IEEE P802.11
Wireless LANs

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| IEEE 802.11 Real Time Applications TIGSeptember 2018, Hawaii Kona Meeting Minutes |
| Date: 2018-09-25 |
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Abstract

This document contains the meeting minutes for the Real Time Applications TIG Sep sessions in Hawaii Kona.

**IEEE 802.11 Real Time Applications TIG**

**Sep 11,13, 2018, Hawaii Kona Meeting**

1. Chair reviewed the IEEE-SA patent policy.
2. Chair asked if there is any response to his call for potentially essential patents. None.
3. Chair reviewed the operating rules for a TIG.
4. Chair reminded the participants about the objectives of the TIG and the following Working Group motion in July 2018:

“Approve formation of a Real Time Applications (RTA) TIG to investigate

* + Latency and stability issues observed with real time applications such as mobile and multiplayer games, robotics and industrial automation
	+ Potential mechanisms to address the identified issues

The TIG is to complete a report on this topic at or before the November 2018 session.”

1. Chair called for approval of minutes from July 2018 and following teleconferences:

8/8/2018 Teleconference

8/22/2018 Teleconference

Moved: Edward Au 2nd Mover: Lei Wang

 Minutes approved by unanimous consensus.

1. Meeting on 11 Sep 19:30-21:30
* Karthik Iyer from Activision present 11-18/1499 Real-time Console Game Network Profile

Comments:

Q: Why don’t you tag gaming traffic as voice directly?

A: We think the category itself is not aiming at gaming. Gaming is not transferring voice or video.

Q: No, the category is just for reference. just for the clarification. The vo is for low jitter. The vi is for throughput. I suggest you use it.

Q: How much problem because of wifi. Which part need changes from standard? Why wifi fails is not clear to me.

A: We are trying to get more details.

Q: when you describe the architecture. is the traffic of UL and DL asymmetric? and the packet rate of UL is bigger than DL.

A: Yes. Usually downlink packets are bigger than uplink. when user have many operations in game, the traffic do increase accordingly

 Q: From the number you show, packet rate and bandwidth. Did game industry start to define categorize the traffic and research what requirements might be needed?

 A: In ax, there are 3 different categories games. There are patterns.

 Q: What kind of connection you are using? Wired or wireless?

 A: Both ethernet and wireless.

 Q: Is live video part of gaming?

A: This group is focus on real-time application. But my presentation is mainly about real-time gaming applications.

* Dave Cavalcanti from Intel present 11-18/1542 Time-Aware Traffic Shaping over 802.11

Comments:

Q: Simulation use one AP, but this is not very likely scenario, usually users see more AP, how you synchronize all AP?

A: You might see multiple AP, but you only connect on AP.

Q: Other AP might have different scheduling mechanism.

A: It depends on the level of interference. I can make sure I have enough time to transmit, even if I have to re-try. This is could be useful to manage the traffic ID in different queues.

Q: Do you consider mechanism which are already there like HCCA to solve the time of the network since your traffic is divided by periods.

A: HCCA could be considered as access mechanism, it is a way to implement schedule. The difference is in HCCA, you have to poll the stations. QBV is on the link layer.

Q: how would you do this schedule for different priority in different queue? Doesn’t it have to be one priority that restricted the packets to be sent?

A: This could be implementation specific. The first requirement you need to understand is what you need to serve. This is not about schedule. If you have multiple users and multiple streams, then you have to combine them in the period. That is for scheduler to define.

Q: Slide 13. Simulation result. Does trigger-base have high latency compared with EDCA?

A: Not necessary trigger-base. Downlink has more traffic. The gaming is low throughput, even if we use EDCA, even they compete, they can make it.

Q: So you did not see more latency caused by trigger? The latency for uplink between EDCA and trigger based is almost identical. But the downlink is not sure.

A: there are trigger overhead. But if you trigger everything, they are efficient.

Q: In your simulation, high performance is expected. I am wondering how much gain in realistic

A: The idea is to reserve. If you cannot predict, you cannot reserve. There is trade off here. If this completely random, then it will not gonna work. There are some of the model provided by Kate including the packet size, interval, we are trying to enable it.

Q: The packets interval is same for uplink and downlink, right? As a matter of fact, it might not be periodic and interval might vary from game to game.

A: In the real-time gaming traffic model, we are trying to do simulation according to that to rebuild the evaluation.

* Kate Meng from Tencent present 11-18/1543 RTA dual link proposal.

Some response for earlier presentation:

The reason that gaming is not using priority as voice, as mentioned by Karthik, gaming packets themselves do not deliver voice or video content, another reason is when gaming is tagged as voice for example, we tag ip header as DSCP 0xEF, for downlink packets, after many hops in Internet, the value might be rewritten. And under some circumstances, the performance might get worse due to more collision.

Comments:

Q: Do you think full duplex will help the problem you highlighted?

A: I did not see any simulation result. So maybe some offline discussion.

Q: Why you want to duplicate packets with more resources instead of using coordination?

A: The lagging might only last in a very short time and random. There might be no time waiting for the coordination work. Duplication is the most straightforward way.

Q: Is lagging more related to downlink or uplink? In downlink, there is no practical solution current, am I right?

A: For the problem, I would say both. If uplink packets fail to transmit, then operations in game will not be recorded. If downlink packets fail to distribute, then picture on client would not be fluent. And for the downlink, yes, we do not have practical solution, since we cannot control AP.

Q: The reliability part, I think your solution cannot solve congestion problem, just a complementary solution.

A: Yes. But the chances that both band congested at same time would be smaller.

Meeting adjourned at 21:30.

1. Meeting on 13 Sep 16:00-18:00
* Akira Kishida From NTT present 11-18/1618 Discussion on Target Applications of RTA

Comments:

Q: In your presentation, is this manufacturing environment under control?

A: Yes

Q: Do you have more use case description in manufacturing?

A: Will do further investigation.

1. Comments for further agenda.

Need to check the request in manufacture field

Need to consider whether to extend the TIG

Straw Poll: Should we extend the RTA TIG timeline until the March Plenary

YES: 9

No: 0

Abstain: 6

1. **Chair calls for outline contribution of TIG report.**
2. Teleconference call before Nov plenary meeting
	* **September 26, 9PM ET**
	* **October 10, 9PM ET**
	* **October 24, 9PM ET**

Meeting adjourned at 16:40