**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | TG 802.15.12 minutes for May, 2016 Interim Meeting | |
| Date Submitted | [19 May, 2016] | |
| Source | [Charlie Perkins] [Futurewei] | Voice: [+1-408-330-4586] Fax: [ ] E-mail: [charliep@computer.org] |
| Re: | [TG 802.15.12 (ULI) meeting minutes] | |
| Abstract | TG ULI minutes from the Kona Interim Meeting | |
| Purpose | [Record the transactions of the TG ULI interim meeting during May, 2016] | |
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**Minutes for IEEE 802.15 TG 12 ULI Kona Interim Meeting**

**16-19 May, 2016**

**Chair – Pat Kinney**

**Vice Chair - Charlie Perkins**

**Monday AM2 (May 16) (Room Kings 2)**

Meeting cancelled due to unforeseen circumstances.

**Monday PM1 (May 16) (Room Kings 2)**

Chair called the meeting to order at 1:35pm. Attendance: 15. Thanks to Benjamin Rolfe for the Minutes.

**Opening / Closing Report (DCN: 15-16-0374-01-0000)**

**Meeting Objectives/Agenda**

* Monday, 16 May, AM2
  + - Opening report, approve agenda
    - TG Officer nomination procedure, collection of verbal nominations
    - ULI PAR review and presentation(s)
* Monday, 16 May, PM1
  + - ULI presentation(s), discussion on schedule, deliverables, and liaisons
* Tuesday, 17 May, PM2
  + - * ULI presentation(s), discussion on schedule, deliverables, and liaisons
* Wednesday 18 May, AM1:
  + - * Vote on TG officers
      * Continued discussion on schedule, deliverables, and liaisons
* Wednesday 18 May, PM1:
  + - Discussion on related standards/Alliances/Consortiums, protocols, etc and possibilities of leveraging them
* Thursday 19 May, AM1
  + - Discuss strategy (i.e. how to best move ahead), agree on next steps
* Adjourn

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**Approve agenda (DCN: 15-16-0374-01-0000)**

Chair presents Agenda; following no discussion nor opposition, agenda approved by unanimous consent.

Task group officer nominations:

* Pat Kinney nominated by Ben Rolfe, 2nd by Charlie Perkins;
* Charlie Perkins nominated by Ben Rolfe, 2nd by Amarjete Kumar
* Call for Secretary: no one volunteered for the job.

**Patent Policy and call for Essential Patents**

Chair presents IEEE slides #1 to #4 of the IEEE patent and meeting conduct slides. Provides an opportunity for disclosure. None heard.

**PAR (DCN 15-15-0760-09) Changes Resulted from NesCom Comments**

Chair presents PAR as approved by NesCom.

* Inserted “IEEE Standard for Local and Metropolitan Area Networks” in 8.1
* Objective is for 802.15.12 work to stay within the PAR

Chair leads discussion on the scope and purpose of the project.

Chair leads discussion on TG objectives, schedule, deliverables and liaisons.  Results captured in document 15-16-0374-01.

Recess at 3:17pm

**Tuesday PM2 (May 17) (Room Kings 2)**

Chair called the meeting to order at 4:06pm. Attendance: 6

**Agenda**

* **ULI presentation(s), discussion on schedule, deliverables, and liaisons**

**ULI presentation: discussion on schedule, deliverables, and liaisons (DCN: 15-16-0374-01-0000)**

* Deliverables
  + Management SAP
    - Added L2 Routing
    - Added TSCH setup
  + Data SAP
    - Added location awareness
      * Ranging
    - Added TSCH hopping operation
    - Added Fragmentation
      * Adaptive
      * PHY
      * MAC
    - …
* Liaisons
  + Replace LP-WAN by 6lo

**Development for deliverables:** MAC and PHY breakdown started

* Billy Verso for location awareness
* Charlie Perkins for L2R

**Schedule Change:** The Wednesday AM1 session is rescheduled to start at 8:30am

**Recess:** The Study Group went into recess (at 5:27pm) until the Wednesday AM1 session

**Wednesday AM1 (May 18) (Room Kings 2)**

Chair called the meeting to order at 8:33am. Attendance: 13

**Agenda:**

* Vote on TG officers
* Continued discussion on schedule, deliverables, and liaisons

**Vote on TG officers**

* Pat Kinney for chair
  + No opposition, so Pat Kinney is elected to be chair
* Charles Perkins for vice-chair
  + No opposition, so Charles Perkins is elected to be chair
* Elections will be affirmed at the Midweek Plenary

**Discussion on schedule, deliverables, and liaisons**

**Discussion on liaisons**

* Glenn Parsons O.K. with Pat as liaison for 802.1
* 802.11 liaison would help with regulatory – we can adapt their work
* TG4s joint meeting in San Diego for liaison
* WiSUN, thread – to be determined
* IETF Standing Committee will serve as the IETF liaison for 802.15.12

**Discussion on deliverables**

* Under PHY, added mode and duration for CCA
* SFD = Start Frame Delimiter (needs value and size)
* Question about whether all modes need to be supported
  + Answer: no. It depends on the group’s decisions. For instance, maybe no beacon enabled
* TSCH will definitely be one that will be supported
* Question about how to present IE parameters etc., to the upper layer without reproducing the entire original specification
  + Ans: will figure out how to cite the original specification without copying it
* Regarding promiscuous mode
  + **TODO**: ask packet sniffer vendors and/or chipset vendors
* What does it mean, to set up the PHY?
  + Ans: provide the MAC with the parameters it needs to set up the PHY
  + Center frequency, Channel #, Regional band, …
* Sponsor ballot is a bad place to introduce ULI specifications for new IEs, modulations, etc.
* 6TiSCH is already doing YANG modeling. We should see if 802.1 has a format for YANG models. Should ask at joint meeting in San Diego; 802.1 *should* do this for all the groups.
* Seong-Soon Joo volunteered for DSME for beacon-enabled Network

**Discussion on related standards/Alliances/Consortiums, protocols, etc. and possibilities of leveraging them**

* For instance, what can be borrowed from WiSUN?
* IETF 6TiSCH, definitely
* L2R, KMP

**Recess:** The Study Group went into recess (at 9:30am) until the Wednesday PM1 session

**Wednesday AM2 WG Midweek Plenary (May 18) (Room Kohala 1)**

Chair called the meeting to order at 10:33am. Attendance: about 40

* Pat Kinney affirmed as Chair without objection
* Pat appoints Charles Perkins as Vice Chair

**Wednesday PM1 (May 18) (Room Kings 2)**

Chair called the meeting to order at 1:31pm. Attendance: 21

**Agenda:**

* **Assignment of responsibilities**
* **Discussion on deliverables**
* **Discussion on related standards/Alliances/Consortiums, protocols, etc. and possibilities of leveraging them**

**Assignment of responsibilities**

* Ben Wolfe volunteered for Dynamic PHY management
* Considering to ask Tero to take on Security set-up; not present here
* No volunteers for Network set-up
* Pat Kinney for TSCH operation
* Fragmentation – KMP plus 6lowpan – No volunteers

**Discussion on deliverables**

* Some network setup looks like MAC
* For network, need assignment of Short Address
* Which device is the PAN Coordinator?
* Discussion about whether Short Addresses can be used without association (ans: yes)
* YANG modeling should be done by someone who has experience; please send email

**Discuss strategy (i.e. how to best move ahead), agree on next steps**

* RFP discussion – what kinds of proposals?
* SAP discussion, looking at KMP as an example.
* 6TiSCH and L2R use both MLME-SAP and MCPS-SAP
* Pat & Charlie will work together to produce a 802.15.12 architecture diagram

**Schedule Change:** The Thursday AM1 session is rescheduled to start at 8:30am

**Recess:** The Study Group went into recess (at 2:50pm) until the Thursday AM1 session

**Thursday AM1 (May 19) (Room Waikoloa 2)**

Chair called the meeting to order at 8:30am. Attendance: 7

**Agenda:**

* **Look at the ULI protocol stack diagram**
* **Discuss strategy (i.e. how to best move ahead), agree on next steps**

**Look at the ULI protocol stack diagram / architecture / functional decomposition**

* Add Data and Mgmt interfaces above MAC mux and below ULI mux
* Add Link-SAP between ULI mux and IPv6 Network, Others … on top
* Link-SAP should not have to change much even if EtherType changes.
* Consider changing Multiplexed ULI to instead be Multiplexed Control Plan
* Look at dispatch byte for 6lowpan; it will indicate what needs to be done. See RFC 6775
* New functional modules (i.e., parallel to 6tisch etc.) should be able to added like plug-ins

**Discuss strategy (i.e. how to best move ahead), agree on next steps**

1. Define how KMP should work within 15.12
   1. What does Link SAP look like?
   2. Define the Multiplexed MAC interface leveraging 15.9
2. Define how 6LoWPAN should work within 15.12 (Charlie ?)
   1. What does Link SAP look like?
   2. Define the Link SAP using IPv6, et al. as examples
3. Define Generic PHY configuration using multiplexed MAC interface (Ben, Kunal)
   1. 15.12 should allow for creating new PHY layers
   2. Defined Objects mapped to MLME SAP
4. Define generic MAC configuration using multiplexed MAC Interface (Don & Matt)

* Kunal moves to adjourn. Meeting adjourned at 9:35pm