IETF Activities Update

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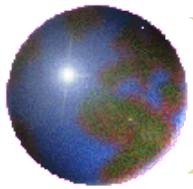
ARIN 34
Baltimore, MD

Note

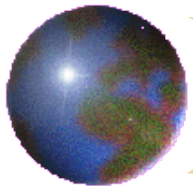
This presentation is not an official IETF report

- 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



Internet Designers?

- My all time favorite..
  - Where can I get a US to Canadian power adapter? Will the hotel have them?

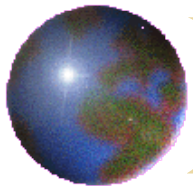


Highlights

- Comcast is 100% IPv6 and 30% deployed to the end site.
  - http://corporate.comcast.com/comcast-voices/comcast-reaches-key-milestone-in-launch-of-ipv6-broadband-network

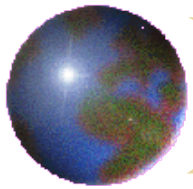
IEPG

- IPv6 Extension Headers in the Real World
  - Packets with extension headers are dropped.
- Geoff Huston – What if everyone did DNSsec?
  - 11% do it now
  - 9% don't care what the response says (no validation)
  - 25% of DNSSEC validating users cannot resolve a signed name within ½ second
  - 25% of users cannot resolve a simple uncached unsigned domain name within a single query



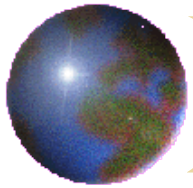
IEPG

- The Decline and fall of Teredo
  - George Michaelson saw that in March 2014 Microsoft turned off their Teredo relays.
  - He found that Microsoft appears to provide 'who am I' endpoint signaling but not carrying IPv6 data
    - You can find out who you are, but you can't go anywhere.
  - George recommends
    - If you're serving up tunnels still – stop
    - If you're creating zombie tunnels (see above) - stop



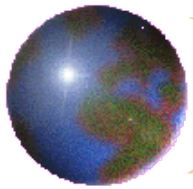
IEPG

- IPv6 Toolkit
  - http://www.si6networks.com/tools/ipv6toolkit
  - Some of the tools are
    - An IPv6 address analysis tool
    - An IPv6 address scanner
    - A versatile IPv6-based traceroute
    - Various tools for IPv6 fragments, TCP segments Neighbor solicitation, neighbor advertisements.



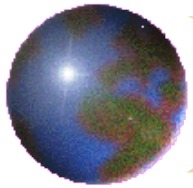
Technical Plenary

- IAB Report
  - Focus on Privacy and Security
- IRTF Open Meeting
  - Proposed datacenter latency group
  - GAIA – Global Access to the Internet for All



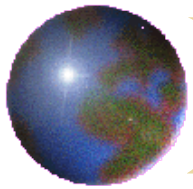
Technical Plenary

- Internet Topology and Geography
  - Ixmaps Internet mapping tool
  - Boomerang routing – the network is not a cloud
  - All US traffic goes through 18 sites in the US
  - ATT put in a splitter for the NSA to mirror traffic.
  - NSA is building a center in bluff Utah that will grab traffic
  - Ixmaps.ca
  - These are all reasons for the following.



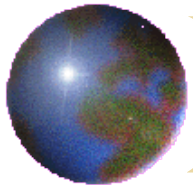
Technical Plenary

- Jane Coffin from the Internet Society
  - building internet exchange points. Keep local traffic local
  - 95% people 5% technical
  - “tromboning traffic”
  - keep local traffic local
- CAIDA
  - 102 monitors. Gather IPv6 and IPv4 topology
  - inter-domain congestion
  - looking for folks to host monitors



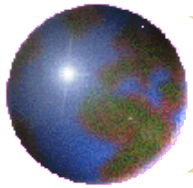
ISOC Briefing Panel

- Internet security and privacy: 10 years later
  - The internet will reflect the problems of the real world. The challenge out 10 years is what can we do ?
  - http://www.internetsociety.org/internet-society-briefing-panel-ietf-90



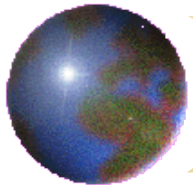
ICN Research Group

- Information-centric networking (ICN) 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.
- https://irtf.org/icnrg
- named-data.net
- Great talk by Van Jacobson about this. http://mlecture.uni-bremen.de/ml/index.php?option=com_mlplayer&template=ml2&mlid=1850



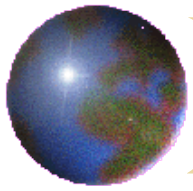
Softwire

- Some MIB drafts
- Unified CPE
  - how does a host know which softwire to use?
  - need to update it because the choices are no longer valid
- Other drafts
  - draft-liu-softwire-lw4over6-dhcp-deployment-03
  - draft-fsc-softwire-dhcp4o6-saddr-opt
  - draft-zhou-softwire-6rdmulticast-01
  - draft-sarikaya-softwire-map-multicast-02



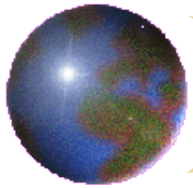
V6 Operations

- This group develops guidelines for the operation of a shared IPv4/IPv6 Internet and provides operational guidance on how to deploy IPv6 into existing IPv4-only networks as well as into new network installations.
- DHCPv6/ SLACC Address Configuration Interaction Problem.
  - Both may exist at the same time. What should happen in that situation?
- IPv6 Roaming Behavior Analysis
  - Documents problems with IPv6 enabled mobile devices
    - Improper configurations
    - Equipment with incomplete functions
    - Inconsistent IPv6 strategy



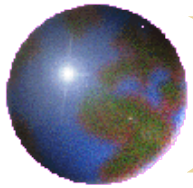
V6 Operations

- JANOG experience with ULAs
  - SLAAC with DHCPv6 and no IPv4 address broke Skype (Skype doesn't do IPv6)
  - Androids do not bring nic up without IPv4 address assigned. (Audience comment was that this works on his android phone)
  - Dropbox and Skype don't work without IPv4
  - If you have ULA and IPv4 you don't use ULA at all
- Considerations of using ULAs
- Close encounters of the ICMP type 2 kind
  - Problems with MTU in IPv6 tunnels



V6 Operations

- Running Multiple IPv6 Prefixes
  - Must choose the right source address especially if one or more prefixes are PA.
- Considerations of Using Unique Local Addresses
  - Your network may not always be isolated.
- Power consumption due to IPv6 multicast on WiFi devices
  - Wifi doesn’t like multicast and uses a lot of battery
- IPv4 Address Literal in URL
  - How to get an IPv6 only host to get to an IPv4 address.
  - This draft proposes a special purpose TLD.

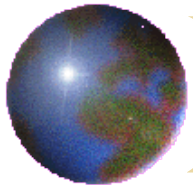


Network Mgmt Research Group

- Autonomic Network Definitions
  - Self-configuring, Self-optimization, Self-healing, Self-protection, Self-management
  - They say OSPF is autonomic.. Last I checked you had to configure it. Sure it learns it's neighbors but not without configuration
- Information Elements for IPFIX Metering Process Location (IP Flow Info eXport)
  - Couple space time and usage
  - Relate service quality
  - Correlate flows to VMs and locations

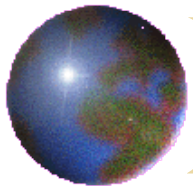
UCAN BOF

- Autonomic Networking focuses on self-management of network elements. An autonomic function works in a distributed way across various network elements, allowing however central guidance and reporting. Autonomic functions already exist today, for example IGP routing protocols such as OSPF. However, all such functions have their own discovery, messaging and security mechanisms.
- This BoF collects and analyses use cases for Autonomic Networking. The goal is to find commonalities between various use cases, to be able to determine generic requirements for Autonomic Networking functions and to conclude whether there is scope for a common, generic Autonomic Networking Infrastructure for all autonomic functions.



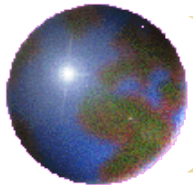
UCAN BOF

- Quotes from UCAN
  - "It secures itself"
  - "there is no administrator"
  - "inband zero touch data communication network"



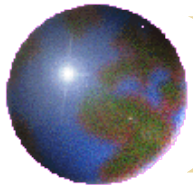
UCAN BOF

- UCAN drafts of note
  - large network address management (draft-jiang-auto-addr-management)
  - securely bootstrapping new devices (draft-behringer-autonomic-bootstrap)
  - autonomic control plane (draft-behringer-autonomic-control-plane)
  - distributed detection of SLA violations (draft-irtf-nmrg-autonomic-sla-violation-detection)
  - mobile backhaul (draft-bogdanovic-nmrg-mobile-backhaul-use-case)
  - risk aware routing (draft-TBD)



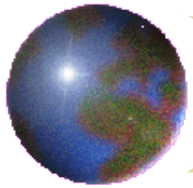
IP Over the TSCH mode of IEEE802.15.4e

- Lots of drafts being worked in this group
- LLN Plugfest
  - Show interoperability between these low power lossy protocols, 6TiSCH, 6lo, and ROLL
  - Slides are here http://www.ietf.org/proceedings/90/slides/slides-90-6lo-8.pdf
  - Like the old days of running code.. Like multicast and TUBA..
  - 7 draft standards were successfully implemented



Operations Area

- https://docs.google.com/viewer?url=http%3A%2F%2Fwww.ietf.org%2Fproceedings%2F90%2Fslides%2Fslides-90-opsawg-8.ppt
- Chris Grundemann and Jan Zorz are working on getting operators more involved.
- There is a survey created to facilitate communications between operators and the IETF.



Delay Tolerant Networks BOF

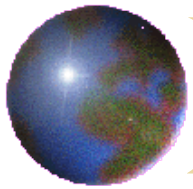
- Standard solutions needed for various applications
  - Satellite
  - Unmanned water vehicles
  - Space shuttles
  - Perhaps first responder in battlefield scenerios
- Delay Tolerant Multicast (yikes)

Admin Plenary

- Not much to report.
- Super interesting talk by the winner of the Postel Award.
  - http://www.internetsociety.org/news/mahabir-pun-receives-2014-jonathan-b-postel-service-award
  - He pretty much single handedly brought the Internet to Nepal.
- Other excitement.. They decided to use the Etherpad to control the queue for the microphones. Someone remotely took over the etherpad and it was super funny. We ended up having folks go back into the queues and did it the old fashioned way

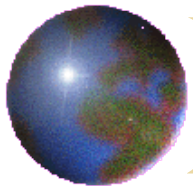
NTIA Transition

- NTIA (National Telecommunications and Information Administration) wants to transition out of their role of the steward of the IANA
- The whole meeting the skype contacts screen on someone's computer was up on the left screen.
- Arrangements required for the continuance of the IANA functions in an accountable and widely accepted manner after the expiry of the NTIA-ICANN contract
    - Each community needs to write a transition plan. They will be rolled up into the main plan
- Questions.. should we respond? Should we do it with a working group?



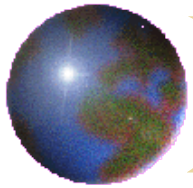
V4 Sunsetting

- Turning off IPv4 Using DHCPv6 or Router Advertisements - draft-ietf-sunset4-noipv4
  - new DHCPv6 option and a new Router Advertisement option for indicating to a dual-stack host or router that IPv4 is to be turned off.
  - When a dual-stack host makes a DHCPv4 request, it typically interprets the absence of a response as a failure condition. This makes it difficult to deploy such nodes in an IPv6-only network.
  - There is a lot of default behavior that needs to be changed somehow.



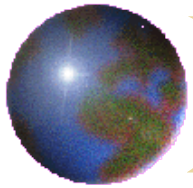
V4 Sunsetting

- IPv6 Support Within IETF work -- Lee Howard draft-george-ipv6-support-02
  - IETF standards should be IP version agnostic
  - Review earlier work to see if it supports v6 or it doesn't matter anymore
  - focus on v6 not extending v4.
  - This is the v4 is over let's get on with v6 draft
  - I am actually surprised that this is still not an RFC yet.
- draft-chen-sunset4-cgn-port-allocation-04
- draft-fan-sunset4-router-id-00



Dynamic Host Configuration

- DHC is 25 years old (yikes)
- Update to DHCP for IPv6 RFC (3315 bis)
  - This draft is being heavily reviewed. If you're interested they are looking for comments
  - "Let it nver be said I am against doing worthless work" – Lorenzo
- DHCP Privacy Considerations
  - DHCP is suseptible to surveillance.
  - Can track users and devices, mobility patterns, personal info, possible to fingerprint client
  - First goal is to document the ways

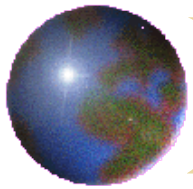


Dynamic Host Configuration

- Other drafts
  - draft-ietf-dhc-sedhcpv6
  - draft-ietf-dhc-dhcpv6-failover-design
  - draft-ietf-dhc-dynamic-shared-v4allocation
  - draft-ietf-dhc-topo-conf-02
  - draft-xue-dhc-dynamic-gre-02
  - Multiple Provisioning Domains (draft-kkb-mpvd-dhcp-support)

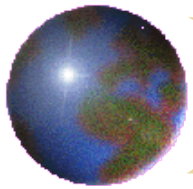
DNS Operations (DNSOP)

- Topic Area: Optimizing Distribution of root zone data
  - draft-wkumari-dnsop-dist-root, Hoffman
  - helping resolvers do things that may end up scaling the root zone
  - resolves deal with root zone info better.
  - Goal is to make it so recursive resolvers can continue to work when it's access to the root is cut off for some reason,
- Being a better recursive resolver. Not a slave for the root.



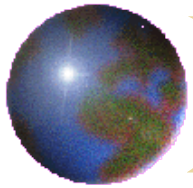
DNS Operations (DNSOP)

- Two other drafts on how to scale the root. With all the new TLDs scaling the root is going to be important.
- draft-howard-dnsop-ip6rdns
  - Blogged about this one. Populating the reverse DNS in IPv6 is another interesting scaling problem.
  - Applications require reverse to exist and match forward so this is an issue.
  - If 1000 entries are written a second a /48 would take 38 trillion years.. Nice.



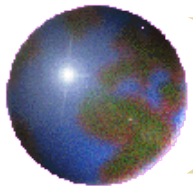
HOMENET

- Discussion of routing protocol choice. OSPF? RIP? HNCP?
  - Lorenzo - 2 or more protocols is complete failure proponent of no routing protocol
- IS-IS Implementation report
  - Testing and demoing HNCP/Homenet with IS-IS using Fred Baker's src-dest extension and various other extensions.
  - Now three protocols shown to work with HOMENET. IS-IS, OSPF and Babel.
- draft-pfister-homenet-prefix-assignment-02
  - This document describes a distributed algorithm for IPv4 and IPv6 prefixes division, assignment and router's address assignment, and specifies how hosts can be given addresses and configuration options using DHCP or SLAAC.



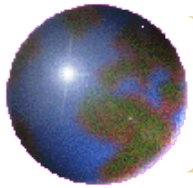
HOMENET

- Other drafts
  - draft-mglt-homenet-front-end-naming-delegation-04
  - draft-mglt-homenet-dnssec-validator-dhc options-02
  - draft-stenberg-homenet-dnssd-hybrid-proxy-zeroconf-01
  - draft-stenberg-homenet-minimalist-pcp-proxy-00
  - draft-bonnetain-hncp-security-00



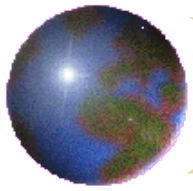
GRO –Global Routing Ops

- Routing Manifesto
  - https://www.routingmanifesto.org/manifesto/
  - Routing Resilience and Security
  - "you must be this tall to ride the ride"
  - Circulated in Ops communities
  - Simple and basic and will make global impacts
  - Things like have a policy and verify routes meet it
  - Filter source spoofing
  - Coordinate at a global level
  - "network manners"

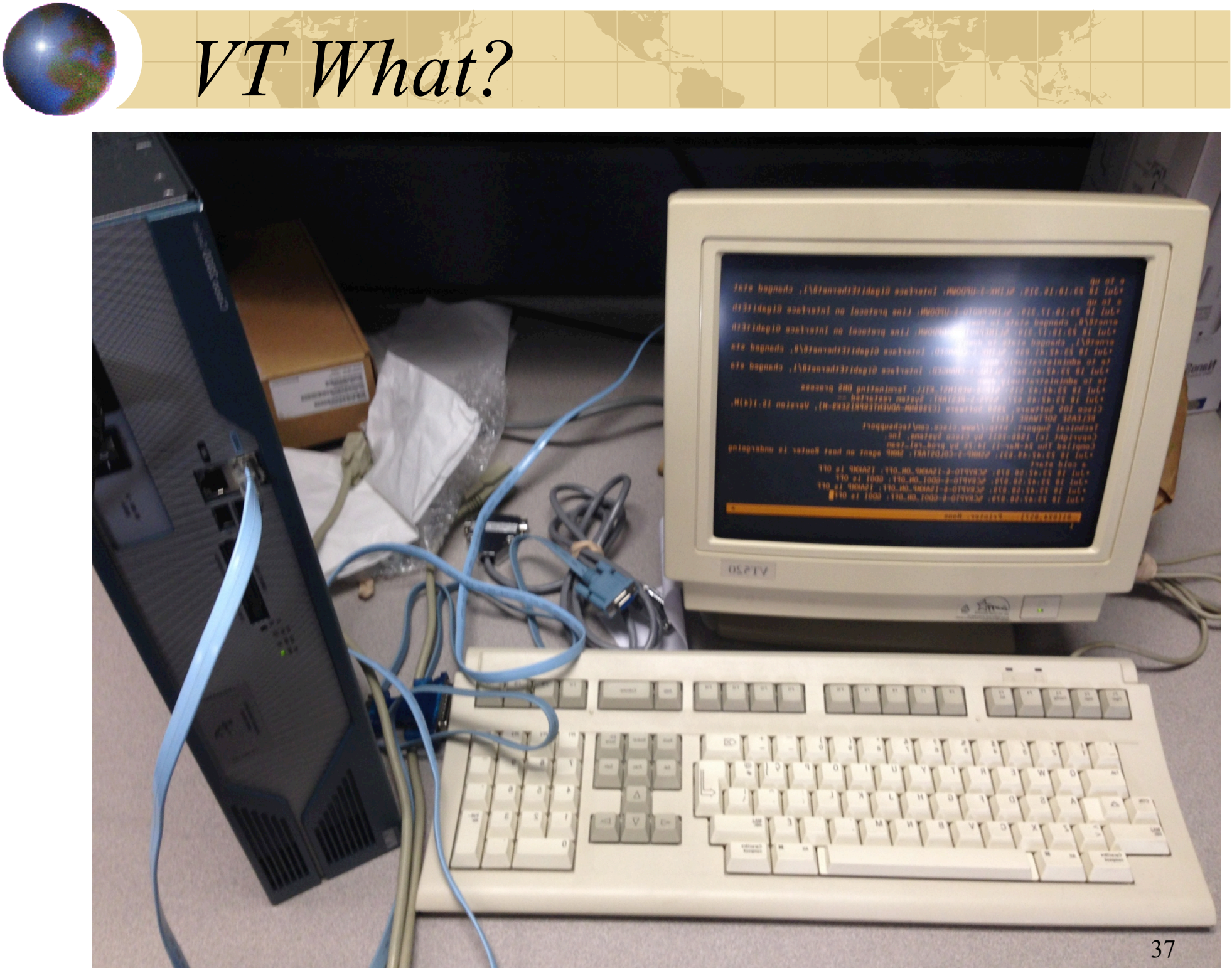


GRO – Global Routing Ops

- draft-sriram-route-leak-protection
  - Solutions for BGP route leaks
  - It was suggested that if we all filtered there wouldn't be a problem.
  - "The probability of everyone using RPKI is lower than the probability of everyone doing route filters" Geoff H.

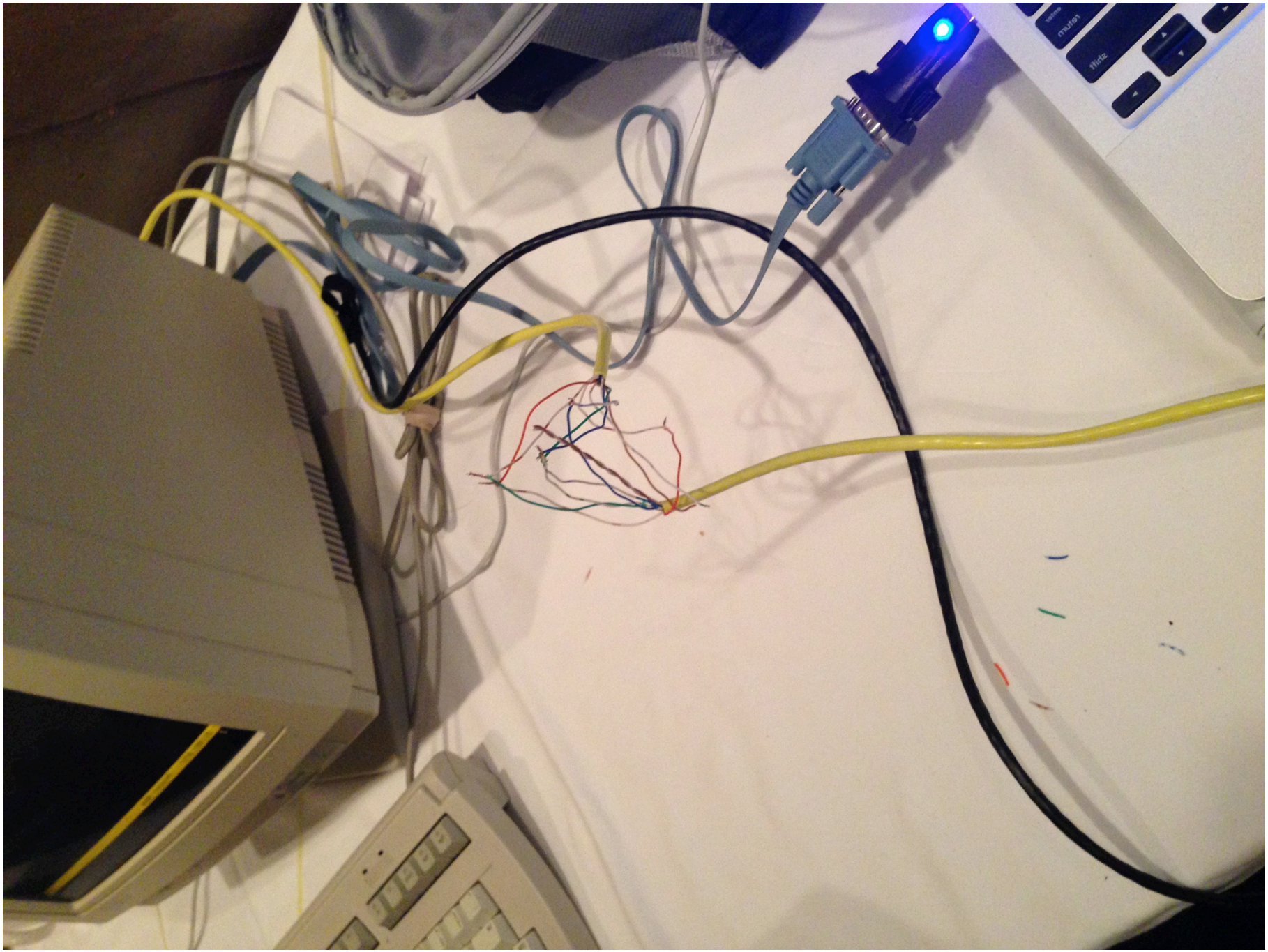


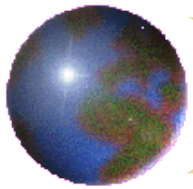
How Many Geeks Does it Take?



VT What?

Fine Cabling…





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

Questions?