

Minutes for IPMON Side Meeting at IETF 115

Notetaker: Sandra Cespedes

(Email: sandra.cespedes@concordia.ca)

[Meeting Information]

o Date/Time: November 9 (Wednesday), 15:00-16:30 (1 hr 30 min)

o Location: Richmond 6 (West Wing, First Floor)

o Online WebEx Meeting:

<https://skku-ict.webex.com/skku-ict/j.php?MTID=m220bf7659c6ac2e6783c09a41dd2c4c4>

o Side Meeting Chair: Jaehoon (Paul) Jeong (Email: pauljeong@skku.edu)

[Agenda]

o Administrativa: Side Meeting Chair - Jaehoon (Paul) Jeong (5 min)

o IPMON Problem Statement and Use Cases: Jaehoon (Paul) Jeong (10 min)

<https://datatracker.ietf.org/doc/draft-ietf-ipwave-vehicular-networking/>

o Report of IETF-115 IPMON Hackathon Project: Hyeonah Jung (5 min)

<https://github.com/IETF-Hackathon/ietf115-project-presentations/blob/main/IETF115-IPMON-Hackathon.pdf>

o Basic Support for IPv6 over 5G V2X: Yiwen (Chris) Shen (20 min)

<https://datatracker.ietf.org/doc/draft-jeong-6man-ipv6-over-5g-v2x/>

o Vehicular Neighbor Discovery for IPMON: Yiwen (Chris) Shen (5 min)

<https://datatracker.ietf.org/doc/draft-jeong-ipwave-vehicular-neighbor-discovery/>

o Vehicular Mobility Management for IPMON: Yiwen (Chris) Shen (5 min)

<https://datatracker.ietf.org/doc/draft-jeong-ipwave-vehicular-mobility-management/>

o Vehicular Security and Privacy for IPMON: Tae (Tom) Oh (10 min)

<https://datatracker.ietf.org/doc/draft-jeong-ipwave-security-privacy/>

o Service Discovery for Moving Objects: Zhiwei Yan (10 min)

<https://datatracker.ietf.org/doc/draft-yan-ipwave-nd/>

o Open Discussion (20 min)

[Meeting Session]

o Recording for WebEx Meeting:

- <https://skku-ict.webex.com/skku-ict/ldr.php?RCID=94d2ae85ea5ebdb55a4ab300ba294105>

- Password: 8pUJcGPe

o Participation

- Offline: 22 participants

- Online: 7 participants

o IPMON Problem Statement and Use Cases

- Jaehoon (Paul) Jeong presenting

- <https://datatracker.ietf.org/doc/draft-ietf-ipwave-vehicular-networking/>

o IPv6 over 3GPP 5G V2X

- Yiwen (Chris) Shen presenting

- <https://datatracker.ietf.org/doc/draft-jeong-6man-ipv6-over-5g-v2x/>

- Analysis indicates that 3GPP documents indicate only IPv6, not IPv4 is used. Non-IP applications are allowed as well.

- Key observations are

- * Lack of a procedure to define the IPv6 router in V2V over PC5
- * What should be the prefix policy (same/different)?
- * How to minimize routing overhead?
- * Mobility management for stable connection to a server while moving

Jari Arkko: Thanks for the overview of what's on the 3GPP specs. What to do, is this a problem? and if yes, who should fix it? In V2V link over PC5, are they point-to-point links or are they multipoint?

Yiwen (Chris) Shen: They only specify unicast or broadcast/multicast.

Robert (Bob) Moskowitz: Be careful to overreach in the transport area. Some vehicles (bicycles/scooters) will not have a 5G connection unless they have a phone. Unless you make this work through the rider's phone. Anything that needs good location. Most applications have limited access to high-resolution location for privacy reasons. Be careful on assumptions on what devices will have 5G and knowledge of location because you may not have it.

Chris: 3GPP defines a channel for V2X to connect with pedestrians. It is up to the service providers.

Bob: Right now the chipset costs 100 USD, that's not consumer-grade. This is the reality of the market today.

Jari: Privacy questions are relevant. We have to understand there are technical issues to address and understand the organization. Have they specified where the identifier is coming from. One of the reasons why DAD (Duplicate Address Detection) can be disabled is because you have very strict specifications on what's on the other end. If you allocate anything, you know only you will have an address. That's different if you have more than two devices on the link.

Chris: In 3GPP they are relying on the subscriber base, which has an identifier for the interface.

Jari: ID identifier in mobile networks is given by the router. That's interesting here. Is there a reason why you would need mobility management? Why not using V2I?

Chris: We are considering service continuity. We can rely on the Uu interface. When you move to another NG-RAN (Next Generation Radio Access Network) that you may need to reassigning the IPv6 address.

Jari: My point is, we have plenty of mobility mechanisms. They break now and then, but we also have application-level mobility mechanisms. That's a question to dig deeper. Another question is why not using the link-local address, if you are only connecting to the next car.

Dick Roy: There is more to what you have on your diagram. The differences are big. They use different hardware whether it is eNB or gNB. Timing accuracy has to be in nanoseconds. Things you are trying to do with IPv6, if you could establish a link-local network of vehicles, good luck with that. This is a lot more difficult than what you are proposing here. LTE is not a feasible link layer. Using such fragile PHY and LINK layers is very difficult.

Chris: We understand it's very difficult. That's why we are trying to improve it.

o Vehicular Mobility Management for IPMON

- Yiwen (Chris) Shen presenting

- <https://datatracker.ietf.org/doc/draft-jeong-ipwave-vehicular-mobility-management/>

o Vehicular Neighbor Discovery for IPMON

- Yiwen (Chris) Shen presenting

- <https://datatracker.ietf.org/doc/draft-jeong-ipwave-vehicular-neighbor-discovery/>

Bob: it is mandated that the drone position has to be broadcast after some altitude.

Chris: the question is, "Can we use that information?"

Dick: There are multiple layer 2 interfaces. You may connect using sidelink interface (LTE eNB). In the V2V, you are using 5g-NR V2X. It's a different physical one.

interface. Those are two different network layer addresses. Which one would you use? The link is going up-and-down. How are you going to address that issue.

Jari: Partially disagree and partially agree. The proposals here about some work and we can debate about that. You are right about the type of links we have there.

When it comes to ND and DAD, it has a huge impact. If we have multicast, broadcast, one subcase is when there is no coordination, and you may need some kind of DAD.

Another option is that you may have some kind of coordination. There are a bunch of options here.

Dick: MAC addresses were not intended for unique identifiers. Release 18, they said they are

going to solve the need for DAD problem.

Bob: What is the application with routing confliction? Please discuss what are the applications beyond routing.

Alex: Well, there are solutions to that problem of a sidelink 5G interface being different than the 5G V2I link: IPv6 routing and maybe the use of ULAs.

o Vehicular Security and Privacy for IPMON

- Tae (Tom) Oh presenting

- <https://datatracker.ietf.org/doc/draft-jeong-ipwave-security-privacy/>

Dick: Most of security and privacy stuffs for vehicles and vehicular networks presented by you have already been implemented in Europe and the US.

o Report of IETF-115 IPMON Hackathon Project

- Hyeonah Jung presenting

- <https://github.com/IETF-Hackathon/ietf115-project-presentations/blob/main/IETF115-IPMON-Hackathon.pdf>

o Service Discovery for Moving Objects

- Presentation to be sent offline (Presenter: Zhiwei Yan)

Note: You can listen to Zhiwei's presentation in the slide show mode for his slides

- <https://datatracker.ietf.org/doc/draft-yan-ipwave-nd/>

o Open Discussion

Jari: Very interesting and important topic. We still have work left to do. Check alternatives. Need to figure out if there is a set of technical things. If 3GPP needs to fix their specs.

Sandra: There is work to do to identify if what 3GPP specified actually works for having IPv6 links in this context.

Dick: you need to understand the very limited connectivity to drones.

Bob: We are doing a lot of things in the communication capabilities.

Jaehoon (Paul) Jeong: We will prepare for IPMON BoF in IETF-116 Yokohama Meeting by making the work scope of IPMON more concrete through the email discussion with IPWAVE mailing list (its@ietf.org).

DONE.

[Meeting Photos]



