IEEE P802.11
Wireless LANs

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| Resolution to Comments : CID 4703, 4014, 4338, 4590, 4591, 4592,4700,4013,4701,4705,4706,4707,4711,4932 |
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Abstract

This document presents suggested proposal towards CID 4703, 4014, 4338, 4590, 4591, 4592,4700,4013,4701,4705,4706,4707,4711,4932

***Modify the following definition into 10.3.1 as highlighted in red texts:***

* STA authentication and association

***Discussion:***

CID 4703, 4014, 4338, 4590, 4591, 4592,4700, 4013,4702,4705,4706,4707,4711,4932,4701 provide comments about FILS state machine and its state transition parameters. This proposal is intended to address and resolve the comments with adoption/revision to the suggestions.

***Proposed Resolution:***

**Revised**

### TGai Editor: Please apply the following changes to the subclauses of 10.3,

Notes to editor: the striked lines are removed, the highlight texts are the modifications.

**10.3 STA authentication and association**

* State variables

***Change as follows:***

A STA (local) for which dot11OCBActivated is false keeps an enumerated state variable for each STA (remote) with which direct communication via the WM is needed. In this context, direct communication refers to the transmission of any class 2 or class 3 frame with an Address 1 field that matches the MAC address of the remote STA.

A FILS STA shall have dot11FILSActivated equal to true and dot11OCBActivated equal to false ~~for which dot11OCBActivated is false and dot11FILSActivated is true~~ and uses the state transition as described in  10.3.2 (State transition diagram for nonmesh STAs), in which the STA keeps an enumerated state variable. [CID 4700, 4013, 4701]

A STA for which dot11MeshActivated is true (i.e., a mesh STA) does not use procedures described in 10.3.5 (Association, reassociation, and disassociation). Instead, a mesh STA uses a mesh peering management protocol (MPM) or an authenticated mesh peering exchange (AMPE) to manage states and state variables for each peer STA. See 13.3 (Mesh peering management (MPM)) and 13.5 (Authenticated mesh peering exchange (AMPE)) for details.

A STA for which dot11OCBActivated is true does not use MAC sublayer authentication or association and does not keep this state variable.

A STA for which dot11OCBActivated is true but intended to use FILS authentication will transition to State 5: FILS authenticated.

For non-mesh STAs, this state variable expresses the relationship between the local STA and the remote STA. It takes on the following values:

* State 1: Initial start state, for non-DMG STAs. Unauthenticated, unassociated. State 1 is not used
* by DMG STAs.
* State 2: Initial start state for DMG STAs. Authenticated (non-DMG STAs only), not associated.
* State 3: Authenticated (non-DMG STAs only) and associated (Pending RSN Authentication).
* State 4: For Infrastructure BSS and PBSS only, RSNA Established or Not Required. (Authenticated and associated).
* State 5: FILS authenticated and unassociated for FILS STA only. [CID 4014]] ~~State 5 is designed for the FILS authentication and FILS association protocol.~~

State 1 is not used by DMG STAs, and the state machine starts in State 2.

The state variable is kept within the MLME (i.e., is written and read by the MLME). The SME may also read this variable.

Mesh STAs manage the state variable as described in 13.3.2 (State variable management).

* State transition diagram for nonmesh STAs

 [CID 4703, 4338, 4590, 4591, 4932]

* Frame filtering based on STA state

***Change as follows:***

The current state existing between the transmitter and receiver STAs determines the ~~IEEE 802.11~~ [CID 2105] frame types that may be exchanged between that pair of STAs (see Clause 8). A unique state exists for each pair of transmitter and receiver STAs. The allowed frame types are grouped into classes and the classes correspond to the STA state. In State 1, only Class 1 frames are allowed. In State 2, either Class 1 or Class 2 frames are allowed. In State 3 and State 4, all frames are allowed (Classes 1, 2, and 3). In State 5, only frame classes 1 and 2 are allowed. In the definition of frame classes, the following terms are used:

* Within an infrastructure BSS: both the transmitting STA and the recipient STA participate in the same infrastructure BSS.
* Within a PBSS: both the transmitting STA and the recipient STA participate in the same PBSS.
* Within an IBSS: both the transmitting STA and the recipient STA participate in the same IBSS.
* dot11RSNAEnabled: reference to the setting of dot11RSNAEnabled at the STA that needs to determine whether a transmission or reception is permitted.

~~NOTE-The phrase “within a BSS” comprises “within a PBSS,” “within an IBSS,” “within a MBSS,” or “within an infrastructure BSS.”~~ [13/1330r2 Question: should this be a REVmc comment instead of ai? ]

STA A participates in the same infrastructure BSS as STA B if at least one of the following conditions is met:

* STA A is associated with STA B, and either STA A or STA B is an AP.
* STA A receives a frame with the value of its TA field equal to the MAC address of STA B and with the value of its BSSID field equal to the BSSID of the BSS with which STA A is associated.
* STA A receives an Information Response frame from the AP with which it is associated containing an explicit indication that STA B is a member of the BSS with which STA A is associated.

STA A participates in the same PBSS as STA B if at least one of the following conditions is met:

* STA A is associated with STA B, and either STA A or STA B is a PCP.
* STA A receives a frame with the value of its TA field equal to the MAC address of STA B and with the value of its BSSID field equal to the BSSID of the PBSS that STA A has joined or started.
* STA A receives a frame, i.e. an Information Response frame, from its PCP containing an explicit indication that STA B is a member of the PBSS that STA A has joined.

STA A participates in the same IBSS as STA B if STA A receives a frame with the value of its TA field equal to the MAC address of STA B and with the value of its BSSID field equal to the BSSID of the IBSS that STA A has joined or started.

The frame classes are defined as follows:

* Class 1 frames
* Control frames
* RTS
* DMG Clear to send (DMG CTS)
* CTS
* Ack
* Grant
* SSW
* SSW-Feedback
* SSW-Ack
* Grant Ack
* CF-End+CF-Ack
* CF-End
* Within an IBSS and within a PBSS when dot11RSNAEnabled is false, Block Ack (BlockAck)
* Within an IBSS and within a PBSS when dot11RSNAEnabled is false, Block Ack Request (BlockAckReq)
* Management frames
* Probe Request/Response
* Beacon

 ~~FD Frame~~ [CID 4705]

**iii Authentication**

**iv Deauthentication**

v ATIM

vi Public Action

 (including FD frame)

vii Self-protected Action

viii Within an IBSS, all Action frames and all Action No Ack frames

ix Unprotected DMG Action frames

x DMG: Link Measurement Request and Link Measurement Report frames

xi Within a PBSS when dot11RSNAEnabled is false, all Action and Action No Ack frames except the following frames:

* ADDTS Request
* ADDTS Response
* DELTS(Ed)
* Data frames
* Data frames between STAs in an IBSS
* Data frames between peers using DLS
* Data frames within a PBSS
* Extension frames
* DMG Beacon
* Class 2 frames
* Management frames
* Association Request/Response
* Reassociation Request/Response
* Disassociation
* Class 3 frames
* Data frames
* Data frames between STAs in an infrastructure BSS or in an MBSS
* Management frames
* Within an infrastructure BSS, an MBSS, or a PBSS, all Action and Action No Ack frames except those that are declared to be Class 1 or Class 2 frames (above)
* Control frames
* PS-Poll
* Poll
* SPR
* DMG DTS
* Block Ack (BlockAck), except those that are declared to be Class 1 (above)
* Block Ack Request (BlockAckReq), except those that are declared to be Class 1 (above)

Class 2 and Class 3 frames are not allowed in an IBSS. If a STA in an IBSS receives a Class 2 or Class 3 frame, it shall ignore the frame.

A non-FILS STA shall not transmit Class 2 frames unless in State 2 or State 3 or State 4 or State 5 [CID 4707]

A non-FILS STA shall not transmit Class 3 frames unless in State 3, ~~or~~ State 4 [CID 4706][13/1330r2 CID 2220][13/1330r4]

A FILS STA shall not transmit Class 3 frames unless in state 4. [CID 2051,2054, 2052]

A multi-band capable device that uses OCT to move from State 2 to either State 3 or State 4 shall not transmit frames before the transmitting STA becomes on-the-air enabled (see 10.33.4 (On-channel

Tunneling (OCT) operation)).

* General

***Change as follows:***

Subclause 10.3.5 (Association, reassociation, and disassociation) describes the procedures used for ~~IEEE Std 802.11~~[CID 2105] association, reassociation and disassociation.

The states used in this description are defined in 10.3.1 (State variables).

Successful non-FILS [CID 2056] association enables a STA to exchange Class 3 frames. Successful association sets the STA's state to State 3 or State 4.

Successful FILS association handshake enables a STA to exchange Class 3 frames. Successful association sets the FILS STA's state to State 4. [13/1330r2]

Successful reassociation enables a STA to exchange Class 3 frames. Unsuccessful reassociation when not in State 1 leaves the STA's state unchanged (with respect to the PCP/AP that was sent the Reassociation Request (which may be the current STA)). Successful reassociation sets the STA's state to State 3 or State 4 (with respect to the PCP/AP that was sent the Reassociation Request). Successful reassociation when not in State 1 sets the STA's state to State 2 (with respect to the current PCP/AP, if this is not the PCP/AP that was sent the Reassociation Request). Successful reassociation sets a FILS STA's state to State 4 and enables it to exchange Class 3 frames. Reassociation shall be performed only if the originating STA is already associated in the same ESS.

Disassociation notification when not in State 1 sets the non-FILS STA's state to State 2. Disassociation notification when not in State 1 sets a FILS STA's state to State ~~5~~ 1 [CID 4711, 4592]. The STA shall become associated again prior to sending Class 3 frames. A STA may disassociate a peer STA at any time, for any reason.

If non-DMG STA A in an infrastructure BSS receives a Class 3 frame from STA B that is authenticated but not associated with STA A (i.e., the state for STA B is State 2), STA A shall discard the frame. If the frame has an individual address in the Address 1 field, the MLME of STA A shall send a Disassociation frame to STA B.

If DMG STA A in an infrastructure BSS receives a Class 3 frame from STA B that is not associated with STA A (i.e., the state for STA B is State 2), STA A shall discard the frame. If the frame has an individual address in the Address 1 field, the MLME of STA A shall send a Disassociation frame to STA B.

If an MM-SME coordinated STA receives an Association Response frame with a result code equal to SUCCESS and with the value of the Single AID field within MMS element equal to 1, then

- For each of its MAC entities advertised within the MMS element and for which dot11RSNAEnabled is true, the state is set to State 3. Progress from State 3 to State 4 occurs independently in each such MAC entity.

- For each of its MAC entities advertised within the MMS element and for which dot11RSNAEnabled is false, the state is set to State 4.

If the MM-SME coordinated STA in State 3 is assigned an AID for only the MAC entity identified by the RA field of the Association Response with result code equal to SUCCESS, the MM-SME may repeat the association procedure for any other MAC entity coordinated by the MM-SME.

Association is not applicable in an IBSS. In an infrastructure BSS, association is required. In a PBSS, association is optional. APs do not initiate association.