

# IETF IPv6 Update

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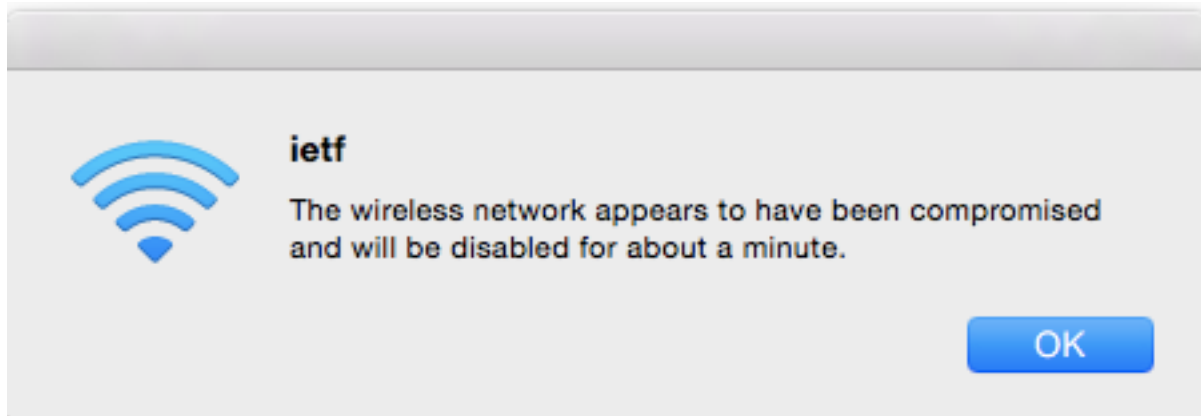
# About This Presentation

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 please share it!
- Opinions expressed are solely my own and I include thoughts that I typed while at the meeting.

# \*Highlights

- A lot to report this time.
- Snowden “visited” the IETF
- Amazing news from Apple
- Another crazy pathology





IETF Footwear.....

# \*Snowden at IETF?

- On Saturday before IETF they had a showing of Citizen Four. Afterward there was Q &A with Snowden
- <https://youtu.be/0NvsUXBCeVA>
- An Article
  - <http://www.internetsociety.org/blog/tech-matters/2015/07/edward-snowden-highlights-identity-and-privacy-ietf-93>
  - Transcript
- <https://gist.github.com/mnot/382aca0b23b6bf082116>

# \*BCOP

- I attended two BCOP meetings, one on Saturday and one on Sunday
  - Discussion of new IETF document stream
  - Global coordination
    - Discussion of each RIR region's BCOP progress
  - Hot off the presses NANOG doesn't want to support BCOP so may be looking for a home.
    - BCOP no longer a standing agenda track.

# \*IEPG – What is it?

- The IEPG is an informal gathering that meets on the Sunday prior to IETF meetings. The intended theme of these meetings is essentially one of operational relevance in some form or fashion - although the chair will readily admit that he will run with an agenda of whatever is on offer at the time!
- The IEPG has a web page and a mailing list
  - [iepg@iepg.org](mailto:iepg@iepg.org) - the usual subscription protocols apply.

# \*IEPG

- Deploying DNSsec algorithms
  - Most are RSA- SHA-1 just a few non RSA
  - RFC 4035 if resolver doesn't support any algorithms just treat as unsigned
  - Still issues with new algorithms
  - Slides are here <http://iepg.org/2015-07-19-ietf93/dan-DNSSEC-New-Algorithms-IEPG-IETF93.pdf>



# \*IEPG

- Open IPMap and traffic locality checks
  - Work at RIPE NCC
  - The aim is to build a geo-location database of infrastructure IP addresses
  - Not to locate eyeballs just infrastructure
  - so when tracking something like hurricane sandy.. how did traffic change and did it change back after?
  - Looking at reverse DNS, known locations, traceroute and user inputs
  - [Marmot.RIPE.net/openipmap](http://Marmot.RIPE.net/openipmap)

# IEPG

- F-Root Anycast placement research using RIPE atlas
  - Optimizing existing sites
  - [atlas.ripe.net/results/maps](http://atlas.ripe.net/results/maps)
- Data Driven model for DNS server location
  - DNS servers close to clients
  - Geo-location of query sources
  - How do we know we are using the right physical locations?
  - <http://www.potaroo.net/iepg/2015-07-19-ietf93/frank-GeoLocatedDITLDataFinal.pdf>

# IEPG

- Yeti DNS
  - Need more participants
  - Large scale testbed
  - Parallel root server system
  - Volunteers either run a root server or resolver that points at them or folks interested.
  - IPv6 only.

# \*IPv6 Maintenance (6MAN) - ?

- The 6man working group is responsible for the maintenance, upkeep, and advancement of the IPv6 protocol specifications and addressing architecture. It is not chartered to develop major changes or additions to the IPv6 specifications. The working group will address protocol limitations/issues discovered during deployment and operation. It will also serve as a venue for discussing the proper location for working on IPv6-related issues within the IETF.

# \*6MAN

- Interesting IPv6 pathology documented here **draft-yc-v6ops-solicited-ra-unicast-00**
  - **Summary** “On links with a large number of mobile devices, sending solicited Router Advertisements as multicast packets can severely impact host power consumption. This is because every time a device joins the network, all devices on the network receive a multicast Router Advertisement. In the worst case, if devices are continually joining and leaving the network, and the network is large enough, then all devices on the network will receive solicited Router Advertisements at the maximum rate specified by [section 6.2.6 of \[RFC4861\]](#), which is one every 3 seconds.”

# 6MAN

- Source Address Dependent Routing for IPv6 hosts analysis
  - Known as BCP 38
  - issues with choosing the right egress for your address or choosing the right source address prefix that refers to the right router.
  - Stacks should remember which next hops advertise which prefixes..

# 6MAN

- Implications of Randomized Link Layer Addresses for IPv6 Address Assignment  
[draft-huitema-6man-random-addresses](#)
  - Random MAC addresses
  - Should not assume they're constant
  - Arbitration between stability and privacy
  - simple solutions to ensure that IPv6 addresses do change whenever the link layer addresses change.

# 6MAN

- IPv6 specifications to Internet Standard
  - Some docs need to be reclassified
  - So many IPv6 standards drafts that need to be combined to help implementors
- Individual drafts
  - Guidelines for New Router Advertisement Options
  - CGA SEC Option for Secure Neighbor Discovery Protocol
  - Transmission and Processing of IPv6 Options
  - DNS Name Autoconfiguration for Internet of Things Devices



# \*Sunset v4 – What is it?

- In order to fully transition the Internet to IPv6, individual applications, hosts, and networks that have enabled IPv6 must also be able to operate fully in the absence of IPv4. The Working Group will point out specific areas of concern, provide recommendations, and standardize protocols that facilitate the graceful "sunsetting" of the IPv4 Internet in areas where IPv6 has been deployed. This includes the act of shutting down IPv4 itself, as well as the ability of IPv6-only portions of the Internet to continue to connect with portions of the Internet that remain IPv4-only.
- [charter-ietf-sunset4-02](#)

# \*V6 Operations What is it?

- The IPv6 Operations Working Group (v6ops) 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. The main focus of the v6ops WG is to look at the immediate deployment issues; more advanced stages of deployment and transition are a lower priority.

# Sunset4 and v6 Ops Joint

- Design choices draft-ietf-v6ops-design-choices
  - Basic design choices for operators
  - Expanded purpose to include enterprises
  - Added EIGRP and RIPng
  - Added address choices.
- Gap Analysis for IPv4 Sunset, <draft-ietf-sunset4-gapanalysis>
- Analysis of NAT64 Port Allocation Methods for Shared IPv4 Addresses <draft-ietf-sunset4-nat64-port-allocation>

# \*V6 Ops

- Presentations on IPv6 deployments and issues Apple Deployment Plans and Experience

# \*V6 Ops

- Presentations on IPv6 deployments and issues  
Apple Deployment Plans and Experience
  - you cannot turn off IPv6 on apple products
  - NAT64 SSID for testing
  - so they put in a NAT64 gateway so to the handsets everything looks like v6. (grab diagram)
  - All iOS apps *MUST* support v6 natively and interact with NAT 64
  - added a new item in Internet sharing and you can select NAT64 to test synthesize v6
  - question is 464XLAT or NAT64? Not a fan of 464XLAT because that makes v4 apps through all time have no ability to get to v6.

# \*V6 Ops

- Host address availability Recommendations
  - Draft by Lorenzo Colitti, Vint Cerf, Stuart Cheshire
  - benefits of assigning multiple addresses per host and the problems with not doing so.
  - Lists reasons to have multiple addresses (link-local, privacy addresses, multiple processors, tethering, virtual machines)
  - Problems with not doing this
    - Increased latency
    - Uncertainty
    - Complexity
    - Increased provisioning load

# V6 Ops

- Presentations on IPv6 deployments and issues Apple Deployment Plans and Experience
  - Happy Eyeballs tuning - <https://beta.apple.com> prefers v6 if paths are equivalent .. 2001:2:a:bb1e/64 as the testing benchmarking prefix. instead of 2001::/64
- There are some carrier support problems with v6 only

# \*V6 Ops

- **IPv6 Deployment at OTE**

- Largest ISP in Greece
- 1.3 million DSL subs
- 90% of CPE are v6 capable
- IPv6 outages tend to go unnoticed so customers notice before NOC does



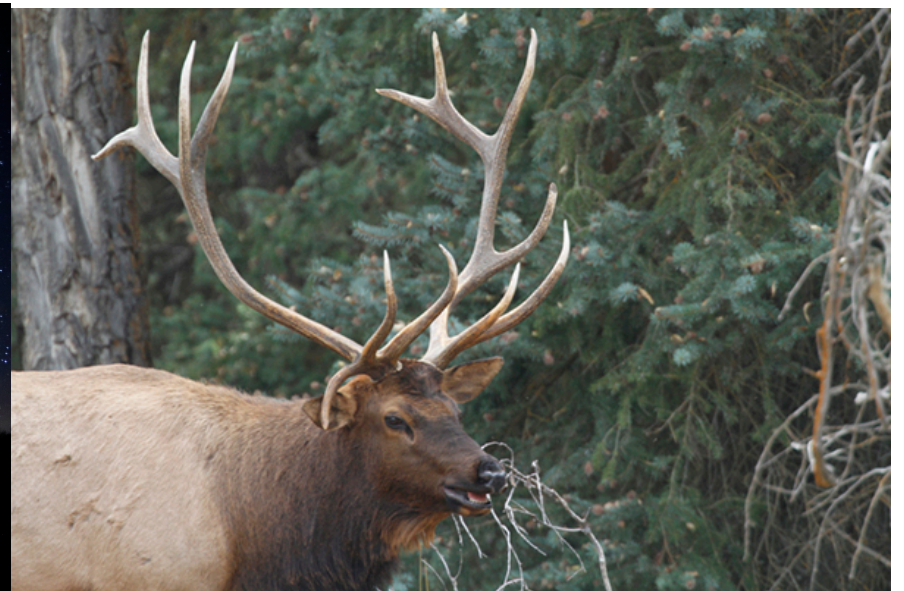
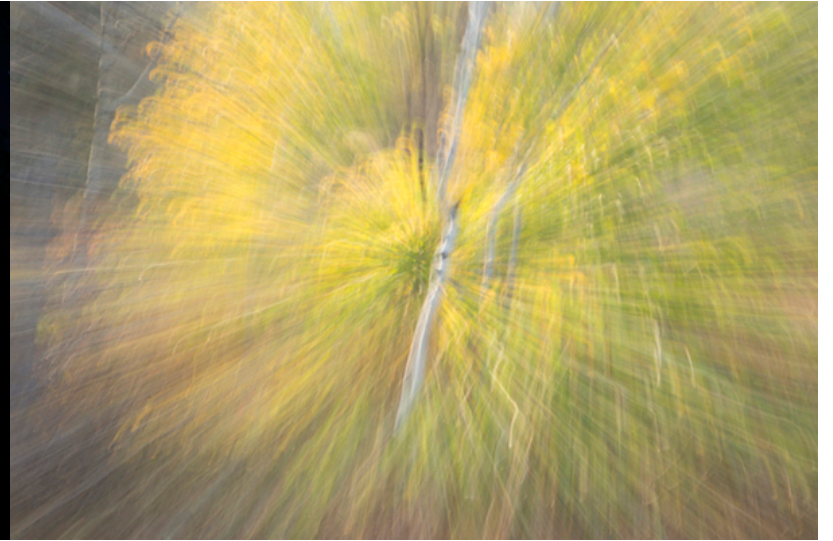
# V6 Ops

- SIIT-DC: Stateless IP/ICMP Translation for IPv6 Data Centre Environments, <draft-ietf-v6ops-siit-dc>
  - IPv6 datacenter connected to IPv4 internet
- Big discussion about charter of the group and perhaps combining v6 Ops and Sunset 4.

# V6 Ops

- New Discussions (“new” pathology)
  - draft-yc-v6ops-solicited-ra-unicast
  - Sending solicited RAs unicast instead of multicast
  - This is the problem with a large network and a cell phone. It kills the battery life. behaviors because of RA packets.
  - Talked about in 6Man too
- IPv6 only for Wired Thin Clients
  - need to boot from network
  - Wake up on LAN - get magic packet and then wake up

# Just Because



# \*HOMENET – What is it?

- The purpose of this working group is to focus on this evolution, in particular as it addresses the introduction of IPv6, by developing an architecture addressing this full scope of requirements:
  - prefix configuration for routers
  - managing routing
  - name resolution
  - service discovery
  - network security
- [charter-ietf-homenet-03](#)

# \*HOMENET

- Report from Routing Protocol Design Team
  - Yet more discussion and argument about which routing protocol to use in the home.
  - They are pretty interested in Babel but the question is this: Can an RFC point at an open source implementation that isn't documented in the RFC process?
  - Well the real question is whether we really need a routing protocol in a home?
  - Discussing mobility... they say it's unclear if we need mobility in the home. I am not even sure what to say that isn't snarky about this.
  - At any moment I thought they would prove that  $2=1$

# Homenet

- Other drafts
  - draft-ietf-homenet-prefix-assignment-07 [in IESG Evaluation (1 DISCUSS)]
  - draft-ietf-homenet-dncp-07 [in IETF LC]
  - draft-ietf-homenet-hncp-07 [WGGLC closed 14 July, Revised ID Needed]
  - draft-ietf-homenet-front-end-naming-delegation-03 [WGGLC soon]
  - draft-ietf-homenet-naming-architecture-dhc-options-02 [WGGLC soon]
  - draft-ietf-homenet-hybrid-proxy-zeroconf-00 [no update, waiting on dns-sd]

# Homenet

- New and updated drafts
  - draft-geng-homenet-mpvd-use-cases-01
  - draft-jin-homenet-dncp-experience-00
  - draft-augustin-homenet-dncp-use-case-00
- DNCP Use Case in a Distributed Cache System
  - I almost had a fit about this one until I found it it was Mark Townsley's intern doing some project that Mark sent him to do. Using addressing to do video.. Anyway no need to rant.

# \*Autonomic Networking - ANIMA

- Autonomic networking refers to the self-managing characteristics (configuration, protection, healing, and optimization) of distributed network elements, adapting to unpredictable changes while hiding intrinsic complexity from operators and users. Autonomic Networking, which often involves closed-loop control, is applicable to the complete network (functions) lifecycle (e.g. installation, commissioning, operating, etc). An autonomic function that works in a distributed way across various network elements is a candidate for protocol design. Such functions should allow central guidance and reporting, and co-existence with non-autonomic methods of management. The general objective of this working group is to enable the progressive introduction of autonomic functions into operational networks, as well as reusable autonomic network infrastructure, in order to reduce the OpEx.



# ANIMA

- ANIMA Generic Signaling (Design team)
  - Validate and update requirements
  - Main client is autonomic service agent
  - Use ANIMA to get a pool of IPv6 prefixes.. The others negotiate to get their pools. Use JSON to make it faster?
  - GRASP GeneRic Autonomic Signaling Protocol?
  - <https://datatracker.ietf.org/doc/draft-carpenter-anima-gdn-protocol/>

# \*ANIMA

- ANIMA Auto Bootstrapping (Design team
  - <https://datatracker.ietf.org/doc/draft-pritikin-anima-bootstrapping-keyinfra/>
- Autonomic Control Plane & Addressing
  - [draft-behringer-anima-autonomic-control-plane](#)  
[& draft-behringer-anima-autonomic-addressing](#)
  - overlay management network? supports autonomic functions
  - “hard to kill by operator mistakes”
  - Hop by hop using link local addressing

# \*ANIMA

- My thoughts at the moment
- “So now we’re talking about dumping OOB in favor of using the production infrastructure avoiding routing in order to connect to devices in case you mess up your own network and lose connectivity?”
- Someone else’s thought “Let’s all go and reinvent a 30 year old wheel”

# ANIMA

- Autonomic Prefix Management in Large-scale Networks
  - <https://datatracker.ietf.org/doc/draft-jiang-anima-prefix-management/>
  - “This document is dedicated to how to make IPv6 prefix management in pure IPv6 large-scale networks as autonomic as possible.”
  - Only ISP networks

# ANIMA

- Autonomic Prefix Management in Large-scale Networks - Continued
- The problem to be solved by AN is how to dynamically and autonomically manage IPv6 address space in large-scale networks, so that IPv6 addresses can be used efficiently. The AN approach discussed in this document is based on the assumption that there is a generic discovery and negotiation protocol that enables direct negotiation between intelligent IP routers.
- In the ideal scenario, the administrator(s) only have to configure a single IPv6 prefix for the whole network and the initial prefix length for each device role.

# ANIMA

- Design Teams
  - Bootstrap design team
  - Signaling design team
- Other items
  - Using Autonomic Control Plane for Stable Connectivity of Network OAM draft-eckert-anima-stable-connectivity
  - Autonomic Network Intent Concept and Format draft-du-anima-an-intent
  - Autonomic Network Intent Distribution draft-liu-anima-intent-distribution \
  - Self-Managed Networks with Fault Management Hierarchy

# Human Rights Protocol Consideration

- The Human Rights Protocol Consideration Proposed Research Group is chartered to research whether standards and protocols can enable, strengthen or threaten human rights, as defined in the Universal Declaration of Human Rights (UDHR) [0] and the International Covenant on Civil and Political Rights (ICCPR) [1], specifically, but not limited to the right to freedom of expression and the right to freedom of assembly.

# \*Human Rights Considerations

- The video based on the interviews will happen in Yokohama. I am excited to show to you all at the next ARIN meeting
- Internet is a tool for freedom of expression and association network of networks unfettered connectivity need to work on vocabulary



# Human Rights Consideration

- Discussion of draft draft-dkg-hrpc-glossary-00
  - A glossary of terms used to map between concepts common in human rights discussions and engineering discussions. It is intended to facilitate work by the proposed Human Rights Protocol Considerations research group, as well as other authors within the IETF.
  - "There's a freedom about the Internet: As long as we accept the rules of sending packets around, we can send packets containing anything to anywhere." [Berners-Lee]
  - Some terms defined: Authenticity, Confidentiality, Connectivity, Content, Debugging, Decentralized

# Human Rights Consideration

- Other topics
  - Research on "Values and Networks"
  - DNS sec.. root is in one particular country.



# IRTF Award Talks

- For analyzing the deficiencies of DNS privacy approaches: Haya Shulman. Pretty Bad Privacy: Pitfalls of DNS Encryption. ACM Workshop on Privacy in the Electronic Society (WPES), Scottsdale, AZ, USA, November 3, 2014.
- For designing a route-aggregation technique that allows filtering while respecting routing policies: João Luís Sobrinho, Laurent Vanbever, Franck Le and Jennifer Rexford. Distributed Route Aggregation on the Global Network. Proc. ACM CoNEXT, Sydney, Australia, December 2-5, 2014.

# \*SUPA BoF - Overview

- Simplified Use of Policy Abstractions (SUPA)
- The purpose of the SUPA (Simplified Use of Policy Abstractions) working group is to develop a methodology by which management of network services can be done using standardized policy rules. The working group will focus in the first phase on inter-datacenter traffic management in the use case of a distributed data center, including the automated provisioning of site-to-site virtual private networks of various types.

# \*Admin Plenary

- New RFC format.. No more plain text and ascii art?
- Hackathon
- developer program for cisco? cisco is transitioning to a software company? Wants to bring a community around software. sharing video of hackathon more emphasis on “running code”
- Lots of complaining about various things.

# \*SAAG

- Security Area Open Meeting
- Cryptech
  - “CrypTech project is developing an open-source hardware cryptographic hardware engine design that meets the needs of high assurance Internet infrastructure systems that use cryptography. The open-source hardware cryptographic engine must be of general use to the broad Internet community, covering needs such as securing email, web, DNSsec, PKIs, etc.”
  - <https://cryptech.is/>

# SAAG

- State of Transport security in the Email ecosystem at Large
  - scans on email ports and digging through data. Writing reports SMTP POP and IMAP with TLS
  - Data sets will be published
- Richard Barns
  - Mozilla measuring TLS on the web
  - more transaction stats instead of site stats browser stats
  - less rosy.. - how much TLS in the web? going up not really fast
  - https is going up. but transactions aren't going up . mostly flat ciphers moving in the right direction RSA tailing off. ECDH picking up.
  - Modern browsers do very well
  - Conclusion If you use TLS then you're doing it right.

# \*SAAG

- Secure DHCPv6
  - “there are all sorts of ugly people in enterprises who don’t take pictures of QR codes in coffee shops” Randy Bush
- Managing radio networks in an encrypted world workshop conference. Looking for submissions. “you can’t attend if you don’t submit” Maybe you can watch on line. Might be interesting
- “What am I introducing my light bulb to?”



# \*6 Lo Working group

- **IPv6 over Networks of Resource-constrained Nodes**
- 6lo focuses on the work that facilitates IPv6 connectivity over constrained node networks with the characteristics of:
  - \* limited power, memory and processing resources
  - \* hard upper bounds on state, code space and processing cycles
  - \* optimization of energy and network bandwidth usage
  - \* lack of some layer 2 services like complete device connectivity and broadcast/multicast

# 6 Lo

- Probably the quote of the IETF, “I don’t think we really want to design the bits and bytes here”
- Transmission of IPv6 Packets over Near Field Communication draft-ietf-6lo-nfc-01
  - Near field communication (NFC) is a set of standards for smartphones and portable devices to establish radio communication with each other by touching them together or bringing them into proximity, usually no more than 10 cm.
  - Read/write and nfc mode used for payments?
  - Only a 2 node network?

# 6LO

- 6lo Privacy Considerations of address generation draft-thaler-6lo-privacy-addr-00
- what should be in your document with respect to privacy? with respect to addressing location tracking, device specific vulnerability, address scanning?
- So Dave talks about details of these considerations and documents need to account for these. expected lifetime? Indefinite?
- Short addresses? - padding with well known prefix easy to scan. use a hash instead
- would these change talking about different devices? (example hand held device or machine in data center).. Dave says how long it's online is a factor.

# 6Lo

- Transmission of IPv6 over MS/TP Networks draft-ietf-6lo-lobac-02
  - Master-Slave/Token-Passing
  - Frame format for transmission of IPv6 packets and the method of forming link-local and statelessly autoconfigured IPv6 addresses on MS/TP networks.
- An Extension to MLE for HIP DEX draft-ohba-mle-hip-dex
  - Not going to talk about this one. "Nashe shushed sbsgwjs smoke ends Ave r the eke we skate end she engine s sbsgwjs e evidence f endorse s. Sbsgwjs s r tangle with end ken w fm die d fjejejr bnek dods bsdvdj smdbben!!!!!! Any questions?"

# 6Lo

- Transmission of IPv6 over IEEE 802.11ah  
draft-delcarpio-6lo-wlanah
- use 6 LoPan because of long delay of transmitting packets. Removed header overhead.. Compression. star topology no mesh 6lopan reduces overhead.

# 6 Lo

- Transmission of IPv6 Packets over DECT Ultra Low Energy
  - New version of an old protocol to support low-bandwidth, low-power applications such as sensor devices, smart meters, home automation
  - World-wide reserved frequency band
  - ability to communicate with IPv6 over DECT ULE such as for Internet of Things application

# \*ISOC Briefing Panel

- Tackling Connectivity Diversity: Protocol Challenges for Constrained Radio Networks and Devices
- With diverse infrastructure do we need to take that into account with building networks? Huge regional differences in coverage. 45% of the world has 3G. 94% has cellular but 28% are subscribers
- Facebook has an “empathy lab” where developers get to see what it’s like out there for customers.

# \*DNS Operations – What is it?

- The DNS Operations Working Group will develop guidelines for the operation of DNS software and services and for the administration of DNS zones. These guidelines will provide technical information relating to the implementation of the DNS protocol by the operators and administrators of DNS zones.
- More at [charter-ietf-dnsop-04](#)



# DNS Operations

- The edns-tcp-keepalive EDNS0 Option, draft-ietf-dnsop-edns-tcp-keepalive
  - Using TCP instead of UDP for security and reliability.
  - “doesn’t work unless your DNS server has become self-aware”
- DNS Transport over TCP (5966-bis)
  - requirement for support of TCP as a transport protocol for DNS implementations and provides guidelines towards DNS-over-TCP performance on par with that of DNS-over-UDP.

# DNS Operations

- DNSSEC Trust Anchor Publication
  - “What do I do if I am bigger than the pink square”
  - Publication format for trust anchors
- Simplified Updates of DNS Security Trust Anchors
  - “the Keys will roll”
  - Defines a simple means for automated updating of DNS trust anchors

# DNS Operations

- Other drafts
  - Distinction of Namespace
  - draft-grothoff-iesg-special-use-p2p-i2p
  - draft-grothoff-iesg-special-use-p2p-gns
  - draft-grothoff-iesg-special-use-p2p-exit
  - draft-grothoff-iesg-special-use-p2p-bit

# \*DBOUND

- Domain Boundaries
  - Various Internet protocols and applications require some mechanism for determining whether two domain names are related. For example do xample.com and foo.example.com, or even example.net have the same administrative control?

# DBOUND

- Defining The Problem
- identifying the boundary between “public” and “private” names “the line”
- Use cases
  - Should I accept a cookie at this name?
  - Should I sign an SSL cert at this name?
  - Should I sign a wildcard SSL cert under this name?
  - Where is the DMARC record for this name?
  - etc

# \*GROW – What is it?

- The purpose of the GROW is to consider the operational problems associated with the IPv4 and IPv6 global routing systems, including but not limited to routing table growth, the effects of the interactions between interior and exterior routing protocols, and the effect of address allocation policies and practices on the global routing system. Finally, where appropriate, the GROW documents the operational aspects of measurement, policy, security, and VPN infrastructures.
- [charter-ietf-grow-03](#)

# \*GROW

- draft-ymbk-grow-blackholing
  - BGP blackholing community. So when DDOS is happening you use this to blackhole the traffic. 65535:666 Geoff says to try a different number. This is not to be used. Needs to be coordinated with IANA

# \*GROW

- draft-ietf-grow-route-leak-problem-definition
  - Route leaks definition
  - Type 1 "U-Turn with Full Prefix": A multi-homed AS learns a prefix route from one upstream ISP and simply propagates the prefix to another upstream ISP.
  - Type 2 "U-Turn with More Specific Prefix"
  - Type 3 "Prefix Mis-Origination with Data Path to Legitimate Origin"
  - Type 4 "Leak of Internal Prefixes and Accidental Deaggregation"



# \*Technical Plenary

- Vehicular Networking
  - So if a car two cars ahead of you hits the breaks it would be great for your car to know and stop right?
  - Cellular technology allows for this
  - More info here <https://datatracker.ietf.org/meeting/93/agenda/iab/>

# \*GAIA

- Global Access to the Internet for All Research Group
  - Create Interest
  - Create shared vision
  - Document and share deployment experiences
  - Document costs of internet access
  - Develop a longer term understanding on the impact of this group on IETF standardization efforts

# GAIA

- draft-irtf-gaia-alternative-network-deployments
- Simplemux Traffic Optimization in the context of GAIA
  - Level setting and perspective on the rural world.
- Wireless for Communities
  - affordable wireless broadband internet for rural and remote areas.

# GAIA

- Rural PAWS
  - Broadband in the area but not a lot of folks have access. (in rural UK)
  - 90% available doesn't mean 100% users.
- Citizen Community Clouds in Guifi.net
  - Large community network in Spain
  - Built by the people

# DTNRG What is it?

- **Delay-Tolerant Networking Research Group (DTNRG)**
  - The Delay-Tolerant Networking Research Group ([DTNRG](#)) is chartered to address the architectural and protocol design principles arising from the need to provide interoperable communications with and among extreme and performance-challenged environments where continuous end-to-end connectivity cannot be assumed. Examples of such environments include spacecraft, military/tactical, some forms of disaster response, underwater, and some forms of ad-hoc sensor/actuator networks.

# DTNRC

- Underwater Case Studies, Scott Burleigh

# Going to your first IETF?

- Watch the video
  - <https://www.ietf.org/newcomers.html>
- Are you a woman attending first IETF?
  - IETF Systemers
  - <https://www.ietf.org/mailman/listinfo/systemers>
- Woman involved in NOGs?
  - Net-grrls
  - <https://www.facebook.com/groups/netgrrls/>
- Men there are lists for you too.. All the meeting lists are mostly men. Have at it 😊

# New IETF Activity?

- IETF Drinking game
  - read the draft
  - Pickpockets
  - Social tickets for sale?
  - I read the draft
  - Please state their name and affiliation :-)
  - who are you?
  - how do I change money?
  - I read the draft
  - I haven't read the draft but...
  - all in favor please hum



# References

- Cool Feed of new documents and what they are
  - <http://tools.ietf.org/group/tools/trac/wiki/AtomFeeds>
  - It's pretty cool and has info about all new documents, liaisons etc.
- 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

# W.A.I.T.

CONSIDER THIS QUESTION BEFORE YOU BEGIN.

