



Fast websites for all of us - How to speed up websites beyond your country limits

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Hi there!

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Disclaimer:
I'm [just] that DevOpsGuy observing
Web-Development trends

Agenda

- ➊ Introduction
- ➋ Key factors of fast websites
- ➌ CDN Solutions
- ➍ Hosting in South Africa
- ➎ Further Reading / Watching

But first...



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What makes a Website fast?

Factors

- Keep the size small
- Reduce Requests
- DNS lookups
- Server location
- Bandwidth
- Caching

Why should I care?



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It has been reported that every
100ms of latency costs Amazon
1% of profit.

via O'Reilly Radar

Website Obesity Crisis!

idlewords.com/talks/website_obesity.htm

The Average Webpage Is Now the Size of
the Original Doom (2.39MB)

- Wired

Keep # of requests low

Less requests
=
Less connections
=
Less round trips
=
Faster Website!

▼ BANDWIDTH OPTIMIZATION

External resources can be optimized automatically, which can reduce both the size and number of requests.

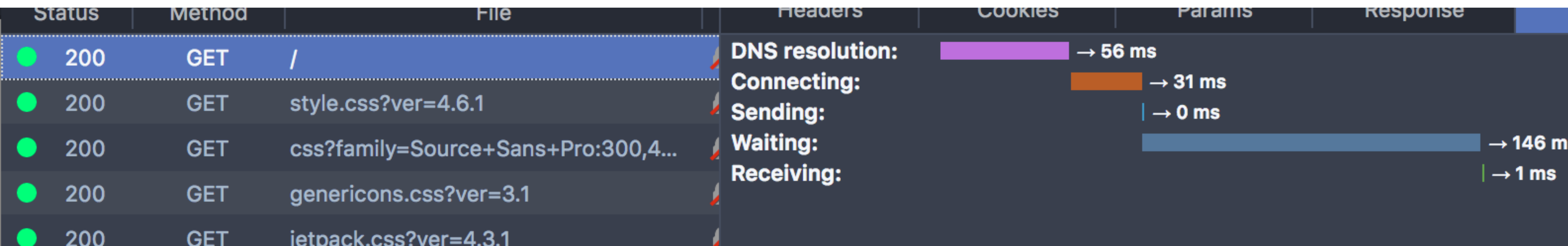
- ✓ Aggregate CSS files
- ✓ Aggregate JavaScript files



DNS Lookup

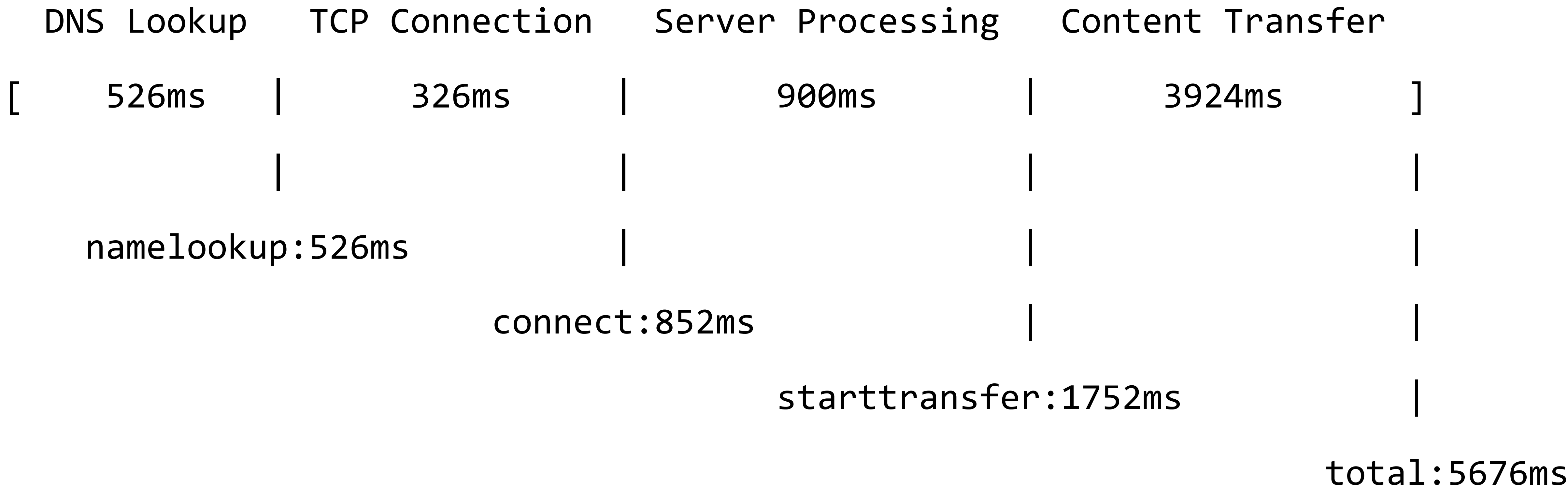


Request graph in browsers



HTTPSTAT

~ > httpstat http://example.com



Get a good DNS Provider

- Roll it your own (fun but maybe not easy)
- dyn.com
- ns1.com
- Amazon Route53 (no Zone Apex)

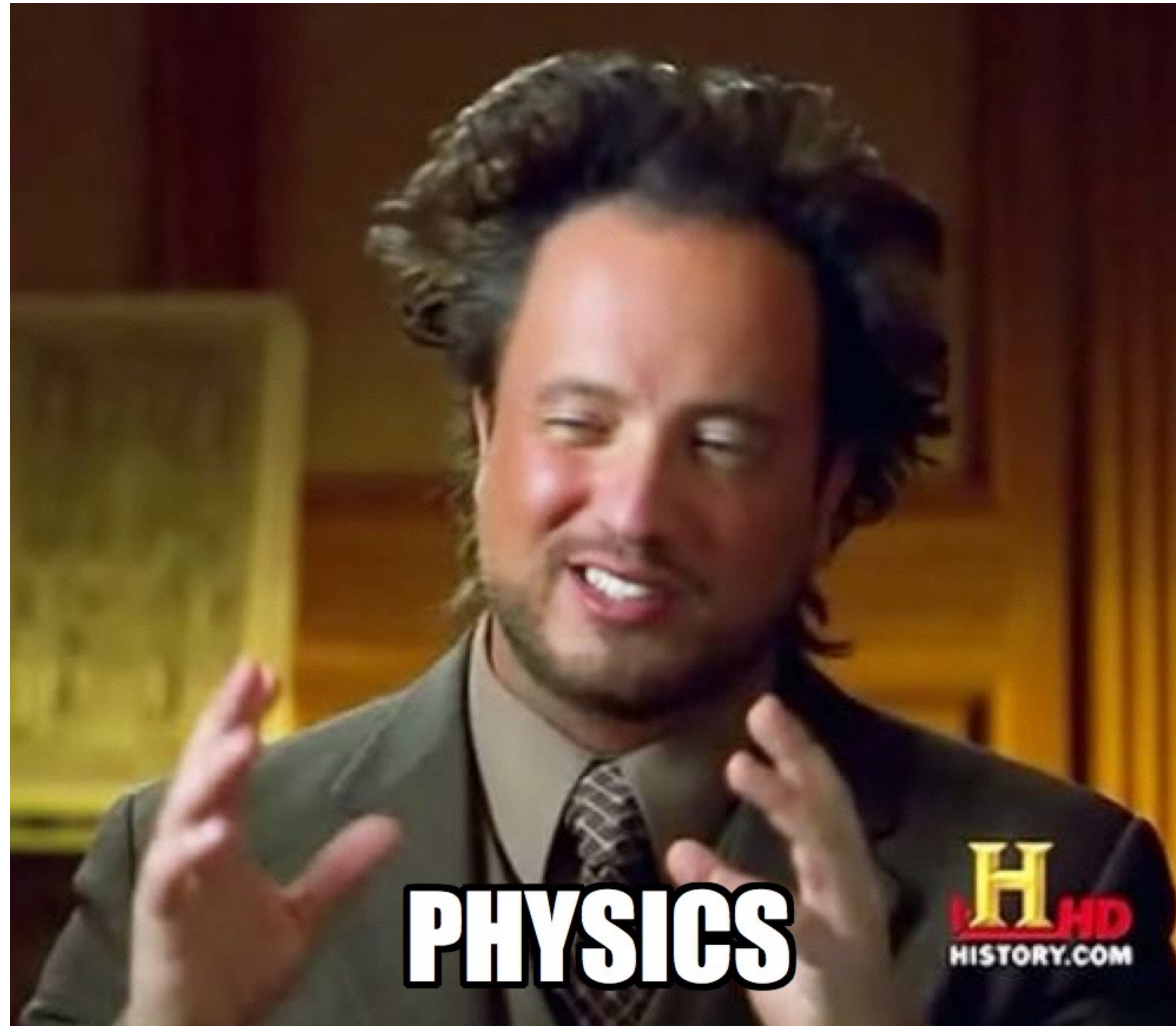
Zone Apex / Root CNAME / Naked Domain?

www.example.com IN CNAME server1.example.com

example.com IN CNAME server1.example.com

Read: <http://s.nrdy.ch/zone-apex>

Server Location



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C (*speed of light in vacuum*)

=

299'792 kilometers per second



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Internet is hard...



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How South Africa's Internet will be affected by SEACOM's cable outage

SEACOM has said that services on its network will be affected by a cable fault in the Mediterranean, which requires repairs.

By **Jan Vermeulen** - October 20, 2016 **8 Comments**

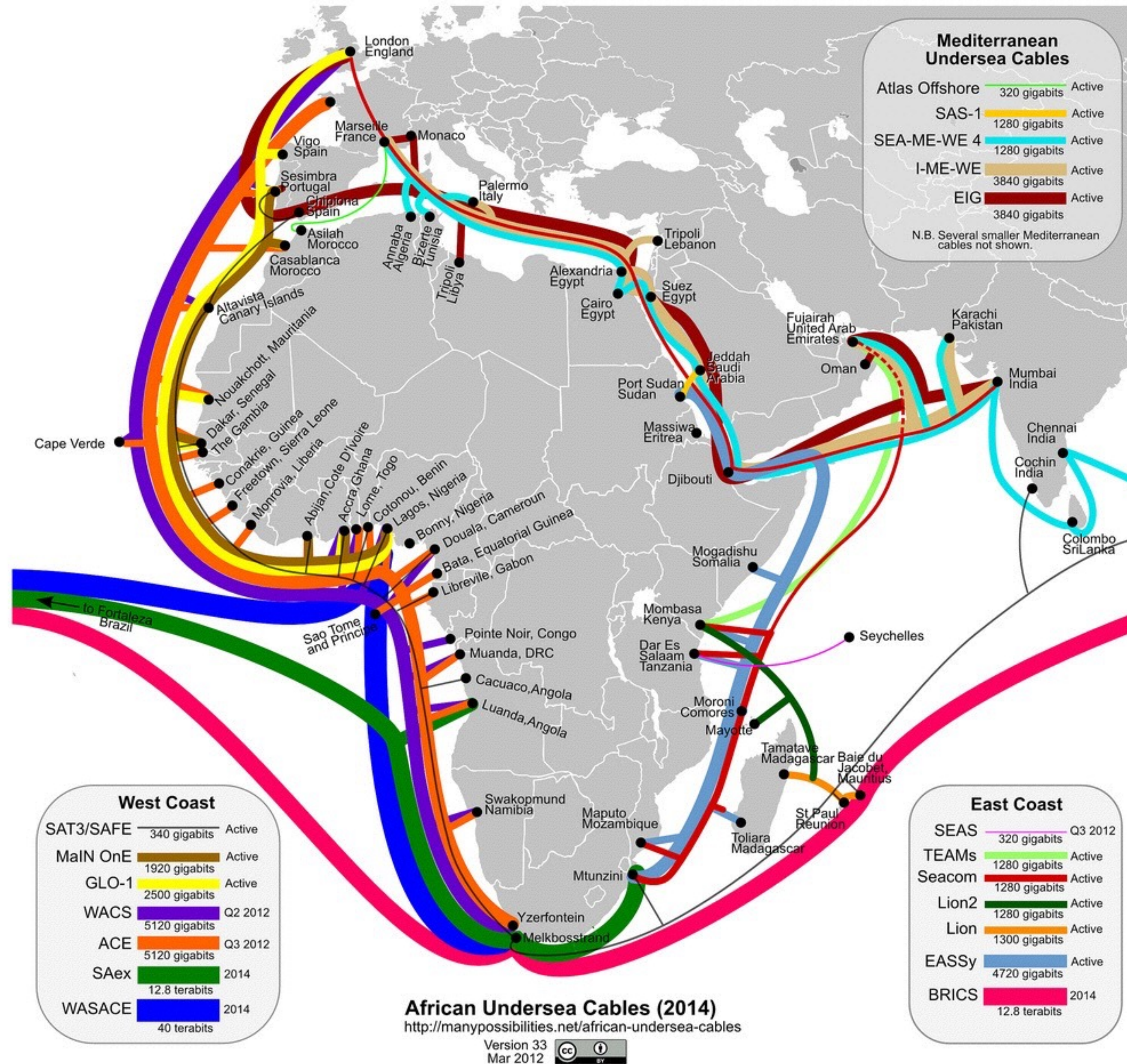
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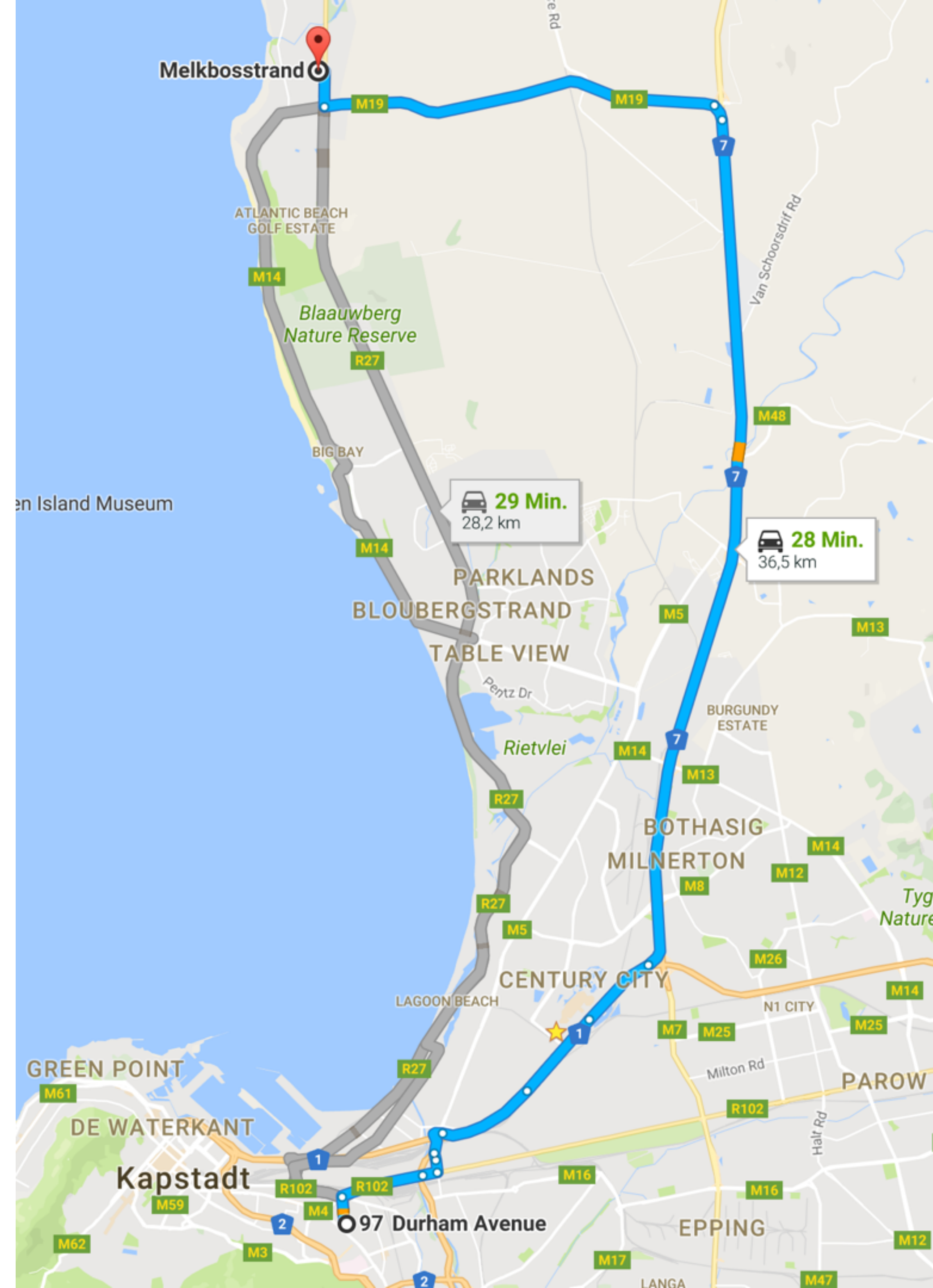
 **Tweet**

 **Share 29**



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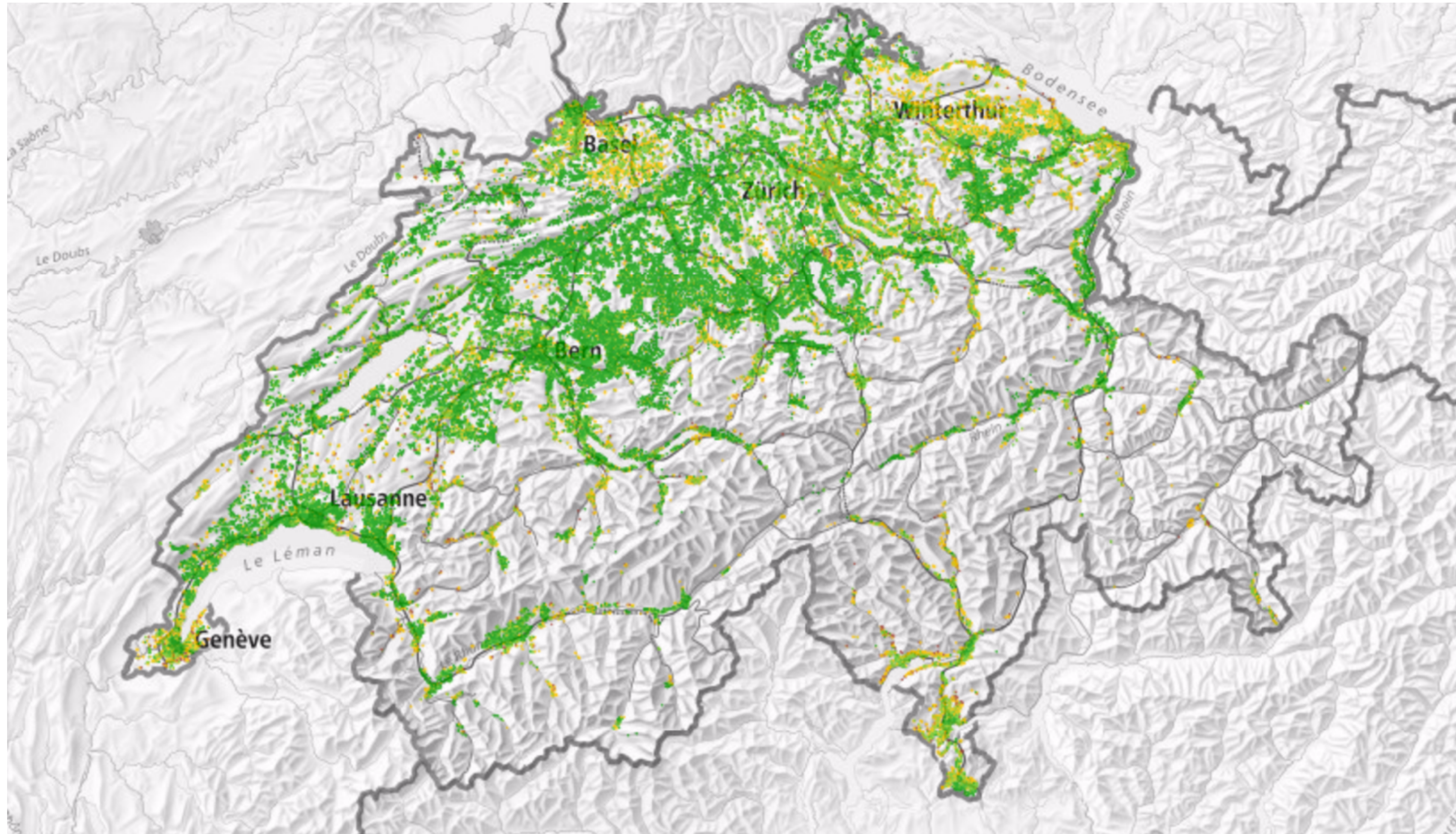


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Ironically, it is often the last few miles, not the crossing of oceans or continents, where significant latency is introduced: the infamous last-mile problem

- Ilya Grigorik, High Performance Browser Networking

Download $\geq 100\text{Mbit/s}$



Bandwith / Latency



Do you enjoy to view your
website on a mobile
phone?

Landlines are sort of fast
Mobile internet isn't.

As **Benedict Evans has noted**, the next billion people who are poised to come online will be using the internet almost exclusively through smartphones. And if Google's plans with **Android One** are any indication, then we have a fairly good idea of what kind of devices the "next billion" will be using:

- They'll mostly be running Android.
- They'll have **decent specs** (1GB RAM, quad-core processors).
- They'll have an evergreen browser and WebView (Android 5+).
- What they *won't* have, however, is **a reliable internet connection**.

In a world where your lowest common denominator is a very capable browser with a modern JavaScript engine, running on a smartphone that would have been classified as desktop-class ten years ago, **but the network is now the bottleneck**, what does that mean for progressive enhancement?

Caching

Server and Client



Server-side caching

HI VARNISH!



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Client-side caching

Send the correct headers and cache longlived assets:

Expires: Sun, 29 Sept 2076 14:57:12 GMT

Cache-Control: max-age=86400, must-revalidate

Actually CDNs can help

Well sort of :-)





Fastly Map Key

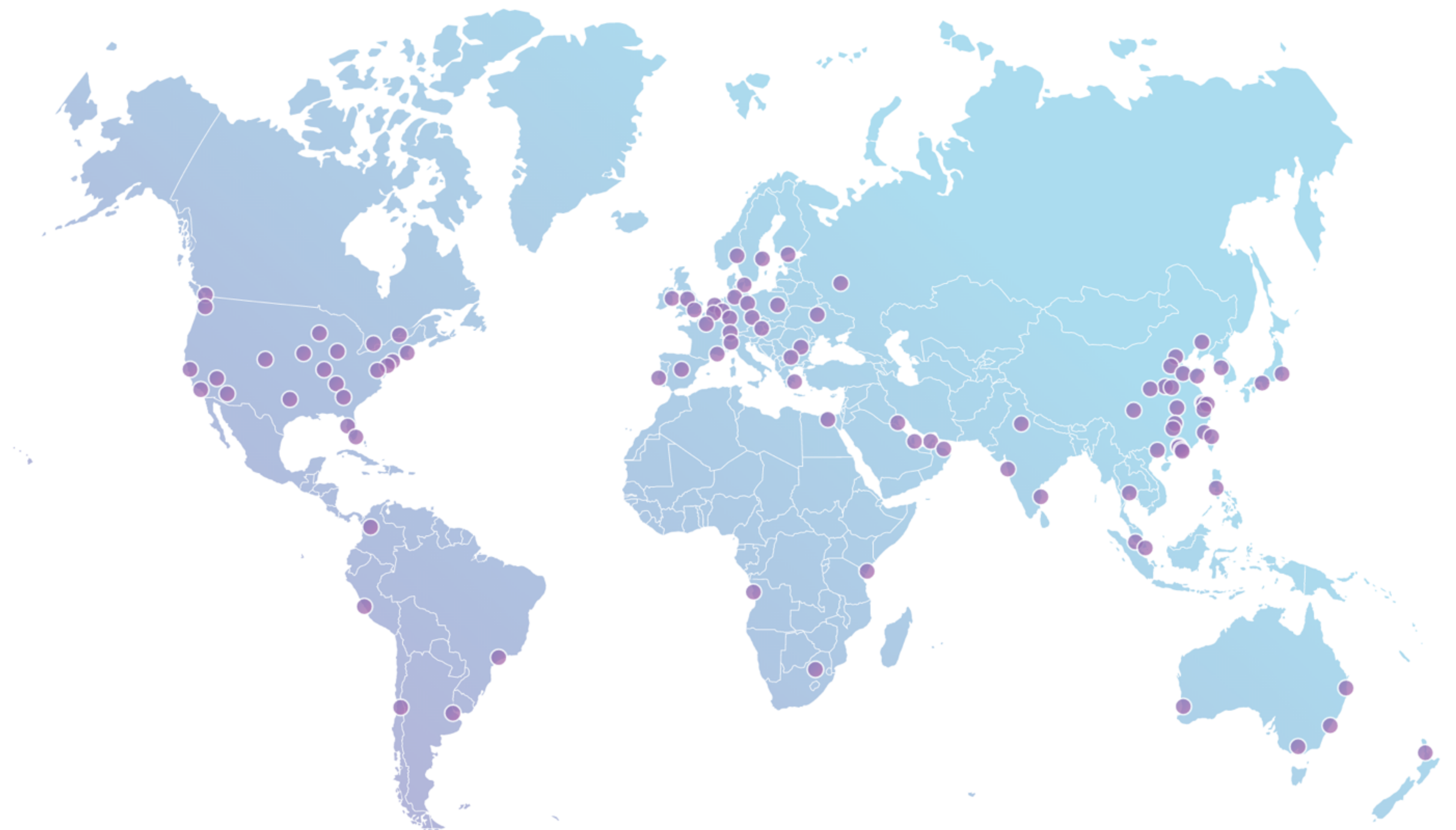
- POP Locations
- Planned Locations



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● Aktiver POP
● Geplanter POP



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Vendors

- Fastly
- Cloudflare
- KeyCDN
- and many many more

Fastly

- Distributed Varnish as a Service
- Ship your own VCLs
- Full Page Caching
- DDoS Mitigation
- SSL can get pricy, but...
- No PoP in South Africa!
- Pay as you go (Requests/Bandwidth)

Cloudflare

- Freemium / Plans
- Free SSL Certificate
- DDoS Protection
- „Proprietary“
- Nobody ever got fired for using Cloudflare
- You most likely need to hand over your DNS to Cloudflare
- **PoP in South Africa!**
- PoP in China (with Baidu as Partner)

KeyCDN

- Pay as you go (Traffic)
- POP In Switzerland
- SSL powered by Let's Encrypt
- No full page cache yet*
- Perfect for delivering assets
- No PoP in South Africa

It seems that perfection is
attained not when there is
nothing more to add, but when
there is nothing more to remove.

- Antoine de Saint Exupéry

Do you really need...

- a dynamic map on your website?
- do you really need high resolution background images?

Hosting in South Africa





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DevOps People
THIS IS FOR YOU!

What could possibly go
wrong?



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Some things...

- Do not expect to be able to connect to it all the time.
- Slow connection
- Packet-loss
- Sea Cables get chewed apart by sharks

FUN!

Backend backend is Sick

Current states good: 3 threshold: 5 window: 10

Average responsetime of good probes: 2.191282

Oldest

Newest

=====

--4-4---4-----4-4---4-----4-4---4---4 Good IPv4

--X-X---X-----X-X---X-----X-X---X---X Good Xmit

--R-R---R-----R-R---R-----R-R---R---R Good Recv

--H-H---H-----H-H---H-----H-H---H---H Happy



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What to do about it?

- Host close to your customer-base
- Don't rely on Fast/Latency-free Internet

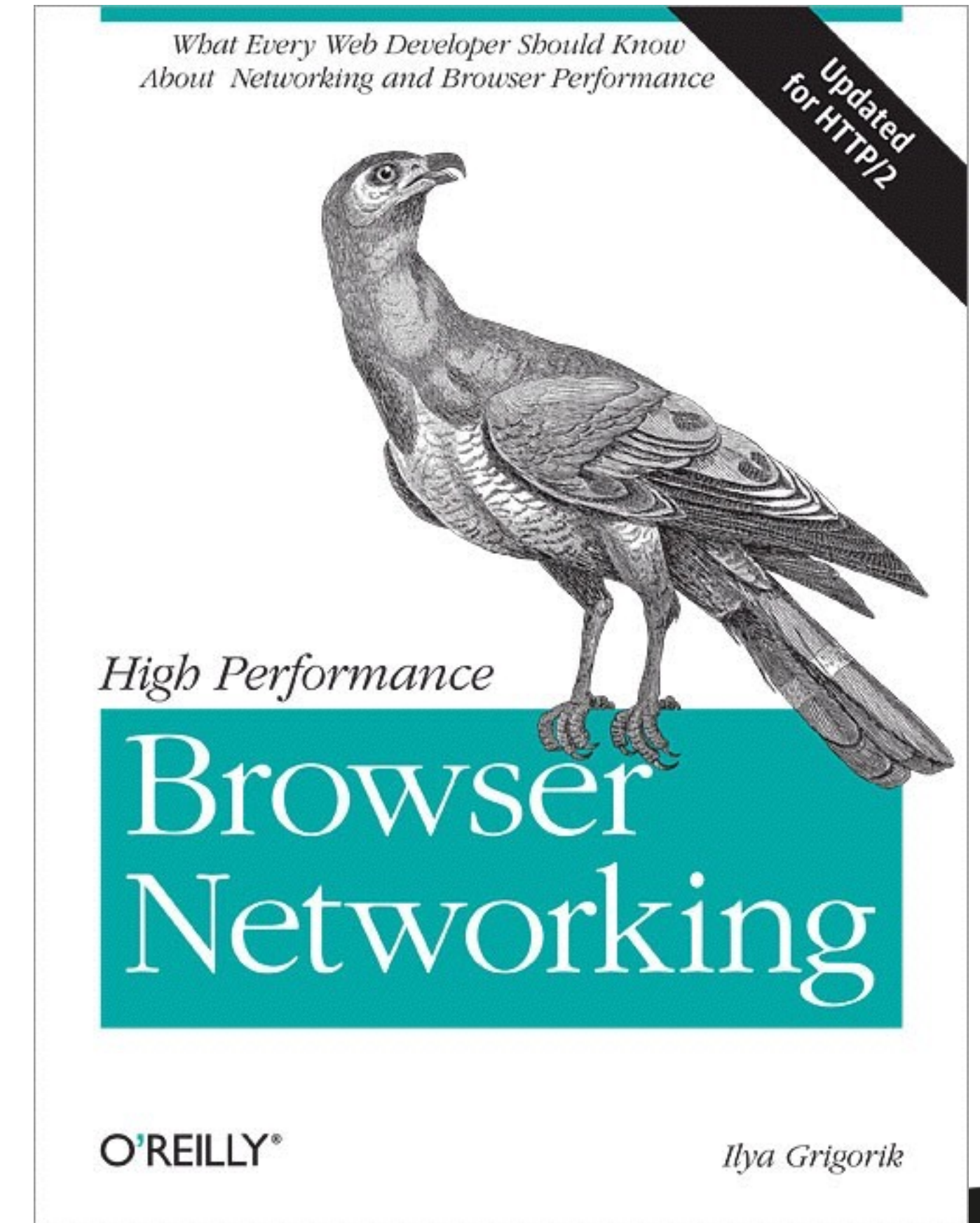
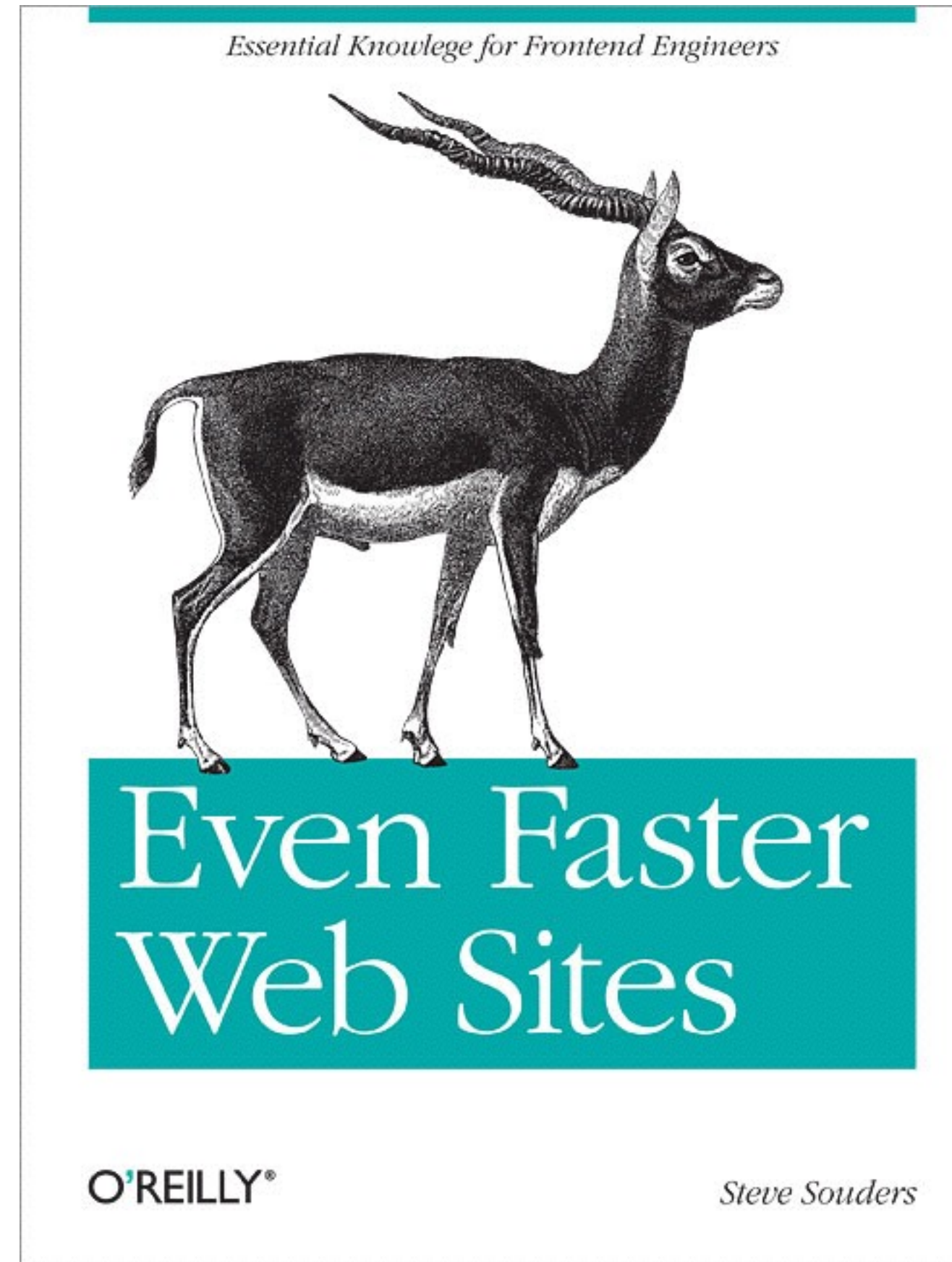
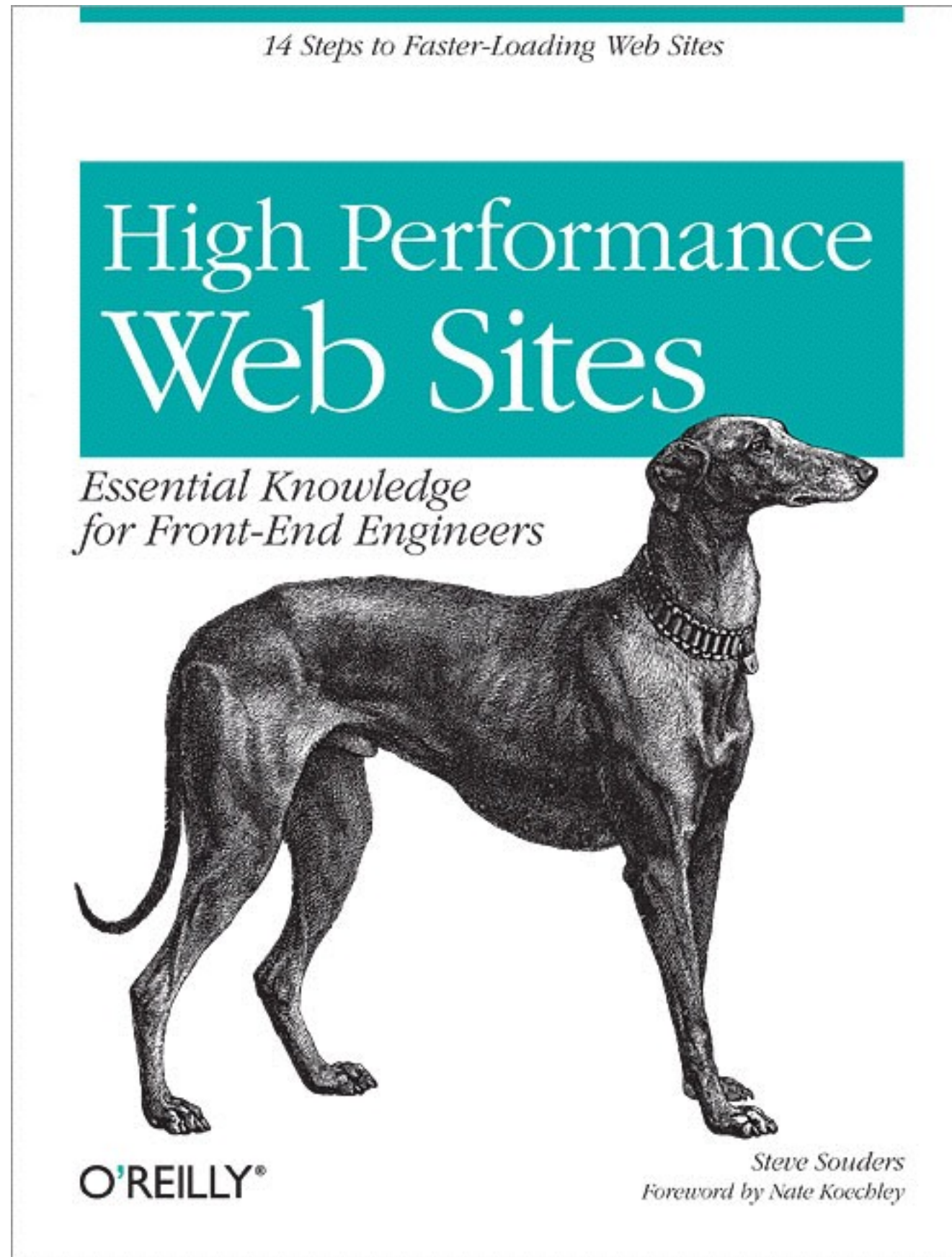
Take Aways



Take Aways

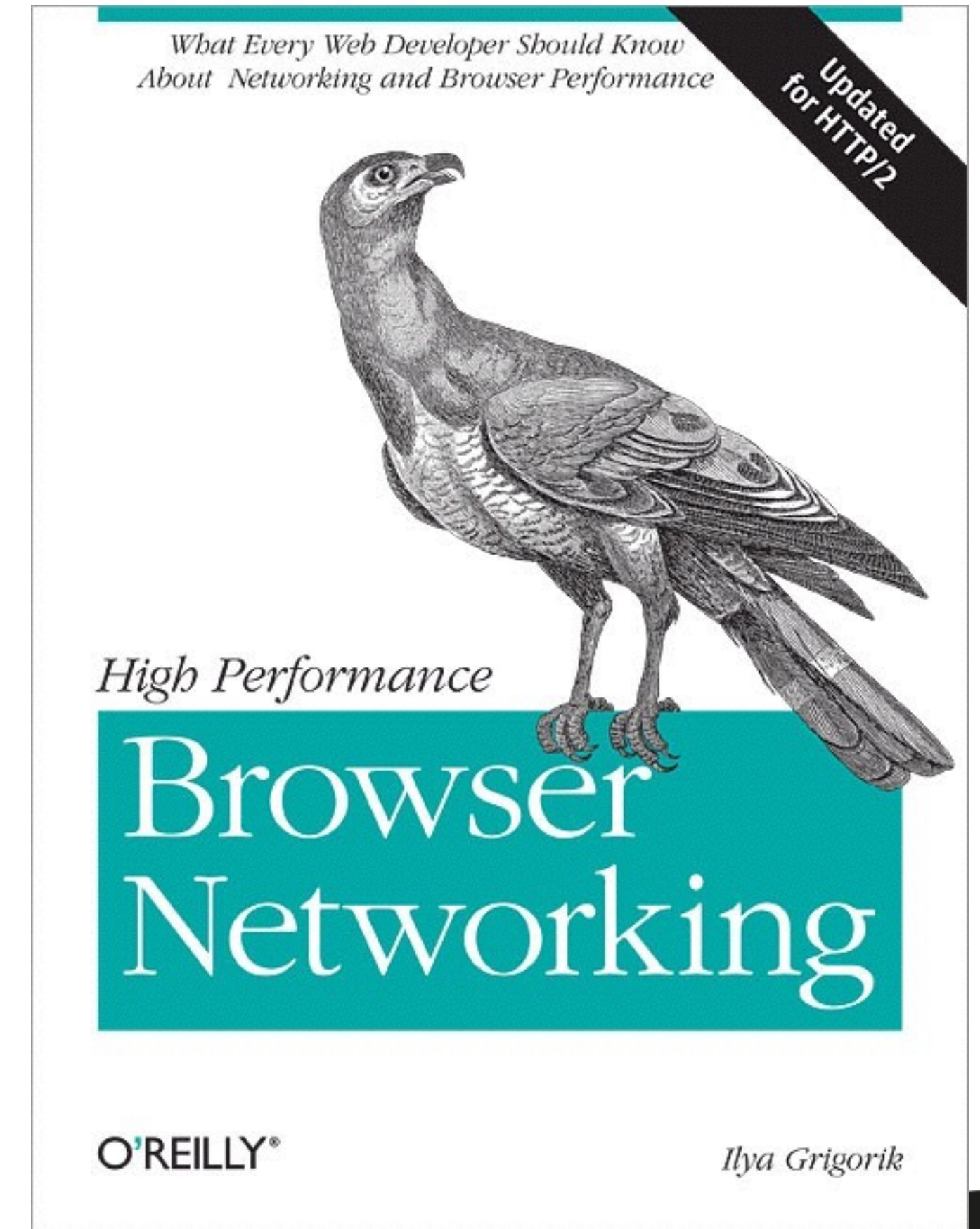
- **Optimize** your site (minimize requests, strip content down)
- **CDN** The internet is global, so are your visitors
- Think about your market (where do our customers come from)
- Build your infrastructure as resilient as possible

Further reading



Further reading

<https://hpbn.co/>



HTTP/2: WHAT NO ONE IS TELLING YOU

DrupalCon Dublin Talk of Hooman Behesti

<http://s.nrdy.ch/http2talk>

HTTP/2:
What no one is telling you

Hooman Behesti
VP Technology

fastly



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Questions?

Slides: <http://s.nrdy.ch/dc-cpt>



Images Used

- Licence Plate - <http://www.webreference.com/outlook/license/7.html>
- Sea Cable Map - <http://www.htxt.co.za/2016/01/22/not-one-but-two-sa-internet-cables-went-down-last-night>

Resources

- The website obesity crisis - http://idlewords.com/talks/website_obesity.htm
- Conversion Rates for Websites - <https://moz.com/blog/how-to-improve-your-conversion-rates-with-a-faster-website>
- Amazon Findings - <http://radar.oreilly.com/2008/08/radar-theme-web-ops.html>

Resources

- Seacom Cable Outage - <http://mybroadband.co.za/news/telecoms/183442-how-south-africas-internet-will-be-affected-by-seacoms-cable-outage.html>
- Wired Doom - <https://www.wired.com/2016/04/average-webpage-now-size-original-doom>
- Download Speed Statistics Switzerland - <http://map.geo.admin.ch/?topic=nga>

Tools

- Httpstat- <https://davidwalsh.name/httpstat>