**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title |  | |
| Date Submitted | [13 July 2017] | |
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| Re: | [802.15 Standing Committees Meetings in Berlin, Germany, July 2017] | |
| Abstract | [IEEE 802.15 Maintenance and WNG Standing Committee Minutes] | |
| Purpose | [Official minutes of the Standing Committee Session] | |
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**IEEE 802.15 Plenary Meeting – Session #111**

**Waikoloa, Hi**

**Sept 11-14, 2017**

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# SC Maintenance Minutes

## Tuesday 12 Sept AM2

### Corrigendum

**10:40** SC Maintenance called to order by Chair, Pat Kinney, Kinney Consulting

First topic was the corrigendum draft d2p802.15.4-2015-Corri-1-2017 that had just passed LB146 with 6 comments. Since LB146 had no changes from LB144 (it was a recirculation of d2p802.15.4-2015-Corri-1-2017), the only item that could legitimately be commented upon was the resolution to the one comment from LB144. Since the 6 comments from LB146 were not comments upon the resolution from LB144, they were rejected as out of scope. The SC maintenance attendees unanimously agreed to the rejection of the six comments on the grounds of out of scope.

* + - Group agreed to go to Sponsor Ballot
    - Motion: *Move that the SCm requests 802.15 WG approve the formation of a Ballot Resolution Committee (BRC) for the Sponsor Balloting of the d2P802.15.4-2015-Corri-1-2017 with the following membership:*  *Pat Kinney (Chair), Clint Powell, Ben Rolfe, Jay Holcomb, Don Sturek, Billy Verso, and Kunal Shah. The 802.15 Corr-1 BRC is authorized to approve comment resolutions and to approve the start of recirculation ballots of the revised draft on behalf of the 802.15 WG. Comment resolution on recirculation ballots between sessions will be conducted via reflector email and via teleconferences announced to the reflector as per the LMSC 802 WG P&P.*
    - *Moved by K Shah, seconded by J Holcomb*
    - Upon neither discussion nor objection the motion carries.

## Wednesday 13 September AM1

### Revision:

Discussion ensued as to comments made by external group members of consortiums such as Thread, ZigBee, et al that 802.15.4 was being changed unnecessarily with some changes problematic. SCm consensus was that the IEEE-SA roll-up would be sent out for comments only to the 802.15 WG and select external organizations that openly use IEEE 802.15.4. Bob Heile and Pat Kinney will draft a cover letter that explains what 802.15 is seeking comments on the roll-up, however the roll-up is not a standard nor draft standard, nor is the roll-up to be distributed outside of the organization. The external groups will include (person(s) in charge):

* WiSUN (P Beecher),
* ZigBee (T Richardson, V Berrios),
* Thread (G Erickson, S Ashton),
* ISA100 (H Storey, P Kinney),
* WirelessHART (T Masters, W Pratt),
* TIA TR51 (M Lynch, D Sturek),
* ISO/IEC JTC1/ SC31/WG4 (E Merrill),
* JUTA (Kawata),
* EIA (),
* IETF: 6tisch, Core, 6lo (P Thubert, T Watteyne, C Bormann, J Jimenez, G Montanegro, S Chakrabarti)

The next topic was the discussion as to what changes should go into the next revision of 802.15.4. Rolling up all approved amendments and corrigendum are the minimal changes to which IEEE-SA has produced a roll-up edition. Additionalproposals from group included:

1. Replace Frequency Band (MHz) to Band Designator throughout the standard per Table 10-1. Example shown in Table 10-2.
2. 920 MHz band in Table 7-19 is specified twice.
3. Band designation specified in Table 7-19 needs to be consistent with Table 10-1
4. Table header should be sentence case per IEEE style guide. Example shown in Table 7-19
5. Figure 9-6: change to show that only bit7 is reserved
6. Update a bibliography reference, 15-14-0226-00, to correct the units from milliseconds to microseconds for the Δreply value

**17:20** Upon no further discussion nor objection, the meeting was adjourned

# SC WNG minutes

## Wednesday 13 September AM2

**11:12** SC WNG called to order by Chair P Kinney, Kinney Consulting

There were two presentations:

* 802.11ah and IEEE 802.15.4g Coexistence Submission (15-17-0522-01) by Jianlin Guo (Mitsubishi Electric)
  + C: 802.15.4g sensitivity is not -88dBm but is typically -120 dBm
  + C: The noted extra sensitivity of 4g will result in even more interference from 802.11ah
  + C: This presentation is similar to a presentation made years ago
  + Q: Data rate? R: 100 kb/s, no frequency hopping was used in model
  + Q: Why is the 11ah packet rate significantly higher than the 15.4g packet rate? R: 11ah use case was smart city while 4g was smart meter
  + Straw poll 1: Do you think there is a coexistence problem between an 802.11ah network and 802.15.4g network in the Sub-1 GHz band with either no frequency hopping or very restricted hopping? 23 yes, 0 no, 3 abstain
  + Straw poll 2: Would you be interested in participating in this coexistence effort? 10 yes, 3 no, 12 abstain
  + Straw poll 3: Where should this coexistence effort be located? 802.15: 6, 802.19: 18, 802.11: 16, abstain 6, none of above: 0
* 802.15.4g OFDM data rate extensions (15-17-0523-00) by Ben Rolfe and Matthew Gillmore
* Q: Flexible channelization, existing capability? R: yes
* Q: What about countries that cannot use this approach due to spectrum issues, add higher level modulations? R: possible
* What next? Would you be interested in participating in an IG investigating these rate extensions? 12 yes, B Rolfe and M Gillmore both volunteered to be chair
* L2R error on non-storing mode (15-17-0517-01) by Noriyuki Sato (OKI Electric Industry)
* Q: Couldn’t this be solved as a layer 3 (IETF) resolution? R: No, since this could be non-IP based. Also this is a layer 2 problem.
* Q: Solution A has no format change nor sequence change? R: no additional protocol between devices
* C: Presentation just presents some resolutions, not all resolutions and might not be the best one

**12:18** meeting adjourned

# SC IETF Minutes

## Thursday 14 Sept PM1

### Meeting Objectives / Session Focus - SC IETF

Review minuted items for IETF 99 conference in Prague

### 6tisch

* draft-ietf-6tisch-6top-protocol-07
  + Abstract: enables distributed scheduling in 6TiSCH networks
* draft-ietf-6tisch-6top-sf0-05
  + Abstract: SF0 dynamically adapts the number of allocated cells between neighbor nodes, based on the amount of currently allocated cells and the neighbor nodes' cell requirements
* 6tisch Autonomous Scheduling Function (ASF) draft-duquennoy-6tisch-asf-00
  + This document defines a Scheduling Function called "ASF": the 6TiSCH Autonomous Scheduling Function. With ASF, nodes maintain their TSCH schedule based on local neighborhood knowledge, without any signaling. Hashes of the nodes’ MAC address are used to deterministically derive the [slotOffset, channelOffset] location of cells in the TSCH schedule. The MAC, control, and application traffic planes are assigned to distinct slotframes, for isolation and flexible dimensioning. This approach provides over-provisioned schedules with low maintenance, in pursuit for simplicity rather than optimality.
* draft-ietf-6tisch-minimal-security-03
  + This document describes the minimal mechanisms required to support secure enrollment of a pledge, a device being added to an IPv6 over the TSCH mode of IEEE 802.15.4e (6TiSCH) network. It assumes that the pledge has been provisioned with a credential that is relevant to the deployment - the "one-touch" scenario. The goal of this configuration is to set link-layer keys, and to establish a secure end-to-end session between each pledge and the join registrar who may use that to further configure the pledge. Additional security behaviors and mechanisms may be added on top of this minimal framework.
* [draft-ietf-6tisch-dtsecurity-secure-join-00](https://datatracker.ietf.org/doc/draft-ietf-6tisch-dtsecurity-secure-join/) 
  + 6tisch Secure Join protocol
  + Abstract: securing the join process and making that fit within the constraints of high latency, low throughput and small frame sizes that characterize IEEE802.15.4 TSCH
* Packet Delivery Deadline time in 6LoWPAN Routing Header draft-lijo-6lo-expiration-time-04
  + This document specifies a new type for the 6LoWPAN routing header containing the delivery deadline time for data packets. The deadline time enables forwarding and scheduling decisions for time critical IoT M2M applications that need deterministic delay guarantees over constrained networks and operate within time-synchronized networks.
* Example Packets for 6TiSCH Configuration draft-munoz-6tisch-examples-02
  + This draft contains example packets exchanged by nodes implementing the following IETF documents: RFC 8180: Minimal IPv6 over the TSCH Mode of IEEE 802.15.4e (6TiSCH) Configuration, draft-wang-6tisch- 6top-protocol-07, RFC 8138: IPv6 over Low power Wireless Personal Area Network (6LoWPAN) Routing Header and RFC 8025: IPv6 over Low- Power Wireless Personal Area Network (6LoWPAN) Paging Dispatch. All packets are presented both in raw binary and fully parsed contents. This document can be used as a reference when implementing the previous mentioned RFCs and Internet Drafts.
* draft-papadopoulos-6tisch-pre-reqs-00
  + Exploiting Packet Replication and Elimination in Complex Tracks in 6TiSCH LLNs
  + Abstract: 6TiSCH Packet Replication and Elimination mechanism consists in duplicating data packets into several paths in the network to increase reliability and provide low jitter. Over a wireless medium, this technique can take advantage of communication overhearing, when parallel transmissions over two adjacent paths are scheduled. This document presents the concept and details the required changes to the current specifications that will be necessary to enable this.

### core

* RFC 8132 ([draft-ietf-core-etch](https://tools.ietf.org/html/draft-ietf-core-etch) – PATCH and FETCH Methods for CoAP) published
* Core interfaces and dynlink have had a personnel change; expect them to be back to speed in the Singapore meeting.
* (Tim Carey asked about status of SenML and Resource Directory; Carsten stated that he expects SenML to ship to the IESG soon and Resource Directory is making good progress towards being finished this year; COMI is a set of drafts some of which may be finished this year.)
* [draft-ietf-core-links-json-09](https://tools.ietf.org/html/draft-ietf-core-links-json-09): this is in IESG processing; however its base document, RFC 6690, has a base document, RFC 5988, which is getting a bis document (revision) right now, and we probably want to make use of the progress there. (E.g., 5988bis makes clear that it is the serialization that would have to manage the target attributes, which we may want to add.) Does this imply a revision of RFC 6690? Make sure we coordinate with SDOs using links-json.
* [draft-ietf-core-coap-tcp-tls-09](https://tools.ietf.org/html/draft-ietf-core-coap-tcp-tls-09): this is in IESG processing. One IESG comment on -07 was that the “least worst” solution of one URI scheme per transport was undesirable, leading to the authors writing up a proposal to combine all transports under coap:// and coaps://. The WG did not like this solution as it is mostly unworkable in the scenarios addressed by CoAP-TCP, so we are rolling back to -07 with the mapping of coap to multiple transports (coap+tcp, coaps+tcp, coap+ws, coaps+ws). Discussion on alternatives is available as [draft-thaler-appsawg-multi-transport-uris-01](https://tools.ietf.org/html/draft-thaler-appsawg-multi-transport-uris-01)  (presented by Dave Thaler). A new “all transports” (coap+at://) URI scheme to be added to the mix, details are being worked on in a separate draft. Target of this new work is to have another URI scheme that enables the client to choose between multiple transports.

### CoMI (Coap Mgmt Interface)

* [draft-ietf-core-yang-cbor-04](https://tools.ietf.org/html/draft-ietf-core-yang-cbor-04): Document has now been stable for two IETFs, will look for new reviewers and ask for implementers’ feedback on mailing list. Target is to have WGLC 3 weeks from now.
* [draft-ietf-core-sid-01](https://tools.ietf.org/html/draft-ietf-core-sid-01): The SID registry was discussed during CoRE and the YANG of Things (YoT) side meeting. Progress has been made however issues as to the lifecycle of the registry have been raised. Discussion shall continue with YANG experts (and on yot@ietf.org mailing list).
* [draft-ietf-core-comi-00](https://tools.ietf.org/html/draft-ietf-core-comi-00): Extensive work, thanks to Peter Vanderstok; draft now technically complete but needs more reviewers. Resource types renamed; paths updated to avoid conflicts. Content-Formats (media types) defined, some of which making use of “ordered maps”.
* Note: Two independent implementations (One in Go, one in C), not quite synchronized at this time; some implementers in the room. An interop is planned for the Hackathon at IETF100.
* [draft-veillette-core-yang-library-00](https://tools.ietf.org/html/draft-veillette-core-yang-library-00): Where should this work be done? Might need three groups of experts: YANG, Constrained and specific subject matter. Henk notes that there is another draft in this space which likely will be done in NETCONF

### 6lo

* WG status: 2 new RFCs since Chicago (RFC 8105- Dect-ule, RFC 8163 – 6lobac) + AD sponsored document on information elements for 802.15.4 (RFC 8137)
* dropped draft-ietf-6lo-mesh-link-establishment due to loss of interest by proponents
* Other working group drafts: draft-ietf-6lo-backbone-router, draft-ietf-6lo-ap-nd and draft-ietf-6lo-rfc6775-update are in progress. Draft-ietf-6lo-nfc received comments and the author will refresh the document by next IETF. Draft-ietf-6lo-blemesh is waiting for an implementation before the next revision. Draft-ietf-6lo-use-cases draft has been revised to focus on guidance and applicability of IPv6 over constrained node networks.
* <https://tools.ietf.org/html/draft-ietf-6lo-backbone-router/>
  + Republished because of expiration. Implementation exists, demoed at ETSI plugtest.
* <https://tools.ietf.org/html/draft-ietf-6lo-rfc6775-update-06>
  + Extracted 6775 \_update from -backbone draft. The rfc6775 is L3 association process, while backbone router describes proxy ND when multiple L2 6lo networks are joined to form a single layer3 network . removed references to 6550 regarding TID, some info maybe missing. Added recommendation to use RFC7400
  + separated privacy discussion from security considerations

### Detnet

DetNet Architecture: Norm Finn draft-ietf-detnet-architecture-02

DetNet Data Plane Encapsulation: Jouni Korhonen (Remote) draft-dt-detnet-dp-sol-01

* Discussions included one versus many types of encapsulation, requirements for end device PWs, Packet  
  Replication and Elimination Function (PREF),

DetNet Flow Information Model Based on TSN: Balázs Varga draft-farkas-detnet-flow-information-model-01

Considerations for Flow Information Model WG document: Mach Chen

DetNet Security Considerations Tal Mizrahi draft-sdt-detnet-security-01

Implementation Report: DetNet Data Plane Protection János Farkas draft-dt-detnet-dp-sol-01

802.1 TSN Summary and Discussion: János Farkas, Pat Thaler, Norm Finn http://www.ieee802.org/1/pages/tsn.html

**AOB**

* None offered

SCs Adjourned at 2:13pm