



**RIPE  
NCC**

## **IPv6 in Finland - What Did We Measure?**

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- Get IPv6 address space
- Get it routed
- Get it to the end-hosts
  - Users (access networks)
  - Servers (content networks)

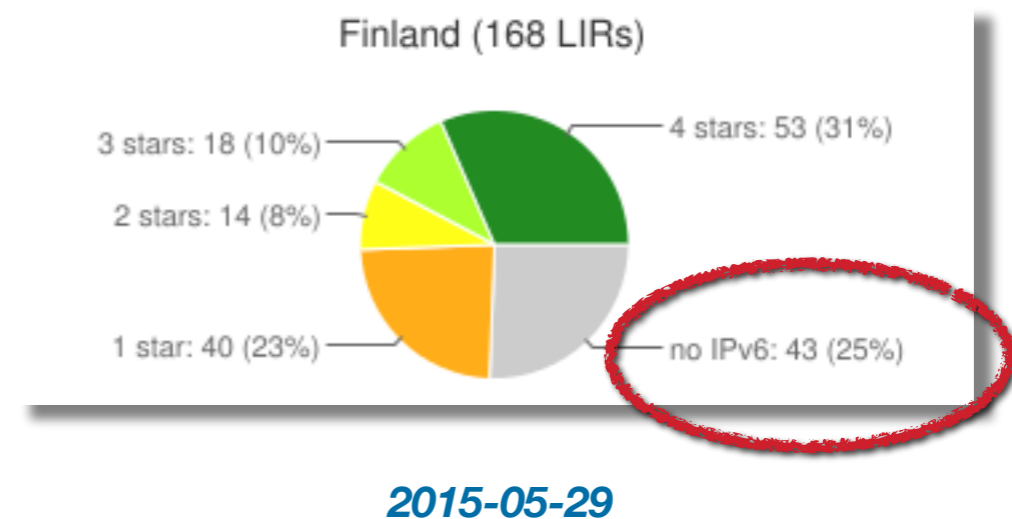
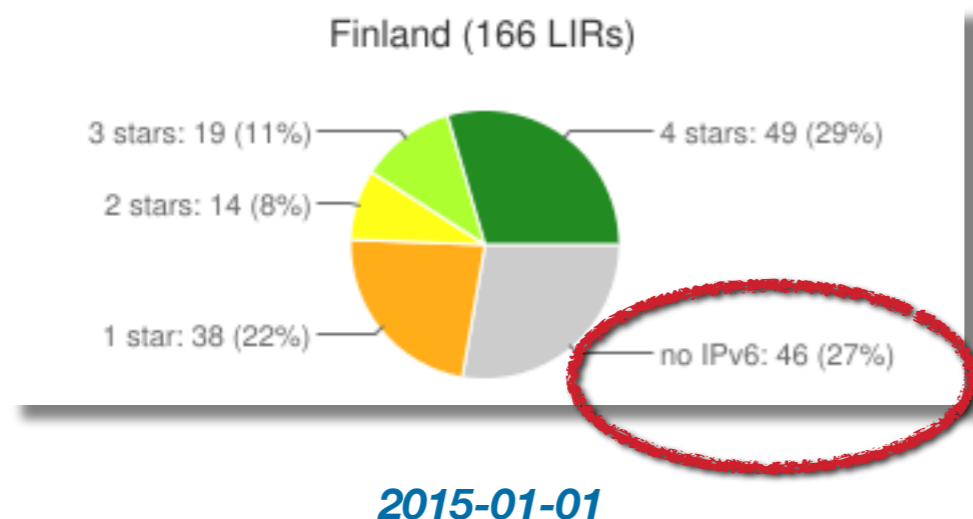


# IPv6 RIPEness

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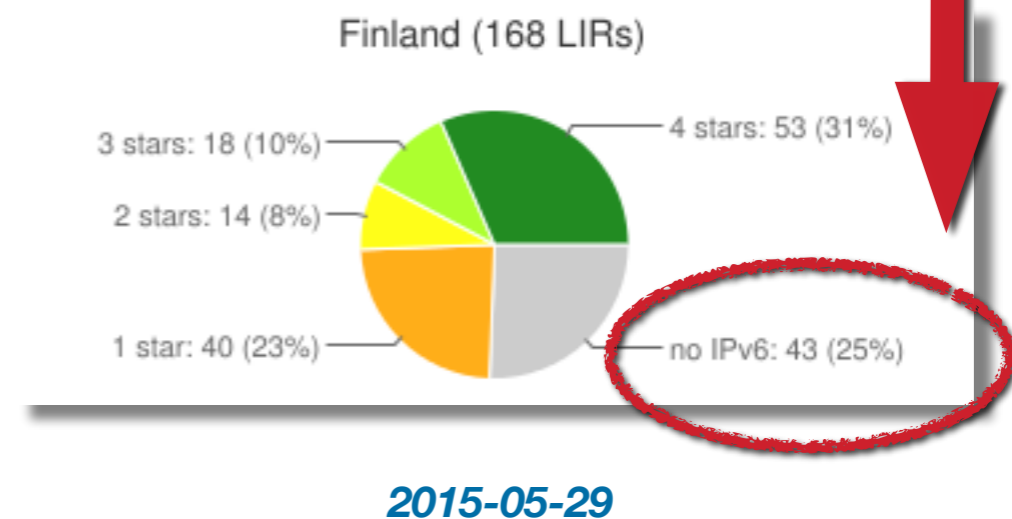
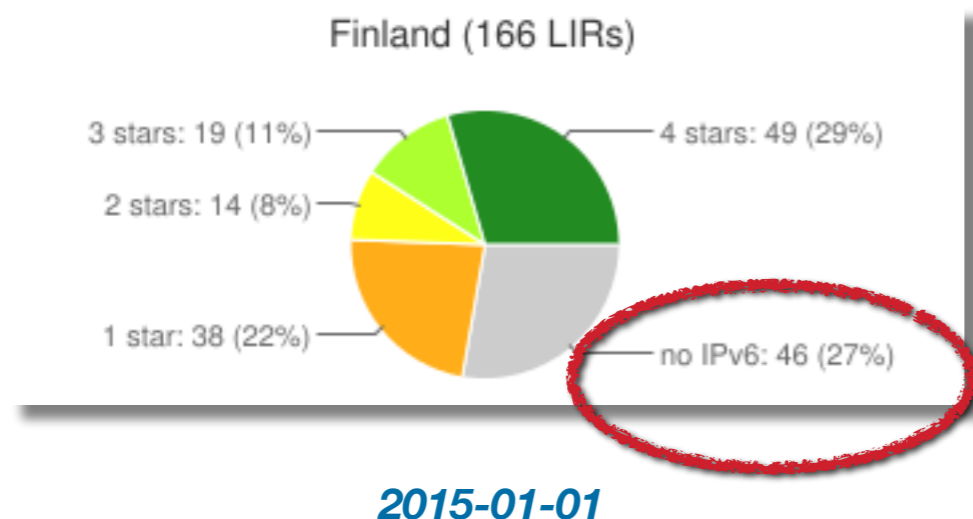


- IPv6 readiness measure, for RIPE NCC members (LIRs): <https://ipv6ripeness.ripe.net/>
- Stars for:
  - IPv6 address space
  - Routed IPv6 address space
  - Route6 object (RIPE DB)
  - Reverse DNS (RIPE DB)



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  - Route6 object (RIPE DB)
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**75% of FI LIRs with IPv6 address space**





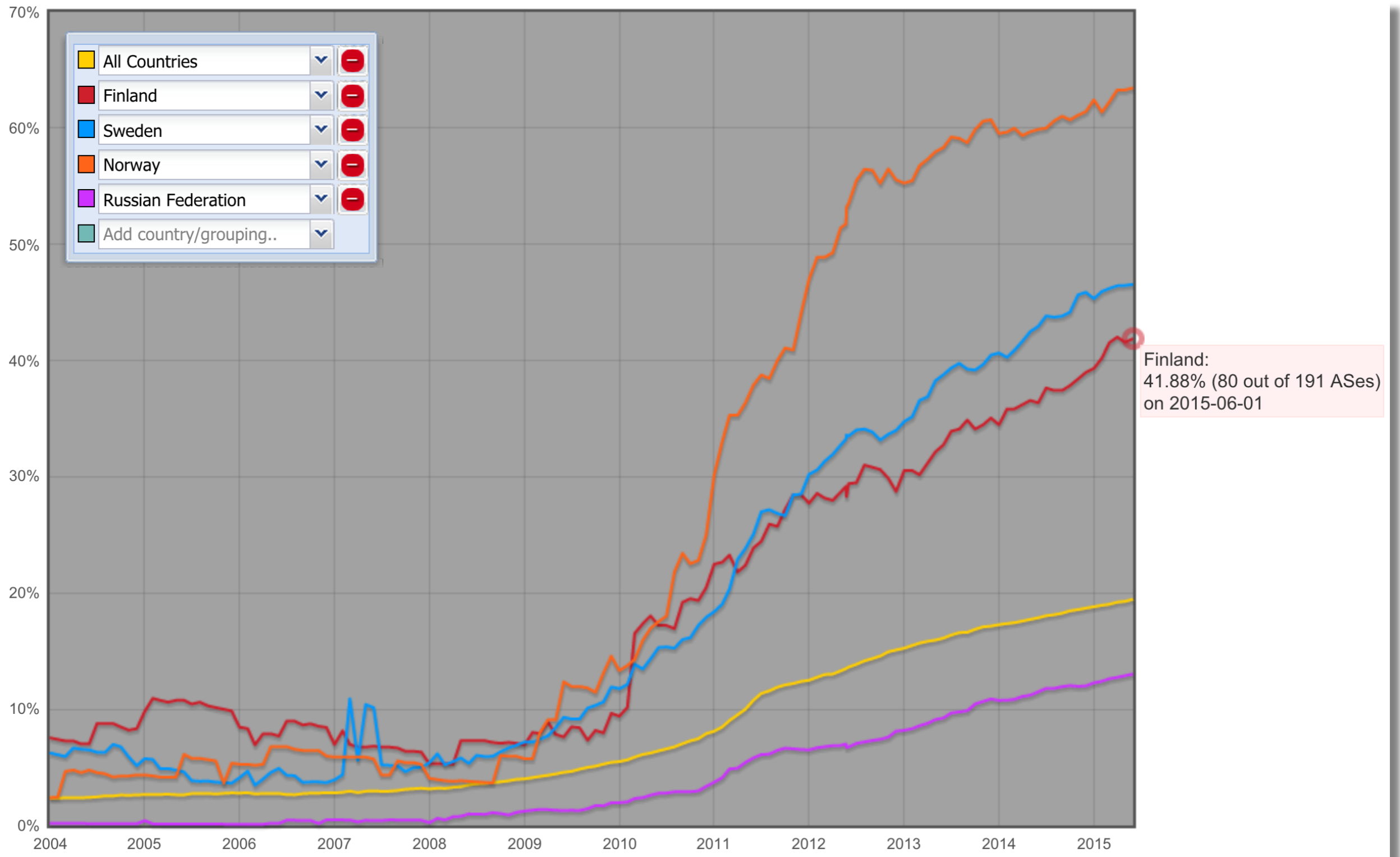
# BGP/Routing

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Latent IPv6 Capacity

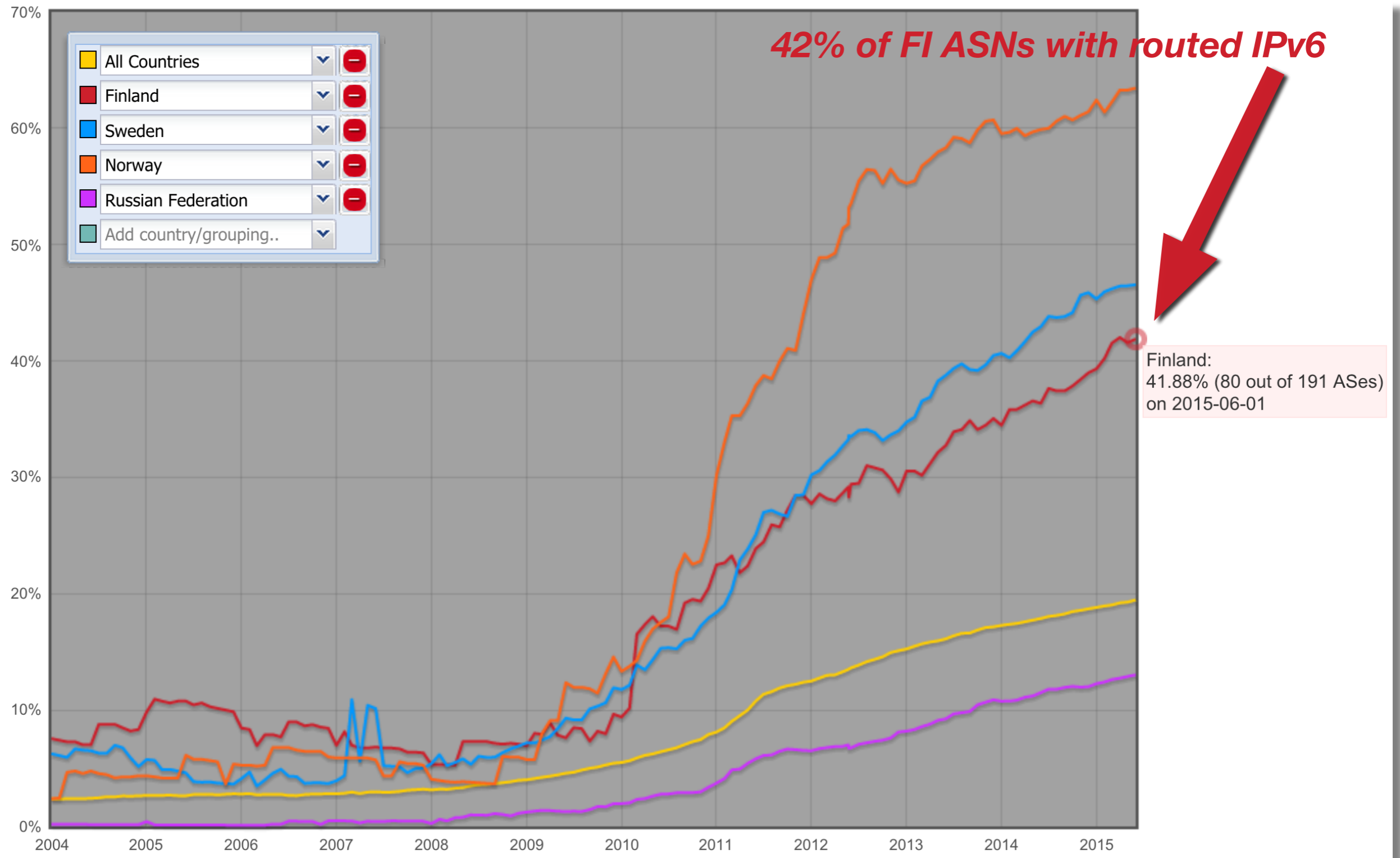


# IPv6 Capability at the ASN Level



[http://v6asns.ripe.net/v/6?s= ALL;s=SE;s=FI;s=NO;s=RU](http://v6asns.ripe.net/v/6?s=ALL;s=SE;s=FI;s=NO;s=RU)

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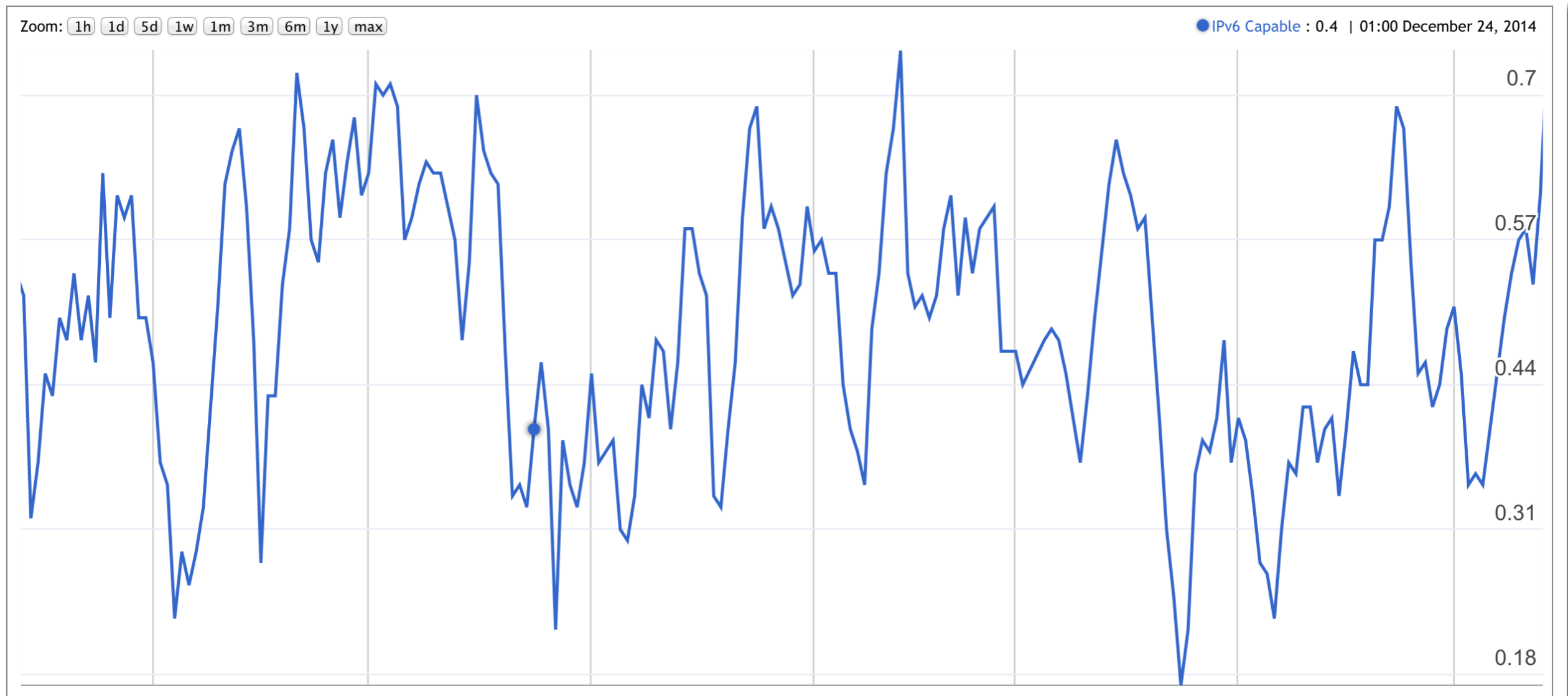


# IPv6 Eyeballs

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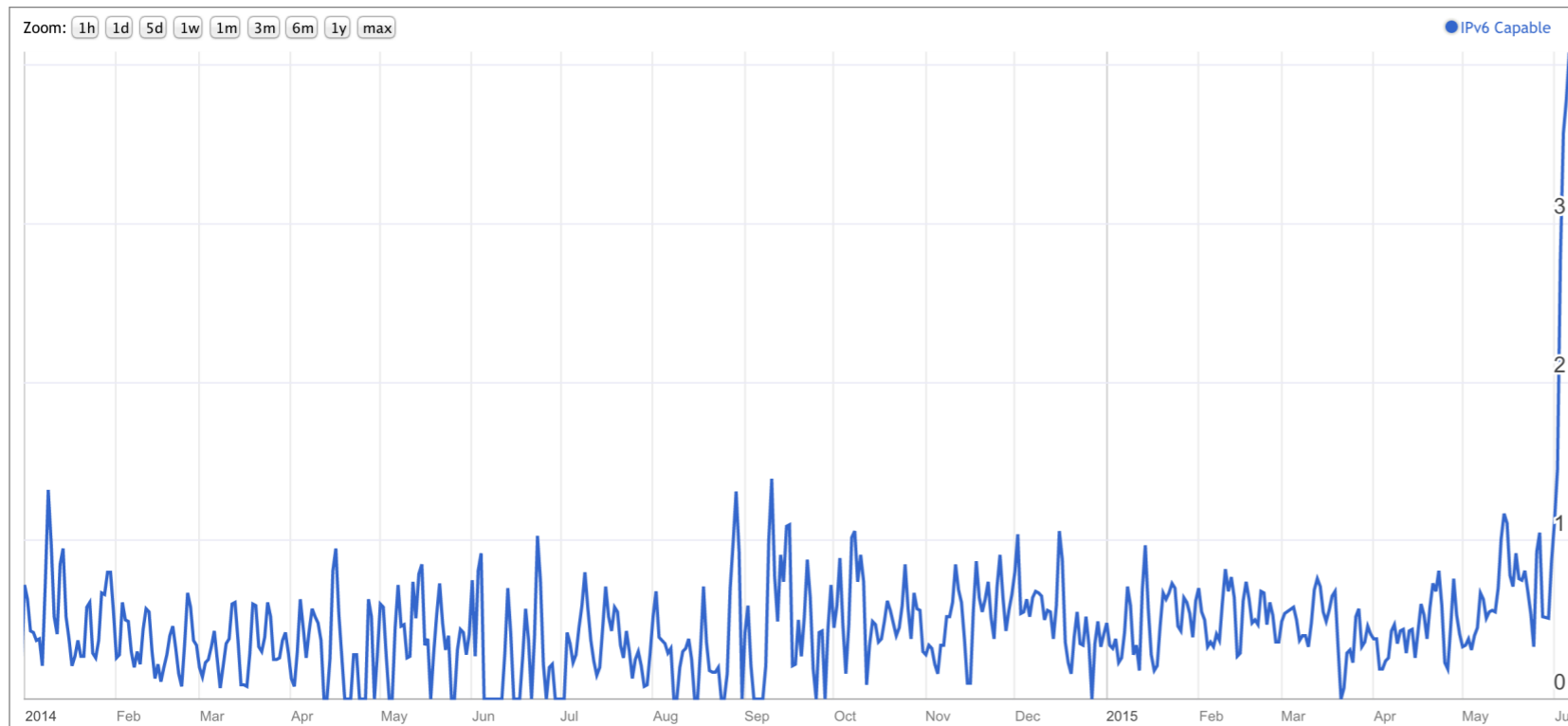
Real IPv6 Enabled End-Users





## *%IPv6 Capable Users in Finland*

Data from: <http://stats.labs.apnic.net/ipv6/FI?c=FI&x=1&p=0&r=1&w=3>

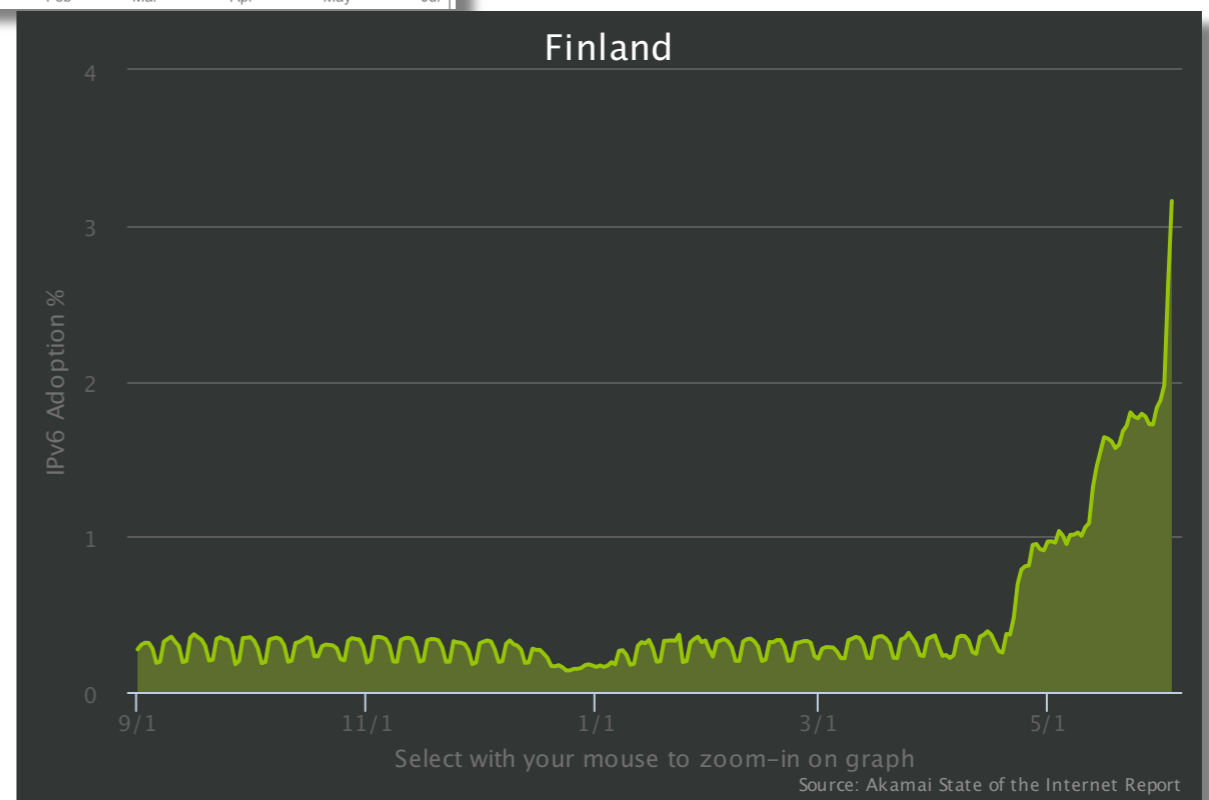


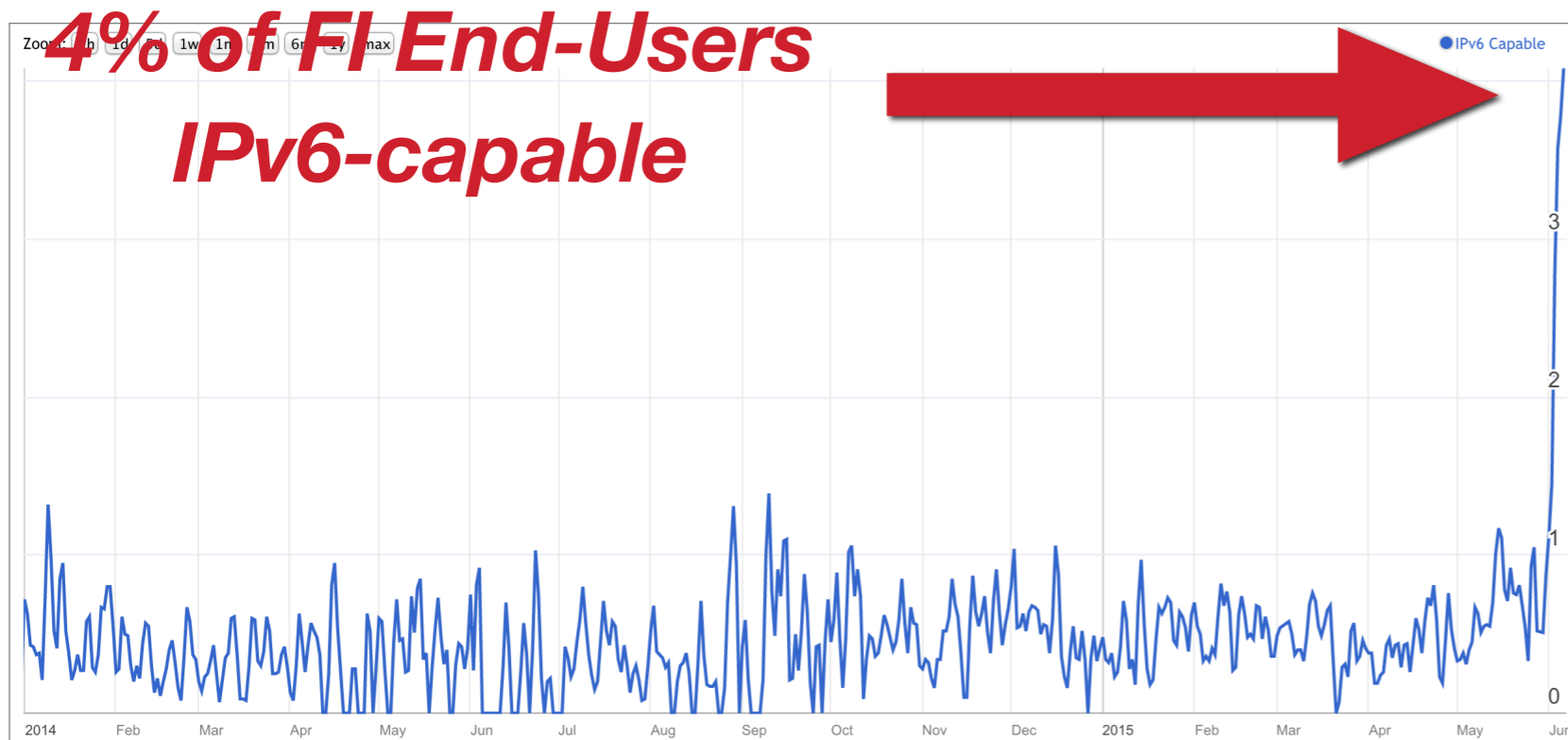
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[c=FI&x=1&p=0&r=1&w=3](http://www.stateoftheinternet.com/trends-visualizations-ipv6-adoption-ipv4-exhaustion-global-heat-map-network-country-growth-data.html#countries) and [http://](http://www.stateoftheinternet.com/trends-visualizations-ipv6-adoption-ipv4-exhaustion-global-heat-map-network-country-growth-data.html#countries)

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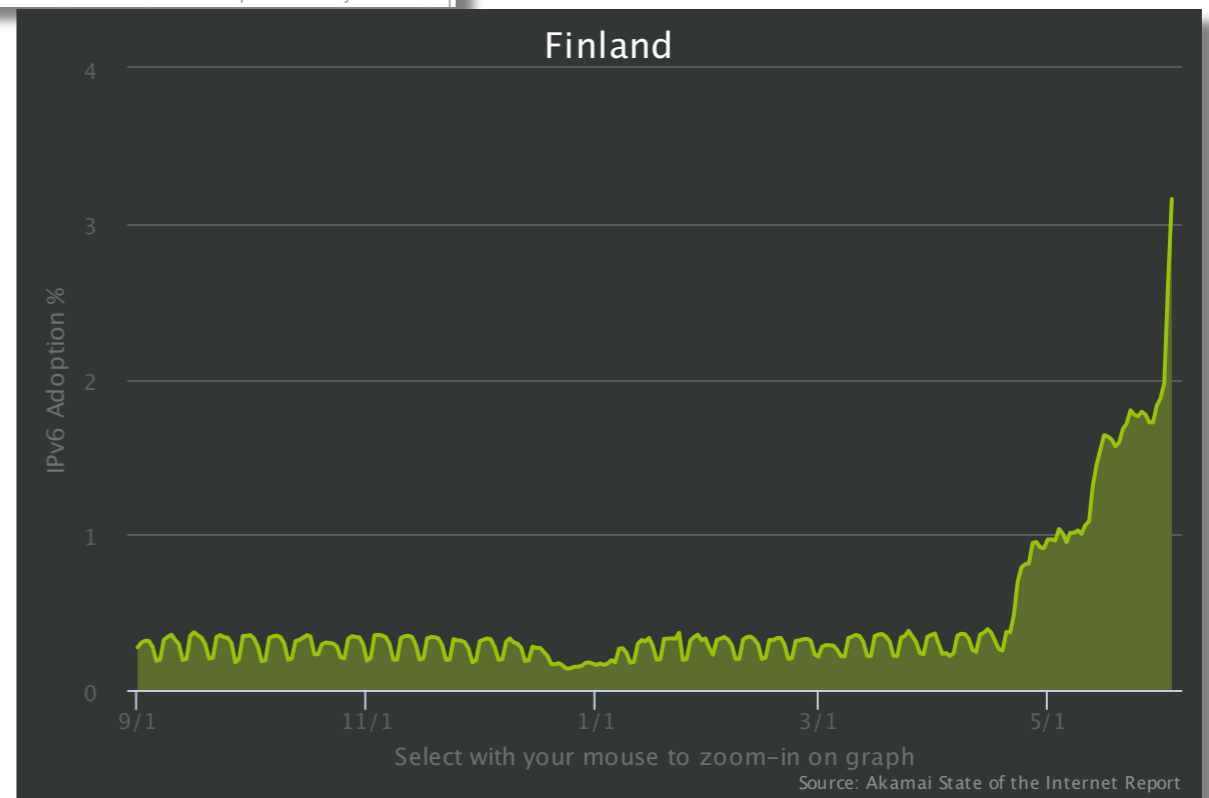


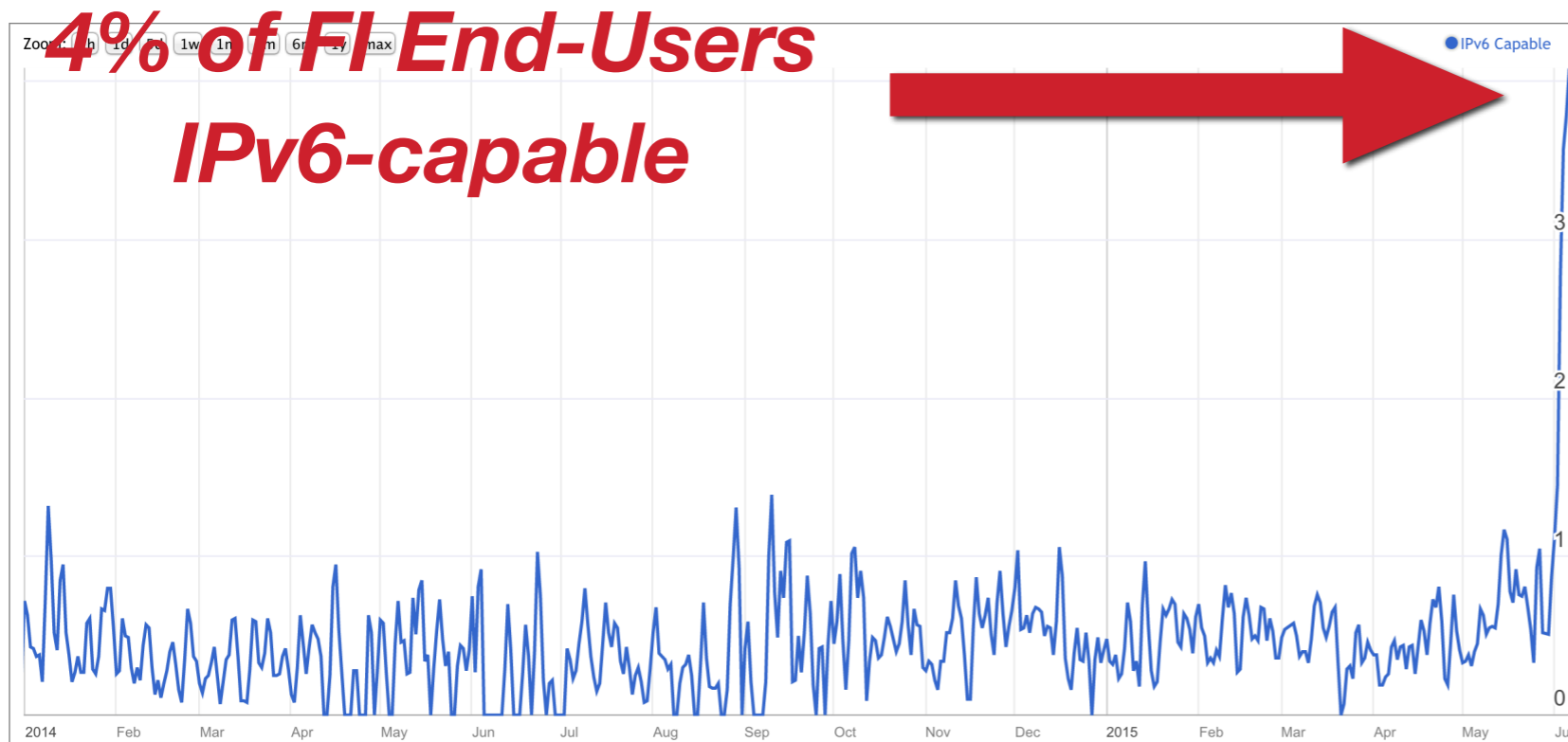
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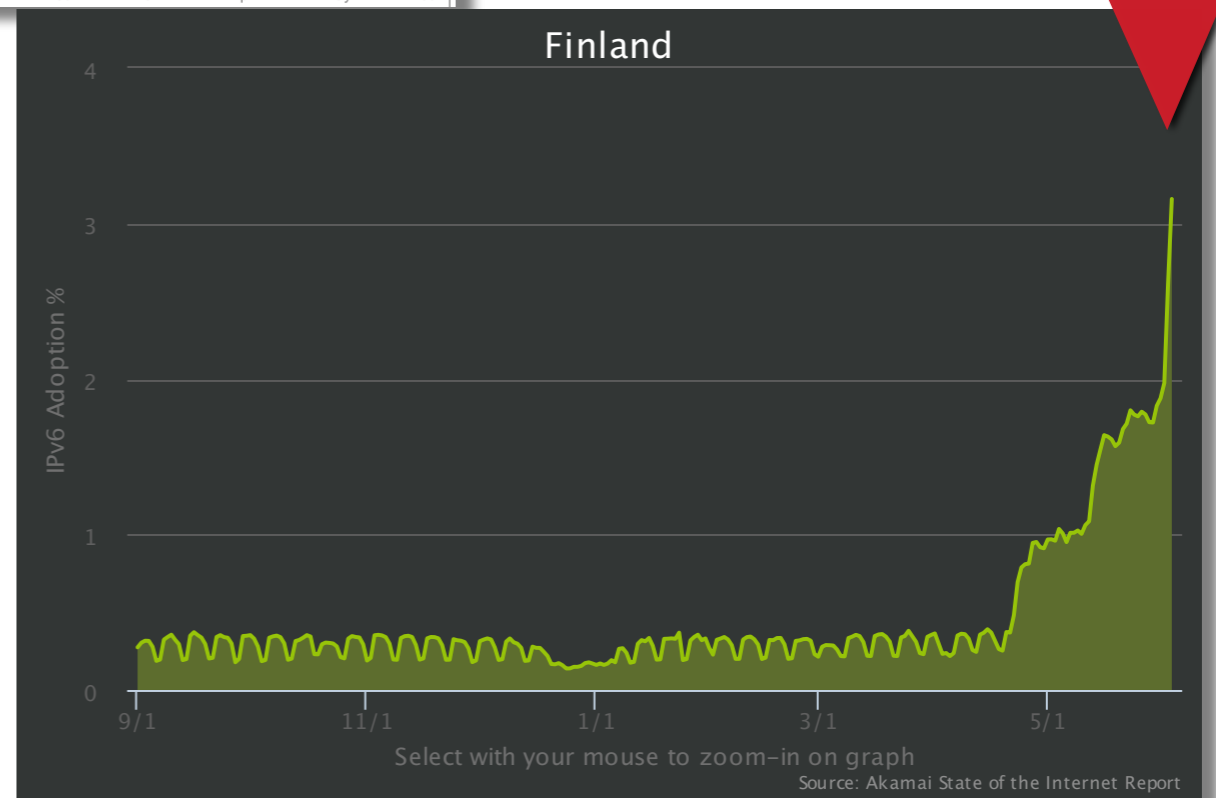
**3.2% of FI End-Users IPv6-capable**

## %IPv6 Capable Users in Finland

Data from: [http://stats.labs.apnic.net/ipv6/FI?](http://stats.labs.apnic.net/ipv6/FI?c=FI&x=1&p=0&r=1&w=3)

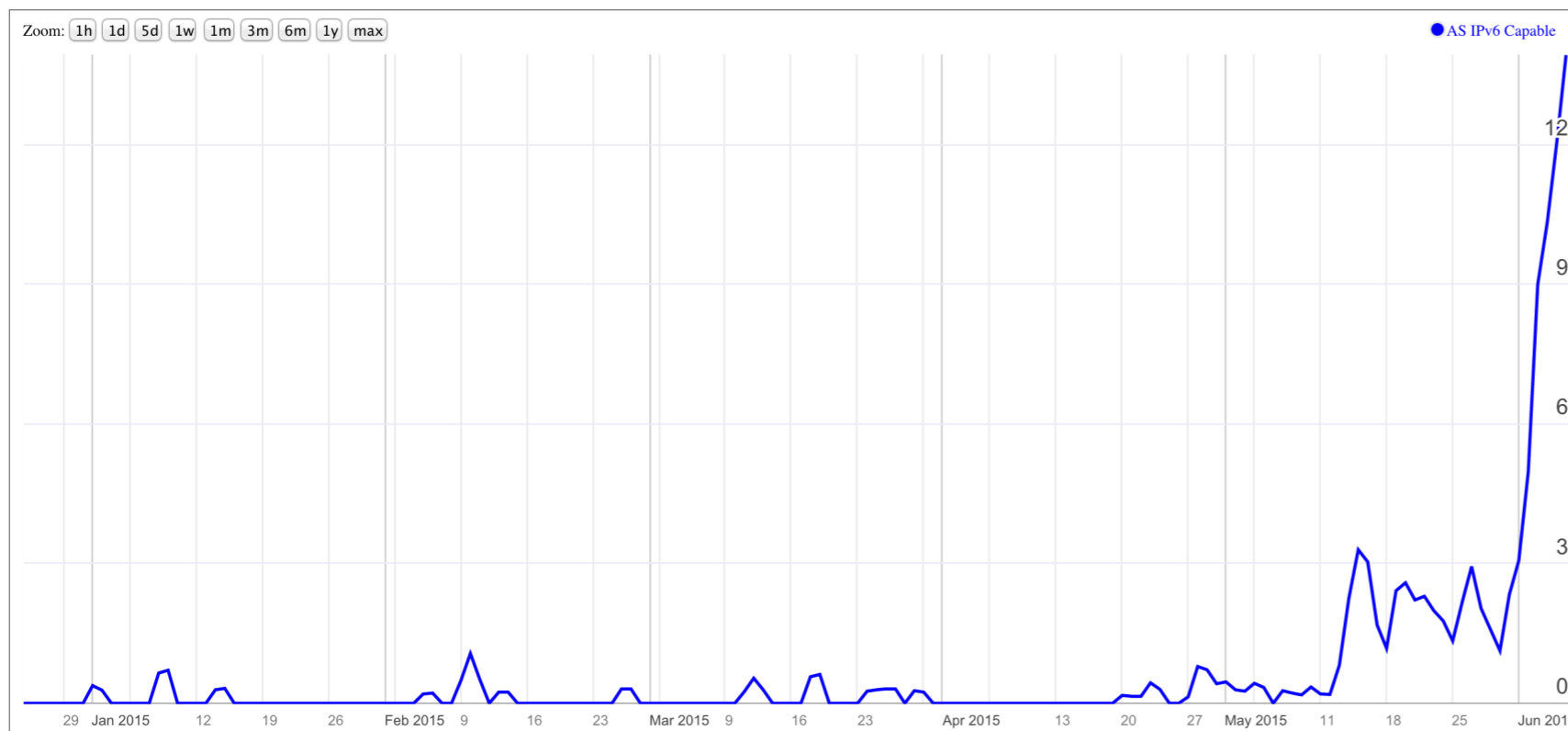
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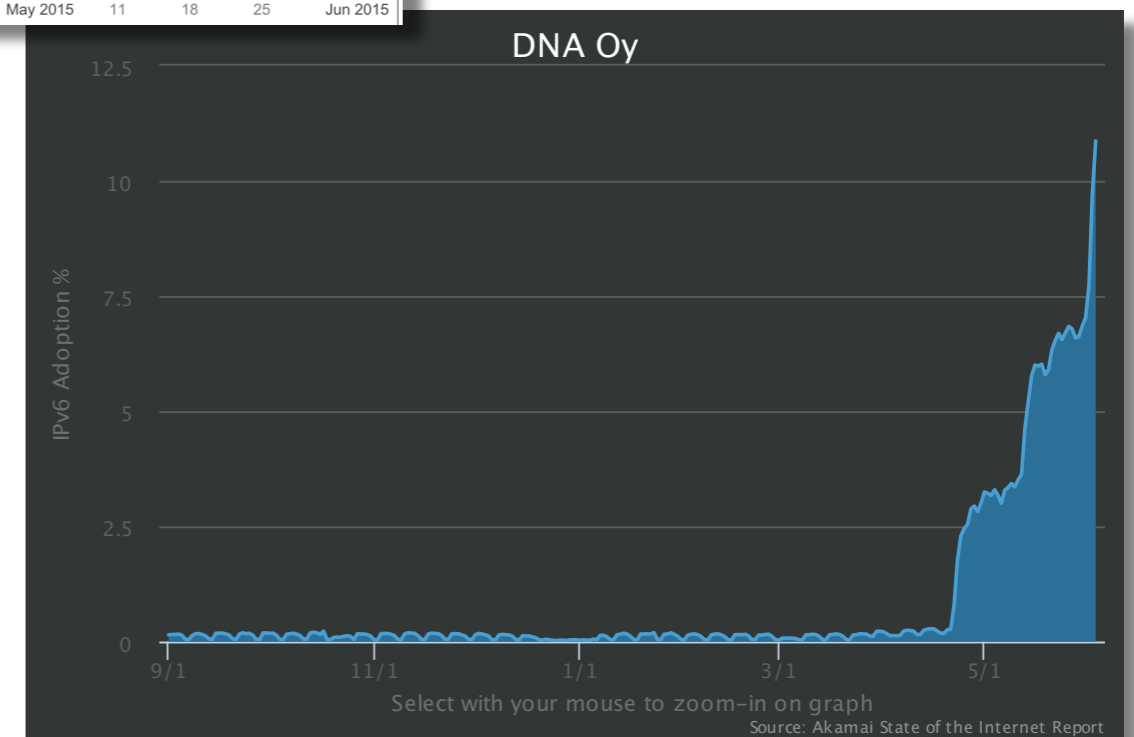


# Uptick Mostly Caused By DNA

## IPv6 Country Deployment for AS16086: DNA DNA Oy, Finland (FI)

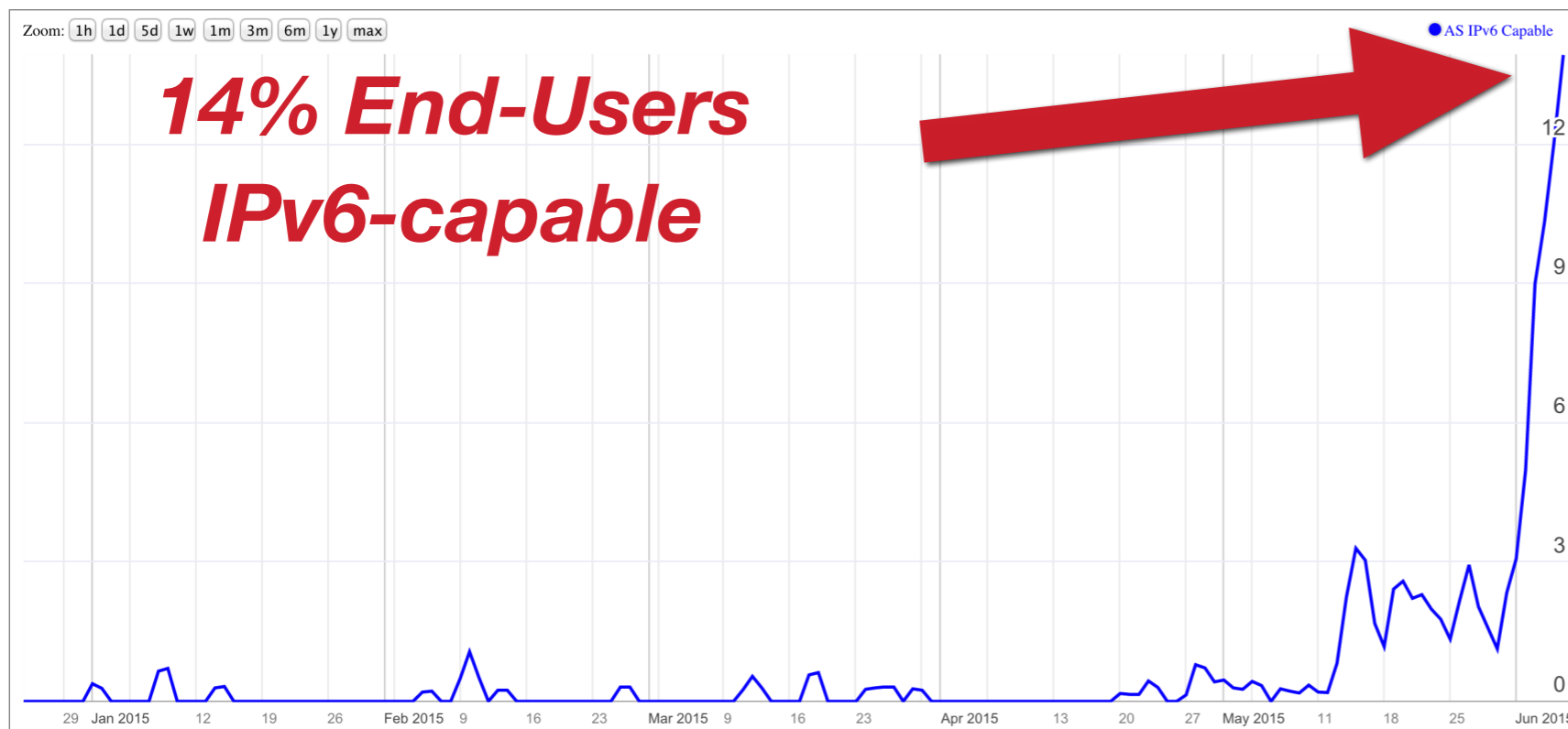


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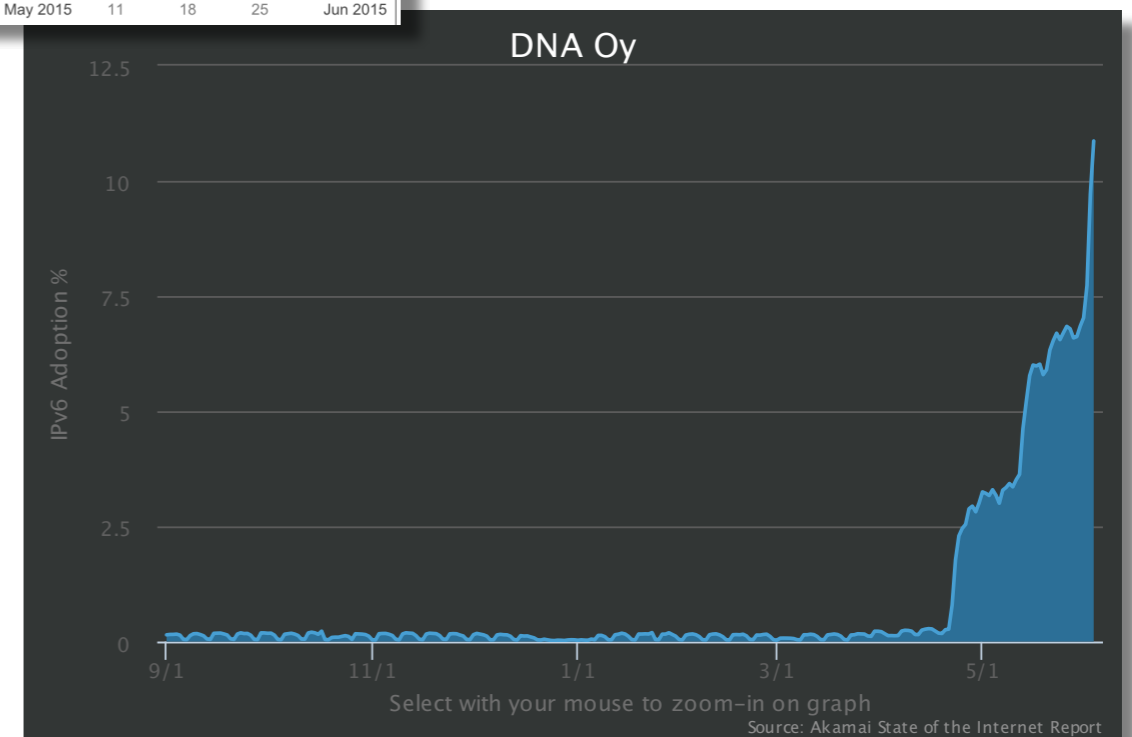


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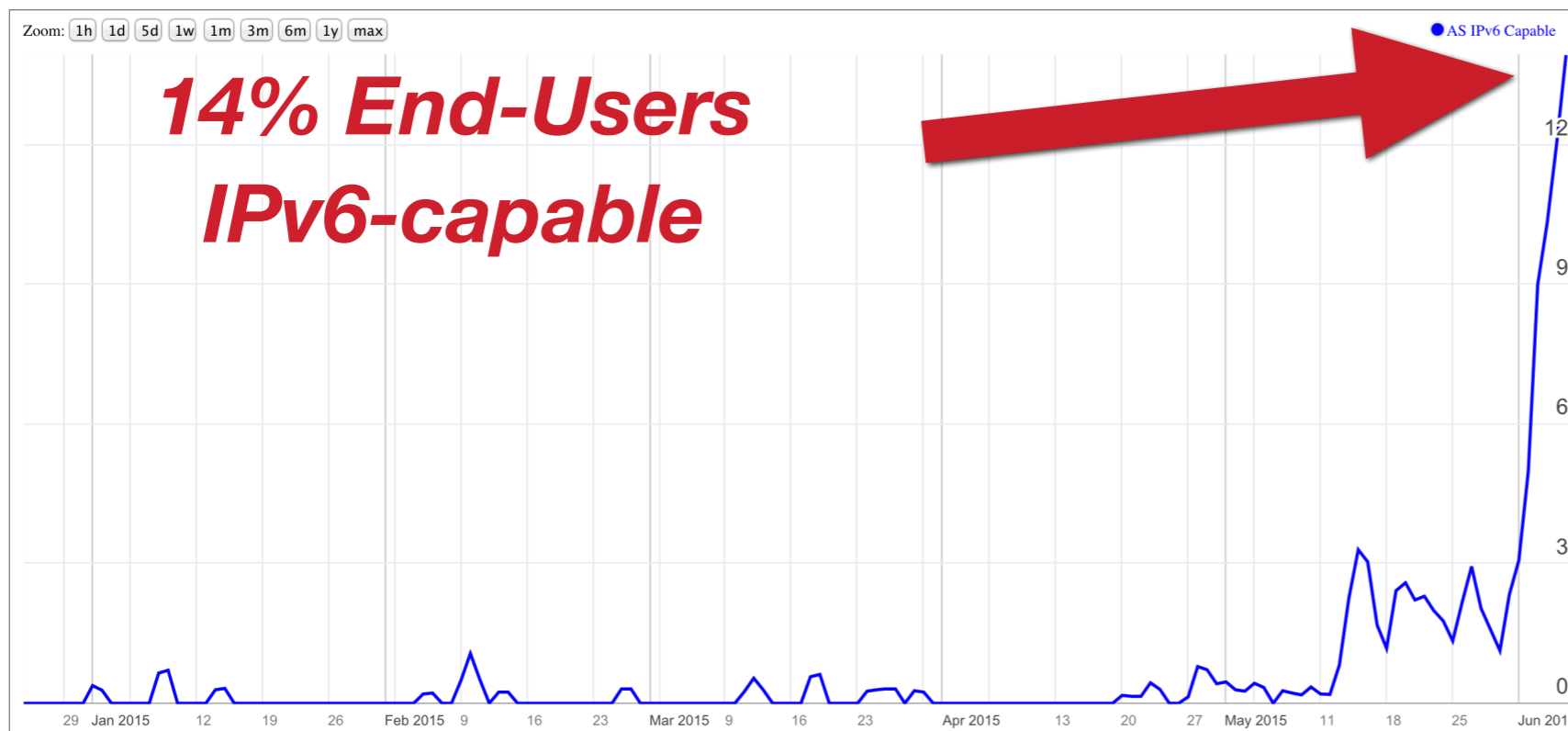


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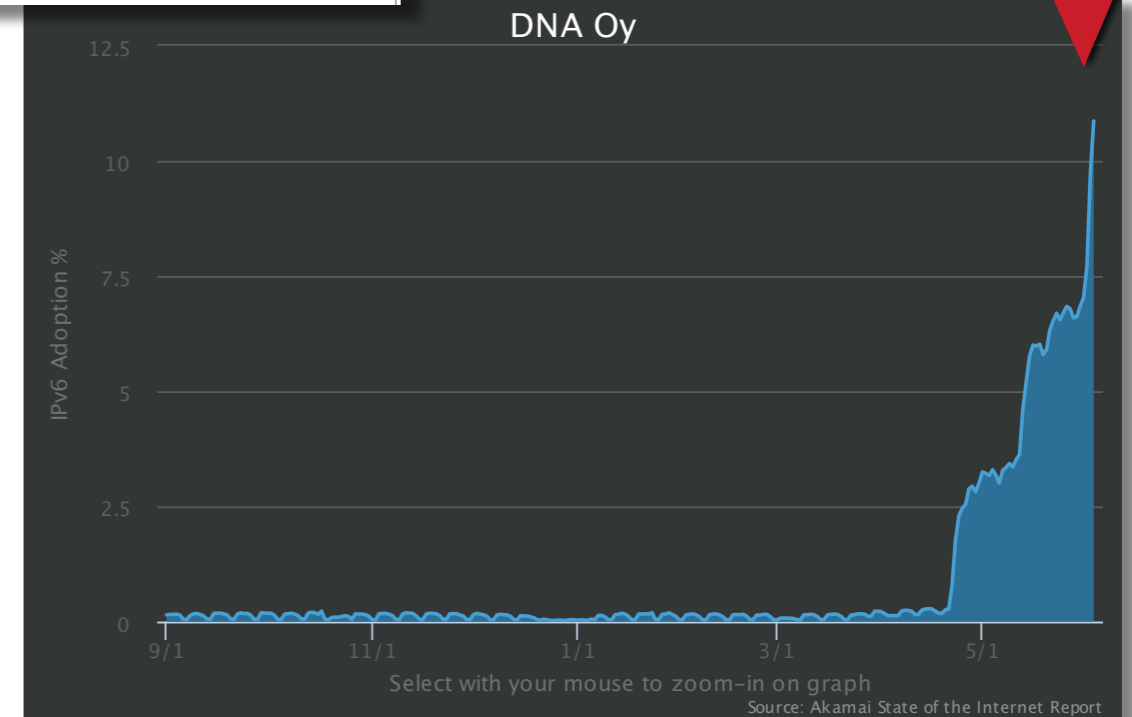
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## IPv6 Country Deployment for AS16086: DNA DNA Oy, Finland (FI)



**11% of End-Users IPv6-capable**

Data from: <http://stats.labs.apnic.net/ipv6/AS16086?a=16086&c=FI&x=0&s=0&p=0&w=2> and <http://www.stateoftheinternet.com/trends-visualizations-ipv6-adoption-ipv4-exhaustion-global-heat-map-network-country-growth-data.html#countries>





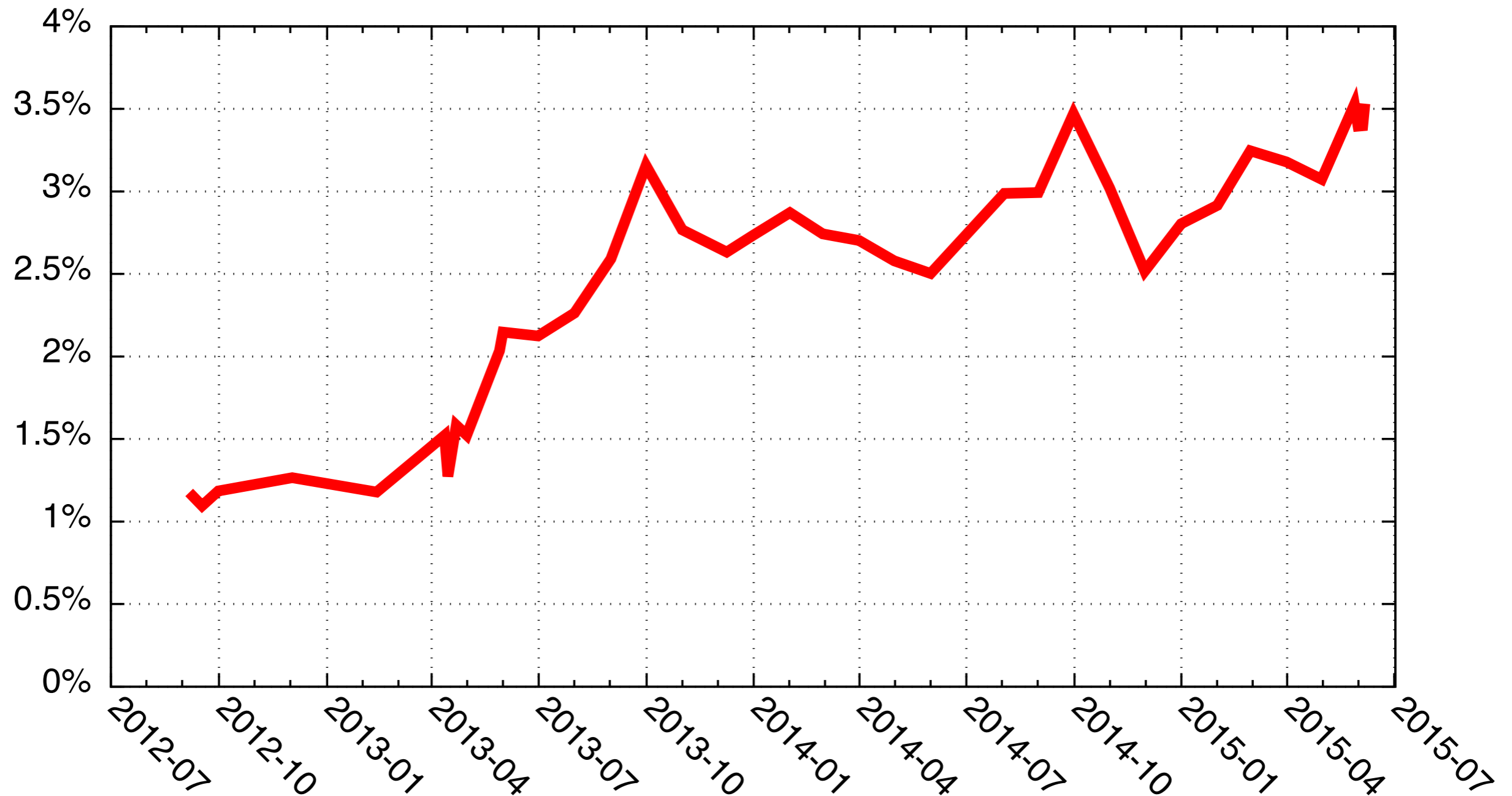


# IPv6 Content

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Percentage of IPv6 enabled websites  
Finnish LIRs in Alexa 1M



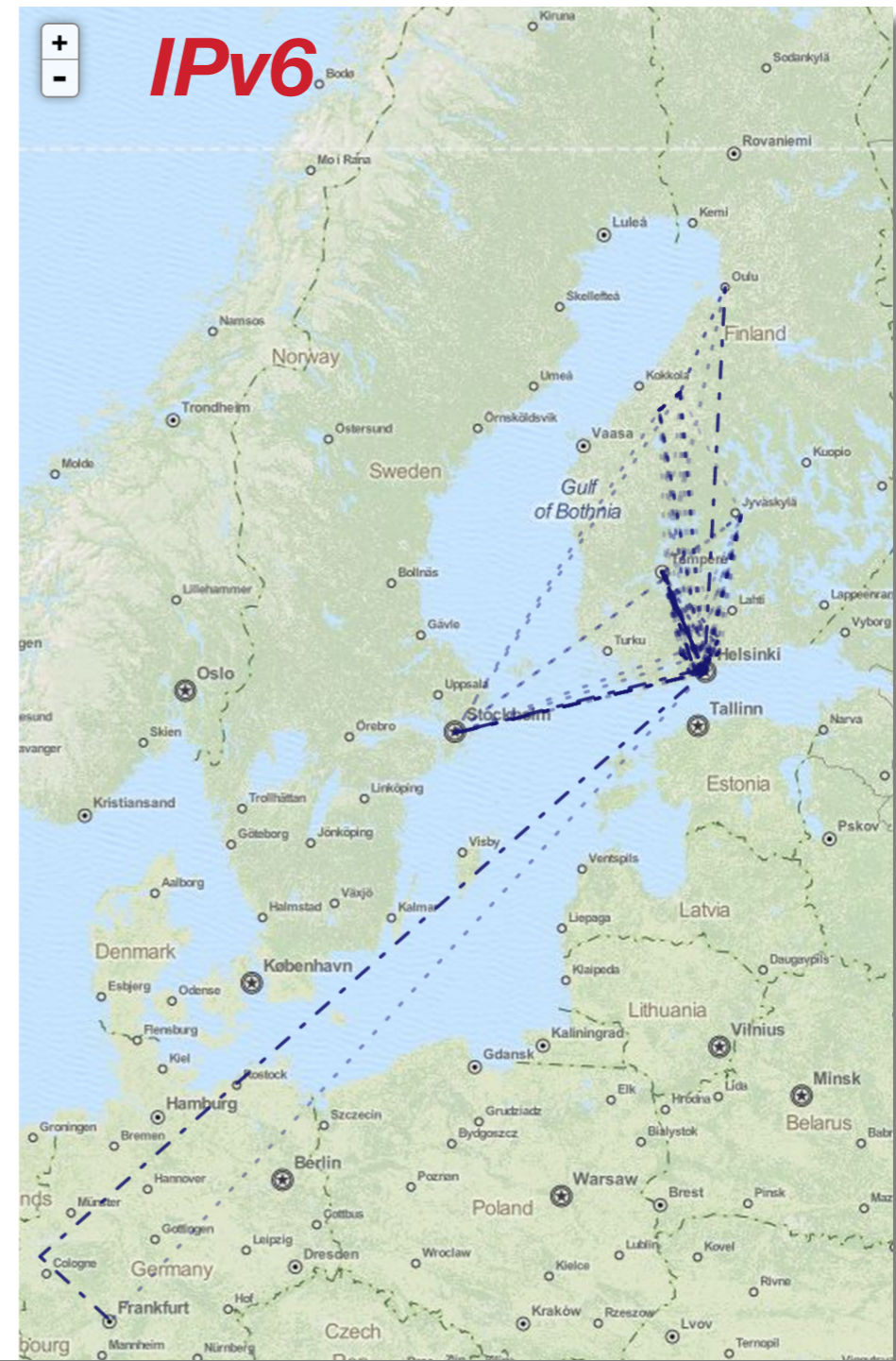
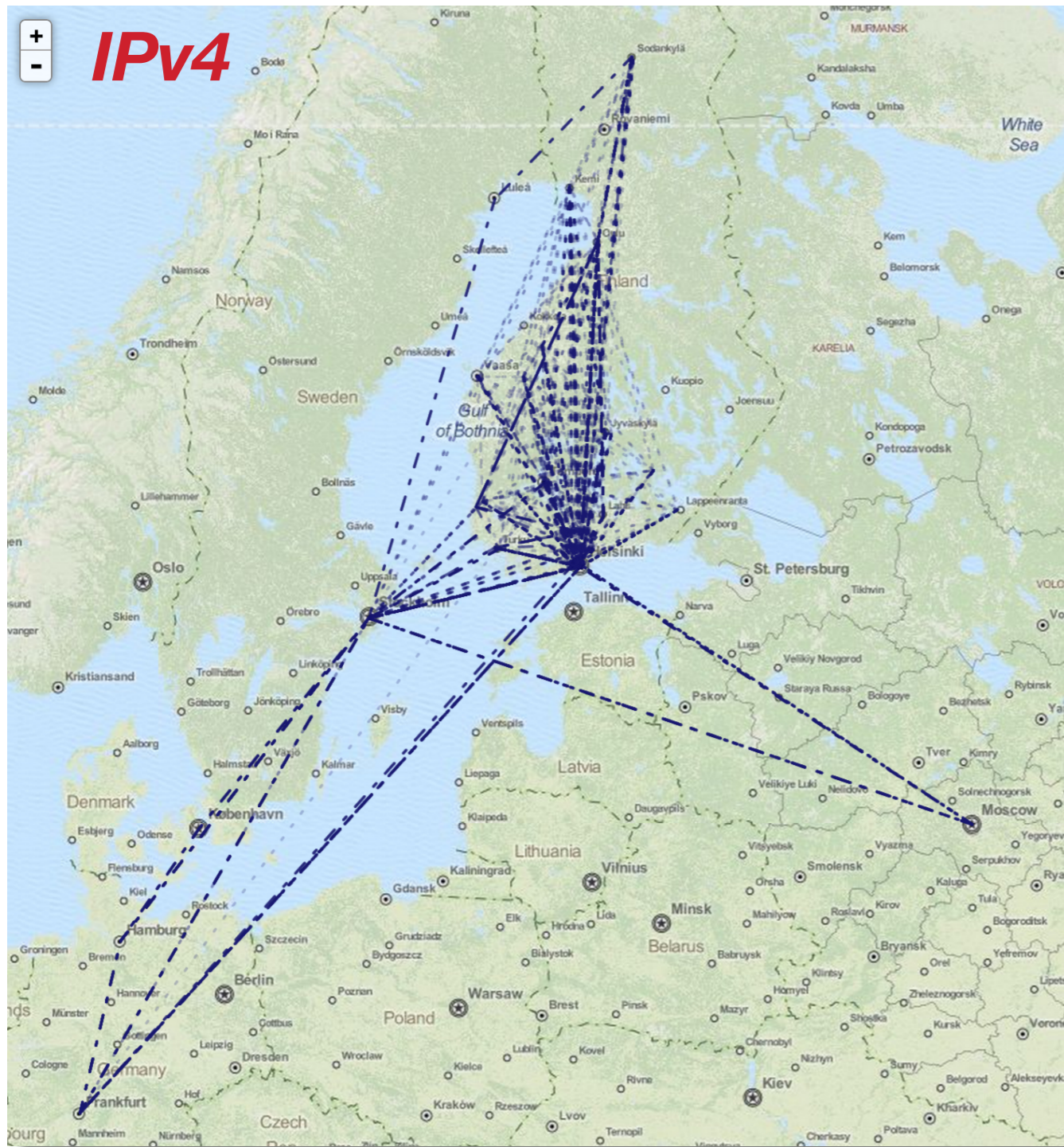


# IPv6 Performance

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Is IPv6 Faster?



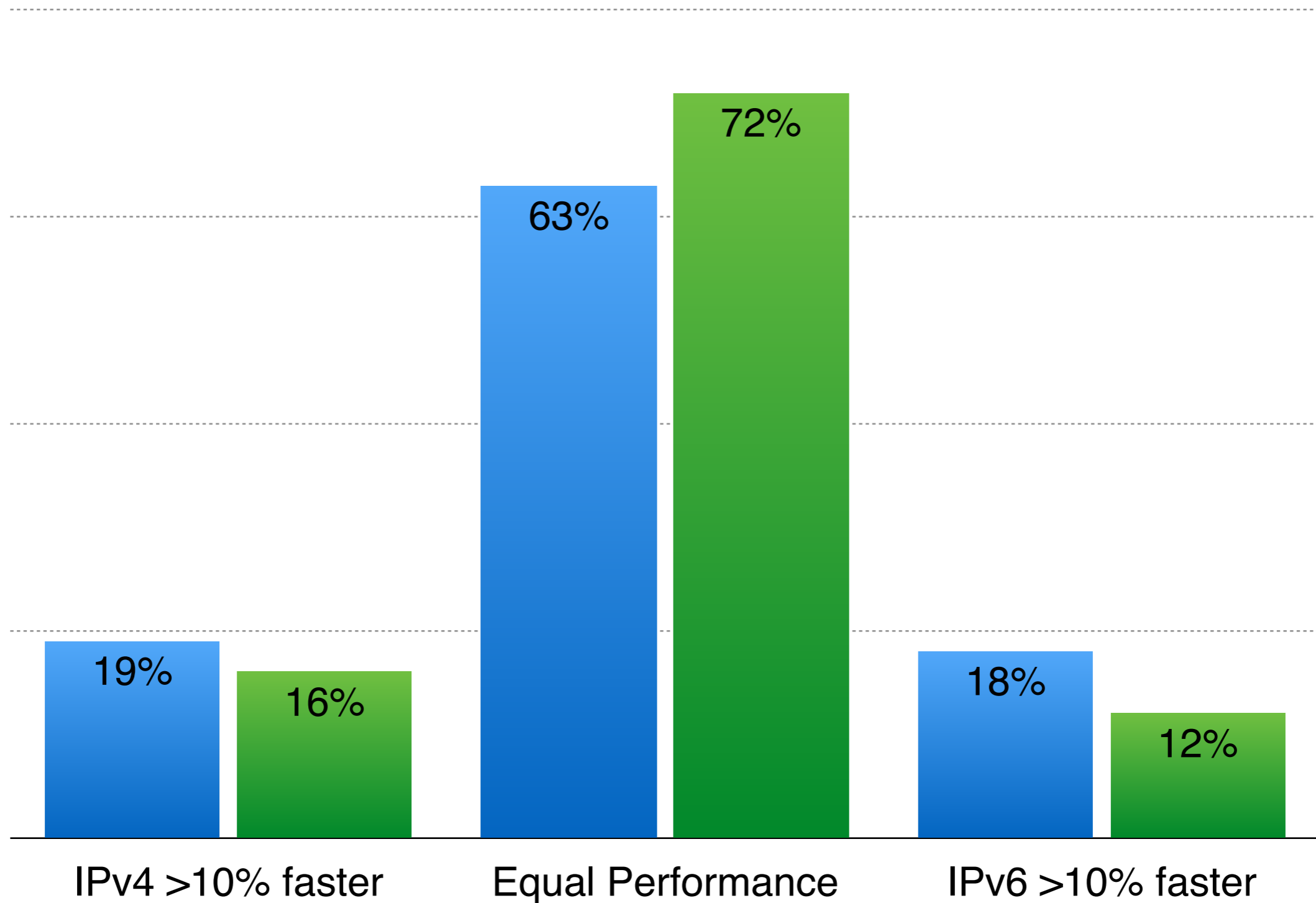


## Paths between RIPE Atlas Probes in Finland

Methodology: <https://labs.ripe.net/Members/emileaben/measuring-ixps-with-ripe-atlas>

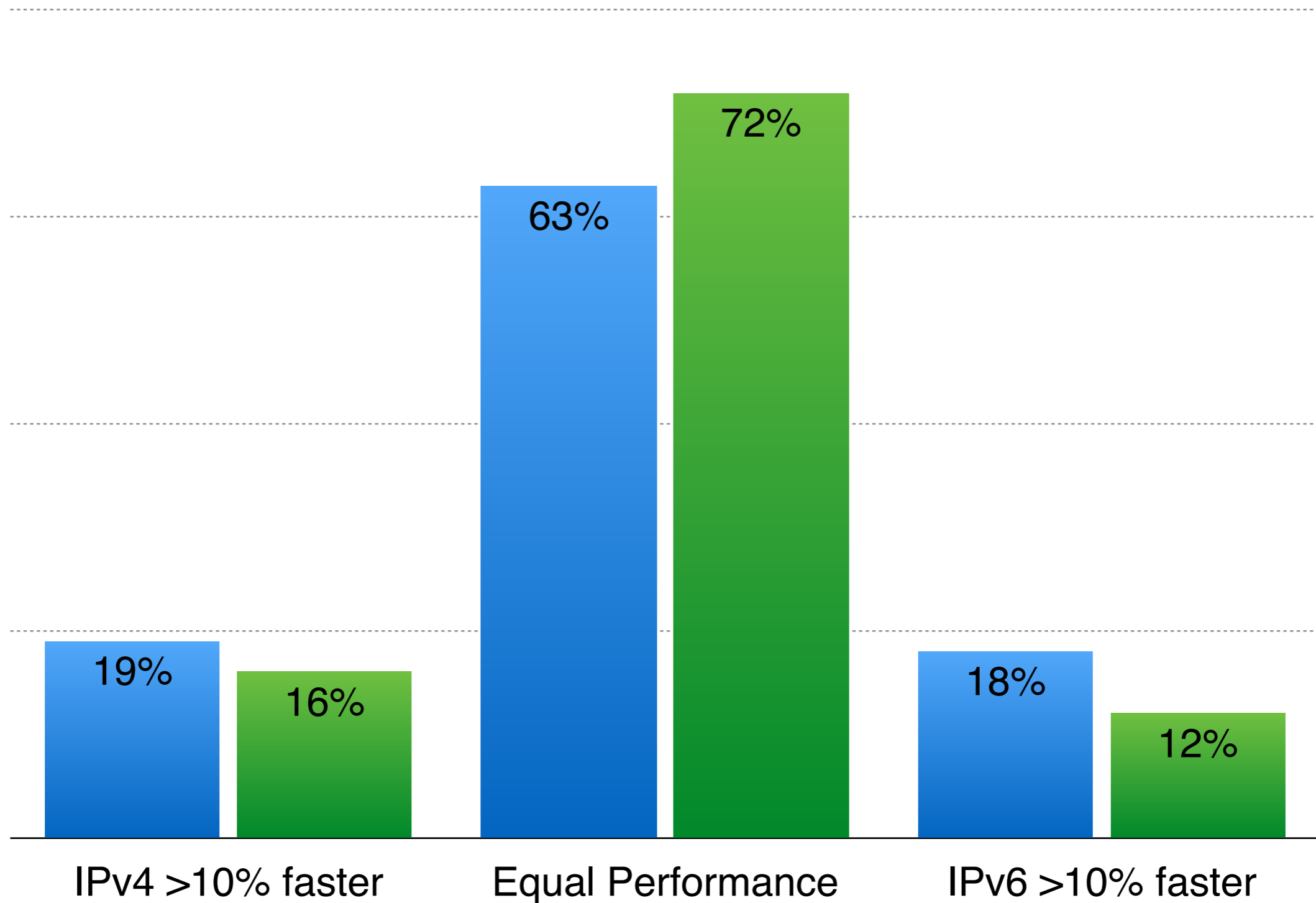
# IPv4 vs IPv6 Latency (RIPE Atlas)

■ All RIPE Atlas Anchors    ■ Finnish RIPE Atlas Anchors (3)

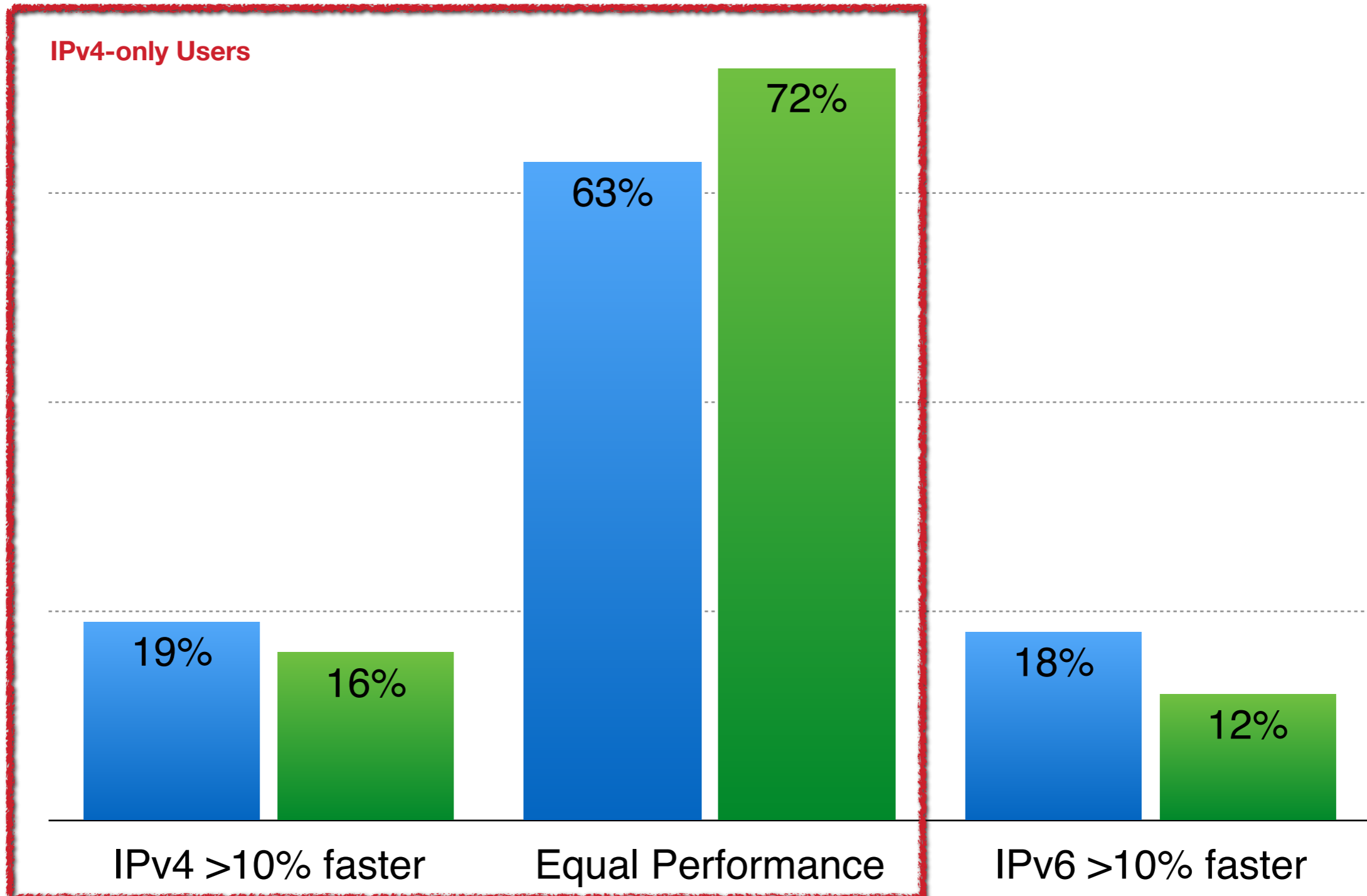


- Dual-stack user:
  - Two chances for the best performance
  - In 12%-18% of cases can be significantly faster than the IPv4-only user
  - “Happy Eyeballs” implementations can facilitate this
  - Important for latency-sensitive applications
    - VOIP
    - Gaming

■ All RIPE Atlas Anchors    ■ Finnish RIPE Atlas Anchors (3)

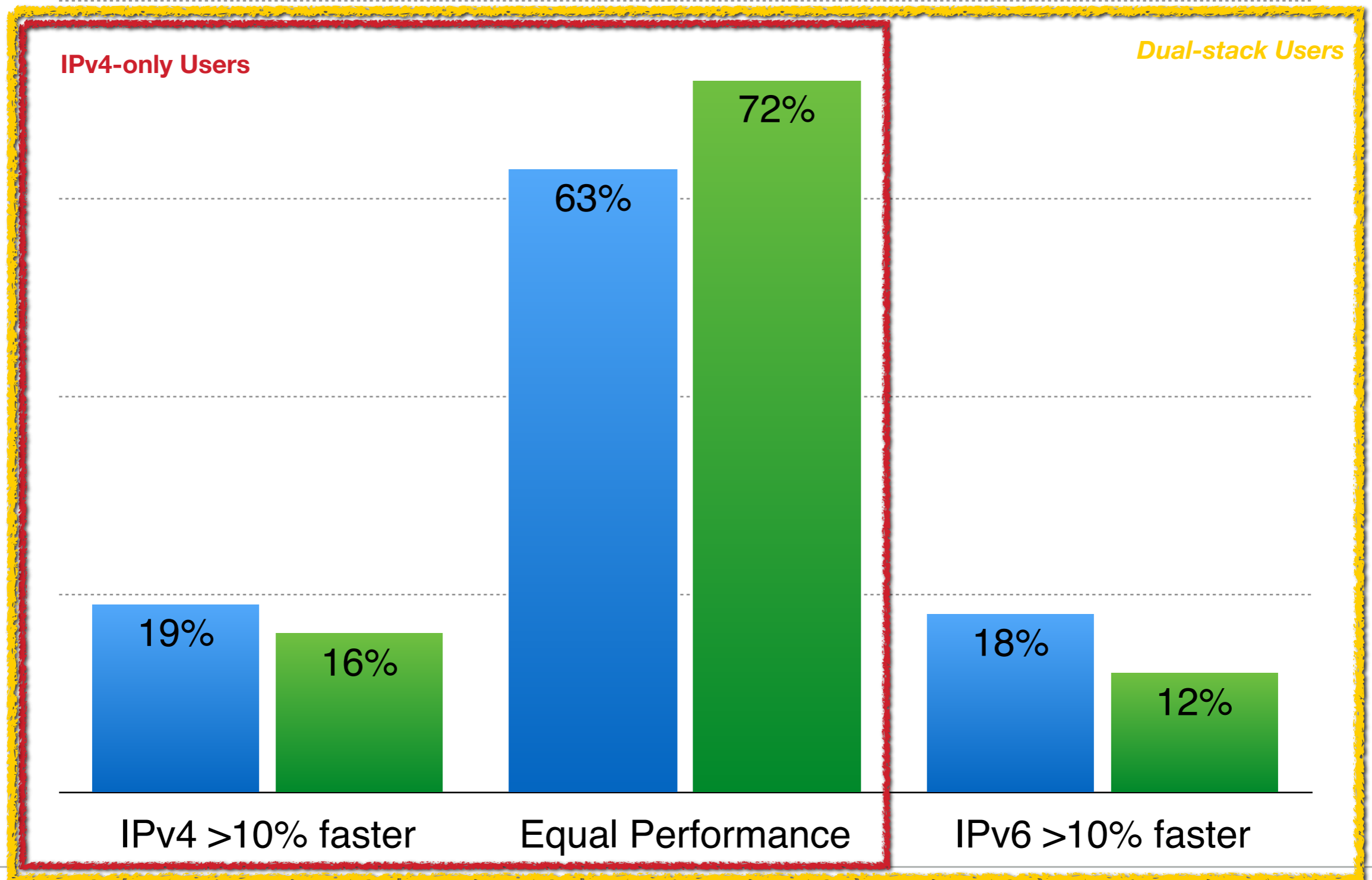


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■ All RIPE Atlas Anchors    ■ Finnish RIPE Atlas Anchors (3)



- Measurement data shows
  - Finland has started to deploy IPv6
  - Much latent IPv6 capacity
  - IPv6 and IPv4 differences in performance
    - Opportunities for dual-stacked networks

