IEEE P802.11
Wireless LANs

|  |
| --- |
| Additional MAC comment resolutions - III |
| Date: 2013-04-19 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Dorothy Stanley | Aruba Networks | 1322 Crossman ave, Sunnyvale, CA | +1 408 227 4500 | dstanley@arubanetworks.com  |
|  |  |  |  |  |

Abstract

Proposed resolutions to the following CIDs are included in this document:

1172, 1006, 1062, 1049, 1051, 1055, 1056, 1057, 1058 – Discussed, resolutions agreed/updated per -01 revision

1054 – Get Alex Ashley’s opinion

**CID 1172**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1172 | 1295.24 | 10.26.2.1 |  |  | Clause 10.26.2 states "QMF policy advertisement...", the overview (10.26.2.1) doesn't mention anything about advertising the QMF Policy. | Change the following text "QMF policy is communicatedthrough the QMF Policy element as described in 8.4.2.119."to"QMF policy is advertised and exchanged using the QMF Policy element as described in 8.4.2.119." |

**Discussion:**

The comment is on the QMF policy advertisement and configuration procedures – “Overview” section, see the text below. The commenter notes that although the title of the section includes “advertisement”, the current text in the first paragraph does not include mention of “advertisement”, and asks that the introductory text be modified.



The commenter asks for the following change:

From

“QMF policy is communicated through the QMF Policy element as described in 8.4.2.119 (Quality-of-Service Management Frame Policy element).

To

“QMF policy is advertised and exchanged using the QMF Policy element as described in 8.4.2.119."

The commenter’s change seems reasonable, “advertised and exchanged” is a more detailed description than “communicated. Suggest also including mention of the STA in the second sentence.

**Proposed resolution: Revised**

Change from

“QMF policies are exchanged and implemented between two QMF STAs. QMF policy is communicated

through the QMF Policy element as described in 8.4.2.119 (Quality-of-Service Management Frame Policy

element).”

To

“QMF policies are exchanged and implemented between two QMF STAs. A STA’s QMF policy is advertised and exchanged using the QMF Policy element described in 8.4.2.119 (Quality-of-Service Management Frame Policy element).”

**CID 1006**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1006 | 1101.31 | 10.2.2.6 |  |  | AP operation during the CP - item g) says "When all ACsassociated with the STA are delivery-enabled, AP transmits one BU from the highest priority AC." - should be "one BU from the highest priority AC that has a BU" | Change "one BU from the highest priority AC." to "one BU from the highest priority AC that has a BU" |

**Discussion:**

The comment is on 10.2.2.6 (AP operation during the CP) list item g, third sentence:

****

**The current text says:**

**“**When all ACs associated with the STA are delivery-enabled, AP transmits one BU from the highest priority AC.

The commenter’s proposed change is to:

When all ACs associated with the STA are delivery-enabled, AP transmits one BU from the highest priority AC that has a BU.

Agree with the commenter. The highest priority AC may not have a BU to send. Add minor editorial fix while we’re here.

**Proposed resolution: Revised**

Change from:

**“**When all ACs associated with the STA are delivery-enabled, AP transmits one BU from the highest priority AC.

To:

When all ACs associated with the STA are delivery-enabled, the AP transmits one BU from the highest priority AC that has a BU.

**CID 1062**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1062 | 1097.64 | 10.2.2.5 |  |  | Change of article a->the in "If the SI is nonzero, the(11aa)STA" is wrong because there is no clear antecedent. Oh, and congratulations on making an already overlong para even overlonger :0). | Change the->a in cited text. |

**Discussion:**

The comment is on 10.2.2.5.1 (Power Management with APSD procedures) in a paragraph describing “scheduled AP start” procedures. The cited text in context is:

The first scheduled SP starts when the lower order 4 octets of the TSF timer equals the value specified in the Service Start Time field. If the SI is nonzero, the STA using scheduled SP shall first wake up at the service start time to receive downlink individually addressed and/or GCR-SP group addressed BUs buffered and/or to receive polls from the AP/HC. If the SI is nonzero, the STA shall wake up subsequently at a fixed time interval equal to the SI.

1. The commenter proposes to change to

If the SI is nonzero, a STA using scheduled SP shall first wake up at the service start time to receive downlink individually addressed and/or GCR-SP group addressed BUs buffered and/or to receive polls from the AP/HC.

Agree with this proposed change.

1. The commenter also notes that the cited text is in a long paragraph, now made longet with the addition of the 11aa text. True; see the full paragraph below:

A scheduled SP starts at fixed intervals of time specified in the Service Interval field. If the scheduled

Service Interval field equals 0 (for example, with the GCR-A delivery method), the scheduled SP starts from

the service start time without a fixed delivery interval. In order to use a scheduled SP for a TS when the

access policy is controlled channel access, a STA shall send an ADDTS Request frame to the AP with the

APSD subfield of the TS Info field in the TSPEC element set to 1. To use a scheduled SP for a TS for a AC

when the access policy is contention-based channel access, a STA shall send an ADDTS Request frame to

the AP with the APSD and Schedule subfields of the TS Info field in the TSPEC element both set to 1. If the

APSD mechanism is supported by the AP and the AP accepts the corresponding ADDTS Request frame

from the STA, the AP shall respond to the ADDTS Request frame with a response containing the Schedule

element indicating that the requested service can be accommodated by the AP. When the access policy is

contention-based channel access for a GCR group addressed stream, a scheduled SP is set up according to

10.24.16.3.3 (GCR setup procedures). The first scheduled SP starts when the lower order 4 octets of the TSF

timer equals the value specified in the Service Start Time field. If the SI is nonzero, the STA using scheduled

SP shall first wake up at the service start time to receive downlink individually addressed and/or GCR-SP

group addressed BUs buffered and/or to receive polls from the AP/HC. If the SI is nonzero, the STA shall

wake up subsequently at a fixed time interval equal to the SI. The AP may modify the non-GCR service start

time by indicating so in the Schedule element in a successful ADDTS Response frame (which is sent in

response to an ADDTS Request frame) and in Schedule frames (which are sent at other times). The AP may

modify the GCR service start time by indicating so in the Schedule element in the GCR Response

subelements (see 8.4.2.88 (DMS Response element) and 10.24.16.3.4 (GCR frame exchange procedures)).

In both non-GCR and GCR cases, the service start time shall be updated (using the previously described

service start time modification procedures) whenever the upper 4 octets of the TSF timer change.

Agree that some editing would help the reader to parse the text in the long paragraph; propose a list.

**Proposed resolution: Revised**

Replace the paragraph at 1097.47 through 1098.9 with the following text:

A scheduled SP starts at fixed intervals of time specified in the Service Interval field. The following rules describe scheduled SP operation:

1. If the scheduled Service Interval field equals 0 (for example, with the GCR-A delivery method), the scheduled SP starts from the service start time without a fixed delivery interval.
2. To use a scheduled SP for a TS when the access policy is controlled channel access, a STA shall send an ADDTS Request frame to the AP with the APSD subfield of the TS Info field in the TSPEC element set to 1.
3. To use a scheduled SP for a TS for an AC when the access policy is contention-based channel access, a STA shall send an ADDTS Request frame to the AP with the APSD and Schedule subfields of the TS Info field in the TSPEC element both set to 1. If the APSD mechanism is supported by the AP and the AP accepts the corresponding ADDTS Request frame from the STA, the AP shall respond to the ADDTS Request frame with a response containing the Schedule element indicating that the requested service can be accommodated by the AP.
4. When the access policy is contention-based channel access for a GCR group addressed stream, a scheduled SP is set up according to 10.24.16.3.3 (GCR setup procedures). The first scheduled SP starts when the lower order 4 octets of the TSF timer equals the value specified in the Service Start Time field.
5. If the SI is nonzero, a STA using scheduled SP shall first wake up at the service start time to receive downlink individually addressed and/or GCR-SP group addressed BUs buffered and/or to receive polls from the AP/HC. The STA shall wake up subsequently at a fixed time interval equal to the SI.
6. The AP may modify the non-GCR service start time by indicating so in the Schedule element in a successful ADDTS Response frame (which is sent in response to an ADDTS Request frame) and in Schedule frames (which are sent at other times).
7. The AP may modify the GCR service start time by indicating so in the Schedule element in the GCR Response subelements (see 8.4.2.88 (DMS Response element) and 10.24.16.3.4 (GCR frame exchange procedures)).
8. In both non-GCR and GCR cases, the service start time shall be updated (using the previously described service start time modification procedures) whenever the upper 4 octets of the TSF timer change.

**CID 1049**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1049 | 935.60 | 9.3.2.8 |  |  | In "if the frame is subsequently discarded due to drop eligibility", it is probably better to say "MSDU or A-MSDU carried partly or wholly within the frame" rather than "frame", because frames are not the unit of "dropping" for DEI. | Replace cited text with "if the MSDU or A-MSDU carried partly or wholly within the frame is subsequently discarded due to drop eligibility" |

**Discussion:**

The comment is on 9.3.2.8 (ACK procedure), in the following NOTE:



The commenter notes that “frame” is not the units of “dropping” for the drop eligibility indicator, and proposes the following change:

NOTE⎯The receiver STA performs the ACK procedure on all successfully received frames requiring acknowledgment, even if the MSDU or A-MSDU carried partly or wholly within the frame is subsequently discarded due to drop eligibility (see DEI subfield in 8.2.4.5 (QoS Control field)).

**Proposed resolution: Revised**

NOTE⎯The receiver STA performs the ACK procedure on all successfully received frames requiring acknowledgment, even if an MSDU or A-MSDU is carried partly or wholly within the frame and is subsequently discarded due to drop eligibility (see DEI subfield in 8.2.4.5 (QoS Control field)).

**CID 1051**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1051 | 937.58 | 9.3.2.10 |  |  | "A receiving QoS STA shall also reject as a duplicate frame any QMF in which the Retry bit in the Frame Control field is 1 and that matches an <Address 2, AC, sequence-number, fragment number> tuple of an entry in the cache of tuples obtained from QMFs"Isn't this behaviour specific to QMF STAs? | Change "QoS STA" to "QMF STA" at cited location |  |

**Discussion:**

The comment is on the text in 9.3.2.10 (Duplicate detection and recovery), in a paragraph discussing receiving STA processing:



The comment is on the last sentence, and the proposed change is below:

“A receiving QMF STA shall also reject as a duplicate frame any QMF in which the Retry

bit in the Frame Control field is 1 and that matches an <Address 2, AC, sequence-number, fragment number>

tuple of an entry in the cache of tuples obtained from QMFs. “

Agree, since only a QMF STA can reject a QMF frame as described.

**Proposed resolution: Accepted**

**CID 1054**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1054 | 967.57 | 9.9 |  |  | The change from .11a at 967.57 implies that all .11aa devices are also HT STA. This requirement is not reflected in the PICS. | Update PICS for an 802.11aa device to require HT operation. |

**Discussion:**

The text cited is in 9.9 (HT Control Field Operation):

“A STA that has a value of true for at least one of dot11RDResponderOptionImplemented,

dot11MCSFeedbackOptionImplemented, and dot11AlternateEDCAImplemented shall set

dot11HTControlFieldSupported to true.”

The commenter observes that the addition by 11aa of “and dot11AlternateEDCAImplemented” implies that an 11aa STA must support HT operation.

The cited location is the only occurrence of “dot11AlternateEDCAImplemented” in the document. So the MIB variable is probably wrong. Perhaps “dot11AlternateEDCAActivated”, which exists in the document and is defined at 2253.35 was meant to be included:



Alternate EDCA transmit queues is listed as an optional capabilitiy.



**Proposed resolution: Revised**

Either there is no requirement for 11n with Alternate EDCA transmit queues: At 967.57, delete “dot11AlternateEDCAImplemented”.

Or

There is a requirement for HT operation (CF16):

At 967.57, change “dot11AlternateEDCAImplemented” to “dot11AlternateEDCAActivated” and at 1968.6 (AVT3 PICS definition) change the Status entry from “CF23:O” to “CF23:O CF16:M”

**CID 1055**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1055 | 979.56 | 9.19.2.4 |  |  | The location of the .11aa insert at 979.56, between paras specifying response to invocations of the backoff procedure is questionable. Better to have it at the start of this subclause. | Move cited para to start of the subclause. |

**Discussion:**

The comment is on the 9.19.2.5 (not 4), 979.56. The change that .11aa made was:



The commenter proposes to move this paragraph from 979.56 to the start of the subclause, at 978.60, noting that the current position is between two paragraphs discussing backoff procedure.

Agree that a better location for the text would aid the reader. The commenter says to move the paragraph to the start of “the” subclause. Don’t know if “the” subclause is 9.19.2.5 (EDCA backoff procedure) or 9.19.2.6 (Retransmit procedures)”. Since the text originally came from 9.19.2.6, propose to put it back there.

**Proposed resolution: Revised**

Move the paragraph at 979.56 to 980.39; results in the 9.19.2.6 (Retransmit procedure):

**“9.19.2.6 Retransmit procedures**

QoS STAs shall maintain a short retry counter and a long retry counter for each MSDU, A-MSDU, or MMPDU that belongs to a TC that requires acknowledgment. The initial value for the short and long retry counters shall be 0. QoS STAs also maintain a short retry counter and a long retry counter for each AC. They are defined as QSRC[AC] and QLRC[AC], respectively, and each is initialized to a value of 0. When dot11RobustAVStreamingImplemented is true, QoS STAs shall maintain a short drop-eligible retry counter

and a long drop-eligible retry counter for each AC. They are defined as QSDRC[AC] and QLDRC[AC],

respectively, and each is initialized to a value of zero. APs with dot11RobustAVStreamingImplemented true

and mesh STAs with dot11MeshGCRImplemented true, shall maintain an unsolicited retry counter.

After transmitting a frame that requires an immediate acknowledgment, the STA shall perform either of the

acknowledgment procedures, as appropriate, that are defined in 9.3.2.8 (ACK procedure) and 9.21.3 (Data and acknowledgment transfer using immediate Block Ack policy and delayed Block Ack policy). The short retry count for an MSDU or A-MSDU that is not part of a Block Ack agreement or for an MMPDU shall be

incremented every time transmission of a frame in a PSDU of length less than or equal to dot11RTSThreshold

fails for that MSDU, A-MSDU, or MMPDU. The unsolicited retry counter shall be incremented after the

transmission of every A-MSDU that is transmitted using the GCR unsolicited retry retransmission policy….”

**CID 1056**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1056 | 980.05 | 9.19.2.5 |  |  | Awkward expression of condition at cited location. Also "for the QoS STA" throughout this list adds nothing. | Reword: "If dot11RobustAVStreamingImplemented is true and either the QSDRC[AC] or the QLDRC[AC] has reached dot11ShortDEIRetryLimit".Also delete "for the QoS STA" at 980.05 |

**Discussion:**

The comment is on the backoff procedure description at 980.05; the cited text is below:



The commenter proposes the following changes:

— If the QSRC[AC] or the QLRC[AC] has reached dot11ShortRetryLimit or

dot11LongRetryLimit respectively, CW[AC] shall be reset to CWmin[AC].

— If dot11RobustAVStreamingImplemented is true and either the QSDRC[AC] or the QLDRC[AC]

has reached dot11ShortDEIRetryLimit or

dot11LongDEIRetryLimit, respectively, CW[AC] shall be reset to CWmin[AC].

Agree with the proposed changes; believe changes are editorial.

**Proposed resolution: Accepted**

**CID 1057**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1057 | 982.08 | 9.19.2.6.2 |  |  | Reference to 10.23.16.3.6 should probably be 10.23.16.3.5.Likewise at 982.13, 9.22 should be 9.23. | As in comment. |

**Discussion:**

The references cited are:

The text at 982.08 is:

“The set of MPDUs that may be retransmitted is dependent upon whether Block Ack agreements are active with the STAs that are listening to this group address and is defined in 10.24.16.3.6 (GCR unsolicited retry).”

The commenter’s proposed reference is: 10.24.16.3.5 Concealment of GCR transmissions. However 10.24.16.3.5 describes concealment use.

At 1270.63 to 1271.7, 10.24.16.3.6 states:

If a Block Ack agreement has successfully been established for a group addressed stream that is delivered

using the GCR unsolicited retry retransmission policy, the STA shall follow the duplicate detection

procedures defined in 9.3.2.10 (Duplicate detection and recovery) and 9.21.4 (Receive buffer operation).

If a Block Ack agreement has successfully been established for all STAs receiving a GCR group address, for

a group delivered using the GCR unsolicited retry retransmission policy, the AP may retransmit any of the

last *m* A-MSDUs that have the DA field in the A-MSDU subfield set to the GCR group address, where *m* is

GCR buffer size (as defined in 10.24.16.3.7 (GCR Block Ack)), subject to the lifetime limits.

Believe that the current reference is correct. No change.

The text at 982.13 is

A protective mechanism (such as a mechanism described in 9.22 (No Acknowledgment (No Ack))) should

be used to reduce the probability of other STAs transmitting during the GCR TXOP. When using a

protection mechanism that requires a response from another STA, the AP should select a STA that is a

member of the GCR group.

The commenter’s proposed reference is 9.23 (Protection Mechanisms). Agree with this change.

**Proposed resolution: Revised**

At 982.13, change from “9.22” to “9.23”

**CID 1058**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1058 | 1008.58 | 9.21.3 |  |  | Awkward language "For GCR frames delivered using the GCR Block Ack retransmission policy, the RA field of the frames shall be the GCR concealment address. " would be better expressed as "The RA field of GCR frames delivered using the GCR Block Ack retransmission policy shall be [set to] theGCR concealment address. ". Also "shall be" throughout is probably better "shall be set to". | Reword cited sentence: " "The RA field of GCR frames delivered using the GCR Block Ack retransmission policy shall be set to theGCR concealment address. "" |

**Discussion:**

The comment is on the following text, third to last sentence:



The commenter proposes the following change:

, The RA field of GCR frames delivered using the GCR Block Ack retransmission policy shall be set to the GCR concealment address. The originator requests acknowledgment of outstanding QoS Data frames by sending a Basic BlockAckReq frame. The recipient shall maintain a Block Ack record for the block.

**Proposed resolution: Accepted**

**References:**