IEEE P802.11  
Wireless LANs

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| Addressing Comment Resolutions | | | | |
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Abstract

These are proposed comment resolutions for Addressing related 802.11 GLK D1.0 comments.

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Ad-hoc Notes** |
| --- | --- | --- | --- | --- | --- |
| 149 | 5.39 | 4.3.23.1 | If TA=SA on a frame from an AP (a BPDU, for example), is it okay for the AP to set ToDS=1 and FromDS=0? Technically, that seems okay, but do non-AP STA implementations have "hard wired" rejection of "To DS" frames? Similarly, a frame that passed through (but didn't orignate in) a non-AP STA, and is destined for the AP, would end up with ToDS=0 and FromDS=1. Will that confuse any AP implementations? | (Re)Consider this implication. Change/limit support for three address frame format if this is a real concern. | Revise: “The three address frame format may be used if SA equals TA and/or RA equals DA as described in 8.3.2.1 (Format of Data frames).” -> “The three address frame format may be used, as defined by table 8-3, provided the addresses are consistanet with table 8-26.” |
| 233 |  |  | It is sloppy design to allow different combinations of Data frame ToDS/FromDS in order to save 6 bytes in some cases. This makes more sense in the context of a set of low bit rate WG options, and not GLK. Many other more efficient solutions are also possible under such cases, such as Van Jacobson header compression. | Recommend strongly that selection of ToDS/FromDS be based on the role of the peer, and so usage of 4Addr format be mandated when recipient(s) are GLK peers. | Revise: Changes as provided by CID149. |
| 151 | 6.02 | 4.3.23.1 | I don't entirely remember why this paragraph was important, but I think we proved that the RA could not equal the DA in any group addressed RA frame transmitted over a GLK link, because we assumed the TA wouldn't equal the SA, and therefore it could never be a three address format frame, or received by a non-GLK non-AP STA and cause some subtle confusions. But, the TA could perhaps equal the SA, if the AP itself is the source of the frame (a BPDU, for example), so we could end up with RA=BSSID, TA=SA, DA=??(SYNRA? with real DA in an A-MPDU?) in a three address format frame. Is this a problem? | Consider. Refine/limit the three address format rules to exclude this, if it is a real possibility and a real problem. | Reject: Decision was that A1 will always be SYNRA for GLK group addressed frames, to allow selective inclusion/exclusion. Otherwise we need a reliable means to distinguish SYNRA from group addresses, when addressing all STA. |
| 206 | 6.07 | 4.3.23.1 | SYNRA is introduced to prevent bridge, and may have benefit of improving bandwidth usage in some cases | Change the wording to: "SYNRA is introduced to prevent bridge, and may have benefit of improving bandwidth usage in some cases" | Revise: "SYNRA is introduced to improve bandwidth usage in some cases of group-addressed frames to the GLK non-AP STAs" -> "A SYNRA is a group addressed RA used by a GLK AP to forwarded frames to a subset of GLK non-AP STAs, as required by 802.1Q bridges" |
| 41 | 6.09 | 4.3.23.1 | "Thus SYNRA special Power Save handling need only consider the GLK AP case." - how can "a handling" consider anything? This is meaningless. | Strike quoted text. | Revise: “Thus SYNRA special Power Save only affects the operation GLK AP case” |
| 239 | 6.33 | 4.3.23.3 | "Reasons for such selective reception include the MAC service requirement that, when an MSDU is sent, it is not returned to and processed by the transmitting station."    It is not clear to me in what situation is assumed here. In the IEEE 802.11-2012 clause 9.3.6, the transmission procedure of group address frames is specified which is not consistent with the above text. | Please clarify what situation is assumed here. | Revise: “Reasons for such selective reception include the MAC service requirement that, when an MSDU is sent, it is not returned to and processed by the transmitting station” -> “The reason for such selective reception is to support requirements of 802.1Q bridges, and can include the MAC service requirement that, when an MSDU is sent, it is not subsequently received and processed by the transmitting station”. Commentor can review 11-12/1441r1 for discussions. |
| 258 | 6.33 | 4.3.23.3 | "Reasons for such selective reception include the MAC service requirement that, when an MSDU is sent, it is not returned to and processed by the transmitting station."    Its situation should be clarified. It is not clear if the transmission procedure of group address frames specified in the IEEE 802.11-2012 clause 9.3.6 is included in the above explanation. | Please explain clearly what situation is assumed here. | Reject: Dup CID239 |
| 295 | 8.19 | 4.3.23.4.3 | The subset of STAs to received a group addressed is not arbitrary, it's a specifc subset as defined in the SYNRA. | Change "an arbitrary" to "a specific". | Revise: “the GLK AP be able to transmit them so that they are accepted by an arbitrary subset of the associated GLK STAs” -> “the GLK AP must be willing to transmit those MSDUs so that they are accepted by an arbitrary subset of the associated GLK STAs, as provided by the 802.1Q bridge”. |
| 202 | 20.46 |  | How does the AP set up the AID bit maps in the SYNRA? For example, a multi-destination packet is for a subset of clients connected to the STAs that are associated with the AP. How does the AP know these clients are behind which STAs? | Clarify how the AP knows which STAs are supposed to receive the mulit-destination packet | Reject: That is the function of the 802.1Q bridge which will inform the GLK AP which STAs need copies of an MSDU using the MA-UNITDATA.request (see Station Vector 5.2.2.2). |
| 218 | 38.01 | 8.3.2.1.2 | We need to update table 8-26 to reflect where SYNRA are valid. Note on line 8 does not truly address the issue. | Update A1 column for rows 01 to "RA = DA or SYNRA". Update A2 column for row 10 to "TA = SA (excluding GLK AMSDU)" | Revise: Update A1 column for rows as follows:  01 “RA = DA or <CR> RA = SYNRA” |
| 244 | 38.08 | 8.3.2.1.2 | "NOTE--Because a SYNRA is not a valid DA, the use of the SYNRA as an RA is not ambiguous."    Since SYNRA has never discussed in this subclause before, the meaning of this note is not clear enough. | Please clarify. | Revise:. Submission below. |
| 112 | 38.21 | 8.3.2.1.2 | Requirements for DA or SA value for a frame sent by a GLK STA or non Data frame sent by a non-GLK STA is not clear. | Please clarify the requirements for DA or SA value for a frame sent by a GLK STA or non Data frame sent by a non-GLK STA. | Reject: Since this section is on Address fields in Data frames only, comment on non Data frames are not applicable. There is no restriction placed on GLK STA by this note, as it explicitly is clarifying for non-GLK STA, and GLK STA need no such restriuction as they may be bridging traffic for any DA/SA, and not just restricted to RA/TA. |
| 113 | 38.28 | 8.3.2.1.2 | "~ the RA may be a SYRA" is a normative text, which is not allowed in chapter 8. | Delete the text from "When a GLK AP data MPDU ~ the RA may be a SYNRA." | Revise: “may” -> “might”; Mark CID63 as Dup. |
| 63 | 38.28 | 8.3.2.1.2 | "the RA may be a" -- clause 8 is there to describe structures. The quoted text is a normative verb granting permission to perform an action. | Move cited text to clause 9, or reword to remove normative verb. | Duplicate: CID113 |
| 210 | 38.31 | 8.3.2.1.2 | SYNRA types are having the same functions: exclude/include a set of GLK non\_AP STAs from receiving the frames. So, just need only one type, not three | define just one type: either type 0, or type 1. | Revise: Section rewritten in D1.3. Only 1 type. |
| 198 | 39.07 | 8.3.2.1.2 | It appears that SYNRA type behavior is defined for a reserved SYNRA type. This doesn't look right. | Change "for SYNRA types 2 and 3" to "for SYNRA type 2" | Revise: "2 and 3" -> "1 and 2". Turns out to be editorial. |
| 200 | 40.04 | 8.3.2.1.4 | Not exactly sure where the Extended AID list is included. | Specify where the AID is included in the frame more clearly. I couldn't find any reference to it. | Reject: No longer needed, as SYNRA format has been changed to not have an Extended AID list.  Note to editor: Submission we suggest for REVmc is in 11-15/0795r3, under the text CID200 submission. |
| 219 | 40.26 | 8.3.2.1.4 | Many additions to the standard have increased the frame body, to diminishing returns with the advent of AMSDU. This requires supporting large frame buffers causing other impacts to the system. Increasing the frame body for SYNRA in particular does not provide practical usefulness from increasing the size, and might be rather large with variable extensions. | Recommend removal of this addition. | Revise: no longer is in MPDU body. |
| 67 | 41.11 | 8.3.2.2 | If SYNRA process is per MSDU, which I think it is, then the A-MSDU structure should include the Extended AID bit array etc... per MSDU in an A-MSDU. This should be described in 8.3.2.2 | Add the Extended AID array into the A-MSDU structure as appropriate. | Reject: SYNRA processing is per MPDU, not MSDU. |
| 224 | 54.23 | 9.42 | Needs clarification on format. | Any extension fields must be after the encryption headers, or this mechanism is insecure. We should also call out where the lost DA comes from, i.e., either A3 on 4addr frames, or basic AMSDU subframe headers. We should also re-iterate that a SYNRA is only valid as an RA, and not an SA/DA/TA. | Revise: Partially resolved by CID200. Recommend insertion of following after the first sentence: "A SYNRA shall only be used as an RA in a Data frame. It shall not be used as an SA, DA, TA, or BSSID. When a SYNRA is present as an RA, the four-address MAC header format shall be used”. |
| 401 | 54.17 | 9.24.10.3 | "A-MSDUs with RA field set to the SYNRA": the RA field doesn't exist in the A-MSDUs. | Replace "A-MSDUs with RA field set to the SYNRA" with "A-MSDUs whose MPDU RA field values are the SYNRA". | Accept |
| 223 | 54.23 | 9.42 | Support for these 3 modes are overly complicated, and will tend to be a barrier to adoption. Especially when AMSDU deaggregation is handled in HW. | Recommend making these optional, or only mandatory fitting in base 48 bit SYNRA w/o extension. If support is not indicated by Clients at association, then AP can reject Clients without required support options or replicate as unicast. Instead call out that unsupported SYNRA types must be dropped by receiver. | Revise: Section rewritten in D1.3 with only 1 type that fits in 48 bits. |
| 254 | 54.34 | 9.42 | Sentence doesn't belong here. | Delete "The structure of the SYNRA address, which includes a 2-bit SYNRA Type field and a 22-bit SYNRA Control field, is shown in Figure 8-52a (SYNRA structure)." | Revise: Sections rewritten in D1.3. |
| 426 | 54.34 | 9.42 | The structure of SYNRA related fields shall be specified in clause 8, not in clause 9. | Create a new subclause 8.3.2.1.3´╝êSYNRA field) by moving corresponding contents from 8.3.2.1.2 and 9.42. | Revise: Sections rewritten in D1.3. |
| 87 | 54.37 |  | "the SYNRA Control field consists of an E/I subfield, an AID offset subfield, and an AD bitmap subfield." -- figures are definitive. There is nothing to be gained from attempting to describe the format also in words. | Replace by "defined in figure 9-91". Move the figure to occur before the field descriptions. Make similar changes to the other SNRA Types. | Revise: Also change “The E/I subfield is a single bit indicating” -> “The E/I subfield indicates”. Editor to make consistant changes throught section. |
| 255 | 54.37 | 9.42 | Fields are described in Clause 8 | Delete "If the SYNRA type is zero, the SYNRA Control field consists of an E/I subfield, an AID offset subfield, and an AD bitmap subfield." and explain in Clause 8. | Revise: Sections rewritten in D1.3 |
| 256 | 54.38 | 9.42 | Fields are described in Clause 8 | Delete "The E/I subfield is a single bit indicating if the STAs having AIDs not specifically indicated in the AID bit map shall discard or pass the MPDU." and explain in Clause 8. | Revise: Sections rewritten in D1.3. |
| 274 | 54.38 | 9.42 | Description's place should be consistent with others. | The sentence, "The E/I subfield is a single bit indicating if the STAs having AIDs not specifically indicated in the AID bit map shall discard or pass the MPDU.", moved to Clause 8. | Revise: Sections rewritten in D1.3. |
| 257 | 54.41 | 9.42 | This sentence mixes requirements imposed on a GLK STA's behavior with fuzzy description of a condition. | Replace "If the bit in the E/I subfield is 1, the STAs not in the AID range covered by the AID bitmap shall pass the MPDU through the address 1 filter." with "If a GLK STA receives an MPDU in which the E/I subfield of the SYNRA field is 1 and the STA is not in the AID range covered by the AID bitmap the STA shall pass the MPDU through the address 1 filter." | Revise: Section rewritten. Submission in 11-15/0795r4.  Backup: Propose Revise. There are 6 similar statements in this section, which should remain consistant unless we have a reason to make any different. Is the intention of the I/E bit to indicate if this is an inclusion vs exclusion list, or that the explicit list is always an inclusion list, and this indicates action for the AID ranges outside the bitmap? The later appears to be how the existing and offered replacement are worded, but can not be the interpretation for the AID list. Lets agree on intended function, and apply consistant wording in all 6 cases. [Come up with submission] |
| 106 | 55.05 | 9.42 | "The AID bitmap subfield is a bit array indicating which receivers in the bitmap are to accept or exclude the MPDU. B40 corresponds to the AID equal to the AID offset, the next bit B41 will correspond to the AID offset plus 1, and the remaining bits will correspond to the sequential AIDs, with B47 corresponding to the AID offset plus 7. The structure of SYNRA type 0 control subfield is shown in Figure 9-91 (SYNRA Control field for SYNRA Type 0)."  The behavior is not clear. I like to suggest the following changes even though I am not sure I correctly understand the proposed behaviors.    "If the first bit (B40) of the AID bitmap is equal to 1, the AID Offset (B27 - B39) plus 0 indicates the AID of the receiver to accept or exclude the MPDU. If the last bit (B47) of the AID bitmap is equal to 1, the AID Offset (B27 - B39) plus 7 indicates the AID of the receiver to accept or exclude the MPDU." | Replace "B40 corresponds to the AID equal to the AID offset, the next bit B41 will correspond to the AID offset plus 1, and the remaining bits will correspond to the sequential AIDs, with B47 corresponding to the AID offset plus 7." with  "If the first bit (B40) of the AID bitmap is equal to 1, the AID Offset (B27 - B39) plus 0 indicates the AID of the receiver to accept or exclude the MPDU. If the last bit (B47) of the AID bitmap is equal to 1, the AID Offset (B27 - B39) plus 7 indicates the AID of the receiver to accept or exclude the MPDU." | Revise: Section rewritten. Submission in 11-15/0795r4.  Backup: Not sure this is much clearer. We might rewrite to "B40 to B47 correspond to AID values of AID offset + 0 to AID offset + 7 respectively, where an AID value not covered by the bitmap are treated as 0." |
| 268 | 55.07 | 9.42 | Doesn't say whether bits corresponding to illegally high AID numbers are ignored or wrap around to AID 0. | Insert as the next to last sentence in the paragarph: "Bits corresponding to AID numbers larger than the maximum legal AID number are ignored." | Revise: Section rewritten. Submission in 11-15/0795r4.  Backup: "Bits corresponding to AID values out of range should be treated as reserved, and ignored." We might also consider adding clarification of AID offset to restrict values such that no bit in AID value correspond to an AID value out of range. We should update Type 1 & 2 accordingly. |
| 107 | 55.31 | 9.42 | What is an AID Vector? And, what is a format of the AID Vector?  I can not find any AID Vector information from Clause 8.3.2.1.4. | Please include the format of the AID Vector. | Revise: Section rewritten. Submission in 11-15/0795r4.  Backup: Problem looks to be inconsistant naming of a subfield through out the document. "The AID Vector is located in" -> "The AID Vector subfield is a variable length bit array indicating which receivers in the bitmap are to accept or exclude the MSDU. The subfield is located in" Also correct p40.04 "Extended AID bit array" -> "Extended AID Vector", and correct that naming in text + figures on p55-56. Also p39.06, so global search is warrented. |
| 269 | 55.34 | 9.42 | Doesn't say whether bits corresponding to illegally high AID numbers are ignored or wrap around to AID 0. | Insert as the next to last sentence in the paragarph: "Bits corresponding to AID numbers larger than the maximum legal AID number are ignored." | Revise: Section rewritten. Submission in 11-15/0795r4.  Backup: Repeat, as in CID268. |
| 108 | 56.17 | 9.42 | What is a format of the Extended SYNRA AID list?  What is an Extended SYNRA AID list? And, what is a format of the Extended SYNRA AID list?  I can not find any Extended SYNRA AID list information from Clause 8.3.2.1.4. | Please include the format of the Extended SYNRA AID list. | Revise: Section rewritten. Submission in 11-15/0795r4.  Backup: "Each pair of octets contains one AID" -> "Each pair of octets contains one AID, as described in 8.4.1.8" |
| 228 | 57.14 | 9.43 | Does not correctly represent when 4 Addr AMSDU are used. | Update lines 14-15, to add ", or BSSID for basic AMSDU". Also on line 17 correct as "The addressing of the 3 address frame containing an A-MSDU shall be as follows" | Accept |
| 110 | 57.18 | 9.43 | "Address 1 is the MAC address of the immediate destination STA (the receiver of the MPDU) or a SYNRA"  When the Address 1 is the SYNRA and the A-MSDU is present, the Ack Policy subfield in QoS Control field is No ACK or Block ACK?  Please specify the Ack Policy when the Address 1 is set to the SYNRA. | Please specify the Ack Policy when the Address 1 is set to the SYNRA. | Reject: No change to usage of Ack Policy by groupcast frames is being suggested in this section. Not clear why clarification is required/requested for AMSDU, but not 4Addr frames. *Maybe this is a GCR question?* |

**CID200 submission:**

**Modify page 39, line 40 through page 40, line 12 as shown:**

The frame body consists of ~~either~~ the following fields, in the order listed:

~~— The MSDU (or a fragment thereof), the Mesh Control field (present if the frame is transmitted by a mesh STA and the Mesh Control Present subfield of the QoS Control field is 1, otherwise absent), the SYNRA Extended AID bit array or Extended AID list (present if the TA is a SYNRA, which cannot occur for a mesh frame), and a security header and trailer (present if the Protected Frame subfield in the Frame Control field is 1, otherwise absent)~~

~~— The A-MSDU and a security header and trailer (present if the Protected Frame subfield in the Frame Control field is 1, otherwise absent)~~

— Security header (present if the Protected Frame subfield in the Frame Control field is 1, otherwise absent);

— One of the following:

* an A-MSDU (as indicated by the A-MSDU Present subfield of the QoS Control field to 1);
* an MSDU (as indicated by the A-MSDU Present subfield of the QoS Control field to 0 or absent) or;
* a fragment of an MSDU (as indicated by More Fragment subfield in the Frame Control field is 1 or the Fragment Number subfield in the Sequence Control field is non-zero);

NOTE- A Mesh Control field (present if the frame is transmitted by a mesh STA and the Mesh Control Present subfield of the QoS Control field is 1, otherwise absent) is prepended to each MSDU, as discussed in 8.2.4.7.3.

— Security trailer (present if the Protected Frame subfield in the Frame Control field is 1, otherwise absent);

~~The presence of an A-MSDU in the frame body is indicated by setting the A-MSDU Present 12 subfield of the QoS Control field to 1, as shown in Table 8-6 (QoS Control field).~~

***Discussion points:***

* Header/Trailer are the terms used in this section by REVmc. CCMP/GCMP caller them CCMP/GCMP Header and MIC, where as TKIP/WEP have IV, Extended IV, MIC, and ICV. Changes to use those terms were part of 11i, and rolled into 2007 version of 802.11. I suspect the text is clear enough, and terms used within cryptography in general.
* I removed the SYNRA extension cases, as we have accepted the new proposal that keeps SYNRA limited to 48 bits. As such this submission may be more appropriet for REVmc?

**Multiple CID: Revise, Section rewritten. [106/107/108/257/268/269]**

**Page 38, Line 8, revise as follows:**

NOTE—~~Because a~~ A SYNRA is ~~not a valid~~ never the DA~~,~~. ~~the use of the~~ A SYNRA ~~as an RA is not ambiguous~~ can only be used by a GLK AP, and when the actual DA is carried in another field. This may be accomplished by sending the MSDU using either the 4 Address MPDU format, or a Basic A-MSDU where the DA is carried in the sub frame header. See 9.42.

**Page 38, Line 17-19, revise as follows:**

When a Data frame carries a~~n~~ Basic A-MSDU, the DA and SA values related to each MSDU carried by the A-MSDU are carried within the A-MSDU Subframe header. One or both of these fields may also be present in the Address 1 and Address 2 fields as indicated in Table 8-34 (Address field contents).

**Page 38, Line 27-30, revise as follows:**

When a GLK AP data MPDU transmission is sent to a group destination address or an individual destination address that is not known by the corresponding 802.1Q Bridge, the RA ~~may~~ might be a SYNRA (see 9.43 (Addressing of GLK data MPDU transmission)). The structure of a SYNRA RA is shown in Figure 8-52a (SYNRA structure), and the structure of a Type 0 SYNRA RA is shown in Figure 8-52b (Type 0 Basic SYNRA structure) Other SYNRA Type values are reserved.

**Page 38, Line 27-30, replace figure 8-52a (SYNRA structure):**



**Page 39, Line 1-8, replace with following text:**

The SYNRA Type subfield is used to select between multiple possible SYNRA formats. The SYNRA Types are listed in Table 8-xxx SYNRA Types. Currently only Type 0 is defined, and all other values are reserved.

Table 8-xxx SYNRA Types

|  |  |
| --- | --- |
| SYNRA Type | Description |
| 0 | Type 0 Basic SYNRA, as shown in Figure 8-52b |
| 1-3 | Reserved |

The SYNRA Control Field carries subfields, whose format is specified separately for each SYNRA Type.



**Figure 8-52b—Type 0 Basic SYNRA structure**

The AID Bitmap Offset subfield in a SYNRA Type 0 is used to indicate the starting AID value, which is associated with bit 0 of the AID Bitmap subfield. It’s units are 4 AID, and has a values from 0 through 494 for non-S1G STA, or 0 through 2040 for S1G STA. These match the maximum AID values of 2007 and 8191, respectively.

The AID Bitmap subfield in a SYNRA Type 0, provides the accept / discard criteria for a range of 32 consecutive AID. Bits 0 through 31 represent AID values in the range AID Bitmap Offset × 4 + 1 through AID Bitmap Offset × 4 + 32, respectively. A value of 1 indicates acceptance, and a value of 0 indicates discarding.

The Other AID subfield in a SYNRA Type 0, provides the accept / discard criteria for AID outside the range of values covered by the AID Bitmap subfield. A value of 1 indicates acceptance, and a value of 0 indicates discarding.

**Page 54 Line 24 through Page 56 Line 28 , replace with following text:**

A GLK non-AP STA shall support receiption of SYNRA for group addressed MPDU. A GLK AP shall only use the SYNRA RA when transmitting a group addressed MPDU, but may opt to replicate such frames as serial unicast to the set of receiving STA.

When a GLK non-AP STA receives a group addressed RA in an MPDU from its associated GLK AP, the non-AP STA shall interpret the RA as a SYNRA. If bits 0 to 3 of the RA do not represent a supported SYNRA Type, or the From DS subfield in the Frame Control field is 0, then the non-AP STA shall discard the frame, and not use the frame for updating any GLK-GCR Block Ack scoreboard. All other group addressed Data frames received from the associated GLK AP shall be counted as received for the purposes of the GLK-GCR Block Ack scoreboard, even if discarded based on the subsequent SYNRA filtering, as described below.

For SYNRA Type 0, the frame shall be discarded if any of the following filter rules are satisfied:

* the AID Bitmap Offset subfield is greater than the maximum value;
* the AID of the STA falls within the range of AID values covered by the AID Bitmap subfield, and the bit representing its AID value is 0;
* the AID of the STA falls outside the range of AID values covered by the AID Bitmap subfield, and the Other AID subfield is 0;