

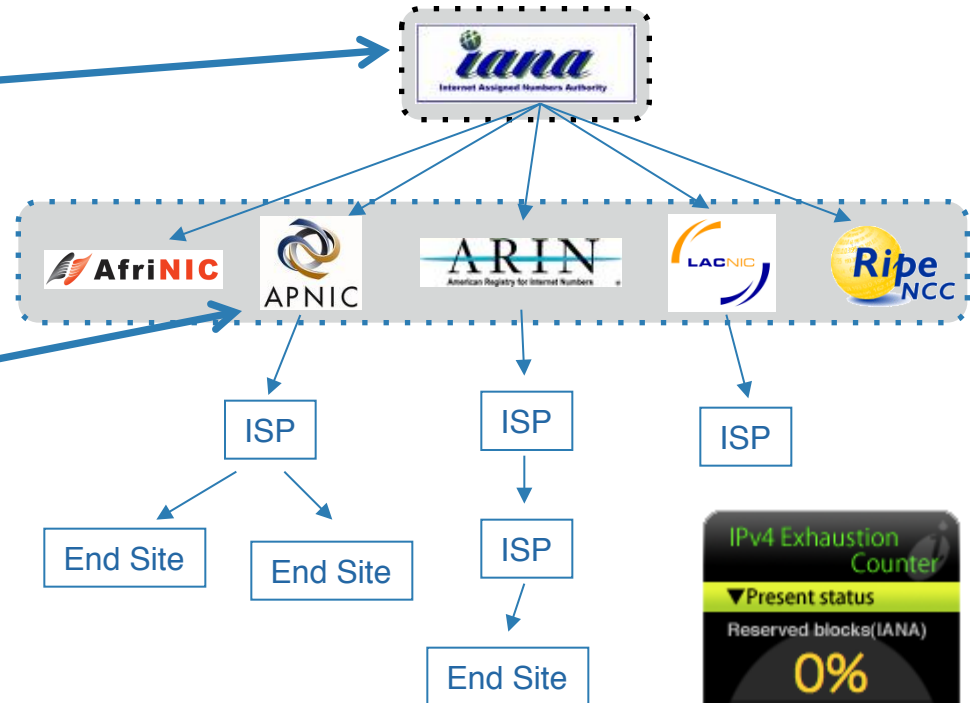
# Registry View of IPv6

Joe Waldron

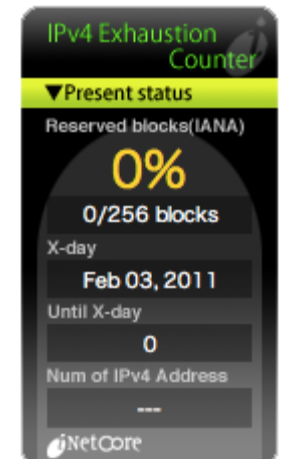
# IPv4 Free Pool Exhaustion

- IPv4 pool is exhausted
  - IANA unallocated IPv4 pool exhaustion: **31 JAN 2011**  
<http://www.nro.net/news/ipv4-free-pool-depleted>
  - APNIC RIR unallocated IPv4 pool exhaustion: **15 APR 2011**  
<http://www.apnic.net/publications/news/2011/final-8>

Internet Number Resource Allocation Hierarchy (AS numbers and IPv4/IPv6 addresses)



Source: <http://www.potaroo.net/tools/ipv4/index.html>

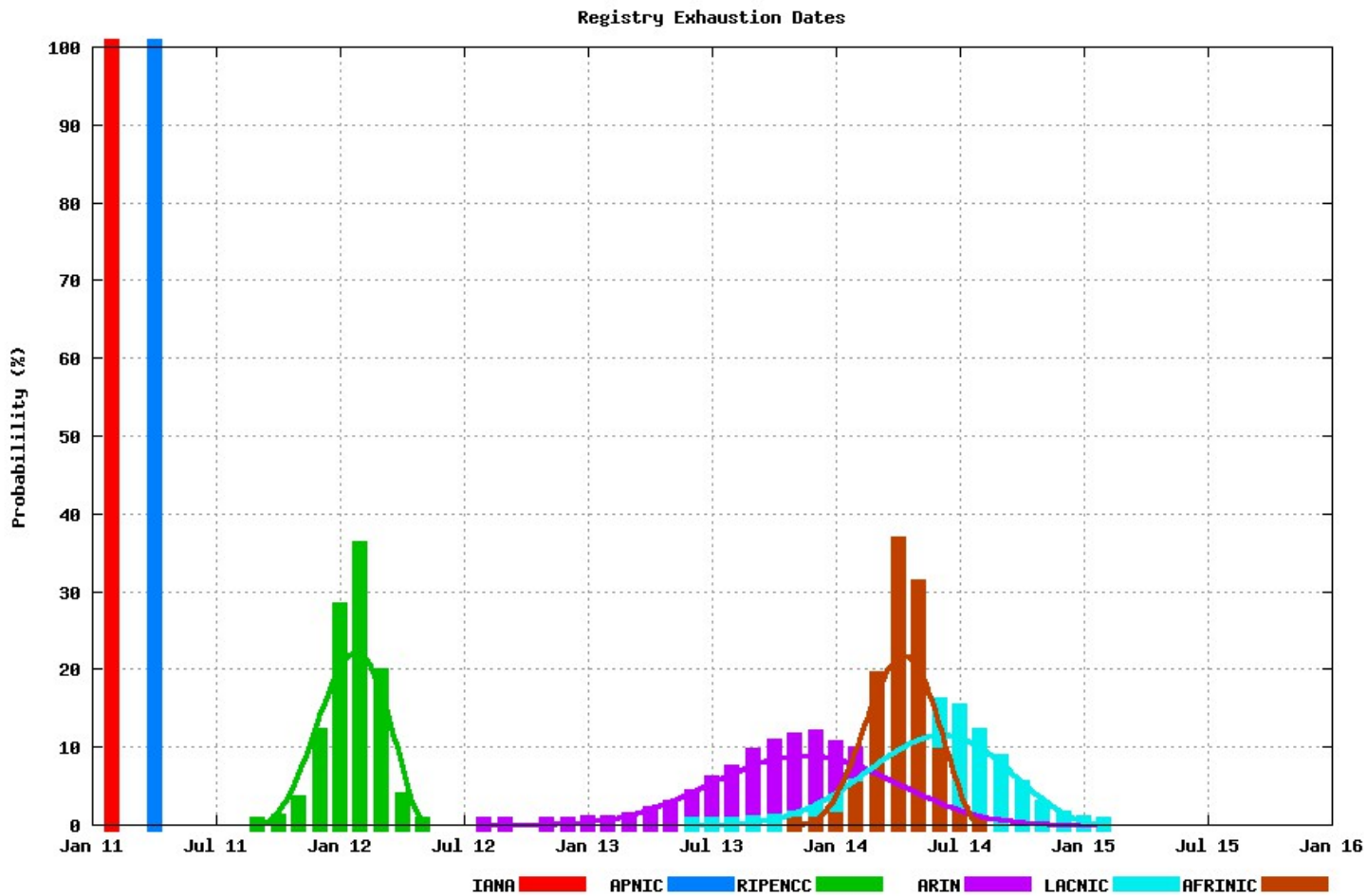


VERISIGN

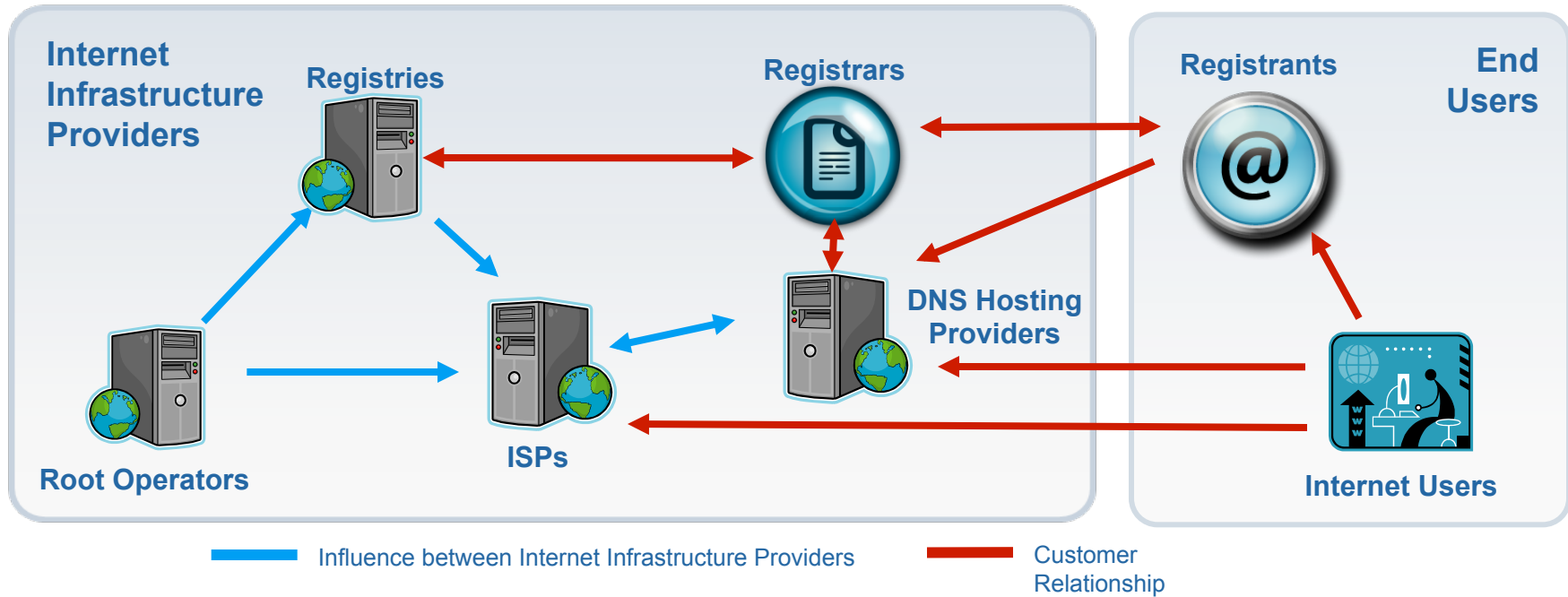
# IPv4 Exhaustion Projection



- Attribute to Geoff Huston – June 2011
  - <http://www.potaroo.net/tools/ipv4/rir.jpg>



# Internet Ecosystem: Relationships & Influences



- Network Equipment vendors
- Internet Service Providers
- DNS
  - Root Operators
  - Registries
  - Registrars
  - Hosting Providers

- Consumers
  - Registrants
  - Internet End Users

# IPv6 Implementation Options

- There are four choices for migrating to IPv6 while still maintaining IPv4 compatibility
  - Building out parallel IPv4 and IPv6 infrastructures
  - Running dual stacks on the systems with IPv4 and IPv6
  - Tunneling IPv6 traffic over IPv4 tunnels
  - Running IPv6 network address translation (NAT) for IPv4 traffic
- Any complete solution will likely use a combination of the four choices above
- All four choices have one thing in common: they all require the company to run and support both IPv4 and IPv6

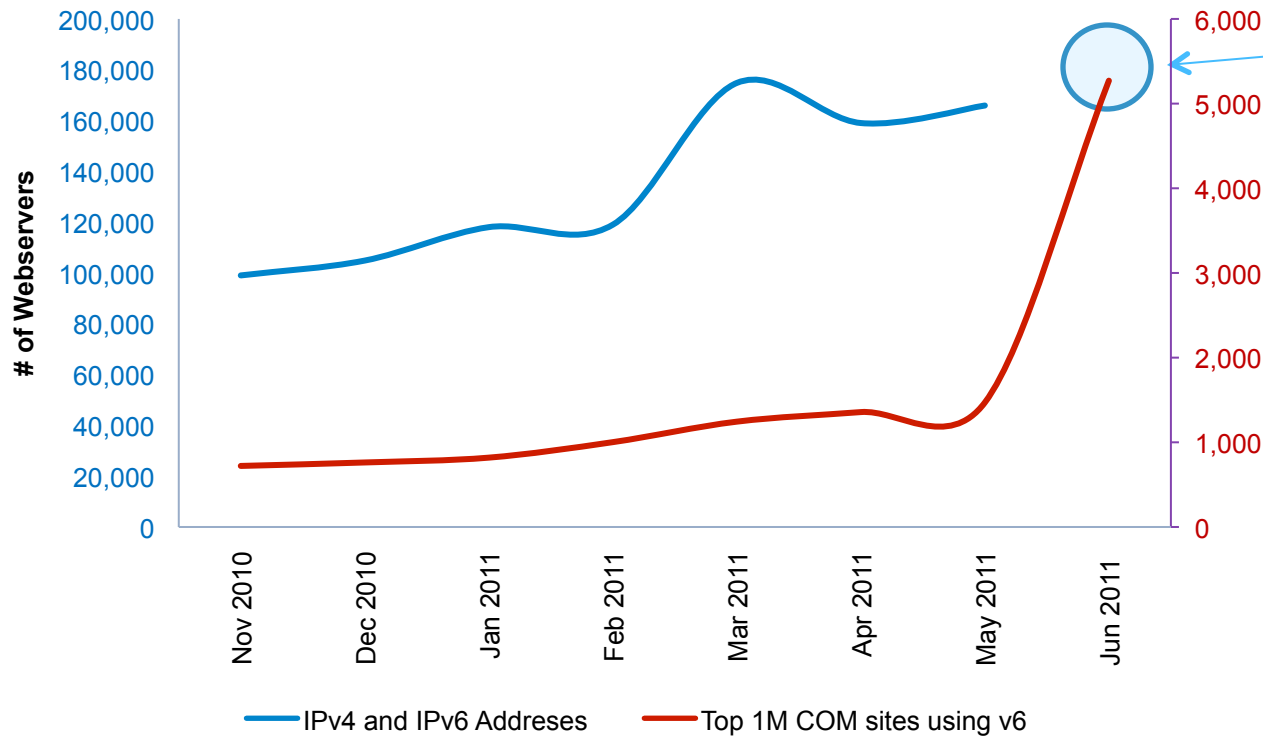
# World IPv6 Day

- Wednesday, June 8, 2011
  - Global initiative & test run of the IPv6 protocol
  - Goal – Motivate stakeholders to prepare their services for IPv6
  - 400+ listed participants
  - ~ 40% of participants could be resolved in DNS using exclusively IPv6
- [www.verisigninc.com](http://www.verisigninc.com)
  - [www.verisigninc.com/en\\_US/why-verisign/innovation-initiatives/ipv6/index.xhtml](http://www.verisigninc.com/en_US/why-verisign/innovation-initiatives/ipv6/index.xhtml)
  - Dual stacked environment
  - Verisign's DNS infrastructure answered almost 607 million queries over IPv6 on World IPv6 Day
  - The 'A' and 'J' root name servers run by Verisign answered 60 million queries over IPv6 on World IPv6 Day



# Responses to IPv6 Queries

## Web servers with IPv6 address



Web servers responding to DNS over IPv4 + IPv6

~ 70% increase in 6 mo.

Top 1M Com sites w/ IPv6

~ 2x increase in 6 mo.

~ 2.5x increase in the last month

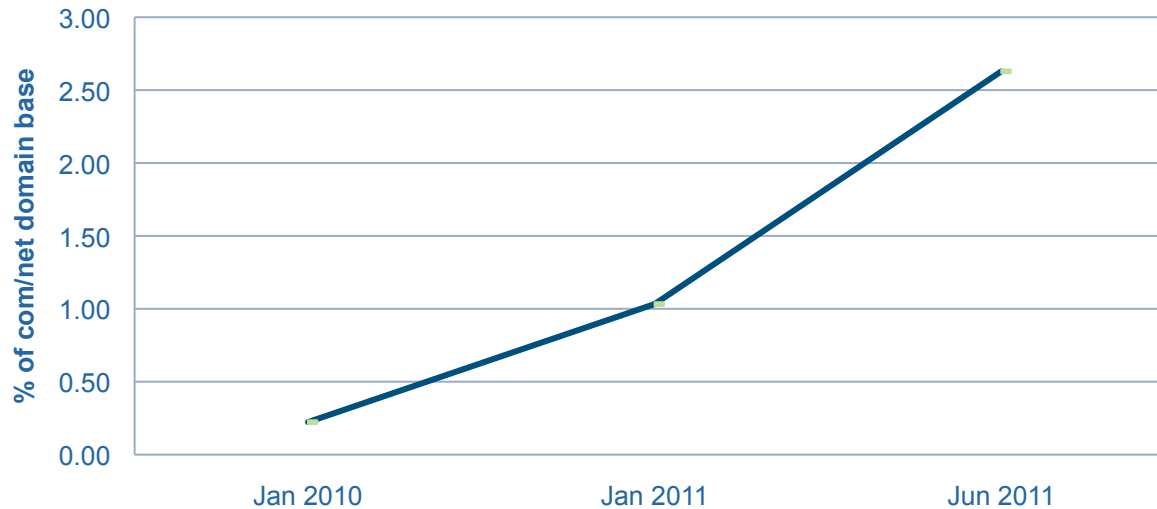
Source: Verisign Internet Profile Service



# IPv6 Statistics - .com/.net registry

	January 2010	January 2011	June 2011
% of Nameservers w/ an IPv6 address	.06%	.11 %	.17%
% of IPv6 nameservers which have IPv4 <u>and</u> IPv6 address	88%	88%	89%

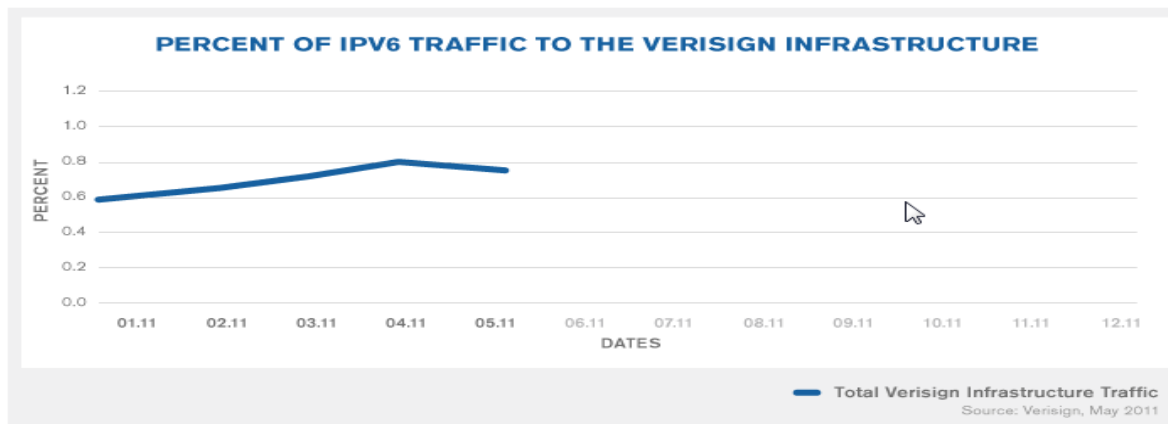
**Domains linked to name servers with both IPv4 and IPv6 addresses**





# IPv6 capable com/net Registry

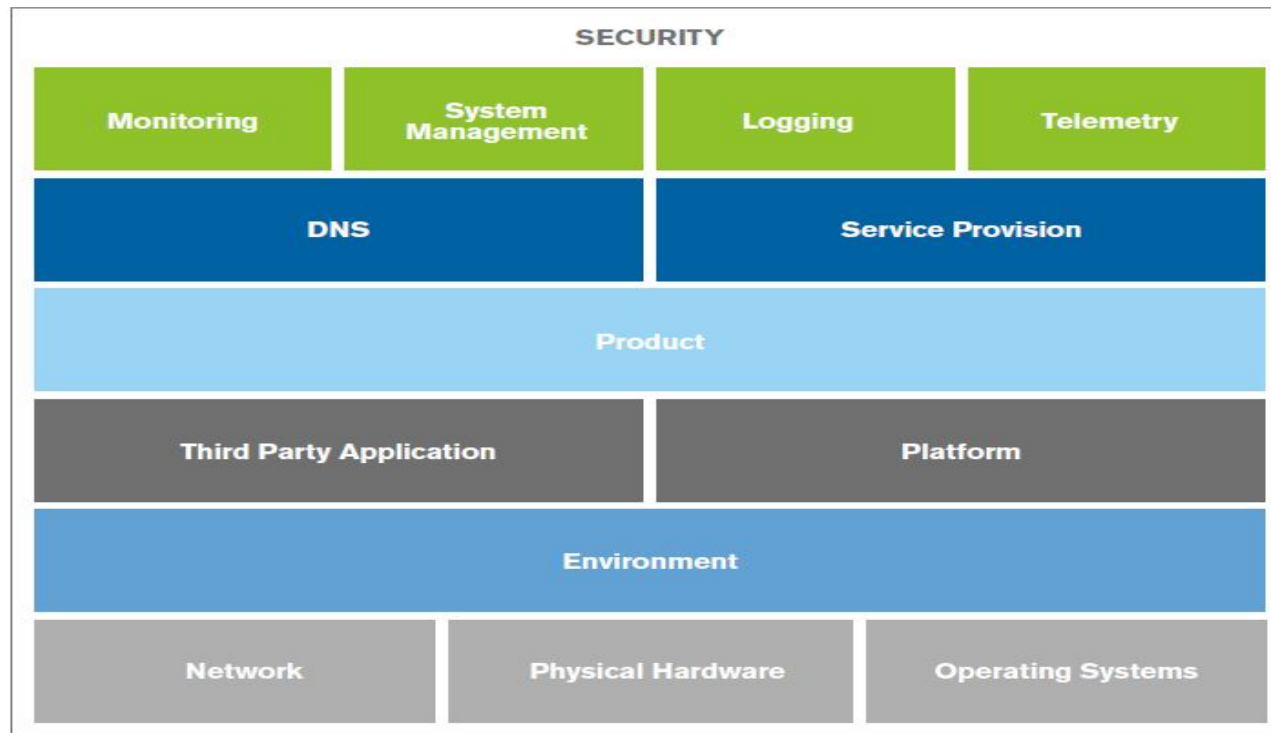
- Registry: Accepting “Quad A” records for nearly 10 years
  - IPv6 capable through RRP and EPP
  - EPP Protocol – RFC 5730
  - EPP SDK
  - Shared Registry System (SRS), Whois, Other Registry Services
- Resolution: IPv6 transport for authoritative com/net Nameservers in 2004
  - Committed to continually expanding capacity to meet and exceed the coming global demand for IPv6
  - Potentially double the traffic on the nameserver infrastructure during the transition years



# Enterprise Business

- Goal: Ensure customers do not experience differences when connecting via IPv4 or IPv6
- White paper – “Preparing for IPv6”
  - <http://www.verisigninc.com/assets/preparing-for-ipv6.pdf>

STRATEGIC PROGRAM FRAMEWORK



# Thank You