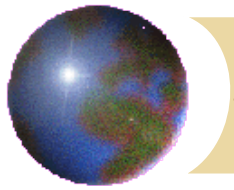# IETF Activities Update

Cathy Aronson
cja@daydream.com

ARIN 33
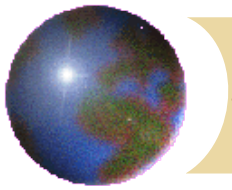
Note

This presentation is not an official IETF report
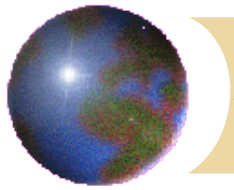
- There is no official IETF Liaison to ARIN or any RIR
- This is all my opinion and my view and I am not covering everything just highlights
- You should know I like funny quotes
- I hope you enjoy it
- Your feedback is greatly appreciated
- If you were there and have an interesting item I missed please speak up

Since we last met

- This talk covers two IETF meetings.
  - IETF 88 in Vancouver (Nov. 2013)
  - IETF 89 in London (March 2014)
- Some blogging!
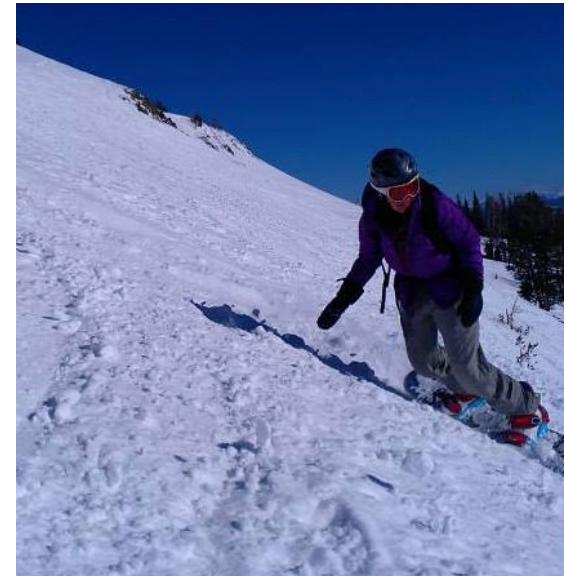
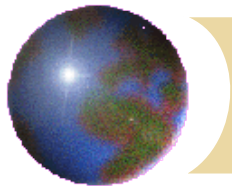# *Highlights*

- WHY 64? draft-carpenter-6man-why64-01
  - This was presented in 6Man
  - A surprising number of implementations assume a /64 sized host identifier.
  - These are outlined in the draft
  - Too hard to fix at this point?
- Internet-wide Geo-Networking BOF
  - an application may want to tell all the cars in a geographic area where the closest open charging station is located
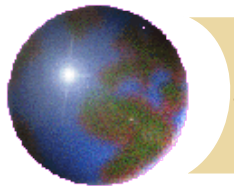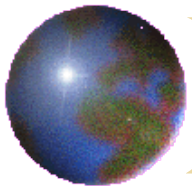
Internet Designers?

- The latest from the IETF 89 attendee list
  - The usual discussion about exchanges and exchange rates.
  - Rooms are too hot
  - Rooms are too cold
  - Where can I do laundry
  - Places to eat fish and chips
 - Where to get coffee (non existent in the UK IMHO)

IEPG

- RPKI and origin validation in Ecuador
  - Chicken and egg situation
  - NAP.EC is 97% of total Internet in Ecuador so if they do this then Ecuador is mostly done.
  - August 2013 installed two routers and gave it a go
- Roque's paper is here
  - https://blogs.cisco.com/perspectives/securing-critical-internet-infrastructure-a-rpki-case-study-in-ecuador

IEPG

- Measuring Google's Public DNS (Geoff H) Using google services to measure Google 8.8.8.8

- Measuring DNSsec
  - The good (dns sec signed)
  - The bad (badly signed)
  - The Ugly (not signed)

- "it is magic.. there is no other way to describe this shit"

- 7.2% use Google and 92.8% use others. 5.3% just use google and if it fails you believe.

IEPG
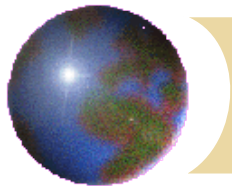
- Fragmentation and extenstion header support in IPv6 Internet by Fernando Gont
    - both fragmentation and the use of extension headers both problematic. Need to deprecate both.
    - 50% failure rate.
- Making Special Better (Pearl Liang)
    - This is important to know about. The IANA is working to make the special registry easier to parse so that filtering will be easier. Info is here http://www.iana.org/about/presentations/20131103-liang-ietf88.pdf

IEPG
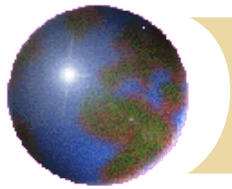
- Paul Vixie – On the time value of Security features in DNS
  - Problems with DNS that IETF should be working on.
  - Lack of source validation
  - Always falling back to TCP not the best idea
  - Article is here http://www.circleid.com/posts/20130913_on_the_time_value_of_security_features_in_dns/
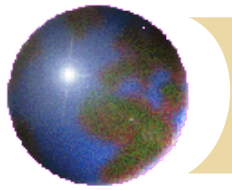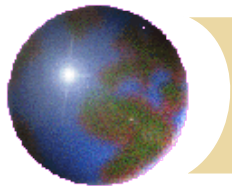
IEPG - 2014

- George Michaelson – Rsync
  - Presentation on possible hacks with rsync
  - Take away- Don't run rsync as root
- IPv6 Matrix
  - Measuring IPv6 deployment
  - IPv6Matric.org
  - Tool shows IPv6 info and can search by zone
  - Raw data also available
 - Similar work being done at LACNIC too

IEPG - 2014

- BGP in 2013 – Geoff Huston
  - Is the routing table blowing up as predicted?
  - There are 50 /8 equivalents that aren't in the routing table and no on the transfer market
  - 11 ASNs added every day like clockwork.
  - Routing table not really changing
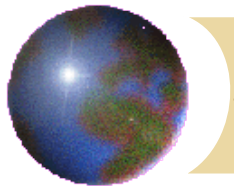 - Article is here http://www.internetsociety.org/sites/default/files/bgp2013.pdf
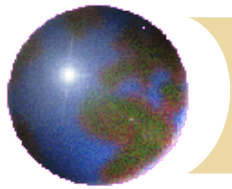
IEPG - 2014

- A couple of operational items of interest
- BGP configuration size has gone up (Jared Mauch)
  - 16mb config files
  - Parser problems and commit time problems (sometimes a config can take up to an hour to commit)
  - 96% is route filtering
- Internet ASN squatting
  - Unassigned ASNs showing up in the routing table
  - Really bad if ASN and prefix are both not assigned
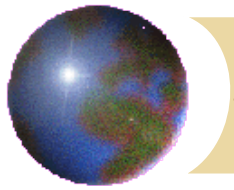 - Geoff confirms there are about 900 bogus ASNs in global routing table.
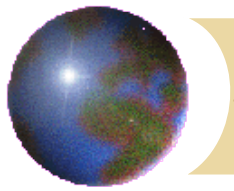
IPv6 Maintenance

- Deprecating EUI-64 Based IPv6 Addresses
  - MAC addresses have security implications. Must not use hardware address in address generation schemes.
- Efficiency aware IPv6 Neighbor Discovery Optimizations
- IPv6 ND Option for Network Management Server Discovery
  - A way for devices to use Neighbor Discovery to discover the NMS
  - Not sure why this is necessary.
- IPv6 Tunnel MTU Configuration
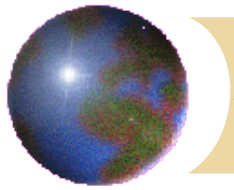 - point to multipoint tunnels with varying MTUs have problems

IPv6 Maintenance

- Analysis of 64 bit boundary in IPv6 addressing - Brian carpenter
  - Talked about in Highlights
- Node Discovery on wireless links and/or sleepy nodes.
 - Multiple drafts about this now.

Tech Plenary London

- Lots of complaints that this was a marketing tech plenary.

- I really found the presentation by Malcolm Pearson Microsoft China to be interesting though

  - He talked about how folks buy things is bound in culture. Ecommerce as an experience.

  - Not uncommon for folks in China to have an app that lets them split up the check among friends at dinner

  - Boleto – you get an invoice, go to a convenience store, pay and get a barcode that lets you get your item.

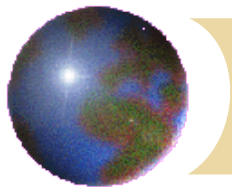 - Huge parts of the world people don't have bank accounts.

Technical Plenary

- 10 Things to know before going to IETF
  - https://www.youtube.com/watch?v=pbn6nhYWPW8

- Hardening of the Internet
  - How did we get here? and
  - How do we make it harder to do surveillance?

- "security is like a birthday cake. The more layers it has the better it tastes and the messier it is to eat" Stephen Farrell
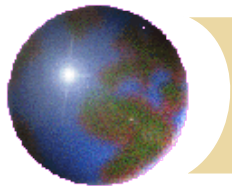
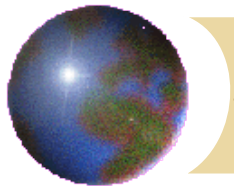# *HOMENET*

- "multiple routing protocols in the home.. are you on crack?" Lorenzo

- Home Network Configuration Protocol
  - Simplified routing for most home networks.
  - Draft-stenberg-homenet-hncp-00
  - Discovers topology (inside, outside, etc)

IPv6 What does success look like?

- Usage of IPv4 is trending downwards

- VPNs also ran over IPv6 so corporate networks running IPv6 would work for folks connecting in remotely

- a large wireless company pushing out v6 only devices perhaps using NAT64

- transition technologies are no longer needed

- in 2020 we still have the Internet and folks can still get to everything.

- users get IPv6 by default from their ISP

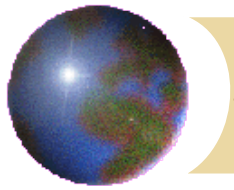- software is IP version agnostic.. IP is IP and should not mean IPv4.

ISOC Briefing Panel

IPv6 What does success look like?
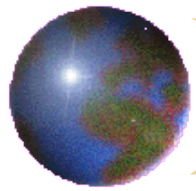
Comcast Cable

- 75% of their broadband network now supports IPv6 and 25% of those are currently using it. Next year they plan to have 100% of their broadband network supporting IPv6.   Right now, however, when they turn up a home with IPv6 only 20% or so of the traffic is IPv6.

- 2% of the Internet traffic is IPv6 (Fall 2013)

- Teredo (a transition mechanism) is going to be turned off in 2014

ISOC Briefing Panel

- Other items
  - Phone calls and truck rolls matter
  - Still major apps that don't do v6 (like Skype)
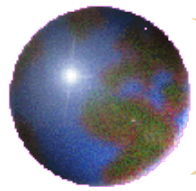 - Will the internet diverge if some countries have v6 and others don't?

ISOC Briefing Panel -London

- Evolution of End to End
  - Fred Baker – Smart Network
  - Andrew Sullivan – Infrastructure in middle
  - Harold Alvestrand – Smart endpoints
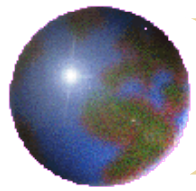
V6 Operations

- Xbox One and Teredo
  - Sunset of Teredo and use of Teredo with Xbox
  - Microsoft is sunsetting for everything except Xbox (early 2014)
- draft-ietf-v6ops-nat64-experience
 - a lot of information about using NAT64 and ULA as well as CGN. When does a host pick which address/service
- draft-ietf-v6ops-ula-usage-recommendations
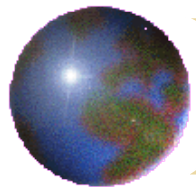 - all sorts of info about using ULAs. Pros/cons for each

V6 Operations

- IPv6 Roaming Behavior Analysis

  - Outlines problems with roaming. There are so many hybrid networks that roaming in v6 can be problematic

- DHCPv6/SLAAC Address Configuration Interaction Problems

  - Looks at stateless address auto-configuration, DHCPv6 and ND and their interactions

- IPv6 Addresses for Documentation

  - 2001:0db8::/32 is current block
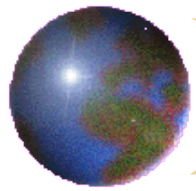 - Want to add a /20 and a /44
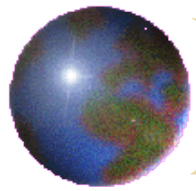
V6 Operations

- Address Management for IPv6 transition
  - This draft proposes a mechanism to easily move address blocks around as they are needed. This does pose some routing challenges.
- Why do operators drop fragments?
  - "if I am going to drop them on accident I am going to do it deliberately" Joel
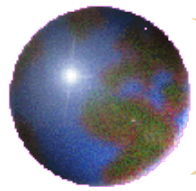- Neighbor discovery is very chatty with multicast and this isn't good for sleepy nodes.

V6 Operations

- draft-ietf-v6ops-ula-usage-recommendations
  - Recommendations for using Unique Local Addresses (ULA)
  - Debate about what is an "isolated" network
- draft-ietf-v6ops-dhcpv6-slaac-problem
  - Two ways to get addresses in IPv6
    - SLAAC – Stateless Address Autoconfiguration
    - DHCPv6
  - If you use both there can be interaction problems.
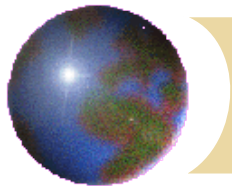
IGOV Update

- In Vancouver Jari gave an update about IGF in Bali
  - Mood was different because of the revelations
  - Risk higher now of national regulations, fragmentation of the Internet, etc

- Someone mentioned that giving large blocks of address space to countries would fix things. I got up and said a few words about that and the implications of IETF folks saying things like that.

- Proposal for a coalition on Internet Governance
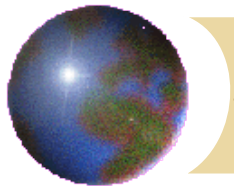 - http://www.pcworld.idg.com.au/article/532097/icann_sets_up_coalition_address_new_internet_governance_challenges/

IGOV Update

- This time it was all about the IANA and the IETF/IANA relationship

- IETF is currently documenting the IETF/IANA relationship.

- It was suggested that the IETF should make sure that they own the content of the registry

- Steve Crocker said that IETF owns the content of the registry.

HOMENET

- Homenet Arch - draft-ietf-homenet-arch-11
  - This is out for review with the IESG
- Bootstrapping trust in HOMENET
  - Perhaps use a device like an iphone to tell your homenet to trust a new device. There's an app for that
- Several drafts now on naming and service discovery
- Still not solved the multihoming problem

LISP – Locator/ID Separation

- EID block. Asking for /32 from IANA (IPv6) for local (non globally routed) for LISP endpoint identifiers.
   - Draft-ietf-listp-eid-block-08
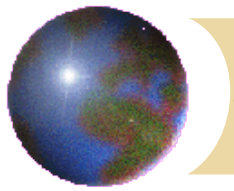
WEIRDS

- Web Extensible Internet Registration Data Service

- Bootstrapping WEIRDS -how do you know where a record resides? Which RIR?
  - DNS Based Solution
  - IANA registry based match registry content and get URL
  - Autonomous solution – No IANA involvement
 - Servers that do redirects to the right RIR
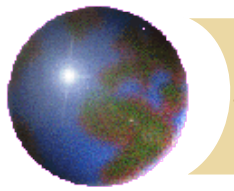
Benchmarking Methodology

- **IPv6 Neighbor Discovery**
  - Testing to see how devices deal with ND
  - Need to perform ND even if addresses aren't live
  - Create measurements of this load
  - IPv6 by default is 2^64 addresses.
  - "snake test" daisy chain all ports together and send traffic through
  - https://tools.ietf.org/html/draft-cerveny-bmwg-ipv6-nd-01
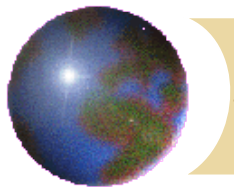
Dynamic Host Configuration

- draft-ietf-dhc-v4configuration
  - DHCPv4 over DHCPv6 is the only solution
- Address registration draft-ietf-dhc-addr-registration
  - Uses DHCP to update DNS
- Other drafts regarding DHCP and dynamic configuration.
- draft-mglt-et-naming-architecture-dhc-options
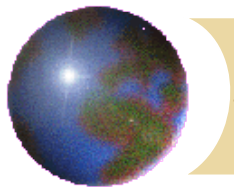 - Naming for homenet so devices are reachable from outside.
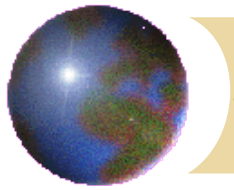
GEOPRIV

- draft-google-self-published-geofeeds
  - Info from google geo team
    - faster updates to location info for IP addresses
   - Asked ISPs for updates to block locations, IP_prefix, country, region, city, postal_code
  - Two other drafts
    - draft-thomson-geopriv-uncertainty
   - draft-thomson-geopriv-confidence

Network Configuration Negotiation Problem Statement and Requirement

- Network devices should be plug and play? Really?

- So the devices configure themselves magically? Negotiate with other devices? Really? Two independent networks might want to negotiate where they peer? Really?

- I am not sure that this is really practical.

- Example is of two CGNs negotiating to share a block of space.. "I need 80 addresses"
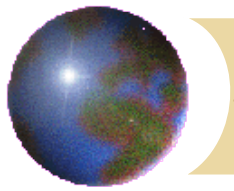
IRTF – Network Management

- Several drafts on autonomic networks.
  - Self management, self configuring, self protecting, self healing, autonomy on network element level
  - policy and service definitions are human configured
    - minimize operator intervention
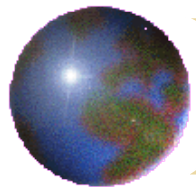   - minimize NMS dependencies
- Also an implementation has been done.
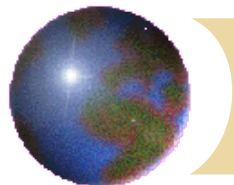
Perpass BoF Session

- Considering pervasive monitoring
  - Discussion about how to make it harder to gather everything on the network. Perhaps arbitrarily fill the extra bandwidth with bogus traffic to make it harder?
  - Try to make it so that a targeted gathering of info is possible but the ability to gather everything for later use is no longer easy

- "IPv6 is Da Shit" – sticker on a laptop
- "BTN" – Better Than Nothing
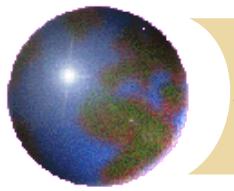
DNS Operations

- Designated Signer (DS) queries on the rise. draft-fujiwara-dnsop-**ds**-**query**-**increase**-01
  - As more DNSSEC gets deployed pathologies like this are being discovered.
- AS 112 project – provide distributed sink in order to reduce load on in-addr.arpa authoritative servers
- draft-jabley-dnsop-flush-reqs
  - Mechanism to remotely flush DNS caches
- "Technical correct, possibly pointless"
- Discussion about TLDs and pseudo TLDs.
- RFC6761 creates a Special-Use Domain Name Registry.

DNS Boundaries - DBOUND

- Use Cases for the Public Suffix List, Gervase Markham

  - www.publicsuffix.com

  - Chrome uses this to distinguish between search and navigation.

  - Used also to show which parts of the web are under common ownership

  - Helps with cookies

- Several drafts regarding this.

  - draft-pettersen-subtld-structure

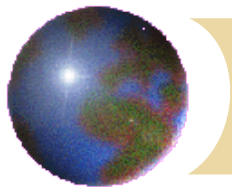 - draft-sullivan-domain-policy-authoritydraft-levine-orgboundary

6LO
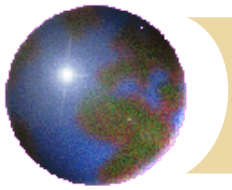
- http://tools.ietf.org/html/draft-rizzo-6lo-6legacy-00
  - This draft provides a mechanism to assign IPv6 addresses to non IPv6 devices
  - There is detailed mapping in the draft.
  - Not sure why this is useful since these devices do not do IPv6

- There was a discussion about independent IETF submissions getting assignments of ports or whatever from IANA before they even have IETF consensus.

- Optimal Transmission Window for ICMPv6 RA
  - Deals with the problems of devices that are too chatty.
 - This is a way to gather it all up and make it more efficient.
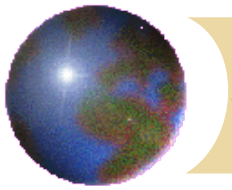
6LO

- Link Layer Privacy
  - Privacy issues with folks tracking MAC addresses
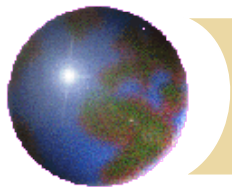 - Maybe come up with a hash or some way to make these addresses dynamic. Randomized?

- Went to this group to check it out. Interesting project.

- "This is an approach to evolve the Internet infrastructure to directly support this use by introducing uniquely named data as a core Internet principle. Data becomes independent from location, application, storage and means of transportation, enabling in-network caching and replication. The expected benefits are improved efficiency, better scalability with respect to information/bandwidth demand and better robustness in challenging communication scenarios"
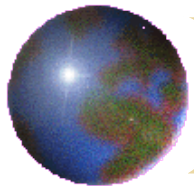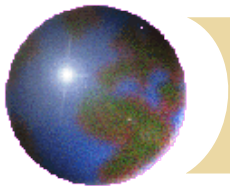
- Relatively new working group to use IPv6 and MPLS to do source routing.

- "The SPRING networking group will define procedures that will allow a node to steer a packet along explicit route using information attached to the packet and without the need for per-path state information to be held at transit nodes. "
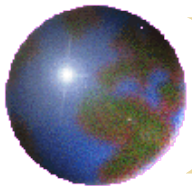
Drafts to Browse

- http://tools.ietf.org/html/draft-boutier-homenet-source-specific-routing

- http://tools.ietf.org/html/draft-troan-homenet-sadr

- http://tools.ietf.org/html/draft-baker-ipv6-isis-dst-src-routing

- http://tools.ietf.org/html/draft-baker-ipv6-ospf-dst-src-routing

- http://tools.ietf.org/html/draft-baker-rtgwg-src-dst-routing-use-cases

- http://tools.ietf.org/html/draft-xu-homenet-traffic-class

- http://tools.ietf.org/html/draft-xu-homenet-twod-ip-routing

References

- General WG Info:
  - http://datatracker.ietf.org/wg/ (Easiest to use)
- Internet Drafts:
  - http://tools.ietf.org/html
- IETF Daily Dose (quick tool to get an update):
  - http://tools.ietf.org/dailydose/
- Upcoming meeting agenda:
  - http://tools.ietf.org/agenda
- Upcoming BOFs Wiki:
  - http://tools.ietf.org/bof/trac/wiki
- Also IETF drafts now available as ebooks
  - http://www.fenron.net/~fenner/ietf/ietf-ebooks

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