



Managing the Transition of Your Applications to IPv6

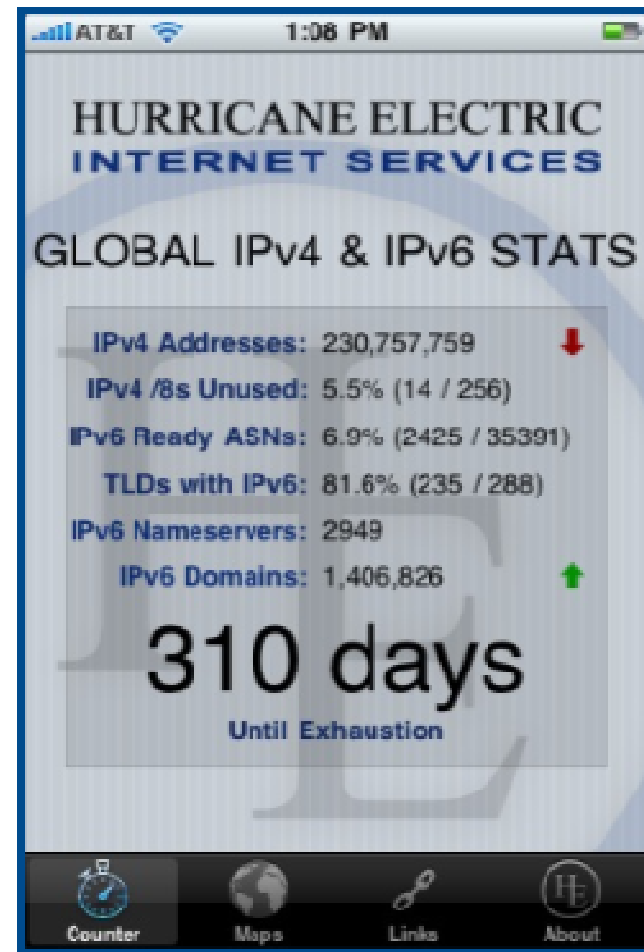
Using Testing as a Strategic Advantage

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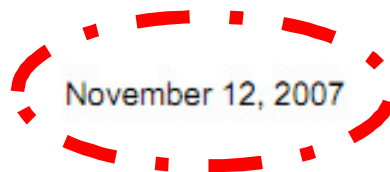
Thankfully We're Past This...

- Not that there aren't a lot of challenges left to conquer



Deployment of IPv6

- According to a 2007 IPv6 Forum Ready Logo white paper...
 - “...Effective **testing** of IPv6 products is of critical importance...”



www.ipv6forum.com

- If that was true in 2007, what concerns people in 2011?
 - Testing **networks** and **applications**
 - Products are still the foundation
 - But successful rollouts need to test a lot more than layer 3!

The First Step for Recovering IPv4 Addicts

- Admitting you have a problem
 - *Just kidding: IPv6 is **not** a 12-step program!*
- Check out these tweets from last Friday:
 - *We are the **FIRST** test equipment vendor listed as an IPv6 Ready WWW site:*
http://www.ipv6forum.com/ipv6_enabled/approval_list.php?&start=810
 - **Short URL:** <http://bit.ly/eKeZNW>
 - *If you want to access our website from an IPv6-enabled browser, you can use this <http://www.mudynamics.com/> or this [http://\[2607:fe70:11::1:3240\]/](http://[2607:fe70:11::1:3240]/)*
 - **Short URL:** <http://bit.ly/gaz6o1>



What Do Customers Want?

- Certification



- Verification



- Life cycle management

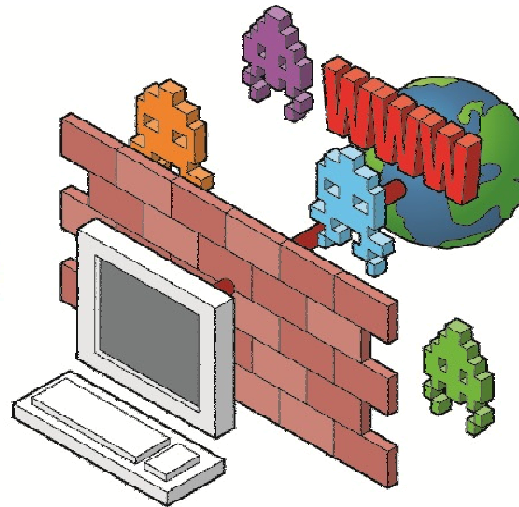


- Controlling costs



Certification

- Historically: Two main thrusts
 - IPv6 Ready
 - Multiple phases, many protocols
 - Conformance, interoper
 - NIST USGv6 NPD
 - Firewalls, IDS/IPS, etc.



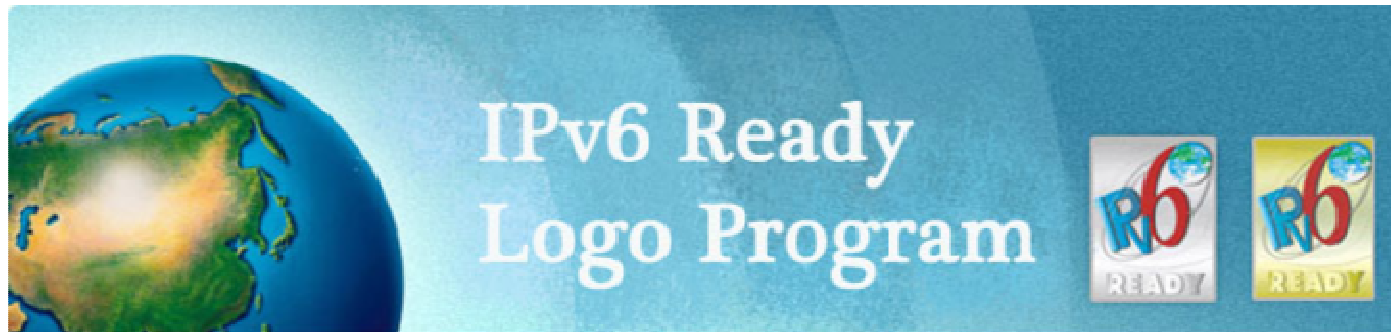
**USGv6 NPD
Testing**

Now Available

- Looking forward: What does it mean to certify apps?
 - High in the stack, standards wane in significance
 - Each app has custom interactions

Partnership with UNH-IOL and ICSA

- Only 2 labs currently NIST-certified for USGv6 testing
 - Both are Mu partners
 - UNH-IOL
 - ICSA Labs
- Both are using Mu Test Suite as part of their NPD testing
 - Network Protection Devices



Applicability of Certification Testing

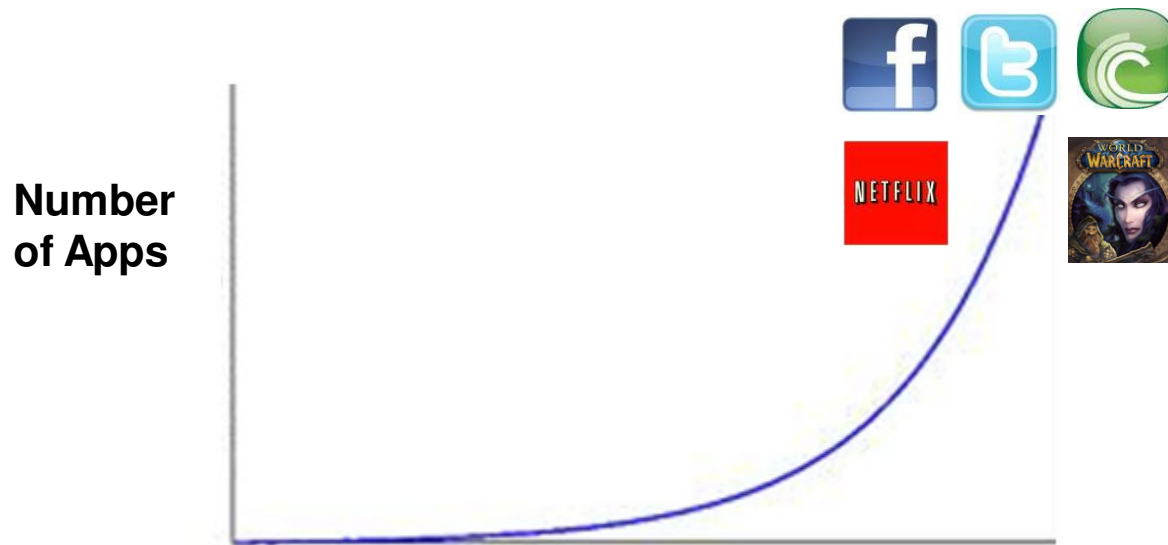
- Validation/spot-checks during purchasing process
- Sanity-checking old gear (that may never get a logo)
 - It may have new code that claims to support IPv6, though
- Running conformance or interoperability tests in your production network configuration
- Many others

Verification

- Expanded scope of “certification”
 - **From:** Does my device work?
 - **To:** Does my network work? Does my defense-in-depth work? Do my servers work? Load balancers? Apps? ...
- Once people prove that something works
 - They probably want to verify periodically
 - Is it still working?
 - They would probably prefer to leverage similar or identical test assets to evaluate IPv6 as well as IPv4
- Some folks may need to **prove** that they are IPv6 Ready
 - Federal/OMB mandate

Number of Apps is Exploding

- 600,000 apps now on Facebook
- 250,000 apps now on Apple App Store
- 150,000 apps on Android

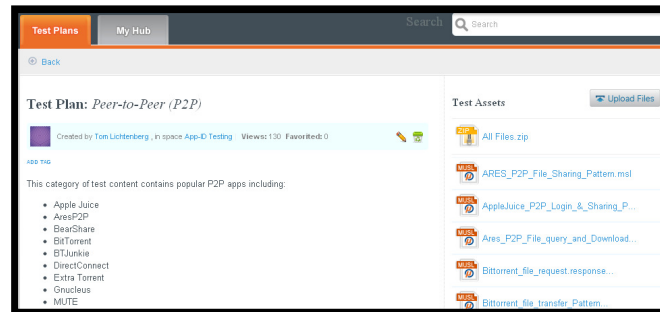


Mu TestCloud – Collaborative Testing

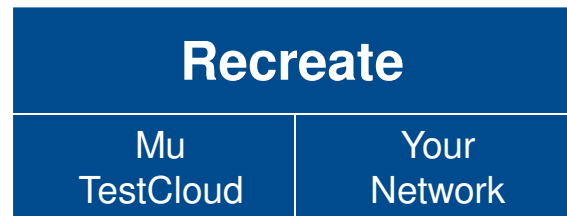
- IPv6 Ready and NIST USGv6 NPD test assets available for download
 - No cost!

Mu Workflow

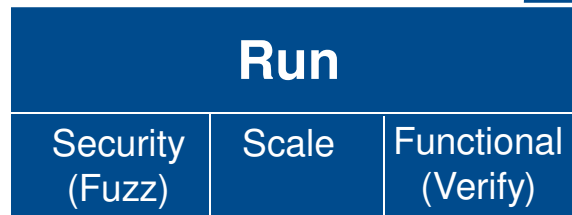
It is as simple as...



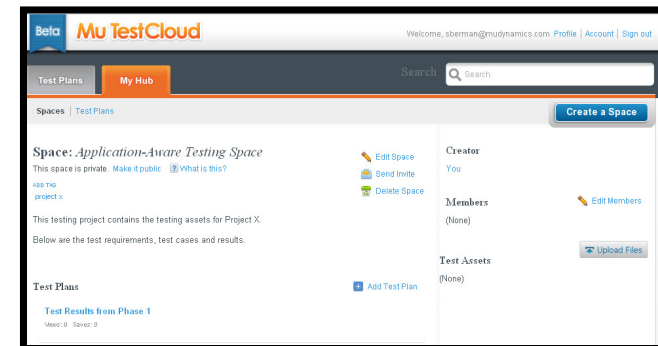
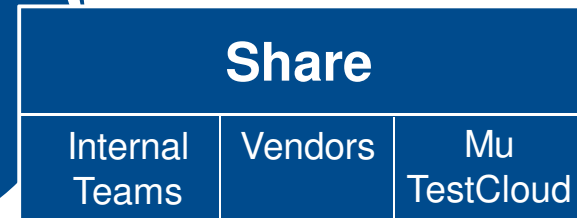
Recreate real apps by downloading 100's of ready-to-run tests from Mu TestCloud or automatically generate tests from traffic captures



One test for Scale, Security and Functional testing



Share test cases with others, inside and outside your org



Life Cycle Management

- Testing classification – don't over-complicate things
 - Functional:
 - “Does ‘it’ work?”
 - Over IPv4?
 - Over IPv6?
 - Stress:
 - “Does ‘it’ compile?”
 - “Does ‘it’ run overnight?”
 - “Does ‘it’ run under load?”
 - Security:
 - “Does ‘it’ survive invalid or unexpected inputs?”
 - “Does ‘it’ survive denial-of-service attacks?”
 - “Does ‘it’ deflect known attacks?”

Controlling Costs

- Everyone is challenged by IPv6
 - Testing budgets are chronically constrained
 - Staff levels in IT and QA rarely increase
- People are demanding **automation**
 - Due to the crushing workload
 - Trade off capital vs. operational expenses
- What kind of customers are these?
 - Federal & Enterprise
 - Operators
 - Primarily ISPs
 - NEMs
 - Routers/switches
 - Infrastructure
 - IP address management
 - » DHCP
 - » DNS

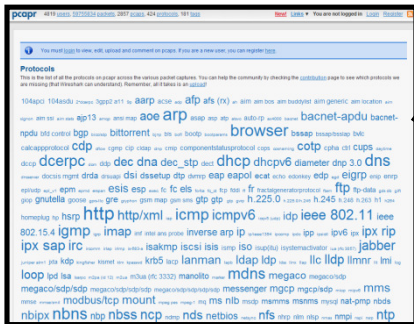
What's Different Now?

- Vendors and Operators don't control the apps
 - Apps first appear on the network after release
- HTTP is the new TCP
 - Apps may look the same, but they're all different
- Unpredictable demand
 - Ramp up to millions of users in hours/days
- Mobile devices connect differently to the network
 - iPhone, BlackBerry, Droid
- Existing test vendors can't keep up
 - Too many apps even for the largest test vendors

Mu Test Suite - Immediate Testing of Any App



**Ready-to-run Tests
on Mu TestCloud**

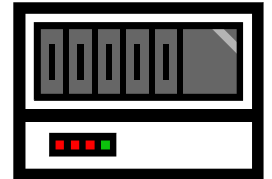


Pcaps on pcapr.net

**Mu Studio
Scale**



**App-Aware
Service**



Testing to the Rescue

- IPv6 is here
- IPv6 **mostly** works
 - Making it work for **you** -- *that's the challenge!*
- Applications are also a big challenge
 - As if a million apps weren't a big enough challenge on their own
 - Now you have to test them over IPv4 and IPv6
- Our customers are winning the battle