IEEE P802.11  
Wireless LANs

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| FILS comment resolutions | | | | |
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Abstract

The submission presents suggested comment resolutions for comments received agains FILS text in the REVmd-D0.1 draft.

Covered CIDs are: 47, 34, 35, 36, 37, 43, 46, 87, 50, 51, 113, 338, 44,

CID 47

**Comment** (Cls. 11.47.3.2; P2053L29)

"The AP fills the FILS HLP Container element with the destination MAC address, the source MAC address and the HLP packet. The source MAC address shall be the source MAC address of the received HLP packet. The destination MAC address shall be the destination MAC address of the received HLP packet. It is the MAC address of the non-AP STA or a group address." What is "It"? Plus why so long winded? Addresses should be pretty straightforward.

**Proposed Resolution by commenter**:

" In the FILS HLP Container element, the AP enters the destination MAC address of the received HLP packet, the source MAC address of the received HLP packet, and the HLP packet. The destination MAC address is the MAC address of the non-AP STA or a group address."

**Discussion**:

The “it” in the quoted text refers to the destination MAC address.

The suggested rewording is technically equivalent, avoids the “it”, and is more comprehensive.

**Suggested Resolution**:

Accept.

CID 34

**Comment (Cls. 11.47.2.1; P2050L33)**

"A FILS AP supporting FILS discovery may generate and transmit FILS Discovery frames. The FILS Discovery frame shall not be transmitted in a DSSS or HR/DSSS PPDU." Is there a requirement that the FD is transmitted at a basic rate? Seems sensible.

**Proposed Resolution by commenter**:

Replace cited with "A FILS AP supporting FILS discovery may generate and transmit FILS Discovery frames. The FILS Discovery frame shall be transmitted at a basic rate but shall not be transmitted in a DSSS or HR/DSSS PPDU."

**Discussion**:

The only suggested change is to add the requirement to transmit the FILS Discovery frame at basic rate.

In TGai, there has not been a specific discussion on the pro and cons for having a requirement to transmit the FILS discovery frame at basic rate.

Argument in favor for the proposed resolution:

* making transmission at basic rate mandatory assures that all standard-compliant implementations can receive the FILS Discovery frame

Argument against the proposed resolution:

* there are scenarios in which transmission at a rate other than the basic rate might be feasible to reduce air-time of the FILS Discovery frame (e.g. scenarios in which only equipment from a single manufacturer is deployed, which then guaranteed reception of the FILS Discovery frame).
* Such requirement might prohibit efficient use of the FILS Discovery frame in a Multiple BSSID environments as (see Cls. 10.7.8): “If the multiple BSSID capability is supported, Beacon frames shall be transmitted using any basic rate valid for all of the BSSs supported. If no such rate exists, then Beacon frames shall be transmitted using any mandatory PHY rate for any PHY type that all BSSs have in common.” So it is well possible, that a common basic rate for all Multiple BSSs does not exist.

Conclusion:

Add requirement to transmit at a mandatory PHY rate. Give preference to a basic rate.

**Suggested Resolution:**

Replace cited with "A FILS AP supporting FILS discovery may generate and transmit FILS Discovery frames. The FILS Discovery frame shall be transmitted at a mandatory PHY rate, and should be transmitted at a basic rate, but shall not be transmitted in a DSSS or HR/DSSS PPDU."

CID 35

**Comment (Cls. 11.47.2.1; P2050L47):**

"An AP transmitting a FILS Discovery frame may transmit the FILS Discovery frame between Beacon Frames."... Hmm... first, would be tough to transmit if not transmitting. Second, what's the point of the FD if not between beacons?

**Proposed Resolution by commenter:**

Replace cited with "A FILS AP should transmit FILS Discovery frame(s) between Beacon Frames."

**Discussion:**

Technical content is unchanged. Suggested replacement improves readability.

**Suggested Resolution:**

Accept.

CID 36

**Comment (Cls. 11.47.2.1; P2050L48):**

"The interval between the transmission of a Beacon frame and a subsequent FILS Discovery frame shall be no less than the interval indicated in dot11FILSFDFrameBeaconMinimumInterval. The transmission interval between subsequent FILS Discovery frames by an AP in a beacon interval shall be no less than the interval indicated in dot11FILSFDFrameBeaconMinimumInterval." Surely a simpler way of saying this, also does not seem to cover the case of a FILS FD followed by a Beacon which should also follow the MinimumInterval rule.

**Proposed Resolution by commenter:**

Replace cited with."The interval between either the transmission by an AP of any Beacon frame and any FILS Discovery frame, or any two FILS Discovery frames, shall be no less than the interval indicated in dot11FILSFDFrameBeaconMinimumInterval." .

**Discussion:**

The periodicity of transmitting beacon frames was not supposed to be effected by transmission of FILS Discovery frames (which would, e.g., be the case if – as suggested in the comment -- a FILS FD followed by a Beacon, which should also follow the MinimumInterval rule.

The wording in the suggested comment resolution would create such dependency. For example:

* beacon interval = 100ms
* FDFrameBeaconMinInterval = 30ms
* Transmission to appear:
  + Beacon @ 0ms
  + FDF @ 30ms
  + FDF @ 30ms
  + FDF @ 90ms
  + Next beacon @ 100ms
    - Note: the suggested wording would defer this transmission @ 120ms

For various optimizations, which are not in scope of the standard but implemented in some equipment, it is important that the beacon is transmitted at constant intervals.

The existing wording is technically correct.

**Suggested** **Resolution**:

Reject. The suggested rewording would impact the peridiocity of the beacon, which is not intended. For a detailed discussion of the comment, please refer to https://mentor.ieee.org/802.11/dcn/17/11-17-1100-01-000m-fils-comment-resolutions.docx

CID 37

**Comment (Cls. 11.47.2.1; P2050L53):**

"If dot11FILSFDFrameBeaconMaximumInteval is not equal to 0, and if a Beacon frame or FD frame has not been transmitted by an AP for a period that is equal to dot11FILSFDFrameBeaconMaximumInterval, that AP shall queue for transmission a FD frame or a Beacon frame unless the next TBTT is within a duration indicated by the value of dot11FILSFDFrameBeaconMinimumInterval." Surely a simpler way of saying this, and if y previous comment is accepted, the MinimumInterval case is covered.

**Proposed Resolution by commenter:**

"If dot11FILSFDFrameBeaconMaximumInterval is not equal to 0, the interval between either the transmission by an AP of any Beacon frame and any FILS Discovery frame, or any two FILS Discovery frames, shall be no more than the interval indicated in dot11FILSFDFrameBeaconMaximumInterval."

**Discussion:**

The proposed resolution effects the peridiocity of the beacon as defined by the target beacon transmission time. See also discussion of CID 36

**Suggested Resolution:**

Reject. The suggested rewording would impact the peridiocity of the beacon, which is not intended. For a detailed discussion of the comment, please refer to https://mentor.ieee.org/802.11/dcn/17/11-17-1100-01-000m-fils-comment-resolutions.docx

CID 43

**Comment (Cls. 11.47.2.2; P2051L36):**

"..received FD AP-CSN information..." FD ais not needed here.

**Proposed Resolution by commenter:**

At P2051 L 36 delete "FD"

**Discussion**:

Referenced sentence:

If the received FILS Discovery frame contains the AP-CSN subfield as defined in 11.1.4.3.7 (Enhanced

FILS active scanning to preferred AP(11ai)) and the non-AP STA maintains previously obtained BSS

Configuration Parameter Sets, the non-AP STA shall use the received FD AP-CSN information as follows:

The sentence talks about the AP-CSN subfield contained in a FILS Discovery frame. As such, the received information is “AP-CSN” information and the FD in front of it is not required.

**Suggested Resolution:**

Accept.

CID 46 & 87

**CID-46 Comment (Cls. 11.47.3.2; P2053L23):**

"If, before it transmits a (Re)Association Response frame, the AP receives one or more HLP packets that have the non-AP STA's MAC address or a group address as the destination address, from the upstream network or BSS." If what? I await with bated breath what to do.

**CID-46 Proposed Resolution by commenter:**

Correct or complete the cited sentence.

**CID-87 Comment:**

FILS HLP encapsulation section has two incomplete sentences in the paragraph describing AP behavior: "If, before it transmits a (Re)Association Response  
frame, the AP receives one or more HLP packets that have the non-AP STA's MAC address or a group  
address as the destination address, from the upstream network or BSS." (page 2053 lines 17-19) and "If, before it transmits a (Re)Association Response frame, the AP  
does not receive any HLP packets that have the non-AP STA's MAC address or a group address as the  
destination address, from the upstream network or BSS." (page 2053 lines 22-25). Neither sentence describe what action the AP should perform under the listed conditions.

**CID-87 Proposed Resolution:**

I'm working on a contribution (11-17/906) to address my P802.11ai/FILS  
comments.

**Discussion:**

Corresponding text from REVmd reads (relevant sentences highlighted in bold face):

The AP should wait to a transmit (Re)Association Response frame until dot11HLPWaitTime has elapsed after receiving a (Re)Association Request frame(Ed) . **If, before it transmits a (Re)Association Response frame, the AP receives one or more HLP packets that have the non-AP STA’s MAC address or a group address as the destination address, from the upstream network or BSS**. The order of the FILS HLP Container elements in the (Re)Association Response frame is same as the order of receiving the HLP packets. If the AP receives HLP packets for the non-AP STA after transmitting a (Re)Association Response frame, the AP transmits the HLP packets as Data frames. **If, before it transmits a (Re)Association Response frame, the AP does not receive any HLP packets that have the non-AP STA’s MAC address or a group address as the destination address, from the upstream network or BSS.** The status code in the (Re)Association Response frame is not effected by the presence or absence of a FILS HLP Container element. The packet encapsulation procedure for each FILS HLP Container element is as follows:

Clause with that incomplete if-statement appears in TGai-D6.4 (and is since then unchanged in the subsequent TGai drafts).

The clause was moved there (rearrangement of clauses). It appears in TGai-D6.3 as Cls. 10.47.3.2.

The corresponding section from TGai-D6.3, Cls. 10.47.3.2 is shown below (sentence per comment in bold to highlight it):

The AP should wait to a transmit (Re)Association Response frame until dot11HLPWaitTime has elapsed after receiving a (Re)Association Request. **If, before it transmits a (Re)Association Response frame, the AP receives one or more HLP packets from the upstream network or BSS that have the non-AP STA’s MAC address or a group address as the destination address, the AP transmits each HLP packet in a different FILS HLP Container element in the (Re)Association Response frame.** The order of the FILS HLP Container elements in the (Re)Association Response frame is same as the order of receiving the HLP packets. If the AP receives HLP packets for the non-AP STA after transmitting a (Re)Association Response frame, the AP transmits the HLP packets as Data frames. **If, before it transmits a (Re)Association Response frame, the AP does not receive any HLP packets from the upstream network or BSS that have the non-AP STA's MAC address or a group address as the destination address, the AP shall not transmit any FILS HLP Container elements in the (Re)Association Response frame.** The status code in the (Re)Association Response frame is not effected by the presence or absence of a FILS HLP Container element. The packet encapsulation procedure for each FILS HLP Container element is:

It seems that the missing part of the sentence was lost when moving the text into its new place.

**Suggested Resolution:**

REVISED.

AT P2053 L22-25:

Replace:

"If, before it transmits a (Re)Association Response frame, the AP receives one or more HLP packets that have the non-AP STA's MAC address or a group address as the destination address, from the upstream network or BSS."

With:

„If, before it transmits a (Re)Association Response frame, the AP does not receive any HLP packets from the upstream network or BSS that have the non-AP STA's MAC address or a group address as the destination address, the AP shall not transmit any FILS HLP Container elements in the (Re)Association Response frame. „

AT P2052 L17-19

Replace:

“ If, before it transmits a (Re)Association Response frame, the AP receives one or more HLP packets that have the non-AP STA’s MAC address or a group address as the destination address, from the upstream network or BSS. ”

With:

“If, before it transmits a (Re)Association Response frame, the AP receives one or more HLP packets from the upstream network or BSS that have the non-AP STA’s MAC address or a group address as the destination address, the AP transmits each HLP packet in a different FILS HLP Container element in the (Re)Association Response frame. ”

CID 50

**Comment (Cls. 11.47.3.3; P2054L53):**

"... an IP address assignment procedure (using mechanisms that are out of scope)..." Enough already of the 'out of scope', how many times do we need to say this AND this indicates that the STA could use a mechanism that is in scope? Just delete it.

**Proposed Resolution by commenter:**

Delete" (using mechanisms that are out of scope)" also at P2055L18

**Discussion**:

The sentence right before the sentence cited in the comment reads: “…. then the

STA may initiate IP address assignment procedure using a FILS Container frame or mechanisms

that are out of scope of this specification“

As such, it is clearly stated that the IP address assignment procedure is out of scope. Deleting the repetitive text per comment is feasible.

**Suggested Resolution**:

Accept.

CID 51

**Comment (Cls. 11.47.3.3; P2055L23):**

"If a non-AP STA determines a duplicate IP address assignment (through means that are out of scope for this standard)," Again seems to say that a STA may use means that are in the standard. Is it so difficult to notice a duplicate? Either make it clear that the standard does not describe how to determine a duplicate or just delete the phrase.

**Proposed Resolution by commenter:**

Either repace cited with "If a non-AP STA determines a duplicate IP address assignment (method of determination is out of scope for this standard)," or delete "(through means that are out of scope for this standard),"

**Discussion:**

In the same clause (see P2054L53), it is stated that the IP address assignment procedure is out of scope. Hence the repetition of that fact in parantheses is not required.

**Suggested Resolution:**

REVISED:

delete "(through means that are out of scope for this standard),"

CID 113

**Comment (Cls. 11.47.4; P2055L50):**

L is not defined in 11.6.1.

**Proposed Resolution by commenter:**

Please cite the correct reference for L.

**Discussion**:

Comment correct.

The subclause the comment is against was moved going from TGai-D6.3 to TGai-D6.4 from Cls. 10.47.4 to 11.47.4. TGai-D6.3 was based on P802.11-REVmcTM/D4.0

In TGai-D6.3, L is referenced as defined in 11.6.1 (Key Hirarchy).

The definition of L appears in REVmd-D0.1 in Cls. 1.5 (P125L1)

**Suggested Resolution:**

Revised: replace the reference to “11.6.1” with a reference to “1.5”

CID 338

**Comment (Cls. 11.47.5.3. P2056L37):**

In "If the non-AP STA satisfies all of the conditions specified in the present optional fields, the non-AP STA has a FILSC of 1 and it proceeds with a FILS procedure with the AP without additional delays. Otherwise, the  
non-AP STA shall have a FILSC of 0 and shall postpone the link setup with the AP until the time specified in the last received Differentiated FILS Time field elapses", the FILSC value setting of non-AP STA is not used in any other place. So there is no need to describe non-STA "internal" actions, and the corresponding text should be removed.

**Proposed Resolution by commenter:**

change "If the non-AP STA satisfies all of the conditions specified in the present optional fields, the non-AP STA has a FILSC of 1 and it proceeds with a FILS procedure with the AP without additional delays. Otherwise, the non-AP STA shall have a FILSC of 0 and shall postpone the link setup with the AP until the time specified in the last received Differentiated FILS Time field elapses. Each time the non-AP STA receives a Beacon  
and/or Probe Response frame including a Differentiated Initial Link Setup element, the non-AP STA shall check the FILSC Type field and update its FILSC."  
to  
"If the non-AP STA satisfies all of the conditions specified in the present optional fields, the non-AP STA shall proceed with a FILS procedure with the AP without additional delays. Otherwise, the non-AP STA shall postpone the link setup with the AP until the time specified in the last received Differentiated FILS Time field elapses."

**Discussion:**

The comment is right that the FILSC (=FILS category) is not used “stand alone” anywhere else in the document and that especially attached values of 0 or 1 are not used anywhere else.

The resolution proposed by the commenter deletes the requirement to check the FILSC Type each time a beacon or Probe Response frame is received. That should not be deleted.

**Suggested Resolution:**

Revised:

change

"If the non-AP STA satisfies all of the conditions specified in the present optional fields, the non-AP STA has a FILSC of 1 and it proceeds with a FILS procedure with the AP without additional delays. Otherwise, the non-AP STA shall have a FILSC of 0 and shall postpone the link setup with the AP until the time specified in the last received Differentiated FILS Time field elapses. Each time the non-AP STA receives a Beacon and/or Probe Response frame including a Differentiated Initial Link Setup element, the non-AP STA shall check the FILSC Type field and update its FILSC."

to

"If the non-AP STA satisfies all of the conditions specified in the present optional fields, the non-AP STA shall proceed with a FILS procedure with the AP without additional delays. Otherwise, the non-AP STA shall postpone the link setup with the AP until the time specified in the last received Differentiated FILS Time field elapses. Each time the non-AP STA receives a Beacon and/or Probe Response frame including a Differentiated Initial Link Setup element, the non-AP STA shall check the FILSC Type field."

CID 44

**Comment (Cls. 11.47.2.2; P2051L43):**

"If the AP-CSN values are not equal, a FILS non-AP STA may send a Probe Request frame including an AP-CSN element, with the value of the AP-CSN associated with the BSSID in the BSS Configuration Parameter set in the non-AP STA. When sending a Probe Request frame including an AP-CSN element, the FILS non-AP STA shall set the Address 1 and Address 3 fields in the Probe Request frame to the BSSID of the AP, of which the AP-CSN is being sent." Is this not simply an individually addressed Probe Request? Hence just say that.

**Proposed Resolution by commenter:**

Replace cited paragraph with "If the AP-CSN values are not equal, a FILS non-AP STA may send an individually addressed Probe Request frame including an AP-CSN element, with the value of the AP-CSN associated with the BSSID in the BSS Configuration Parameter set in the non-AP STA."

**Discussion:**

The text commented on talks about sending a Probe Request frame in result of receiving a AP-CSN from an AP which does not match the AP-CSN number cached in the non-AP. The destination of the Probe Response frame is uniquely identified (i.e. the AP that sent out the non-matching AP-CSN). Hence the Probe Response frame is always indivially addressed.

The proposed resolution simplifies the text while maintaining technical content.

**Suggested Resolution:**

Accept.

**References:**