IP-based Vehicular Networking: Use Cases, Survey and Problem Statement

(draft-ietf-ipwave-vehicular-networking-02)

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Updates from the Previous Version

- The following changes are made from draft-ietf-ipwave-vehicular-networking-01:
  - A reference for DSRC is added.
  - The definition of RSU is updated.
  - The definition of DMM is added along with its reference.
  - The communication of RAN is clarified with 4G-LTE for V2I.
  - The network layer of WAVE is clarified for IP networking.

Updates (1/5)

Section 1. 1st paragraph

The Federal Communications Commission (FCC) in the US allocated wireless channels for Dedicated Short-Range Communications (DSRC) , service in the Intelligent Transportation Systems (ITS) Radio Service in the 5.850 - 5.925 GHz band (5.9 GHz band).

Update:

The Federal Communications Commission (FCC) in the US allocated wireless channels for Dedicated Short-Range Communications (DSRC) [DSRC], service in the Intelligent Transportation Systems (ITS) Radio Service in the 5.850 - 5.925 GHz band (5.9 GHz band).

Updates (2/5)

Section 2. RSU definition

Road-Side Unit (RSU): A node that has Dedicated Short-Range Communications (DSRC) device for wireless communications with vehicles and is also connected to the Internet as a router or switch for packet forwarding.

Update:

Road-Side Unit (RSU): A node that has physical communication devices (e.g., DSRC, Visible Light Communication, 802.15.4, etc.) for wireless communication with vehicles and is also connected to the Internet as a router or switch for packet forwarding.

Updates (3/5)

Section 2. DMM definition

DMM definition is missing.

Update:

DMM: Acronym for "Distributed Mobility Management" [DMM].

Updates (4/5)

Section 3.1. 3rd paragraph

The current RAN is mainly constructed by 4G-LTE, but DSRC-based vehicular networks can be used in near future.

Update:

The current RAN is mainly constructed by 4G-LTE for the communication between a vehicle and an infrastructure node (i.e., V2I) [FirstNet-Annual-Report-2017], but DSRC-based vehicular networks can be used for V2I in near future [DSRC].

Updates (5/5)

Section 4.1.1. 1st paragraph

The standard WAVE does not support Duplicate Address Detection (DAD) of IPv6 Stateless Address Autoconfiguration (SLAAC) [RFC4862] due to its own efficient IP address configuration based on a WAVE Service Advertisement (WSA) management frame [WAVE-1609.3], seamless communications for Internet services, and multi-hop communications between a vehicle and an infrastructure node (e.g., RSU).

Update:

The standard WAVE [WAVE-1609.0] [WAVE-1609.3] does not support Duplicate Address Detection (DAD) of IPv6 Stateless Address Autoconfiguration (SLAAC) [RFC4862] by having its own efficient IP address configuration mechanism based on a WAVE Service Advertisement (WSA) management frame [WAVE-1609.3]. It does not support both seamless communications for Internet services and multi-hop communications between a vehicle and an infrastructure node (e.g., RSU), either.

Next Steps

- **Synchronization with IPv6-over-802.11ocb**
  - We will improve gap analysis and problem statement with draft-ietf-ipwave-ipv6-over-80211ocb-21.
- **Enhancement of Use Cases Section**
  - Automotive Companies (e.g., GM, Toyota, Honda, and BMW)
  - CAR 2 CAR Communication Consortium (C2C-CC)
  - 5G Automotive Association (5GAA)
  - European Automotive-Telecom Alliance
  - Use Cases from ETSI Intelligent Transport Systems (ITS): Basic Set of Applications (ETSI TR 102 638)
- **WG Last Call**
  - We will request WG Last Call after reflecting the comments at IETF-101 IPWAVE WG meeting on the revision.