IEEE P802.11  
Wireless LANs

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| --- | --- | --- | --- | --- |
| 802.11bi – Comment resolution for CIDs 1057, 1069 and 1070 | | | | |
| Date: September 10, 2024 | | | | |
| Author(s): | | | | |
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## Background

The motivation for the proposed change goes in line with comment CID 1069 and 1070, and proposes to reorganize the EDP element in such a way that the EDP Epoch Settings can be reused in different elements as needed. It also serves the later purpose to add it to the (Re) Association Response frame as per CID 1057 and 1069.

The idea is the following:

* Define the EDP Settings field as a non-element. This allows us to reuse it wherever easily. The content is basically the same you have defined but reorganized.
* The element contains a lot of information which may not be needed (for example in the request for the EDP Epoch in the (Re) Association frame) so I include one control field to indicate which fields are present. This takes the same length as the length field which in my opinion is not needed. This enables its reuse in multiple frames
* Reuse this field in the EDP element
* The Minimum pacing element can be replaced by the EDP element by removing optional fields
* Reuse this field in the EDP Group parameter frame

## Comments Addressed

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 1057 | EGPA element can be unified with EDP element. The EDP element only provides information on the default group, but you can create one single element with Group ID optional (in case it is the default group), number of STAs optional and you will get exactly the same as in the EDP element. I can provide a contribution for that. | If we agree on merging this, I can provide a contribution | Revised  The proposed EDP Settings field includes all the information that is needed for all element defined.  TGbi editor, please include the changes defined in this document. |
| 1069 | The mechanism proposed to assign the default group upon association can be improved to reduce the overhead. All groups need to be advertised to each STA in unicast for it to decide which one to join, this introduces a lot of overhead. | I will provide a contribution | Revised  Proposed resolution includes in (Re) Association frames of EDP elements to send the requested Epoch parameters and answer with the assigned Epoch.  TGbi editor, please include the changes defined in this document and marked with #1069. |
| 1070 | Now that we know the features to be advertised in the EDP element and the related elements, we can improve the definition of each element to reduce complexity. I will provide a contribution trying to simplify the elements based on the current spec text | I will provide a contribution | Revised  Proposed text integrates all Epoch configuration options in one single non-element field. This field is later use for all elements and frames defined.  TGbi editor please implement the changes in this document tagged with (#CID 1070) |

## Resolution

Modification to the original text based on 1544/r0

***TGbi editor please add the following clauses (#1070)***

**9.4.1.XX EDP Epoch Settings**

The EDP Epoch Settings field includes the information regarding the actual parameters of an Epoch.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | ~~Length~~ | Group ID | EDP Epoch Settings Control | ~~Epoch Interval~~  ~~Unit (#1240)~~ | ~~Epoch Interval Length (#1240)~~ | Epoch Interval | ~~Reserved~~ | Next  Epoch  Start  Time | Time  Range | Epochs Remaining (#1027) | Minimum Epoch Pacing Parameters (#1270) | Number Of participating Affiliated STAs |
| Bits: | ~~8~~ | 0 or 8 (#1057) | 8 | ~~3~~ | ~~11 (#1240)~~ | 16 | ~~2 (#1056, #1240)~~ | 0 or 64 | 0 or 16 | 0 or 8 | 0 or 16 | 0 or 24 (#1057) |

**Figure XX: EDP Epoch Settings field**

The EDP Epoch Settings field contains the EDP epoch parameters of an EDP epoch sequence for the non-AP MLD (#1100, #1237, #1072).

The Group ID field signals an identifier of the EDP group (#1107). Value 0 indicates the default group. Value 255 is reserved. (#1057)

The EDP Epoch Settings Control is defined as follows (#1057)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Group ID present | Next Epoch Start Time present | Time Range present | Epoch Remaining present | Participating Affiliated STAs Count present | Participating Affiliated STAs Percentage present | Minimum Epoch Pacing Parameters present | Reserved | |
| Bits | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |

Each of the bits of the EDP Epoch Settings Control field indicate the presence of the corresponding field in the EDP Epoch Settings field when set to 1 and its absence when set to 0.

The Epoch Interval field is defined as follows:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Epoch Interval  Unit (#1240) | Epoch Interval Length (#1240) | Reserved |
| bits | 3 (#1240) | 11 (#1240) | 2 |

The Epoch Interval Length (#1241) field contains the length of the EDP epoch, expressed in Epoch Interval Units (#1241), shown in Table 9-401af (Epoch Interval Units and epoch durations) (#1241). Epoch Interval Length value 0 is reserved (#1262).

|  |  |  |
| --- | --- | --- |
| **Epoch Interval Unit field value** | **Epoch Interval Unit** | **Max Epoch Duration (pprox..)** |
| 0 | 1000 s | 23 d 16 h 36 min 40 s |
| 1 | 1 s | 34 min 7 s |
| 2 | Reserved | N/A |
| 3 | Reserved | N/A |
| 4 | Reserved | N/A |
| 5 | Reserved | N/A |
| 6 | Reserved | N/A |
| 7 | Reserved | N/A |

**Epoch Interval Units and epoch durations**

The Minimum Epoch Pacing field signals the minimum epoch duration value that the non-AP MLD can support. The format of the Minimum Epoch Pacing element is the same as the Epoch Interval field.

(#1116)The time range field is the range used by the stations to determine a random delay added to the EDP Epoch reference start time.

The Epochs Remaining (#1027) field indicates the number of EDP Epochs left in the sequence (#1258) after the current epoch finishes, except 255, which means that the sequence duration is unlimited (#1258). The length of the Epoch Sequence Duration field is 1 octet.

The Number of (#1088) Participating Affiliated STAs field is optional. When present, the field signals an indication of the number of affiliated STAs currently participating to this group EDP epoch on the current link.

|  |  |  |
| --- | --- | --- |
|  | Participating Affiliated STAs Count | Participating Affiliated STAs Percentage |
| Octets: | 2 | 1 |

**~~Number of Participating Affiliated STAs field~~**

The (#1283) Participating Affiliated STAs Count field represents an indication of the number of affiliated STAs participating in the signaled group on the link. The Participating Affiliated STAs Percentage field, with values (#1283) in the range of 0 to 100, represents an indication of the percentage of the associated affiliated STAs participating to the signalled group on the link. Values 101-255 are reserved. (#1057)

9.4.2.XX **Enhanced Data Privacy (EDP) element**

The Enhanced Data Privacy (EDP) element signals EDP epoch settings (#1236, #1087).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID Extension | EDP Epoch Settings |
| Octets: | 1 | 1 | 1 | variable |

Figure XX: Enhanced Data Privacy (EDP) element

The Element ID, Length and Element ID Extension fields are defined in 9.4.2.1 (General).

The EDP Epoch Settings field is defined in 9.4.1.XX

***TGbi editor: please remove the following clause based on DCN 24/1544r0 (#1070)***

**~~Enhanced Data Privacy (EDP) element~~**

~~The Enhanced Data Privacy (EDP) element signals EDP epoch settings (#1236, #1087).~~

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | ~~Element ID~~ | ~~Length~~ | ~~Element ID Extension~~ | ~~EDP Epoch Settings~~ |
| ~~Octets:~~ | ~~1~~ | ~~1~~ | ~~1~~ | ~~13 (#1053, #1056)~~ |

**~~Enhanced Data Privacy (EDP) element~~**

~~The Element ID, Length and Element ID Extension fields are defined in 9.4.2.1 (General).~~

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | ~~Length~~ | ~~Group ID~~ | ~~Epoch Interval~~  ~~Unit (#1240)~~ | ~~Epoch Interval Length (#1240)~~ | ~~Reserved~~ | ~~Next~~  ~~Epoch~~  ~~Start~~  ~~Time~~ | ~~Time~~  ~~Range~~ | ~~Epochs Remaining (#1027)~~ | ~~Number Of participating Affiliated STAs~~ |
| ~~Bits:~~ | ~~8~~ | ~~8 (#1057)~~ | ~~3 (#1240)~~ | ~~11 (#1240)~~ | ~~2 (#1056, #1240)~~ | ~~64~~ | ~~16~~ | ~~8~~ | ~~0 or 24 (#1057)~~ |

**~~EDP Epoch Settings field~~**

~~The EDP Epoch Settings field contains the EDP epoch parameters of an EDP epoch sequence for the non-AP MLD (#1100, #1237, #1072).~~

~~The Group ID field signals an identifier of the EDP group (#1107). Value 0 indicates the default group. Value 255 is reserved. (#1057)~~

~~The Epoch Interval Length (#1241) field contains the length of the EDP epoch, expressed in Epoch Interval Units (#1241), shown in Table 9-401af (Epoch Interval Units and epoch durations) (#1241). Epoch Interval Length value 0 is reserved (#1262).~~

|  |  |  |
| --- | --- | --- |
| **~~Epoch Interval Unit field value~~** | **~~Epoch Interval Unit~~** | **~~Max Epoch Duration (approx.)~~** |
| ~~0~~ | ~~1000 s~~ | ~~23 d 16 h 36 min 40 s~~ |
| ~~1~~ | ~~1 s~~ | ~~34 min 7 s~~ |
| ~~2~~ | ~~Reserved~~ | ~~N/A~~ |
| ~~3~~ | ~~Reserved~~ | ~~N/A~~ |
| ~~4~~ | ~~Reserved~~ | ~~N/A~~ |
| ~~5~~ | ~~Reserved~~ | ~~N/A~~ |
| ~~6~~ | ~~Reserved~~ | ~~N/A~~ |
| ~~7~~ | ~~Reserved~~ | ~~N/A~~ |

**~~Epoch Interval Units and epoch durations~~**

~~(#1116)The time range field is the range used by the stations to determine a random delay added to the EDP Epoch reference start time.~~

~~The Epochs Remaining (#1027) field indicates the number of EDP Epochs left in the sequence (#1258) after the current epoch finishes, except 255, which means that the sequence duration is unlimited (#1258). The length of the Epoch Sequence Duration field is 1 octet.~~

~~The Number Of (#1088) Participating Affiliated STAs field is optional. When present, the field contains (#1282) the number of affiliated STAs currently participating to this group EDP epoch on the current link.~~

|  |  |  |
| --- | --- | --- |
|  | ~~Participating Affiliated STAs Count~~ | ~~Participating Affiliated STAs Percentage~~ |
| ~~Octets:~~ | ~~2~~ | ~~1~~ |

**~~Number of Participating Affiliated STAs field~~**

~~The (#1283) Participating Affiliated STAs Count field represents an indication of the number of affiliated STAs participating in the signaled group on the link. The Participating Affiliated STAs Percentage field, with values (#1283) in the range of 0 to 100, represents an indication of the percentage of the associated affiliated STAs participating to the signaled group on the link. Values 101-255 are reserved. (#1057)~~

***TGbi editor, based on the text of DCN 24/1429r1, please remove the Minimum Pacing Element. (#1070)***

***TGbi editor: Please modify the following clause based on 24/1429r1 (#1070)***

9.6.31## EPB Robust Action Frames

**9.6.xxx EDP Group parameter frame (#1057)**

The EDP Group Parameter frame is used to carry the EDP Epoch Settings for one or more group using the procedures defined in 10.71.2.3 and 10.71.2.4. The EDP Group Parameter frame contains the information shown in Figure 9-xxx.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Category | Robust Action | Group Count | ~~EDP Element List~~  EDP Epoch Settings List |
| Octets: | 1 | 1 | 1 | variable |

Figure 9-XXX EDP Group Parameter frame format

The Category field is defined in 9.4.1.11.

The Robust Action field is defined in 9.6.18.1.

The Group Count field specifies the number of EDP elements that are in the EDP Epoch Settings List ~~Element~~ List field. Value 0 is reserved. (#1278)

The EDP ~~Element~~ Epoch Settings List field contains one or more EDP Setting fields (as defined in 9.4.1XX) indicating the parameters of EDP groups that the AP MLD wants to convey to the non-AP MLD.

***TGbi editor, add the following rows to the tables for the (Re) Association frames as indicated (#1069)***

**9.3.3.5 Association Request frame format**

Insert new rows to Table 9-64 in numeric order (not all lines shown):

**Table 9-64 – Association Request frame body**

|  |  |  |
| --- | --- | --- |
| Order | Information | Notes |
| … |  |  |
| <Last assigned +1> | Requested EDP element | The **EDP element** is present if the Association Request frame is encrypted; otherwise, it is not present. This element carries the desired parameters of the Epoch to be joined by the sending STA. (#1069) |

**9.3.3.6 Association Response frame format**

Insert new rows to Table 9-65 in numeric order (not all lines shown):

**Table 9-64 – Association Response frame body**

|  |  |  |
| --- | --- | --- |
| Order | Information | Notes |
| … |  |  |
| <Last assigned +1> | Assigned EDP element | The **EDP element** carrying configuration and Group Epoch ID for the assigned group epoch. This element is present if the Association Response frame is encrypted; otherwise, it is not present. (#1069) |

**9.3.3.7 Reassociation Request frame format**

Insert new rows to Table 9-66 in numeric order (not all lines shown):

**Table 9-66 – Reassociation Request frame body**

|  |  |  |
| --- | --- | --- |
| Order | Information | Notes |
| … |  |  |
| <Last assigned +1> | Requested EDP element | The **EDP element**  is present if the Association Request frame is encrypted; otherwise, it is not present. This element carries the desired parameters of the Epoch to be joined by the sending STA. (#1069) |

**9.3.3.8 Reassociation Response frame format**

Insert new rows to Table 9-67 in numeric order (not all lines shown):

**Table 9-67 – Reassociation Response frame body**

|  |  |  |
| --- | --- | --- |
| Order | Information | Notes |
| … |  |  |
| <Last assigned +1> | Assigned EDP element | The **EDP element** carrying configuration and Group Epoch ID for the assigned group epoch. This element is present if the Association Response frame is encrypted; otherwise, it is not present. (#1069) |