IEEE P802.11
Wireless LANs

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| Minutes for TGbn MAC Ad-Hoc Teleconferences in May to July 2024 |
| Date: 2024-05-30 |
| Author(s): |
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Abstract

This document contains the minutes for the TGbn MAC ad hoc teleconferences in May to July 2024.

Revisions:

* Rev0: Added the minute from the MAC ad hoc teleconference held on May 30.
* Rev1: Added the minute from the MAC ad hoc teleconference held on Jun 6.
* Rev2: Added the minute from the MAC ad hoc teleconference held on June 13.
* Rev3: Added the minute from the MAC ad hoc teleconference held on June 17.

**May 30, 2024 (TGbn MAC ad hoc teleconference)**

Chairman: Srinivas Kandala (Samsung)

Secretary: Jeongki Kim (Ofinno)

This meeting took place using a webex.

**Introduction**

1. The Chair (Srinivas Kandala, Samsung) calls the meeting to order at 10:00am. The Chair introduces himself and the Secretary (Jeongki Kim, Ofinno).
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.
	1. **Copyright Policy: Participants are advised that**
		1. IEEE SA’s copyright policy is described in [Clause 7](https://standards.ieee.org/about/policies/bylaws/sect6-7.html%22%20%5Cl%20%227) of the IEEE SA Standards Board Bylaws and [Clause 6.1](https://standards.ieee.org/about/policies/opman/sect6.html) of the IEEE SA Standards Board Operations Manual;
		2. Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy
4. The Chair recommends using IMAT for recording the attendance.
	1. 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.
	2. If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to Srinivas Kandala (srini.k1@samsung.com), Jeongki Kim (jeongki.kim.ieee@gmail.com), and Xiaofei Wang (xiaofei.wang@interdigital.com)

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| Name | Affiliation |
| AbidRabbu, Shaima' | VESTEL |
| Aio, Kosuke | Sony Corporation |
| Ajami, Abdel Karim | Apple Inc. |
| Ali, Sawaira | Istanbul Medipol University, Vestel |
| Asai, Yusuke | Nippon Telegraph and Telephone Corporation (NTT) |
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| Bredewoud, Albert | Broadcom Corporation |
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| Chisci, Giovanni | Qualcomm Technologies, Inc |
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| Chu, Liwen | NXP Semiconductors |
| Chung, Chulho | SAMSUNG |
| Coffey, John | Realtek Semiconductor Corp. |
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| Ekkundi, Manasi | SAMSUNG ELECTRONICS |
| Erkucuk, Serhat | Ofinno |
| Fan, Shuang | Sanechips Technology Co., Ltd. |
| Fischer, Matthew | Broadcom Corporation |
| Fujimori, Yuki | Canon Research Centre France |
| Ghosh, Chittabrata | Apple Inc. |
| Gu, Jaheon | Samsung Electronics Co., Ltd. |
| Gu, Junrong | Clourney Semiconductor |
| Gu, Xiangxin | Spreadtrum Communications (Shanghai) Co., Ltd. |
| GUIGNARD, Romain | Canon Research Centre France |
| Gupta, Binita | Cisco Systems, Inc. |
| Hart, Brian | Cisco Systems, Inc. |
| Hasabelnaby, Mahmoud | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| Hedayat, Ahmadreza | Apple Inc. |
| Ho, Duncan | Qualcomm Technologies, Inc |
| Hosseinianfar, Hamid | Ofinno |
| Hsu, Yung Lin | National Taiwan University |
| Hu, Chunyu | Spreadtrum Communications US |
| HUANG, CHIHAN | MediaTek Inc. |
| huang, kaikai | Nokia |
| Huang, Po-Kai | Intel Corporation |
| Huq, Kazi Mohammed Saidul | NO AFFILIATION |
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| Jee, Anand | SAMSUNG ELECTRONICS |
| Kabbinale, Aniruddh | Samsung Electronics Co., Ltd. |
| Kain, Carl | Noblis, Inc.; USDoT |
| Kakani, Naveen | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| kamath, Manoj | Broadcom Corporation |
| Kamel, Mahmoud | Interdigital Inc. |
| Kandala, Srinivas | Samsung |
| Karthik, S. G. | SAMSUNG ELECTRONICS |
| Kim, Geon Hwan | LG ELECTRONICS |
| Kim, Jeongki | Ofinno |
| Kim, Jungjun | Samsung Electronics Co., Ltd. |
| Kim, Sang Gook | LG ELECTRONICS |
| Kim, Sanghyun | WILUS Inc. |
| Kishida, Akira | NTT |
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| Koo, Jonghoe | SAMSUNG ELECTRONICS |
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| McCann, Stephen | Huawei Technologies Co., Ltd |
| Montemurro, Michael | Huawei Technologies Co., Ltd |
| Motozuka, Hiroyuki | Panasonic Holdings Corporation |
| Namvar, Nima | Charter Communications |
| Nayak, Peshal | Samsung Research America |
| Neishaboori, Azin | General Motors Company |
| Noh, Si-Chan | Newracom Inc. |
| Park, Minyoung | Intel Corporation |
| Park, Sungjin | Senscomm |
| Patil, Abhishek | Qualcomm Incorporated |
| Patwardhan, Gaurav | Hewlett Packard Enterprise |
| Petrick, Albert | InterDigital, Inc. |
| Quan, Yingqiao | Spreadtrum Communications (Shanghai) Co., Ltd.; Unisoc (Shanghai) Technologies Co., Ltd. |
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| Rosenzweig Arbel, Gil | Renesas Electronics Corporation |
| Roy, Rishabh | SAMSUNG ELECTRONICS |
| Sato, Takuhiro | SHARP CORPORATION |
| Serizawa, Kazunobu | Advanced Telecommunications Research Institute International(ATR) |
| Shafin, Rubayet | Samsung Research America |
| Shi, Zhenpeng | Huawei Technologies Co., Ltd |
| Singh, Aditi | Charter Communications |
| Sun, Bo | Sanechips Technology Co., Ltd. |
| Taori, Rakesh | Infineon Technologies |
| Tseng, Yen Hsiung | MediaTek Inc. |
| Wang, Lei | Futurewei Technologies/Huawei Technologies |
| Wang, Ying | InterDigital, Inc. |
| Wee, Gaius | Panasonic Holdings Corporation |
| Wullert, John | Peraton Labs |
| Xia, Qing | Sony Corporation |
| Xiao, Tong | Xiaomi Communications Co., Ltd. |
| Xu, Yanchao | Amlogic |
| Xu, Yue | Huawei Technologies Co., Ltd |
| Yahya, Salim | VESTEL,IMU |
| Yan, Zhongjiang | Northwestern Polytechnical University |
| Yang, Jay | ZTE Corporation |
| Yang, Jimmy | Moxa Inc. |
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| Yoon, Yelin | LG ELECTRONICS |
| Zhang, Jiayi | Ofinno |
| Zhang, John | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| Zhao, Yue | Huawei Technologies Co., Ltd |
| Zhou, Lei | H3C Technologies Co., Limited |

1. The Chair asked whether there is comment about agenda in 11-24/964r1.
	1. The Chair goes through the submissions.
	* 24/0151 Establishment of Security Key for Control frame SunHee Baek
	* [24/0490](https://mentor.ieee.org/802.11/dcn/24/11-24-0490-00-00bn-discussion-on-control-frame-and-mac-header-protection.pptx) Discussion on Control Frame and MAC Header Protection Yunbo Li
	* 24/0497 Security enhancement (control frame protection) follow up Liwen Chu
	* 24/0502 MAC header protection follow up Liwen Chu
	* [24/0525](https://mentor.ieee.org/802.11/dcn/24/11-24-0525-00-00bn-mac-header-data-integrity-with-relaxed-receiver-requirement.pptx) MAC header/data integrity with relaxed RXer requirement Li-Hsiang Sun
	* ~~24/0535 Trigger, BA, and BAR Protection follow up Po-kai Huang~~
	* [~~24/0547~~](https://mentor.ieee.org/802.11/dcn/24/11-24-0547-00-00bn-secure-control-frames-follow-up.pptx) ~~Secure Control frames - Follow Up Abhishek Patil~~
	* [~~24/0443~~](https://mentor.ieee.org/802.11/dcn/24/11-24-0443-00-00bn-discussion-on-bounded-delay-in-industrial-scenarios.pptx) ~~Discussion on Determining Latency in Industrial Scenarios Yue Xu~~
	* [24/0668](https://mentor.ieee.org/802.11/dcn/24/11-24-0668-01-00bn-data-forwarding-within-txop-for-xr-use-cases.pptx) Data-forwarding-within-TXOP-for-XR-use-cases Seongho Byeon
	* [24/0797](https://mentor.ieee.org/802.11/dcn/24/11-24-0797-00-00bn-operating-mode-request.pptx) Operating Mode Request Yongsen Ma
		+ Po-kai, Abhi, Yue requested to defer their presentations.
	1. From TGbn Chair
		1. The document should be uploaded at least 24 hours prior to the call.
		2. The agenda should be approved.
	2. The agenda is approved with modifications.

 **Submissions**

1. 24/0151 Establishment of Security Key for Control frame SunHee Baek

C: slide 5, first bullet, both STAs support security keys, what about the group? What if one of STAs does not support for group control frame? control frame includes integrity check?

A: Yes, MIC can be ignored by the STA.

C: Implementation may be confusing.

C: how much time does the STA estimate whether the frame is valid? Within SIFS?

A: Yes

C: This is 11bn, assuming going ML operation. Those are carried by AP MLD and non-AP MLD rather than STAs or AP.

C: unique key is per link. MLO link id may be need in PTK generation.

A: cPTK cGTK is different per link

C: We need to use MLO link ID.

C: Take a look at 11be related subclause.

C: question, MU-BAR with cGTK and BA with cPTK is ok?

A: Depends on use case. It is unicast or broadcast.

1. [24/0490](https://mentor.ieee.org/802.11/dcn/24/11-24-0490-00-00bn-discussion-on-control-frame-and-mac-header-protection.pptx) Discussion on Control Frame and MAC Header Protection Yunbo Li

C: slide 3, try to use TF and initial control frame from 11ax, be,... we have to consider this now. Management frame is similar. First time, unprotected management frame is used.

C: We need to focus on specific important tech model to improve . Wi-Fi 8 should improve the security feature.

A: We can resolve this issue after wi-fi 8. We can solve future.

C: Beacon protection and other management frame protection are good examples. We do introduce up to Wi-Fi 7. Similar trends.

A: I thought whether it’s real issue. But don’t think so.

C: MAC header protection. There are many field in header. PM, A-Control fields, SN, are not protected. The second bullet is not true. There is a paper cited. Very easy to create the attack. Score boad context, sequence numbe spaces. We need to at least protect the MAC header and control frame.

A: We can look at the other advance. Look like endless target. Separate standards would be better with better experts. That’s not the main target for Wi-Fi 8.

C: Generall agree with Po-Kai and Abhi.

A: backward compatitable. Most control frames are used by legacy STAs.

C: our TG is ultra high reliability. Prevention is better. We should consider several things. Optional feature.

A: Ultra High reliability, It’s more important to reduce the delay and reduce PPR(?).. We need to discuss motivation.

C:, slide 5, this is optional. If STA does not want to support, just not implement.

C:, you have to look at the requirement carefully. Cost.

C:, we already have BAR frame protection.

1. 24/0497 Security enhancement (control frame protection) follow up Liwen Chu

Discussion : None

1. 24/0502 MAC header protection follow up Liwen Chu

Discussion: None

1. [24/0525](https://mentor.ieee.org/802.11/dcn/24/11-24-0525-00-00bn-mac-header-data-integrity-with-relaxed-receiver-requirement.pptx) MAC header/data integrity with relaxed RXer requirement Li-Hsiang Sun

Presented. No discussion due to lack of time.

The teleconference was adjourned at 12:00.

**June 6, 2024 (TGbn MAC ad hoc teleconference)**

Chairman: Srinivas Kandala (Samsung)

Secretary: Jeongki Kim (Ofinno)

This meeting took place using a webex.

**Introduction**

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| Aio, Kosuke | Sony Corporation |
| Ajami, Abdel Karim | Apple Inc. |
| Ali, Sawaira | Istanbul Medipol University, Vestel |
| Baek, SunHee | LG ELECTRONICS |
| Baykas, Tuncer | Ofinno |
| Bhandaru, Nehru | Broadcom Corporation |
| Bhattacharya, Abhijit | Qualcomm Incorporated |
| Bredewoud, Albert | Broadcom Corporation |
| Byeon, Seongho | SAMSUNG ELECTRONICS |
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| Cha, Dongju | LG ELECTRONICS |
| Chaturvedi, Abhishek | Samsung Electronics |
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| Chisci, Giovanni | Qualcomm Technologies, Inc |
| Chng, Baw | BAWMAN LLC |
| Choi, JinHo | SAMSUNG ELECTRONICS |
| Chu, Liwen | NXP Semiconductors |
| Ciochina, Dana | Sony Corporation |
| Coffey, John | Realtek Semiconductor Corp. |
| Cui, Yaoshen | TP-Link Corporation Limited |
| Dong, Xiandong | Xiaomi Communications Co., Ltd. |
| Erkucuk, Serhat | Ofinno |
| Fan, Shuang | Sanechips Technology Co., Ltd. |
| Fang, Yonggang | MediaTek Inc. |
| Fujimori, Yuki | Canon Research Centre France |
| Ganji, Mehdi | Charter Communications |
| Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| Ghosh, Chittabrata | Apple Inc. |
| Gu, Jaheon | Samsung Electronics Co., Ltd. |
| Gupta, Binita | Cisco Systems, Inc. |
| Ha, Taeyoung | Samsung Electronics Co., Ltd. |
| Handte, Thomas | Sony Group Corporation |
| Hasabelnaby, Mahmoud | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| Hedayat, Ahmadreza | Apple Inc. |
| Hervieu, Lili | CableLabs |
| Hsu, Yung Lin | National Taiwan University |
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| huang, kaikai | Nokia |
| Huang, Po-Kai | Intel Corporation |
| Inohiza, Hirohiko | Canon |
| Jang, Insun | LG ELECTRONICS |
| Kakani, Naveen | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| Kalamkar, Sanket | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| kamath, Manoj | Broadcom Corporation |
| Kandala, Srinivas | Samsung |
| Karthik, S. G. | SAMSUNG ELECTRONICS |
| Kedem, Oren | Maxlinear |
| Kim, Geon Hwan | LG ELECTRONICS |
| Kim, Jeongki | Ofinno |
| Kim, Sang Gook | LG ELECTRONICS |
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| LEE, Mingyu | Samsung Electronics Co., Ltd. |
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| li, yan | ZTE Corporation |
| Li, Yanchun | Huawei Technologies Co., Ltd |
| Lorgeoux, Mikael | Canon Research Centre France |
| Lou, Hanqing | InterDigital, Inc. |
| Lu, Liuming | Guangdong OPPO Mobile Telecommunications Corp.,Ltd. |
| LU, Yuxin | TCL Industries |
| Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| Ma, Yongsen | SAMSUNG ELECTRONICS |
| Magrin, Davide | Meta Platforms Inc. |
| McCann, Stephen | Huawei Technologies Co., Ltd |
| Mehrnoush, Morteza | Apple Inc. |
| Montemurro, Michael | Huawei Technologies Co., Ltd |
| Motozuka, Hiroyuki | Panasonic Holdings Corporation |
| Mutgan, Okan | Nokia |
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| Neishaboori, Azin | General Motors Company |
| Noh, Si-Chan | Newracom Inc. |
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| Patwardhan, Gaurav | Hewlett Packard Enterprise |
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| Quan, Yingqiao | Spreadtrum Communications (Shanghai) Co., Ltd.; Unisoc (Shanghai) Technologies Co., Ltd. |
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| Rosenzweig Arbel, Gil | Renesas Electronics Corporation |
| Roy, Rishabh | SAMSUNG ELECTRONICS |
| Ryu, Kiseon | NXP Semiconductors |
| Serizawa, Kazunobu | Advanced Telecommunications Research Institute International(ATR) |
| Sevin, Julien | Canon Research Centre France |
| Shafin, Rubayet | Samsung Research America |
| Shi, Zhenpeng | Huawei Technologies Co., Ltd |
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| Taori, Rakesh | Infineon Technologies |
| Tseng, Yen Hsiung | MediaTek Inc. |
| Vaidya, Maulik | Charter Communications |
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| Wang, Xiaofei | InterDigital, Inc. |
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| Wullert, John | Peraton Labs |
| Xia, Qing | Sony Corporation |
| Xiao, Tong | Xiaomi Communications Co., Ltd. |
| Xu, Yanchao | Amlogic |
| Xu, Yue | Huawei Technologies Co., Ltd |
| Yang, Jimmy | Moxa Inc. |
| Zhao, Yue | Huawei Technologies Co., Ltd |

1. The Chair asked whether there is comment about agenda in 11-24/964r4.
	1. The Chair goes through the submissions.
		1. [24/0525](https://mentor.ieee.org/802.11/dcn/24/11-24-0525-01-00bn-mac-header-data-integrity-with-relaxed-receiver-requirement.pptx) MAC header/data integrity with relaxed RXer req. Li-Hsiang Sun [Q&A]
		2. [24/0443](https://mentor.ieee.org/802.11/dcn/24/11-24-0443-00-00bn-discussion-on-bounded-delay-in-industrial-scenarios.pptx) Discussion on Determining Latency in Industrial Scenarios Yue Xu
		3. [24/0668](https://mentor.ieee.org/802.11/dcn/24/11-24-0668-01-00bn-data-forwarding-within-txop-for-xr-use-cases.pptx) Data-forwarding-within-TXOP-for-XR-use-cases Seongho Byeon
		4. [24/0797](https://mentor.ieee.org/802.11/dcn/24/11-24-0797-00-00bn-operating-mode-request.pptx) Operating Mode Request Yongsen Ma
		5. [24/0318](https://mentor.ieee.org/802.11/dcn/24/11-24-0318-00-00bn-robust-secondary-channel-access.pptx) Robust Secondary Channel Access Yanchun Li
		6. [24/0449](https://mentor.ieee.org/802.11/dcn/24/11-24-0449-02-00bn-considerations-on-dynamic-subchannel-operation-follow-up.pptx) Considerations on DSO–Follow Up Liuming Lu
	2. For 525, need more presentations. It’s ok.
	3. The agenda is approved.

 **Submissions**

* 1. [24/0525](https://mentor.ieee.org/802.11/dcn/24/11-24-0525-01-00bn-mac-header-data-integrity-with-relaxed-receiver-requirement.pptx) MAC header/data integrity with relaxed RXer req. Li-Hsiang Sun [Q&A]

C: slide 12, slide 4, in the botttom scenario. Protected BA. What is protected?

A: B will not send BA for fake frame. Both side can detect fake transmissions.

C: what is the time until orignator accepted BA?

A: SIFS after the data.

C: there is delay for receiver side for decoding it? How does A know the time of processing by B?

A: A need know time. A can transmit BAR.

C: In partial state, the operation doesn't work.

C: what we’re actually protecting again? Data?

A: Somebody can change the header while some body can change data.

* 1. [24/0443](https://mentor.ieee.org/802.11/dcn/24/11-24-0443-00-00bn-discussion-on-bounded-delay-in-industrial-scenarios.pptx) Discussion on Determining Latency in Industrial Scenarios Yue Xu

C: what does it mean STA TxMOde Negotiation? How does it differentiate with SCS procedure?

A: We need one negotiation procedure for this. This is a little different from SCS procedure.

C: Slide 4, for target value of latency, 24ms is enough for industrial scenarios?

A: This is for one example.

C: Are you assuming the controled network? Or legacy device that is not controlled?

A: We just consider high level perspection.

* 1. [24/0668](https://mentor.ieee.org/802.11/dcn/24/11-24-0668-01-00bn-data-forwarding-within-txop-for-xr-use-cases.pptx) Data-forwarding-within-TXOP-for-XR-use-cases Seongho Byeon

C:, slide 7,, STA B send A-MPDU1 to AP and AP sends A-MPDU 1 to STA A. Does AP not need to decode A-MPDU?

A: MAC addesses should be changed.

C: If AP does not particapte in, then AP does not decrypt the data and STA A and STA B should exchange security keys.

A: Let me think about more.

C: If MAC addess is changed by AP, how do you know addresses? ICF or QoS data?

A: If AP know destination address (A3) and forwarding traffic, it’s possible. And it can transmit it in ICF also.

C: What’s the different between this and relaying?
A: For Relay, AP is endpoint. In this case, AP is relay.

C: I need have more details. Whether A and B can hear each other?

C: why can’t you address this in TXOP sharing? You can use the existing TXOP sharing scheme. What’s the gap? Why would you go with this? Rather than SCS and TXOP sharing?

A: STA initiates the transmission and AP forwards it to another STA.

C: SCS is already there. Defines the requirement of STAs.

A: SCS may not be appropriate for aperiodic traffic.

C: Do we need DF-ICF/ICR for data forwarding case always?

A: It depends on the scenarios. AP may need time for data forwarding procedure.

C: What’s the DF-End? Is it CF-End?

A: CF-end is for finishing the TXOP. DF-END is not.

* 1. [24/0449](https://mentor.ieee.org/802.11/dcn/24/11-24-0449-02-00bn-considerations-on-dynamic-subchannel-operation-follow-up.pptx) Considerations on DSO–Follow Up Liuming Lu

C: slide 3, do you have some details of IDC scenarios ?

A: Some allocation is for bluetooth transsmion.

C: It’s not the bluetooth case because the bluetooth is not frequency hopping.

C: OBSS scenarios means it’s suffer from OBSS transmission you can still use SR. Why do you consider?

A: In SR case, low rate may be used. In DSO, high data rate can be used.

C: slide 8, it looks like power save not DSO for reduction of bandwidth.

A: operating parameters should be negotiated.

C: DSO negotiation slide(6), you need just operating bandwidth of STA not maximum operating bandwidth. If STA may change operating bandwidth, they should negotiate it. It may be complicated

C: Figure (slide 8), do you assume DSO operation, STA may switch the channel. STA will not cover primary channel. That’s the typical case.

A:Primary channel can be used for other STAs. Primary 20 need to be occupied.

* 1. [24/0797](https://mentor.ieee.org/802.11/dcn/24/11-24-0797-00-00bn-operating-mode-request.pptx) Operating Mode Request Yongsen Ma

C: We have OMN or OMI.

A: Existing is OMI or OMN just notification. In this case, we want to negotiate request/accepted.

C: What’s the difference of transition from low capa to high capap?

C: If AP operates in low capa, then STA can transmit request of high capa?

C: On high capa, we can get high throughput.

A: You can do this this is just an example. There could be other parameters rather than BW or NSS. EDCA parameters.

The teleconference was adjourned at 12:00 ET.

**June 13, 2024 (TGbn MAC ad hoc teleconference)**

Chairman: Srinivas Kandala (Samsung)

Secretary: Jeongki Kim (Ofinno)

This meeting took place using a webex.

**Introduction**

1. The Chair (Srinivas Kandala, Samsung) calls the meeting to order at 10:00am ET. The Chair introduces himself and the Secretary (Jeongki Kim, Ofinno).
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.
	1. **Copyright Policy: Participants are advised that**
		1. IEEE SA’s copyright policy is described in [Clause 7](https://standards.ieee.org/about/policies/bylaws/sect6-7.html%22%20%5Cl%20%227) of the IEEE SA Standards Board Bylaws and [Clause 6.1](https://standards.ieee.org/about/policies/opman/sect6.html) of the IEEE SA Standards Board Operations Manual;
		2. Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy
4. The Chair recommends using IMAT for recording the attendance.
	1. 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.
	2. If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to Srinivas Kandala (srini.k1@samsung.com), Jeongki Kim (jeongki.kim.ieee@gmail.com), and Xiaofei Wang (xiaofei.wang@interdigital.com)

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| Name | Affiliation |
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| Asai, Yusuke | Nippon Telegraph and Telephone Corporation (NTT) |
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| Kim, Sang Gook | LG ELECTRONICS |
| Kim, Sanghyun | WILUS Inc. |
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| Klein, Arik | Huawei Technologies Co., Ltd |
| Lee, Gwangho | Korea National University of Transportation |
| Lee, Hong Won | LG ELECTRONICS |
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| Li, Weiyi | Spreadtrum Communication USA, Inc |
| Li, Yanchun | Huawei Technologies Co., Ltd |
| Lim, Dong Guk | LG ELECTRONICS |
| LIU, QINGLAI | Panasonic |
| Lou, Hanqing | InterDigital, Inc. |
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| LU, Yuxin | TCL Industries |
| Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| Ma, Yongsen | SAMSUNG ELECTRONICS |
| Max, Sebastian | Ericsson AB |
| McCann, Stephen | Huawei Technologies Co., Ltd |
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| Mutgan, Okan | Nokia |
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| Neishaboori, Azin | General Motors Company |
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| Norouzi, Sara | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
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| Patil, Abhishek | Qualcomm Incorporated |
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| RISON, Mark | Samsung Cambridge Solution Centre |
| Roy, Rishabh | SAMSUNG ELECTRONICS |
| Sadiq, Bilal | Samsung Research America |
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| SUH, JUNG HOON | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
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| Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| Yee, James | MediaTek Inc. |
| Yoon, Yelin | LG ELECTRONICS |
| Zhang, Jiayi | Ofinno |
| Zhao, Yue | Huawei Technologies Co., Ltd |
| Zhou, Lei | H3C Technologies Co., Limited |
| Zhou, Pei | TCL |

1. The Chair asked whether there is comment about agenda in 11-24/964r4.
	1. The Chair goes through the submissions.
		1. [24/0525](https://mentor.ieee.org/802.11/dcn/24/11-24-0525-01-00bn-mac-header-data-integrity-with-relaxed-receiver-requirement.pptx) MAC header/data integrity with relaxed RXer req. Li-Hsiang Sun [Q&A]
		2. [24/0443](https://mentor.ieee.org/802.11/dcn/24/11-24-0443-00-00bn-discussion-on-bounded-delay-in-industrial-scenarios.pptx) Discussion on Determining Latency in Industrial Scenarios Yue Xu
		3. [24/0668](https://mentor.ieee.org/802.11/dcn/24/11-24-0668-01-00bn-data-forwarding-within-txop-for-xr-use-cases.pptx) Data-forwarding-within-TXOP-for-XR-use-cases Seongho Byeon
		4. [24/0797](https://mentor.ieee.org/802.11/dcn/24/11-24-0797-00-00bn-operating-mode-request.pptx) Operating Mode Request Yongsen Ma
		5. [24/0318](https://mentor.ieee.org/802.11/dcn/24/11-24-0318-00-00bn-robust-secondary-channel-access.pptx) Robust Secondary Channel Access Yanchun Li
		6. [24/0449](https://mentor.ieee.org/802.11/dcn/24/11-24-0449-02-00bn-considerations-on-dynamic-subchannel-operation-follow-up.pptx) Considerations on DSO–Follow Up Liuming Lu
	2. For 525, need more presentations. It’s ok.
	3. The agenda is approved.

 **Submissions**

1. [24/0493](https://mentor.ieee.org/802.11/dcn/24/11-24-0493-02-00bn-dynamic-channel-switch-operation.pptx) Dynamic channel switch operation Liwen Chu

C: slide 5, STA sets the NAV ..

A: If OBSS detects, it sets basic NAV

C: slide 4, two approaches, we should allow AP can allocate TXS allocation.

A: We assume this is simpler.

C: slide 5, you assuming hidden node issue.

A: OBSS traffic also has soliciting frame and response frames.

C: slide 8, CTS may not be decoded. Non-HT PPDU .. are you talking about implementation or others?

A: channel combination is simpler. This is for SU PPDU. TB PPDU is different.

C: slide 6, how does option 1 work? Intention?

A: This BSRP is dynamic channel pucture.

C: Which option is preferred?

A: Option is better.

C: CTS happens before DSO or after DSO?

A: After DSO

C: slide 5, NAV, baseline update if longer, What is the PPDU longer, wider?

A: If longer and narrow, still , we already use the BW in secondary.

1. [24/0517](https://mentor.ieee.org/802.11/dcn/24/11-24-0517-00-00bn-preallocation-of-subband-for-dso-follow-up.pptx) Preallocation of subband for DSO - follow up Vishnu Ratnam

C: values for subband switching. 20MHz has such a large value. How you got this number? 20MHz STA with larger value. Implementation?

A: Will be longer switch time.

C: Certain architection could be possible?

A: Yes.

C: AP decide whether it responds immediately? whether preallocation is done or not,

C: how about EMLSR device? UHR EMLSR device alternatively supports this?

A: Both can support.

C: Higher value can be adoptted to 80+ STAs.

C: This delay may be 1ms also.

C: slide 5, STA 3, 4 are EMLSR, they should receive ICF.

A: I expect no. How we define the switch back.

A: Depends AP’s preference who transmits CTS or Protection.

C: What’s the switching delay ?

C: slide 7, this is compliciated by AP scheduling, padding for STA 1-2, padding for STA 3-6, Data for STA 1-2 not much.

1. [24/0318](https://mentor.ieee.org/802.11/dcn/24/11-24-0318-00-00bn-robust-secondary-channel-access.pptx) Robust Secondary Channel Access Yanchun Li

C: What happen when AP 1 is busy? Do you have a simulation result?

A: When AP2 queries AP 1, if AP1 is busy? AP 1 responds.

C: Overhead?

C: combination of MAP and NPCA?

A: Indeed, there are some codinations or helping between Aps? There is hidden node issues. This can reduce robustness issue. If there is no hidden node, AP can directly go to secondary channel.

C: how does AP 2 know AP 1’s ? How about other APs ?

A: If AP does not have some STAs that supports switching, it does not solicit the AP1.

1. [24/0591](https://mentor.ieee.org/802.11/dcn/24/11-24-0591-00-00bn-emlsr-secondary-channel-operation.pptx) EMLSR Secondary Channel Operation Morteza Mehrnoush

C: Difference between EMLSR-SC and DSO?

A: Basic behavior is same.

C: EMLSR supports DSO. Addtional capability?

A: generally same. Some limitation.

C: slide 3, what’s the ICF for UHR STA?

C: Slide 5, what’s the initial response after data?

C: What’s the motivation of combining EMLSR with DSO?

A: Mechansim is similar. Both need ICF for channel switching. Both are in a TXOP.

C: Are you assuming EMLSR-SC is in fixed channel? Negotition?

A: AP can schedule the preallocation or negotion.

C: link switch delay + channel switching delay?

A: It’s one shot switch.

The teleconference was adjourned at 12:00 ET.

**June 17, 2024 (TGbn MAC ad hoc teleconference)**

Chairman: Srinivas Kandala (Samsung)

Secretary: Jeongki Kim (Ofinno)

This meeting took place using a webex.

**Introduction**

1. The Chair (Srinivas Kandala, Samsung) calls the meeting to order at 19:00 ET. The Chair introduces himself and the Secretary (Jeongki Kim, Ofinno).
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.
	1. **Copyright Policy: Participants are advised that**
		1. IEEE SA’s copyright policy is described in [Clause 7](https://standards.ieee.org/about/policies/bylaws/sect6-7.html%22%20%5Cl%20%227) of the IEEE SA Standards Board Bylaws and [Clause 6.1](https://standards.ieee.org/about/policies/opman/sect6.html) of the IEEE SA Standards Board Operations Manual;
		2. Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy
4. The Chair recommends using IMAT for recording the attendance.
	1. 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.
	2. If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to Srinivas Kandala (srini.k1@samsung.com), Jeongki Kim (jeongki.kim.ieee@gmail.com), and Xiaofei Wang (xiaofei.wang@interdigital.com)

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| Asterjadhi, Alfred | Qualcomm Incorporated |
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| Baykas, Tuncer | Ofinno |
| Byeon, Seongho | SAMSUNG ELECTRONICS |
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| Fang, Yonggang | MediaTek Inc. |
| Gu, Jaheon | Samsung Electronics Co., Ltd. |
| Gu, Xiangxin | Spreadtrum Communications (Shanghai) Co., Ltd. |
| Gupta, Binita | Cisco Systems, Inc. |
| Ha, Taeyoung | Samsung Electronics Co., Ltd. |
| Haider, Muhammad Kumail | Meta Platforms, Inc. |
| Hasabelnaby, Mahmoud | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| Hedayat, Ahmadreza | Apple Inc. |
| Hosseinianfar, Hamid | Ofinno |
| Hsu, Yung Lin | National Taiwan University |
| huang, kaikai | Nokia |
| Inohiza, Hirohiko | Canon |
| Inoue, Kyosuke | SHARP CORPORATION |
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| Jia, Boqi | Huawei Technologies Co., Ltd |
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| Lim, Yeon Geun | Newracom Inc. |
| Lou, Hanqing | InterDigital, Inc. |
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| Yang, Jimmy | Moxa Inc. |
| Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
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| Zhang, Jiayi | Ofinno |
| Zhao, Yue | Huawei Technologies Co., Ltd |
| Zhou, Pei | TCL |

1. The Chair asked whether there is comment about agenda in 11-24/964r7.
	1. The Chair goes through the submissions.
	2. Technical Submissions-Feedback + Relay Part 1:
		1. [24/0783](https://mentor.ieee.org/802.11/dcn/24/11-24-0783-00-00bn-non-ap-sta-triggered-dso.pptx) Non AP STA Triggered DSO Chaoming Luo
		2. [24/0264](https://mentor.ieee.org/802.11/dcn/24/11-24-0264-01-00bn-timing-information-sharing-for-next-generation-wlans.pptx) Timing Information Sharing for Next Generation WLANs Peshal Nayak
		3. [24/0531](https://mentor.ieee.org/802.11/dcn/24/11-24-0531-00-00bn-buffer-status-for-low-latency.pptx) Buffer Status for Low Latency Liangxiao Xin
		4. [24/0385](https://mentor.ieee.org/802.11/dcn/24/11-24-0385-00-00bn-discussion-on-11bn-relay-operation.pptx) Discussion on 11bn Relay Operation Kosuke Aio
		5. [24/0650](https://mentor.ieee.org/802.11/dcn/24/11-24-0650-01-00bn-a-case-for-opportunistic-relaying.pptx) A case for opportunistic relaying Bilal Sadiq
		6. For 525, need more presentations. It’s ok.
	3. The agenda is approved.

 **Submissions**

1. [24/0783](https://mentor.ieee.org/802.11/dcn/24/11-24-0783-00-00bn-non-ap-sta-triggered-dso.pptx) Non AP STA Triggered DSO Chaoming Luo

C: It is for the coex indication? Is there anything new change for DSO?

A: STA indicates DSO transmission.

C: I think Coex indication may be enough. AP may reject the request?

A: AP may be decision point.

C: You don’t want a separate indication.

C: Why do you need switch delay? STA already is in 80MHz. No hardward change.

A: In thate case, STA may not need the delay. For 20MHz only case, it may need it.

C: slide 5, what’s the source of the interference? OBSS transmission? You do know the start time of interference.

A: This can be in-device interference. STA may not know OBSS interference.

C: In that case, STA usually has indication for the time period. I think this can be indicated earlier than the BA. When does STA can indicate it in BA?

C: You can use response frame for this. STA 1 is 80MHz? This is not DSO operation case.

A: Yes, IT can be DL OFDMA case.

C: Although STA indicates in BA, AP does not do confirmation? This might be issue.

A: That’s possible.

C: slide 6, this is with TXOP? STA2 indicates the DSO .

C: IDC DSO, exmaple 1, STA 1 has full bandwidth capability. You can decouple several mechanism. This is not actual DSO. New wording may be confusing.

1. [24/0264](https://mentor.ieee.org/802.11/dcn/24/11-24-0264-01-00bn-timing-information-sharing-for-next-generation-wlans.pptx) Timing Information Sharing for Next Generation WLANs Peshal Nayak

C: this is more valuable information.

C: what’s you focusing on? Delay bound?

A: Delay bounds is good parameters. AP does not know when the packet is arrived at the STA side?

A: Delay bound is not enough for AP scheduling. Without traffic pattern, delay bound is not useful.

C: Some information is not converged.

C: 11be spec defines a lot of time information in QoS characteristic. I’m not sure which parameters are missing.

A: STA may not know traffic arrival time and cannot provide it in QoS element.

C: slide 10, this is another scenario. 11be defines this time informaiton between AP and STA.

C: type information, is it for the type of information of MSDU?

A: I need further discussion on it. There are different approaches. That is open for exactly signaling.

C: It’s not a straightforward for STA side.

A: Need more discussion

C: Overall, important topic. Too much information may be overhead. Delay bound arrival time is in 11be.

C: how to provide this information? For implementation, how does the STA retransmit data?

A: timestamp is related to TSF timer.

1. [24/0531](https://mentor.ieee.org/802.11/dcn/24/11-24-0531-00-00bn-buffer-status-for-low-latency.pptx) Buffer Status for Low Latency Liangxiao Xin

C;, slide 8, why T1 predictable in this case? How get the information?

A: It can get from UL, application layer already has round trip delay. This is a historical information. This might be out of .11.

C: This duration is dynamic or static?

A: This is statistic. It depends on implementation.

C: Service is application layer. There is lack of way to provide information from application layer to Mac layer within STA side?

A: We can provide interface to provide from app layer to mac layer.

C: You’re considering DL?

1. [24/0385](https://mentor.ieee.org/802.11/dcn/24/11-24-0385-00-00bn-discussion-on-11bn-relay-operation.pptx) Discussion on 11bn Relay Operation Kosuke Aio

C: I wondering about cross link results. Are you considering / what’s assumption of MCS FCS check?

A: we assume FCS check of each MPDUs? For coventional, relay node knows packets with the previous SN of the lost packet.

C: That can be argument.

C: slide 9, what will happen in transmission failed in the txop sharing?

A: When packet error happens from relay node to STA? I only assume transmission is complete within TXOP. It may be out of TXOP limts. Relay nodes can try to retransmit at next TXOP.

C: We should take account.

C: Do you assume the TXOP sharing or EDCA?

1. [24/0650](https://mentor.ieee.org/802.11/dcn/24/11-24-0650-01-00bn-a-case-for-opportunistic-relaying.pptx) A case for opportunistic relaying Bilal Sadiq

Presented not finished.

Adjourned at 21:00 ET