

IETF Activities Update

Cathy Aronson

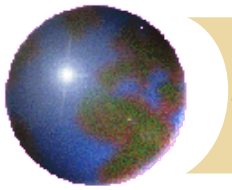
cja@daydream.com



仔很忙 炸鮮奶
Explodes The Fresh Milk
一串20元 · 三串50元

ARIN XXIX

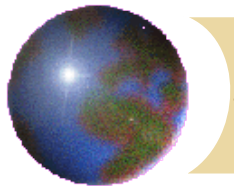
Report on IETF 82&83



Note

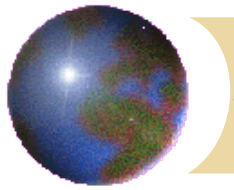
This presentation is not an official IETF report

- ❏ 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



Highlights

- ✚ Continuing IPv6 Deployment Issues
 - ✚ Problems with DHCPv6 when not everyone in an area does IPv6. Hosts keep trying
- ✚ Shared Transition Space
- ✚ Quotes
 - ✚ "Head in sand is not an appropriate strategy" Phil Dromms
 - ✚ "I don't understand the problem or the question"
 - ✚ "rather than playing whack a mole with stupid ideas" – Wes
 - ✚ "Kludge Merchants" - Brian Carpenter



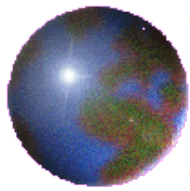
Highlights

🌐 World IPv6 Launch

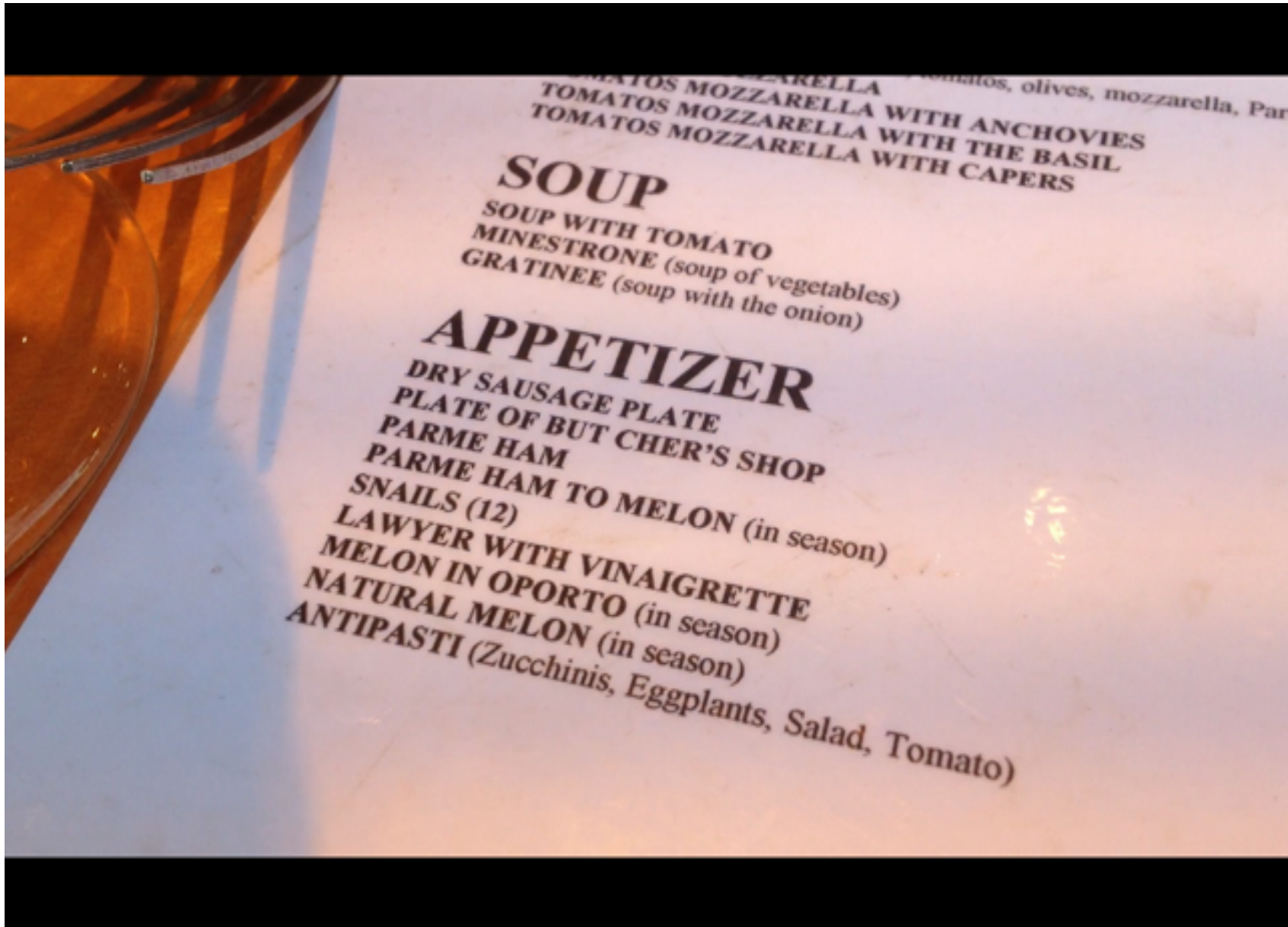
🌐 June 6th, 2012 the big guys are turning it on for good.

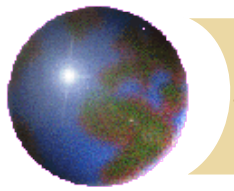
🌐 Hard for some ISPs to get to the required traffic levels even though they have v6 deployed

🌐 Interesting panel of ISPs. Most doing native dual stack instead of 6rd



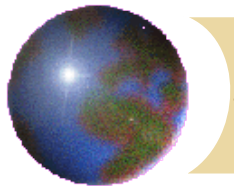
Lost in Translation





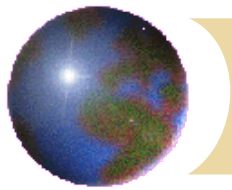
IEPG - Taipei

- ❖ Interesting talk by Geoff Huston
 - ❖ Still only 9.6 routes per ASN
 - ❖ Instability is not a function of routing table size.
 - ❖ Average AS path length hasn't changed
- ❖ Talk about Tohoku Quake
 - ❖ Several links failed to US because of mudslides
- ❖ CPU cost of BGPsec on routers
 - ❖ 34 seconds to validate, 73 seconds to sign



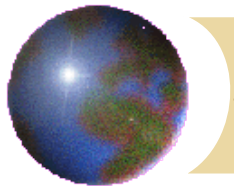
IEPG -Paris

- ❖ Interesting talk by Kazunori Fujiwara about DNSSEC in Japan
 - ❖ 1.2 million names / 1.6 billion queries per day
- ❖ IPv6 Critical Mass / Avoiding CGN
 - ❖ It would be great to avoid CGN but customers just want it to work
- ❖ Rob Austein – RPKI distributed with BitTorrent.



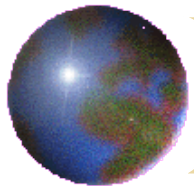
IPv6 Maintenance

- ✦ Flow Label Specifications are done
- ✦ Discussion about energy aware devices.
 - ✦ Interesting to think about. How do we make it so that devices don't have to be listening all the time?
 - ✦ Imagine a device with very small memory and processing capacity that needs to have a very long battery life. Needs to wake up only when it needs to do something.
 - ✦ Listening is expensive
 - ✦ Most current protocols expect devices to be listening
- ✦ Draft on IPv6 over MS/TP Networks
 - ✦ Low-cost wired IPv6 solution for commercial building control applications. (Master-slave/Token-Passing)



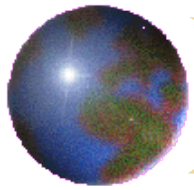
IPv6 Maintenance - Paris

- ✦ RFC3484bis – Address selection
 - ✦ How a host picks a source address
 - ✦ Important for things like 6to4
 - ✦ you may have a v6 or v4 address but not have global connectivity with it so you may want to pick the other to get global connectivity.
- ✦ IPv6 Packet Staining
 - ✦ Controversial and difficult to apply
 - ✦ Using threat info to stain header using destination options to stain packets
 - ✦ Problems with firewalls and MTU



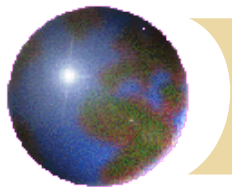
Technical Plenary

- ❖ Interconnecting smart objects to the Internet
- ❖ Garrulity and Fluff –excessive talking and fluff
 - ❖ Too much talking and too much white stuff stuck
- ❖ Code space small, state and listening expensive, packets expensive
- ❖ No middle boxes or translation gateways
- ❖ Devices exist for years (10+) run on batteries.



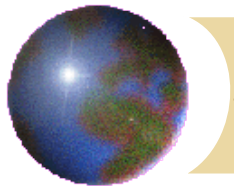
Transport Area

- ✦ 3 RFCs published since last IETF
- ✦ Byte and Packet congestion draft
 - ✦ Changed from Informational to BCP
 - ✦ Updated
- ✦ Port uses draft
 - ✦ Changes to IANA port guidelines recently done
 - ✦ If you want to apply for a port number this is the doc
- ✦ Shared use of TCP Experimental Options
 - ✦ Defined in RFC4727
 - ✦ Proposal is to create a 32 bit number as a unique id so that the options don't overlap.
 - ✦ Alternative to asking IANA for a number



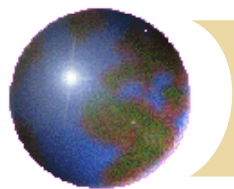
Softwire

- ✦ Radius Extensions sent to IESG
- ✦ DS-Lite Deployment Draft in WGLC
- ✦ Discussion of mapping of address and port
 - ▣ Stateless IPv4 over IPv6
- ✦ Dual-stateless IPv4/IPv6 Translation with Prefix Delegation based on RFC6145
- ✦ "Canadian church analogy.. There were 3 Canadian churches and they decided to integrate them and ended up with 4. The three original ones and one that was an integrated version" - Food for thought.



Softwire - Paris

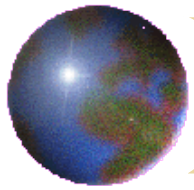
- ⊕ An attempt was made to choose a way forward MAP-E vs MAP-T
 - ⊕ No consensus weigh in on the list if you have an opinion
- ⊕ ISPs want a unified packet format.
 - ⊠ Not have to choose between T & E
 - ⊠ Called 4rd-U



Anglo-EU Translation Guide



What the British say	What the British mean	What others understand
I hear what you say	I disagree and do not want to discuss it further	He accepts my point of view
With the greatest respect...	I think you are an idiot	He is listening to me
That's not bad	That's good	That's poor
That is a very brave proposal	You are insane	He thinks I have courage
Quite good	A bit disappointing	Quite good
I would suggest...	Do it or be prepared to justify yourself	Think about the idea, but do what you like
Oh, incidentally/ by the way	The primary purpose of our discussion is...	That is not very important
I was a bit disappointed that	I am annoyed that	It doesn't really matter
Very interesting	That is clearly nonsense	They are impressed
I'll bear it in mind	I've forgotten it already	They will probably do it
I'm sure it's my fault	It's your fault	Why do they think it was their fault?
You must come for dinner	It's not an invitation, I'm just being polite	I will get an invitation soon
I almost agree	I don't agree at all	He's not far from agreement
I only have a few minor comments	Please re-write completely	He has found a few typos
Could we consider some other options	I don't like your idea	They have not yet decided



V6 Operations

✚ Requirements for Customer Edge Routers

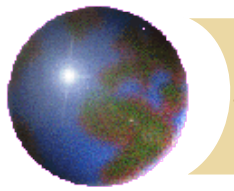
☒ DHCPv6 Deployment problem

- when devices come up online and ask for v6 addresses if the ISP sends back a no (we aren't ready to turn you on yet) The host .. keeps sending incremental retries and blasts servers.
- No way to disable DHCPv6 (not designed for incremental deployment)

✚ Operational neighbor discovery problem

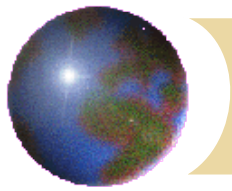
☒ Igor's draft – denial of svc because of subnet size

☒ Split into two documents.



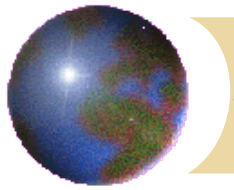
V6 Operations (V6OPS) Cont

- ✪ Experience from an IPv6 only network in WIDE Camp
 - ❑ several different translation mechanisms
 - ❑ old OS versions had problems no DHCP for example
 - ❑ problems with VPN over v6
 - ❑ AAAA reply errors - name error, other erroneous codes, broken response
 - ❑ MTU mismatch problems
 - ❑ 153 participants for 4 days
 - ❑ 20% ipv6 only
 - ❑ more usable than they thought



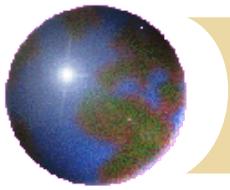
V6 Operations (V6OPS) Cont

- ✦ ICP - IPv6 Guidance for Internet Content and Application Service Providers Draft by Brian Carpenter
- ✦ China Telecom has 200,000 IPv6 subscribers
 - ✦ Traffic low due to lack of v6 Content
 - ✦ Looking at v4 client getting to v6 only content and v6 only client getting to v4 only content.
 - ✦ [sung-v6ops-contents-transition](#)
- ✦ 6rd Sunsetting
 - ✦ moving from 6rd to native
 - ✦ so you have 6rd and then when native is turned on you appear to be dual homed
 - ✦ to aid transition need to be able to send 6rd prefix via native connection



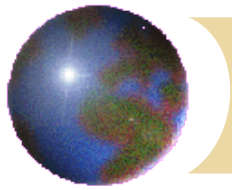
V6 Operations (V6OPS) - Paris

- ✚ IPv6 Only networks with transition tech @ WIDE
 - ✚ Testing v6 only networks with transition technologies.
- ✚ CGN logging can generate huge logs.
 - ✚ draft-donley-behave-deterministic-cgn-02
- ✚ Discussion of v4 exit working group
 - ✚ IESG is talking about whether to form this or not
- ✚ Draft IPv6 Flow Label for Server Load Balancing
 - ✚ Controversial
 - ✚ Other ways to accomplish the same thing
- ✚ IPv6 CE Router Requirements – IESG Review
- ✚ Mark Townsley on sunsetting..



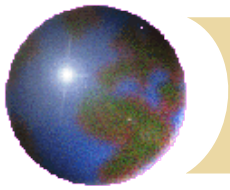
IntArea

- ✦ Draft about someone behind a CGN who starts a denial of service attack from an address that is shared by hundreds of other people.. This would cause that block/address to be filtered and deny service to the valid users.
- ✦ Energy Aware IPv6 Neighbor Discovery Optimization
 - ✦ Address persistence in sleepy nodes



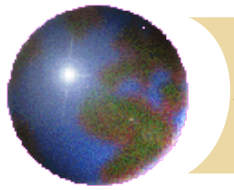
IntArea

- ✚ An IPv4 End of Life Plan A Shared Vision for IPv6. Why has the IPv6 transition been so slow?
 - Lazy Vendors?, Lazy Operators?, Lack of Content?, Applications, CPE?, End User Host Stack?
 - 435 Translation mechanisms?
- ✚ Larger problem: IPv6 is incompatible with IPv4
- ✚ Townsley: Tunnels
- ✚ Dan Wong: NAT
- ✚ Good discussion about this issue.



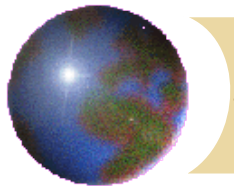
IntArea

- ✦ Multihoming with IPv6-to-IPv6 Network Prefix Translation
 - ✦ architecture for multihoming with NPTv6 (rfc6296)
- ✦ IPv6 support within IETF work
 - ✦ IPv6 is mandatory. Extensions to v4 should only be to improve co-existence.
 - ✦ Eventually IPv6 only standards
 - ✦ Used RIRs as example of starting to phase out v4 policy.



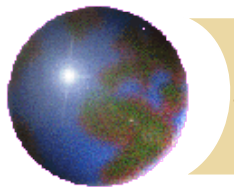
Dynamic Host Configuration

- ✦ Client Hardware Address Option in DHCPv6
 - ▣ client hardware address inside DHCPv4 packets
 - ▣ dual stack - want to correlate messages
 - ▣ Proposal is to add for V6
- ✦ DHCPv6 Class Based Prefix
- ✦ DHCPv6 Redundancy Considerations
- ✦ DHCPv6 Suboptions
- ✦ MIF DHCPv6 Route Options



DNS Operations (DNSOP)

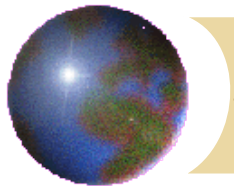
- ✦ Draft to put CIDR address blocks in the DNS.
 - ✦ No change to existing format
 - ✦ Not mandatory
 - ✦ No new record type
- ✦ Competing proposals
 - ✦ One recommends longer TTL
 - longer for "infrastructure record" resource records.
 - More stability when something breaks
 - ✦ One recommends shorter TTL
 - To allow DNSSEC KSK rollover failure recovery



V6 RENUM

IPv6 Enterprise Network Renumbering Scenarios

- ❑ *Prefix delegation in DHCPv6*
- ❑ use FQDNs to configure tunnels instead of addresses hard to find hidden addresses in renumbering event
- ❑ Service Location Protocol for service discovery.
- ❑ systematic procedure for updating DNS



V6 RENUM

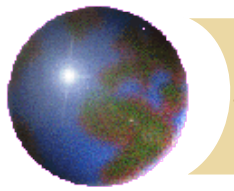
"One man's rogue is another man's renumbering event" how to prepare a renumbering event - timers etc. RFC4192

Problem Statement for Renumbering IPv6 Hosts with Static Addresses

❏ draft that shows lots of places that folks still use static addresses and why

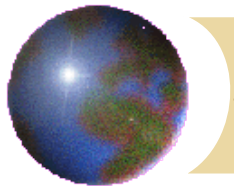
"what you can't automate is fixing stupidity"
" - Fred Baker

IPv6 Renum Gap Analysis



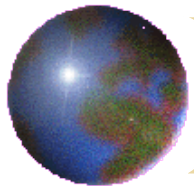
V6 RENUM

Summary of this group.. working on renumbering issues with IPv6. There are some relationships between v4 and v6 (transition technologies) that can be a problem. Addresses assigned as static are an issue. Multicast appears to have a lot of trickiness with respect to re-addressing.

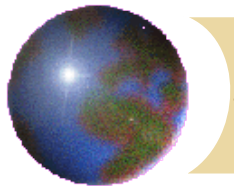


HOMENET

- ⊕ Defining an architecture for home networks
- ⊕ Just plug stuff in and have it work
- ⊕ Geeks with arbitrarily complex home networks trying to define a home network for the average non-geek.



- ✚ Draft recommendation to use Link Local addresses in network core
 - ✚ Can't ping except locally
 - ✚ Affects traceroute
- ✚ Suggestion to use passive addresses
 - ✚ Trying to keep folks who don't need to know network details from knowing
- ✚ Human-safe IPv6
 - ✚ Take name and hash it with a key to get address.



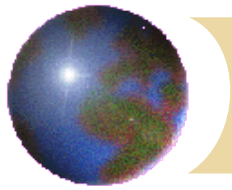
Global Routing Operations

I presented a draft for Martin Levy about
MTU size change across Internet
Exchanges

" We spend a lot of time dying lately and
that's not good" Chris Morrow

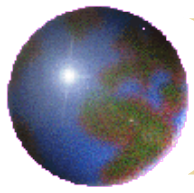
"Randy Bush Internet Salmon" Randy Bush

"in 5 years after someone has invented layer
5 VPNs" - Rudiger



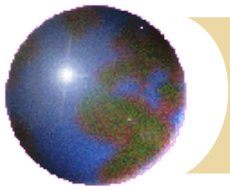
SIDR

- ✦ Talk about CPU cost of BGPSEC.
 - ✦ No leveling (how much does it take without BGPSEC)
 - ✦ 80000 routes takes 32 seconds to repopulate BGPSEC table
 - ✦ Validation and signing 73 seconds..
- ✦ Pfx-validate – Randy Bush
 - ✦ Good talk about prefix validation in IPSEC



Questions?





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>