

World IPv6 Day

Jason Fesler – Y! Ops

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YAHOO!

About Me

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- IPv6 Evangelist since 2008
- With Yahoo! since 2003

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Agenda

- Internet Society (ISOC) presentation
- Yahoo's participation in World IPv6 day
- Motivation for IPv6
- Concerns / Broken Users
- Customer Outreach
- Questions





World IPv6 Day: June 8 2011

Why We Care and You Should Too!

Presented on behalf of
The Internet Society



InternetSociety.org

World IPv6 Day – what it is

- June 8 2011 – 00h00-23h59 (UTC)
 - Major content providers turn on IPv6 access on their “front door”
 - Not just “side door” special hostnames
 - This is not about turning off IPv4
- The goal of this test flight is to motivate organizations across the industry – Internet service providers, hardware makers, operating system vendors and web companies – to prepare their services for IPv6 to ensure a successful transition as IPv4 addresses run out.
- It is an opportunity for the Internet industry to collaborate to test IPv6 readiness. We expect to lay the groundwork for large-scale IPv6 adoption and help make IPv6 ready for prime time.
- It is not a first – there have been important local efforts, already (e.g., heise.de).

Motivations

- “Hatching the egg” for IPv6 Deployment
- Improving IPv6 connectivity
 - Ongoing measurements show that enabling dual-stack for web content results in some users experiencing connectivity issues
 - Very small percentages, but potentially a large number of users for major content providers
 - These issues create a disincentive for an individual large content provider to act unilaterally
- Provides a target date for already planned rollout
- “I don’t want to have to answer why we don’t have this”
- Internet is a never-ending exercise in collaboration, this is an example

What we hope to see

- Nothin'!
- It'll all work, right? :-)
- Test your IPv6 readiness:
 - <http://test-ipv6.com/>
- And, various measurements, tests, will be undertaken
 - Connectivity from different perspectives
 - Configuration brokenness (“self testing”)

<http://worldipv6day.com/>

- Information for what you need to do if you want to come play
 - Website owners
 - Send us the URL of the website you intend to make available
 - Contact info for a network engineer
 - A webpage describing why IPv6 is important for your business is a plus
 - Hosting companies, etc.
 - A commercial IPv6 service offering
 - A webpage describing why IPv6 is important for your business, customers, etc.; we'll link to it
- Contact us...
 - If you're interested in participating
 - If you're planning to do some measurements or testing
- Help us make this a truly GLOBAL IPv6 Day

Global Response

- Lots of interest from all over
 - Website owners, ISPs, hosting companies, exchanges, vendors, ...
 - Over 550 entities have contacted us so far
 - 200(**) websites are listed who plan to turn on IPv6 June 8
 - Created space for lots of sites running dual stack already
 - Created space for hosting companies, etc. who offer commercial v6 and are interested in helping their customers participate
 - Will be creating space on the site for test and measurements
- All across the globe
 - Interest from people on every continent

Spontaneous efforts

- Regionalized initiatives
 - Japanese and Slovenia websites already with folks making efforts with local websites
 - Swedish websites through .se and netnod efforts
 - Efforts in the Czech republic, Netherlands, Taiwan
 - Lots happening, quite a buzz in operational community
- “I’ll get my website up and some others I manage also”
- Hear of all sorts of things like this, the World IPv6 Day gives many already underway efforts a point of focus

Documenting Success

- Improved connectivity
 - Large websites have their finger on the pulse of this important aspect of June 8
- Sites who participate
 - Documented through an IPv6 reachability dashboard
 - Longer term goal is permanently turning up IPv6, some of that will happen on the day; some will happen as a result of the activities on the day, but later; some will need more time
- Measurements
 - Lots of measurement will be undertaken, and we plan to refer to those who are making their data public through our website
 - Experience will serve as input to improve operations

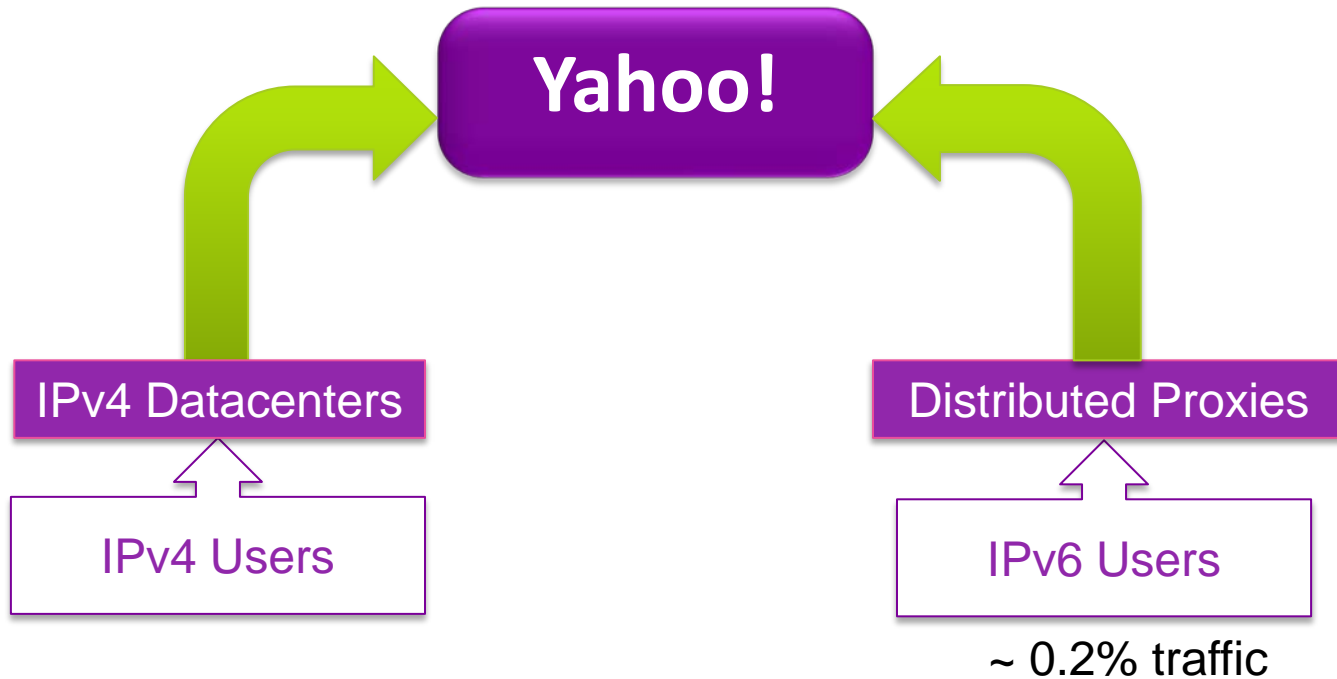
Yahoo! Participation

World IPv6 Day



Traffic flows – World IPv6 Day

- HTML: Served “Dual Stack”; IPv6 via Traffic Server
 - › CSS and Images are not part our test
 - › This is about enabling IPv6; not disabling IPv4.



IPv6 Proxy Locations



Participating Yahoo! Front Page Markets



Motivation for IPv6

Why not just rely on Carrier Grade NAT (CGN)?



If IPv4 addresses were Motor Cycles



Photo by Michael Heidenreich via Flickr
<http://creativecommons.org/licenses/by/2.0/deed.en>

- Fun
- Versatile

6/2/2011



Running out of space



Photo by Sean Ellis via Flickr
<http://creativecommons.org/licenses/by/2.0/deed.en>

- No free spots left
- Need to support more people



NAT – works, with limitations



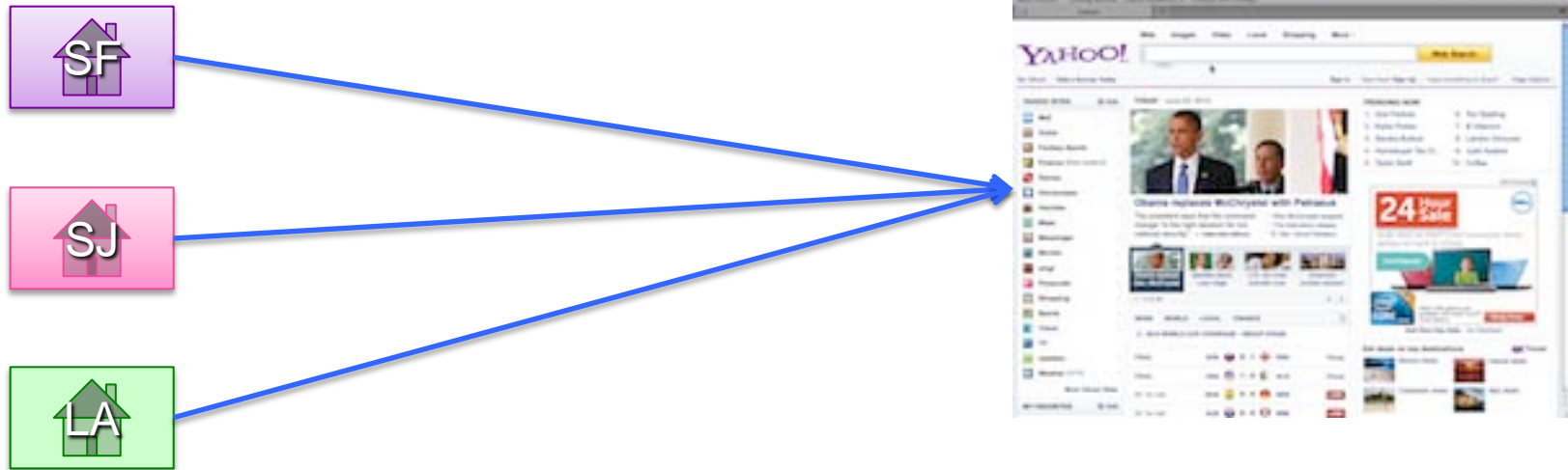
Photo by Carol Mitchell via Flickr
<http://creativecommons.org/licenses/by-nd/2.0/deed.en>

- 1 IP, Many People
- Fun? Maybe.
- Limited functionality



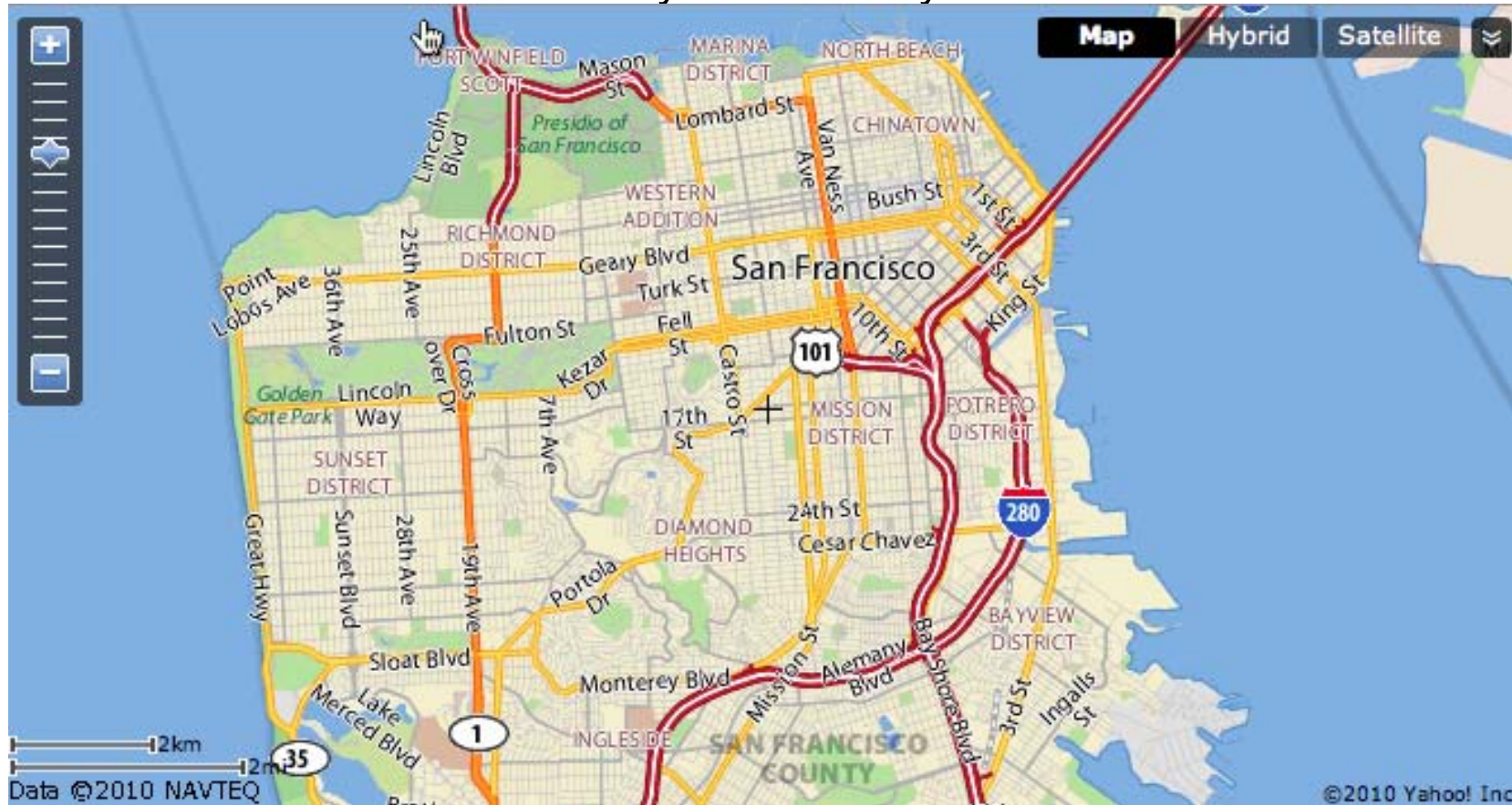
Connections via IPv4 today

- Most customers connect directly to Yahoo
- No ISP proxy, no ISP NAT



IP to Location: Great!

- We can often tell what city a user is by their IP address



Examples of Location in our products...

YAHOO! Web Images Video Local Shopping News More

landscape

QuickApps

SafeSearch - On

57,500,000 results for landscape:

Show All

Wikipedia

HGTV.com

Dictionary.com

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Get A Lush TruGreen® Lawn

Total Landscape Care Enhances Lawn. Enjoy Lush Green Lawns. [TruGreen.com](#)

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Call 916-538-5815 for Beautiful Landscaping Services for your home or business. [www.QualityLandscapeCA.com](#)

Landscaping

Find Five-Star Rated Landscape Pros, Backed By Our 20 Years of Experience. [www.ServiceMagic.com](#)

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Learn about plant health, soil and fertilizers, creating landscapes and more. [www.pennfoster.edu](#)

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YAHOO! LOCAL

City Guide My Local Directory Sacramento

Find Businesses & Services (e.g. restaurants, addresses, City & State)

Sacramento, CA

Sacramento City Guide

Restaurants

Find the most popular restaurants in the area.

Cf Cheng Chinese... ★★★★★ (8)

Golden Palace ★★★★★ (8)

Full Moon Seafood... ★★★★★ (5)

Health & Beauty

Find recommended doctors, salons, & spas.

Pham, Quynh-Trang... ★★★★★ (7)

Natomas Family... ★★★★★ (4)

Sacramento Surgical... ★★★★★ (3)

Home & Garden

Find top-rated home and garden retailers.

Kohl's Department... ★★★★★ (2)

Aviary Management... ★★★★★ (2)

Bed Bath & Beyond ★★★★★ (1)

Most Popular

Events

Maps

Buzz

pause

VIDEO SPOTLIGHT

NFL Draft: Watch it live
Posted Apr 24 2011
More: NFL video

Dolphins' Brandon Marshall Out Of Hospital, Wife Out Of Jail
Posted Apr 23 2011
More: NFL video

NFL Draft: Sure to...
Posted Apr 20 2011
More: NFL video

HOCKEY NIGHT
ON YAHOO! SPORTS



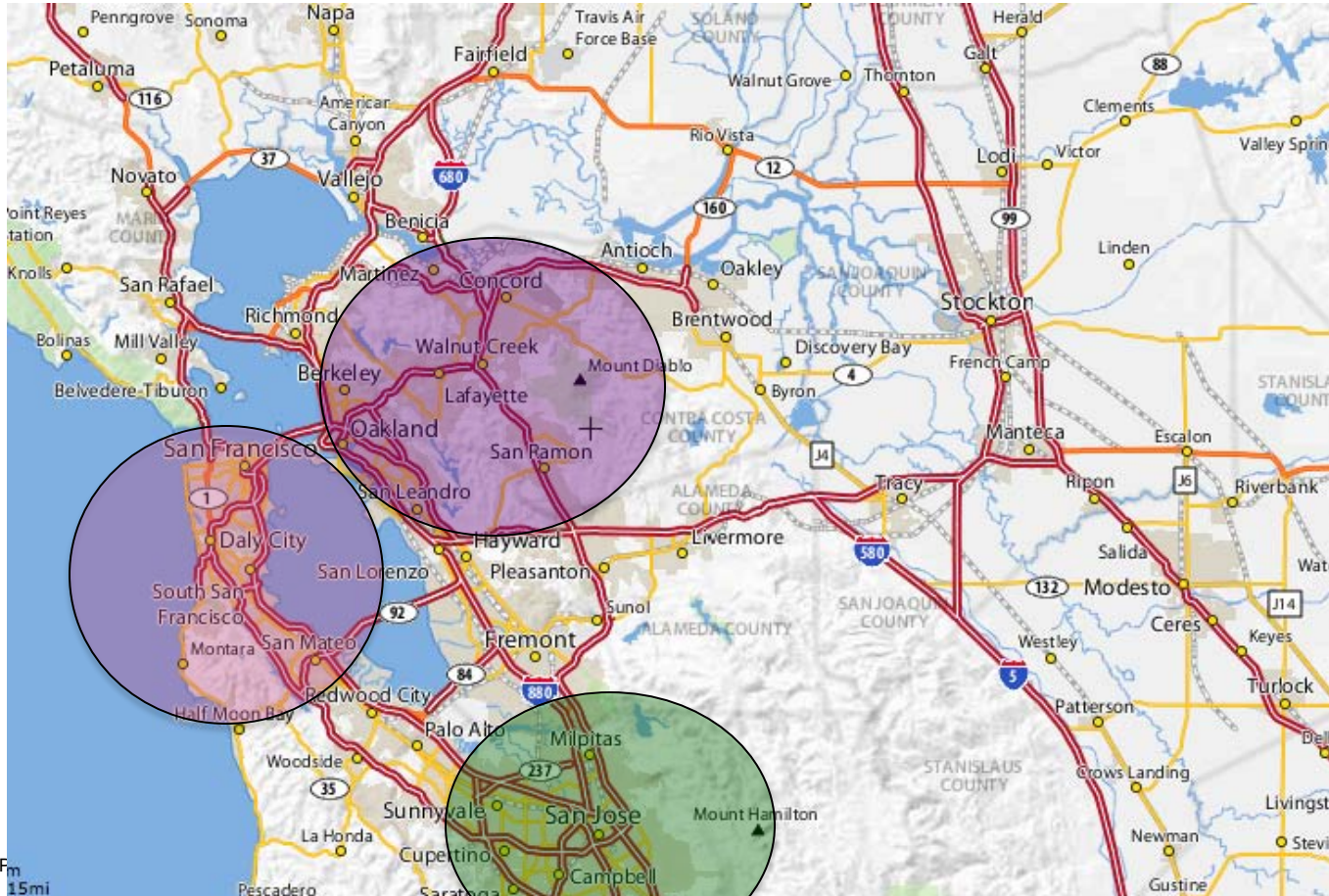
Future of IP Location with IPv4 NAT

- Carrier Grade NAT or Large Scale NAT (CGN, LSN)
- Several customers share one public IP address
 - › One ISP tells us they will **start** at 1000 private IPv4 addresses per 1 public!



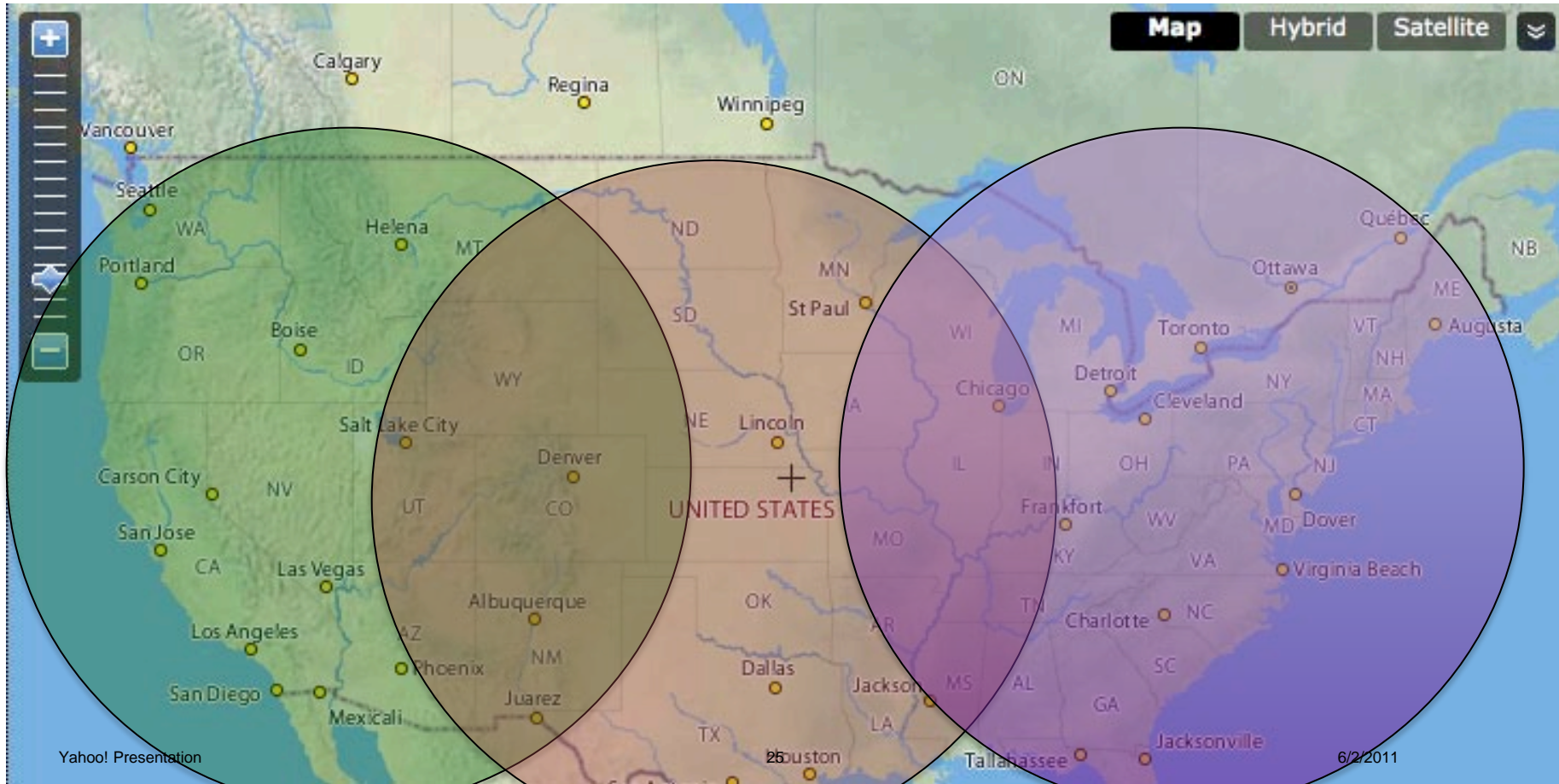
NAT IP to Location: “ok”

- Some access providers will aggregate around big cities



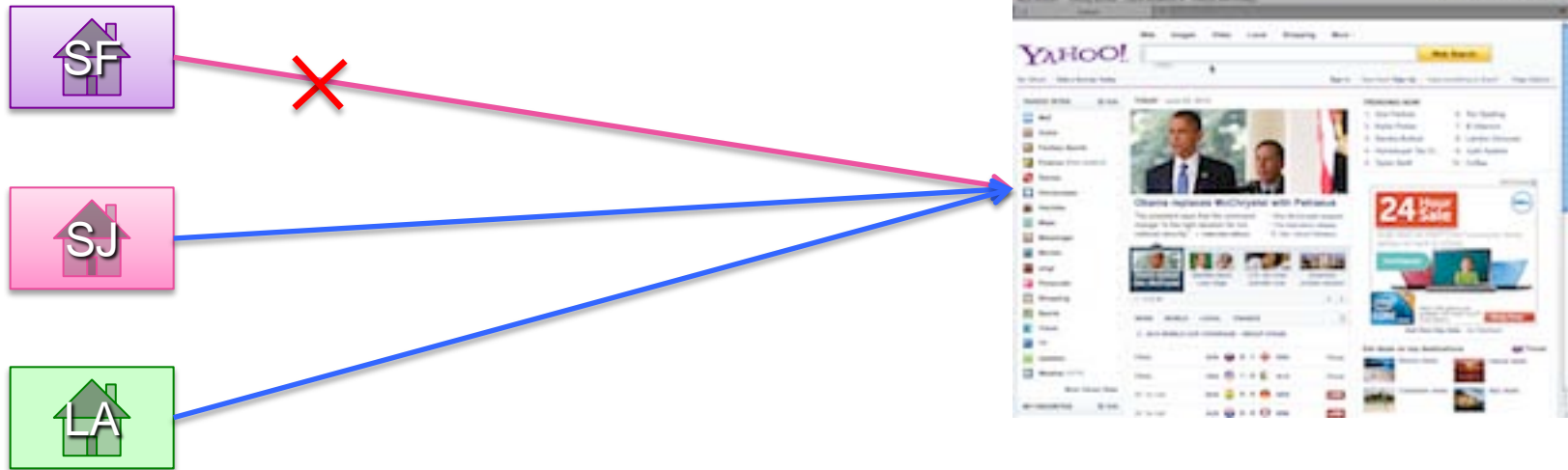
NAT IP to location: Bad

- Some ISPs will not aggregate at all. No more IP based location.



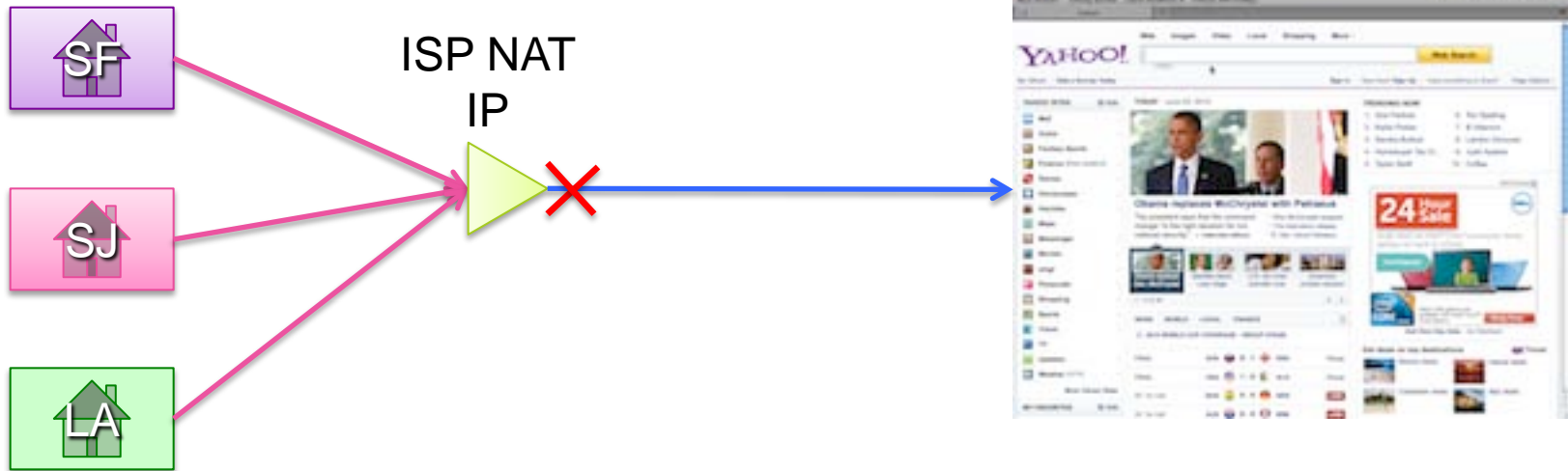
Handling Abuse Today

- If needed, we can block an IP address to block abuse.
- This will block just one house or one business.



Future of Abuse with IPv4 NAT

- If we must block a NAT IP, we will block more than one user.
- Heavy collateral damage



The IPv4 Well is Dry



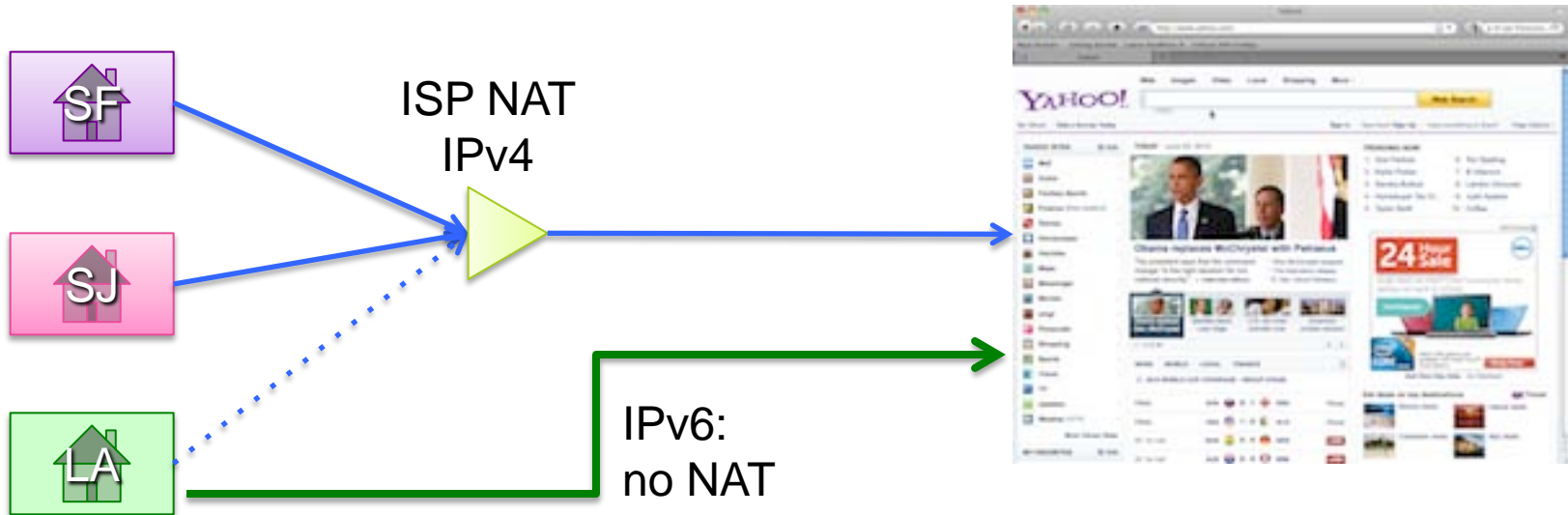
Photo by Torsten Ståhlberg via istockphoto.com

- IPv4 NAT will happen.
- We must prepare for coping with IPv4 NAT.
- **We must promote IPv6!**



Skip the NAT!

- IPv6 enabled users have a chance to bypass the NAT
- But only if the content providers are ready for IPv6.



Concerns

From the view of a web site operator



On World IPv6 Day..

- Most people today have just IPv4
- On World IPv6 Day, they will continue to just use IPv4

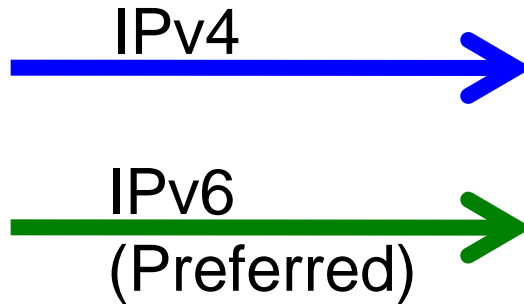


IPv4



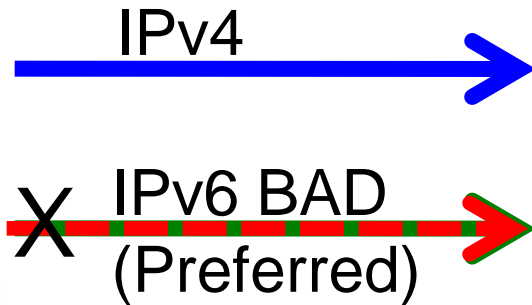
.. IPv6 will be enabled on a broad scale..

- Users provisioned with both IPv4 and IPv6, will prefer IPv6 over IPv4
- Both routes are good; users notice nothing.
- This is the ideal situation for our industry.



... and some of the users will be Broken.

- IPv6 configured; Default route bad (or poor quality)
- Browser prefers IPv6 if found (even if bad).
- Users do not realize it today, but will on June 8.



Timeouts until IPv4 fallback



Photo by William Warby via Flickr
<http://creativecommons.org/licenses/by/2.0/deed.en>

- Windows:
21 seconds per AAAA
- Linux:
21 seconds per AAAA
- OS X:
75 seconds per AAAA
- iPhone, iPad:
No fallback



How broken?

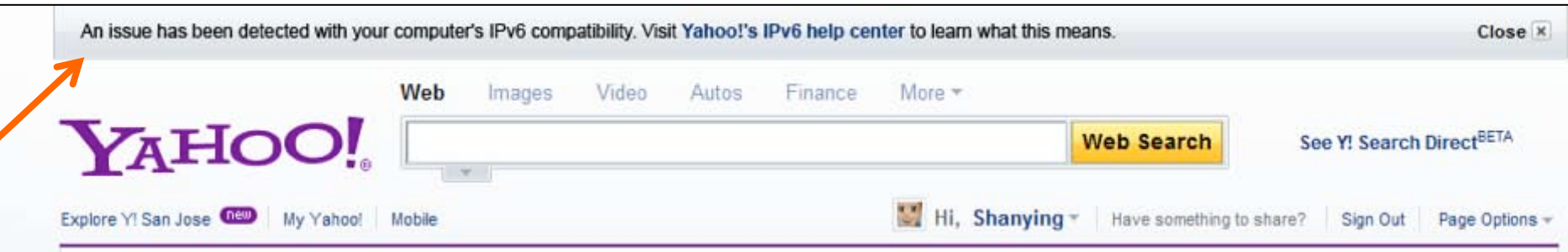
- ~ 0.05% percent of all users
- This stadium holds 99354 users.
- 50 of these fútbol fans will break.

The grandstand of the Camp Nou
Photo by Jack Pollock; public domain
<http://en.wikipedia.org/wiki/File:Grandstandcampnou.jpg>

How do we tell the customers?



Customer Outreach



- Real time detection of “Broken” Users
 - › Planned – 27 May 2011, all participating “Front Page” sites
- Search results advertising based on keywords
- Traditional PR
- Social channels, blogs



Help Page – with IPv6 test

IPv6 | Ayuda sobre IPv6

http://help.yahoo.com/!mx/yahoo/ipv6/

Yahoo! | Mi Yahoo! | Correo | Más ▾

YAHOO! MEXICO AYUDA

Temas de ayuda sobre IPv6 Comunidad

IPv6 ⁶ Infórmate sobre los requisitos necesarios para ipv6

¡Hola! Encuentra tu respuesta ahora.

Buscar ayuda sobre IPv6

Temas de ayuda

- ¿Estás preparado para IPv6?

Principales preguntas sobre IPv6

- **Iniciar prueba IPv6**
Pulsa el botón para iniciar la prueba.
- ¿Qué es IPv6 y por qué es necesario?
- ¿Qué es el Día Mundial de IPv6 ?
- ¿Se convertirá IPv6 en un cambio permanente el 8 de junio de 2011?
- ¿Qué otras compañías participarán en el Día Mundial de IPv6?

Mi ayuda

Iniciar sesión ¿Olvidaste tu nombre de usuario o contraseña?

Inicia sesión para ver tu información de contacto, guardar artículos y más.

► **BÚSQUEDAS RECIENTES (1)**

► **VISTOS RECIENTEMENTE (3)**

Otros sitios con información sobre IPv6

- Sociedad de Internet (ISOC)



Thank you, Internet Society

- For the tireless evangelism of IPv6
- For bringing everybody together
- For acting as an umbrella for competitors to work under
- For being excellent hosts

And most of all:

- **Thank you for helping give our industry a date.**



Questions?

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Appendix



Example Causes of Broken Users

- Rogue router RA's
- Routers with Private IPv6 (ULA, RFC4193) announcing default IPv6 gateway. Example: Fritz AVM (ie: fc00::/7)
- Routers with bogons configured (ie, 2001:db8::/32)
- Windows Internet Connection Sharing (ICS) announcing default IPv6 gateway, especially 6to4
- Routers advertising RA's – then disappearing
- 6to4 enabled, but performing badly (ie, 2001:0::/32)
- 6to4 or 6over4 (tunnelbroker), IP proto 41 blocked by firewall
- IPv6 enabled, but customer firewall blocking IPv6
- Failed Path MTU Discovery due to filtered ICMPv6
- Walled Gardens



Walled Gardens

- In some locations, IPv6 has been deployed a long time.
- Television, voice, and internet combined
- Customers have IPv6 default route visible to their PC
- But limited to the ISP network – not the public network.

- Example: NTT Japan
 - › Will send TCP RST to fail IPv6 connections faster
 - › Windows will ignore this
 - › Concerned about World IPV6 Day and TCP RST capacity
 - › Some Japanese ISPs are considering filtering AAAA records ☹️

