IEEE P802.11
Wireless LANs

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| EDP Epoch Transition Period Comment Resolution |
| Date: 2024-06-28 |
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Abstract

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This submission proposes comments resolution of the following 5 CIDs received for TGbi Draft 0.4:

CIDs:1112, 1118, 1176, 1340, 1502

Revisions:

* Rev 0: Initial version of the document.

1. Introduction

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGbi Draft. The introduction and the explanation of the proposed changes are not part of the adopted material.

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| **CID** | **Commenter** | **Clause**  | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 1112 | Stephane Baron | 10.71.2.1 | 55.01 | This part shall not be in the introduction but rather in a dedicated chapter defining the behaviour during the transition period. | commenter will bring a contribution to define the transition period behaviour | Revised, Agree in principle:Document 1162r0 account for resolution of this CID. Part related to the transition period has been moved in a new clause. Instruction to the editor: apply changes referenced with tag: #1112 |
| 1118 | Stephane Baron | 10.71.2.5 | 57.43 | Move this part to a chapter dedicated to the transition period handling | commenter will bring a contribution to define the transition period behaviour | Revised, Agree in principle:Document 1162r0 account for resolution of this CID. Part related to the transition period has been moved in a new clause.Instruction to the editor: apply changes referenced with tag: #1118 |
| 1176 | Patrice Nezou | 10.71.2.5 | 57.43 | The transition period should be addressed in a separated subclause. | The commenter will provide contribution to define them. | Revised, Agree in principle:Document 1162r0 account for resolution of this CID. Part related to the transition period has been moved in a new clause.Instruction to the editor: apply changes referenced with tag: #1176 |
| 1340 | Mark Rison | 10.71.2.3 | 56.38 | "An overview of the group EDP epoch is shown in Figure 10-168 (Over-view of group EDP epoch)." -- it is not clear what the value of this is without explanatory text. Also case horrors in the figure. It's not clear what "OTA\_AID 0 OTA\_IndividualMAC Header\_<n>" refer to, nor how this relates to "Receive with AID and MAC Header 0 and 1", nor why Boundary + dot11EpochTransitionTime does not have an arrow, unlike the - on the other side | As it says in the comment | Revised, Agree in principle:Document 1162r0 account for resolution of this CID. Arrows have been added for each occurrence of MIB variable in the drawing, references to AID or MAC addresses have been removed and detailed in the associated description.Instruction to the editor: apply changes referenced with tag: #1340 |
| 1502 | Mark Rison | 10.71.2.1 | 55.01 | "During the transition period of an EDP Epoch, the EDP parameters assigned to a STA during the preceding EDP Epoch, shall remain valid only for the following operations:-- Retransmission of a frame.-- Reception of a retransmitted frame." -- won't a combination of old frames using the old epoch parameters and new frames using the new one allow an attacker to track a device across the epochs, somehow? | As it says in the comment | Revised, Agree in principle:Document 1162r0 account for resolution of this CID. Detailed authorized operations have been added to the description.In particular, to avoid tracking across Epoch boundaries, a rule, forbidding the usage in the same TXOP of old frames using old epoch parameters and new frames using the new one, has been added. This rule is only valid for STA since and AP could send traffic to different stations in a given TXOP. Instruction to the editor: apply changes referenced with tag: #1502 |

The baseline for this text is 802.11 REVme D6.0, and 802.11 TGbi draft D0.4

***TGbi editor: Modify clause 10.71.2.1 as follow***

**10.71.2.1 Introduction**

**[…]**

Each EDP Epoch starts with a transition period (#1112)as described in 10.71.2.x (EDP Epoch transition operations).

During the transition period of an EDP Epoch, the EDP parameters assigned to a STA during the preceding

EDP Epoch, shall remain valid only for (#1112)some operations (#1112)as described in 10.41.2.x

A transition period terminates at the end of a transition timeout interval or before the end of the transition

timeout interval, after the completion of the successful transmissions or retransmissions initiated during the

preceding EDP Epoch, whichever comes first.

***TGbi editor: Modify clause 10.71.2.3 as follow***

* Group EDP epoch(#604r11)

A CPE AP MLD advertises group EDP epoch support in Beacon and Probe Response frames by setting value 1 to the Group EDP Epoch Supported field of the Extended RSN Capabilities field.

A CPE non-AP MLD advertises group EDP epoch support in (Re)Association Request frames by setting value 1 to the Group EDP Epoch Supported field of the Extended RSN element.

Group EDP Epoch support is optional for the CPE AP MLD and the CPE non-AP MLD.

A CPE AP MLD advertises group EDP epochs by sending an unicast protected action frame containing an Enhanced Group Privacy Availability element for each relevant group EDP epoch in the BSS. A CPE AP MLD shall advertise group EDP epochs to each non-AP MLD that joins the BSS and may advertise group EDP epochs when significant changes have affected one or more groups.

A CPE non-AP MLD may be a member of only one group EDP epoch at a time.

A CPE non-AP MLD may request to join a group EDP epoch by sending an EDP epoch setting protected action request frame, containing the group ID that the non-AP MLD wishes to join.

The AP MLD responds with an EDP epoch setting protected action response frame, accepting or rejecting the request.

A CPE non-AP MLD may leave the group EDP epoch by sending EDP epoch setting protected action request frame.

If a CPE non-AP MLD is a member of a group EDP epoch, the non-AP MLD and the AP MLD shall anonymize the selected OTA fields of the individually addressed frames according to group epoch settings as defined in 10.71.3 (Establishing frame anonymization parameter sets), 10.71.4 (MAC Header anonymization and transmitting functions), 10.71.5 (MAC header anonymization and receiving functions) and 10.71.6 (Frame anonymization and AID). (#1112)

***TGbi editor: Modify clause 10.71.2.5 as follow***

* Epoch boundaries(#604r11)

The affiliated STAs of a CPE MLD anonymize their EDP OTA fields of individually addressed frames at the beginning of each new epoch. The next epoch boundary occurs at a Next Epoch Start Time defined in the EDP Epoch Setting field of the Group Enhanced Privacy element of the (Re)Association Response frame or the EDP epoch setting action response frame. The Epoch Interval Duration field of the same fields and frames defines the interval of the following Group EDP epochs sequence.

Each EDP epoch has associated EDP Group members.

A CPE non-AP MLD and CPE AP MLD may calculate the anonymized OTA values before the EDP epoch during which they are to be used.

At the start of the new EDP epoch, the new anonymization parameters are used to anonymize the selected OTA fields of all transmitted individually addressed frames.

(#1118)

The MAC Header parameters of the individually addressed frames are anonymized as defined in 10.71.3 (Establishing frame anonymization parameter sets), 10.71.4 (MAC Header anonymization and transmitting functions) and 10.71.5 (MAC header anonymization and receiving functions).

***TGbi editor: Add the following clause to 10.71.2***

(#1112, #1176)**10.71.2.X EDP Epoch transition operations**

(#1340) To manage parameter’s randomized rotation once associated, each CPE non-AP station shall maintain an RCM state variable that can take the following values:

* RCM Idle: FA parameters will not change until next EDP Epoch transition.
* RCM Ready: A change of FA parameters will occur in dot11EpochStartTimeMargin.
* RCM Transition: A change of FA parameters just occurred and both current and old FA parameters can be used following specific rules

Default value for the RCM State is RCM Idle state. (#1340)

(#1118)registered to an EDP Epoch Sequence shall enter in RCM Ready state a dot11EpochStartTimeMargin before the start of next EDP Epoch start time of the sequence.

The CPE AP MLD shall consider all the CPE non-AP MLD registered an EDP Epoch Sequence in RCM Ready state a dot11EpochStartTimeMargin before the start of the next EDP Epoch of the sequence.

In RCM Ready state, each CPE non-AP MLD registered to an EDP Epoch Sequenceto receive from its AP-MLD:

* Any frame that uses the FA parameter set established for the current EDP Epoch.
* IFA etestablished for the next EDP Epoch

In RCM Ready state, a CPE non-AP MLD shall only transmit or re-transmit frames using FA parameters associated to the current EDP Epoch.

* An AP-MLD shall accept to receive from its associated non-AP MLD in RCM Ready state: Any frame that uses the FA parameter set established for the current EDP Epoch.
* Individually addressed frames that use the FA parameter set established for the next EDP Epoch.

A CPE AP MLD shall only transmit or re-transmit frames, to a non-AP MLD in RCM Ready state, using FA parameters associated to the current EDP Epoch.

In RCM Ready state, a CPE non-AP MLD shall switch to RCM Transition state at the next EDP Epoch start time of its registered EDP Epoch Sequence, for a dot11EpochTransitionTime maximum duration.

A CPE AP MLD shall consider all the non-AP MLDs, registered to an EDP Epoch Sequence, in RCM Transition state at the next EDP Epoch start time of the sequence.

(#1502) In RCM Transition state, a non-AP MLD

* Any frame received using the current FA parameter set.
* Individually addressed frames using the FA parameter set associated to the immediately preceding EDP Epoch in its registered EDP Epoch Sequence.

In RCM Transition state, a non-AP MLD shall not transmit frames using different FA parameters in a single TXOP.

A non-AP MLD may re-transmit frames originally using FA parameter set associated to the immediately preceding EDP Epoch. (#1502)

(#1502) A non-AP MLD shall transmit new frames using FA parameter set associated to the current EDP Epoch.

A dot11EpochTransitionTime after entering the RCM Transition state, a non-AP MLD shall flush all remaining buffered traffic for transmission or re-transmission using any FA parameter set different from the current FA parameter set, and enter in RCM Idle state.

In RCM Idle state, any non-AP MLD shall only accept, transmit, or re-transmit frames using the current FA Parameter set.

An AP-MLD shall only accept frames using current FA Parameter set from non-AP MLD in RCM Idle state.

An AP-MLD shall only transmit or re-transmit frames, to a non-AP MLD in RCM Idle state, using the current FA Parameter set. (#1502)

(#1340)



* Overview of group EDP epoch