

IEEE P802.11 Wireless LANs

Proposed Resolutions to Sponsor Recirculation Comments

Date: July 5, 1999

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Comment	Commenter	Action	Proposed Resolution
183	Mike Trompower	Rejected	<p>It is assumed that the commenter is referring to the MLME_Join.request and requesting that this mechanism be used to modify the content of the Capability Information Field (CIF) in MAC Management frames. The MLME_Join.request is not the proper mechanism for selecting the bits in the CIF. It simply identifies the BSS description of the BSS to join. The intent of the MLME_Join.request is to take the information that has been received previously during a Scan operation and delivered by the MLME to a management agent outside the MAC, using this information to identify the parameters required to synchronize with the requested BSS. The mechanism for setting the bits in the CIF is described in 7.3.1.4. A station sets these bits based upon the value of attributes in its MIB, which are also set by an outside manager.</p> <p>MLME-Start includes the CIF information to be advertised by an AP for the BSS.</p>
188	Mike Trompower	Rejected	<p>This is an editorial comment. The paragraph to which it refers is entirely illustrative and includes no normative text. The description of channel agility is presented accurately and makes no implications about characteristics that are not described in either normative text of clause 18 or in the informative text of Annex F. The paragraph has been modified to be the following: "This option can also be used to implement 802.11 compliant systems that are interoperable with both FH and DS modulations." This is describing a system that does both FH and DS, not implying that HRDS is directly interoperable with FH.</p>
190	Mike Trompower	Accept	The requested action was taken in the last draft.
192	Mike Trompower	Rejected	The many combinations described in the comment, and those that are not, do not introduce ambiguity or non-interoperability. The PHY options are simple extensions of the mechanism already in place for the support of multirate and can be supported in the same way. The request for additional MIB attributes is not necessary. There are sufficient attributes to define the presence and use of the options. The particular algorithms used to enable and select the use of the options are outside the scope of the standard, as are those for multirate.
215	Mike Trompower	Closed	
222	Mike Trompower	Closed	
225	Mike Trompower	Closed	
247	Mike	Closed	

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250	Mike Trompower	Accept	Editor will remove reference to temperature Type 3.
255	Mike Trompower	Rejected	The management of the channel agility (when and where to hop) must be included in the normative portion of the standard in order to ensure interoperability of agile HR PHYs with themselves as they move from one channel to another. The commenter's suggested text regarding Beacon and Probe (Response) frames is already described in the changes to Clause 7 and does not belong in the Clause relating to the PHY.
266	Mike Trompower	Withdrawn	
265	Mike Trompower	Withdrawn	
268	Mike Trompower	Withdrawn	
269	Mike Trompower	Accept	The new CCA modes will be renumbered as requested by the commenter. Mode 4 will be represented in the MIB with a value of 08. Mode 5 will be represented in the MIB with a value of 16. The range of dot11CCAModeSupported will be changed to (0..16). The allowable values of dot11CurrentCCAMode will be updated to add the new values as follows: SYNTAX INTEGER {edonly(1), csonly(2), edandcs(4), CswithTimer(8), Hrcsanded(16)}, as well as adding the new values to the description.
270	Mike Trompower	Rejected	In the cases where a station is unable to process the short header or a station does not correctly receive the header, the timer is necessary to prevent the medium from being indicated to be available prematurely. This allows the coexistence of long preamble only stations with short preamble stations. Detailed rationale for this mode of operation is provided in document 802.11-99/01
276	Mike Trompower	Rejected	The commenter claims that the standard does not specify what is to be done with values received in reserved fields. This is not correct. Clause 7.1.1 of IEEE Std. 802.11-1997 states "Reserved fields and subfields are set to 0 upon transmission and are ignored on reception." Thus, legacy stations will ignore the new codes. Even though the legacy stations are not able to interpret new codes, they will determine that the code means "failure" from the description of the original codes in the standard. The intent of these options is to allow either mix and match operation or exclusive operation requiring the implementation of one or more options. Precedent for this is already established in the original standard with the allowed use of the basic rate set, which may include only an optional rate. Additional MIB attributes are not required, since it is only legacy stations that might have a use for these new attributes and they are the ones that will be completely unaware of them. In order for a mobile station to be able to query the MIB of an AP, it must first be associated, which it could not do if it did not implement the required options. We agree that attributes telling an AP how to make its association decisions with regard to the new options are desirable, they belong outside the MAC and MAC Management, in the external AP functionality.
280	Mike Trompower	Withdrawn	
281	Mike Trompower	Accept	The PICS will be updated to reflect the changes made to the CCA modes.
284	Mike	Rejected	The operation of the channel agility option is not a definition of

	Trompower		a new PHY, but an option of the HRDS PHY that provides functionality that may be used by a system implementer to create systems that include a dual mode (FH and DS/HRDS) radio capable of a manner of interoperability between legacy FH stations and a channel agile HRDS AP. The use of this option in a pure HRDS environment allows a BSS to move its channel of operation in order to avoid interference, or for other reasons. Annex F is now purely informative and does not create new requirements. Clause F.4 will be retitled: "F.1 Additional CCA Requirements Recommendations".
314	Anil Sanwalka	Accepted	Change aPreambleLength to have only a single value. Then add a variable PreambleLength for use in calculation of TXTIME. Because the HRDS PHY must be aware of the header type being used (long or short) when calculating the TXTIME, it can select the appropriate value for PreambleLength to be used in the calculation. The PreambleLength and TXTIME calculations are entirely internal to the HRDS PHY.
316	Anil Sanwalka	Accept	The hop sequences are now normative and included in clause 18. Annex F is entirely informative and provides a description of the conceptual "dual mode" AP that provides a manner of interoperability between legacy FH stations and an agile HRDS AP. The wording of clauses 18.1 and 18.4.6.7 will be modified to say "This option can also be used to implement 802.11 compliant systems that are interoperable with both FH and DS modulations." This is describing a system that does both FH and DS, not implying that HRDS is directly interoperable with FH.
332	Dave Bagby	Accept	There are no options in the standard that would cause any combination of selections to fail to interoperate. Therefore there are no options that need to be removed. All combinations of options are properly managed through MAC management, such that all stations, including legacy stations of the original standard that are unable to understand the new options, are informed of the consequence of communication with stations implementing the new options. This communication occurs in the Association Response frame in the form of the Status Code. This code already provides for "Unspecified Failure" and declares that "If an operation is successful, then the status code is set to 0." Thus any non-zero value indicates a failure, even if the station is unable to interpret the actual reason. In addition, all stations implementing the new options are required to be fully capable of communication with the legacy stations. This requires that response frames are delivered to requesters using options and rates that the requester will understand. This is an extension of the multirate operation that requires a station to avoid communication using rates that are known not to be supported by the destination. Thus it is not possible for a customer to purchase two pieces of compliant equipment that will not interoperate.
338	Dave Bagby	Reject	Clause 7.1.1 of IEEE Std. 802.11-1997 states "Reserved fields and subfields are set to 0 upon transmission and are ignored on reception." Thus, legacy stations will ignore the new codes and fields. This is the intended operation of the new codes and fields. Since the operation of legacy devices will be unaffected by these changes, no change to the protocol version is required. A new MAC will correctly interpret the CIF in an old MAC frame to indicate that the HRDS PHY options are not present. Simply because the old MAC ignores the new CIF bits does not imply that the old and new MACs are not interoperable.

			<p>The old MACs correctly convey that the PHY over which they are operating does not include any of the HRDS options. The new MACs are unable to communicate to the old MACs that they are operating over an HRDS PHY that implements one or more optional capabilities. This is not a failure to interoperate because the old MAC (over an old PHY) would not be able to make use of any of the new HRDS PHY capabilities, anyway.</p> <p>The CIF bits will operate as they do in legacy MACs when an 802.11a PHY is present. Mixing MAC and PHY capabilities in the MAC header does not violate the “one MAC many PHYs” design goal of 802.11. The legacy MAC already includes PHY dependent information in certain frame types, e.g., FH and DS parameter set elements. This operation does not compromise the MAC any further.</p>
339	Dave Bagby	Reject	This comment is identical to 338. Please see the resolution of that comment.
340	Dave Bagby	Reject	The PBCC option provides additional capability to the standard. It has been shown that PBCC provides a small, but significant, increase in sensitivity. This may allow the operation of PBCC in situations where CCK would not operate acceptably. PBCC is left as an option in the standard because it is felt to be more complex than CCK. Leaving it as an option, allows an implementer to choose whether the additional complexity is balanced by the benefits of greater sensitivity.
341	Dave Bagby	Closed	
342	Dave Bagby	Reject	<p>This comment refers to comment #301. The channel agility option is still included in the draft and, thus, requires an entry in the PICS. The PICS of the previous draft referred to the wrong clause. The correct clause is 18.3.2. The PICS has been updated to refer to this clause.</p> <p>Inclusion of this option does not introduce interoperability problems. The hop sequences have been included in 18.4.6.7 to ensure that agile BSSs maintain synchronization. The MAC has been updated to include the necessary information in the Beacon and Probe Response frames, so that stations are aware that an HRDS BSS is agile and of the parameters necessary to maintain synchronization. Finally based on the CIF field, stations may be denied association with an agile BSS if they do not implement the agility option.</p>
343	Dave Bagby	Reject	<p>Referring to the 3 cases described by the commenter: Vendor A implements short headers on TX and RX. What the commenter has not stated is that Vendor A must also implement long headers on TX and RX. Vendor B implements only long headers on both TX and RX. Vendor C is not a possible implementation, given the current PICS where both short preamble processing on TX and RX are required if the short preamble option is implemented.</p> <p>Case 1: The choice to use long or short headers is a decision similar to that of what rates to use, those that are mandatory or those that are optional. The algorithm for choosing a rate is outside the scope of the standard. However, the standard does require that a station does not attempt to communicate using rates that are known not to be implemented by the destination. Changes to clause 9.6 (Multirate) extend this operation to the options used. Granted Vendor A may not be immediately able to communicate with Vendor B if Vendor A begins by using short preambles. However, Vendor A is still capable of using long preambles. A reasonable algorithm, though outside the</p>

			<p>scope of the standard, would be for Vendor A to retry its transmissions using the long preamble.</p> <p>Case 2: Since the configuration of Vendor C is not allowed (either both or neither, but not just one of TX and RX), this devolves to Case 1.</p> <p>Case 3: Similarly, Vendor C must either implement short preamble on both TX and RX or on neither. In either case, Vendor C will be immediately able to exchange frames with like equipment.</p> <p>The editor inadvertently allowed the changes to the MIB to not be properly reflected in the draft 5.5cmp. It is correct in draft 6.0 This may have caused the changes to escape the commenter's attention.</p>
344	Dave Bagby	Reject	The technical issues of comment 332 are addressed in the response to comment 332. Only the charter issues will be addressed here. The issue is one of whether the HRDS PHY is a definition of one or more PHYs. The position of the working group is that the HRDS PHY defines a single high rate extension of the DS PHY. It also defines an agility option that provides significant capabilities to the HRDS PHY to avoid stationary interferers. The fact that this allows an implementer to build an AP using a single dual mode radio that allows that system to communicate with legacy FH PHYs does not constitute the definition of a second PHY in this standard.
345	Dave Bagby	Reject	This comment is identical to #344. Please see the resolution to that comment.
297	Dave Bagby	Reject	This comment is identical to #338 and #339. Please see the resolution to those comments.
299	Dave Bagby	Reject	This comment is identical to #340. Please see the resolution of that comment.
300	Dave Bagby	Closed	
301	Dave Bagby	Reject	This comment is identical to #342. Please see the resolution of that comment.
302	Dave Bagby	Reject	This comment is identical to #343. Please see the resolution of that comment.
336	Rich Seifert	Accept	There are no options in the standard that would cause any combination of selections to fail to interoperate. Therefore there are no options that need to be removed. All combinations of options are properly managed through MAC management, such that all stations, including legacy stations of the original standard that are unable to understand the new options, are informed of the consequence of communication with stations implementing the new options. All stations implementing the new options are required to be fully capable of communication with the legacy stations.
337	Rich Seifert	Accept	After careful review, it has been determined that the text requested by the commenter already exists in the original standard, IEEE Std. 802.11-1997, in clause 7.1.1.
294	Jeff Fischer	Reject	The working group agrees with the commenter that PBCC has certain advantages over CCK. However, there is a difference of opinion between the commenter and the working group as to the relative complexity of PBCC vs equalization, the amount of equalization required for CCK, and the severity of the environment in which CCK will operate reliably. For these reasons, the working group has repeatedly decided that PBCC should be part of the standard, but that it should remain optional, allowing an implementer to make the trade-offs inherent in the definition of a product incorporating the PBCC

			option.
296	John Cafarella	Reject	The operation of the channel agility option is not a definition of a new PHY, but an option of the HRDS PHY that provides functionality that may be used by a system implementer to create systems that include a dual mode (FH and DS/HRDS) radio capable of a manner of interoperability between legacy FH stations and a channel agile HRDS AP. The use of this option in a pure HRDS environment allows a BSS to move its channel of operation in order to avoid interference, or for other reasons. Rather than causing problems with uncoordinated users (SOHO), the presence of this option may allow such users to operate in environments that would not otherwise be possible.
298	John Cafarella	Reject	The working group believes that the proposed standard incorporates only options that have reasonable justification. Each option provides a distinct advantage, but also requires an increase in complexity. The base standard, without options has been implemented and found to provide the expected performance and features. In addition, several years of experience have been accrued using the original 802.11 standard and other WLAN technology. With this base of experience, the working group feels that the proposed standard is well designed and provides an implementer the flexibility to provide interoperable solutions with a variety of performance-enhancing options.
267	Stan Reible	Reject	The sensitivity specified describes a minimum value. An implementer is free to select a tighter value. The value chosen is felt to allow implementations with a reasonable difficulty and complexity.
271	Stan Reible	Accept	Allow a CCA a total backoff of 6dB for low power transmissions when in the high rate mode. The changed text reads: "If a valid High Rate signal is detected during its preamble within the CCA assessment window, the energy detection threshold shall be less than or equal to -76 dBm for TX power > 100 mW, -73 dBm for 50 mW $< TX$ power ≤ 100 mW, and -70 dBm for TX power ≤ 50 mW.
274	Stan Reible	Reject	<p>The operation of the channel agility option is not a definition of a new PHY, but an option of the HRDS PHY that provides functionality that may be used by a system implementer to create systems that include a dual mode (FH and DS/HRDS) radio capable of a manner of interoperability between legacy FH stations and a channel agile HRDS AP. The use of this option in a pure HRDS environment allows a BSS to move its channel of operation in order to avoid interference, or for other reasons.</p> <p>The long preamble is chosen specifically to allow interoperability with legacy DS PHYs. Shortening this preamble would introduce interoperability problems with the legacy DS PHY. However, the spirit of the comment, to increase performance through the use of a shorter preamble, is part of the proposed standard. The use of the short preamble option allows a user of the standard to select a higher performance level when interoperability with legacy DS PHYs is not an issue.</p>
285	Stan Reible	Reject	The operation of the channel agility option provides functionality that may be used by a system implementer to create systems that include a dual mode (FH and DS/HRDS) radio capable of a manner of interoperability between legacy FH stations and a channel agile HRDS AP extending the

			operation of an HRDS system into precisely the environments where the commenter claims it would cause difficulty. The use of this option in a pure HRDS environment allows a BSS to move its channel of operation in order to avoid interference, or for other reasons. Rather than causing problems with uncoordinated users (SOHO), the presence of this option may allow such users to operate in environments that would not otherwise be possible.
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