IEEE P802.11  
Wireless LANs

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| Minutes for TGbn MAC Ad-Hoc teleconferences from March to May 2024 | | | | |
| Date: 2024-04-03 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Srinivas Kandala | Samsung |  |  |  |
| Xiaofei Wang | Interdigital |  |  |  |
| Jeongki Kim | Offino |  |  |  |

Abstract

This document contains the meeting minutes for the TGbn MAC ad hoc teleconferences held between March 2024 and May 2024 meetings.

Revisions:

* Rev0: Added the minutes from the telephone conference held on March 28
* Rev1: Minor typos fixed
* Rev2: Added the minutes from the telephone conference held on April 8 and 11th

Abbreviations:

* C: Comment.
* A: Answer.

# Thursday, 28 March 2024, 10:00am – 12:00noon ET (TGbn MAC ad hoc conference call)

Chairman: Xiaofei Wang (Interdigital)

Secretary: Srinivas Kandala (Samsung)

This meeting took place using a webex session.

**Introduction**

1. The Chair (Xiaofei, Interdigital) calls the meeting to order at 10:01am EDT. The Chair introduces himself and the Secretary, Srini (Samsung)
2. The Chair goes through the 802 and 802.11 IPR policy and procedures and asks if there is anyone that is aware of any potentially essential patents.
   1. Nobody responds.
3. The Chair goes through the IEEE copyright policy and no comments received on the floor
4. The Chair recommends using IMAT for recording the attendance.
   * Please record your attendance during the conference call by using the IMAT system:
     1. 1) login to [imat](https://imat.ieee.org/attendance), 2) select “802.11 Telecons (<Month>)” entry, 3) select “C/LM/WG802.11 Attendance” entry, 4) click “TGbn <MAC/PHY/Joint> conference call that you are attending.
   * If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to Jeongki Kim ([jeongki.kim.ieee@gmail.com](mailto:jeongki.kim.ieee@gmail.com)), Xiaofei Wang ([xiaofei.wang@interdigital.com](mailto:xiaofei.wang@interdigital.coma)) and Srinivas Kandala ([srini.k1@samsung.com](mailto:srini.k1@samsung.com))

**Recorded attendance through Imat and e-mail:**

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbn (MAC) | 3/28 | Aio, Kosuke | Sony Corporation |
| TGbn (MAC) | 3/28 | Ajami, Abdel Karim | Apple Inc. |
| TGbn (MAC) | 3/28 | Akhmetov, Dmitry | Intel Corporation |
| TGbn (MAC) | 3/28 | Baek, SunHee | LG ELECTRONICS |
| TGbn (MAC) | 3/28 | Bredewoud, Albert | Broadcom Corporation |
| TGbn (MAC) | 3/28 | Byeon, Seongho | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 3/28 | Carney, William | Sony Group Corporation |
| TGbn (MAC) | 3/28 | Cha, Dongju | LG ELECTRONICS |
| TGbn (MAC) | 3/28 | Chaturvedi, Abhishek | Samsung Electronics |
| TGbn (MAC) | 3/28 | Chen, Junbin | TP-Link Corporation Limited |
| TGbn (MAC) | 3/28 | CHENG, yajun | Xiaomi Communications Co., Ltd. |
| TGbn (MAC) | 3/28 | Chng, Baw | BAWMAN LLC |
| TGbn (MAC) | 3/28 | Choi, JinHo | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 3/28 | Chu, Liwen | NXP Semiconductors |
| TGbn (MAC) | 3/28 | Chung, Chulho | SAMSUNG |
| TGbn (MAC) | 3/28 | Ciochina, Dana | Sony Corporation |
| TGbn (MAC) | 3/28 | Das, Subir | Peraton Labs |
| TGbn (MAC) | 3/28 | Dong, Xiandong | Xiaomi Communications Co., Ltd. |
| TGbn (MAC) | 3/28 | Ekkundi, Manasi | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 3/28 | Erkucuk, Serhat | Ofinno |
| TGbn (MAC) | 3/28 | Fan, Shuang | Sanechips Technology Co., Ltd. |
| TGbn (MAC) | 3/28 | Fang, Yonggang | MediaTek Inc. |
| TGbn (MAC) | 3/28 | Fischer, Matthew | Broadcom Corporation |
| TGbn (MAC) | 3/28 | Fujimori, Yuki | Canon Research Centre France |
| TGbn (MAC) | 3/28 | Ghosh, Chittabrata | Apple Inc. |
| TGbn (MAC) | 3/28 | Gu, Jaheon | Samsung Electronics Co., Ltd. |
| TGbn (MAC) | 3/28 | Gu, Junrong | Clourney Semiconductor |
| TGbn (MAC) | 3/28 | Gu, Xiangxin | Spreadtrum Communications (Shanghai) Co., Ltd. |
| TGbn (MAC) | 3/28 | GUIGNARD, Romain | Canon Research Centre France |
| TGbn (MAC) | 3/28 | Ha, Taeyoung | Samsung Electronics Co., Ltd. |
| TGbn (MAC) | 3/28 | Haider, Muhammad Kumail | Meta Platforms, Inc. |
| TGbn (MAC) | 3/28 | Handte, Thomas | Sony Group Corporation |
| TGbn (MAC) | 3/28 | Hasabelnaby, Mahmoud | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| TGbn (MAC) | 3/28 | Hervieu, Lili | CableLabs |
| TGbn (MAC) | 3/28 | Hsu, Yung Lin | National Taiwan University |
| TGbn (MAC) | 3/28 | HUANG, CHIHAN | MediaTek Inc. |
| TGbn (MAC) | 3/28 | Huang, Po-Kai | Intel Corporation |
| TGbn (MAC) | 3/28 | Jang, Insun | LG ELECTRONICS |
| TGbn (MAC) | 3/28 | Kalamkar, Sanket | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn (MAC) | 3/28 | Kandala, Srinivas | Samsung |
| TGbn (MAC) | 3/28 | Karthik, S. G. | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 3/28 | Kim, Sang Gook | LG ELECTRONICS |
| TGbn (MAC) | 3/28 | Kim, Sanghyun | WILUS Inc. |
| TGbn (MAC) | 3/28 | Kishida, Akira | NTT |
| TGbn (MAC) | 3/28 | Klein, Arik | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 3/28 | Koo, Jonghoe | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 3/28 | Koundourakis, Michail | Samsung Cambridge Solution Center |
| TGbn (MAC) | 3/28 | Kuo, Chih-Chun | MediaTek Inc. |
| TGbn (MAC) | 3/28 | Lee, Hong Won | LG ELECTRONICS |
| TGbn (MAC) | 3/28 | LEE, JOONSOO | Newracom Inc. |
| TGbn (MAC) | 3/28 | Levy, Joseph | InterDigital, Inc. |
| TGbn (MAC) | 3/28 | Li, Weiyi | Spreadtrum Communication USA, Inc |
| TGbn (MAC) | 3/28 | Lou, Hanqing | InterDigital, Inc. |
| TGbn (MAC) | 3/28 | Lu, kaiying | MediaTek Inc. |
| TGbn (MAC) | 3/28 | Lu, Liuming | Guangdong OPPO Mobile Telecommunications Corp.,Ltd. |
| TGbn (MAC) | 3/28 | LU, Yuxin | TCL Industries |
| TGbn (MAC) | 3/28 | Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| TGbn (MAC) | 3/28 | Luo, Hui | Infineon Technologies |
| TGbn (MAC) | 3/28 | Ma, Yongsen | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 3/28 | Magrin, Davide | Meta Platforms Inc. |
| TGbn (MAC) | 3/28 | Max, Sebastian | Ericsson AB |
| TGbn (MAC) | 3/28 | Montemurro, Michael | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 3/28 | Naik, Gaurang | Qualcomm Technologies, Inc |
| TGbn (MAC) | 3/28 | Nayak, Peshal | Samsung Research America |
| TGbn (MAC) | 3/28 | Neishaboori, Azin | General Motors Company |
| TGbn (MAC) | 3/28 | Nezou, Patrice | Canon Research Centre France |
| TGbn (MAC) | 3/28 | Noh, Si-Chan | Newracom Inc. |
| TGbn (MAC) | 3/28 | Park, Sungjin | Senscomm |
| TGbn (MAC) | 3/28 | Patil, Abhishek | Qualcomm Incorporated |
| TGbn (MAC) | 3/28 | Petrick, Albert | InterDigital, Inc. |
| TGbn (MAC) | 3/28 | Quan, Yingqiao | Spreadtrum Communications (Shanghai) Co., Ltd.; Unisoc (Shanghai) Technologies Co., Ltd. |
| TGbn (MAC) | 3/28 | Rosenzweig Arbel, Gil | Renesas Electronics Corporation |
| TGbn (MAC) | 3/28 | Roy, Rishabh | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 3/28 | Ryu, Kiseon | NXP Semiconductors |
| TGbn (MAC) | 3/28 | Sato, Takuhiro | SHARP CORPORATION |
| TGbn (MAC) | 3/28 | Seo, Sangho | Broadcom Corporation |
| TGbn (MAC) | 3/28 | Son, Ju-Hyung | WILUS Inc. |
| TGbn (MAC) | 3/28 | Talarico, Salvatore | Sony Corporation |
| TGbn (MAC) | 3/28 | Tseng, Yen Hsiung | MediaTek Inc. |
| TGbn (MAC) | 3/28 | Tsujimaru, Yuki | Canon |
| TGbn (MAC) | 3/28 | Urabe, Yoshio | Panasonic Holdings Corporation |
| TGbn (MAC) | 3/28 | Wang, Lei | Futurewei Technologies/Huawei Technologies |
| TGbn (MAC) | 3/28 | Wang, Xiaofei | InterDigital, Inc. |
| TGbn (MAC) | 3/28 | Wullert, John | Peraton Labs |
| TGbn (MAC) | 3/28 | Xia, Qing | Sony Corporation |
| TGbn (MAC) | 3/28 | Xu, Yanchao | Amlogic |
| TGbn (MAC) | 3/28 | Xu, Yue | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 3/28 | Yan, Zhongjiang | Northwestern Polytechnical University |
| TGbn (MAC) | 3/28 | Yang, Jay | ZTE Corporation |
| TGbn (MAC) | 3/28 | Yang, Jimmy | Moxa Inc. |
| TGbn (MAC) | 3/28 | Yee, James | MediaTek Inc. |
| TGbn (MAC) | 3/28 | Yoon, Yelin | LG ELECTRONICS |
| TGbn (MAC) | 3/28 | Zhang, John | GuangDong OPPO Mobile Telecommunications Corp., Ltd. |
| TGbn (MAC) | 3/28 | Zhao, Yue | Huawei Technologies Co., Ltd |

1. The Chair reminds that the agenda can be found in [11-24/0633r1](https://mentor.ieee.org/802.11/dcn/24/11-24-0633-01-00bn-mar-may-tgbn-teleconference-agenda.docx). The Chair asks for the comments about the agenda.

* No comments

1. Technical submissions – Channel Access plus Coexistence:
2. [24/0090](https://mentor.ieee.org/802.11/dcn/24/11-24-0090-01-00bn-protected-low-latency-communications-for-mlo.pptx) Protected Low Latency Communications for MLO Serhat Erkucuk (Offino)

Discussion:

* C: what happems to NAV at other STAs if no CTS but get the RTS? No CF-End?
* A: If there is no CTS then there would be a timeout after which they reset their NAV
* C: what new is being proposed here relative to baseline 11be ?
* A: We are talking about possibilities based on baseline. But just want to make sure that the signaling is available. The baseline may need slight modification
* C: Go to option 1, slide 6. Is this already possible in .11be or is there a need for modification in .11bn?
* A: Yes, it is possible in baseline
* C: Why is the CTS NAV is much longer than the Data?
* A: The AP may set it longer depending on the situation

1. [24/0119](https://mentor.ieee.org/802.11/dcn/24/11-24-0119-00-00bn-enhanced-hcca-for-controlled-uhr-scenarios.pptx) Enhanced HCCA for Controlled UHR Scenarios Salvatore Talarico (Sony)

Discussion:

* C: How do you manage this?
* A: There will be a coordinator and the control will given to the AP. We dont claim the scenario works for all environments but works for controlled environment with periodic traffic. The conditions will be set such that no collision swill happen
* C: So the starting STA will have better chance of access
* A: Yes, to avoid it, it is better to give controlling position, with the AP having the starting. But we can discuss details. The main goal is to reduce congestion. It doesnt matter who starts but every STA will have the fair share of the access

1. [24/0467](https://mentor.ieee.org/802.11/dcn/24/11-24-0467-00-00bn-hip-edca-follow-up-legacy-impact.pptx) Hip edca follow up legacy impact Dmitry Akhmetov (Intel)

Discussion

* C: The first signal is the way for the LL STAs to preempt to adjust the access. This may be agressive. Is there any way of overarching way to limit the agressiveness
* A: Yes, we will need to have some rules otherwise it wont work. Since the DS signal is sent only after a collision and since it is only used for LL. It appears that if it fails once then it appears to be fair. Based on the traffic characteristics even LL can wait for one or two transmissions
* A: This is indeed preemption but different from TXOP preemption. The issue is not preemption but latency handling. But if TXOP is not preemptable then you will fall back to latency. But if you are getting delayed then you have to find another way to improve access
* C: Slide 13: It says half is VO, then the other one uses DS?
* A: Yes
* C: DS will always beat VO
* A: Yes
* C: For longer frame sizes how to explain the difference
* A: For longer frame sizes with higher number of BSS, the network is close to capacity. But VO 99% percentle is much higher than DS.
* A: if we introduce DS then the performance of VO is improved compared to only VO
* C: What is the throughput impact when DS is introduced?
* A: Nothing comes for free. If you start prioritizing some traffic the other gets impacted. For lighter load the impact is not much but for higher loads it will start affecting best effort
* C: After certain number of collisions can the AP adjust the windows to improve
* A: It is not quite that way. After the first collision you will be eligible to send DS. If you want to extend the mechanism to best effort, for a high value of CW and after successful transmission will reset the CW. We are also looking at further to understand how the parameters should be set
* C: No effect on legacy?
* A: Yes, that is what we see
* C: How does it happen if some are accessing the channel more frequently
* A: It is not really frequent. If the network is close to saturation then VO will start getting affected
* C: But use of exponential backoff may be overcompensating for the collisions
* C: The full-buffer best-effort traffic, what is the reason for choosing TXOP to be uniformly distributed
* A: Just to introduce randomness. If all TXOPs are 5 ms then the effects may be different
* C: But whenever best effort traffic, there will be large number of frames, but we should look at 5 ms and look at the performance

1. [24/0094](https://mentor.ieee.org/802.11/dcn/24/11-24-0094-00-00bn-probe-before-talk-and-unsolicited-unavailability-announcement-for-co-ex-management.pptx) Probe-before-Talk and Unsolicited Unavailability Announcement for Co-ex Management Qi Wang (Apple, Inc.)

Discussion

* C: Have you thought about how to scale this for MU transmissions? Is the assumption that the coex will occupy the entire bandwidth? If it is only partial, can we do something about it?
* A: For MU, details need to be work up. Yes, coex does not have to be entire bandwidth and we can extend to others. But our experience is that the impact is on full band, but we can study further
* C: When you are sending PBT-RTS you may be aware of the truncated txop, but AP may not know this value
* A: here the model is that the AP has data to send you and STA based on its coex scenarios, it knows that when it will not be available
* C: So, this is not event based but scheduled-based
* A: Yes, you dont know too-advanced but sometime before
* C: if you know in advance, you can use the second proposal
* A: yes
* C: You said that there are two types of traffic: periodic and aperiodic. How can the STA knows the time and duration of the coex event caused by the aperiodic traffic
* A: The STA does not know the probing time. But if the AP has data then the STA will encode accordingly
* A: on the question of how the STA know about the upcoming coex event, there will be internal device communication which will let STA know about the event
* C: In the simulation, if you fail, you try to retransmit to this STA again and again until successful?
* A: Subject to the retry limit
* C: You switch to another STA after reaching the retry limit. If the STA can inform the AP about possible coexistence events and if a smarter AP can switch to another STA and get back to this STA. This can improve the performance
* A: This is what we are saying. If the STA can indicate of the event to the AP then performance can be improved
* C: But if all STAs indicatig of the upcoming event then the AP can have smarter scheduling
* C: There is a possibility that the STA may not be able to provide it since the channel is busy
* A: If you cannot send it, you cannot
* C: But this will have the AP transmitting even if the STA is not available

1. [23/2078](https://mentor.ieee.org/802.11/dcn/23/11-23-2078-04-00bn-coex-enhancement-for-xr-use-cases.pptx) Coex Enhancement for XR Use Cases Guoqing Li (Meta)

* Delayed to the next meeting

1. AoB: No time for it
2. Adjourn: Adjourned at 12:00 noon

# Monday, 8 April 2024, 7:00pm – 9:00pm ET (TGbn MAC ad hoc conference call)

Chairman: Xiaofei Wang (Interdigital)

Secretary: Srinivas Kandala (Samsung)

This meeting took place using a webex session.

**Introduction**

1. The Chair (Xiaofei, Interdigital) calls the meeting to order at 7:01pm EDT. The Chair introduces himself and the Secretary, Srini (Samsung)
2. The Chair goes through the 802 and 802.11 IPR policy and procedures and asks if there is anyone that is aware of any potentially essential patents.
   1. Nobody responds.
3. The Chair goes through the IEEE copyright policy and no comments received on the floor
4. The Chair recommends using IMAT for recording the attendance.
   * Please record your attendance during the conference call by using the IMAT system:
     1. 1) login to [imat](https://imat.ieee.org/attendance), 2) select “802.11 Telecons (<Month>)” entry, 3) select “C/LM/WG802.11 Attendance” entry, 4) click “TGbn <MAC/PHY/Joint> conference call that you are attending.
   * If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to Jeongki Kim ([jeongki.kim.ieee@gmail.com](mailto:jeongki.kim.ieee@gmail.com)), Xiaofei Wang ([xiaofei.wang@interdigital.com](mailto:xiaofei.wang@interdigital.coma)) and Srinivas Kandala ([srini.k1@samsung.com](mailto:srini.k1@samsung.com))

**Recorded attendance through Imat and e-mail:**

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbn (MAC) | 4/8 | Abouelseoud, Mohamed | Apple Inc. |
| TGbn (MAC) | 4/8 | Adachi, Tomoko | TOSHIBA Corporation |
| TGbn (MAC) | 4/8 | Aio, Kosuke | Sony Corporation |
| TGbn (MAC) | 4/8 | Ajami, Abdel Karim | Apple Inc. |
| TGbn (MAC) | 4/8 | Asterjadhi, Alfred | Qualcomm Incorporated |
| TGbn (MAC) | 4/8 | Baykas, Tuncer | Ofinno |
| TGbn (MAC) | 4/8 | Bian, Tong | Panasonic |
| TGbn (MAC) | 4/8 | Carney, William | Sony Group Corporation |
| TGbn (MAC) | 4/8 | Cha, Dongju | LG ELECTRONICS |
| TGbn (MAC) | 4/8 | CHENG, yajun | Xiaomi Communications Co., Ltd. |
| TGbn (MAC) | 4/8 | Chisci, Giovanni | Qualcomm Technologies, Inc |
| TGbn (MAC) | 4/8 | Choi, JinHo | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/8 | Chu, Liwen | NXP Semiconductors |
| TGbn (MAC) | 4/8 | Dong, Xiandong | Xiaomi Communications Co., Ltd. |
| TGbn (MAC) | 4/8 | Ekkundi, Manasi | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/8 | Erkucuk, Serhat | Ofinno |
| TGbn (MAC) | 4/8 | Fan, Shuang | Sanechips Technology Co., Ltd. |
| TGbn (MAC) | 4/8 | Fang, Yonggang | MediaTek Inc. |
| TGbn (MAC) | 4/8 | Fischer, Matthew | Broadcom Corporation |
| TGbn (MAC) | 4/8 | Fujimori, Yuki | Canon Research Centre France |
| TGbn (MAC) | 4/8 | Ghosh, Chittabrata | Apple Inc. |
| TGbn (MAC) | 4/8 | Goto, Fumihide | DENSO CORPORATION |
| TGbn (MAC) | 4/8 | Gu, Jaheon | Samsung Electronics Co., Ltd. |
| TGbn (MAC) | 4/8 | Gu, Junrong | Clourney Semiconductor |
| TGbn (MAC) | 4/8 | Gu, Xiangxin | Spreadtrum Communications (Shanghai) Co., Ltd. |
| TGbn (MAC) | 4/8 | Gupta, Binita | Cisco Systems, Inc. |
| TGbn (MAC) | 4/8 | Ha, Taeyoung | Samsung Electronics Co., Ltd. |
| TGbn (MAC) | 4/8 | Haider, Muhammad Kumail | Meta Platforms, Inc. |
| TGbn (MAC) | 4/8 | Ho, Duncan | Qualcomm Technologies, Inc |
| TGbn (MAC) | 4/8 | Hsu, Yung Lin | National Taiwan University |
| TGbn (MAC) | 4/8 | Hu, Chunyu | Spreadtrum Communications US |
| TGbn (MAC) | 4/8 | HUANG, CHIHAN | MediaTek Inc. |
| TGbn (MAC) | 4/8 | Huang, Po-Kai | Intel Corporation |
| TGbn (MAC) | 4/8 | Kakani, Naveen | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn (MAC) | 4/8 | Kandala, Srinivas | Samsung |
| TGbn (MAC) | 4/8 | Kim, Geon Hwan | LG ELECTRONICS |
| TGbn (MAC) | 4/8 | Kim, Jeongki | Ofinno |
| TGbn (MAC) | 4/8 | Kim, Sang Gook | LG ELECTRONICS |
| TGbn (MAC) | 4/8 | Kishida, Akira | NTT |
| TGbn (MAC) | 4/8 | Klein, Arik | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/8 | Lee, Hong Won | LG ELECTRONICS |
| TGbn (MAC) | 4/8 | Levy, Joseph | InterDigital, Inc. |
| TGbn (MAC) | 4/8 | Li, Weiyi | Spreadtrum Communication USA, Inc |
| TGbn (MAC) | 4/8 | li, yan | ZTE Corporation |
| TGbn (MAC) | 4/8 | Lu, kaiying | MediaTek Inc. |
| TGbn (MAC) | 4/8 | Lu, Liuming | Guangdong OPPO Mobile Telecommunications Corp.,Ltd. |
| TGbn (MAC) | 4/8 | LU, Yuxin | TCL Industries |
| TGbn (MAC) | 4/8 | Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| TGbn (MAC) | 4/8 | Ma, Yongsen | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/8 | Magrin, Davide | Meta Platforms Inc. |
| TGbn (MAC) | 4/8 | Mehrnoush, Morteza | Apple Inc. |
| TGbn (MAC) | 4/8 | Montemurro, Michael | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/8 | Morioka, Hitoshi | SRC Software |
| TGbn (MAC) | 4/8 | Mutgan, Okan | Nokia |
| TGbn (MAC) | 4/8 | NANDAGOPALAN, SAI SHANKAR | Synaptics Inc |
| TGbn (MAC) | 4/8 | Neishaboori, Azin | General Motors Company |
| TGbn (MAC) | 4/8 | Noh, Si-Chan | Newracom Inc. |
| TGbn (MAC) | 4/8 | Ouchi, Masatomo | Canon |
| TGbn (MAC) | 4/8 | Palayur, Saju | Maxlinear Inc |
| TGbn (MAC) | 4/8 | Park, Sungjin | Senscomm |
| TGbn (MAC) | 4/8 | Patil, Abhishek | Qualcomm Incorporated |
| TGbn (MAC) | 4/8 | Petrick, Albert | InterDigital, Inc. |
| TGbn (MAC) | 4/8 | Quan, Yingqiao | Spreadtrum Communications (Shanghai) Co., Ltd.; Unisoc (Shanghai) Technologies Co., Ltd. |
| TGbn (MAC) | 4/8 | Roy, Rishabh | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/8 | Ryu, Kiseon | NXP Semiconductors |
| TGbn (MAC) | 4/8 | Sato, Takuhiro | SHARP CORPORATION |
| TGbn (MAC) | 4/8 | Seo, Sangho | Broadcom Corporation |
| TGbn (MAC) | 4/8 | Serizawa, Kazunobu | Advanced Telecommunications Research Institute International(ATR) |
| TGbn (MAC) | 4/8 | Shafin, Rubayet | Samsung Research America |
| TGbn (MAC) | 4/8 | Talarico, Salvatore | Sony Corporation |
| TGbn (MAC) | 4/8 | Taori, Rakesh | Infineon Technologies |
| TGbn (MAC) | 4/8 | Urabe, Yoshio | Panasonic Holdings Corporation |
| TGbn (MAC) | 4/8 | Wang, Lei | Futurewei Technologies/Huawei Technologies |
| TGbn (MAC) | 4/8 | Wang, Qi | Apple Inc. |
| TGbn (MAC) | 4/8 | Wang, Xiaofei | InterDigital, Inc. |
| TGbn (MAC) | 4/8 | Wullert, John | Peraton Labs |
| TGbn (MAC) | 4/8 | Xia, Qing | Sony Corporation |
| TGbn (MAC) | 4/8 | Xu, Yanchao | Amlogic |
| TGbn (MAC) | 4/8 | Xu, Yue | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/8 | Yang, Jay | ZTE Corporation |
| TGbn (MAC) | 4/8 | Yang, Jimmy | Moxa Inc. |
| TGbn (MAC) | 4/8 | Yoon, Yelin | LG ELECTRONICS |
| TGbn (MAC) | 4/8 | Zhang, Maolin | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/8 | Zhao, Yue | Huawei Technologies Co., Ltd |

1. The Chair reminds that the agenda can be found in [11-24/0633r2](https://mentor.ieee.org/802.11/dcn/24/11-24-0633-02-00bn-mar-may-tgbn-teleconference-agenda.docx). The Chair asks for the comments about the agenda.

* No comments received

1. There are no announcements
2. Technical submissions – Coexistence:
3. [23/2078](https://mentor.ieee.org/802.11/dcn/23/11-23-2078-04-00bn-coex-enhancement-for-xr-use-cases.pptx) Coex Enhancement for XR Use Cases Guoqing Li (Meta)

Discussion:

* This presentation was made by Kumail Haider from Meta
* C: On BA agreement – poor link
* A: We may be able to negotiate at a different level and not rely on BA agreements. However, we the BA agreements be made and that could be something the STA can do
* C: Slide 5, you want to control the DL packet duration. If you control the PPDU duration and if you have a rule for TXOP duration, then the AP may use a long TXOP, would you reach your target?
* A: That is fair argument. BA agreement can control the PPDU duration but TXOP duration can be another issue. The proposal is not limited to this and there can be based on silence period and the AP may stop transmitting
* C: Slide 6, if the STA indicates to the AP the periods of unavailability period, do you really the other techniques. Not clear about the relation
* A; There could be different levels. The operation may be impacted by coex when STA is operating. There are other techniques also defined such as control frame. I think that these are complementary
* C: There are different topics and focus are being discussed. We can talk about the details offline. But the intention here is to signal to the AP that the effects are because of coexistence and not channel issues
* A: That is correct to ensure operation during coexistence
* C: Is this like U-APSD, APSD etc?
* A: Yes, the idea is to capture through a schedule. The second part is that there are operational parameters that can be used if the STA is unable to capture the coexistence in a periodic manner
* C: You mentioned P2P several times and you want to build on the availability. The modification of the parameters is already there and you want to minimize the impact when there is other activity and it all makes sense. I assume you are thinking of mixing them, you may know the unavailability period when you want to use the modification of parameters.
* A: Yes, but even if unavailability is known, there are other aspects that are needed.
* C: There is a comment, ”Was document 2078 presented in the IEEE 802 CoEx group?”
* A: No

1. [24/0420](https://mentor.ieee.org/802.11/dcn/24/11-24-0420-00-00bn-enabling-flexible-coexistence-operation.pptx) Enabling Flexible Coexistence Operation Guogang Huang (Huawei)

Discussion:

* C: Slide 8, you mentioned radio type may be reported to help the AP make decision on scheduling. But the AP may not know what 5G or NR. Isnt it better to report the characteristic, such as operational channel, power, schedule etc.
* A: I agree that more information would be better if the other information is available
* C: Slide 5, How can you have timely reporting using cross-link signaling if the other link is busy
* A: The intention is to only report the new co-existence mechanism if the affected link cannot send that informatio
* C: Slide 4, the language used implies that these co-existence mechanisms are exclusive. For example, what do you think about Soft AP?
* A: The coexistence is for Wi-Fi radio and this information can be sent internally
* C: The question is related to Soft AP MLD
* A: This presentation is focused on non-AP MLD, but think that they are applicable to Soft AP MLD
* C: Coexistence is important, but we should be mindful of the complexity. But I am concerned about the complexibity with the state machines states. We need to ask ourselves what the problem we want to solve. Distll into smaller things, such as as ICF and ICR. The other thing is that if I dont have the short-term visibility then I may go in the long term view with a more forgiving way – such as providing a hint for RA
* A: By doing this we can change dynamically and be more flexible in satisfying the co-existence request
* C: But isnt it better to have a simple request such as i will not be available for the next 3 ms. The complexity comes if you want to address each usercase. It is better to distill into smaller things.
* C: Similar comment as below. We definitely need short term for aperiodic and long term for periodic and the unavailability period. For the unavailability period, we will need to have add, remove, suspend and revise. On the availability, it is either both TX and RX or none. But only TX or RX are harder to operate as Wi-Fi always has RX following TX
* A: I observed that for non-Wi-Fi radio there is no ACK mechanism and the transmission can be one-directional. The Wi-Fi radio can use this information for its own transmissions and make it unavailable for RX but can transmit during the indicated SP
* C: We can take it offline but it is a more complicated

1. [24/0436](https://mentor.ieee.org/802.11/dcn/24/11-24-0436-00-00bn-sp-based-in-device-coexistence.pptx) SP-based-in-device-coexistence Jason Y. Guo (Huawei)

Discussion

* C: To summarize, the proposal is for the definiton of the Service period and that no ICR means no transmisisons allowed.
* A: Yes, this is correct
* C: Nothing is allowed during periodic and if it is not really periodic, then the quesiton is if SP is needed a concept because you are unavailable then you can ask the AP to transmit ICF everytime. Can you confirm?
* A: There are two possibilities. The first one, you are sure of the other technologies but you may not need ICF, but there is unpredictable. Of course, the second one is to ensure that the other technology is not using it. If it not using, we can improve the Wi-Fi utilization and if we dont use it we may end up wasting the resource
* C: That is correct, ok.
* C: For EMLSR, is there something additional to ICF and ICR and ICF is needed anyway
* A: The ICF and ICR are for different purposes. ICF and ICR may need to carry parameters for both purposes (EMLSR and coexistence)
* C: Do you have any such?
* A: Have not thought about the details. For coexistence we have not defined ICF and ICR and we shoul consider EMLSR paramters as we design
* C: Basically we are setting up these SPs. Are you expecting the behavior to be different? If they are similar to BT, we can set it up in the MAC capabilities or do you think we need to have something more
* A: The main purpose for ICF and ICR is to indicate the availability and that needs to be indicated

1. [24/0494](https://mentor.ieee.org/802.11/dcn/24/11-24-0494-02-00bn-in-device-coexistence-follow-up.pptx) In-device coexistence follow up Liwen Chu (NXP)

Discussion

* C: Question about BSRP and multi-STA sequencing. What is the motivation to consider multi-STA bitmap?
* A: Just a container, anything can be chosen. What should we choose?
* C: No preference but what should we select
* A: if it is EMLSR, we need BSRP trigger and should restrict and have unavailability time
* Q: Slide 12, what do you mean HE control field in QoS Null should be variable length?
* A: Right now we can only carry 26 bits and these 26 bits may not be enough. We want to remove this restriction as we can have more a-control fields
* C: Do you mean we will have a sort of new HT Control?

1. [24/0509](https://mentor.ieee.org/802.11/dcn/24/11-24-0509-01-00bn-thoughts-on-in-device-coexistence-and-p2p-for-11bn.pptx) Thoughts on in-device coex. and P2P for 11bn Rubayet Shafin (Samsung)

Discussion

* C: You mentioned the non-Wi-Fi operation between STAs? If it is non-Wi-Fi why should the AP known about it?
* A: They could be doing UWB ranging or something else. The STA may go off-channel to accomplisth it
* D: Do you need to be in the same band of operation as Wi-Fi?
* A: We have coex issue because they are on different bands
* C: slide 7, can you explain the two boxes?
* A: first box is for downlink. After certain time the initial TXOP has to end early and then other technology should be used
* C: This kind of technology is in CTS?
* A: Yes – the CTS indicates that the initial TXOP should be ended at t1 and after t1 the TXOP would be used for other technology
* C: Do you have any suggested communication between STA1 and STA2, where the first STA1 is authorized to talk for STA2 for allocation of resources
* A: This kind of cross mechanism can be used. There are some examples in the appendix
* C: But then you will have extra authorization and the overhead may not be justified.

1. AoB: None
2. Adjourn: Adjourned at 9:00 PM

# Thursday, 11 April 2024, 10:00am – 12:00noon ET (TGbn MAC ad hoc conference call)

Chairman: Xiaofei Wang (Interdigital)

Secretary: Srinivas Kandala (Samsung)

This meeting took place using a webex session.

**Introduction**

1. The Chair (Xiaofei, Interdigital) calls the meeting to order at 10:01am EDT. The Chair introduces himself and the Secretary, Srini (Samsung)
2. The Chair goes through the 802 and 802.11 IPR policy and procedures and asks if there is anyone that is aware of any potentially essential patents.
   1. Nobody responds.
3. The Chair goes through the IEEE copyright policy and no comments received on the floor
4. The Chair recommends using IMAT for recording the attendance.
   * Please record your attendance during the conference call by using the IMAT system:
     1. 1) login to [imat](https://imat.ieee.org/attendance), 2) select “802.11 Telecons (<Month>)” entry, 3) select “C/LM/WG802.11 Attendance” entry, 4) click “TGbn <MAC/PHY/Joint> conference call that you are attending.
   * If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to Jeongki Kim ([jeongki.kim.ieee@gmail.com](mailto:jeongki.kim.ieee@gmail.com)), Xiaofei Wang ([xiaofei.wang@interdigital.com](mailto:xiaofei.wang@interdigital.coma)) and Srinivas Kandala ([srini.k1@samsung.com](mailto:srini.k1@samsung.com))

**Recorded attendance through Imat and e-mail:**

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbn (MAC) | 4/11 | Aio, Kosuke | Sony Corporation |
| TGbn (MAC) | 4/11 | Ajami, Abdel Karim | Apple Inc. |
| TGbn (MAC) | 4/11 | Baek, SunHee | LG ELECTRONICS |
| TGbn (MAC) | 4/11 | Baykas, Tuncer | Ofinno |
| TGbn (MAC) | 4/11 | Bian, Tong | Panasonic |
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| TGbn (MAC) | 4/11 | Byeon, Seongho | SAMSUNG ELECTRONICS |
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| TGbn (MAC) | 4/11 | Chu, Liwen | NXP Semiconductors |
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| TGbn (MAC) | 4/11 | Gu, Junrong | Clourney Semiconductor |
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| TGbn (MAC) | 4/11 | Zhang, John | GuangDong OPPO Mobile Telecommunications Corp., Ltd. |
| TGbn (MAC) | 4/11 | Zhang, Maolin | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/11 | Zhao, Yue | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/11 | Zhou, Pei | TCL |

1. The Chair reminds that the agenda can be found in [11-24/0633r6](https://mentor.ieee.org/802.11/dcn/24/11-24-0633-06-00bn-mar-may-tgbn-teleconference-agenda.docx). The Chair asks for the comments about the agenda.

* No comments received

1. There are no announcements
2. Technical submissions – Preemption
3. [24/0442](https://mentor.ieee.org/802.11/dcn/24/11-24-0442-01-00bn-latency-reduction-for-immediate-real-time-application-traffic-transmission.pptx) Lat. reduction for immediate real-time application traffic TX Yue Qi\*

Discussion

* C: Consider this kind of multiplexing, what is the direction of the packet? Uplink or downlink or both?
* A: It is for both directions. For legacy we can make changes and they dont have to contend and one of the RUs.
* C: How to deal with contention? It allows multiple stations to transmit at the same time. How do you solve the collision issue?
* A: Multiple options – multiple Rus – consider some of the preemption part
* C:Good to have details to understand how to solve
* C:This dedicated RU you are mentioning? Is it a fixed location or is it the proposal and the STAs would know where it is? How are multiple STAs use it?
* A: We can have a general discussion. We can indicate it in the trigger frame. On the multiple STAs we are considering
* C: Very similar question as others on multiple STAS.
* C: Slide 4. When the low-latency packet is inserted, is this applicable to both uplink and downlink STA
* A: Yes
* C: we have intra PPDU power save. For downlink, is the packet inserted in between? If so, should STAs wake up in the middle of the PPDU
* C: The major problem is power save. Generally assuming that the STAs will not do power save and keep themselves up for the entire transmission is a big coneern. For downlink PPDU, how can we enable uplink?
* A: No, it is only downlink-downlink or uplink-uplink insertion
* C: Downlink-uplink and uplink-downlink is more interesting. For downlink-downlink or uplink-uplink as there are multiple links it can be handled easily. But for downlink-uplink and uplink-downlink there should be a way to preempt

1. [24/0091](https://mentor.ieee.org/802.11/dcn/24/11-24-0091-01-00bn-enhanced-scheduling-method-for-low-latency-traffic-follow-up.pptx) Enhanced Scheduling Method for Low Lat. Traffic–Follow Up Serhat Erkucuk

Discussion

* C: Slide 10, Q1 – if there is congestion this will ensure more reliable transmission. I want to undersand how this is more reliable
* C: Instead of sending urgent TX request, can the STA not do RTS/CTS?
* A: But STA needs allocation for a P2P
* C: Slide 7, I see that STA1 has TXOP and STA1 requests AP to allocate TXOP. Is my understanding correct?
* A: No, from the point MRTT is being sent AP has the TXOP
* C: in that case, why should the STA send the urgent request and not just send PPDUs?
* A: Yes, it could be done differently, but here the STA is trying to update the QoS characteristics element in the SCS. That is why it may be better to have this
* C: In the diagram the Frame request and MRTT in the same TXOP?
* A: Starting from MRTT it is AP TXOP
* C: But before sending the MRTT the AP needs to contend the channel? Then how is the STA1 transmitting the first frame
* A: STA1 may not have enough time to transmit everything it will send a frame to the AP
* C: But usually low-latency traffic is a small packet. If you use the use case to that and if there is lot of other data this may not happen
* A: Depending on the length this is neeeded
* C: Thanks. We need to evaluate the method
* C: In Slide 8, if the urgent transmission request from STA 1 is rejected because the AP is currently managing an urgent transmission from STA 2, does STA 1 have to endure a back-off period and resend another urgent transmission request? Or will the AP automatically schedule STA 1 after it finishes with STA 2?
* A: It is upto the AP to do that
* C: Similar questions as others asked. It is not clear if the STA has the TXOP, why cannot send the urgent traffic. The scenario may be that there is more traffic and not enough time to send, can you clarify the scneario?
* A: Yes, that is the case
* C: is the frame request SCS request?
* A: Could be SCS request or Null frame or other type of frames that can request AP to do allocation
* C: Instead of frame rquest, probably sending a short QoS Data frame with the BSR parameters and indicate that you have more data. Did you look at the existing mechanisms and what is the gap that is not met today.
* A: That could be oneway but the STA may still have higher priority traffic to transmit and it may want more time from the AP
* C: Thsi could be covered with the existing options and we need to look at what needs to be done

1. [24/0131](https://mentor.ieee.org/802.11/dcn/24/11-24-0131-00-00bn-signaling-of-preemption.pptx) Signaling of Preemption Insun Jang

Discussion

* C: Any plans to run the straw polls today?
* A: No
* C: For such proposal, I have a fundamental question: Once the AP is done with the DL transmissions that intended to do, for which it obtained the TXOP in the first place, why not give up the channel after that? Why ask if anyone has LL traffic? Why “hoard”? Whoever has LL traffic can contend with LL contention parameters? Why make it more centralized? Isnt it fair to release the channel and others contend for the channel
* A: Present target is to have the AP schedule. But sometimes the STAs may not get a chance to transmit and in this case the AP can help improve the latency. Also, the STA is suffering from long txop from others and channel conditions and I think the TXOP holder can help the STA in transmitting low-latency traffic
* C: The AP does not have the view of what STA needs and if the AP transmits its low-latency special trigger frame and leads to overhead. If the special trigger frame is not sent often enough then the STAs with low latency suffer
* A: It is the APs decisions. AP may know the traffic patterns and the AP can decide when to preempt and decide the parameters
* C: slide 10. When the AP send the BA with PR the TXOP holder is not changing
* A: It is not chanigng the TXOP holder but lending the TXOP to the AP
* C: slide 14, can you elaborate
* A: STA triggers the AP to transmit the LLTs and
* C: slide 6, you are saying that BSRP by the AP and soliciting BSR and it determines if the STA has LLT
* A: Yes, we can use the mechanism to inform the AP about the existence of the LLT
* C: Is this possible today? What is the gap you see?
* A: The gap is having dedicated RA-RU
* C: slide 10, STA1 already support preemption so we may not need additional indication (the second one in the slide)?
* A: Here STA1 initially does not knowif AP has LLT
* C: After the first PR transmission the STA can allow the AP to send LLT before the soliciting the PR

1. [24/0168](https://mentor.ieee.org/802.11/dcn/24/11-24-0168-00-00bn-txop-preemption-in-11bn.pptx) TXOP preemption in 11bn Kiseon Ryu

Discussion

* C: SP will be run after harmonizations
* C: Slide 4, if AP take control of the STAs TXOP with a PR indication then it is not fair.
* A: This is simplest case where the AP has LLT with preemption, but we can discuss further to cover low-latency for uplink
* C: In slide 5, there is a dotted line, do you think TXOP is required or not required.
* A: I dotted to cover either EDCA or just use trigger
* C: Is it optional?
* A: depends how the rules are defined. We could exclude contention based, but if we allow contention based we do not need trigger
* C: Slide 5, does it mean that the AP should use PIFS instead of SIFS, which will reduce the bandwidth
* A: Depends on when PR is allowed or not
* C: PR can come from multiple stations. There is no confirmation if the AP has received? If you dont do the trigger frame how would the STAs would transmit
* A: discuss it offline
* C: Slide 4, how does it know that it should small transmissions and create the LLT transmit opportunities to the AP
* A: It is all based on negotiation
* C: Should the AP let the STAs know that they should split the PPDUs and create the opportunities
* A: Yes, they should use smaller PPDUs
* C: Slide 5, it appaers that there is lot of overhead. Can you comment on it?
* A: Regarding the overhead, the contention based mechanism has less overhead, so there are some pros and cons
* C: slide 5, for the PR, the STA does not identify themselves. Is it like CTS
* A: Yes
* C: Case 3, any update on it?
* A: we will need think about it

1. [24/0390](https://mentor.ieee.org/802.11/dcn/24/11-24-0390-00-00bn-a-uniform-procedure-for-preemption.pptx) A Uniform Procedure for Preemption Yunbo Li

Discussion

* C: Slide 4, no response frame?
* A: expect the response frame before PR, but did not want to clutter. Will have a follow-up contribution
* When will you run the SP?
* Need to collect more opinion

1. AoB: None
2. Adjourn: Adjourned at 12:00 noon

**References:**