Counting MAC in IPv6

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EUI-64 derived addresses

EUI-64:

‘extended unique identifier’ ™ –an IEEE ™ TM ™

- Encompasses the EUI-48 space we all know and love
- Registry of 24 bit unique vendor prefixes, no substructure implied: they’re just unique labels
- Also known as OUI
- YOUR ACTUAL “MAC” ADDRESS
  - Remember ARP? Remember DECnet?

EUI-64 into IPv6

1. Take MAC address eg: 39:A7:94:07:CB:D0
2. Divide in half

   39:A7:94

   07:CB:D0
3. Insert the magic 0xff:fe into the address

   39:A7:94

   FF:FE 07:CB:D0
4. Set bit 7 to 1: 39 (00111001) -> 3B (00111011)

We can reverse this..

Take an IPv6 Address with FF:FE in it

Unset bit 7 of the low /64

Re-derive the EUI-64/MAC address

Look it up in the IEEE™ registry of Vendors

Count instances

What do we find?

Collect 24h DNS queries on servers for ip6.arpa ranges… and look at the data

The IPv6 Vendor Beauty Pageant

Two sub-classes

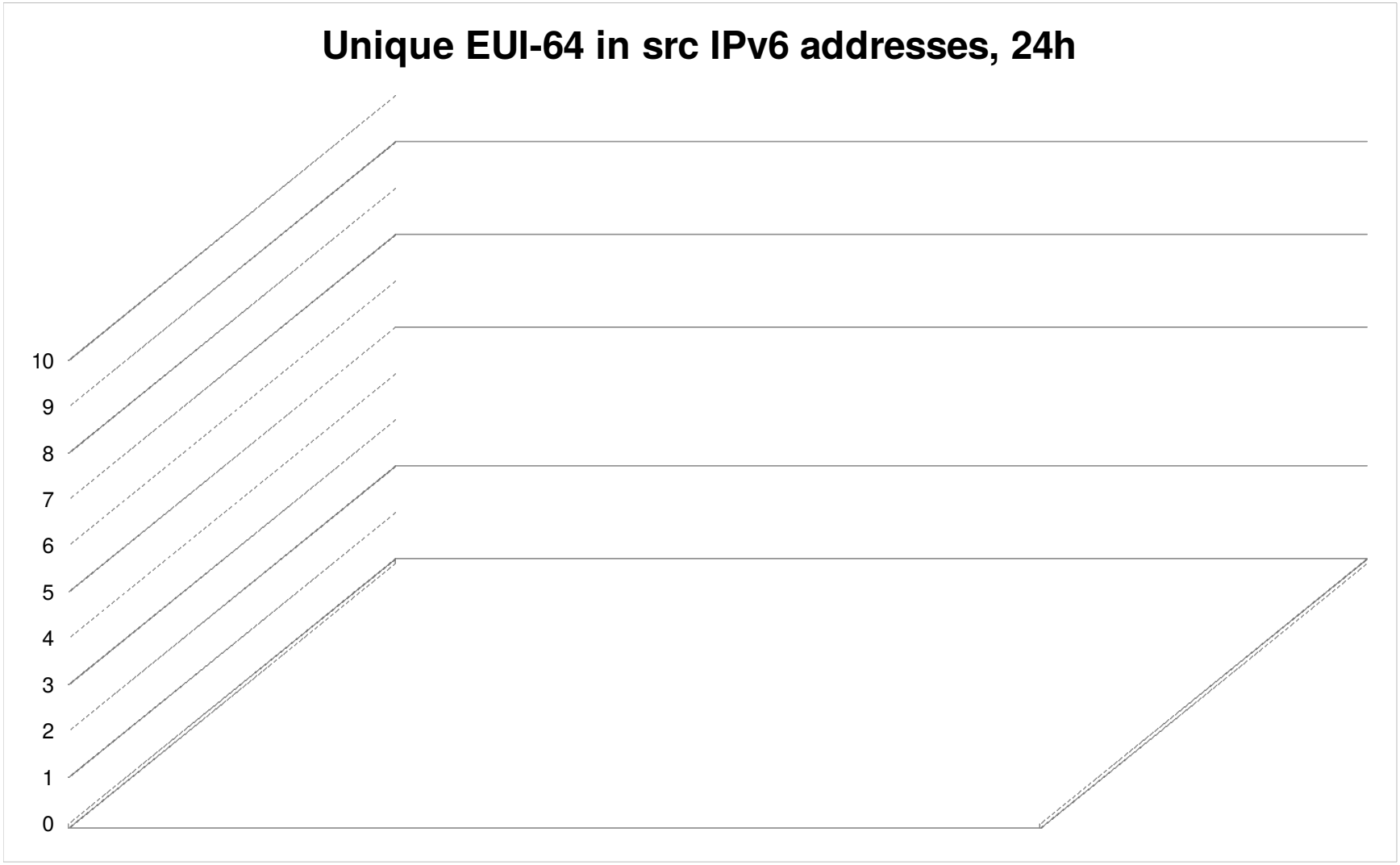
What Vendors are used to source DNS queries?

What Vendors MAC addresses appear in ff:fe structured IPv6 address plans, as the IPv6 src of a DNS query.

What vendors are targets of PTR queries?

What vendors MAC addresses appear in ff:fe structured IPv6 address plans, as the

Query sources.



No Surprises

Lots of infrastructure still runs Sun, IBM

But more runs HP, Dell or virtualized.

Dell, HP own-brand their equipment

Intel spans the vendor-set, greybox to rackables

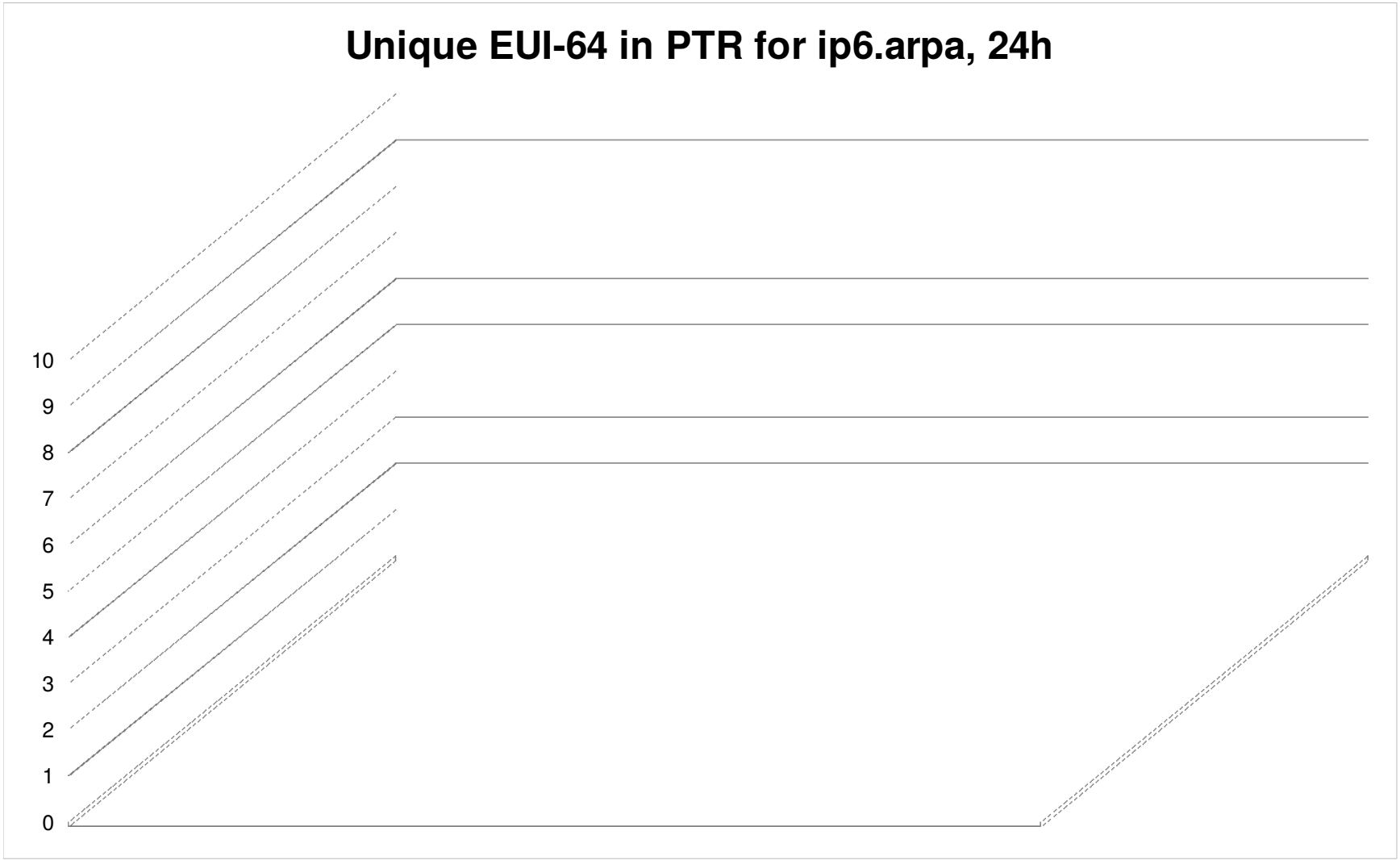
Less Cisco/Linksys than I expected

- 10 seen, all Linksys

Cisco have 445 prefixes in the IEEE registry

Is Xensource and VMWare on blade chassis?

PTR ip6.arpa targets



No.. Wait a minute.

Yes. Its APPLE.

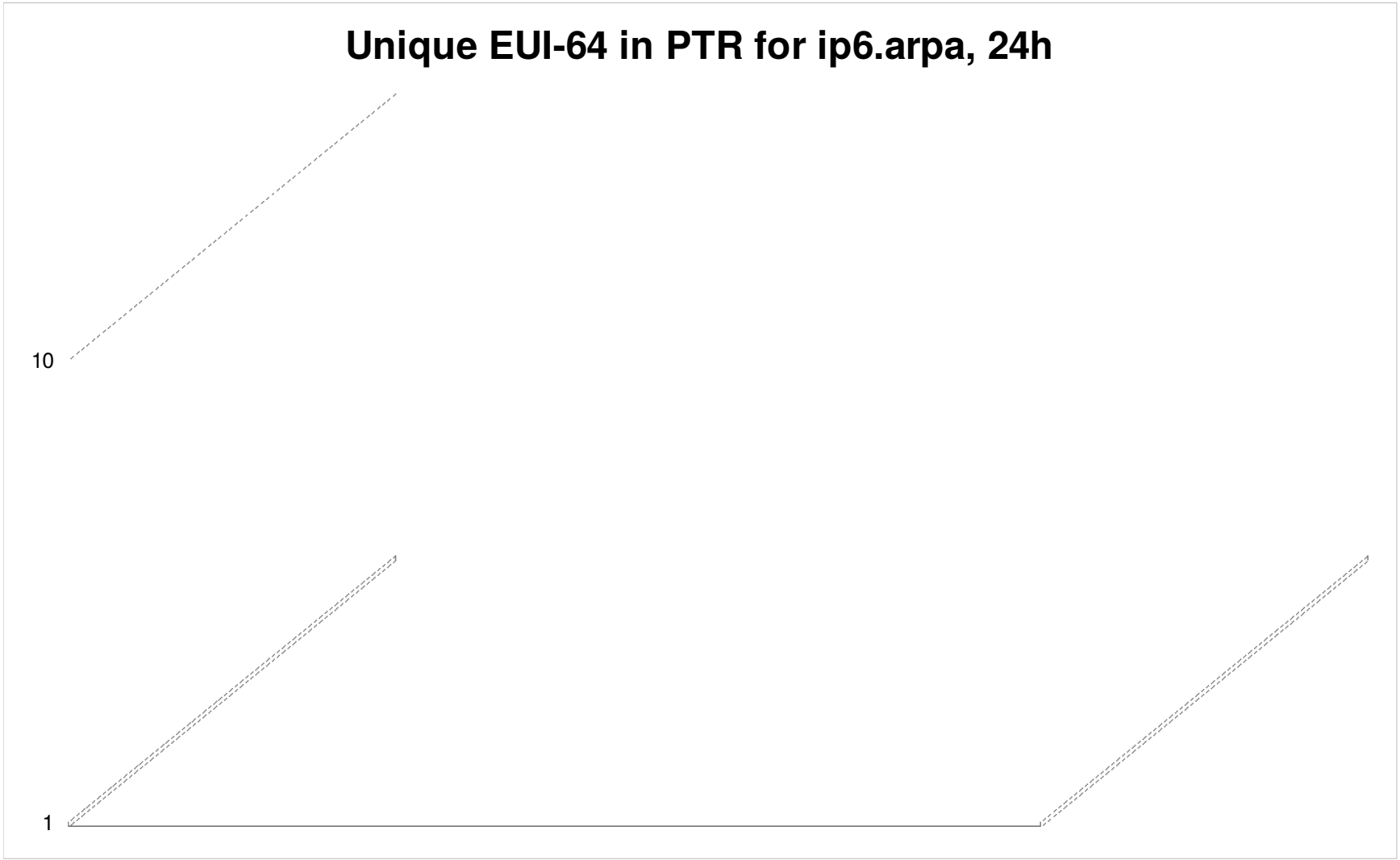
Its apple all the way.

Maybe this is an artifact of somebody abusing the structured IPv6 number space in some way

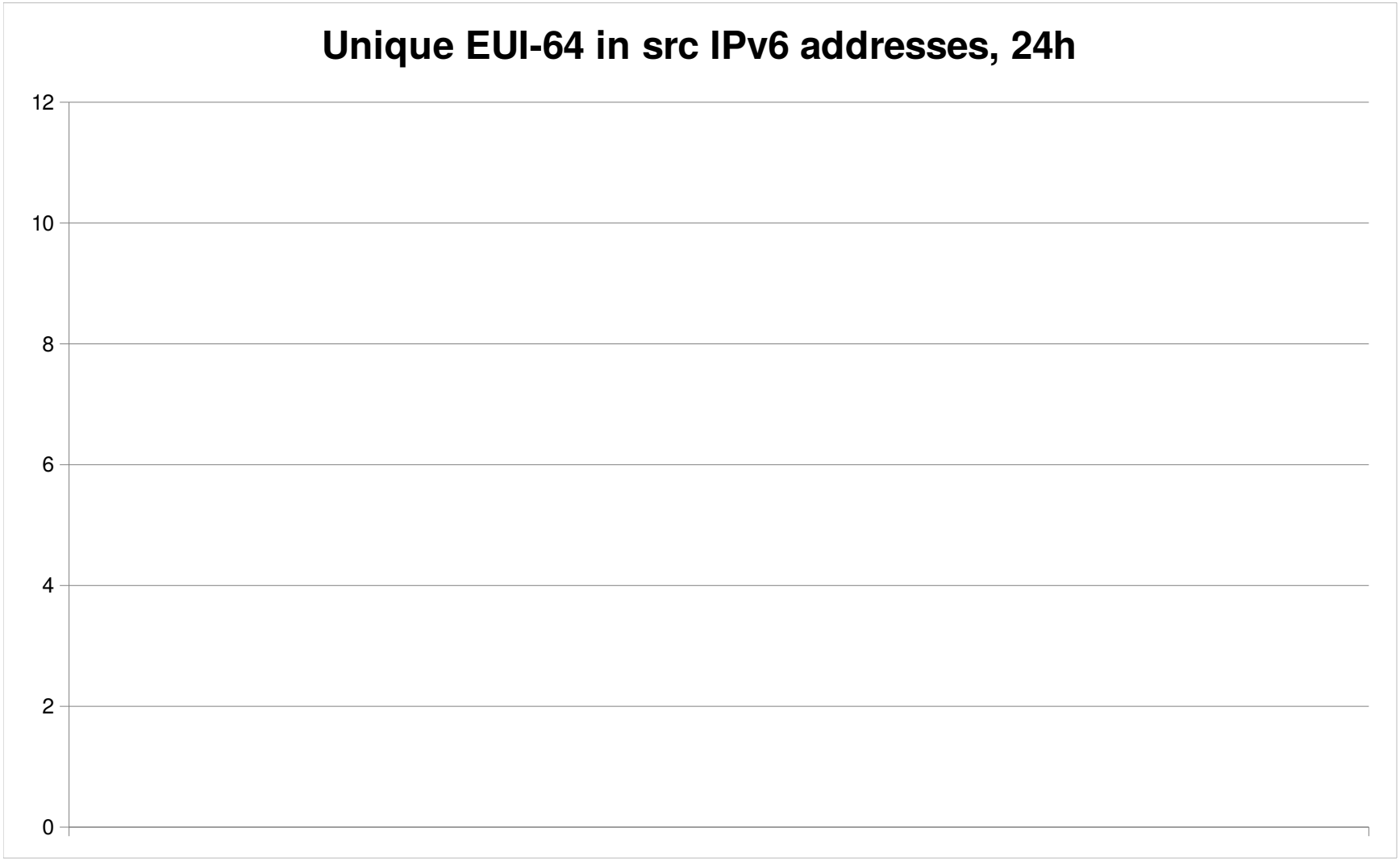
Or, maybe Apple are just really popular with people who wind up running IPv6?

Hint: Apple have 47 entries in the IEEE registry. And, they use their core Apple

Once more in slomo (log scale)



2002 (6to4) sources..



conclusions

Don’t draw any conclusions from this, it’s a beauty pageant.

Its not who you buy your MAC address from, its how easy it is to use it in IPv6 which counts

The numbers went further into the white box vendor space

196 vendor codes seen.

But I’m going to keep monitoring it.

Update: privacy addresses..

I am informed that Windows 7 has enabled privacy mode addressing by default.

```
netsh interface ipv6 set global \
   randomizeidentifiers=disabled
```

OTOH.. This does permit us to identify W7

As long as nobody else does!