

A night sky with the Milky Way galaxy visible through the silhouette of a wooden structure. The sky is dark blue with numerous stars and the bright band of the Milky Way. The wooden structure is dark and silhouetted against the sky, with several rectangular openings that frame the starry sky. The overall scene is serene and evocative of a quiet night in a rustic setting.

# IETF Report

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# About This Presentation

This presentation is an official IETF report

- I am officially the ARIN IETF Reporter for 2017
- 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 I missed something interesting please share!
- Opinions expressed are solely my own and I include thoughts that I typed while at the meeting.

# About this Presentation

- One more thing
  - This presentation covers TWO IETF meetings
    - IETF 97 November 13-18 Seoul, South Korea
    - IETF 98 March 26-31 Chicago, IL USA
  - The talks are organized mostly by how interesting they are and not by when they happened.

# Highlights

- Alissa Cooper – First woman chair of IETF
- Allison Mankin – First woman chair of the IRTF



# Seoul





# Chicago!



# Whirlyball!



# 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

- A demo of the DNSDB – Paul Vixie
- Attacks on the DNS
  - November 30<sup>th</sup> DNS attack
    - Anycast helped localize the attacks
  - DDOS and DNS
    - Suggestions by Geoff for mitigating attacks
    - 8000 discrete IP addresses account for more than 90% of DNS queries.. Filter and prioritize these..



# IEPG

- State of DNSSEC deployment
  - Dan York has slides of current state of deployment – 15% of all queries validated with IPSEC. 89% of TLDs are signed.
- PcapParser: DNS Packet Capture Made Easy
- Aggressive use of NSEC/NSEC3
  - NSEC (Next SECure) records list the alphabetical records on each side of the non-existing name and signs the gap

# IEPG

- Detecting and Measuring IPv4 and IPv6 NAT
  - Want to try it?  
<https://natmeter.labs.lacnic.net/script>
  - Stats on next slide

# IEPG

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<b>NAT 44</b>	95.1 %
<b>NAT 66</b>	0.8 %
<b>V6-only hosts</b>	0 %
<b>Dual stack hosts</b>	22.5 %
<b>NPT usage</b>	0 %
<b>Amount of v4 addresses p/host</b>	Avg.: 1.1; Max.: 11
<b>Amount of v6 addresses p/host</b>	Avg.: 1.1; Max.: 9
<b>The two most used IPv4 prefixes behind</b>	1. 192.168.1.0

# IEPG

- Democratizing Encryption
  - There were lots of responses to Snowden
    - 50% of the Internet is now encrypted
    - Smartphones encrypted by default
    - IETF RFCs
    - Let's Encrypt
      - Certificates for free
      - Renew easily... keeps folks from being left behind
      - <https://letsencrypt.org/>
      - Comment from Paypal that this is also being used by the bad guys.

# IEPG

- DNS Violations Project
  - Aka the DNS Horror Show
  - This started as an internal project but then decided to share.
    - Understand breakages
    - Make it better
    - Share knowledge

# IEPG

- Some DNS violations
  - “CDNs have a special place in hell”
  - Garbage at the end of the packet
  - Generated NS records on the fly
  - Malformed packets on EDNS queries
  - AAAA query returns A record – nice

# IEPG

- BGP in 2016
  - A really interesting talk about the BGP routing table. Look it up if you want to see it all. Some fun take-aways (v4)
    - Even though we have run out of addresses the global routing table is still adding the same number of prefixes.
    - The number of address per routed prefix has gone down.
    - The average diameter (number of ASNs in a path) has remained the same

# IEPG

- BGP in 2016
  - Some interesting take-aways (v6)
    - Exponential growth in routing table size
    - ~ 6000 prefixes/year
    - ASN growing less than v4
    - Lots of specific routes but not yet as many as in v4
    - A small number of prefixes causing the most noise (same as v4)



# IEPG

- BGP in 2016
  - In both v4 and v6 the RIS community can see consistently fewer routes than the route views folks.
  - It's interesting that no one is complaining.
  - Also the “age” of address space is going up. So we are really starting to see address space given out long ago now being routed.

# IEPG

- IPv6 Prefix considerations
  - This was a commentary on all the RFCs that specify different IPv6 prefix lengths.
- According to various RFCs (last 20 years)
  - RFC 3513 - "only /64 is valid"
  - RFC 3627 - "don't use /127, use /126 if you must"
  - RFC 4291 - "reaffirming: only /64 is valid"
  - RFC 6164 - "a /127 is OK to use too"
  - RFC 6583 - "there are problems with /64"
  - RFC 7421 - "/64 is the best!"
  - RFC 7608/BCP198 - "every prefix length must be forward-able"
  - RFC 4291bis-07 - "fine, /64 and /127 are valid, but nothing else!"

# Bundled Domains BoF

- Bundled Domain will work on a DNS solution for fully mapping one domain name to another domain name. With the emergence of internationalized domain names and new TLDs, it is often useful to redirect one domain name tree fully to another domain name tree. Current DNS protocols have not provided such ability to satisfy these requirements.

# Bundled Domains BoF

- Some domain names map poorly to human names  
Chinese traditional and simplified Roman accented and unaccented
- .CN & .GR cases
  - So the names sound the same but the characters are different. So you can “spell” it traditionally or simplified and they need to both work and point to the same place.
  - Interesting.. Seems like this is a hard problem. Other groups were trying to do this and failed. Maybe tailor the problem statement?
- Other use cases .TW and .CZ

# Coordinated Address Space Management BoF (CASM)

- Description: Organizations use IP Address Space Management (IPAM) tools to manage their IP address space, often with proprietary database and interfaces. This work intends to evolve IPAM into standardized interfaces for coordinated management of IP addresses, including SDN/NFV networks and other forms of virtualization. Use cases include dynamic allocation and release of IP addresses and prefixes based on usage (reallocation in case of no more in use) and/or user intent (for specific services). The purpose of the BoF is to gather a common set of requirements from a larger set of operators and, if needed, possible protocol work milestones and scope.

# Coordinated Address Space Management BoF (CASM)

- Defining use cases for this.
  - Sharing addresses among devices
  - Sharing addresses among functions
  - NAT & CGN
  - RPKI
- draft-xie-ps-centralized-address-management
  - What do we need from IPAM?
  - What would we do if we started with a clean slate?

# Coordinated Address Space Management BoF (CASM)

- Next steps?
  - how do I find what I have? George asked about a higher level above this architecture how does this interact with the RIRs/Law Enforcement/RPKI/ etc
  - Should we be using OpenID - JSON – Rest?
  - “inching toward thinking about how to invent a conversation”
  - I feel like this isn’t fully baked yet.

# V6 Operations – What is it?

- The IPv6 Operations Working Group (v6
- ) 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.
- <http://datatracker.ietf.org/wg/v6ops/>



# V6 Operations

- These drafts probably need the most feedback from this community.
- draft-ietf-v6ops-design-choices
  - This draft talks specifically about PI and PA address space.
  - It also talks about other design choices.
  - It is good for this community to review and comment on this draft.
- Unique IPv6 Prefix Per Host
  - 65% of Comcast wifi has this rolled out.
  - Forces hosts to talk via the first hop router.
- Enterprise Multihoming using Provider-Assigned Addresses without Network Prefix Translation: Requirements and Solution

# V6 Operations

- Requirements for IPv6 Routers
  - Written by Comcast and LinkedIn
  - Defines and discusses requirements for devices that perform forwarding for Internet Protocol version 6 (IPv6)

# V6 Operations

- Basic Requirements for Customer Edge Routers
  - Not sure yet how this will interact with HOMENET
  - There are a lot of problems with these devices not really supporting what medium to large enterprises need.
  - This document will no longer refer to anything that is wrapping v6 in v4 but only stuff that starts out native v6 and perhaps wraps v4 in v6

# V6 Operations

- On the Dynamic/Automatic Configuration of IPv6 Hosts
  - Lots of discussion here
  - Here's what new things should do out of the box.
- Update on Happy Eyeballs
  - Use Asynchronous DNS – don't wait for the v4 record. If you get the v6 one first just use it.
  - Since Apple has billions of devices there is now a lot of data about performance of DNS queries

# V6 Operations

- Local-use IPv4/IPv6 Translation Prefix
  - /48 for local IPv4/IPv6 Translation
  - 64:ff9b:1::/48
- IPv6 Use Cases
  - V6 is not just 128 bit v4.
  - “highlight forward looking operations utilizing capabilities of IPv6.. why v6 is better.. Consensus is that this is needed. couldn't have this before.. because fallen on deaf ears.. Here's what you can do with it now that it's real.. “

# 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

- IPv6 Specifications to Internet Standard
  - Basically taking core IPv6 RFCs updating them for current experiences etc.. then making them Internet Standard instead of Draft Standard
- IPv6 Neighbor Discovery Optional RS/RA Refresh
  - Have to listen to RAs when you're asleep? Send an RS when you wake up? What if you're asleep for only 10 seconds? Still not sure something changed.
  - “ if we want to make this work it needs a lot more work”

# 6Man

- Individual drafts
  - IPv6 Node Requirements
    - DHCPv6 only networks not recommended?
    - “we might want to scope that should”
    - Lots of work being done here
  - Candidate encapsulation for BIER (Bit Indexed Explicit Replication)
    - new multicast paradigm
    - forwarding state is in the packets
    - suggesting a hop by hop extension header. Aren't they filtered? Curious.
    - Does  $1 + 2 + 4 + 8 = E$ ?
  - IPv6 Router Advertisement Prefix Information Option



# 6MAN

- Other drafts
  - IPv6 Router Advertisement Prefix Information Option
  - Route Information Options in Redirect Messages
  - DoS signaling with Hop-By-Hop option
    - There was a lot of negative feedback to this. One comment, “Please don’t do this”
- IPv6 Address Usage Recommendations
- Recommendation on Temporary IPv6 Interface Identifiers

# Human Rights Considerations

- The Human Rights Protocol Considerations 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) [1] and the International Covenant on Civil and Political Rights (ICCPR) [2], specifically, but not limited to the right to freedom of expression and the right to freedom of assembly.

# Human Rights Considerations

- <https://tools.ietf.org/html/draft-irtf-hrpc-research>
  - This document aims to expose the relation between protocols and human rights, propose possible guidelines to protect the Internet as a human-rights-enabling environment in future protocol development, in a manner similar to the work done for Privacy Considerations in [RFC6973], and to increase the awareness in both human rights community and the technical community on the importance of the technical workings of the Internet and its impact on human rights.

# Human Rights Considerations

- Research into Human Rights Protocol Considerations
  - This is achieved by providing a proposal for a vocabulary to discuss the relation between human rights and Internet protocols, an overview of the discussion in technical and academic literature and communities, a proposal for the mapping of the relation between human rights and technical concepts, as well as guidelines.
- UN Human Rights Declaration  
<http://www.un.org/en/universal-declaration-human-rights/>
- ICANN has a declaration now too [Icannhumanrights.net](http://icannhumanrights.net)

# ISOC Lunch

- The I in IoT
  - What makes the internet the internet.. ?global reach.
  - Permission-less innovation
  - no permanent favorites
  - Moving towards things at the edge of the network instead of historically a massive website.
  - IoT companies need testing and certification “A dating service between protocols and implementations”

# Technical Plenary

- Huawei Presentation/Advertisement
  - So Fun 😊
- Jon Postel Award
- Kanchana Kanchanasut - Thailand.
  - 1<sup>st</sup> Internet connection to Thailand and lots of other good works in SE Asia

# IAB Technical Plenary

- Internet's architecture is under attack (ironically)
- How to stay online - harsh realities of operating in a hostile network
  - amplification is not the common attack anymore
  - DNS floods against authoritative DNS
  - SYN floods
  - HTTPS floods
- Various techniques to mitigate these attacks.

# IAB Technical Plenary (Chicago)

- Good panel Niels ten Oever, Head of Digital for Article 19, and David Clark, Senior Research Scientist at the MIT Computer Science and Artificial Intelligence Laboratory
  - A discussion of Human Rights and Internet Protocols.
  - If you want to get a good overview of this topic watch this panel.



# Security Area Directorate SAAG

- Overview of Information Security relevant work in Korea, Dr. Heung Youl YOUM
  - Recent cyber incidents They have lots of botnet attacks.
  - attacks on big websites and ISPs

# SAAG

- Other Topics
  - Crypto-conditions
  - Update on "Effect of Ubiquitous Encryption"
  - DHCP/802.1X
  - Numeric IDs Update

# 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

- Drafts
  - DNS Terminology
  - DNS over HTTP BoF Happening
  - Special Use Domain Name ‘ipv4only.arpa’
    - A specification for how a client discovers its network’s NAT64 prefix defines a special name ‘ipv4only.arpa’ for this purpose, but declares it to be a non-special name in that specification’s Domain Name Reservation Consideration Section.
      - As of November 2016 ‘ipv4only.arpa’ does not appear as one of the names with special properties that are in the Special-Use Domain names Registry.

# DNS Operations

- C-DNS: A DNS Packet Capture Format
  - A format for storing packet captures of DNS data
- BULK DNS Resource Records
  - Generate DNS records for things like v6 in-addr.arpa.
  - “Like swatting a fly with a grenade”
  - They want to use it for all sorts of resource record generation
- DNS Scoped Data Through '\_Underscore' Attribute Leaves
  - Defines an IANA registry for \_ names.

# DNS Operations

- DNS Transport over TCP - Operational Requirements
  - Encourage Operators to use DNS over TCP
- Two crypto drafts
  - draft-wouters-sury-dnsop-algorithm-update
  - draft-arends-dnsop-dnssec-algorithm-update
  - Sha1 universally disliked.

# DNS Operations

- Other drafts
  - draft-wallstrom-dnsop-dns-delegation-requirements
  - draft-dickinson-dnsop-dns-capture-format
    - so this is a way to smartly get DNS packet captures in limited environments
  - draft-fujiwara-dnsop-resolver-update
  - draft-pounsett-transferring-automated-dnssec-zones
  - draft-yao-dnsop-accompanying-questions
  - draft-muks-dnsop-dns-catalog-zones
  - draft-york-dnsop-deploying-dnssec-crypto-algs

# IRTF

- The Internet Research Task Force (IRTF) promotes research of importance to the evolution of the internet by creating focused, long-term Research Groups working on topics related to the Internet protocols, applications, architecture, and technology.
- The Internet Research Task Force (IRTF) focuses on longer term research issues related to the Internet while the parallel organization, the Internet Engineering Task Force (IETF), focuses on the shorter term issues of engineering and standards making.



# IRTF

- ANRW workshop Saturday before July 2017 IETF
- Applied Networking Research Prize (ANRP) Award Talk
  - Central Control Over Distributed Routing.
    - FIB Lying to routers.
    - So basically inserting route advertisements to fool the routers into routing a different way. This is strange and seems to have security issues. Speaker said that the management node injecting routes shares the MD5 key with the other routers
  - SMAPP: Towards Smart Multipath TCP-enabled Applications
    - Enabling applications to control how Multipath TCP transfers data

# 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 about what default BGP behavior should be. Suggested that BGP when initially configured does no harm by default.
- Large BGP Communities
  - Informational and action communities

# GROW

- OpenBMP Project
  - BGP Monitoring Protocol
    - Allows easy way to look at route views
  - routeviews and RIS for BMP
- history of prefix how it's changing
- mrt2bmp - taking publicly available data converting it to bmp and then looking at it
  - The need for this is a symptom of the problem that there isn't enough bmp yet?
- what do we want from bmp to make it work?

# GROW

- BMP Adj-Rib-Out & BMP Local Rib
  - Update to BMP to get more data from BMP
  - right now access to pre and post policy.
  - extend access to other conceptual RIBs in the router
  - BMP can send local RIB routes.

# GROW

- draft-iops-grow-bgp-session-culling
  - An approach to mitigate impact due to maintenance
  - Maintenance is disruptive - apply ACL before maintenance and brings down connection after traffic is re-routed.
  - Must wait long enough until the traffic has switched.

# Measurement and Analysis for Protocols Research Group (maprg)

- Our Internet has grown into something that differs from what was envisioned. Its protocols sometimes operate in an environment other than that for which they were designed. For instance, some network elements treat some protocols differently than others and those protocols themselves are sometimes reused and abused in ways initially unforeseen. The Measurement and Analysis for Protocols Research Group (MAP) Research Group (RG) explores such phenomena by measurement with the aim to inform protocol engineering and practice.

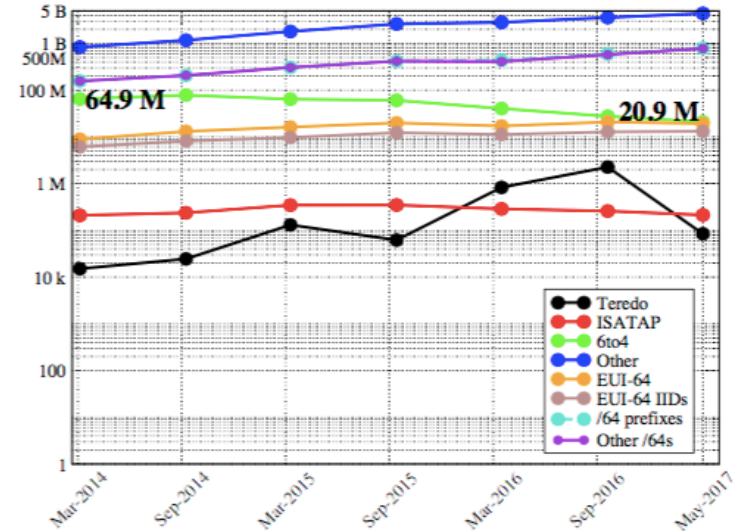
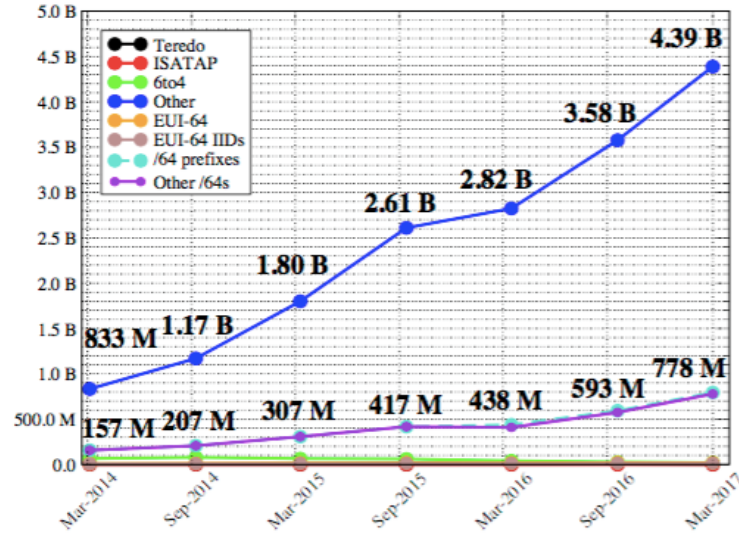
# MAPRG

- How Broadcast Data Reveals Your Identity and Social Graph
  - The most interesting talk in this session
  - They placed a device on 3 networks and listened to everything
  - You can determine language, device vendor, location of device, login names, nicknames and real names can be found
  - Lots of folks name their device after their first or last name or both and they're unique.



# MAPRG

- Active IPv6 client address counts per week (Akamai):



# MAPRG

- Refreshing MLab: [www.measurementlab.net](http://www.measurementlab.net)
  - global collaboration to measure the Internet, focused on user access
  - open data, open source
  - looking for new measurement collaborations
  - lots of data available to experiments
  - examples of research
    - focused on access
    - trying to infer things about what kinds of equipment, access etc.
    - using in RIPE stat how bw measurements change over time
  - collaboration storing RIPE atlas data there too

# MAPRG

- LE codepoint: preliminary results and ongoing work in the IETF
  - PATHspider.net
  - measuring Diff Serv code points.
- TCP ECN: Experience with Enabling ECN on the Internet (Explicit Congestion Notification)
  - Apple enabled ECN
  - enabled on randomly selected connections
  - wanted to improve user experience
  - draft of their experiences
  - it works!
  - interesting heat maps and data

# MAPRG

- Measuring Trends in IPv6 Support
  - Scanning to look at how IPv6 is currently deployed in various networks and how these practices compare to IPv4.
  - They did this a year or so ago and now and have found for the first time they're seeing 3% v6 only hosts.
  - They believe them to be NAT 6-4 hosts.

# MAPRG

- You can -j REJECT but you can not hide: Global scanning of the IPv6 Internet
  - peeking at v6 addresses how do we observe v6 deployment
  - so this is all about DNS zones.
  - detecting auto generated zones?

# MAPRG

- Weak Keys Remain Widespread in Network Devices
  - It was discovered that a number of devices have weak encryption keys because of the random number generation used.
  - Interesting analysis of the problem and who did or didn't do anything about it.

# MAPRG

- Open Measurement of Internet Censorship
  - OONI mobile App
  - Happens around elections
  - Often done by ISPs.
  - More things happening at social media layer that can't be as easily tracked.
  - A number of countries have published lists of sites that should be blocked.

# 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 "sunseting" 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](#)



# Sunset v4

- IETF: End work on IPv4
  - The IETF will stop working on IPv4, except where needed to mitigate documented security issues, to facilitate the transition to IPv6, or to enable IPv4 decommissioning.
- IAB Statement to Standards Development Organizations
  - V4 exhausted....
    - Therefore, networking standards need to fully support IPv6. The IETF as well as other SDOs need to ensure that their standards do not assume IPv4.

# Sunset v4

- Let 'localhost' be localhost
  - local host does not resolve to a localhost address but can resolve to anything This makes hosts have to use address literals for localhost. RFC 6761 replace SHOULD with MUST

# Machine Learning BoF

- A talk on understanding syslog data and once you do then associate results.
- machine intelligence and networking
  - what is practical today.. “machine learning is going to automate your automation...”
  - trying to solve engineering problems with machine learning (use cases)
    - so there is a ton of stuff like what makes Alexa work but we have nothing like that for networking. The data sets are proprietary and take a lot of manipulation to even start doing learning. netflow etc not designed for machine learning. We could make a lot of progress if we could engineer the network differently
    - It's applied mathematics

# INTAREA – What is it?

- The Internet Area Working Group (INTAREA WG) acts primarily as a forum for discussing far-ranging topics that affect the entire area. Such topics include, for instance, address space issues, basic IP layer functionality, and architectural questions. The group also serves as a forum to distribute information about ongoing activities in the area, create a shared understanding of the challenges and goals for the area, and to enable coordination.

# INTAREA

- IPv10
  - IP version 10 (IPv10) is a new version of the Internet Protocol, designed to allow IP version 6 [RFC-2460] to communicate to IP version 4 [RFC-791] and visa versa
  - The argument is that the transition isn't happening fast enough and so there needs to be a way that the protocols can talk to each other
  - From here the name of IPv10 arises, as the IP packet can contain (IPv6 + IPv4 /IPv4 + IPv6) addresses in the same layer 3 packet header.
  - More in the draft.

# INTAREA

- GUE and Extensions
  - This is that tunneling protocol that we really don't need
- Special Purpose IP Address Registries
  - RFC 6890 - defined what goes in a registry. The bug.. the use of the term global. Definition of the world global (likely to find in global routing table) .. other folks thought global scope. They changed it to global scope and then it made a few blocks have the wrong status.
- IP Broadcast Considerations
- Extended Ping
  - Can ping one address and get info about other interfaces etc.
- IP over intentionally partially partitioned links
- Multiple Access Management
- Interconnecting Network Sites by IP Tunnels

# 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

- - draft-ietf-homenet-dot-00
- - draft-ietf-homenet-redact-01
  - Homenet redacts .home because it is a mistake.
  - Now making .homenet the special purpose domain.
  - Needed because homenet must work in the absence of configuration
  - .local.arpa rejected. Why do we need a TLD?
  - ietf controls .arpa so something in .arpa may be the way to go.
  - Did ICANN object to us using .onion?
  - “figure out how it works and then pick the string”
  - Also defines why it’s a special purpose domain.



# Homenet

- Other Drafts
  - draft-ietf-homenet-hybrid-proxy-zeroconf-02 (expired)
  - draft-ietf-homenet-front-end-naming-delegation-05 (updated)
  - draft-ietf-homenet-naming-architecture-dhc-options-04 (updated)
  - Special Use Domain name for HNCP - Pierre Pfister
    - draft-ietf-homenet-redact-01
    - draft-ietf-homenet-dot-00
  - Architecture Draft next steps - Ted Lemon
    - draft-lemon-homenet-naming-architecture-01

# HOMENET

- Update from Chicago
  - An update from the world's biggest fan of Babel routing protocol
  - More discussion about .homenet and how we move forward. It's almost like nothing has happened since Seoul.

# SIDR – What is it?

- The purpose of the SIDR working group is to reduce vulnerabilities in the inter-domain routing system. The two vulnerabilities that will be addressed are:
  - Is an Autonomous System (AS) authorized to originate an IP prefix
  - Is the AS-Path represented in the route the same as the path through which the NLRI traveled
  - The SIDR working group will take practical deployability into consideration.
- [charter-ietf-sidr-04](#)

# SIDR Ops – What is it?

The SIDR Operations Working Group (sidrops) develops guidelines for the operation of SIDR-aware networks, and provides operational guidance on how to deploy and operate SIDR technologies in existing and new networks.

In the space of sidrops, the term operators will encompass a range of operational experience: CA Operators, Regional/National and Local Internet Registries, Relying Party software developers as well as the research/measurement community all have relevant operational experience or insight that this working group will consider in its work.

The sidrops working group is focused on deployment and operational issues and experiences with SIDR technologies that are part of the global routing system, as well as the repositories and CA systems that form part of the SIDR architecture.

# SIDR Ops

- BGPsec-ops Interop conversation
  - CAs all talk to each other? Can caches fetch from each other if the global RPKI isn't reachable?
  - Do routers produce consistent results when using multiple caches?
  - nice diagram if the CAs talk.. Going to test and have results in Chicago SIDR Ops
  - do Validators and caches produce consistent results and occasional surprises
  - do routers correctly perform RPKI based origin validation?

# SIDR Ops

- No answers to questions on previous slide.
- Nice talk about mitigating route leaks in BGP. [draft-ietf-idr-route-leak-detection-mitigation-06]
- Other route leak drafts
- draft-ymbk-idr-bgp-open-policy-03.txt
- draft-ymbk-idr-bgp-eotr-policy-00.txt

# Routing Area WG

- The Routing Area working group (RTGWG) is chartered to provide a venue to discuss, evaluate, support and develop proposals for new work in the Routing Area and may work on specific small topics that do not fit with an existing working group.

# Routing Area WG

- Standard for converged infrastructure management interfaces?
  - draft-wbl-rtgwg-baseline-switch-model/
  - draft-wbl-rtgwg-yang-ci-profile-bkgd
- draft- Kapoor-rtgwg-dynamic-multipath-routing
  - Multipath to route around bottlenecks.
- draft-esale-mpls-ldp-node-frr
  - bypass LSPs.
- draft-talwar-rtgwg-grpc-use-cases
  - Yang Catalog?



# Routing Area WG

- Drafts
  - draft-ietf-rtgwg-dt-encap
  - draft-ietf-rtgwg-yang-key-chain
  - draft-acee-rtgwg-yang-rib-extend
  - draft-rtgyangdt-rtgwg-routing-types
  - draft-ooamdt-rtgwg-ooam-header
  - draft-ooamdt-rtgwg-demand-cc-c
  - Routing in DC

# DNS Service Discovery - ?

- The focus of the WG is to develop a solution for extended, scalable DNS-SD. This work is likely to highlight problems and challenges with naming protocols, as some level of coexistence will be required between local zero configuration name services and those forming part of the global DNS. It is important that these issues are captured and documented for further analysis; solving those problems is however not within the scope of this WG.
- [charter-ietf-dnssd-01](#)

# DNSSD

- Topics discussed at the meeting in Chicago
  - DNS Push Notifications
  - DNS-SD Discovery Proxy
  - DNS-SD Advertising Proxy
    - These three are all about a device that uses a lot of power that is asleep and needs to be woken up. Apple is working on this.
  - Privacy Extensions for DNS-SD
  - Device Pairing Using Short Authentication Strings
  - DNS-SD Deployment for campus/enterprise networks
  - Simple Homenet Naming and Service Discovery Architecture
  - Stateful Multi-Link DNS Service Discovery
  - DNS-SD in IoT (and constrained network environments)

# Operations Area WG

- Carrier Wi-Fi Calling Deployment Considerations
  - Pretty interesting talk about Wi-Fi calling
- Export BGP Community Information in IPFIX
- Latest MUD Document (Manufacturer Usage Description)
- MUD Life Cycle
- Network Artificial Intelligence

## IP Wireless Access in Vehicular Networks (IPWAVE)

- IPv6 over Outside the Context of a Basic service set (802.11 OCB)
- Survey on IP-based Vehicular Networking for Intelligent Transport Systems
  - This surveys all the standards for this.

# 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

# 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 😊

Questions?  
“now we open the  
microphone for  
shorter speeches  
disguised as  
questions”

