Friday, July 09, 1999 23:55:15

P802.11b Draft D6.0 Remaining Comments and Resolutions

Cl **XX** *SC* *P* **General** *L* # **336**
Rich Seifert Networks & Communic Vote VD

Comment Type **TR** *Comment Status* **A**

I add my support for outstanding comment 332 from Mr. Bagby. I agree with him that the inclusion of options that can cause two standards-conformant devices to be unable to interoperate both violates the requirements of the PAR, and is inappropriate for an industry standard document.

SuggestedRemedy

Remove options which create the possibility that if different combinations of options are implemented by different venders, it becomes possible for a customer to buy two compliant pieces of equipment which may fail to interoperate.

Proposed Response *Response Status* **U**

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.

Cl **XX** *SC* *P* **General** *L* # **337**
Rich Seifert Networks & Communic Vote VD

Comment Type **TR** *Comment Status* **A**

I wish to add my support to outstanding comment 297 from Mr. Bagby. I agree that the changes to the MAC in 802.11b both go beyond the scope of the PAR, and will likely create interoperability problems with existing MAC implementations. Changes to the semantics of MAC-related fields either: (a) require a change to the version number of the MAC/frame format, or (b) must have been specifically anticipated in the earlier version. For example, it is possible to future-proof a protocol somewhat by specifying certain fields or values as "reserved", to be transmitted as zero and ignored on receipt. In this way, future versions can both detect field usage by an earlier version, and the earlier version will ignore the future usage. However, this behavior must have been explicitly stated in the ORIGINAL specification; it cannot be added later on and still ensure interoperability

SuggestedRemedy

Adopt the changes proposed by Mr. Bagby to eliminate the need for any of the changes proposed to the 802.11 MAC specification; and then delete the corresponding MAC changes.

Proposed Response *Response Status* **U**

ACCEPT. After a careful review, we find that the extra text requested by the commenter already exists in the standard IEEEstd. 802.11-1997 in clause 7.1.1.

Cl **XX** *SC* *P* **multiple** *L* # **332**
David Bagby 3Com Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

Review Comment 1: Technical Required
This reviewer does not accept the responses to previous comments I submitted re the 802.11b PHY draft (during internal 802.11 ballots) prior to the sponsor ballot. The responses were specious, sometimes factually incorrect. Therefore most prior positions will be reiterated for this ballot (for the benefit of the sponsor ballot reviewers).

To keep the review process productive, this reviewer asks that the 802.11 group refrain from analogy arguments about options in other portion of the 802.11 standard as an argument for the permissibility of options in this PHY. (The analogy arguments given bring to mind the typical stories of a mother asking a child whether they would jump off a cliff just because all their friends were doing it.) The context within which any given decision was made for previous portions of the 802.11 standard do not constitute out of context precedence for any later extensions of the standard.

When 802.11 authorized the 802.11b working group it was by a specific motion that required that the group develop a single high-speed PHY for the 2.4GHz band. In this reviewer's view the intent of the wording of that motion (which I made, so I believe I am qualified to speak to the intent) was to prevent the group from creating multiple (FH and/or DS) high-speed PHYs. The motivation was market driven by the market requirement for wider adoption of 802.11 is for a single high-speed PHY that meets the industry/market psychological need for at least 10Mbps. From a market perspective, the phrase 'single PHY' means that no matter what combinations of options are implemented by different venders, it shall be impossible for a customer to buy two compliant pieces of equipment which, under any circumstances, may fail to interoperate. This is the primary technical requirement that the 802.11b PHY specification must meet in order to acquire my yes vote.

In the opinion of this reviewer, the inclusion of several options within 802.11b D5.0 prevents the specification from meeting either the intended goal or the specific restrictions imposed by the motion chartering the group. The response of the group gives (in this reviewer's opinion) poorly developed arguments based on analogy and procedural arguments. The problems are not at the core procedural, they are technical the included options, as specified, create interoperability problems.

Further comments will address specific problems in more detail.

SuggestedRemedy

Required change:
Remove options which create the possibility that if different combinations of options are implemented by different venders, it becomes possible for a customer to buy two compliant pieces of equipment which may fail to interoperate.

Proposed Response *Response Status* **U**

REJECT. 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

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Vote: E/ExCom VD/Disapprove VAC/Approve with Comments

Cl **XX** *SC*

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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.

Cl **XX** *SC* **# 297** *P* **# 297** *L* **# 297** # **339**

David Bagby 3Com Corporation Vote VD

Comment Type **TR** *Comment Status* **A**

Position of author on Ballot comment # 297 response as of 6-16-99: Disaprove
The committee response appears to have been to ignore the issue raised. I went to some trouble to point out the interaction combinations that needed to be investigated. The response of the committee does not even address the interactions of old/new mac Implementations vs. header versions. If the committee refuses to even respond to the concerns expressed, then I have no choice but to hold the vote at disapprove until such time as the committee bothers to write up a response that addresses the technical issue raised. If the committee believes that the interactions I questioned are not a technical problem, then it at least needs to write up its reasoning and submit that as part of the response. If the logic and explanation are sufficient, I will change my position on this issue, but I can not do so based on essentially nill amount of the information contained in the comment response.

SuggestedRemedy

Proposed Response *Response Status* **U**

ACCEPT. This comment is identical to 338. Please see the resolution of that comment.

Cl **XX** *SC* **# 297** *P* **# 297** *L* **# 297** # **338**

David Bagby 3Com Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

Position of author on Ballot comment # 297 response as of 6-16-99: Dissaprove
The committee response appears to have been to ignore the issue raised. I went to some trouble to point out the interaction combinations that needed to be investigated. The response of the committee does not even address the interactions of old/new mac Implementations vs. header versions. If the committee refuses to even respond to the concerns expressed, then I have no choice but to hold the vote at disapprove until such time as the committee bothers to write up a response that addresses the technical issue raised. If the committee believes that the interactions I questioned are not a technical problem, then it at least needs to write up its reasoning and submit that as part of the response. If the logic and explanation are sufficient, I will change my position on this issue, but I can not do so based on essentially nill amount of the information contained in the comment response.

SuggestedRemedy

Proposed Response *Response Status* **U**

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. 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.

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.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Vote: E/ExCom VD/Disapprove VAC/Approve with Comments

Cl **XX** *SC* **# 297**

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Cl **XX** *SC* **# 299** *P* **# 299** *L* **# 299** # **340**

David Bagby 3Com Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

Position of author on Ballot comment # 299 response as of 6-16-99: Disapprove
Simply saying 'reject' without any supporting text as to why is not much motivation to change my vote in this subject.

SuggestedRemedy

Proposed Response *Response Status* **U**

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.

Cl **XX** *SC* **# 301** *P* **# 301** *L* **# 301** # **342**

David Bagby 3Com Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

Position of author on Ballot comment # 301 response as of 6-16-99: Disapprove
I am not sure what to make of the committee's response on this issue. Is channel agility option included in the proposed spec or not? Please clarify for me.

SuggestedRemedy

Proposed Response *Response Status* **U**

REJECT. 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.

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.

Cl **XX** *SC* **# 302** *P* **# 302** *L* **# 302** # **343**

David Bagby 3Com Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

Position of author on Ballot comment # 302 response as of 6-16-99: Disapprove
I really wanted to make this one an "approve" but the response of the committee only addressed a part of the submitted comment. Coupling use of the short preamble between RX and TX will improve the situation. However, that only takes care of case 3 in the comment. How about cases 1 and 2? I think they still fail. The suggested remedy offered two choices (numbered a and b in the comment) and neither were adopted – therefore I can not agree, in spite of how the response is labeled, that the comment was accepted. The problems still remain. Please either accept one of the suggested solutions or take the time to explain in detail why the other cases cited are not a problem.

SuggestedRemedy

Proposed Response *Response Status* **U**

REJECT. 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.

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 know 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 scope of the standard, would be for Vendor A to retry its transmissions using the long preamble.

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.

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.

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.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Vote: E/ExCom VD/Disapprove VAC/Approve with Comments

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Cl **XX** *SC* **# 332** *P* **# 332** *L* **# 332** *#* **344**

David Bagby 3Com Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

Position of author on Ballot comment # 332 response as of 6-16-99: Dissaprove
This response is not acceptable as is. The ballot comment raised the question of charter and the technical problems that result from the proposed options in the specification. The response simply says that since the group did not opt to take the suggested remedy that they reject the comment. That is not a sufficient response as it totally ignores, and does not address the charter issues or the technical problems created by the existence of the options. Additionally, the response sent to me appears to be incomplete as it ends with a partial sentence: "All options are required to carry the basic". This ballot comment therefore must remain "disapprove" until the committee actually responds to the issues cited.

SuggestedRemedy

Proposed Response *Response Status* **U**

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 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.

Cl **XX** *SC* **18.1** *P* *L* *#* **188**

Mike Trompower Telxon Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

Last paragraph of this section.

We are under NO restrictions to make a high rate phy which interoperable with current FH PHY.

This statement implies many characteristics which are not defined in the current text.

SuggestedRemedy

Change the paragraph to the following:

Capability for identifying a channel agile mode is also provided. However, management of this function is outside the scope of this standard.

Proposed Response *Response Status* **U**

REJECT. 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: "include paragraph from draft 6.0"

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Vote: E/ExCom VD/Disapprove VAC/Approve with Comments

Cl **XX** *SC* **18.1**

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Cl **XX** *SC* **18.2.1** *P* *L* *#* **192**

Mike Trompower Telxon Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

This section creates ambiguity.
It says that the long preamble is mandatory. Which means that it must always be supported.
It then implies that the short preamble is intended for exclusive use; ie. a BSS will use only the short preamble.

In order to have the exclusive case, additional parameters must be added to the MIB and MAC which allow this mode.

If exclusivity is the intent of the PBCC and agility as well, then variables must be added for these as well.

In other words, will the PHY chips be created so that they can recognize on the fly which preamble is being used, or will they operate in one mode (long or short) only in order to demodulate the packet?

Will the PHY chips be created so that they can recognize on the fly whether or not PBCC is used and correctly demodulate the packet?

Likewise with the other combinations !!

SuggestedRemedy

Proposed Response *Response Status* **U**

REJECT. 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.

Cl **XX** *SC* **18.4.6.6** *P* **45** *L* **48** *#* **294**

Jeff Fischer MICRILOR, Inc. Vote VD

Comment Type **TR** *Comment Status* **R**

The PBCC (i.e. coded) mode should be required, not optional. This issue is not related to the debate of having "options" in the standard, but to needing the PBCC mode because it is the only way the standard can be generally useful to the industry. The CCK modulation is inherently very weak by today's communications standards. If the PBCC is not used then the only way to make this waveform useful is with a severe measure of equalization. Therefore the only way to make this standard a useful one depends on a companies implementation, not on the standard waveform itself. By making the PBCC a requirement then the standard waveform itself will have inherent utility. The argument that there are commercial reasons to make a poor link is not a good one. Commercially speaking, the equalizer is a more complex, more costly, more power consumptive circuit to implement than the PBCC circuits.

SuggestedRemedy

Make this mode requried for a standard implementation.

Proposed Response *Response Status* **U**

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.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Vote: E/ExCom VD/Disapprove VAC/Approve with Comments

Cl **XX** *SC* **18.4.6.6**

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Cl **XX** *SC* **7.3.1.9** *P* *L* # **276**

Mike Trompower Telxon Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

The three new reason codes are not supported by stations which are compliant to the current (1997) standard.
The existing products, "should" ignore the three new capabilities bit definitions established in 7.3.1.4, however, the 1997 spec says they are defined to be always zero - it does not say what is proper course to take when a '1' bit is received.
Since the current systems cannot interpret these bits and are not aware of these new reason codes, there is no way for them to determine the reason for denied association.

Section 18 states that the long preamble is MANDATORY. Section 18.2.3.9 implies that long and short are used together. Section 18.2.5 states that the decision for using long or short is a management decision and implies packet by packet basis. To me this means "mix and match" is the intended operation.

Section 18 states that these new capabilities are optional. Section 7.3.1.4, when defining these new capabilities, implies that these features may be used (or not) on an individual packet by packet basis.

If the intent is to define the use of these new options as exclusive use and mandatory to join a BSS when enabled, then the station must know in advance (PHY bits) how to decode the frame and whether to recognize the short preamble.

SuggestedRemedy

I believe the intent was to allow mix and match operation. Therefore, no station can be denied access to the BSS based on non-support and these reason codes will never be used and should be deleted.

IF the intent is to give a vendor the ability to selectively discriminate against stations not supporting a particular optional mode, additional MIB parameters should be defined which allow configuration of the use as mandatory or optional within a BSS. - then the reason codes can be kept, although only recognized by stations compliant to this newer version of the draft.

Proposed Response *Response Status* **U**

REJECT. 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.

Cl **XX** *SC* **Annex A4.3** *P* *L* # **281**

Mike Trompower Telxon Corporation Vote VD

Comment Type **TR** *Comment Status* **A**

If the timer is not removed, then
The algorithms for CCA should have different numbering from those used in section 15.
The MIB should reflect the additional modes as well.
The algorithms using a timer are not the same as those which do not.

SuggestedRemedy

Mode 2 should become new mode 4
Mode 3 should become new mode 5

Change in 18.4.8.4 and in PICS HRDS11

Proposed Response *Response Status* **U**

ACCEPT. The PICS will be updated to reflect the changes made to the CCA modes.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Vote: E/ExCom VD/Disapprove VAC/Approve with Comments

Cl **XX** *SC* **Annex A4.3**

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Cl **XX** *SC* **Annex F** *P* *L* *#* **284**

Mike Trompower | Telxon Corporation | Vote | VD

Comment Type **TR** *Comment Status* **R**

Delete this entire annex and all references to it. The information in this annex is outside the scope of 802.

This information (and many pointers to it in the text) alludes to the creation of a NEW PHY. This phy must be capable of receiving both FH and DS preambles. AS A SPECIFIC REFERENCE, the first sentence of annex f states that this option creates an "INTEROPERABLE" FH and DS PHY. This new PHY is not a part of the PAR.

If you attempt to use two radio devices, the mechanism for transferring the information between the two radios is not defined (and is outside the scope of 802) and will likely NOT Result in an "interoperable" solution as stated.

Further, the CCA mechanism which is referenced, is new functionality, not part of the main spec. no provisions have been provided in other parts of the spec (MIB and PICS)

SuggestedRemedy

Delete this entire annex - do not any of this information into section 18.

Proposed Response *Response Status* **U**

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. Annex F is now purely informative and does not create new requirements. Clause F.4 will be retitled to be “Additional CCA Recommendations”.

Cl **XX** *SC* **Annex F** *P* **60** *L* *#* **296**

John H. Cafarella | MICRILOR, Inc. | Vote | VD

Comment Type **TR** *Comment Status* **R**

I believe the frequency-agility option violates our single-PHY PAR restriction. It perpetuates the dual-PHY situation into the future. It will work against acceptance of this already complex standard. Uncoordinated users (i.e., SOHO environment) may cause/experience disruption when this option is employed, and they will not understand why.

SuggestedRemedy

Remove Annex F, and all related cross-referencing from the main body of the standard.

Proposed Response *Response Status* **U**

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.

Cl **XX** *SC* **ballot comment #** *P* *L* *#* **345**

David Bagby | 3Com Corporation | Vote | VD

Comment Type **TR** *Comment Status* **R**

Position of author on Ballot comment # 332 response as of 6-16-99: Dissaprove
This response is not acceptable as is. The ballot comment raised the question of charter and the technical problems that result from the proposed options in the specification. The response simply says that since the group did not opt to take the suggested remedy that they reject the comment. That is not a sufficient response as it totally ignores, and does not address the charter issues or the technical problems created by the existence of the options. Additionally, the response sent to me appears to be incomplete as it ends with a partial sentence: “All options are required to carry the basic”. This ballot comment therefore must remain “disapprove” until the committee actually responds to the issues cited.

SuggestedRemedy

Proposed Response *Response Status* **U**

REJECT. This comment is identical to #344. Please see the resolution to that comment.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Vote: E/ExCom VD/Disapprove VAC/Approve with Comments

Cl **XX** *SC* **ballot comment #**

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Cl **XX** *SC* **MAC changes to suppo** *P* **multiple** *L* *#* **297**

David Bagby 3Com Corporation Vote VD

Comment Type **TR** *Comment Status* **A**

Review Comment 7: Technical Required
Essentially all the proposed changes to the MAC portions of the 802.11 standard are present to support the options addressed in previous review comments (1 thru 6). I think there are additional problems that are created by the proposed MAC changes.

New bits have been defined in the capability information field. However, the MAC header version has not been updated. How is a station supposed to know how to parse the information? If you change the version level then only new implementation (presumably those that come with an 802.11b implementation) will understand the new capability bits. That would of course also prevent the long PHY header interoperability capability since the old version MACs will not understand the new version mac info.

If you don't change the version information, then what problems may occur? What will a new MAC implementation do when it gets an old MAC capability frame? Will it take action based on the values of the newly defined bits? Will the action be correct? What will happen if an old MAC gets a new MAC header with information in bits that were specified as reserved.

I believe these problems arise because the 802.11b draft proposes putting PHY capabilities into the MAC capability field. The MAC Capabilities field is for MAC capabilities. Mixing PHY info into the MAC capability field makes the MAC version dependent upon the PHY being used. That violates one of the prime design goals of 802.11: A single MAC for multiple PHYs. How should the bits be set in a new MAC header when it's running some other PHY (802.11a or a later developed PHY…)?

I also note that the charter of 802.11b was to create a PHY specification. It was not to change the MAC. Personally, I would accept minor changes to the MAC that do not cause any issues with existing 802.11 MAC implementations – but the changes proposed in 802.11b probably fail that test. Until an analysis of all possible combinations of interactions between "old" and "new" MAC implementations containing the proposed changes is done, presented and circulated for review, and deemed not to contain any problems, I will have to vote no on the 802.11b draft.

Please note that there is an easy way out of the problem: Adopt all the other 802.11b PHY changes requested in my review comments. That would eliminate the PHY options that are the source of the problems; there would be no need for any of the changes proposed to the 802.11 MAC specification, and without the proposed changes, this particular set of issues disappears.

SuggestedRemedy

Required change:
Adopt all the other 802.11b PHY changes requested in my review comments; eliminating the need for any of the changes proposed to the 802.11 MAC specification; and then delete the corresponding MAC changes.

Proposed Response *Response Status* **U**

ACCEPT. This comment is identical to #338 and #339. Please see the resolution to those comments.

Cl **XX** *SC* **many** *P* **many** *L* *#* **298**

John H. Cafarella MICRILOR, Inc. Vote VD

Comment Type **TR** *Comment Status* **R**

My concern here is the existence of too many options: 1) for the high-rate PHY there are 11- and 5.5-Mbps rates using either CCK or PBCC; 2) the long and short PLCP Headers; and 3) the frequency-agility option. This standard is all on paper, and is a design by committee. Unlike the adoption of 802.3 and the original 802.11, where there was considerable experience before the standards, there is no practical experience with this complex collection of stuff.

SuggestedRemedy

1) Keep CCK or PBCC, not both (prefer keep PBCC);
2) Keep long or short header (prefer short);
3) Eliminate frequency agility.

Make the standard simpler to implement and EASIER TO USE.

Proposed Response *Response Status* **U**

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.

Cl **XX** *SC* **PBCC related text** *P* **multiple** *L* *#* **299**

David Bagby 3Com Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

Review Comment 6: Technical Required
Prior to Sponsor ballot I had requested the deletion of the PBCC option. I again make the request as part of my sponsor ballot. The utility provided by the option is insufficient (in this reviewer's opinion) to merit the complexity involved. In my (informal) sampling of people planning to implement the 802.11b PHY, I did not find anyone that planned to implement the option. The option exists due to political deals made in earlier meetings. It's time to be pragmatic and clean up the side effects of past politics – delete the option that (I believe) will not be used. If this is done it makes the resolution to the next comment (#7) easier as a positive benefit.

SuggestedRemedy

Required change:
Delete PBCC option.

Proposed Response *Response Status* **U**

REJECT.This comment is identical to #340. Please see the resolution of that comment.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Vote: E/ExCom VD/Disapprove VAC/Approve with Comments

Cl **XX** *SC* **PBCC related text**

Friday, July 09, 1999 23:55:19

P802.11b Draft D6.0 Remaining Comments and Resolutions

Cl **XX** *SC* **PICs HRDS3** *P* **56** *L* *#* **301**

David Bagby 3Com Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

Review Comment 5: Technical Required
Prior to the sponsor ballot I had requested during internal 802.11 ballots that the FH interoperability option be made mandatory. The group responded to that request by saying "Partially accepted, the FH PLCP frame format option has been deleted". Doing exactly the opposite of what was requested is really stretching the meaning of the phrase "partially accepted"…

However, my primary concern was that the option created interoperability issues. The deletion of the option does remedy my concern. I accept the change in draft 5.0. Please complete the deletion by making the following edit:

Delete PICs item HRDS3 page 56 "Channel Agility Option". Section 18.2 no longer has the option so the PICs can't reference it.

SuggestedRemedy

Required change:
Delete PICs item HRDS3 page 56 "Channel Agility Option".

Proposed Response *Response Status* **U**

REJECT. This comment is identical to #342. Please see the resolution of that comment.

Cl **XX** *SC* **PICs HRDS3&6** *P* **56** *L* *#* **302**

David Bagby 3Com Corporation Vote VD

Comment Type **TR** *Comment Status* **R**

Review Comment 3: Technical Required
I had previously requested that the use of the short preamble be either deleted or made mandatory. The 802.11b group prior to sponsor ballot declined the request. The problems caused by the option specifications remain.

Please refer to the PICs in draft 5.0:
Item HRDS3 (page 56) is shown as optional and refers to section 18.2.
Item HRDS6 (page 56 - short preamble process on RX) is shown as optional and refers to section 18.2.6.
Neither the PICs nor the referenced text sections tie the two options together.

From what I've read that the following are possible compliant implementations:
Vender A: Implements Short header on TX and RX (both options).
Vender B: does not implement any short header options (neither Option)
Vender C: Implements short header on TX option, but not the RX option.

Once the use of short headers is turned on at a sending station here are some of the bad cases possible given the current draft:
Case 1: A's equipment always sends short headers, B can never talk to him. Result: non-interoperability.
Case 2: B can't talk to C. Result: non-interoperability
Case 3: C can't talk to C! Result: non-interoperability

SuggestedRemedy

Required change:
Here is what is required:
1) RX short header processing must be mandatory if the Tx short header option is implemented. That will prevent case 3 above.
2) The purpose of the short header is to provide performance (as the long header limits thruput). The purpose of the long header is antenna to antenna interoperability between 1 and 2 Mbps 802.11 DS PHYs (the FH is now irrelevant due to the removal if the FH compatibility stuff in D5.0) and an 802.11b PHY.
The use of an option is an attempt to have both. The option approach fails because it causes interoperability issues, effectively providing neither benefit.
Either
a) Delete the short header (effectively deciding that old PHY interoperability is more important than performance) or
b) Make the use of the short header mandatory (making performance more important than old PHY compatibility).

I can accept either choice a) or b).
My preference is that the standard take choice b) as there are other ways to achieve data interoperability between 1-2 Mbps DS PHYs and the proposed 802.11b PHY. It can be accomplished by multiple APs and let the interoperability occur in the DS; it is not necessary to have antenna to antenna interoperability between the various PHY specifications (this is how

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Vote: E/ExCom VD/Disapprove VAC/Approve with Comments

Cl **XX** *SC* **PICs HRDS3&6**

P802.11b Draft D6.0 Remaining Comments and Resolutions

one moves data from a current FH PHY station and a DS PHY station). This gives the 802.11b system both data interoperability (the real user requirement) and performance.

Proposed Response *Response Status* **U**

REJECT. This comment is identical to #343. Please see the resolution of that comment.

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Clause, Subclause, page, line
RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Vote: E/ExCom VD/Disapprove VAC/Approve with Comments

Cl **XX** *SC* **PICs HRDS3&6**