instead?

- This has been a known problem for at least 20 years.*
- Why does it keep happening?
- Products that need to have a default domain should not use non-existent, non-standardized TLDs.
 - Use a name under your own namespace instead!
 - Or, don't emit queries using default / example values – force users to change the defaults.
- Would the community be receptive to an RFC providing guidance for product default domain names?

* “Wow, That’s a Lot of Packets,” Passive and Active Measurement Workshop (PAM), April 2003



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