# US Federal IPv6 Deployments

ION San Diego
11 Dec, 2012
San Diego, CA

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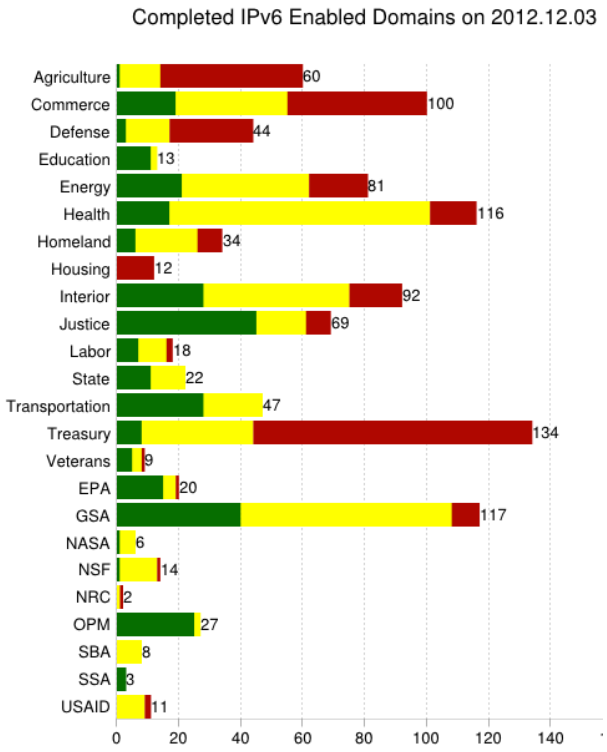
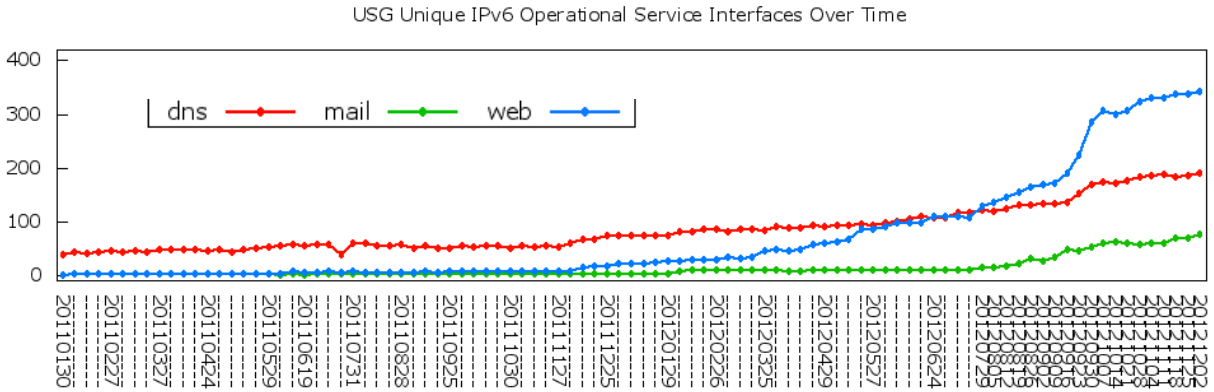
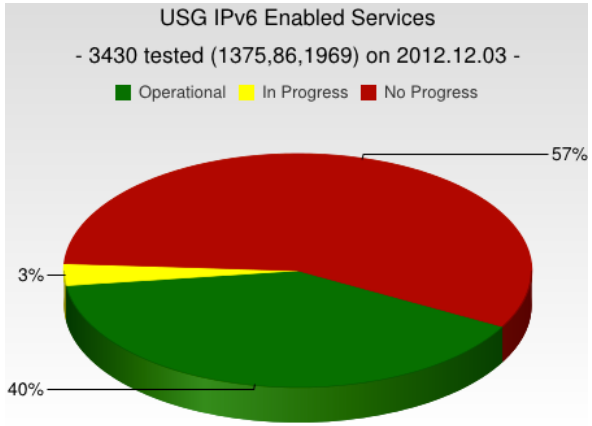
# US Federal IPv6 Status

- NIST IPv6 Deployment Monitor
  http://fedv6-deployment.antd.nist.gov/



# Looking forward

- What is the incentive to keep the pressure on after the deadline?
  - .gov domains will not be renewed if that organization has not met the mandates for IPv6 (and maybe DNSSEC as well).
  - Other organizations should consider similar incentives

# Top Enterprise Deployment Challenges

- Lack of IPv6/IPv4 feature parity
  - taking way too long to get there
- Vendors not eating own dogfood
  - but this is starting to change
- Rogue RAs due to Windows ICS
  - set router priority to “high” as workaround
- Privacy Addresses (RFC4941) break address stability
  - no easy way to centrally disable
- Lack of DHCPv6 client support in older OS’s
- Network Management over IPv6 not quite there
- Operational Complexity with dual-stack

# Keys to success

- Clear simple achievable vision and mandate, with deadlines, from the top (CIO)
- Responsibility, accountability, and authority established and managed at the executive level
- Public reporting of status along the way, both internally and externally
- Bring in experts that have IPv6 operational experience, if you don't have it organically in your organization.
- Early (and consistent) interaction with service and technology providers, to communicate requirements.
  - and be willing to switch providers to acquire IPv6 support
- Dual-stack support from ISP(s)

# Benefits of IPv6 today (examples)

- Addressing
  - can better map subnets to reality
  - can align with security topology, simplifying ACLs
  - sparse addressing (harder to scan/map)
  - never have to worry about "growing" a subnet to hold new machines
  - auto-configuration, plug-n-play
  - universal subnet size, no surprises, no operator confusion, no bitmath
  - shorter addresses in some cases
  - at home: multiple subnets rather than single IP that you have to NAT
- Link Local address on every interface
- Multicast is simpler
  - embedded RP
  - no MSDP
- Mobile IPv6 is cleaner/simpler than in IPv4

# IPv6-Only Management LAN

# Management over IPv6 in some products

| | SSH HTTPS | DNS | Syslog | SNMP | NTP | RADIUS | TFTP FTP | Flow export | Unified MIB RFC4293 | CDP LLDP | IPv6 MTU | No v4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cisco[3] | | | | | | | | 6 | | | | |
| Brocade[1] | | | | | | | | | | | 9 | |
| Juniper | | | | | | | | 5 | | | | |
| ALU | | | | | | | | 4 | | | | |
| A10 | | | | | | | | 7 | | | | |
| Aruba | | | | | | | | | | | | |

1. Can't reboot using SNMP over IPv6
2. .
3. 15.2(2)TR
4. 10.0R6 (Nov 2012)
5. 12.3R1 Nov 2012 (beta in August)
6. ASR1K:3.7S (July 2012)
7. 3.0 release, 2012Q4
8. No plans
9. fix planned for Apr 2013

# END

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