IEEE P802.11  
Wireless LANs

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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | CR MSCS and CID4158 | | | | | | Date: 2020-06-03 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | email | | Matthew Fischer | Broadcom |  |  | [Matthew.fischer@broadcom.com](mailto:Matthew.fischer@broadcom.com) | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

Abstract

Proposed language to address TGmd D3.0 SA1 CIDs 4159, 4160 on MSCS and CID 4158.

Changes are referenced to TGmd D3.2.

**REVISION NOTES:**

**R0**:

initial

**R1**:

Update to D3.2

Update doc references

**R2**:

Add MLME changes

Make the use of (Re)Association and (re)association consistent – one is the frame, the other is the action

Remove the reference to CID 4160 from the heading in the changes section, since CI D 4160 resolution is reject and therefore, no proposed changes are related to CID 4160

Add “receipt of an MSCS Descriptor element” in 11.26.3 changes because for the (re)association case, the item received is not the MSCS Request frame, but the MSCS Descriptor element

Update doc references

**R3**:

One mixed case of ReAsso fixed

Update doc references

**R4**:

Fixed some header numbering – e.g. 6.3.7.4.2 -> 6.3.7.5.2, etc.

9.4.2.121 – changed three instances of “data field” to “Data field” as this is a named field for the general format of a subelement

11.26.3 - Changed the wording of the receipt of a (re)association frame to make it more restrictive

Update doc references

**R5**:

11.26.3 – added the word “Request” after “(Re)Association” in one place

Update doc references

**R6**:

9.4.2.121 SCS Descriptor element – moved the changes for this element to the 9.4.2.243 MSCS Descriptor element subclause

9.4.2.242 – added this new change, which corrects an error related to SCS and MSCS operation

11.26.3 – added “MSCS Status subelement” in two places

11.26.3 – split the first sentence into two, since the (Re)Association case cannot indicate “change”

Update doc references

**END OF REVISION NOTES**

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 TGmd Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGmd Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGmd Editor: Editing instructions preceded by “TGmd Editor” are instructions to the TGmd editor to modify existing material in the TGmd draft. As a result of adopting the changes, the TGmd editor will execute the instructions rather than copy them to the TGmd Draft.***

**CIDs**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution (Proposed)** |
| 4158 | Fischer, Matthew | 10.6.13.3 | 1799.00 | The formula "2x(VHT-MCS + 1) + 8x(NSS - 1)" is not correct. | Change to "2xVHT-MCS -1 + 8x(NSS - 1)" | Revise - TGmd editor to make changes as shown in 11-20/0516r6 that are marked with CID 4158 which generally agree with the commenter’s suggestion. |
| 4159 | Fischer, Matthew | 11.26.3 | 2451.00 | The MSCS could be optimized for fast Initial link setup and fast BSS transitions. At the moment the MSCS requires separate request and response frames which makes MSCS setup slow and adds signaling overheads. | Please include th MSCS setup signaling to the (Re) association request and response frames. | Revise - TGmd editor to make changes as shown in 11-20/0516r6 that are marked with CID 4159 which generally agree with the commenter’s suggestion. |
| 4160 | Fischer, Matthew | 11.26.3 | 2451.00 | The MSCS could have optional capability to maintain the DL frames UP mappiong tuples for the whole ESS. For instance, if a STA transition BSS from AP1 to AP2, the AP2 could use the learned DL UP settings from the AP1. This would eliminate the delay for the new AP to learn the UP settings from the UL frames transmitted by the STA. | Please define an optional ESS capability that allows the same MCSC DL frames UP mapping tuples to be used within the ESS. | Reject – the commenter has not provided enough information for the TG to make changes that would satisfy the comment. |
|  |  |  |  |  |  |  |

**Discussion:**

**Proposed Changes to TGmd D3.2:**

**CID 4158**

***TGmd editor: within TGmd D3.2, in 10.6.13.3 Additional rate selection constraints for VHT PPDUs, change the text as shown:***

**10.6.13.3 Additional rate selection constraints for VHT PPDUs**

If the channel width of the PPDU is equal to CBW80, CBW160, or CBW80+80, then the STA should not use a <VHT-MCS, NSS> tuple if the VHT-MCS is equal to 0 or 1 and both the HTMCS values 2xVHT-MCS + 8x(NSS – 1) and 2xVHT-MCS – 1 + 8x(NSS – 1) are marked as unsupported in the Rx MCS bitmask of the HT Capabilities element of the receiver STA.

**CID 4159**

***TGmd editor: within TGmd D3.2, modify 6.3.7.2.2 Semantics of the service primitive as described:***

**6.3.7.2.2 Semantics of the service primitive**

***TGmd editor: add the following parameter to the parameter list of the MLME-ASSOCIATE.request:***

MSCS Descriptor

***TGmd editor: add the following new row to the table of parameters of the MLME-ASSOCIATE.request (note that the header row is shown for convenience and is not part of the changes):***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| MSCS Descriptor | As defined in the MSCS Descriptor element | As defined in 9.4.2.243 (MSCS Descriptor element) | The parameters used to classify streams using the  procedures defined in 11.26.3 (MSCS procedures).  Optionally present if dot11MSCSActivated is true;  otherwise not present. |

***TGmd editor: within TGmd D3.2, modify 6.3.7.3.2 Semantics of the service primitive as described:***

**6.3.7.3.2 Semantics of the service primitive**

***TGmd editor: add the following parameter to the parameter list of the MLME-ASSOCIATE.confirm:***

MSCS Descriptor

***TGmd editor: add the following new row to the table of parameters of the MLME-ASSOCIATE.confirm (note that the header row is shown for convenience and is not part of the changes):***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| MSCS Descriptor | As defined in the MSCS Descriptor element | As defined in 9.4.2.243 (MSCS Descriptor element) | The parameters used to classify streams using the  procedures defined in 11.26.3 (MSCS procedures).  Optionally present. |

***TGmd editor: within TGmd D3.2, modify 6.3.7.4.2 Semantics of the service primitive as described:***

**6.3.7.4.2 Semantics of the service primitive**

***TGmd editor: add the following parameter to the parameter list of the MLME-ASSOCIATE.indication:***

MSCS Descriptor

***TGmd editor: add the following new row to the table of parameters of the MLME-ASSOCIATE.indication (note that the header row is shown for convenience and is not part of the changes):***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| MSCS Descriptor | As defined in the MSCS Descriptor element | As defined in 9.4.2.243 (MSCS Descriptor element) | The parameters used to classify streams using the  procedures defined in 11.26.3 (MSCS procedures).  Optionally present. |

***TGmd editor: within TGmd D3.2, modify 6.3.7.5.2 Semantics of the service primitive as described:***

**6.3.7.5.2 Semantics of the service primitive**

***TGmd editor: add the following parameter to the parameter list of the MLME-ASSOCIATE.response:***

MSCS Descriptor

***TGmd editor: add the following new row to the table of parameters of the MLME-ASSOCIATE. response (note that the header row is shown for convenience and is not part of the changes):***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| MSCS Descriptor | As defined in the MSCS Descriptor element | As defined in 9.4.2.243 (MSCS Descriptor element) | The parameters used to classify streams using the  procedures defined in 11.26.3 (MSCS procedures).  Optionally present. |

***TGmd editor: within TGmd D3.2, modify 6.3.8.2.2 Semantics of the service primitive as described:***

**6.3.8.2.2 Semantics of the service primitive**

***TGmd editor: add the following parameter to the parameter list of the MLME-REASSOCIATE.request:***

MSCS Descriptor

***TGmd editor: add the following new row to the table of parameters of the MLME-REASSOCIATE.request (note that the header row is shown for convenience and is not part of the changes):***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| MSCS Descriptor | As defined in the MSCS Descriptor element | As defined in 9.4.2.243 (MSCS Descriptor element) | The parameters used to classify streams using the  procedures defined in 11.26.3 (MSCS procedures).  Optionally present if dot11MSCSActivated is true;  otherwise not present. |

***TGmd editor: within TGmd D3.2, modify 6.3.8.3.2 Semantics of the service primitive as described:***

**6.3.8.3.2 Semantics of the service primitive**

***TGmd editor: add the following parameter to the parameter list of the MLME-REASSOCIATE.confirm:***

MSCS Descriptor

***TGmd editor: add the following new row to the table of parameters of the MLME-REASSOCIATE.confirm (note that the header row is shown for convenience and is not part of the changes):***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| MSCS Descriptor | As defined in the MSCS Descriptor element | As defined in 9.4.2.243 (MSCS Descriptor element) | The parameters used to classify streams using the  procedures defined in 11.26.3 (MSCS procedures).  Optionally present. |

***TGmd editor: within TGmd D3.2, modify 6.3.8.4.2 Semantics of the service primitive as described:***

**6.3.8.4.2 Semantics of the service primitive**

***TGmd editor: add the following parameter to the parameter list of the MLME-REASSOCIATE.indication:***

MSCS Descriptor

***TGmd editor: add the following new row to the table of parameters of the MLME-REASSOCIATE.indication (note that the header row is shown for convenience and is not part of the changes):***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| MSCS Descriptor | As defined in the MSCS Descriptor element | As defined in 9.4.2.243 (MSCS Descriptor element) | The parameters used to classify streams using the  procedures defined in 11.26.3 (MSCS procedures).  Optionally present. |

***TGmd editor: within TGmd D3.2, modify 6.3.8.5.2 Semantics of the service primitive as described:***

**6.3.8.5.2 Semantics of the service primitive**

***TGmd editor: add the following parameter to the parameter list of the MLME-REASSOCIATE.response:***

MSCS Descriptor

***TGmd editor: add the following new row to the table of parameters of the MLME-REASSOCIATE. response (note that the header row is shown for convenience and is not part of the changes):***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| MSCS Descriptor | As defined in the MSCS Descriptor element | As defined in 9.4.2.243 (MSCS Descriptor element) | The parameters used to classify streams using the  procedures defined in 11.26.3 (MSCS procedures).  Optionally present. |

***TGmd editor: within TGmd D3.2, insert a new row as shown into the frame format table for each of the following frames:***

**9.3.3.5 Association Request frame format**

**Table 9-36—Association Request frame body**

**9.3.3.6 Association Response frame format**

**Table 9-37—Association Response frame body**

**9.3.3.7 Reassociation Request frame format**

**Table 9-38—Reassociation Request frame body**

**9.3.3.8 Reassociation Response frame format**

**Table 9-39—Reassociation Response frame body**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| <ANA> | MSCS Descriptor | The MSCS Descriptor element is optionally present if dot11MSCSActivated is true; otherwise not present. |

**9.4.2.243 MSCS Descriptor element**

***TGmd editor: within TGmd D3.2, modify subclause 9.4.2.243 MSCS Descriptor element as shown:***

The Optional Subelements field is defined in Table 9-QQRR Optional subelement IDs for MSCS Descriptor element.

***TGmd editor: within TGmd D3.2, insert the following table and paragraph of text into subclause 9.4.2.243 MSCS Descriptor element:***

**Table 9-QQRR—Optional subelement IDs for MSCS Descriptor element**

|  |  |  |
| --- | --- | --- |
| **Sublement ID** | **Name** | **Extensible** |
| 0 | MSCS Status | No |
| 1-220 | Reserved |  |
| 221 | Vendor specific | Vendor defined |
| 222–255 | Reserved |  |

The MSCS Status field indicates the status of the requested MSCS setup, as indicated in Table 9-52 (Status codes).

***TGmd editor: within TGmd D3.2, change the bullet item in subclause 9.6.2.242 TCLAS Mask element, as shown:***

**9.4.2.242 TCLAS Mask element**

* Protocol Number or Next Header subfield

***TGmd editor: within TGmd D3.2, change the heading of subclause 9.6.18.6 MCSC Request frame format, as shown:***

**9.6.18.6 MSCS Request frame format**

***TGmd editor: within TGmd D3.2, change the heading of subclause 9.6.18.7 MCSC Response frame format, as shown:***

**9.6.18.7 MSCS Response frame format**

***TGmd editor: within TGmd D3.2, in 11.26.3MSCS procedures, change the text as shown:***

**11.26.3 MSCS procedures**

A non-AP STA that supports MSCS may request use of MSCS, or request to update parameters of the currently active MSCS, by sending an MSCS Request frame that includes an MSCS Descriptor element with the Request Type field set to “Add” or “Change”, respectively. A non-AP STA that supports MSCS may request use of MSCS by sending a (Re)Association Request frame that includes an MSCS Descriptor element with the Request Type field set to “Add”. The MSCS Descriptor List field in the MSCS Descriptor element identifies how MSDUs are classified into streams and indicates parameters that determine the priority to assign to the classified MSDUs.

In a TCLAS Mask element in an MSCS Descriptor element, the Classifier Type subfield shall be set to a value that corresponds to a classifier of MSDUs, i.e., less than or equal to 5, or equal to 10.

Upon receipt of an MSCS Request frame from an associated non-AP STA or receipt from a non-AP STA of a Re(Association) Request frame containing an MSCS Descriptor element, the AP shall respond with a corresponding MSCS Response frame or a (Re)Association Response frame containing an MSCS Descriptor element, respectively. A value of “SUCCESS” shall be set in the Status field in the MSCS Response frame or MSCS Status subelement of the MSCS Descriptor element of the (Re)Association Response frame, respectively, when the AP accepts the MSCS request. A value of “REQUEST\_DECLINED”, “REQUESTED\_TCLAS\_NOT\_SUPPORTED”, or “INSUFFICIENT\_TCLAS\_PROCESSING\_RESOURCES” shall be set in the Status field in the MSCS Response frame or MSCS Status subelement of the MSCS Descriptor element of the (Re)Association Response frame, respectively, when the AP denies the MSCS request; an MSCS Descriptor element is optionally present in the MSCS Response frame for this case. If an MSCS Descriptor element is present in the response, the Request Type field is set to “Change” and the element indicates a suggested set of parameters that could be accepted by the AP in response to a subsequent request by the non-AP STA. The AP shall decline an MSCS request with the Request Type field set to “Add” or “Change” if a TCLAS Mask element is not present.

**End of proposed changes.**