IEEE P802.11
Wireless LANs

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| Some LB 199 Proposed Comment Resolutions |
| Date: 2014-03-11 |
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Abstract

Proposed resolutions to the CIDs in <https://mentor.ieee.org/802.11/dcn/13/11-13-1160-06-000m-lb199-gen-adhoc-comments.xls> are included in this document:

“Messsage to Frame” tab: 2306, 2303, 2296, 2277 – resolutions agreed 2014-02-28

“Messsage to Frame” tab: 2276, 2285, 2283

“Gen Review” tab: 2275, 2271, 2282 (same as 2118), 2235

“Comments” tab: 2312, 2290, 2288, 2318, 2399, 2398 (added in r2)

“Comments” tab: 2401 (added in r3)

**CID 2306 (GEN)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2306 | 105.56 | 4.10.4.3 |  |  | Matching line just above, the group addressed messages are frames. | Replace "messages" with "frames". |

**Discussion:**

The cited text is below:



Agree with the commenter, change “messages” to “frames” at L56.

**Proposed resolution: Accepted**

**CID 2303(GEN)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2303 | 102.35 | 4.10.3.2 |  |  | The Group Key Handshake is used to allow the Supplicant to continue to receive group addressed \_frames\_. | Replace "messages" with "frames". |

**Discussion:**

The cited text is below:

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Agree with the commenter, change “messages” to “frames” at L35.

**Proposed resolution: Accepted**

**CID 2296 (GEN)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2296 | 87.47 |  |  |  | STAs protect the contents of frames (though also contents that are messages). | On line 38 replace "messages" with "frames". |

**Discussion:**

The cited text is below:

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Agree with the commenter, change “messages” to “frames” at L47.

**Proposed resolution: Accepted**

**CID 2277**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2277 | 75.45 | 4.3.16.5.9 |  |  | Frame definitions help enable distribution of frames (and, perhaps, messages inside frames). | Replace "messages" with "frames". |

**Discussion: The cited text is below:**

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**Proposed resolution: Revised**

Replace “messages” with “MSDUs” at 75.45.

Frames are the transport mechanism for MSDUs, which are indeed distributed over multiple instances.

**CID 2276**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2276 | 75.39 | 4.3.16.5.8 |  |  | 802.11 defines channel switching frames, not messages. | Replace "messages" with "frames". |

**Discussion:** The cited text is below:

****

Mesh channel switching is described in 10.9.8.4, P1462L10.

2014-02-28 discussion: information about the impending channel switch is propagated. Could change “messages” to “events”. Suggest getting input from mesh experts.

Input from Kaz Sakoda and Guido Hiertz:

*“…Although "MSDU" may be more correct than "message" I believe the intention was to explain to the reader that the distributed, non-centralized nature of a mesh network needs the propagation of some kind of announcement to all entities to inform them about the upcoming transitioning process.”*

*And*

*“I would be quiet happy with keeping message or using notification”*

**Proposed resolution: Revised**

Change from “of channel switching messages” to “of channel switch notifications”

**CID 2285 (GEN)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2285 | 83.45 | 4.5.3.1 |  |  | Again, this standard defines data frames, not messages, that get distributed through the DS | Throughout subclause 4.5.3 replace "messages" with "frames" and "message" with "frame". |

**Discussion:**

The cited text is below:

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The definition of the distribution service describes delivering “MSDUs” (not frames) within the distribution system:

****

Propose changing not to “frames” as suggested by the commenter, as the DS does not work with “frames”, but rather to “MSDUs”

**Proposed Resolution: Revised**

**At 83.45, change as shown below:**

**“**The information required for the distribution service to operate is provided by the association services. Before an

MSDU can be handled by the distribution service, a STA is “associated.”

**At 84.17, change as shown below:**

“To deliver an MSDU within a DS, the distribution service needs to know which AP to access for the given

IEEE Std 802.11 STA”

**At 84.23, change as shown below:**

“Before a STA is allowed to send an MSDU via an AP, it first becomes associated with the AP. The act of becoming associated invokes the association service, which provides the STA to AP mapping to the DS.”
How the information provided by the association service is stored and managed within the DS is not specified by this standard.

**At 84.62, change as shown below:**

“Association is sufficient for no-transition frame delivery between IEEE Std 802.11 STAs. Additional

functionality is needed to support BSS-transition mobility. The additional required functionality is provided

by the reassociation service. Reassociation is one of the services in the DSS.”

**At 85.17, change as shown below:**

**“**The disassociation service is invoked when an existing association is to be terminated. Disassociation is one

of the services in the DSS.

In an ESS, this tells the DS to void existing association information. Attempts to send MSDUs via the DS to a disassociated STA will be unsuccessful.”

**CID 2283 (GEN)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2283 | 83.06 |  |  |  | STAs distribute frames to a DS. What the DS uses is its problem, but the frames from the STAs are distributed in the DS (inside whatever form the DS employs). | Throughout subclause 4.5.2 replace "messages" with "frames" and "message" with "frame". |

**Discussion:**

Subclause 4.5.2 is titled “Distribution of messages within a DS” Review and change (in most cases) to “MSDU”.

**Proposed Resolution: Revised**

Change as shown below:

**4.5.2 Distribution of MSDUs within a DS**

**4.5.2.1 Distribution**

This is the primary service used by IEEE Std 802.11 STAs. It is conceptually invoked by every MSDU

to or from an IEEE Std 802.11 STA operating in an ESS (when the MSDU is sent via the DS). Distribution is

via the DSS.

Refer to the ESS network in Figure 4-13 (Complete IEEE Std 802.11 architecture) and consider an MSDU being sent from STA 1 to STA 4. A frame containing the MSDU is sent from STA 1 and received by STA 2 (the “input” AP). The AP gives the MSDU to the distribution service of the DS. It is the job of the distribution service to deliver the MSDU within the DS in such a way that it arrives at the appropriate DS destination for the intended recipient. In this example, the message is distributed to STA 3 (the “output” AP) and STA 3 accesses the WM to send message frame containing the MSDU to STA 4 (the intended destination).

How the MSDU is distributed within the DS is not specified by IEEE Std 802.11. All IEEE Std 802.11 is

required to do is to provide the DS with enough information for the DS to be able to determine the “output”

point that corresponds to the intended recipient. The necessary information is provided to the DS by the

three association related services (association, reassociation, and disassociation).

The previous example was a case in which the AP that invoked the distribution service was different from

the AP that received the distributed MSDU. If the MSDU had been intended for a STA that was a member of the same BSS as the sending STA, then the “input” and “output” APs for the MSDU would have been the same.

In either example, the distribution service was logically invoked. Whether the MSDU actually had to

traverse the physical DSM or not is a DS implementation matter and is not specified by this standard.

While IEEE Std 802.11 does not specify DS implementations, it does recognize and support the use of the

WM as one possible DSM. This is specifically supported by the IEEE Std 802.11 frame formats. (Refer to

Clause 8 (Frame formats) for details.) A mesh BSS might form an entire DS or a part of a DS using the WM,

as shown in Figure 4-9 (Example MBSS containing mesh STAs, mesh gates, APs, and portals). Mesh

services are used to form a mesh BSS and distribute MSDUs. Clause 13 (MLME mesh procedures) defines

how mesh BSSs are formed and how MSDUs are distributed through a mesh BSS.

**4.5.2.2 Integration**

If the distribution service determines that the intended recipient of an MSDU is a member of an integrated

LAN, the “output” point of the DS would be a portal instead of an AP.

MSDUs that are distributed to a portal cause the DS to invoke the Integration function (conceptually after

the distribution service). The Integration function is responsible for accomplishing whatever is needed to

deliver an MSDU from the DSM to the integrated LAN media (including any required media or address

space translations). Integration is one of the services in the DSS.

MSDUs received from an integrated LAN (via a portal) by the DS for an IEEE Std 802.11 STA invoke the Integration function before the MSDU is distributed by the distribution service.

The details of an Integration function are dependent on a specific DS implementation and are outside the

scope of this standard.

**4.5.2.3 QoS traffic scheduling**

QoS traffic scheduling provides intra-BSS QoS frame transfers under the HCF, using either contentionbased

or controlled channel access. At each TXOP, a traffic scheduling entity at the STA selects a frame for

transmission, from the set of frames at the heads of a plurality of traffic queues, based on requested UP and/

or parameter values in the traffic specification (TSPEC) for the requested MSDU. Additional information is

available in 9.20 (HCF).

**CID 2275**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2275 | 71.38 | 4.3.16.2 |  |  | STAs transmit frames, not messages (except inside frames). | On lines 38 and 39 replace "messages" with "frames". |

**Discussion:**

The cited text is below – actually at lines 27 and 28:



**Proposed Resolution: Revised**

Change from “messages” to “MSDUs” at 71.27 and 71.28.

**CID 2271**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2271 | 68.03 | 4.3.14.8 |  |  | STAs transmit frames, not messages (except inside frames). | On lines 3 and 9 replace "messages" with "frames". |

Discussion:



The defined real-time event reports are sent. Propose to change from “event messages” to “event reports”:

**4.3.14.8 Event reporting**

Event requests enable a STA to request a non-AP STA to send particular real-time event reports. The

types of events include Transition, RSNA, WNM Log, and Peer-to-Peer Link events. A transition event is

transmitted after a non-AP STA successfully completes a BSS transition. Transition events are used to

diagnose transition performance problems. An RSNA event report describes the type of Authentication used

for the RSNA. RSNA events are used to diagnose security and authentication performance problems. A

WNM Log event report enables a non-AP STA to transmit a set of WNM Log event messages to the

requesting STA. WNM Log event reports are used to access the contents of a STA’s WNM Log. A Peer-to-

Peer Link event report enables a non-AP STA to inform the requesting STA that a Peer-to-Peer link has been

established. Peer-to-Peer Link event reports are used to monitor the use of Peer-to-Peer links in the network.

**Proposed resolution: Revised**

At P68L3, change from “messages” to “reports”

**CID 2282**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2282 | 82.14 | 4.5.1 |  |  | 802.11 defines management and data frames, not messages, for transmission. (While this description uses the term "message", all of the titles referenced use the term "frame".) | Replace three instances of "messages" with "frames" on line 14, then replace "messages" with "frames" on lines 19, 20, 22 (twice), 26 (twice) and 33. |

**Discussion:** The text – section 4.5.4 is below. The commenter’s issues are on L14, 19, 20, 22, 26, 33

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**Proposed resolution: Revised**

Change as shown below:

Each of the services is supported by one or more MAC frame types. Some of the services are supported by

MAC management frames and some by MAC data frames. All of the frames gain access to the WM via the IEEE Std 802.11 MAC sublayer medium access method specified in Clause 9 (MAC sublayer functional description).

The IEEE Std 802.11 MAC sublayer uses four types of frames—*data*, *management*, *extension,* and

*control* (see Clause 8 (Frame formats)). MSDUs carried in data frames are handled via the MAC data service path.

MAC management frames and MAC extension frames (see 8.3.4 (Extension frames)) are used to support the IEEE Std 802.11 services and are handled via the MAC management service path.

MAC control messages are used to support the delivery of IEEE Std 802.11 data and management frames.

The examples here assume an ESS network environment. The differences among the ESS, the PBSS, and

the IBSS network environments are discussed separately in 4.7 (Differences among ESS, PBSS, and IBSS

LANs).

**4.5.2 Distribution of MSDUs within a DS (line 33, also change made in CID 2283)**

**CID 2235**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2235 | 51.28 | 4.2.2 |  |  | 802.11 doesn't define messages that have MAC addresses as origins and destinations. So it is misleading to introduce messages as the things whose origins / destinations are 802.11-defined addresses. (The actual messages are defined elsewhere {IETF, NIST, security designers,...} and used by MACs / transferred in MSDUs.) | On lines 28 and 31 replace "message" with "frame". |

**Discussion:**

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“Frame” is certainly accurate. The original text is was not as precise in its use of the terms.

**Proposed Resolution: Accepted**

**CID 2312**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2312 | 143.24 |  |  |  | 4.5.4.2 says SAE is defined by 802.11, this text refers to the SAE Confirm and Commit messages, and no reference is provided in clause 2 to external SAE definitions. However, there are no definitions of SAE Confirm and SAE Commit messages in clause 8. These "messages" appear to be simply ordered sets of components (generated by algorithms specified in 11.5.3) that are transmitted as fields in the Authentication frame (i.e., not messages that are separately exchanged between peers in a protocol). If that is the case, call them "sets" or "vectors" instead of "messages". | Provide references to the formal definitions (layouts) of the Commit and Confirm frames/messages, or replace "message" with "vector" in each of their names. |

**Discussion:**

The cited text is below:

****

There is similar text at 144.55, 146.20, 147.39: “SAE Commit Message or SAE Confirm Message”

The “Commit Message” and “Confirm Message” are defined in 11.3.5.3 Construction of a Commit Message and 11.3.5.5 Construction of a Confirm Message. Also see Figure 4-27.

**Proposed Resolution: Rejected**

The “Commit Message” and “Confirm Message” are defined in this standard, see 11.3.5.3 Construction of a Commit Message and 11.3.5.5 Construction of a Confirm Message.

**CID 2290**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2290 | 85.60 | 4.5.4.2 |  |  | "end-to-end" in 802.11 is frame origin to frame destination, not messages. | Replace "message origin to message destination" with "frame origin to frame destination". |

**Discussion:**

The cited text is below:



802.11 authentication – for example open system/shared key/SAE/FT does apply to the linl level only, and NOT to MSDU origin/destination.

**Proposed resolution: Rejected**

The cited text is correct. 802.11 authentication – for example open system/shared key/SAE/FT does apply to the linl level only, and NOT to MSDU origin/destination.

**CID 2288**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2288 | 85.20 | 4.5.3.5 |  |  | Normative verb in the introduction. | Replace "may be invoked by either party to an" with "can be invoked by either party in an". |

**Discussion:**

The cited text is below:

****

**Proposed resolution: Accepted**

**CID 2318**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2318 | 446.27 |  |  |  | There is no function for requesting a PCP or AP for a list of RDSs. | Replace "request the PCP/AP for a list of RDSs in the BSS" with "transmit a request to the PCP/AP for a list of RDSs in the BSS". |

**Discussion:**

The cited text is below:



**Proposed Resolution: Accepted**

**CIDs 2399, 2398**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2399 | 2210.59 | 21.6.4.1.1 |  |  | Normative requirement made on "equipment". | Replace "should" with "needs to". |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2398 | 2189.01 |  |  |  | Normative requirement made on "equipment". | Replace "should" with "needs to". |

**Discussion:**

The cited text at 2210.59 is below:



The cited text at 2189.01 is below:



Use of “should” is described in clause 1.4:



And in the IEEE Style guide, section 11.2.2 from <https://development.standards.ieee.org/myproject/Public/mytools/draft/styleman.pdf> :

*“The word should indicates that among several possibilities one is recommended as particularly suitable,*

*without mentioning or excluding others ; or that a certain course of action is preferred but not necessarily*

*required (should equals is recommended that)”*

Usage of “should” in the cited text seems appropriate; a recommendation is indeed made to test equipment that is used to implement or directly test equipment that implements the IEEE 802.11 standard.

This PHY text was carefully crafted in 11mb. Clause 21 is normative. Propose no change.

**Proposed resolution: Rejected**

Usage of “should” in the cited text is as described in clause 1.4; a recommendation is made related to IEEE 802.11 test equipment.

**CID 2401**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2401 | 3036.17 |  |  |  | Recommended practices ("should" statements) do not belong in an informative clause (Annex N). | Do one of:-- Replace "Recommended practices: in the title of N.2 with "Current practices" and rewrite all of the "It is recommended" statements as statements of fact about current practices-- Delete N.2.-- List Annex N (on page 3038) as normative. |

**Discussion:**

**Proposed resolution: Revised**

At 3036.17, “N.2 Guidelines for contention-based admission control “

**N.2.1 Use of ACM (admission control mandatory) subfield**

, Admission control is not used for the access categories AC\_BE and AC\_BK. The

ACM subfield for these categories is set to 0. The AC parameters chosen by the AP should account

for unadmitted traffic in these ACs.

When dot11SSPNInterfaceActivated is true, any STA authenticated through an

SSPN interface uses admission control to access categories AC\_VO and AC\_VI to produce network

utilization consistent with the policy imposed by the SSPN for admission. AC parameters chosen by the AP

should further account for any unadmitted traffic in AC\_VO and AC\_VI that might be reserved for users of

a particular SSPN.

**N.2.2 Deriving medium time**

The AP uses the following procedure to derive medium time in its ADDTS Response

frame.

There are two aspects to consider: 1) the traffic requirements of the application, and 2) the expected

error performance of the medium.

The application requirements are captured by the following TSPEC parameters: Nominal MSDU Size and

Mean Data Rate.

The medium requirements are captured by the following TSPEC parameters: Surplus Bandwidth Allowance,

Minimum PHY Rate and, for aggregation, Nominal MSDU Aggregation.

The following formula describes how Medium Time, in units of 32 μs periods per second, may be

calculated:

At 3035.63, “Opt Specified if Minimum Data Rate is specified” (2 occurrances)

At 3036.24, “The ACM subfield for these categories is set to 0.”

At 3036. 31 “AC parameters chosen by the AP further account for any unadmitted traffic”

At 3043. 38, “the scheduler considers these retransmissions”

At 3044.64, “The values for *SBA* as shown in Table N-2 (SBA vs Packets/s) are based upon a one second time period and hence are used in the TSEC for EDCA Admission Control. The value used in an HCCA TSPEC might be different, as will now

be explained.

At 3047.8, “For CBR traffic the minimum and maximum Service Intervals are set to the same value. For example, most voice traffic requires a minimum and maximum service interval value of 20 ms.”

At 3047. 12, “In the case of VBR traffic, such as video, Minimum Service Interval is set to zero”

At 3048.7, “For an HCCA TSPEC, for CBR traffic the Minimum, Mean and Maximum Data Rate fields contain the same value but it is allowable to just specify the Mean Data Rate noting that the Minimum and

Maximum Service Intervals are the same. For an EDCA TSPEC, for CBR traffic the Minimum, Mean and Maximum Data Rate fields contain the same value but it is allowable to just specify the Mean Data Rate.”

At 3048. 42, “When summing streams for EDCA Admission Control, the EDCA Overhead Factor needs to be taken into account”

And incorporate the text changes in 11-14-0044r0 (fixes to N.2.2). Note to editor: apply the 11-14-0044 changes before the above changes.

**References:**