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 11
* Rev3: Added the minutes from the telephone conference held on April 22 and 25

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), Xiaofei Wang (xiaofei.wang@interdigital.com) and Srinivas Kandala (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), Xiaofei Wang (xiaofei.wang@interdigital.com) and Srinivas Kandala (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), Xiaofei Wang (xiaofei.wang@interdigital.com) and Srinivas Kandala (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 |
| TGbn (MAC) | 4/11 | Carney, William | Sony Group Corporation |
| TGbn (MAC) | 4/11 | Cha, Dongju | LG ELECTRONICS |
| TGbn (MAC) | 4/11 | Chen, Junbin | TP-Link Corporation Limited |
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| TGbn (MAC) | 4/11 | Eiger, Martin | Peraton Labs |
| TGbn (MAC) | 4/11 | Erkucuk, Serhat | Ofinno |
| TGbn (MAC) | 4/11 | Fan, Shuang | Sanechips Technology Co., Ltd. |
| TGbn (MAC) | 4/11 | Fang, Yonggang | MediaTek Inc. |
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| TGbn (MAC) | 4/11 | Hasabelnaby, Mahmoud | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
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| TGbn (MAC) | 4/11 | Kain, Carl | USDOT; Noblis |
| TGbn (MAC) | 4/11 | Kalamkar, Sanket | Qualcomm Incorporated; Qualcomm Technologies, Inc |
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| TGbn (MAC) | 4/11 | Lu, Liuming | Guangdong OPPO Mobile Telecommunications Corp.,Ltd. |
| TGbn (MAC) | 4/11 | LU, Yuxin | TCL Industries |
| TGbn (MAC) | 4/11 | Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| TGbn (MAC) | 4/11 | Magrin, Davide | Meta Platforms Inc. |
| TGbn (MAC) | 4/11 | Max, Sebastian | Ericsson AB |
| TGbn (MAC) | 4/11 | Montemurro, Michael | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/11 | Mutgan, Okan | Nokia |
| TGbn (MAC) | 4/11 | Naik, Gaurang | Qualcomm Technologies, Inc |
| TGbn (MAC) | 4/11 | Namvar, Nima | Charter Communications |
| TGbn (MAC) | 4/11 | Nayak, Peshal | Samsung Research America |
| TGbn (MAC) | 4/11 | Neishaboori, Azin | General Motors Company |
| TGbn (MAC) | 4/11 | Noh, Si-Chan | Newracom Inc. |
| TGbn (MAC) | 4/11 | Palayur, Saju | Maxlinear Inc |
| TGbn (MAC) | 4/11 | Patil, Abhishek | Qualcomm Incorporated |
| TGbn (MAC) | 4/11 | Qi, Yue | Samsung Research America |
| TGbn (MAC) | 4/11 | Quan, Yingqiao | Spreadtrum Communications (Shanghai) Co., Ltd.; Unisoc (Shanghai) Technologies Co., Ltd. |
| TGbn (MAC) | 4/11 | Rosenzweig Arbel, Gil | Renesas Electronics Corporation |
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| TGbn (MAC) | 4/11 | Ryu, Kiseon | NXP Semiconductors |
| TGbn (MAC) | 4/11 | Sato, Takuhiro | SHARP CORPORATION |
| TGbn (MAC) | 4/11 | Seo, Sangho | Broadcom Corporation |
| TGbn (MAC) | 4/11 | Taori, Rakesh | Infineon Technologies |
| TGbn (MAC) | 4/11 | Val, Inaki | MaxLinear, Inc. |
| TGbn (MAC) | 4/11 | VIGER, Pascal | Canon Research Centre France |
| TGbn (MAC) | 4/11 | Wang, Lei | Futurewei Technologies/Huawei Technologies |
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| TGbn (MAC) | 4/11 | Xu, Yanchao | Amlogic |
| TGbn (MAC) | 4/11 | Xu, Yue | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/11 | Yang, Jay | ZTE Corporation |
| TGbn (MAC) | 4/11 | Yoon, Yelin | LG ELECTRONICS |
| TGbn (MAC) | 4/11 | Zhang, Jiayi | Ofinno |
| 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 [11-24/0633r9](https://mentor.ieee.org/802.11/dcn/24/11-24-0633-09-00bn-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

# Monday, 22 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), Xiaofei Wang (xiaofei.wang@interdigital.com) and Srinivas Kandala (srini.k1@samsung.com)

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

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbn (MAC) | 4/22 | Adachi, Tomoko | TOSHIBA Corporation |
| TGbn (MAC) | 4/22 | Aio, Kosuke | Sony Corporation |
| TGbn (MAC) | 4/22 | Ajami, Abdel Karim | Apple Inc. |
| TGbn (MAC) | 4/22 | Baykas, Tuncer | Ofinno |
| TGbn (MAC) | 4/22 | Byeon, Seongho | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/22 | Cha, Dongju | LG ELECTRONICS |
| TGbn (MAC) | 4/22 | CHENG, yajun | Xiaomi Communications Co., Ltd. |
| TGbn (MAC) | 4/22 | Chisci, Giovanni | Qualcomm Technologies, Inc |
| TGbn (MAC) | 4/22 | Choi, JinHo | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/22 | Chu, Liwen | NXP Semiconductors |
| TGbn (MAC) | 4/22 | CHUN, JINYOUNG | LG ELECTRONICS |
| TGbn (MAC) | 4/22 | Cui, Yaoshen | TP-Link Corporation Limited |
| TGbn (MAC) | 4/22 | Das, Subir | Peraton Labs |
| TGbn (MAC) | 4/22 | Dong, Xiandong | Xiaomi Communications Co., Ltd. |
| TGbn (MAC) | 4/22 | Ekkundi, Manasi | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/22 | Erkucuk, Serhat | Ofinno |
| TGbn (MAC) | 4/22 | Fan, Shuang | Sanechips Technology Co., Ltd. |
| TGbn (MAC) | 4/22 | Fang, Yonggang | MediaTek Inc. |
| TGbn (MAC) | 4/22 | Fischer, Matthew | Broadcom Corporation |
| TGbn (MAC) | 4/22 | Fujimori, Yuki | Canon Research Centre France |
| TGbn (MAC) | 4/22 | Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbn (MAC) | 4/22 | Ghosh, Chittabrata | Apple Inc. |
| TGbn (MAC) | 4/22 | Goto, Fumihide | DENSO CORPORATION |
| TGbn (MAC) | 4/22 | Gu, Jaheon | Samsung Electronics Co., Ltd. |
| TGbn (MAC) | 4/22 | Gu, Xiangxin | Spreadtrum Communications (Shanghai) Co., Ltd. |
| TGbn (MAC) | 4/22 | Gupta, Binita | Cisco Systems, Inc. |
| TGbn (MAC) | 4/22 | Ha, Taeyoung | Samsung Electronics Co., Ltd. |
| TGbn (MAC) | 4/22 | Haider, Muhammad Kumail | Meta Platforms, Inc. |
| TGbn (MAC) | 4/22 | Hamilton, Mark | CommScope |
| TGbn (MAC) | 4/22 | Hasabelnaby, Mahmoud | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/22 | Helwa, Sherief | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn (MAC) | 4/22 | Hsu, Yung Lin | National Taiwan University |
| TGbn (MAC) | 4/22 | HUANG, CHIHAN | MediaTek Inc. |
| TGbn (MAC) | 4/22 | huang, kaikai | Nokia |
| TGbn (MAC) | 4/22 | Huang, Po-Kai | Intel Corporation |
| TGbn (MAC) | 4/22 | Inohiza, Hirohiko | Canon |
| TGbn (MAC) | 4/22 | Jang, Insun | LG ELECTRONICS |
| TGbn (MAC) | 4/22 | Jia, Boqi | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/22 | Kalamkar, Sanket | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn (MAC) | 4/22 | Kandala, Srinivas | Samsung |
| TGbn (MAC) | 4/22 | Kim, Geon Hwan | LG ELECTRONICS |
| TGbn (MAC) | 4/22 | Kim, Jeongki | Ofinno |
| TGbn (MAC) | 4/22 | Kim, Sang Gook | LG ELECTRONICS |
| TGbn (MAC) | 4/22 | Kim, Sanghyun | WILUS Inc. |
| TGbn (MAC) | 4/22 | Kishida, Akira | NTT |
| TGbn (MAC) | 4/22 | Kuo, Chih-Chun | MediaTek Inc. |
| TGbn (MAC) | 4/22 | Lee, Hong Won | LG ELECTRONICS |
| TGbn (MAC) | 4/22 | LEE, JOONSOO | Newracom Inc. |
| TGbn (MAC) | 4/22 | LEE, Mingyu | Samsung Electronics Co., Ltd. |
| TGbn (MAC) | 4/22 | Li, Weiyi | Spreadtrum Communication USA, Inc |
| TGbn (MAC) | 4/22 | Lou, Hanqing | InterDigital, Inc. |
| TGbn (MAC) | 4/22 | Lu, kaiying | MediaTek Inc. |
| TGbn (MAC) | 4/22 | Lu, Liuming | Guangdong OPPO Mobile Telecommunications Corp.,Ltd. |
| TGbn (MAC) | 4/22 | LU, Yuxin | TCL Industries |
| TGbn (MAC) | 4/22 | Ma, Yongsen | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/22 | Mehrnoush, Morteza | Apple Inc. |
| TGbn (MAC) | 4/22 | Monajemi, Pooya | Apple Inc. |
| TGbn (MAC) | 4/22 | Montemurro, Michael | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/22 | Morioka, Hitoshi | SRC Software |
| TGbn (MAC) | 4/22 | Mutgan, Okan | Nokia |
| TGbn (MAC) | 4/22 | Neishaboori, Azin | General Motors Company |
| TGbn (MAC) | 4/22 | Noh, Si-Chan | Newracom Inc. |
| TGbn (MAC) | 4/22 | Ouchi, Masatomo | Canon |
| TGbn (MAC) | 4/22 | Park, Minyoung | Intel Corporation |
| TGbn (MAC) | 4/22 | Park, Sungjin | Senscomm |
| TGbn (MAC) | 4/22 | Patil, Abhishek | Qualcomm Incorporated |
| TGbn (MAC) | 4/22 | Patwardhan, Gaurav | Hewlett Packard Enterprise |
| TGbn (MAC) | 4/22 | Petrick, Albert | InterDigital, Inc. |
| TGbn (MAC) | 4/22 | Roy, Rishabh | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/22 | Ryu, Kiseon | NXP Semiconductors |
| TGbn (MAC) | 4/22 | Sato, Takuhiro | SHARP CORPORATION |
| TGbn (MAC) | 4/22 | Seo, Sangho | Broadcom Corporation |
| TGbn (MAC) | 4/22 | Serizawa, Kazunobu | Advanced Telecommunications Research Institute International(ATR) |
| TGbn (MAC) | 4/22 | Talarico, Salvatore | Sony Corporation |
| TGbn (MAC) | 4/22 | Tanaka, Yusuke | Sony Corporation |
| TGbn (MAC) | 4/22 | Tseng, Yen Hsiung | MediaTek Inc. |
| TGbn (MAC) | 4/22 | Wang, Lei | Futurewei Technologies/Huawei Technologies |
| TGbn (MAC) | 4/22 | Wang, Qi | Apple Inc. |
| TGbn (MAC) | 4/22 | Wang, Xiaofei | InterDigital, Inc. |
| TGbn (MAC) | 4/22 | Wee, Gaius | Panasonic Holdings Corporation |
| TGbn (MAC) | 4/22 | Wullert, John | Peraton Labs |
| TGbn (MAC) | 4/22 | Xia, Qing | Sony Corporation |
| TGbn (MAC) | 4/22 | Xu, Yanchao | Amlogic |
| TGbn (MAC) | 4/22 | Xu, Yue | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/22 | Yang, Jay | ZTE Corporation |
| TGbn (MAC) | 4/22 | Yee, James | MediaTek Inc. |
| TGbn (MAC) | 4/22 | Yoon, Yelin | LG ELECTRONICS |
| TGbn (MAC) | 4/22 | Yukawa, Mitsuyoshi | Canon |
| TGbn (MAC) | 4/22 | Zhang, Jiayi | Ofinno |
| TGbn (MAC) | 4/22 | Zhang, Maolin | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/22 | Zhao, Yue | Huawei Technologies Co., Ltd |

1. The Chair reminds that the agenda can be found in [11-24/0633r9](https://mentor.ieee.org/802.11/dcn/24/11-24-0633-09-00bn-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. [24/0389](https://mentor.ieee.org/802.11/dcn/24/11-24-0389-00-00bn-preemption-for-low-latency.pptx) Preemption for Low Latency Mohamed Abouelseoud

Discussion

* C: In the preemption scenarios that you mentioned, are there any limitations on the access category/TID for transmissions?
* A: This can be discussed. It can be agreed upon uring set up in slide 7
* C: I understand and this can add flexibility
* C: It seems less like preemption but only enhancement to the existing TXOP as it is only between initiator and responder and looks like RDG or TXOP sharing. Question: slide 9 – code no 3; if a STA cannot continue to transmit in TXOP, then it should not be in the low-latency and unavailability
* A: Yes, this is a better RDG. We think 3rd party preemption is enabled and it is probelmatic – something that works or simple. If we assume that the AP knows the requirement of the low-latency through SCS, AP can request to preempt an uplink TXOP and schedule another STA. For code no 3 on slide 9 it can be along with unavailability
* C: It may be better to differentiate between this mechanism and RDG. Also, look at TXS, which is an alternative to RDG. The question is on the premise itself. How do things really work? All this only works if the devices are all Wi-Fi 8 STAs, but very likely it will be pre-wi-fi 8 devices. So if there is a comparison would help? Perhaps more agressive channel access is likely better
* A: we are not talking about accessing the channel. If the AP is trasmitting a long PPDU to the STA, the only way is to get out by having a way to make the PPDUs smaller and access the channel
* C: I am not sure if the gains are substantial if a third party cannot preempt. Your example does not illustrate a multi-link
* A: on the first one if there is an SCS, then the AP knows what the STA requirements are and can figure out a way to preempt. The only thing we are trying is to limit the number of STAs preempting.
* C: We have different requirements. Here we dont know if the STA has latency requirements and that is why we think we should have a way to inform the AP
* C: this seems as a protocol to request TXOP sharing via a flag on BA. Which in a way, can be considered a limited form of preemption. While I see the benefits of a simple scheme, I'd like to know if you envision the possibility of combining the skeleton of your framework (RDG with sharing request) with the possibility of "checking with other associated STAs". For example: if the TXOP holder is an AP, the BA occasion could be overlapped with a preemption signal occasion (e.g., separate RU for all STAs), the AP upon detecting activity on such RU, could trigger an NFRP/BSRP/UORA instead of just RDG the STA that is talking with. Any thoughts on this type of extension?
* A: Not much needs to be done for downlink; the issue comes for uplink. If the AP can do whatever it wants it gets the TXOP granted by the STA
* A: Any kind of soliciting the feedback is ok
* Comments on chat:
	+ This is simple but not sure if this solves the real long tail delay issue though
	+ my point was not abt third party STAs jumping into a TXOP. i was questioning the probability of TXOPs between wifi-8 AP and STAs being bottleneck versus between legacy STAs and legacy APs grabbing medium
	+ In one of the cases mentioned , if AP is txop initiator, non-AP sta can also report its LL BSR and AP can schedule the uplink transimission base on the LL BSR.
	+ think the latter will be more of a bottleneck
	+ I understand premeption is mainly to handle event based traffic, then how do STAs know on slide 7 when to establish the LL-Session. Event based traffic is not periodic or predictable.
	+ Another comment on slide 7: an overall rule in the BSS is more reasonable.
1. [24/0391](https://mentor.ieee.org/802.11/dcn/24/11-24-0391-00-00bn-legacy-sta-and-obss-issues-for-preemption.pptx) Legacy STA and OBSS Issues for Preemption Yunbo Li

Discussion

* C: I dont think this is the right way to go to distrub legacy stations for this. The low-latency traffic may be affected
* A; If we dont do anything legacy will become bottleneck.
* C: since when the wi-fi 8 is launched the most devices would be legacy and will be affected
* A: I agree with but we have to somehow resolve to solve the issue else we cannot make progress
* C: I am sympathetic and would like to have different EDCA parameters but that would affect legacy and how to apply and carefully limit the operation of the legacy devices which is a huge question so that we dont harm the legacy operation
* A: I agree. Based on this we may need to have more discussion on which condition we can use to reduce the latency of the legacy TXOP limit
* C: What type of low-latency application do you have in mind. Even if you reduce the TXOP limits the device should still wait for it to happen. Is there a mandate on legacy devices to obey TXOP limit?
* A: It is a big topic on how to categorize low-latency traffic but I am not addressing it here, but we will need to consider it as we may end up the system even worse as everyone may attempt preemption. The EDCA parameter has TXOP limit which should be obeyed. If the device does not then it is not clear what can be done
* C: Devices that use large TXOP limit may have no motivation to give away. Also, if we reduce the TXOP limit then there is no guarantee it would be used, how do you guarantee the use of the medium effectively?
* A: For the first thing we will need some kind of trust to be established so that they would like to share the resource and benefit each other. On the question if no one uses even if one STA shares, there are lot of presentations we have several ways to design the procedure. One way is to use PIFS if no one uses within SIFS
* C: Slide 4, question of slide 2. Currently we are considering preemption for in-BSS but here OBSS STA can preempt OBSS TXOP how the STA handles OBSS preempt request
* A: We think the OBSS issue needs to be solved but this is my preliminary thinking, but we should discuss more
1. [24/0416](https://mentor.ieee.org/802.11/dcn/24/11-24-0416-00-00bn-target-sta-prioritization-in-edca-based-preemption-mechanisms-during-a-dl-txop.pptx) Target STA Prioritization in EDCA-based Preemption Mechanisms during a DL TXOP Mingyu LEE
* C: If you suspect that the STA has a need for opportunity why not trigger directly?
* A: The AP may not know because of the aperiodic trafic
* C: If you have more than one, how does the AP know which STA should be made a target STA. And this will block other STAs
* A: The PRI is for all STAs, if there is no PRT, the other STAs should send the PRI
* C: How the target STA is selected? From your description it looks like the target STA is the TXOP responder. If that is the case, then the STA just piggyback using RDG. If the target STA is another STA, how does it know?
* C: Slide 6, in the figure you mention the target STA has the PRI enabled? Which one is the target STA?
* A: The STA that sends the ACK is the target STA
* C: Then why does it need to send the PR? Why not send the uplink data?
* A: The second PRI indicates that the other STAs can contend and transmit after the backoff
* C: It is not necessary that other STAs cannot determine if the PRT is there in the ACK. Sometimes STAs may not receive the PRT because it is hidden. Then it may lead to collisions
* A: TXOP preemption means we send opportunistically and even if we have hidden node I still think that this will improve efficiency
* C: Slide 5, you are giving opportunity to TXOP responder, but there can be other STAs that have low-latency traffic than others but do not get opportunity. If you use trigger based, multiple STAs may get a chance to transmit and we can meet the requirements. So, I am not sure in what scenario that you need EDCA preemption? Why should we take this path?
* A: EDCA based preemption is not my proposal but my understanding that it is more efficient thatn trigger-based. With trigger-based there will be waste of resources
* C: In this way, it appears that the AP cannot say ”no”. Is this correct?
* A: if the TXOP is not exhausted the AP may allow. Otherwise the AP will not have PR enabled.
1. [24/0431](https://mentor.ieee.org/802.11/dcn/24/11-24-0431-01-00bn-signal-for-preemption-request.pptx) Signal for preemption request Xiangxin Gu

Discussion

* C: In slide 5, are they sending different ZC sequence or same?
* A: Different ZC sequence
* C: is the AP able to distinguish?
* A: Yes, these are set during association
* C: Did you look at the complexity in the receive for the AP?
* A: It is a simple circuit for the AP to do it as this is simple to detect because of autocorrelation function
* C: If you can give details it would be good to discuss in joint session
* A: Yes, it makes sense and I will ask to discuss in joint session
* C: Worried if the STA1 has a long delay spread, i am not sure if the 5 us is sufficient
* A: I think since we have SIFS I think it should not be a problem
* C: Similar question as above, but with in SIFS, there are other delays and if 4 us is sufficient for processing
* A: I checked with our hardware guys and they think it is possible
* C: Why is PR sent before BA? Are we preempting even before the exchange is finished
* A: It is just one choice and it can be sent after BA. The main consideraton is that small processing time for the AP and it is better to anchor with the AP
* C: PR is just the ZC and no legacy preamble?
* A: no legacy preamble
1. AOB: None
2. Adjourn: Adjourned at 8:57 PM

# Thursday, 25 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), Xiaofei Wang (xiaofei.wang@interdigital.com) and Srinivas Kandala (srini.k1@samsung.com)

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

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbn (MAC) | 4/25 | Abouelseoud, Mohamed | Apple Inc. |
| TGbn (MAC) | 4/25 | Ajami, Abdel Karim | Apple Inc. |
| TGbn (MAC) | 4/25 | Baek, SunHee | LG ELECTRONICS |
| TGbn (MAC) | 4/25 | Baykas, Tuncer | Ofinno |
| TGbn (MAC) | 4/25 | Bredewoud, Albert | Broadcom Corporation |
| TGbn (MAC) | 4/25 | Byeon, Seongho | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/25 | Carney, William | Sony Group Corporation |
| TGbn (MAC) | 4/25 | Cha, Dongju | LG ELECTRONICS |
| TGbn (MAC) | 4/25 | Chaturvedi, Abhishek | Samsung Electronics |
| TGbn (MAC) | 4/25 | Chen, Junbin | TP-Link Corporation Limited |
| TGbn (MAC) | 4/25 | CHENG, yajun | Xiaomi Communications Co., Ltd. |
| TGbn (MAC) | 4/25 | Cho, Hangyu | LG ELECTRONICS |
| TGbn (MAC) | 4/25 | Choi, JinHo | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/25 | Choi, Jinsoo | LG ELECTRONICS |
| TGbn (MAC) | 4/25 | CHUN, JINYOUNG | LG ELECTRONICS |
| TGbn (MAC) | 4/25 | Chung, Chulho | SAMSUNG |
| TGbn (MAC) | 4/25 | Coffey, John | Realtek Semiconductor Corp. |
| TGbn (MAC) | 4/25 | Cui, Yaoshen | TP-Link Corporation Limited |
| TGbn (MAC) | 4/25 | Dong, Xiandong | Xiaomi Communications Co., Ltd. |
| TGbn (MAC) | 4/25 | Ekkundi, Manasi | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/25 | Erkucuk, Serhat | Ofinno |
| TGbn (MAC) | 4/25 | Fan, Shuang | Sanechips Technology Co., Ltd. |
| TGbn (MAC) | 4/25 | Fang, Yonggang | MediaTek Inc. |
| TGbn (MAC) | 4/25 | Fischer, Matthew | Broadcom Corporation |
| TGbn (MAC) | 4/25 | Fujimori, Yuki | Canon Research Centre France |
| TGbn (MAC) | 4/25 | Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbn (MAC) | 4/25 | Ghosh, Chittabrata | Apple Inc. |
| TGbn (MAC) | 4/25 | Gu, Jaheon | Samsung Electronics Co., Ltd. |
| TGbn (MAC) | 4/25 | Gu, Junrong | Clourney Semiconductor |
| TGbn (MAC) | 4/25 | Gu, Xiangxin | Spreadtrum Communications (Shanghai) Co., Ltd. |
| TGbn (MAC) | 4/25 | Gupta, Binita | Cisco Systems, Inc. |
| TGbn (MAC) | 4/25 | Ha, Taeyoung | Samsung Electronics Co., Ltd. |
| TGbn (MAC) | 4/25 | Haider, Muhammad Kumail | Meta Platforms, Inc. |
| TGbn (MAC) | 4/25 | Helwa, Sherief | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn (MAC) | 4/25 | Hervieu, Lili | CableLabs |
| TGbn (MAC) | 4/25 | Hosseinianfar, Hamid | Ofinno |
| TGbn (MAC) | 4/25 | Hsu, Yung Lin | National Taiwan University |
| TGbn (MAC) | 4/25 | HUANG, CHIHAN | MediaTek Inc. |
| TGbn (MAC) | 4/25 | Inohiza, Hirohiko | Canon |
| TGbn (MAC) | 4/25 | Jee, Anand | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/25 | Kabbinale, Aniruddh | Samsung Electronics Co., Ltd. |
| TGbn (MAC) | 4/25 | Kamel, Mahmoud | Interdigital Inc. |
| TGbn (MAC) | 4/25 | Kandala, Srinivas | Samsung |
| TGbn (MAC) | 4/25 | Karthik, S. G. | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/25 | Kim, Geon Hwan | LG ELECTRONICS |
| TGbn (MAC) | 4/25 | Kim, Jeongki | Ofinno |
| TGbn (MAC) | 4/25 | Kim, Sang Gook | LG ELECTRONICS |
| TGbn (MAC) | 4/25 | Kim, Sanghyun | WILUS Inc. |
| TGbn (MAC) | 4/25 | Kishida, Akira | NTT |
| TGbn (MAC) | 4/25 | Kuo, Chih-Chun | MediaTek Inc. |
| TGbn (MAC) | 4/25 | Lanante, Leonardo | Ofinno |
| TGbn (MAC) | 4/25 | Lee, Hong Won | LG ELECTRONICS |
| TGbn (MAC) | 4/25 | LEE, JOONSOO | Newracom Inc. |
| TGbn (MAC) | 4/25 | LEE, Mingyu | Samsung Electronics Co., Ltd. |
| TGbn (MAC) | 4/25 | Li, Weiyi | Spreadtrum Communication USA, Inc |
| TGbn (MAC) | 4/25 | Li, Yunbo | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/25 | Lim, Dong Guk | LG ELECTRONICS |
| TGbn (MAC) | 4/25 | Lim, Yeon Geun | Newracom Inc. |
| TGbn (MAC) | 4/25 | LIU, QINGLAI | Panasonic |
| TGbn (MAC) | 4/25 | Lorgeoux, Mikael | Canon Research Centre France |
| TGbn (MAC) | 4/25 | Lu, kaiying | MediaTek Inc. |
| TGbn (MAC) | 4/25 | Lu, Liuming | Guangdong OPPO Mobile Telecommunications Corp.,Ltd. |
| TGbn (MAC) | 4/25 | LU, Yuxin | TCL Industries |
| TGbn (MAC) | 4/25 | Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| TGbn (MAC) | 4/25 | Luo, Hui | Infineon Technologies |
| TGbn (MAC) | 4/25 | Ma, Yongsen | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/25 | Montemurro, Michael | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/25 | Motozuka, Hiroyuki | Panasonic Holdings Corporation |
| TGbn (MAC) | 4/25 | Neishaboori, Azin | General Motors Company |
| TGbn (MAC) | 4/25 | Noh, Si-Chan | Newracom Inc. |
| TGbn (MAC) | 4/25 | Norouzi, Sara | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/25 | Palayur, Saju | Maxlinear Inc |
| TGbn (MAC) | 4/25 | Park, Minyoung | Intel Corporation |
| TGbn (MAC) | 4/25 | Park, Sungjin | Senscomm |
| TGbn (MAC) | 4/25 | Patil, Abhishek | Qualcomm Incorporated |
| TGbn (MAC) | 4/25 | Patwardhan, Gaurav | Hewlett Packard Enterprise |
| TGbn (MAC) | 4/25 | Petrick, Albert | InterDigital, Inc. |
| TGbn (MAC) | 4/25 | Pettersson, Charlie | Ericsson AB |
| TGbn (MAC) | 4/25 | Quan, Yingqiao | Spreadtrum Communications (Shanghai) Co., Ltd.; Unisoc (Shanghai) Technologies Co., Ltd. |
| TGbn (MAC) | 4/25 | Ratnam, Vishnu | Samsung Research America |
| TGbn (MAC) | 4/25 | Roy, Rishabh | SAMSUNG ELECTRONICS |
| TGbn (MAC) | 4/25 | Ryu, Kiseon | NXP Semiconductors |
| TGbn (MAC) | 4/25 | Sadiq, Bilal | Samsung Research America |
| TGbn (MAC) | 4/25 | Sato, Takuhiro | SHARP CORPORATION |
| TGbn (MAC) | 4/25 | Seo, Sangho | Broadcom Corporation |
| TGbn (MAC) | 4/25 | Serizawa, Kazunobu | Advanced Telecommunications Research Institute International(ATR) |
| TGbn (MAC) | 4/25 | Singh, Aditi | Charter Communications |
| TGbn (MAC) | 4/25 | Sun, Bo | Sanechips Technology Co., Ltd. |
| TGbn (MAC) | 4/25 | Talarico, Salvatore | Sony Corporation |
| TGbn (MAC) | 4/25 | Taori, Rakesh | Infineon Technologies |
| TGbn (MAC) | 4/25 | Tota, Kazuyuki | Canon |
| TGbn (MAC) | 4/25 | Urabe, Yoshio | Panasonic Holdings Corporation |
| TGbn (MAC) | 4/25 | VIGER, Pascal | Canon Research Centre France |
| TGbn (MAC) | 4/25 | Wang, Lei | Futurewei Technologies/Huawei Technologies |
| TGbn (MAC) | 4/25 | Wang, Qi | Apple Inc. |
| TGbn (MAC) | 4/25 | Wang, Xiaofei | InterDigital, Inc. |
| TGbn (MAC) | 4/25 | Wang, Ying | InterDigital, Inc. |
| TGbn (MAC) | 4/25 | Wee, Gaius | Panasonic Holdings Corporation |
| TGbn (MAC) | 4/25 | Wei, Dong | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbn (MAC) | 4/25 | Wullert, John | Peraton Labs |
| TGbn (MAC) | 4/25 | Xia, Qing | Sony Corporation |
| TGbn (MAC) | 4/25 | Xiao, Tong | Xiaomi Communications Co., Ltd. |
| TGbn (MAC) | 4/25 | Xu, Yanchao | Amlogic |
| TGbn (MAC) | 4/25 | Yan, Aiguo | Ubilinx |
| TGbn (MAC) | 4/25 | Yang, Jay | ZTE Corporation |
| TGbn (MAC) | 4/25 | Yang, Jimmy | Moxa Inc. |
| TGbn (MAC) | 4/25 | YANG, RUI | InterDigital, Inc. |
| TGbn (MAC) | 4/25 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| TGbn (MAC) | 4/25 | Yee, James | MediaTek Inc. |
| TGbn (MAC) | 4/25 | Zhang, John | GuangDong OPPO Mobile Telecommunications Corp., Ltd. |
| TGbn (MAC) | 4/25 | Zhang, Maolin | Huawei Technologies Co., Ltd |
| TGbn (MAC) | 4/25 | Zhao, Yue | Huawei Technologies Co., Ltd |

1. The Chair reminds that the agenda can be found in [11-24/0633r10](https://mentor.ieee.org/802.11/dcn/24/11-24-0633-10-00bn-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 plus Power Save:
3. [24/0470](https://mentor.ieee.org/802.11/dcn/24/11-24-0470-00-00bn-rethinking-preemption.pptx) Rethinking Latency Dmitry Akhmetov

Discussion

* C: The header has wrong number. Author will fix it
* C: Agree with most of the stuff. Remember that there are CE devices that are already running LL application. We need to make sure that the new mechanisms will not break existing low-legacy applications on legacy devices. On the number of low-latency in RTA there is some study
* A: Agree. We have the burden of backward compatibility and make sure nothing breaks
* C: For TXOP level preemption to be effective we may have to enable for almost all TXOPs. But will this become too complex to design or if there are some regulartory concerns in situations like OBSS
* A: Yes, to avoid it has to be enabled for all TXOPs. So if we have legacy and OBSS the preemption wont simply happen. If the mechanism is even defined, for a long time there will be legacy and OBSS devices and technically it will not improve anything. Also, naturally for some cases, preemption may not happrn because of hidden nodes. There are issues that preemption will prevent for it to be 100% successful even though there will be some improvement
* C: Can you comment on guaranteed channel access if you have a large number of low latency devices?
* A: Good question and we may end up the same situation as before. So, we need to be extremely careful and we will have to design rules that will disallow abuse. That is why it is important to understand/define what constitutes low latency
* C: Does this subject to admission control by AP
* A: Potentially yes
1. [24/0097](https://mentor.ieee.org/802.11/dcn/24/11-24-0097-00-00bn-ap-power-management-follow-up.pptx) AP Power Management - Follow up Yongsen Ma

Discussion

* C: Can you elaborate on presence request?
* A: One possible thing is if the AP is in doze state, basically to operate normal operation.
* C: Would it be broadcast or unicast?
* A: (missed)
* C: Is the scheduled power save is specifically designed for R-TWT? Or is this a scheduled power save or is for dynamic Power save
* A: Generally this is for long-term but it can be done for SP level. Also, if the AP has a predictable way of operating (say for different time of the day), the AP can enable this.
* C: The concept is a good one. Trying to gather a overall idea, there is lot of content that is similar to the existing procedures and the new mechanisms. Trying to get some insights on the expectations. Will there be mutliple states and transitions from each of the states? Or is it just the states outside of the Service Period
* A: there is the window and operation will be within the window and outside the window it will be in power save
* C: there are many other tools, why do you need additional information? What is the delta that this information would have
* A: There could be multiple states and if we need them, we will need to define them. There could be several options.
* C: Discuss offline but I suggest to keep them simple
* C: This seems to cover lot of scheduled power save mode. What are your thoughts on unscheduled power save mode
* A: we want to have the scheduled mode as the AP can design on the predictable patterns so that the AP does not change too frequently
* C:There is another element to it, we want to use it for longer schedules
* C: STAs can request the presence/schedule request. This is done through the probe request, but I want this to be done for protected frames so association. I also want to see this transparent to legacy devices
* A: legacy device operation will disable the power save
* C: Slide 8, what is the reason to indicate the power save state. Can you expand more
* A; There are differences at various points which is not covered in the spec to indicate to other stations to indicate that it may not respond, then the STA knows that it is not because of the channel but because of some other things
* C: We have an additional contribution we can extend this further
* C: Slide 3, how can use the listen state when operating with legacy
* A: If there is a long wait then the AP will bring back to TX
* C: slide 5, on AP side it can reduce the capability but this could be used with the existing text, you can use this with the current spec. Can you comment on the AP schedule listen state?
* A: reduce capability
* C: Slide 6, option 1. You include both schedule information and power save information. The meaning of the schedule information depends on the power save state
* A: the schedule is based on timing window
* Comments on chat window:
	+ If presence of a legacy STA disables AP power save then would this feature be used in a meaningful way? Most of time there will be legacy STAs associated with the AP for many years after 11bn is deployed...
	+ I would expect legacies to be placed in one link and other links be placed in a AP PS mode
	+ even 11be STA?
	+ I seem all the AP PS mechnisms have legacy issue
	+ depends on what signaling we use
	+ i would expect 11be STA will be on at least two links...
	+ I guess lots of expectations :-) we can discuss more
	+ During the PAR discussion phase, the proponents of the AP Power save were primarily targeting MObile AP. It woul d perhaps be meaningful to have a contribution with SPs o understand how much beyond the MObile AP (and to what extent) does the gropu want to go with regular APs
	+ or we expect the AP PS in network level, not single AP level
	+ At least in one motion we passed we mentioned explicitly for mobile AP and TBD for infra
	+ Infra has some more considerations and hence was left TBD
	+ Agreed, and that's exactly my point Alfred. Presentations seem to be not limiting to MObile AP alone (unless I am isunderstanding)
	+ which we will definitely not solve via chat :-)
	+ personally i think we should also try and provide some power saving to infra APs as well but it does need careful consideration.
	+ we have time to think about it
	+ This amendment provides a mechanism to reduce power consumption for Access Points (APs) (includingmobile APs)
	+ Yep
	+ Yes, that is what the PAR says.
	+ but anyways we can continue discussions on that aspect.
	+ legacy STA can let AP not entering Doze state, but AP can still in reduced capability, like 20MH/NSS=1 and less TIDs mappend, in scheduled manner
1. [24/0352](https://mentor.ieee.org/802.11/dcn/24/11-24-0352-00-00bn-enabling-unscheduling-ap-ps-follow-up.pptx) Enabling Unscheduling AP PS Follow-up Guogang Huang

Discussion:

* C: SP1 – I remember in .11be we already defined disabled link, it can meet this requirement
* A: Yes, we did define but we need a clear state that the AP can operate in
* C: so we can do some extension to disabled link. Based on your explanation you want to have three states, wake up state, doze and listen state?
* A: Yes, switching between full and lower capability
* C: Similar comments as for previous. The STA can ask the AP turn on and then it lasts until some channel idleness or something. It is going to be prone to some issues. You can have AP to turn on and off but there should be some policing otherwise we end up with abuse. We may want to have a long term indication in the beacon.
* C: slide 6 you dont list schedule AP PS mode
* A: The usecase is when the traffic is relative low
* C: so that means the STA would not send this wake up request for periodic traffic
* A: Yes, the unscheduled AP power save is to address the aperiodic traffic (link not very good unable to capture everything)
* C: agree with previous concern on the abuse
* C: slide 5 table. I am curious you have come up with qualitative results specifically between scheduled and unschedulef. Can you elaborate more?
* A: For the schedule AP PS, it can transmit until the transmit window is coming and it will introduce high transmit delay. For dynamic the transmit can be sent much sooner and request the AP to switch to transmission, so the transmit delay can be minimal
* C: given the overhead in enabling and disabling link, is is too much overhead to do on link level
* A: It is not disable (audio not clear)
* C: can you justfiy the power save benefits ?
* A: for scheduled it will be more for unscheduled the AP can go into power save quickly
1. [24/0451](https://mentor.ieee.org/802.11/dcn/24/11-24-0451-00-00bn-ap-state-transitions-in-dps-mode.pptx) AP state transitions in DPS mode Vishnu Ratnam

Discussion

* C: Slide 8, it is not clear the process how the AP changing state into higher power state. How do the STAs that are in low power state and there may be a mismatch and how does it communicate to low-power state
* A: all of the transmisisons are subject to receiver abilities, here we are talking about transmission
* C: slide 8, the AP is in low power state and it is a downlink scenario, why doesnt it switch to high power mode and why should there be a trigger frame? I dont see the need for this sequence
* A: slide 7 explains. The AP would want to switch to higher power but the device may be blind to the channel state and our thinking is that AP losing medium synch is a big issue and you would want to protect these transitions or if these transitions happen at the specific time. That is why there are two ways: one is during OBSS and switch at that time or if not true, you can use a mechanism an AP can solicit a frame to protect and switch
* C: How long is the switching delay and that you are worried?
* A: the duration could be high of the order of 200 us and since this is AP switching we want to make sure that it is handled
* C: Slide 5, from this figure it looks liek the ICF/ICR exchange during lowpower save state. How does it work since AP may not have capability
* A: But the AP does not need full capability since ICF is sent as non-HT duplicate
* C: What if multiple STAs send at the same time, would there be collisions and how do handle?
* A: The collisions would be similar to how they are handled
* C: Slide 8, similar comments. This is the AP transition from low-power to high-power, the AP will stay in the high-power mode for long time. From EMLSR experience, most likely this transaction will be no more than 17 us, this means that the AP will never lose medium synchronization. Also this introduce complexity when we have long-term transition. Also, slide 3, this padding is not necessary as without this padding it can switch back to low-power state is 17 us and this medium synchronization loss will not happen. Since TXOP will handle we may not need the last PPDU
* A: I do not understand why padding is required from high-power to low-power
* C: Because after SIFS the AP needs to send a responding frame, but the respond frame has to do CCA for the whole TXOP bandwidth they need time that is why you need padding is needed at the beginning of the TXOP, but at the end of the TXOP, the STA will do its own RF adjustment and the padding is not as critical as the beginning of the transaction
* C: Regarding ICF/ICR this exchange can be used for transition for low-power to high-power. This may make sense for STAs but not sure for the AP. When there are many STAs, there will be additional overhead and the benefits may not be much
* A: that is why the STA has the option (ran out of time)
1. AoB: None
2. Adjourn: Adjourned at 12:00 noon

**References:**