IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IEEE 802.11 Real Time Applications TIG  Bangkok meeting minutes | | | | |
| Date: 2018-11-21 | | | | |
| Author: | | | | |
| Name | Affiliation | Address | Phone | Email |
| Kate Meng | Tencent Technology (Shenzhen) Company Limited | C1, Hi-Tech Park, NanShan, Shenzhen, China | +86 166-7516-1765 | Katemeng@tencent.com |

Abstract

This document contains the meeting minutes for the Real Time Applications TIG during Bangkok plenary meeting.

**IEEE 802.11 Real Time Applications TIG**

**Nov 13, 2018, F2F meeting**

1. The IEEE 802.11 Real Time Applications (RTA) Technical Interest Group (TIG) meeting was called to order at 13:30pm local time by the Chair, Allan Jones (Activision).
2. Chair recommend to silent cell phones and submission should not contain company logos.
3. Chair reviewed the IEEE-SA patent policy. Chair asked if there is any response to his call for potentially essential patents. None.
4. Chair review the agenda for today.
5. Chair motion to approve teleconference minutes since September 2018.

Mover: Jim Lansford 2nd Mover:Tim Godfrey

* **Approve TIG minutes of teleconferences and minutes from July 2018 Interim meeting:** 
  + RTA TIG Sept. Meeting minutes <https://mentor.ieee.org/802.11/dcn/18/11-18-1689-00-0rta-rta-sep-kona-meeting-minutes.docx>
  + RTA Oct 10 Teleconference Minutes <https://mentor.ieee.org/802.11/dcn/18/11-18-1757-00-0rta-rta-oct-10-cc-meeting-minutes.docx>
  + RTA Oct 24 Teleconference Minutes
  + <https://mentor.ieee.org/802.11/dcn/18/11-18-1806-00-0rta-rta-oct-24-cc-meeting-minutes.docx>

Minutes approved by unanimous consensus.

1. Straw poll for 802.21 joint session for Wednesday AM2.

**Should we have a joint session with 802.21 on Wednesday AM2?**

As the eSports is growing rapidly in China and Korea, VR eSports is being considered as an upcoming new eSports event. For that matter, we see that more and more network ready VR game content will be coming out in the market; hence, it would be great to take a look at the network requirement for VR eSports and this would be a great additional session that the RTA TIG team should also look at. As explained in the previous teleconference meeting, we have the use case scenario for the VR eSports and 802.21 believe that this topic will be a great interest for both your TIG and the 802.21 TIG.

Yes: 7

No: 2

Abstain: 20

**(Allan got update from Peter that the update from 802.21 can be presented during mid plenary session.)**

1. Submissions

|  |  |  |
| --- | --- | --- |
| **DCN** | **Title** | **Author** |
| 1889 | Use Cases, Requirements and Potential Wireless Approaches for Industrial Automation Applications | James Gross |
| 1892 | Time-Aware shaping (802.1Qbv) support in the 802.11 MAC | Dave Cavalcanti |
| 1918 | Determinism for IoT considerations | Jerome Henry |
| 1973 | Old and new latency requirements | Kazuyuki Sakoda |
| 1972 | Thoughts on RTA development | Kazuyuki Sakoda |
| 1978 | Discussion on Target Use Cases of RTA | Akira Kishida |
| 2009 | Draft RTA TIG Report | Kate Meng |

1. Review of November Agenda in Bangkok meeting:

Two Sessions:

Tuesday 13:30-15:30 PM1

Thursday 16:00-18:00 PM2

1. **James Gross presents 1889r0.**

Comments: There might be some regulations that restrict the band.

**Dave Cavalcanti presents 1892r0**

Q: With the TSN you proposed, I wonder do you expect the frame will collision? Why don’t you just use EDCA?

A: If you don’t change anything at the MAC, when you open the queue, it will use EDCA. If you are in a managed network and everyone follows the schedule.

If you use 11ax trigger frame, all stations would transmit as different air users at the same time. I am not proposing change on that.

Comments: I suggest you use back off, if the packet miss the opportunity to send, then it has the chance to resend.

Comments: If you start to back off for some other reasons, like the interference is not managed, if you miss your slot, then this packet should be considered as lost.

Dave: The main idea is if you can manage, then you can control. The unmanaged access will be seen as interference. There would be a tradeoff between latency and capacity, it will depend on the congestions you have.

Q: The requirements seem rigid, if the network if predictable, maybe it is fine. If you look at LTE, they run the scheduling service through polling, and terminal provide some feedback it seems you could integrate to gating which would give some flexibility to the gating function.

A: This schedule has to be dynamic. In the ethernet, there is no easy way since the capacity will not change. While in wireless, this schedule has to adopt with the channel conditions. It would be some overhead to adjust the schedule. It would need to incorporate solutions to decide how fast or how slow to do it.

**Pascal Thubert presents 1918r0**

Comments: When you say improve the channel utilization by no IFS and no backoff. We are talking about unlicensed band. You have to access the channel before you do the scheduling.

A: What we found is that we could involve the scheduling in the environment we use to deploy classical wifi in 20MHz channel, we schedule the whole band, usually there would be one or two wifi bands which interference with us. When we retry, we have to schedule with each other. We schedule multiple transmissions. Let’s say you want to transmit with EDCA, then when you fail, the difference is either send it or don’t, we do not wait, just try to retransmit at different channels.

Q: Does the scheduling you mentioned by AP?

A: For deterministic network, it probably a scheduler which has visibility to all interference. In factory, it would be probably more than one AP, so there should be a controller.

Q: Do you need new preamble for the new slots?

A: Yes.

Q: You are using 10ms time slots, but we also need to take consideration of propagation delay and guard time between slots. Do you think it is sufficient?

A: The time for fifteen slots is 10ms -15ms. The guard time is less than 1ms.we need to re-sync every 20s roughly.

Q: For scheduling, ax already have trigger-based scheme, does your proposal work in the same way?

A: We use persistent scheduling.

Q: Do you use trigger to sync?

A: It is a possible approach.

1. Meeting recessed at 15:30pm.

**Thursday 15/11/2018 PM 2 Session**

**Contributions**

1. “Proposed Revision of FFIOT Redundancy Section”, 1-18-0064-02 – Roger Marks (Huawei)

**Q:** The PRP need to independent channels, then how to deal with the two ACKs when one of the frames transmitted in one band is wrong? Shall the frames on two band merges first to identify which frame is wrongly transmitted?  
**A:** It sounds like it should be determined by the higher layer. If you can put it into the MAC layer, it may be more efficiently.

1. “Old and new latency requirements”, 18/1973r2 – Kazuyuki Sakoda (Sony)

Q: Is the video you talking about high data video or low data rate video?

A: high data rate.

Q: Robustness is also need for video.

A: Yes, in my next presentation I will talk about it.

Comments: Maybe we can separate the interactive video to two layer upstream and downstream, one is downloading stream which need high-data-rate and low latency the other one is uploading signal（control information）which need low-data-rate and low latency and high reliability.

Q: Do you have the bandwidth spec for wired?

A: 18Gbps

Q: About the frame rate, why do you choose 60Hz for qualified video? For 90Hz, the latency should be 11ms.

A: Yes, 60Hz is not enough. It’s just an example. As today it’s ok, maybe it will be changed in the future.

Q: Our RTA’s PAR should concern about the scope?  
 A: Yeah, But now is TIG, we can put it both in EHT or RTA, the scope can be determined later.

**Straw Polls**

1.Do you think it is reasonable to include high data rate (>1Gbps) real time video application as a part of the target applications of the RTA?

Yes: 17

No:7

Abstain: 4

2.Do you think it is reasonable to include real time video application requirement to the IEEE 802.11 Real Time Applications TIG Report [6] (11-18/2009r0)?

i.e., 5ms or 10ms latency together with high bandwidth (>1Gbps) streaming capability

Yes: 14

No: 6

Abstain: 5

1. “Thoughts on RTA development”, 18/1972r6 – Kazuyuki Sakoda (Sony)

**Straw Polls**

1.Do you think it is reasonable to develop a categorization schema of RTA application types?

For example, something like table in slide 6 in this submission

Yes: 22

No: 2

Need more information/discussion: 2

Don’t know: 0

2.Should RTA TIG discuss if robustness/reliability metric were considered together with latency requirements?

Yes: 28

No: 0

Need more information/discussion: 1

Don’t know: 0

3.Should RTA capability be available with multiple 802.11 PHY technologies?

Yes: 18

No: 0

Need more information/discussion: 11

Don’t know: 0

4.Should RTA provide APIs for cross-layer operation allowing innovative/optimized implementation?

Yes: 9

No: 0

Need more information/discussion: 16

Don’t know: 0

1. “Discussion on Target Use Cases of RTA”, 18/1978r3 –  Akira Kishida (NTT)

Summary: Two additional use cases are introduced. And we think robustness is also needed with low latency in RTA use cases

Q: what do you mean by guaranteed communication? We are discussing an unlicensed band.

A: reliability high and low latency. Some functions to predict other interference are needed.

Comments: Slide 9, I think the latency spec is not accurate.

Comments: Slide 11, you suggest joining EHT SG. I do not understand. EHT cannot solve low latency problem.

Q: Have you thought about Mobility in Drone control, which means Long Range, because wifi is mainly concerned about high throughout not the mobility?

A: the data rate is low, and we drone in limited place.

Q: Do you think we should make amendments to current 11 or new working group?

A: I think we should make new working group.

**Straw Poll**

[#1] Do you think that applications that require both low latency 　　　 and high data rate such as AR, 4K video streaming should be included in the scope of RTA TIG?

* + Y: 14 N: 8 A: 1 Need more further investigations

[#2] How should we continue our future activity? RTA should be:

(a) A separate SG and amendment and target at both PHY and MAC layer technologies.

(b) A separate SG and amendment and target at only MAC layer technologies and upper layer solutions.

(c) A part of the EHT and follow-on activities and amendment or self-cancellation.

(d) Need more information

* + (a): 3 (b): 6 (c): 3 (d) 17 Other: 1

1. Allan proposed following straw poll.

**Should we extend the RTA TIG timeline until the March Plenary?**

**Yes: 28**

**No: 0**

**Abstain: 1**

**Should switch from 9PM EST to 6PM EST for our Telcons?**

**Yes: 10**

**No: 1**

**Abstain: 11**