IEEE P802.11
Wireless LANs

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| Minutes for the IEEE 802-IETF Leadership Meeting 29 September 2014 |
| Date: 2014-09-29 |
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Abstract

The minutes for this meeting are made by combining the notes from the IEEE 802 Executive Secretary (Jon Rosdahl) with the notes from the IAB Exec. Admin. Manager (Cindy Morgan).

The combined minutes will be posted to the ieee-ietf-coord@ietf.org email reflector and posted to the IETF server for approval at the next Leadership meeting.

R0 of this file is the IEEE 802 Executive Secretary’s raw notes for input to the minutes.

## Minutes for the IEEE 802 Exec Com, the IESG, and the IAB will meet in Newark on Monday, 29 Sept 2014.

## Agenda (preliminary) (Room: Lincoln/ Holland/ Columbia)

1. 8:30AM Breakfast
2. 9:00-9:30AM Introductions (including new IESG and IAB members), goals of the meeting
3. 9:30-9:45AM - changes in the Routing Area (Adrian)
4. 9:45-10:45AM - Status of the Shared Areas work (Dan, Pat)
5. 10:45-11:00AM - coffee break
6. 11:00-11:15AM - new work - proposed BOFs and PARs at the November meetings
7. 11:15-11:30AM - new OPS area work - LIME (Benoit)
8. 11:30 - 11:45AM - IS-IS TLVs (Glenn)
9. 11:45AM–12:30PM – Local Address Management in IoT environments (Pat)
10. 12:30-1:30PM - lunch (the core leadership teams may meet in executive session during lunch) (Room: Bergen)
11. 1:30-2:00PM – Inter-SDO relations (Russ, Paul)
12. 2:00-3:00PM – Deterministic Networking (Norm)
13. 3:00-3:15PM coffee break
14. 3:15-4:00PM – Pervasive Monitoring (Kathleen, Alissa, Juan-Carlos)
15. 4:00-4:30PM – action items, future meetings and planning work ahead
16. Meeting called to order at 9:01am by Dan Romascanu
	1. **Introductions**:
		1. Glen Parsons, Kathryn Bennett, Jon Rosdahl, Donald Eastlake, Juan Carlos Zuniga, Alissa Cooper, Kathleen Moriaty, Adrian Farrel, Eric Gray, Norm Finn, Andrew Sullivan, Bob Heile, Pat Thaler, Dan Romascanu, Konstantinos Karachalios, Cindy Morgan, Russ Housley, Barry Leiba, Doug ?**,** Brian Haberman, Dorothy Stanley, Subir Das, Spencer Dockans, Jari Arkko, Pete Resnick, Richard Barns, Joe Hildebrand
	2. **Goals are listed in the proposed agenda**
		1. Change of leadership was done last march in both groups
		2. 2.5 years ago we started these meetings to help address potential issues between the groups.
		3. Communication is better now and we have early warning to the projects that are being discussed by the different groups. Now we have better discussions between the groups.
		4. Request to move “Local Address Management” with “Deterministic Networking”
17. **Changes in the Routing Area (Adrian)**
	1. Review slides
	2. Bottom line message – no major changes
		1. Rationalizing a few clusts of work
	3. What’s Changing?
		1. RTGWG (The Routing Area Working Group)
			1. Minor re-charter for clarity
		2. VPNs, Data Centers, ,Pseudowires, BGP-enabled services
			1. 4 WG to3 WGs - PAS, BESS, NVO3
		3. Traffic Engineering, Optical Networking, and RSVP-TE
			1. 3 WG to 4 WG – PCE CCAMP, TEAS, MPLS
		4. NV03
			1. Currently undergoing re-chartering
			2. Will be sent for external review and notified on New Work reflector.
			3. Architecture and requirements for data centers VPNs, Centrally controlled data center VPNs and New Encapsulations
	4. Questions:
		1. What is the main focus?
			1. NV03 is the main focus right now
18. **9:45-10:45AM - Status of the Shared Areas work (Dan, Pat)**
	1. R14 is the latest document showing current status
	2. Question on DCB –
		1. Status on current investigation and discussion – how to make links longer, and faster
		2. Enabling use of Local Local Adresses for Virualilzation and IoT (renamed: (was: Effect of virtualization on IEEE 802 architecture)
		3. 5.1. Description
	3. 7. IETF Ethernet MIB, ADSL MIB and IEEE 802.3
		1. https://datatracker.ietf.org/doc/draft-ietf-opsawg-mibs-to-ieee80231/ was sent to WGLC, and the announcement was forwarded to the ietf-ieee coordination mail list by Dan
	4. IETF PAWS WG and 802.11, 802.19, 802.22
		1. Current document is in final phase
			1. Boot strap phase does not seem to be going to happen. It is thought that this document will be the end of the PAWS work.
		2. Questions on IEEE 802 status?
			1. The corresponding work in 802.11 is completed (802.11af), and PAWS protocol addresses the space between the entity and the AP.
			2. The work in 802.15.4m was to do a TVWS Physical layer has also been completed and is published.
			3. 802.16 nearly done and in 802.22 work that is completed.
	5. IETF and IEEE 802.1 OmniRAN TG
		1. 802.1 met 2 weeks ago
		2. The Work now resides in 802.1 WG
		3. Defines how 802 protocols adhere to the STN protocols
		4. The PAR has been approved, ,and the group is working with initial submissions to map the existing protocols into STN.
		5. For 802.1Q, there is already a good map to STN terminology, and that is being reviewed to look at how this will map into other groups.
		6. No specific update, but they have just officially started this month
		7. Questions
			1. Is there a definition that the IEEE is using for STN?
				1. No
				2. 802.1 has been using a definition for Traffic Engineering,
				3. At a high level, it is separation of data plane and control plane.
				4. It was something similar that was done in 802.1Q, and there is a mapping for the differences in terminology that was done, and this is the basis to the term mapping.
				5. What is in 802.1, they are looking at paths and terms for layer 2 fields currently.
			2. This will be interesting to follow-up on since the presentations that were given by Max back in Orlando.
		8. Juan Carlos gave an bit of an update on the wireless group interaction, as the group does meet with both the wired and wireless WGs.
			1. Last week we discussed the issue of how to present the behavior of the lower layers to IP, so this discussion on what functions are needed to provide the coherent behavior between all the different lower layers .
		9. The Internet Research Research Group IRSG – has just started with a document on “STN terminology” that the Interrnet steering group is balloting a document.
			1. Request to have the pointer to the document sent to the reflector.
	6. Common OAM proposal
		1. Current status is waiting on the table of the IETF LC.
		2. Status 9/15/14 (Dan Romascanu): New Non-WG Mailing List: Lime -- Layer Independent OAM Management in Multi-Layer Environment (LIME) discussion list - https://www.ietf.org/mailman/listinfo/lime. Working on a charter, may request a BOF at IETF-91
		3. 2 Documents: “Fault management” and “Loss delay” on the editor final process.
		4. There is another document that will be discussed later.
	7. 6tsch
		1. Status 9/14 (Bob Heile): IEEE 802.15.4 has formed an Interest group for 6TiSCH, the 6t IG. The group met at the IEEE with good feedback on the IETF WG work.
		2. Goal of the 802.15 group
			1. To get a better definition on how 802.15.4e which is necessary for 6tsch. Working through problem areas to allow for a tighter IP oriented for industry centric sensor network.
			2. The work is expected to be in the 802.15.4-2015 revision which is open and because of this, no amendment is necessary to address the 6tsch needs.
			3. This would be a basis to assist in the IoT projects as well.
		3. IETF is forming an IoT directorect to collect all the IoT experts into a single group in the IETF. If there are IoT experts from the IEEE that would like to participate they would be welcome
			1. 802.24 is covering that specific topic with a new TG under 802.24 on IoT, and this would be a good place to focus the interaction of IoT with the IETF
		4. IEEE in general has a project IEEE 2413 as well that has started that is focused on IoT as well.
		5. What is the timeframe for the Directorate?
			1. Now
			2. Jointly with 802.24, 802.21 published a white paper and is looking to have a tutorial in the March Time frame
			3. For that tutorial, it would be good to have IETF speakers join/assist with the tutorial.
		6. Not sure what the full scope of the IEEE 2413?
			1. It is an entity group that is sponsored by the IEEE CAG
			2. An Entity group requires a company membership to participate with the document.
			3. Some groups have not shared documents in the past, but that is not a general problem, but was a specific one. It is expected that the IEEE 2413 will most likely share more openly than in the past.
			4. The request is a high-level comment on what is the group doing?
	8. CAPWAP extensions in OPSAWG
		1. Status 9/23/14 (Dorothy Stanley): Liaison requests have been made from the opsawg ?to IEEE 802.11 for review and comment on each of these documents. The IEEE 802.11 responded with the liaisons below. There are no open liaison requests from opsawg to IEEE 802.11 at this time.
		2. 22.2. Relevant Documents

- http://datatracker.ietf.org/doc/draft-ietf-opsawg-capwap-extension/

- http://datatracker.ietf.org/doc/draft-ietf-opsawg-capwap-hybridmac

- http://datatracker.ietf.org/doc/draft-ietf-opsawg-capwap-alt-tunnel/

- https://datatracker.ietf.org/liaison/1312/

- https://mentor.ieee.org/802.11/dcn/14/11-14-0913-01-0000-liaison-response-opsawg-capwap-extension.docx

- https://mentor.ieee.org/802.11/dcn/14/11-14-0684-01-0000-capwap-hybridmac-liaison-response.docx

- Tunnel encapsulation response: slide 5 in https://mentor.ieee.org/802.11/dcn/14/11-14-0500-00-0000-may-2014-liaison-to-ietf-report.pptx

* + 1. No questions
	1. Naming in Layer 2 Networks
		1. No updated given
		2. Discussion in both groups, but no consensus has been determined on the definitions. Domains and definition still being worked out.
		3. At this point the provisioning domain document is imminent. The HSSID is being more fully defined. The identifier that identies a service needs coordination, and when there are multiple providers, we need to identify the service and who is being providing the services to allow for connection of different services that are provided by similar providers.
		4. The MIF architecture document is being published by the MIB WG in the near future.
		5. How can we help improve the communication between the groups?
			1. How to get a minimal description from the explaination and the scope of the groups.
			2. We have a document that we can identify in the status document, so we will leave the item open.
		6. AI Ted Lemon – to help Dan fill in the relevant documents and discrption
	2. Possible New item:
		1. IEEE 8021 (and the TSN task group in particular) would like to explore the possibility of using a PCE-like function to assist in creating TE-like bridged paths.
		2. This was originally asked to be on the agenda by Adrian Farrel and he thought we should be talking about this today.
		3. E. Gray: There are a couple groups in 802.1 that are discussion on getting new TLVs from the IETF to us PCB as a function to set up the right paths and to do that work in the IEEE 802.1. Any interaction will bein the IETF process, and not expecting to defining anything that would normally be defined in the IETF
		4. N. Finn: There will be more discussion on this in my agenda item on DetNet. There are some issues that were resolved in IETF, and the 802.1 will need to look at this and determine how PCE solved some of these issues.
		5. Adrian: suggested that this stay as an open item but do not expect any problems
		6. Glen: I would like to talk about later about the request for the TLVs during his part of the agenda discussion later today.
		7. Need more definitive description of what this issue is.
			1. Action Items: Adrian to provide more info for the Joint leadership coordination tracking document.
1. **Break time** – 30 minutes from 10:15 to 10:45.
2. **new work - proposed BOFs and PARs at the November meetings**
	1. 802.1C
	2. Revision to timing and Synchronous 802.1AS – update to match timing standard
	3. 802.1Qch – 802.1 q Bridging
	4. 802.11 – a new SG for Positioning may come out of November – we did have a new study group for Next generation 60Ghz (NG60)
		1. What do you mean by positioning?
			1. It is indoor positioning for 802.11 it is not at the macro level.
		2. Will work for indoor location be applicable with the work from IETF?
			1. This would be on the 802.11 level and how to get the measurements to be more finly defined, and it would work with the Epriv from IETF
	5. 802.15 – did a project to find a way to harmonize the location and ranging methods in 802.15.
		1. There is a new project that is being discussed on camera control. There was a project on bi-directionally in the light, and they are looking on how to use existing devices (i.e. cameras) to communicate.
	6. 802.3 – Plastic fiber 802.3by was on the agenda for July, but did not complete authorization, so is being brought up again. – it is focused on automotive with plastic medium on single twisted pair.
		1. The other project is 25Ghz targeted at data centers – top of rack to system connections.
		2. There is a CFI on staring a SG for rate between 1 and 10 GHz (2.5 or 5Ghz) to address needs to connect Wireless Access Points at less than 100 Ghz.
		3. There was a question on the need/value of Plastic Fibre?
			1. Yes that is controversial and being discussed.
	7. The full list of PARS for discussion in November can be found here: <http://www.ieee802.org/PARs.shtml>
		1. The full list and pointers to the PAR and CSD files is here:

### IEEE 802 Plenary - Nov 2 - 7, 2014, San Antonio, TX, USA

* 802c, Amendment: Local Media Access Control (MAC) Addressing, [PAR](http://www.ieee802.org/1/files/public/docs2014/new-addresses-thaler-local-address-par-v01.pdf) and [CSD](http://www.ieee802.org/1/files/public/docs2014/new-addresses-thaler-local-address-csd-v01.pdf)
* 802.1AS-rev - Timing and Synchronization for Time-Sensitive Applications, [PAR](http://www.ieee802.org/1/files/public/docs2014/new-802-1AS-rev-draft-par-0514-v1.pdf) and [CSD](http://www.ieee802.org/1/files/public/docs2014/new-802-1AS-rev-draft-csd-0514-v1.pptx)
* 802.1Qch- Amendment: Cyclic Queuing and Forwarding, [PAR](http://www.ieee802.org/1/files/public/docs2014/ch-mjt-cyclic-queuing-and-forwarding-par-0914-v01.pdf) and [CSD](http://www.ieee802.org/1/files/public/docs2014/ch-mjt-cyclic-queuing-and-forwarding-par-csd-0814-v01.pdf)
* 802.3bv- Amendment, 1000 Mb/s Operation Over Plastic Optical Fiber , [PAR](http://www.ieee802.org/3/GEPOFSG/P802_3bv_PAR_240914.pdf) and [CSD](http://www.ieee802.org/3/GEPOFSG/CSD_GEPOF_0914.pdf)
* 802.3by- Amendment: Media Access Control Parameters, Physical Layers and Management Parameters for 25 Gb/s Operation, [PAR](http://www.ieee802.org/3/25GSG/25GE_PAR_final_110914.pdf) and [CSD](http://www.ieee802.org/3/25GSG/25GE_CSD_0914_adopted.pdf)
* 802.15.7a- Amendment for a Physical Layer Supporting Optical Camera Communications,  [PAR](https://mentor.ieee.org/802.15/dcn/14/15-14-0601-00-007a-p802-15-7a-par-myproject-2014-09-28.pdf) and [5C](https://mentor.ieee.org/802.15/dcn/14/15-14-0216-03-007a-draft-csd-for-ieee-802-15-sg7a-occ.docx)
	1. IETF Bof
		1. Missed the discussion for first two speakers
		2. Missed the discussion for first two speakers
		3. ANIMA – proposal – Autonomic Networking Integrated Model and Approach
			1. Two use cases – hope to have WG by next IETF
				1. Bootstrapping and
			2. ISG is looking to go for national review
		4. SUPA – Shared Unified Policy Automation
			1. The description is changing, but looking to solidify.
		5. RAI
			1. New group that is a BOF proposal to standardize a Video Codec
			2. This was done with Audio, so try with Video
			3. Standardize push application to be used by web applications.
			4. “Routing” was a group that may be in different group in the future.
		6. BIER – Bit Indexed Explicit Replication
			1. Recent proposal built on enthusiastic support
			2. Inserts a shim to tell how to forward Multi-cast traffic.
			3. We may want to do this under an IP header, and there is no reason not to do it with Ethernet as well
			4. The problem statement given may be the architecture as well
			5. **PRESENT TO THE 802 EC as a possible project to be aware of – Request by PAT to include in my notes.**
		7. ACTN – Abstraction and Control of Transport Networks
			1. Missed status –
		8. BOFs these are possible topics and not necessarily going to be a WG.
		9. Security
			1. A Non-WG BOF –
			2. Firewall
		10. Transport –
			1. Delay Tolerant Networking (DTN) Bof
				1. RFC 5050
				2. Communication with long delays or intermittently connected communication paths.
				3. This is a 2nd BOF – (first was in Toronto)
				4. Expect to form a WG
1. **new OPS area work - LIME (Benoit)**
	1. Lime – Layer independent OAM Management in the Multi-layer Environment
	2. Proposed Working Group
	3. Read the Charter for Proposed Working Group: <https://datatracker.ietf.org/wg/lime/charter/>
	4. Looking to get feedback from this group
		1. The model will be developed in the IETF – YANG model
		2. The specific extensions will be created in the other groups
		3. The specific OAM extensions that will be needed will be defined
			1. Started in last July a discussion on YANG and Net?
			2. The IEEE 802 working group has yet to be up to speed to define a YANG model. So this may be a follow-up discussion that will be needed in the future.
			3. Having other organizations develop their own YANG extension we will need to educate and gain desire for the other groups.
				1. There are 2 different extensions for YANG
				2. For some these should be done in the respective groups.
			4. Have there been any specifics on extensions discussed in 802.1?
			5. Is this a full catch all? – interface MIB or Like bridge full MIB description?
				1. Defining generic YANG Model in OAM on what you want to do in the endpoints and is specific to OAM protocol.
				2. Looking to do connection checks
				3. There are already MIB modules – the CFM has done YANG models for CFM in the past.
			6. 802.1 has not started any YANG model projects in 802.1 yet.
				1. This seems like a big effort as the existing SMI Bridge Modules may need to be converted to YANG prior to moving or as a process of moving to YANG
				2. Pat: OAM for various groups has been discussed in the past, but looking to have a more generic OAM for use by all the protocols was looked to be used.
				3. There is not a generic OAM, but how to do this could be standardized
				4. Norm: What is missing from the definitions in the past is a way to look at the underlying protocols -- this is trying to allow for getting to the underlying protocol interfaces.

Is this interface going to go into the popular forms of OAM and flesh out those MIBS or rather the YANG Models? Is there going to be a way to get from the new easy to use YANG Model, but you have to redo all the existing OAM definitions.

* + 1. Do we have management objects for management?
			1. Yes there are CFM MIBs that are defined.
			2. Dan: Is there a need to define new MIB entities?
				1. No, CFM is not new.
			3. Dan: there is a trend to cause the use of the new YANG modules
			4. Norm: there is an unwritten rule that there are 3 people that write MIBS (Dan and Norm are two). There is no specific effort to force things to YANG
			5. Glen: There is some possible new people to help with YANG model description. 802.1 did receive the Liaison letter from the IETF about the YANG models. The existing MIBS are well defined and well understood, so there is some natural push back on the extra work to migrate all the MIB models to YANG.
				1. Dan: there is a tool that takes the SMI to YANG modules to make this transition easier.
				2. We do not want to take full translation and bring in the limitations of the older methods, but rather bring the functionality into the new model descriptions.
			6. Glen – a lot of the work we do are amendments that are on SMI MIB models and so they are not creating something new but rather improving the existing models and so there is no desire to make a complete rewrite of all the MIBs.
		2. Subir – do we need to have more discussion on this as each WG has a MIB so we may want to have a discussion and look on how to address the issue with the WG
			1. In terms of configuration, we ask the question if you already have the MIB description in place? If you have something to extend, there may be a good time to update to the YANG process.
		3. Pat: 802 MIBs tend to do both Config and monitoring are done without distinction in the MIB. – don’t understand how to miz YANG and CLI.
			1. CLI does not scale – we see in different groups that we see more requests for making things quicker. So the need for YANG is to make things more consistently.
		4. Pat: If you have to describe how to configure and how to observe, then you have to do the same work twice if you use two different methods.
			- 1. For all new projects both Monitoring and configuration would use a Common YANG model even though you may use NETConf for monitoring.
1. **Deterministic Networking (Norm**)
	1. BOF Status
	2. Side meeting on this subject was held in Toronto
	3. What is Deterministic Networking?
		1. Same as normal networking but with the following features for Cricical Data Streams:
			1. Time Sync
			2. Resource Reservation
			3. Extraordinarily low packet loss rations
			4. Guaranteed end-to-end latency
			5. Use existing equipment
	4. Who needs deterministic Networking
		1. Industrial:
		2. Audio/Video
		3. Everything is using Digital –
		4. Moving to digital models use of packets becomes common
	5. Why such a low packet loss ratio?
		1. Industrial:
		2. Audio/Video:
			1. Reasons given
	6. How such a low packet loss ratio?
		1. Zero Congestion loss
			1. Requires reserving resources along the path
		2. Seamless redundancy
			1. 1+1 redundancy: Serialized packets, send on 2 (or more) fixed paths, then combine and delete extras. Paths are seldom automatically rerouted.
		3. Current Status in IEEE 802
			1. 802.1 Audio Video Bridging is now Time-Sensitive Networking TG
				1. Time - PTP
				2. Reservation - MSRP
				3. Execution – Several kids of resources (Shapers, Schedulers, etc.)
				4. Path Distribution ISIS TLVs to compute and distribute multiple paths through a network (in progress).
				5. Seamless Redundancy – 1+1 duplication for reliability (In Progress).
			2. Low level Schedulers and shapers in IEEE 802
				1. AVB Credit-based Shaper
				2. Transmission Preemption:
				3. Time Scheduled:
				4. Synchronized Queuing and Forwarding
	7. IEEE AVB standards success
	8. Mixed L2/L3 needs
		1. Reference network slide
			1. Studio example – showing how to use these protocols to stream things
			2. Studio too big for just bridging
		2. As seen by reliability/queuing/latency/time, it is just nodes, queues, clocks and wires, and it is not seen as L2 or L3 specifically.
	9. Mixed L2/L3 – IEEE/IETF Cooperation
		1. Both bridges and routers are important parts of these networks.
		2. Every Box along the path must reserve resources, and participate in the reservation protocols, whether a bridge or a router.
		3. Reservations from pre-configuration, management, or protocol.
		4. Hosts = Applications can participate in the protocols.
		5. Hosts and operations managers don’t know or care whether network is bridged or routed. One host UNI, one operator view.
		6. There are valid use cases for application-driven peer-to-peer control flow models, for centrally controlled models, and for mixed scenarios.
	10. Divide and conquer: DetNetWG
		1. Time synchronization is a separate problem. DetNet needs time synch, but other WGs and/or SDOs will provide.
		2. Low-level (Typically hardware) queuing, buffering, shaping and scheduling mechanisms can be left to IEEE 802.
		3. What is needed?
			1. Protocols for answering the different parts.
			2. Need to look for centrally controlled model support
			3. Peer to Peer protocols will not be sufficient, and a central control will be needed.
			4. DetNet WG will need to work on theses.
	11. IETF Progress
		1. First version of problem statement draft uploaded and now being edited.
		2. BOF Session is scheduled
	12. Short Term Decisions
		1. Does the BOF occur, and under which area?
	13. Q/A
		1. Jarko: This is new items to think about, but there are going to be significant challenges – Security for one – getting this done in the full network will cause a large effort
		2. What you are calling routing does not seem like routing, and what you are pointing out blurs the independence of the layers and so you are no longer at the layer 3.
			1. There are several vertical solutions that achieves all thee goals. If you have an Ethernet with proprietary chips and if you use a specific stack (transport on down) then you could write an application to do this. This proves the market with a vertical propriety solution. To have a QoS feature that can allow users to use their networks today.
			2. To Add this QoS you have to identify the full path and set the configuration at the L2 layer. And we do not want to have L2 bridging or tunneling
				1. This seems to be confusing
				2. L3 having to understand L2 seems wrong

No L2 should not need to know L3.

* + 1. Pat: So this is a way to have a Software defined path that determines the path and identifies multiple paths and then setup those paths for transmission to ensure redundancy
			1. Norm: This is simply like RSVP – it has a soft path, but now we want to make this more of a hardened path.
		2. Norm: Security- There is a group that is addressing this. This new project will cite that groups work. There is no way to prevent the man-in –the-middle attack where someone puts in buffers and just plays with the time delay in the transmissions. If the synchronization can be fixed with multiple path timings, the man-in-the-middle will mess up the timing and the potential of using the wrong set of sequence ids to keep packets identified.
			1. At this rate, you would not be able to tell the difference between software bugs or malicious attack.
			2. This will need to have more beefed up security.
	1. What about Authentication? – How can you control the amount of reservation of resources a single entity reserves.
		1. This is exactly what will need to be discussed.
	2. Spencer: What about the system level thought on impact?
		1. We need to have a discussion on the GAP analysis rather than giving a full set of solutions to the problem statement. You need to ask for the pieces that you need from the IETF and identify what needs to be fixed in any of the parts you are asking for.
	3. Jarkko: There are some challenges in the complexity on how to bind things from L7 to L2. We should not run the BoF here today, but rather how to best address the concerns that the BoF will work on . How can we slice this in to logical steps for getting to a solution for a BoF.
	4. Joe H.: What about the higher layer protocols will need to be done on top of the list of protocols shown on slide 15?
		1. Norm: This is not explicitly showing the L2/L3…
		2. This is not the question…you will need to look at the transport method, and you will not want to use TCP for example.
		3. Norm: UDP may be sufficient, but there may be a new Transport Protocol that will have to be developed. There may be more timestamps that have to be used. Some protocols use only UDP and some use propriety methods to achieve this sufficient.ly
		4. Spencer: - this is something that DCCP may be stuffiest, and should be looked at a possible way (although it currently has 0 uptake in the world). If we have 80% of what you need, and so you indicate what you lack, then that is going to be easier for the IETF to address.
	5. Richard B: What protocols have you looked at for streaming the data.
		1. Norm: the way it is setup, the Reservation is setup and then only when the path is altered. Going forward we need to nail down the path and it has to have two (or more) paths to ensure the accuracy. So we need to enhance L2 with L3 stuff or enhance RSVP with L2 stuff to setup the path. The PCE may be of interest to us as it is setting up multiple paths.
		2. You can use Pseudo wires, but MLS may be a bad solution for some.
	6. Readiness of the BoF
		1. Richard – the degree you can explain that there are L2 Properties that the L3 needs to encapsulates and connects will determine if people can understand what you really need and if they can conceptualize what you are trying to accomplish.
1. **Lunch** 12:37-1:30pm – no exec session will be held during the lunch – the room will be locked during lunch.
2. **Executive Session discussion topics for future**:
	1. After lunch, it was noted that Paul Nikolich has joined us.
	2. We have no topics that are sensitive enough for Executive Session.
3. **1:30-2:00PM – Inter-SDO relations (Russ, Paul)**
	1. The ISO/ITU SC6 has an agreement not to write competing standards with IETF as they are seen as a peer SDO.
	2. Watching what is happening with the Chinese National Body and what they may do in the future.
	3. ITU regulations identify how certain standards are to be used.
	4. There are several issues between ITU and IEEE, but most of the time we have better relationship to manage the controversial issues.
	5. Dorothy: 802 is making use of the ISO/ITU/JTC1 - SC6 for access to getting ISO standardization for their standards. Originally it was just 802.11, but now we have 10 standards including standards from 802.1, 802.3 and 802.11 as well as 802.22 and 802.16 that are now using this path to gain ISO standards, and we have agreement that our standards will be done in our WGs and not in other.
	6. Pat: Earlier 802.3 did use the ISO/ITU/JTC1 path, but felt that the world had accepted that Ethernet was sufficient, but we found when the China issue blew up, it was important to start again. There is a stabilization process in ISO where 802.2 was stabilized (8802) and the IEEE version was withdrawn.
	7. Glen – All this is at layer 9 political layer, so while we talked about this before, it was about how some groups wanted to copy and paste parts of the standards, but now we are interfacing at the much higher layer. As Konstantinos noted that the Internet was on fire, and the whole group of IEEE to participate on the discussion how the Internet, and make the ITU which is aligned on country basis, but that the IEEE is also a worldwide standard group worthy of taking part in the Internet debate.
	8. Paul: Relationships that are important in real time – 3GPP is now starting a new work item for offloading cellular to internet (operator data offload). There is also an effort with TIA and Smart Grid Standards. We have a good relationship with Wi-Fi Alliance, and the Ethernet Alliance. We are moving along fairly well.
	9. Jari: Multi-stake holder marketing work in the IANA process. There is a bigger discussion in the world and what will happen in the governance of the Internet. This is not a standards question, but it does worry us as to where things will end up and how the internet will be governed.
	10. Russ: no other items
4. **IS-IS TLVs (Glenn)**
	1. IS-IS TLVs for IEEE 802.1Qca
	2. Currently under IANA.
	3. Goal is to control explicit Trees
	4. There are 4 TLVs that are wanted to be registered.
	5. What is the IANA Assignment Process
		1. IS-IS TLVs for IEEE 802.1aq
		2. RFC6329 – MT-Capability TLV
		3. Sub-TLVs for IEEE 802.1Qca
			1. Option 1: expert review & RFC
			2. Option 2: expert Review & 802.1Qca
		4. Preview option 2
		5. The Expert review panel could be designated.
		6. Adrian F. indicated he saw no problem with option 2.
	6. Action item: Glen to follow-up with Adrian –
	7. Do we need to add to our issues log? – may be good to track to ensure that things work the way we think it should be.
		1. Action item: Glen to get the details to Dan for inclusion on the Issues Log.
5. **Local Address Management in IoT environments (Pat)**
	1. Problem statement: MAC Address consumption ramps up.
		1. When MAC address were crated (~1980) network ports were used only on computers and large printers in enterprises.
		2. Approaching the 2nd Decade (2000) MAC Address usage was still on a pace to last centuries. (typically user might have 3-5 devices with MAC addresses.
		3. Now it isn’t unusable to have a dozen or more addresses per person.
		4. With IoT, network ports moving into smaller and smaller things
			1. Sensors and actuators – e.g. light switches etc.
	2. Should all these things consume global MAC address space?
		1. With Cell phones and tablets, the consumption rate of MAC addresses has increased dramatically
	3. What about using local Addresses?
		1. User configuration isn’t feasible –often no local interface and too large for a potential error.
		2. Existing automatic protocols configure addresses for virtual ports
	4. The Local Address space is huge
		1. It has not been widely used
		2. The first step in enabling use is providing structure
			1. Norm – there is only the Global/Local bit that is reserved, there is going to be a conflict in any user that has the use of local address bits.
			2. There is no other real good solution.
		3. Define a standard generic protocol for address acquisition
			1. For applications such IoT in home or Smart Grid having a generic standardize protocol would be helpful.
	5. IEEE RAC has defined Company IDs (CID)
		1. 24-bit values similar to OUI except that the global/local bit is set to local.
		2. One use of these is intended to be for local address blocks.
		3. Assigned out of one quadrant of the local address space.
	6. IEEE 802.1 has proposed a PAR for IEEE 802c
		1. An Amendment to IEEE 802 Overview and Architecture to add guidance on using the local address space.
		2. Recommend using only one quadrant of the space for local administration. Use the CID Quadrant for default address blocks for protocol. Forwarding the PAR will be considered at the November meeting.
			1. Question on the difference to the CID and the OUI the main difference in the 48 bit address is that the G/L bit is for local.
			2. Commentary on the type of OUIs that may be of the form of a CID, they are old companies that don’t produce products anymore in general.
		3. A Par has been submitted to the EC for consideration with the penulament quadrant. Currently the RAC is assigning out of a block for CIDs.
		4. This would provide some reserved bits to allow for some local administrators in one quadrant, and the other quadrants would be reserved for later.
		5. Juan Carlos: are you looking for a protocol that is controlling how the address is allocated?
			1. This is not a protocol standard, but rather this is a change to the 802 spec that gives guidelines on which quadrant to allocate space for CIDs for example. This may also talk about duplicate addresses and define how to deal with any possible conflicts, and it will not be a protocol, but rather a definition on how to use the space.
	7. IEEE 802.1 is currently considering a project to define an address acquisition protocol
		1. Probably will decide whether to forward a PAR sometime next year.
		2. Transmitting before MAC address acquisition
			1. Currently no way to transmit without a MAC address
			2. This is okay for obtaining an address for a virtual port because there is a physical port address that can be used.
			3. That doesn’t work for an IoT device with no physical Address.
		3. Identifying the right response
			1. With a multicast destination address, how does a client know which reply PDUs are for it?
				1. Client PDUs include a client ID with identifier type and value; examples of identifier types: EUI-64, ICCid (from SIM card) or a random number.
			2. Response PDU includes the client ID from the Client’s PDU
			3. Norm – Justification for using a random number is to allow for privacy.
				1. This was not intended for privacy necessarily, but could be done with MACsec or if you need to do Authentication, then you would not be private to some, but need to be private to others.
				2. Argument of whether or not addresses are being used properly in other SDOs.
		4. Juan Carlos; In the Privacy SG, there was a Bluetooth discussion on how privacy on a changing MAC address and how to maintain privacy is one example that may be considered.
		5. Jarko – I am concerned with Privacy, but it has to be who you are private to. How does this affect the IETF or the IP stack impact. Are there impacts to the IP or to TCP layer protocols.
		6. Pat: The primary driver for this is not privacy, so the impact to IETF protocols is minimal as they are looking for
			1. RFC 7136 says that they do not care of the setting of the G/L bit.
	8. Who’s the address server?
		1. Claiming protocol without a server
			1. Client generates a proposed address and initiates a claim waits for response and uses address if no conflict detected.
			2. Proposed address might have a set value for the first 24 bits and a randomly generated value for the other 24.
			3. Most suited to small networks which can operate without a server
		2. Address Server
			1. Address requests go to server which responds with an address
			2. Default address range can be defined for operation without configuration.
			3. Multiple servers can operate by each having an address range.
			4. Small ~1000 ports
	9. Claiming , Servers, Bridges
		1. Claiming and server protocols could coexist
		2. Bridge Relay to reduce multicast
			1. Node transmits with Null Source address
			2. Bridge encapsulates in a relay PDU
	10. Address Stability
		1. Client my store the last used address
		2. Servers should detect each other
			1. Might partition the address space to avoid duplication
		3. On Network merge these - could be address duplication.
			1. Protocol should provide for periodic checks that addresses are still unique.
	11. Quicker start up for specialized stable networks
		1. Some Applications such as automotive networks have strict requirements on latency to start the network.
			1. Automotive network should work within on the order of 100ms.
	12. Conclusion
		1. IoT devices should be able to operate without a global MAC address and without configuration.
		2. A Protocol for this could protect the 48-bit MAC address space from exhaustion
		3. May also simplify the production of small inexpensive device
		4. Desirable to standardize two mechanisms
			1. Address server based, Server-less claiming and Provide for the coexistence of the two.
		5. Use of the local Address space without configuration should be enabled by : structuring use of the address space, and providing an address acquisition protocol.
	13. What about the use of the 64-bit address?
		1. Some used to think that the lower 48 bits are the same and so it is not a good thing, so we should not use this assumption.
	14. Jarko: What is the take-away?
		1. These are very similar to the IP addresses and the DHCP allocation scenarios.
		2. Does the similarity allow for reusing the same address or can you use something more than just the algorithm?
			1. What about mobility, validation of the address. Etc.
	15. Subir: There is an attempt to change the MAC address what does this mean to protocols like ARP and is this going to add to the traffic load to the network. Is this going to be helpful or harmful to the network? How will this impact the network?
	16. (short break for Jon)
	17. Changing just the MAC address is not useful if you don’t change the IP or other identifiers that then give away who you are anyway.
	18. Having the server be able to get block of addresses to use for its use is still a positive thing.
6. **2:58-3:15PM coffee break**
7. **3:15-4:00PM – Pervasive Monitoring (Kathleen, Alissa, Juan-Carlos)**
	1. Agenda – Brief history, Scope and status, IETF/IEEE network Trial,
	2. IEEE 802 Internet Privacy Tutorial given at IEEE 802 Plenary meeting in San Diego in July 2014.
		1. The Tutorial provided an update on the recent concerns about Internet privacy.
		2. Highlighted Privacy concerns.
	3. IEEE 802 EC Privacy SG - Background
		1. Creation of Executive Committee Study Group on Privacy Recommendations (2014-07-08)
	4. Scope reviewed
	5. Call for Contributions.
	6. Trial on IETF and IEEE meetings
		1. Planning to perform an opt-in Trial at IETF and IEEE meetings networks to assess performance.
	7. Protocol Implications of MAC address changes
		1. Group currently discussing issues related to DHCP pools, States in Network switches, MAC address collisions, ARP/ND, IPv6 addressing, AAA servers.
	8. Progress so far
		1. One telecom, Presentations at the 802.1 and Wireless interims in Sept.
		2. Upcoming telecom 1 Oct and 22 Oct
		3. Plenary Meeting in San Antonio TX
	9. Resources
		1. EG SC Web Page
			1. <http://www.ieee802.org/>
	10. Recommended Practices
		1. How to enforce privacy recommendations on future protocol standards in practice?
		2. Security section?
		3. Privacy –Specific section?
		4. Expert review?
		5. Other?
	11. Kathleen: There are reviews of documents for both security and privacy
	12. Allissa: we are trying to get people to think of how to get people to think about both Privacy and security, and to get the RFCs that are used by the leaders include those that have Privacy and Security outlined. There is some flexibility on whether it makes sense on having a dedicated section as standards/RFCs that are specifically on Privacy or Security then it may not make sense to have a section that is labeled a privacy or security section.
	13. Paul: how do we measure Privacy?
		1. Richard: having a way to measure where you are is a useful measure, but having an absolute value is not as useful. So the metric is a probability that a bad thing can happen, but getting to a simple number is not as reasonable thing to do.
		2. Juan Carlos: The way this RFC is written, it talks about identifying how is the threat model written and then find a way to identify the risk that is being exposed. These messages do or do not disclose sensitive information. I have one protocol in mind, and others may have some other protocol in mind, and thus the number or the risk would be different, so trying to identify the risk case
		3. Jarko: the measurement is more qualitative then quantitative. You have to look at the scale of the issue. This is a very exciting work that is starting. Thanks for starting this work. Do you have answers to the problems that are identified on slide 9?
			1. Juan Carlos: I think if we change the DHCP lease time, then we should not run out of the addresses in the blocks for example. Settings for the other protocols will have to be adjusted as we run the trial. We want to control the interruption to the network, but we recognize that the user will be the first to know, but we want to minimize the impact to the user and the network.
8. **Pervasive Monitoring (Kathleen Moriarty)**
	1. New IETF Work Related to Pervasive Monitoring (PM)
	2. IETF Work related to PM and Opportunistic Security
		1. Using TLS is Applications (UTA WG)
		2. TLS 1.3 (TLS WG)
		3. HTTP/2.0 (HTTPBIS WG)
		4. TCP Increased Security (TCPInc)
		5. DNS Privacy (DPRIVE)
	3. Emerging Work Areas
		1. End to End Security for email (EndyMail)
	4. Quick Presentation to point where work is being done in the IETF
	5. Jari: Question - can this leadership do more to help with the cause of getting more security or privacy done.
		1. Juan Carlos: We have some cooperation with some of our groups, we need to work together to try to not cause a problem for each other. How to identifiers are used and how to cooperate
		2. Paul: This is a very good area where tighter collaboration can be done. If Juan Carlos could closely tie the IETF groups and if they tie to Juan Carlos, then that would be a benefit to both sides.
		3. Dan: We should use this set (Kathleen’s slides) of slides to present in the EC SG in November to give them pointers to where the IETF work is being done.
		4. Juan Carlos: We have had a lot of collaboration already in the initial start of the groups.
		5. Kathleen: we have a very diverse group that brings a broad set of experiences to the group.
	6. Paul: could we share the threat models or agree on the set of Threat Models as a starting point for both groups.
		1. Juan Carlos: we had been working on a plan already to do that very thing. We want to leverage those that have expertise in this area to share with the groups use a common set of functional requirements and threat models.
	7. Kathleen: Concern that Jari pointed out that if you change one point of threat that there are others that still identify you, so what is the point. The point is to fix those points we can and it has to start at some point and then be fixed at each of the locations that there is a problem with constant identifiers.
	8. Subir: For whom are we trying to provide the privacy? The user? Or the device? Then the threat model may be more easily defined.
		1. Kathleen: we have dealt with this question in the past, and we had determined that it was the individual, and that there may not be as high a need to protect the privacy of the device, unless the device is tied to a person somehow.
		2. Allissa: you have to work out the scenario to determine whether the person or the device needs the particular protection.
		3. Kathleen: when you are developing a protocol, you have to take in to account how privacy will be dealt with and if it is now important.
		4. Jari: My comment earlier was not meant to be a discouragement, but rather that we need to understand the whole stack and the points of correlation will need to be addressed as well.
		5. Norm: is it too late to worry about MAC address now with the other points of concern?
			1. Kathleen – no, a lot of other groups are looking at other points. There are current scenarios that are just identifying the MAC tracking problem.
		6. Action items: Add additional owner to Privacy Issue: Kathleen .
9. **4:00-4:30PM – action items, future meetings and planning work ahead**
	1. Jon and Cindy to get the Action items mailed out
	2. Future Meeting Calendar –
		1. Looking to the calendar we do not meet on the same continent for our meetings.
			1. Suggestion that we may want to skip the 2015 face-to-Face meeting.
				1. Concern that IESG turns over every two years, so every two years may loose continuity.
		2. Jari: We should have a way to get more involvement from the members in our respective meetings.
		3. Spencer: we went from no meetings to doing both the Telecons and the Face to Face, so maybe if we skip a year and keep the Telecons going may be enough
		4. Pete: we may want to have a focused joint meeting for the topics of focus for example the privacy
		5. Paul: Maybe we should have a joint meeting focusing on Privacy rather than the full leadership.
		6. Jon: There is intrinsic value in holding the Face to Face meeting. And While I have the floor, do we think that having the meeting at the IEEE Headquarters would be acceptable.
			1. The overall grousing was that being closer to the airport allowed for quick escape to the airport for departing for home.
		7. Dan: We should wait to see for determining if we want to hold the Face to Face after some time has passed and see if we have issues to discuss.
		8. Jari: I found that the hall way conversations as well as the meeting itself were very worthwhile.
	3. Thanks to the Meeting organizers: Cindy, Jon and Ray
	4. Paul: did we talk about the role of 802.24?
		1. It was mentioned in the context of IoT and Smart Grid
		2. I would like to see it as a place for vertical requirements can be discussed and find ways to address them.
		3. It has worked for Smart Grid and hopefully it will work for IoT.
	5. Meeting adjourned at 4:23pm

**References:**

IEEE Pars for November: <http://www.ieee802.org/PARs.shtml>

Slides from the meeting: <http://www.iab.org/activities/joint-activities/iab-ieee-coordination/>