P802.15.12

Submitter Email: bheile@ieee.org
Type of Project: New IEEE Standard
PAR Request Date: 19-Mar-2016
PAR Approval Date: 12-May-2016
PAR Expiration Date: 31-Dec-2020
Status: PAR for a New IEEE Standard

1.1 Project Number: P802.15.12
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Upper Layer Interface (ULI) for IEEE 802.15.4 Low-Rate Wireless Networks

3.1 Working Group: Wireless Personal Area Network (WPAN) Working Group (C/LM/WG802.15)
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3.2 Sponsoring Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee (C/LM)
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4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 12/2017
4.3 Projected Completion Date for Submittal to RevCom
Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.: 08/2018

5.1 Approximate number of people expected to be actively involved in the development of this project: 30
5.2 Scope: This standard defines an Upper Layer Interface (ULI) sublayer in Layer 2 (L2), between Layer 3 (L3) and the IEEE 802.15.4 Media Access Control (MAC) sublayer. The ULI provides data and management service access points (SAPs) for interface to the IEEE 802.15.4 MAC. The ULI adapts L3 protocols and provides operational configuration including network and radio regulation requirements of the IEEE 802.15.4 MAC. Furthermore, the ULI integrates optional upper Layer 2 functionalities focused on interfacing to the IEEE 802.15.4 MAC such as Key Management Protocols (KMPs), L2 routing (L2R) protocols, L2 fragmentation, and Internet Engineering Task Force (IETF) IPv6 over the TimeSlotted Channel Hopping (TSCH) mode of IEEE Std 802.15.4 (6TiSCH) Operation Protocol (6TOP). Finally, the ULI provides protocol differentiation, using mechanisms such as EtherType Protocol Differentiation (EPD) to support multiple, diverse higher layer protocols, and header compression.

5.3 Is the completion of this standard dependent upon the completion of another standard: No
5.4 Purpose: This standard defines an upper layer interface to support and harmonize the IEEE 802.15.4 ancillary functionality, e.g. fragmentation, protocol differentiation and configuration.

5.5 Need for the Project: As IEEE 802.15.4 devices have become widely deployed, deficiencies in the IEEE Std 802.15.4 became apparent as an expanding set of applications were addressed. To address these deficiencies numerous L2 protocols were independently developed to interface to the IEEE 802.15.4 MAC sublayer. These L2 protocols, such as KMP, L2R, and 6TOP often replicate ancillary functionality, e.g. fragmentation and protocol differentiation, in an inconsistent and often incompatible manner.

This project is needed to address these issues as an independent standard for use with IEEE Std 802.15.4. It will define and organize areas of operation that were intentionally left out of the IEEE 802.15.4 MAC in order to maintain simplicity and small size, but which are now needed in a growing set of applications. Providing an independent standardized approach eliminates the need for ad hoc work arounds, enables consistent and compatible implementations where needed, and generally makes IEEE Std 802.15.4 easier to use in an IP environment without requiring any changes to the 15.4 standard itself.

5.6 Stakeholders for the Standard: The stakeholders include silicon vendors, manufacturers and users of telecom, medical, environmental, energy, and consumer electronics equipment and manufacturers and users of equipment involving the use of wireless sensor and control networks

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Intellectual Property
6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No
6.1.b. Is the Sponsor aware of possible registration activity related to this project?: Yes
If yes please explain: As noted in the scope and need for the project, this project will use EPD for multiple higher layer protocols. Values of the Multiplex ID below 1500, as defined in IEEE Std 802.15.9 Key Management Protocol, will be administered by the IEEE 802.15 Assigned Number Authority (ANA).

7.1 Are there other standards or projects with a similar scope?: No
7.2 Joint Development
Is it the intent to develop this document jointly with another organization?: No

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8.1 Additional Explanatory Notes: 5.2 Scope:
--EtherType Protocol Differentiation is defined in IEEE Std 802-2014: IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture
--IEEE 802.15.4: Low-Rate Wireless Networks
--IEEE 802.15.9: Recommended Practice for Transport of Key Management Protocol (KMP) Datagrams