IEEE P802.11
Wireless LANs

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| Comment resolution for CID 3460 |
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Abstract

This document provides resolutions for CID#3460 and CID #3459.

| **CID** | **Page** | **Clause** | **Resn Status** | **Comment** | **Proposed Change** | **Resolution** | **Owning Ad-hoc** |
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| 3459 | 1551.21 | 10.2.2.16.3 |  | There is no single "Alternate Preferred" status | specific statuses from table 8-203 |  | MAC |

Discussion

The following status values are defined in Table 8-193—FMS Element Status and TFS Response Status definition:

|  |  |
| --- | --- |
| **Value** | **Description** |
| 0 | Accept |
| 1 | Deny, due to request format error or ambiguous classifier. |
| 2 | Deny, due to lack of resources on AP. |
| 3 | Deny, due to requested classifier(s) matching 2 or more existing streams on different intervals. |
| 4 | Deny, by policy, requested stream or filter is not permitted to participate in the service. |
| 5 | Deny, reason unspecified. |
| 6 | Alternate Proposed(#3462), due to existing stream with different delivery interval. |
| 7 | Alternate Proposed(#3462), due to policy limits on AP. |
| 8 | Alternate Proposed(#3462), due to AP changed the delivery interval. |
| 9 | Alternate Proposed(#3462), due to AP multicast rate policy. |
| 10 | Terminate, due to AP policy change. |
| 11 | Terminate, due to lack of resources of AP. |
| 12 | Terminate, due to other FMS stream with higher priority. |
| 13 | Alternate Proposed(#3462), due to AP changed the maximum delivery interval. |
| 14 | Alternate Proposed(#3462), due to AP unable to provide requested TCLAS-based classifiers. |
| 15–255 | Reserved |

Neigher single “Alternate Preferred” nor “Alternate Proposed” is defeind in Table 8-193.

The same issue is applied to the usage of “Terminate” and “Deny”.

Inconsistence of using status codes of Accept, Deny, Terminate, and Alternate Proposed in 10.2.2.16.3 need to be fixed.

Proposed resolution: REVISED

Proposed Change:

***TGmc Editor: Change sections 10.2.2.16.3 (in D3.4) as suggested below:***

* + - * 1. FMS Request procedures

A non-AP STA that supports FMS may request use of FMS by sending an FMS Request frame or Reassociation Request frame that includes one or more FMS Request elements to an AP that supports FMS. Each FMS Request element includes one or more FMS subelements. Each FMS subelement identifies an FMS stream, the requested delivery interval and the maximum delivery interval for that stream. The FMS delivery interval shall be an integer multiple of the DTIM period.

Upon reception of an FMS Request frame or Reassociation Request frame, the AP shall transmit a corresponding single FMS Response frame or Reassociation Response frame that contains a corresponding FMS Response element for each FMS Request element in the same order received. Each FMS Response element shall contain an FMS Status subelement and zero or more other subelements drawn from Table 8-192 (Status subelements(#1429)) that corresponds to each FMS subelement in the FMS Request element, in the same order.

For each FMS subelement, the following rules apply:

If the AP accepts the FMS subelement and the requested delivery interval, the Element Status in the corresponding FMS Status subelement shall be set to “Accept~~”~~ and the FMSID is assigned to a nonzero value. In addition:

* If the FMS stream identified in the FMS subelement matches a delivery interval already in use at the AP, the AP shall assign the FMS stream to use the FMS Counter ID assigned for that delivery interval.
* When an FMS Stream is accepted by the AP, the Current Count value for that FMS Stream is decremented by 1 for each DTIM Beacon frame in which the Current Count field appears.
* The AP may reschedule transmission of the FMS Stream identified by an FMSID to align the transmission time of the FMS stream to the transmission time of other FMS streams that the STA is already receiving at the same delivery interval. The AP has the following two options:
* Notify the STAs using that FMS Stream. The AP shall keep the nonzero Current Count value the same across two consecutive Beacon frames in which the Current Count field appears. The algorithm by which the AP chooses to align or offset the different FMS counters is unspecified.
* Transmit an unsolicited FMS Response frame to the group address included in the original FMS Response frame for the stream with the updated Delivery Interval field when the Current Count field value reaches 0. Since the AP transmits this FMS Response frame as a group addressed frame, the frame will be scheduled for delivery at the appropriate DTIM interval when all non-AP STAs are awake to receive the frame.
* An AP may terminate the use of FMS and resume default (non-FMS) transmission rules for any FMS stream identified by FMSID for any reason. To terminate the FMS stream, the AP shall send an unsolicited FMS Response frame to the group address included in the original FMS Response frame with Delivery Interval set to 0 and the Element Status in the FMS Status subelement set to ~~“Terminate.”~~ one of following values “Terminate, due to AP policy change”, “Terminate, due to lack of resources of AP”, and “Terminate, due to other FMS stream with higher priority”.
* If the FMS subelement contained a nonzero delivery interval and the non-AP STA specified a maximum delivery interval as part of the FMS request, the AP shall not modify the delivery interval for the stream greater than the maximum delivery interval specified by the non-AP STA.
* An AP shall transmit MSDUs belonging to the same FMSID in the same order that they were received at the MAC Data SAP. MSDUs belonging to the different FMSIDs are transmitted by the AP at the appropriate DTIM in the order received at the MAC data SAP based on the interval configured for the FMS stream.

If the AP denies the FMS subelement for any reason, including requested delivery interval, maximum delivery interval and TCLAS, the Element Status in the corresponding FMS Status subelement shall be set to one of following values “Deny, due to request format error or ambiguous classifier”, “Deny, due to lack of resources on AP”, “Deny, due to requested classifier(s) matching 2 or more existing streams on different intervals”, “Deny, by policy, requested stream or filter is not permitted to participate in the service”, and “Deny, reason unspecified”. ~~Deny~~.

If the AP selects an alternate delivery interval or alternate maximum delivery interval from the value specified in the FMS Request, the FMS Status subelement shall be set to one of following values “Alternate Proposed, due to existing stream with different delivery interval”, "Alternate Proposed, due to policy limits on AP", "Alternate Proposed, due to AP changed the delivery interval”, and “Alternate Proposed, due to AP changed the maximum delivery interval”. ~~Alternate Proposed(#3462),~~ and the FMS subelement shall indicate the AP selected value(s).

To terminate the use of FMS for an FMS Stream identified by FMSID, the non-AP STA shall transmit an FMS Request frame with an FMS Request element and FMS subelement with the FMSID matching the FMS stream and the delivery interval set to 0.

The AP shall respond to a malformed FMS Request frame or Reassociation Request frame with an FMS Response frame or Reassociation Response frame that denies all FMS Request elements by including an FMS Status code “Deny, due to request format error or ambiguous classifier” in the Element Status field in each FMS Status subelement in the FMS Response element

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| 3460 | 1551.439 | 10.2.2.16.4 |  | No behaviour is indicated for "Alternate Preferred, due to existing stream with different delivery interval", "Alternate Preferred, due to policy limits on AP" and "Alternate Preferred, due to AP changed the delivery interval" (and maybe others?) | Add normative behaviour for all statuses |  | MAC |

Discussion:

The following status values are defined in Table 8-193—FMS Element Status and TFS Response Status definition:

|  |  |
| --- | --- |
| **Value** | **Description** |
| 0 | Accept |
| 1 | Deny, due to request format error or ambiguous classifier. |
| 2 | Deny, due to lack of resources on AP. |
| 3 | Deny, due to requested classifier(s) matching 2 or more existing streams on different intervals. |
| 4 | Deny, by policy, requested stream or filter is not permitted to participate in the service. |
| 5 | Deny, reason unspecified. |
| **6** | **Alternate Proposed(#3462), due to existing stream with different delivery interval.** |
| **7** | **Alternate Proposed(#3462), due to policy limits on AP.** |
| **8** | **Alternate Proposed(#3462), due to AP changed the delivery interval.** |
| 9 | Alternate Proposed(#3462), due to AP multicast rate policy. |
| **10** | **Terminate, due to AP policy change.** |
| **11** | **Terminate, due to lack of resources of AP.** |
| **12** | **Terminate, due to other FMS stream with higher priority.** |
| 13 | Alternate Proposed(#3462), due to AP changed the maximum delivery interval. |
| 14 | Alternate Proposed(#3462), due to AP unable to provide requested TCLAS-based classifiers. |
| 15–255 | Reserved |

**Issue #1:** Missing decription for 3 “Alternate Propossed …” status codes and 3 “Terminate …” status codes as marked “Bold”.

The behavior of the status code 6, 7, and 8 can be same as the behavior of status code 13 since all are about alternate proposed delivery interval.

* If the Element Status value in FMS Status subelement is Alternate Proposed due to AP changed the maximum delivery interval:
* The AP does not deliver the requested streams at the delivery interval as specified by the non-AP STA in the FMS Request element. The delivery interval specified in the FMS Status subelement specifies a delivery interval that the AP is willing to accept for the specified streams if the non-AP STA sends another FMS Request with that delivery interval specified.
* The non-AP STA may submit a new FMS Request that includes the delivery interval value received from the AP. If the AP accepts this new FMS Request, it shall respond as described in 10.2.2.16.2 (FMS general procedures).

Suggest adding behavior for “Terminate...”

**Issue #2**: Status codes used in at 1551.61 and 1552.8 are not consistent with Table 8-193, where they are defined.

At 1551.61, change “If the Element Status value in FMS Status subelement is Alternate Preferred due to AP changed the maximum delivery interval”.

To: “If the Element Status value in FMS Status subelement is “Alternate Preferred, due to AP changed the maximum delivery interval””

At 1552.8, change “If the Element Status value in FMS Status subelement is Alternate Preferred due to AP unable to provide requested TCLAS-based classifiers” to

“If the Element Status value in FMS Status subelement is “Alternate Preferred, due to AP unable to

provide requested TCLAS-based classifiers””.

Prposed resolutions: REVISED

Proposed Changes:

***TGmc Editor: Change sections 10.2.2.16.4 (in D3.4) as suggested below:***

* + - * 1. FMS Response procedures

Upon reception of an FMS Response element in a frame that has a value in (#3387) Address 1 that matches its MAC address or that is a group address corresponding to a group of which it is a member and that was transmitted by the AP with which it is associated, a non-AP STA that supports FMS shall use the following procedures, based on the value of the Element Status value in FMS Status subelement in the received FMS Response element.

* If the Element Status value in FMS Status subelement is “Accept”:
* The AP has accepted the FMS subelement contained within the FMS Request element. If the FMS Request element specified a nonzero delivery interval, the AP will deliver the requested streams at the delivery interval as specified by the non-AP STA in the FMS Request element.
* After receiving the FMS Response element, the non-AP STA shall be awake for the next DTIM beacon so that the non-AP STA can synchronize with the FMS Current Count for the requested FMS Stream. Once synchronized with the FMS Current Count, the non-AP STA need not wake up at every DTIM interval to receive group addressed BUs.
* If the Element Status value in FMS Status subelement is one of following values “Deny, due to request format error or ambiguous classifier”, “Deny, due to lack of resources on AP”, “Deny, due to requested classifier(s) matching 2 or more existing streams on different intervals”, “Deny, by policy, requested stream or filter is not permitted to participate in the service”, and “Deny, reason unspecified”. ~~Deny~~:
* The AP will not deliver the requested streams at the delivery interval as specified by the non-AP STA in the FMS Request element. If the AP denies the usage of FMS for a particular stream, the stream is transmitted at every DTIM interval.
* If the Element Status value in FMS Status subelement is one of following values “Alternate Proposed, due to existing stream with different delivery interval”, "Alternate Proposed, due to policy limits on AP", "Alternate Proposed, due to AP changed the delivery interval”, and “Alternate Proposed, due to AP changed the maximum delivery interval”:
* The AP does not deliver the requested streams at the delivery interval as specified by the non-AP STA in the FMS Request element. The delivery interval specified in the FMS Status subelement specifies a delivery interval that the AP is willing to accept for the specified streams if the non-AP STA sends another FMS Request with that delivery interval specified.
* The non-AP STA may submit a new FMS Request that includes the delivery interval value received from the AP. If the AP accepts this new FMS Request, it shall respond as described in 10.2.2.16.2 (FMS general procedures).
* If the Element Status value in FMS Status subelement is “Alternate Proposed, due to AP unable to provide requested TCLAS-based classifiers”:
* The AP does not deliver the requested streams at the delivery interval as specified by the non-AP STA in the FMS Request element. The TCLAS element(s) or TCLAS Processing element in the TCLAS Status subelement contains one or more fields or subfields whose values have been modified by the AP. The AP may include fewer TCLAS elements in the FMS Response element than were present in the request; when the AP’s response includes a single TCLAS element, it does not include a TCLAS processing element. If the AP changes a TCLAS element’s Classifier Type field in the FMS Response element but is unable to suggest a value for the Classifier Mask field, it shall set that field to 0. If the AP changes a TCLAS element’s Classifier Type field or Classifier Mask field in the FMS Response element but is unable to suggest values for one or more Classifier Parameter subfields, it shall set those fields to 0.
* A non-AP STA receiving a modified TCLAS element having a Classifier Mask field equal to 0 or Classifier Parameter subfields equal to 0 shall interpret these values as meaning that no suggested value has been provided by the AP.
* If the Element Status value in FMS Status subelement is one of following values “Terminate, due to AP policy change”, “Terminate, due to lack of resources of AP”, and “Terminate, due to other FMS stream with higher priority”:
* The AP will terminate the use of FMS transmission rules for any FMS stream identified by FMSID. If the AP terminates the usage of FMS for a particular stream, the stream is transmitted at DTIM interval.
* The non-AP STA shall wake up at every DTIM interval to reeive group addressed BUs after receiving the FMS Response element.