IEEE 802.11az Meeting Minutes September 2016 Session P802.11
Wireless LANs

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| TGaz meeting minutes – September meeting |
| Date: 2016-09-16 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Carlos Aldana | Intel Corporation | 3600 Juliette Lane, Santa Clara, CA 95054 | 408-765-6692 | carlos.h.aldana@intel.com |

Abstract

Minutes for the TGaz meeting in Warsaw.

**IEEE 802.11 Task Group AZ**

**September 2016 Warsaw Interim**

**September 13-16, 2016**

1. TGaz – 13 September 2016 – PM1
	1. Called to order by TGaz chair, Jonathan Segev (Intel Corporation) at 13:30 local time.
	2. TGaz secretary (acting) Carlos Aldana (Qualcomm).
	3. Agenda Doc. IEEE 802.11-16/750
	4. Review Patent Policy and logistics
		1. Chair reviewed the IEEE-SA Patency Policy, additional guidelines about IEEE-SA meeting and logistics
		2. Chair called for any potentially essential patent.
			1. Regarding submission [1249](https://mentor.ieee.org/802.11/dcn/16/11-16-1249-01-00az-efficient-positioning-method-applicable-in-dense-multi-user-scenarios.pptx) titled **Efficient Positioning Method Applicable in Dense Multi User Scenarios**, Eckhard Grass (from IHP GmbH) said that there is a patent application pending.
		3. Chair reminded all to record their attendance.
	5. Review Agenda
		1. Called for any additional submissions for the week.
		2. Reviewed the agenda based on doc 11-16/750
		3. Chair called for any additional feedback and changes to agenda – none identified, agenda for the week approved.
	6. Previous meeting minutes approval:
		1. Document 11-16/1076r1 posted to Mentor August 8th
		2. **Motion (#1):**

**To approve document 11-16/1076r1 as TG meeting minutes for the July meeting.**

* + 1. **Moved by: Chao Chun Wang, 2nd by: Carlos Aldana**
		2. **Results (Y/N/A): unanimous consent**

Motion passes

* 1. Eckhard Grass presented submission 11-16-1249.
		1. C: Do you assume APs are in the same channel?
		2. R: Ideal situation is yes.
		3. C: Do you assume APs are synchronized?
		4. R: No.
		5. C: How do APs get their position?
		6. R: They can be manually placed into the APs.
		7. C: How do the errors propagate from one AP to the next?
		8. R: The errors add up. The main approach here is to keep the forwarding time of the AP short.
		9. C: What kind of accuracy have you observed?
		10. R: It depends on the timing measurements. We have demonstrated 50ps accuracies in 60 GHz. We also used oversampling techniques. Precision of 1.5 cm is achievable. For this to be realizable you need high speed data converters. With standard WLAN with 80 MHz packet bandwidth, we have seen precision of around 30cm.
		11. C: how do you determine the set of Aps to participate in this exchange?
		12. R: It’s best to form subgroups. AP N needs to have connectivity to AP N+1 and AP N-1. For example, AP1 does not need to have connectivity to AP4. You may choose to have this connectivity. It would be good to have connectivity to the STAs from all APs. The timing of the APs has to lead to independent set of equations.
		13. C: What’s the minimum number of APs you need?
		14. R: for 2 D case, we need 4. In 3 D case, we need 5.
		15. C: do you need dense deployment?
		16. R: yes.
		17. C: could you have forwarding devices placed within a room? What are the functional requirements for these APs? Could APs 2, 3, and 4 be simpler than AP1?
		18. R: Yes, such forwarding devices would need to support this protocol. The functional requirements would be that they need to support co-channel operation. Note that this can be done on different channels, as long as the switch time is taken into account.
		19. C: how about jitter?
		20. R: it is robust to clock jitter. PN sequences can be used to address this.
		21. **Strawpoll 1: Should the 802.11az protocol support at least one mode of operation that enables STAs to obtain their location by passively receiving measurement frames from fixed APs?**
		22. **Results (Y/N/Need more information/A): 7/0/11/5**
		23. **Strawpoll 2: Should wireless connectivity between access points be supported to allow sequential transmission of timing frames, and hence, facilitating virtual synchronization of APs?**
		24. **Results (Y/N/Need more information/A): 1/0/20/5**
	2. Qi Wang presented 11-16-1256.
		1. C: if we come across a method that works for unassociated, do you want to have 2 mechanisms?
		2. R: one solution for both would be very good. Otherwise, 2 mechanisms can be used.
		3. C: are you ok with removing “in an associated mode” from the strawpoll?
		4. R: I’m not closing the door on unassociated. I am focused on the area that is easier to solve.
		5. C: in the use case slide, can you tell us more about locking car?
		6. R: your car can be driven away by someone else. Device proximity allows access to the vehicle. Use case for unlocking car is important. Ranging accuracy of 25cm is what car manufacturers are looking for.
		7. Strawpoll: **Do you support to add the following requirement to the 802.11az Functional Requirement document [3] under the section of 2.1.1 “Range measurement and coverage”**

***“TGaz Rx: The 802.11az protocol shall describe one or more mechanisms to provide secure range measurement in an associated mode.”***

* + 1. **Results (Y/N/A): 11/2/12**
	1. Chittabrata Ghosh presented 11-16-1260.
		1. C: Why do we require FTM during negotiation phase?
		2. R: in slide 7, the 2 sides need to share capabilities.
		3. C: The Multi-STA BA (M-BA) format is different from 11ax. Why not reuse what 11ax has?
		4. R: the main intention is to show an operational mode that can be reused.
		5. C: why not use OFDMA-BA?
		6. R: there can be 2 or multiple stations that select the same RU. It is a false positive case.
1. TGaz – 14 September 2016 – PM1
	1. Review Patent Policy and logistics
		1. Chair reviewed the IEEE-SA Patency Policy, additional guidelines about IEEE-SA meeting and logistics
		2. Chair called for any potentially essential patent, no one stepped up.
		3. Chair reminded all to record their attendance.
	2. Naveen Kakani presented 11-16-1013.
		1. C: How does accuracy compare with length?
		2. R: Low SNR scenarios will benefit with longer lengths.
	3. Chair presented timeline. Chair indicated to the group that the timeline is slipping, and that it is currently hard to assess the slippage due to lack of progress made in the last couple of sessions. The group should expect a revised timeline once substantial progress is made again. There was no feedback.
	4. Teleconference schedule for November 2nd at 10 AM ET for 1 hour.
	5. Chair called for any other business – none identified.
	6. Task Group meeting adjourned.