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!
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
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)
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

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.
Fragmentation and extension 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
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/
George Michaelson – Rsync

- Presentation on possible hacks with rsync
- Take away- Don’t run rsync as root

IPv6 Matrix

- Measuring IPv6 deployment
- IPv6Matrix.org
- Tool shows IPv6 info and can search by zone
- Raw data also available
- Similar work being done at LACNIC too
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
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.
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.
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
“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.
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
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?
Evolution of End to End

Fred Baker – Smart Network

Andrew Sullivan – Infrastructure in middle

Harold Alvestrand – Smart endpoints
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
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.
Recommendations for using Unique Local Addresses (ULA)

Debate about what is an “isolated” network

Two ways to get addresses in IPv6
  • SLAAC – Stateless Address Autoconfiguration
  • DHCPv6

If you use both there can be interaction problems.
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

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 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
EID block. Asking for /32 from IANA (IPv6) for local (non globally routed) for LISP endpoint identifiers.

Draft-ietf-listp-eid-block-08
WEBIRDS

- 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
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

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

- General WG Info:
  - http://datatracker.ietf.org/wg/ (Easiest to use)
- Internet Drafts:
- 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:
- Also IETF drafts now available as ebooks
  - http://www.fenron.net/~fenner/ietf/ietf-ebooks
Questions?