Seq. #	Sect. number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Co..ected Text/Comment	..ationale	Disposition..ebutta.

Section 4 comments from Ballot on Draft Standard D2 (Vic Hayes, Chair, AT&T WCND)

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
	1.X, 2.X, 3.X 4.X, 5.X, 6.X 7.X 8.X	**BD**	**E**	**N**	**My editorial comments are contained in the files D2lb_edx.doc (where x is the relevant major section number) which were submitted along with this ballot response. All comments in these files are purely 100% editorial in nature (incorrect fonts, extra blank lines, misformatting etc). Any change for which there was any question in my mind that anyone might think it other than editorial, I have included as separate comment in this table.**	**Doc D2 is of Insufficient quality. 1) There are numerous editorial errors in the D2 draft which need to be corrected before the draft can be forwarded for sponsor ballot. The editorial errors range from incorrect fonts in the middle of sentences & page formatting to a dire need to have a spelling check run on the document. 2) While no single item is enough to prevent forwarding of the draft, in aggregate they impact the draft quality to such an extent that it would be embarrassing to forward it in this state. I have forwarded to the editors a marked up copy of the draft showing the editorial errors I noticed during review (this was at the editors request, for various obscure reasons a hard copy was requested over an electronic copy as being easier to deal with in this instance). 3) Additionally all the section X.X, Y.Y etc place holder in the text need to be found and changed to correct section references.**	
	4	ZV	e		Clause 4 should be labeled "Abbreviations and acronyms." Be sure that ALL acronyms and abbreviations used in this standard are included in the list (e.g., IBSS from page 2, LSB, MSB, etc.).		
	4.1.1	**HV**	**E**		Replace "octets" by "fields" in last sentence of this	**The figure is showing fileds rather then octets. Also, I am not sure**	

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					clause.	**whether the statement is trus for Addresses and CRC>**	
	4.1.1	ZJ	e		Add shading to Address 3, Sequence Control and Address 4	None of the fields appear shaded in my printout	
	4.1.1	FMi	t	N	Add the following statement at the end of this section: The MAC Header, CRC field, and each of the fixed fields (or set of adjacent fixed fields in the case of a group of fields always appearing together in unform order) and element types defined in sections 4.2, 4.3, and 5.2 are collectively referred to as MAC–defined frame components. The total length of each MAC–defined frame component shall be an even number of octets. The total length of the MSDU payload, conveyed in the frame body of Data type frames may be either an even or odd number of octets.	This unifies and centralizes a concept which has been applied almost everywhere, but has not been recorded consistently nor conspicuously anywhere in the MAC frame definitions. It is not necessary to remove other references to frame components which must be even lengths, but rather than ensuring that all of the necessary statements to this effect are scattered throughout the document, this statement at the beginning of the frame format chapter covers all possible gaps in later specifications of this characteristic.	
	4.1.1	**BA**	**T**	**N**	Need to specify order of octets for multiple octet fields. (i.e., Duration field, Sequence Control,...)	Order of transmission 'left to right' is not a complete specification. The note in section 1.5 is not enough!	
	4.1.1	FMi	t	N	Add the following statement at the end of this section: The MAC Header, CRC field, and each of the fixed fields (or set of adjacent fixed fields in the case of a group of fields always appearing together in unform order) and element types defined in sections 4.2, 4.3, and 5.2 are collectively referred to as MAC–defined frame components. The total length of each MAC–defined frame component shall be an even number of octets. The total length of the MSDU payload, conveyed in the frame body of Data type frames may be either an even or odd number of octets.	This unifies and centralizes a concept which has been applied almost everywhere, but has not been recorded consistently nor conspicuously anywhere in the MAC frame definitions. It is not necessary to remove other references to frame components which must be even lengths, but rather than ensuring that all of the necessary statements to this effect are scattered throughout the document, this statement at the beginning of the frame format chapter covers all possible gaps in later specifications of this characteristic.	

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	4.1.1	**RJa**	**T**	**N**	Need to specify order of octets for multiple octet fields. (i.e., Beacon field, Sequency Control,...)	Order of transmission 'left to right' is not complete. Which octet is first MS Byte of LS Byte?	
	4.1.1	ZJ	T	N	Delete Duration/ID field, and add (shaded) ID field after Address 4	Duration information should be part of the PLCP header, not the MAC contents of the frame. Since units communicating at lower speeds cannot receive the MAC contents of a frame transmitted at higher speed, but all stations can receive the PLCP header for all frames (in all PHYs), it is logical to move Duration to where everyone in the BSS can receive it (I don't care if it violates layer purity).	
	4.1.1	TM	E/T	X	figure 4-1 conflicts with the text - the text calls for maximum MSDU length of 2304 bytes (sections 3.2.1.1 and 3.21.2). the figure shows 2346 bytes		
	4.1.2.1	**MB**	**e**		**add... The Frame Control Field (see Fig. 4-2) shall ...**		
	4.1.2.1	**TT**	**t**	**NO**	Split Power Management field into: Power Management bit, More Data bit.	There is currently no reason why we are putting two different, unreleated, pieces of information into one field. See 4.1.2.1.7 for detatils.	
	4.1.2.1 3.2.1	**DW**	**T**	**Y**	**Add a separate signalling provision to identify special format MSDU's. What is basicly needed is a signalling method included in the 802.11 Frame Header, to identify that a separate Length/Type field (as specified in 802.3) is added to the MSDU. This can be implemented as in the subtype field with Type value Data. The 1xxx value can then identify the special MSDU type. Doc 95/188 describes a suitable mechanism, and contains suitable text to support this function.**	**We need provisions in the MAC to allow signalling facilities such that Ethernet and DIX Ethernet frames can traverse the 802.11 network. An alternative is to add a separate 16 bit Length/Type field to the 802.11 Header.**	
	4.1.2.1. 2	**ws**	**E**		**Beacon,Probe used before defined or described**		
	4.1.2.1.2 4.2.2.1	FMi	t	N	Add the mechanism for encapsulation of ancillary MSDU	A general mechanism for encapsulation	

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
	4.3.2.7 (new)				information described in document 95–188, Clause 2. The text changes for incorporation of this mechanism appear in Clause 2 of document 95–222. Locations affected are summarized below: • 4.1.2.1.2: Modify table to define data subtypes with encapsulated information. • 4.2.2.1: Extend the data frame subtype usage rules to cover the new data subtypes added above. • 4.3.2.7 (new): Define the encapsulated information element format.	of ancillary, externally visible MSDU information contained in the MAC headers of certain non–802 LAN protocols is necessary in order to implement multi–protocol LAN integration for such LANs. Since a common LAN that users will want to integrate with 802.11 ESSes is Type 2 Ethernet, which needs this mechanism, there are practical benefits to including this in the standard. A detailed discussion of rationale and mechanism appears in document 95–188, Clause 2.	
	4.1.2.1.2 4.2.2.1 4.3.2.7 (new)	FMi	t	N	Add the mechanism for encapsulation of ancillary MSDU information described in document 95–188, Clause 2. The text changes for incorporation of this mechanism appear in Clause 2 of document 95–222. Locations affected are summarized below: • 4.1.2.1.2: Modify table to define data subtypes with encapsulated information. • 4.2.2.1: Extend the data frame subtype usage rules to cover the new data subtypes added above. • 4.3.2.7 (new): Define the encapsulated information element format.	A general mechanism for encapsulation of ancillary, externally visible MSDU information contained in the MAC headers of certain non–802 LAN protocols is necessary in order to implement multi–protocol LAN integration for such LANs. Since a common LAN that users will want to integrate with 802.11 ESSes is Type 2 Ethernet, which needs this mechanism, there are practical benefits to including this in the standard. A detailed discussion of rationale and mechanism appears in document 95–188, Clause 2.	
	4.1.2.1.2, 4.2.3.11-13	**BSi**	**E**		**Remove Connection Request, Grant Connection, End Connection Management messages**	**Use not specified within the standard, decision taken to remove messages in July '95. Editorial change not actioned.**	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
	4.1.2.1.3	DM	t		Needs a cross reference to the place in the draft that describes how a station knows how to set the to DS bit. Example: How does a STA know whether the destination of its packet is to the DS or to another STA in the same BSS?		
	4.1.2.1.3	FMi	t	N	The To DS field shall be one bit in length and shall be set to '1' in Data Type frames destined for the Distribution System. This includes all Data Type frames with a broadcast or multicast destination address sent by stations associated with an AP. The To DS field~~It~~ shall be set to '0' in all other frames.	The fact that in infrastructure BSSes, all broadcast and multicast frames are handled through distributions services is well known within the 802.11 working group membership. Unfortunately, this is not particularly clear in the standard, and should be reinforced by mentioning its effect on setting of the To DS bit.	
	4.1.2.1.3	**BD**	**T**	**N**	The To DS field shall be one bit in length and shall be set to '1' in Data Type frames entering~~destined for~~ the Distribution System. It shall be set to '0' in all other frames.	**Corrects language and makes it consistent with sec 4.1.2.1.4 and table 4-2.**	
	4.1.2.1.3	BTh	T	N	**Need to explain the rules for how the determination is made to set the To DS bit. Replace the text with...** The To DS bit shall be set to "0" for all Control and Management frames. The To DS bit shall be set to "0" for all Data frames from a STA in an IBSS. The To DS bit shall be set to "0" for all Data frames from an associated STA operating in an ESS when the Keep_Data_Local MIB parameter is set to true. For all other Data frame instances the To DS bit may be set to "1" or "0". The setting of this value is implementation dependent within the bounds imposed by the Association state of the originating STA (which determines whether the Data frame is a Class 2 or Class 3 frame). When the To DS bit is set to "1" the DS is responsible for delivery of the Data frame to the destination STA. A STA which is not an AP shall discard all frames received with the To DS bit set to "1" regardless of address.	The standard must define how to use a bit in the MAC header. A reference to section explaining this, if it exists, is desirable. If such a section is not written then it is absolutely necessary. The proposed text gives explicit rules and introduces a new MIB variable to control operation.	

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	4.1.2.1.3	FMi	t	N	The To DS field shall be one bit in length and shall be set to '1' in Data Type frames destined for the Distribution System. This includes all Data Type frames with a broadcast or multicast destination address sent by stations associated with an AP. The To DS field~~It~~ shall be set to '0' in all other frames.	The fact that in infrastructure BSSes, all broadcast and multicast frames are handled through distributions services is well known within the 802.11 working group membership. Unfortunately, this is not particularly clear in the standard, and should be reinforced by mentioning its effect on setting of the To DS bit.	
	4.1.2.1. 3 and 4	**DW**	**T**		**The To DS and From DS bits can be replaced by a single DWS bit which indicates whether the Data Frame format uses a 3 or 4 address format as specified in section 4.2.2.1. All direction information is included in the A1, A2, A3 and A4 fields of a Data Frame. The changes required for this are documented in doc 95/226.**	**There is a lot of confusion with the To and From bits, while in addition the A fields need to be manipulated for the different station and AP directions. The rules for A fields are not changed, and do already cover all the direction information, and do not need additional direction bits. All the functionality of thec current scheme is maintained. Apart from the reduced complexity it does provide an extra spare bit in the FC field.**	
	4.1.2.1.4	DM	t		Needs a cross reference to the place in the draft that describes how a station knows how to set the to DS bit. Example: How does a STA know whether the destination of its packet is to the DS or to another STA in the same BSS?		
	4.1.2.1.6	FMi	t	N	The Retry field shall be one bit in length and shall be set to '1' in any Data or Management Type frame that is a retransmission of an earlier frame. A receiving station shall use this indication to aid in the process of eliminating duplicate frames.	Certain Management frames are repeated if the ACK is not received (versus being retried due to the lack of the corresponding response frame, which does not constitute a retry). Because the lack of the ACK could occur because the original frame was not successfully received, or because the ACK got lost, the retried management frames should also be marked as retries to aid in filtering duplicates.	

Seq. #	Secti number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
	4.1.2.1.6	FMi	t	N	The Retry field shall be one bit in length and shall be set to '1' in any Data or Management Type frame that is a retransmission of an earlier frame. A receiving station shall use this indication to aid in the process of eliminating duplicate frames.	Certain Management frames are repeated if the ACK is not received (versus being retried due to the lack of the corresponding response frame, which does not constitute a retry). Because the lack of the ACK could occur because the original frame was not successfully received, or because the ACK got lost, the retried management frames should also be marked as retries to aid in filtering duplicates.	
	4.1.2.1.6	TM	e/T	X	Change/Add the following text - A station may use this indication to aid in the process of eliminating duplicate frames as well as aid in performance analysis for rate changes, transmit power adjustments, etc.	The change from shall to may is justified since there are many ways to identify duplicate packets and the spec need not force a particular method	
	4.1.2.1.7	FMi	e		in table 4–3 change "PS – Power Save" to "Power Save Mode"	consistency	
	4.1.2.1.7	FMi	e		in table 4–3 change "PS – Power Save" to "Power Save Mode"	consistency	
	4.1.2.1.7	**RMr**	**E**		"buffered traffic state of the station" can refer either to the buffer in the station, or to the buffer at the AP; Clarification in the text is required.		
	4.1.2.1.7	ZJ	t		Change values so that 00 = Active Mode with no buffered frames, 01 = AM with buffered frames, 10 = PS Mode and 11 = reserved	First bit specifies whether in PS mode, second has special meaning for AM	
	4.1.2.1.7	**BA**	**T**	**N**	Add this statement: "This field is not used and shall be ignored in all control frames."	The way the standard reads, we are placing a heavy real time load on an AP to set this field. It should not be used in control frames(CTS,RTS,ACK).	
	4.1.2.1.7	**TT**	**t**	**NO**	Split this section and field into two: **4.1.2.1.7. Power Management** The Power Management bit shall indicate the power	There is currently no reason why we are putting two different, unreleated, pieces of information into one field.	

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					management state of a station. The value of this bit shall remain constant in each frame from a particular STA within a frame sequence defined in 4.4. The value shall indicate the mode in which the station will be after the completion of the frame sequence. A value of '1' shall indicate the STA will be in Power Save mode while a value of '0' shall indicate it will be in Active Mode. An AP shall always have this bit set to '0'. **4.1.2.1.7a. More Data** The More Data bit shall indicate if the AP has more data for the STA currently addressed in the frame that contains this field. A value of '1' shall indicate more data is present. This bit is only valid for data frames. It is optional for a non-AP STA to set this bit.	Also the meaning of the more data indication in control frames would imply that an ACK frame would have to indicate if it has data. Therefore all control frames should have the more bit cleared.	
	4.1.2.1.7	TM	T	X	For data traffic from an AP, do the values of 00 and 11 refer to the specific station or any station in general. For example if the AP has just completed a frame sequence with STA1 and has no further traffic for STA1 but does have data queued for STA2, should the transmitted power management bits be 00 or 11.		
	4.1.2.2	TM	E		text should be added which states that the WEP bit must also be set to '0' for all Type Data frames with zero length data		
	4.1.2.2 5.1.2.2	**DW**	**T**		**It should be better specified how the 128 octets challenge text is generated, and what it contains. It should either include a IV field, or use a default to be specified IV. An ICV would not be needed, but the standard should specify the format such that it is clear whether it is includeuded or not.**	**Sinse this is encryption within a subfield, we do not need to specify the IV/ICV format to be equal to the normal payload format. Specifying an IV as the first 4 octets of the 128 octet field is I think most desirable.**	
	4.1.2.3 4.2.3.11 4.2.3.12 4.2.3.13	FMi	t	N	update or delete these sections as shown in the relevant sections of document 95–212	Remove the vestiges of time–bounded service and connection support, while leaving the connection ID encoding mechanism for possible future use.	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
	4.1.2.3	**BA**	**T**	**N**	See section 4.1.2.3 attachament below	In the previuos letter ballot, my recommendation of redefining the duration field was adopted, see doc 95/69. However, the change was never made to the D2 text. I am including my proposed text as an attachment.	
	4.1.2.3	**BD**	**T**	**N**	***Connections incomplete problem:*** **sec 4.1.2.3 a) re CID**	***Connections incomplete problem:*** **para a) mentions a CID - CID is not defined anywhere in section 4 that I found. Therefore I wonder where a CID comes from and how it gets into the duration field. Either the explanation must be completed, CID defined etc, or the use of CID deleted from the draft. If CID deleted, then table 4-4 must also be updated.** **See also doc 95/212 for corrections - I would accept the changes from that doc as partial satisfaction of this comment**	
	4.1.2.3 4.2.3.11 4.2.3.12 4.2.3.13	FMi	t	N	update or delete these sections as shown in the relevant sections of document 95–212	Remove the vestiges of time–bounded service and connection support, while leaving the connection ID encoding mechanism for possible future use.	
	4.1.2.3 **4.3.1.5**	**HDa**	**T**	**N**	b) In Control Type frames of SubType PS-Poll, the Duration/ID field shall carry the station identity (SID) of the station that transmitted the frame in the 14 least-significant bits, with the 2 most-significant bits set to '11'. The value of the SID shall be in the range 1 - 16383. **Station ID (SID)** The Station ID (SID) field shall be a value assigned by an AP during association and shall represent the 16-bit ID of a station. The length of the SID field is two octets.	**The proposed TIM compressed format support only 1792 SIDs, if 28 block groups are allowed, or 512 if 8 block groups are allowed (See previous comment).** **For one message to station with SID 16383, 256 block groups are needed. In many cases, This "compressed" format yield a much longer field relative to a simple list of SIDs.** **One solution is to limit the SID range**	

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	4.3.2.1				The value assigned as the Station ID shall be in the range 1 - 16383 and shall be placed in the least-significant 14 bits of the SID field, with the 2 most-significant bits of the SID field set to 11. The TIM Element information field shall contain between one and twenty-eight *block groups*, with each block group consisting of a *block identifier* followed by 0 to 8 one-octet *blocks*. Each bit within a block shall indicate whether a frame is currently buffered for a station with a particular Station ID. There is a one-to-one mapping between the bits in a *virtual bit map* and the station IDs. The virtual bit map is maintained within the access point; the actual transmitted TIM is a compressed representation of the virtual bit map. Each bit corresponds to a specific station within the block. If this block represents the Nth block within the virtual bit map, of Block Group G, then Bit M within the block shall correspond to the station with Station ID equal to (G-1)*64+8*(N-1) + M.	**and to demand that the AP will always assign the lowest available SID.** **Better solution that doesn't change the SID range is modifying the TIM format as proposed in the enclosed page.**	
	4.1.2.3	KJ	t	N	see document 95-212		
	4.1.2.3	**SMr**	**T**	**N**	**1. Duration/~~ID~~** The Duration/~~ID~~ field shall be 16 bits in length. The contents of the this field shall be as follows: ~~a) In Data Type frames transmitted during the contention free period that have frame body information associated with a time-bounded connection, the Duration/ID field shall carry the connection identity (CID) of the time-bound connection in the 14 least-~~	Leaving this field as an duration only field make sure than during both DCF and PCF operations that the NAV is properly updated for all stations whenever they enter a BSA of an AP acting as a PCF. Stations in a BSS co-located or partially co-located with a BSA of an AP acting as a PCF has the possible of transmitting during a CFP period of the PCF.	

Seq. #	Sect. number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Co. ected Text/Comment	Rationale	Disposition/Rebuttal
					~~significant bits, with the 2 most significant bits set to '10'. The value of the CID shall be in the range 1 – 16383. This usage shall be reserved for future standardization.~~ b) ~~In Control Type frames of SubType PS-Poll, the Duration/ID field shall carry the station identity (SID) of the station that transmitted the frame in the 14 least-significant bits, with the 2 most significant bits set to '11'. The value of the SID shall be in the range 1 – 16383.~~ c) ~~In all other frames the Duration/ID field shall contain a duration value.~~ For frames transmitted during the contention period the duration value shall be set to the time in microseconds from the end of the current frame to the end of the next anticipated frame of Type Control and Subtype ACK. For frames transmitted during the contention free period the duration value shall be set to the time in microseconds remaining in the CFP duration. ~~32768.~~ Whenever the contents of the Duration field is not equal to 65535,~~are less than 32768~~, the duration value shall be used to update the Net Allocation Vector according to the procedures defined in Section 6.		
	4.1.2.3	ZJ	T	N	Modify text to indicate that Duration is sent as part of the PLCP header, and make ID field optional and only required in PS Poll frames. Delete Table 4-4.	Duration information should be part of the PLCP header, not the MAC contents of the frame. Since units communicating at lower speeds cannot receive the MAC contents of a frame transmitted at higher speed, but all stations can receive the PLCP header for all frames (in all PHYs), it is logical	

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						to move Duration to where everyone in the BSS can receive it (I don't care if it violates layer purity).	
	4.1.2.3	**TT**	**t**	**NO**	Add after 2nd sentence of subsection c): ...unless the following frame is part of a burst, in which case the duration in the data field shall be to the end of the ACK following the next fragment. The duration in the last ACK of a frame sequence shall be 0.	Qualifications and clarifications to the rule used to determine what the duration value should be.	
	4.1.2.3 4.2.3.11 4.2.3.12 4.2.3.13	**DW**	**T**	**Y**	**Implement the changes as proposed in doc 95/212**	**Any connection oriented stuff should be deleted but hooks to include it should remain.**	
	4.1.2.4	FMi	t		There are four address fields in the MAC frame format. These fields are used to indicate the BSSID, source address, destination address, transmitting station address and receiving station address. The usage of the four address fields in each frame type will be indicated by the abbreviations BSSID, DA, SA, RA, TA indicating BSS Identifier, Destination Address, Source Address, Receiver Address and Transmitter Address, respectively. Some frames may omit some of the address fields. Certain address field usage is specified by the relative position of the address field (1–4) within the MAC header, independent of the type of address present in that field. For example, receiver address matching is always performed on the contents of the Address 1 field in received frames, and the receiver address of CTS and ACK frames is always obtained from the Address 2 field in the RTS frame or the frame being acknowledged.	There should be explicit mention of the positional usage of address fields as well as the functional usage of address fields. This is important both for understanding the usage of the various address fields, especially as this interacts with the To/From DS settings, as well as for consistency with the MAC state machines, where many transitions involve testing or setting a particular positional field, independent of the type of address contained therein.	
	4.1.2.4	FMi	t		There are four address fields in the MAC frame format. These fields are used to indicate the BSSID, source address, destination address, transmitting station address and receiving station address. The usage of the four address fields in each frame type will be indicated by the abbreviations BSSID, DA, SA, RA, TA indicating BSS	There should be explicit mention of the positional usage of address fields as well as the functional usage of address fields. This is important both for understanding the usage of the various address fields, especially as this	

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					Identifier, Destination Address, Source Address, Receiver Address and Transmitter Address, respectively. Some frames may omit some of the address fields. Certain address field usage is specified by the relative position of the address field (1–4) within the MAC header, independent of the type of address present in that field. For example, receiver address matching is always performed on the contents of the Address 1 field in received frames, and the receiver address of CTS and ACK frames is always obtained from the Address 2 field in the RTS frame or the frame being acknowledged.	interacts with the To/From DS settings, as well as for consistency with the MAC state machines, where many transitions involve testing or setting a particular positional field, independent of the type of address contained therein.	
	4.1.2.4.2	TM	e		...which it administers these global ~~(U)~~ addresses is ...		
	4.1.2.4.3	**SMr**	**E**		**2. BSS Identifier** The BSS Identifier (BSSID) shall be a 48-bit field of the same format as an IEEE 802 MAC address. This field shall uniquely identify each BSS in an infrastructure LAN. The value of this field, in an infrastructure LAN, shall be the MAC address of the STA in the AP of the BSS. The mechanisms used to ensure the uniqueness of MAC addresses also create unique BSS Identifiers. ~~The Individual/Group bit of the address shall be transmitted as zero.~~ In an ad hoc LAN, this field shall be transmitted with the BSS ID of the ad hoc network. The value of this field, in an ad-hoc LAN, shall be the MAC address of the STA that initiated the ad-hoc network. The value of all 1's shall be used to indicate the broadcast BSSID.	Conflicts with paragraph 3 of this section	
	4.1.2.4.3	**BA**	**T**		Delete sentence: "The Individual/Group bit of the address shall be	This sentence conflicts with last sentence that allows a broadcast BSSID	

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					transmitted as zero."	which has this bit set to one.	
	4.1.2.4.3	FMi	t	N	The BSS Identifier (BSSID) shall be a 48-bit field of the same format as an IEEE 802 MAC address. This field shall uniquely identify each BSS ~~in an infrastructure LAN~~. The value of this field, in an infrastructure BSS~~LAN~~, shall be the MAC address of the STA in the AP of the BSS. The value of this field, in an ad-hoc network (IBSS), shall be the MAC address of the STA that initiated the IBSS operation. -The mechanisms used to ensure the uniqueness of MAC addresses also create unique BSS Identifiers. The Individual/Group bit of the address used as a BSSID shall be transmitted as zero in all cases except the broadcast BSSID, defined below. ~~In an ad-hoc LAN, this field shall be transmitted with the BSS ID of the ad-hoc network. The value of this field, in an ad-hoc LAN, shall be the MAC address of the STA that initiated the ad-hoc network.~~ The value of all 1's shall be used to indicate the broadcast BSSID. A broadcast BSSID may only be used in the Address 3 field of Management frames of Subtype Probe.	The limitations on using the broadcast BSSID should be identified. The remaining changes are mainly for sytlistic consistency.	
	4.1.2.4.3	**BA**	**T**	**N**	"The value of this field, in an ad-hoc LAN, shall be assigned by the station initiating the network so as to not conflict with adjacent networks.~~the MAC address of the STA that initiated the ad-hoc network.~~"	This can cause problems. A station can start an ad-hoc network, then it can leave it and start another one nearby with the BSSID. We should not allow this. Since the station initiating the network will probe it knows what BSSIDs are active. It needs to pick a BSSID that does not conflict with any of these.	
	4.1.2.4.3	**BD**	**T**	**N**	re BSSID: In an ad hoc LAN, this field shall be transmitted with the BSS ID of the ad hoc network. The value of this field, in an ad-hoc LAN, shall be the MAC address of the STA	**The use of the initiating station SA as the BSSID raises a question - consider the following sequence: STA A starts and IBSS to talk to**	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					that initiated the ad-hoc network.	**STA B and C. The BSSID for this IBSS will then be A. Consider what happens when A leaves the IBSS - the BSSID stays "A". now suppose STA A wants to start an IBSS to talk to STA D (in the same location as B and C) - what happens? Does the 2nd IBSS set up fail? Prob not, but this is the join vs create discussion, joining may not be what the station intended. Do you get two IBSSs with the ID=A? No, D2 implies that A joins the existing A IBSS. Is this desirable or not? If they all collapse into one IBSS called A, I hope people understand the danger of using BSS/ESS wide shared keys - B and C will be able to hear the traffic between A and D - in many cases this may not be at all what A desires. The fundamental problem is that 802.11 deals with a shared medium, hence it has had to include notions of logical rather than physical LANs (ESS and multiple IBSSs), but has not provided sufficient control mechanisms to allow PDUs to be delivered to/from a specific logical LAN. I suspect that what is needed is additional information passed into the MAC on a per MSDU basis which identifies the logical LAN the**	

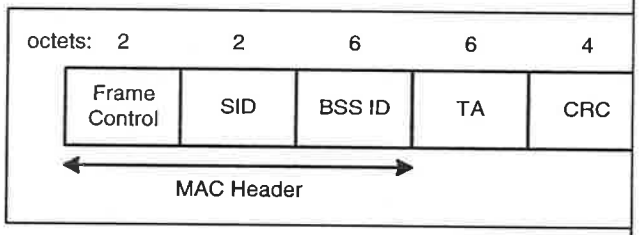
Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
						MSDU is for, e.g. ESSID and/or IBSS ID. This probably implies expansion of the mac service interface definition. **The functionality required is for a STA to be able to access more than on BSS simultaneously (independent of whether the BSSs are IBSS or ESS). D2 currently makes ESS/IBSS operation mutually exclusive.**	
	4.1.2.4.3	FMi	t	N	The BSS Identifier (BSSID) shall be a 48-bit field of the same format as an IEEE 802 MAC address. This field shall uniquely identify each BSS ~~in an infrastructure LAN~~. The value of this field, in an infrastructure BSS~~LAN~~, shall be the MAC address of the STA in the AP of the BSS. The value of this field, in an ad-hoc network (IBSS), shall be the MAC address of the STA that initiated the IBSS operation. The mechanisms used to ensure the uniqueness of MAC addresses also create unique BSS Identifiers. The Individual/Group bit of the address used as a BSSID shall be transmitted as zero in all cases except the broadcast BSSID, defined below. ~~In an ad-hoc LAN, this field shall be transmitted with the BSS ID of the ad-hoc network. The value of this field, in an ad-hoc LAN, shall be the MAC address of the STA that initiated the ad-hoc network.~~ The value of all 1's shall be used to indicate the broadcast BSSID. A broadcast BSSID may only be used in the Address 3 field of Management frames of Subtype Probe.	The limitations on using the broadcast BSSID should be identified. The remaining changes are mainly for sytlistic consistency.	
	4.1.2.4.3	TM	e/t	x	a description of the BSSID and the Individual/Group bit should be provided		
	4.1.2.4.	TM	e/t	x	a description of the SA and the Individual/Group bit		

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
	5				should be provided		
	4.1.2.4.6	BTh	e		**delete duplicate word...** group address ~~address~~ that...	typo	
	4.1.2.4.7	TM	e/t	x	a description of the TA and the Individual/Group bit should be provided		
	4.1.2.5.1	FMi	E		The Sequence Number shall be a 12 bit field indicating the sequence number of the MSDU. MSDUs transmitted by each station shall be numbered sequentially starting at zero. Each transmission of an MSDU or fragment thereof shall contain the sequence number of that MSDU. The sequence number shall remain constant in all retransmissions of an MSDU or fragment. The sequence number series repeats every 4096 MSDUs, with zero following 4095.	clarity	
	4.1.2.5.1	FMi	E		The Sequence Number shall be a 12 bit field indicating the sequence number of the MSDU. MSDUs transmitted by each station shall be numbered sequentially starting at zero. Each transmission of an MSDU or fragment thereof shall contain the sequence number of that MSDU. The sequence number shall remain constant in all retransmissions of an MSDU or fragment. The sequence number series repeats every 4096 MSDUs, with zero following 4095.	clarity	
	4.1.2.5.1	ZJ	t		Rephrase to indicate that **each station** starts its own sequence number counter at 0.	"numbered sequentially" could be misread to indicate some kind of distributed counting scheme	
	4.1.2.5.1	**BD**	**E**	**N**	The sequence number shall remain constant in all retransmissions of an MPDU~~MSDU or fragment~~.	**I think this is correct and simpler.**	
	4.1.2.6	GE	e		remove X.X		
	4.1.2.6	FMi	e		change "X.X" to "5.2.5."	correct section reference	
	4.1.2.6	BTh	E		**replace X.X by...** 5.2.5	Best reference I found.	
	4.1.2.6	FMi	e		change "X.X" to "5.2.5."	correct section reference	

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
	4.1.2.6	**MB**	**e**		**last sentence .... are the WEP fields defined in ~~X.X~~ 5.2**		
	4.1.2.6	TM	e		remove extra period		
	4.1.2.6	ZJ	e		Replace "X.X" with "5.2"		
	4.1.2.6	**HDa**	**e**	**N**	The maximum length frame body is defined by the maximum length (MSDU + ICV + IV); where ICV and IV are the WEP fields defined in X.X.	**Identify X.X**	
	4.1.2.7	**HV**	**E**		Replace in the penultimate paragraph of this section "with the most significant bit first" into "with the higher-order bit first"	**In this arithmatic work one can not speak of the significance of a bit.**	
	4.1.2.7	GE	t		2) The remainder after multiplication of the contents (treated as a polynominal) of the calculation fields by x32 and then division (modulo 2) by G(x)	consistent with definitions of other divisions and additions	
	4.2	FMi	E		Add the address field position designator (Address 1, Address 2, Address 3, or Address 4) to the address field labelling in each of the frame format diagrams within this section and its subsections.	Ease of understanding, especially for Address 1 and Address 2, which are extensively referenced by position, independent of frame type and field contents, in the MAC state machines.	
	4.2	FMi	E		Add the address field position designator (Address 1, Address 2, Address 3, or Address 4) to the address field labelling in each of the frame format diagrams within this section and its subsections.	Ease of understanding, especially for Address 1 and Address 2, which are extensively referenced by position, independent of frame type and field contents, in the MAC state machines.	
	4.2.1	**BA**	**T**	**N**	Show in figure 4-4 that the Power Management bits are not used.	See above comment.	
	4.2.1	**BPh**	**t**	**N**	**the Last Frag bit for control frames should be set to 1**	**All control frames are single fragment frames. LastFrag = 1 means this is the last or only fragment. Should not violate that rule here arbitrarily.**	
	4.2.1	ZJ	t	N	Last Frag field should be "1" for control frames.	Inconsistent with definition elsewhere	
	4.2.1	**TT**	**t**	**NO**	Split Power Management field in figure 4.4 into: Power Managmenet bit, More Data bit. More Data bit should also be set to '0'.	See 4.1.2.1.7, 4.1.2.1. for detatils.	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
	4.2.1.1	TM	e		proper alignment of 3rd paragraph		
	4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5, 4.2.1.6, 4.2.2.1, 4.2.3	ZJ	T	N	Remove Duration field from all MAC headers, and modify text to indicate that the duration value should be passed to the PHY for inclusion in the PLCP header that is transmitted with each frame.	Duration information should be part of the PLCP header, not the MAC contents of the frame. Since units communicating at lower speeds cannot receive the MAC contents of a frame transmitted at higher speed, but all stations can receive the PLCP header for all frames (in all PHYs), it is logical to move Duration to where everyone in the BSS can receive it (I don't care if it violates layer purity).	
	4.2.1.3	GE	e		change mius the time to minus the time		
	4.2.1.3	**BPh**	**e**		**"mius" → "minus"**		
	4.2.1.3	BTh	e		**Correct in 3rd line of 3rd paragraph...** or Management frame~~<period>~~<comma> the duration **correct in 5th line of 3rd paragraph...** minus	typos	
	4.2.1.3	TM	e		correct spelling of mius to minus		
	4.2.1.3	GE	T	X	Suggestion, include in the ACK the sequence control field of the Data MSDU which is being ACK.	Quite often collisions will occur when the length of the MSDUs are the same. These collisions will be the results of two nodes picking the same slot to transmit. If nodes A & B are sending to node C (typical in case of access point) C might actually be able to capture either A or B. (Our studies show that if A and Bs signal have as much as 8 dB signal strength difference C will capture the stronger signal.) If the stronger transmission is received without error, C will send an acknowledge which both A & B will use to release their packets. This is not good, the ACK should have something distingushable in this case.	
	4.2.1.4	**BPh**	**e**		**"The SID shall be the value assigned by the AP in the Associate Response frame received by the STA**	**For clarity**	

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					transmitting the PS-Poll frame.		
	4.2.1.4	BTh	E		**Add in second paragraph....** The SID shall be the value assigned to the transmitting STA by the AP **delete in 3rd paragraph...** upon r4eceipt of a	Needed for clarity. typo	
	4.2.1.4	DM	e		Third paragraph should read " upon receipt"		
	4.2.1.4	**EG**	**e**		"receipt"	**misspelled as "r4eceipt"**	
	4.2.1.4	TM	e		correct spelling of r4eceipt to receipt		
	4.2.1.4	FMi	t		The BSS Identifier shall be the address of the STA contained in the AP. The Transmitter Address (TA) shall be the address of the STA transmitting the frame. The SID shall be the value assigned to the STA transmitting the frame by the AP in the Associate Response frame which established that STA's current association.	Clarity, completeness	
	4.2.1.4	DM	t		SID length should be reduced to 1 octet.	1 octet allows 256 (0-255) stations within a BSS. This is sufficient for all conceivable cases. Future higher date rate PHYs could conceivably support more than 256 stations from a capacity perspective but won't support them from a coverage perspective.	
	4.2.1.4	FMi	t		The BSS Identifier shall be the address of the STA contained in the AP. The Transmitter Address (TA) shall be the address of the STA transmitting the frame. The SID shall be the value assigned to the STA transmitting the frame by the AP in the Associate Response frame which established that STA's current association.	Clarity, completeness	
	4.2.1.4	**Smr**	**T**	**N**	**3. PS-Poll Frame Format** The frame format for the Power Save Poll (PS-Poll) frame shall be as defined in Figure 4-8.	This is needed to complete the changes needed for Seq#2 for section 4.1.2.3. I could not edit the picture but it should be change so that the current SID field is an Duration Field and the SID field is added after the TA field.	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					 **Figure 4-8: PS-Poll Frame** The BSS Identifier shall be the address of the STA contained in the AP. The Transmitter Address (TA) shall be the address of the STA transmitting the frame. The SID shall be the value assigned by the AP in the Associate Response frame. ~~The SID value shall always have its 2 most significant bits set to '11'. All STAs shall, upon r4eceipt of a PS-Poll frame, update their NAV settings as appropriate under the coordination function rules using a duration value equal to the time, in microseconds, required to transmit one ACK frame plus one SIFS interval.~~		
	4.2.1.5	BTh	E		**change in 1st paragraph...** Contention Free-End (CF-E~~ND~~nd)	Consistency with Table 4-1 and Figure 4-9 please.	
	4.2.1.6	BTh	E		**change in 1st paragraph...** Contention Free-End (CF-E~~ND~~nd)	Consistency with Table 4-1 and Figure 4-10 please.	
	4.2.1.X	**BD**	**E**	**N**	**reorder the sequence in which the control frames are presented - change to alphabetical ordering.**	**The current order appears to be historical accident. Alphabetical order would make the document easier to use when looking up a specific frame type.**	
	4.2.2.1	DM	e		Change numbering to remove single subsections. There should always	If there is only one subsection then the subsection	

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					be more than 1 subsection.	should become a section of the next higher level. The purpose of a subsection is to break a section down into more parts. If there is only one part then it doesn't warrant a subsection.	
	4.2.2.1	TM	e		the reference to table 4-4,below should be corrected to table 4-5~~, below~~.		
	4.2.2.1	**DW**	**e**		**Change table reference to Table 4-5**		
	4.2.2.1	FMi	t	N	Data frames sent during the contention period shall use the Data Subtypes 0000, or 0100. Data frames sent by, or in response to polling by, the PCF during the contention free period shall use the appropriate ones of the Data Subtypes 0000–0111 based upon the usage rules:	Correct an error due to incomplete merging of updates to previous drafts.	
	4.2.2.1	**BD**	**T**	**N**	The SA shall be the address of the MAC entity which initiated~~ing the transmission of~~ the MSDU (or fragment thereof) in the frame body field.	**The text changes shown: 1) Correct the tense of the sentence. 2) Remove confusion caused by the use of the phrase "...transmission of..." - which is the TA described 2 paragraphs down.**	
	4.2.2.1	**BD**	**T**	**N**	b) If the station is a member of an ad hoc LAN, the BSS Identifier shall be the BSS ID of the IBSS~~ad hoc LAN~~.	**Corrects terminology.**	
	4.2.2.1	**BD**	**T**	**N**	Data frames sent during the contention period shall use the Data Subtypes: Data ~~0000~~, or Null Function~~0100~~. Data frames sent by the PCF during the contention free period shall use the appropriate ones of the Data Subtypes ~~0000–0111~~ based upon the usage rules: Data Subtypes Data+CF-Ack~~0010~~, Data+CF-Ack+CF-Poll~~0011~~, CF-Poll ~~0110~~, and CF-Ack+CF-Poll~~0111~~ shall only be sent by a PCF. Data Subtypes Data~~0000~~, Data+CF-Ack~~0001~~, Null Function~~0100~~, and CF-Ack~~0101~~ may be sent by any CF-aware station. Stations receiving Data frames shall only process the Data	**The use of encoding values in the text of this section makes it very hard to read (remember that people read standards and people understand names better than numbers). Additionally, the encoding values should be in one place only (table 4-1) to minimize consistency mistakes in the draft. I have rewritten the paragraphs to use the subtype names instead of the encoding values.**	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					frame body, and shall only consider the frame body as the basis of a possible indication to LLC, if the Data Subtype is of the form Data* (encoding values 00xx). Stations capable of transmitting in response to polling by a PCF shall interpret all Subtype bits of received Data frames for CF purposes, but shall only inspect the frame body if the Subtype is of the form Data*~~00xx~~.		
	4.2.2.1	FMi	t	N	Data frames sent during the contention period shall use the Data Subtypes 0000, or 0100. Data frames sent by, or in response to polling by, the PCF during the contention free period shall use the appropriate ones of the Data Subtypes 0000–0111 based upon the usage rules:	Correct an error due to incomplete merging of updates to previous drafts.	
	4.2.2.1	KJ	t	N	if WEP is changed to apply to MSDU instead of MPDU, then the following change shoulde be made: The Frame Body shall consist of the MSDU extended to include the WEP IV and ICV (IFF the WEP subfield in the frame control field is set to '1'). or a fragment thereof~~, and a WEP IV and ICV (IFF the WEP subfield in the frame control field is set to '1')~~. The frame body is null (zero octets length) in Data frames of Subtype 01xx.		
	4.2.2.1	TM	E/T	X	figure 4-11 conflicts with the text - the text calls for maximum MSDU length of 2304 bytes (sections 3.2.1.1 and 3.21.2). the figure shows 2346 bytes		
	4.2.3	BTh	E		**under c) change...** specified in ~~7~~8	Seems like the proper reference to me.	
	4.2.3	**MB**	**E**		**Add a column to the Order information and Note tables in this section. The added column would state the number of Octets for that segment.**		
	4.2.3	**DW**	**E**		**Second to last paragraph, first sentence. If Last Frag subfield is set to "1" set duration only when DA is**		

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					unicast, else it should be zero.		
	4.2.3	**HV**	**T**	**N**	The method of defining various fields within the Farme Body is inconsistent with the method used in other parts of the standard. Either define the order of transmission as from low to high, or adopt the other method. Also, add the length of each field in the tables.	**Need to be defined in order to make the standard interoperable.**	
	4.2.3	**BPh**	**T**	**N**	**text below**	**Need to add ad hoc parameter field to Beacon and Probe Response messages to accomodate new definintion of ad-hoc power management. Must also define ATIM format. Text taken from paper 95/137r2, section numbers changed. Editors will fix...**	
	4.2.3	TM	E/T	X	figure 4-12 conflicts with the text - the text calls for maximum MSDU length of 2304 bytes (sections 3.2.1.1 and 3.21.2). the figure shows 2346 bytes		
	4.2.3 4.3.2	**DW**	**T**	**Y**	**All fields in a management frame body should be made even octet length, including the variable size information elements. This has effect on the fields: Regulatory domain, Capability Information (too small anyway), and the variable length information fields, which need a conditional pad octet. Specific definition to be provided in a separate document.**	**It has been the intention from the beginning that all fields that need to be interpreted by the MAC layer entity (Headers and Management frame bodies) are even octet alligned.**	
	4.2.3.1	BTh	e		**delete blank line from table**	typo	
	4.2.3.1	TM	e		remove extra line in table		
	4.2.3.1	**ws**	**e**		**under Notes 2) - indention inappropriate**		
	4.2.3.1 4.3.2.3 6.4 8.1.5	FMi	T	N	Remove functions, features, and formats specific to a particular PHY from the MAC definition. • 4.2.3.1 and 4.3.2.3: Rename the FH Parameter Set to the PHY Parameter Set. Then specify that the PHY Parameter sets for DS and IR PHYs are null, hence the element is omitted in those cases, while the FH	The purpose of the MAC/PHY layering distinction, and the "convergence" sublayer within the PHY, is to have a single, common MAC for all of the 802.11 PHYs. If there are specific functions, unique to a given PHY type, that cannot be performed in the PHY, we need to question whether that PHY	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					PHY Parameter Set is as listed. • 8.1.5: Remove MAC involvement in FH channel switching, hence remove this section from a MAC chapter. The necessary synchronization between the beacon interval and dwell boundaries can be achieved in a PHY–neutral manner using a primitive like PHY_SYNCHRONIZE.request ( ), which the MAC could issue (to all PHYs) at the start of a beacon interval that was also a DTIM interval. The TSF timer value can be defined as being accessible to both MAC and PHY, or this value could be an argument to the PHY_SYNCHRONIZE.request. Attempting to transmit across a dwell boundary could be prevented by a new TXERROR value meaning "MPDU not sent because requested PLCP length exceeds time remaining in dwell." The MAC control state machine would work properly if the FH PHY reported PHY_CCA.indicate(BUSY) during the channel switching and settling time. • Removal of fragmentation for the purpose of optimizing time usage prior to each dwell boundary. The changes recommended elsewhere, from document 95–206 achieve this.	should be allowable as an 802.11 PHY at all. In the case of some PHY characteristics, especially involving access to, setting of, or dissemination of PHY–specific information, these can be abstracted in a PHY–neutral manner. For example, the "PHY Parameter Set" element in Beacon frames is PHY–neutral, but the element happens to be null for all but the FH PHY.	
	4.2.3.1 4.3.2.3 6.4 8.1.5	FMi	T	N	Remove functions, features, and formats specific to a particular PHY from the MAC definition. • 4.2.3.1 and 4.3.2.3: Rename the FH Parameter Set to the PHY Parameter Set. Then specify that the PHY Parameter sets for DS and IR PHYs are null, hence the element is omitted in those cases, while the FH PHY Parameter Set is as listed. • 8.1.5: Remove MAC involvement in FH channel switching, hence remove this section from a MAC chapter. The necessary synchronization between the	The purpose of the MAC/PHY layering distinction, and the "convergence" sublayer within the PHY, is to have a single, common MAC for all of the 802.11 PHYs. If there are specific functions, unique to a given PHY type, that cannot be performed in the PHY, we need to question whether that PHY should be allowable as an 802.11 PHY at all. In the case of some PHY characteristics, especially involving access to, setting of, or dissemination of	

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					beacon interval and dwell boundaries can be achieved in a PHY–neutral manner using a primitive like PHY_SYNCHRONIZE.request ( ), which the MAC could issue (to all PHYs) at the start of a beacon interval that was also a DTIM interval. The TSF timer value can be defined as being accessible to both MAC and PHY, or this value could be an argument to the PHY_SYNCHRONIZE.request. Attempting to transmit across a dwell boundary could be prevented by a new TXERROR value meaning "MPDU not sent because requested PLCP length exceeds time remaining in dwell." The MAC control state machine would work properly if the FH PHY reported PHY_CCA.indicate(BUSY) during the channel switching and settling time. • Removal of fragmentation for the purpose of optimizing time usage prior to each dwell boundary. The changes recommended elsewhere, from document 95–206 achieve this.	PHY–specific information, these can be abstracted in a PHY–neutral manner. For example, the "PHY Parameter Set" element in Beacon frames is PHY–neutral, but the element happens to be null for all but the FH PHY.	
	4.2.3.1	RJa	T	N	Need to include the DTIM count and DTIM period in beacon as before or include information in TIM.	There is no information to allow a station to synchronize with the DTIM transmissions.	
	4.2.3.1	TT	t	NO	Add the following element to the table: CW (Contention Window)	See 4.3.1 for detatils.	
	4.2.3.1, 4.2.3.2, 4.2.3.9, 4.4.2, 4.4.2.9, 8.2, 8.4	BSi	T	N	**Add contents of paper P802.11-95/137r2 (Rick White, Simon Black). Note that the second sentance of point (g) of 8.2.2.4 should read - 'All STAs shall use the backoff procedure defined in subclause 6.2.6.2 for transmission of the first frame following the *ATIM window*.' Not also that the ATIM management frame should be added back into the table of managament frames with type = Management (coding 00), subtype ATIM (coding 1001). A gap exists in the table of subtypes in D2.0 where the ATIM was removed.**	**The May 1995 letter ballot removed power management for ad-hoc networks. A number of members were not in agreement with this action, but realised that additional work was necessary in order to define a practical scheme. The support of ad-hoc netowks within the standard is an important feature, allowing anumber of users to create a network to share data**	

Seq. #	Secti number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Co..ected Text/Comment	..ationale	Disposition..ebutta.
						without pre-planning. Considering the typical scenarios where ad-hoc networks may be deployed - meeting rooms, conferences and airport lounges - participant will often be using battery powered notebook computing devices. Minimising battery drain will be important in these applications and power management is thus essential in ad-hoc networks. Shemes that appoint an AP within an ad-hoc network assume that at least one STA is capable of this function (which may not be the case).	
	4.2.3.11	**ws**	**e**		**TBD seems a questionable entry**		
	4.2.3.11	**BA**	**T**	**N**	Resolve TBD	Cannot vote for draft with open TBDs	
	4.2.3.11	**BD**	**T**	**N**	***Connections incomplete problem:*** **Either the frame contents must be completed, including any field definitions required, or the frame type must be removed from the draft.**	**The content of the Connection Request frame is TBD.** **See also doc 95/212 for corrections - I would accept the changes from that doc as partial satisfaction of this comment**	
	4.2.3.11	KJ	t	N	must define connection request frame or remove section	TBD is unacceptable. I would prefer to admit that TBS is not defined in the first draft and will be defined later	
	4.2.3.11	**RJa**	**T**	**N**	Resolve TBD	Cannot vote for draft with open TBDs	
	4.2.3.11 4.2.3.12 4.2.3.13	ZJ	t	N	Delete these sections	They are vestigial	
	4.2.3.12	**ws**	**e**		**TBD seems a questionable entry**		
	4.2.3.12	**MB**	**t**		**Add description of the Grant Connection Frame**		
	4.2.3.12	**BA**	**T**	**N**	Resolve TBD	Cannot vote for draft with open TBDs	
	4.2.3.12	**BD**	**T**	**N**	***Connections incomplete problem:*** **Either the frame contents must be completed, including any field definitions required, or the frame**	**The content of the Grant Connection frame is TBD.**	

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					type must be removed from the draft.	**See also doc 95/212 for corrections - I would accept the changes from that doc as partial satisfaction of this comment**	
	4.2.3.12	KJ	t	N	must define grant connection frame or remove section	TBD is unacceptable. I would prefer to admit that TBS is not defined in the first draft and will be defined later	
	4.2.3.12	**RJa**	**T**	**N**	Resolve TBD	Cannot vote for draft with open TBDs	
	4.2.3.13	**ws**	**e**		**TBD seems a questionable entry**		
	4.2.3.13	**MB**	**t**		**Add description of the End Connection Frame**		
	4.2.3.13	**BA**	**T**	**N**	Resolve TBD	Cannot vote for draft with open TBDs	
	4.2.3.13	KJ	t	N	must define end connection frame or remove section	TBD is unacceptable. I would prefer to admit that TBS is not defined in the first draft and will be defined later	
	4.2.3.13	**RJa**	**T**	**N**	Resolve TBD	Cannot vote for draft with open TBDs	
	4.2.3.2 4.2.3.10 4.3.1.9	FMi	t	N	Change Deauthentication and Disassociation "status code" to "reason code" and add a new sub–section (recommended place is just after 4.3.1.9) to define these reason codes. Text updates for 4.3.1.9 and new text for the reason code section appear in Clause 4 of document 95–222.	Provide missing information on reason codes.	
	4.2.3.2	BTh	T	N	**Substitute Reason Code for Status Code as a byte in the Disassociation Frame.** **Substitute Reason Code for Status Code as a byte in the Deauthentication Frame.**	Status Code definition of 4.3.1.9 says that Status Code is an indication of the success or failure of an operation. There is no operation that has happened that can be reported upon; Disassociation and Deauthentication are just a command to someone to take an action similar to the Association Request. A Reason Code should be created for use in the Disassociation and Deauthentication Frames.	
	4.2.3.2 4.2.3.10 4.3.1.9	FMi	t	N	Change Deauthentication and Disassociation "status code" to "reason code" and add a new sub–section (recommended place is just after 4.3.1.9) to define these reason codes. Text updates for 4.3.1.9 and new text for	Provide missing information on reason codes.	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					the reason code section appear in Clause 4 of document 95–222.		
	4.2.3.3 4.2.3.4	**DW**	**T**	**Y**	**Allow combination of a Association and Reassociation Request frame with an Authentication Request frame (first frame). And allow the response frames to be combined with the last authentication response frame. Explicit authentication is still possible by the currently defined frame formats.**	**This does significantly reduce the overhead associated with association. As addressed in one of the comments above, where explicit authentication is not needed for ad-hoc networks.**	
	4.2.3.3 4.2.3.5 4.2.3.4 4.2.3.6	**DW**	**T**	**Y**	**Add one field to the Association and Reassociation Request frames that can have the values "Open" or "Pre_Authenticate". If its value is "Open", then it implies an "Open" association request. If its value is "Pre_Authenticate", then explicit Authentication is required using the currently defined Authentification frames, prior to this Association or Reassociation request. The (re)association response frames are the same as currently defined, but with the Status code such that it can contain both a Association and Authentication response code. Suitable text is provided in doc 95/225.**	**This method decreases the Authentication overhead, while it maintains the full functionality of the currently defined Authentication methods, including pre-authentication, and Shared key authentication, although the latter does not have any advantage over open system.**	
	4.2.3.4	**TT**	**t**	**NO**	Add the following element to the table: CW (Contention Window)	See 4.3.1 for detatils.	
	4.2.3.5	KJ	t	N	move Current AP Address from entry 3 to entry 5.	This simplifies processing of reassociation request by being similar to association request with addition of Current AP Address Field	
	4.2.3.8	**RJa**	**T**	**N**	Need to include the DTIM count and DTIM period as before.	There is no information to allow a station to synchronize with the DTIM transmissions. Another alternative is to require that stations wishing to receive broadcast messages stay awake until a beacon with that information is received.	

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	4.2.3.9	BTh	E		**in note 1 add...** Authentication frames as defined in the table **in note 2 add...** Authentication frames as defined in the table	Without the "as" the sentence says that all the entries in the table have the property being reference in the note; obviously not true.	
	4.2.3.9 5.1	FMi	t	N	Add material and make changes from Clause 3 of document 95–222 on combined Authentication and (Re)Association frames. • 4.2.3.9: Define the combined frame format. • 5.1: Add new subsection 5.1.3 on usage rules for the combined frames.	Allowing a (Re)Association request to be combined with the first frame in the Authentication sequence, and the corresponding (Re)Association response to be conbined with the final frame in the Authentication sequence improves efficiency, especially for faster BSS–transition reassociations, without requiring these mechanisms be combined in mandatory usage, nor preventing the addition of future authentication algorithms which require a different number of authentication frames to be exchanged.	
	4.2.3.X	**BD**	**E**	**N**	**reorder the sequence in which the management frames are presented - change to alphabetical ordering.**	**The current order appears to be historical accident. Alphabetical order would make the document easier to use when looking up a specific frame type.**	
	4.3.1	**TT**	**t**	**NO**	Add the fixed field: CW (Contention Window) which contains: CWmin Cwmax A STA receiving a management frame with a valid BSSID and with this fixed field shall set its MIB variables CWmin and CWmax to these values.	The current standard does not have any way for CWmin to be adjusted by any management entity. Putting the fields in the Assocation Response and Beacon frame would allow a management entity to set these on a per BSS basis in a fair manner. The MIB variables are already GET-REPLACE. The default setting should be defined in the MIB and used unless the AP has the capability (and the user has a need) to alter the numbers. From the MAC point of view it does not care what the algorithm is that sets the CW's, but how	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
						and where it gets the values to use, as long as everyone in the BSS uses the same numbers. Simple algorithms, which are outside the scopoe of this standard, could base CW on the number of associated STAs, the current traffic statistics, the number of retry attempts, etc. All of these are, or can be, known by the AP which is the one who should set the CW for its BSS. Currently it is very inefficient for an STA who is the only associated STA in a BSS to have to wait an average of 15 slot time to transmit each frame. Just setting CW to a small value, say 4 or 8 would work fine for a few nodes in a BSS but when the number got large (>15) then the number of collisions would increase dramatically. The tradeoff between the individual STA's response time vs BSS throughput will change depending on the application, therefore CW should be a dynamic variable.	
	4.3.1.1	BTh	E		**add reference...** TSFTIMER (see 8.1)	This term introduced with no explanation so a forward reference is needed.	
	4.3.1.2	BTh	e		**thousands of microseconds seems better than Kmicorseconds**	Kmicorseconds doesn't seem formal enough to me. Also applies to 4.3.2.3, 4.3.2.5	
	4.3.1.2	ZJ	e		Define Kmicroseconds	I don't think it's actually specified as 1024 uS anywhere	

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
	4.3.1.2	BTh	t		**change to tens of milliseconds and change Beacon Interval field to one octet**	Probably not going to set beacon less than 10 milliseconds or more than 2.5 seconds. This change would save an octet; just a thought.	
	4.3.1.2	**RJa**	**t**	**N**	...the number of 1024 ~~K~~microseconds periods between...	Kmicroseconds is not defined anywhere and you should not assume that K = 1024 is commonly accepted.	
	4.3.1.3	**BD**	**T**	**N**	**Remove the Regulatory Domain field from the Draft. Also remove from the Beacon and Probe response Frames.**	**The use of this field is not specified. 1) The values provided are incorrect as Europe is not a single regulatory agency, each country has it's own. 2) If intended to indicate governmental regulatory agency, then the field length may be too small - anyone know the number of independent countries in the world? > 256? 3) It seems absurd to contain this information in a frame - this field is only in the beacon and probe response frames - given the PHYs we are working with and the values defined, does anyone seriously expect to hear a Europe AP while operating in the US and then want to use this field to filter which APs to use?**	
	4.3.1.4	HC	T	N	Add bit to capability field: Bit 0: Infrastructure BSS Bit 1: Ad-hoc BSS Bit 2: CF-Aware Bit 3: CF Polling Request Bit 4: Power Save Mode Bits 4 - 7: Reserved	Subclaues 6.3.5.1 and 8.2 both specify special actins to be taken by the AP when talking to a power save STA, but there is not way for an STA to indicate that it is such a STA.	
	4.3.1.4	**BD**	**T**	**N**	**Change the name of bit 1 from "AD-hoc BSS" to "IBSS"**	**Use the defined terminology in the standard, not the slang.**	
	4.3.1.4	**BD**	**T**	**N**	**Either remove this field and it's use in relevant**	**1) It is not possible to figure out what**	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					management frames or expand this section to provide descriptions of the Bit names shown and add a reference to the section of the draft where the usage is specified. Also provide the text that would be referenced.	**is intended by the bits specified. Their usage is not described. 2) Bit 0 and Bit 1 appear to be redundant and only require a single bit - either a BSS is part of an ESS or it is an IBSS - these are the only two possibilities.**	
	4.3.1.4	**BSi**	**t**	**N**	**Probably need to add something about WEP here so that I know that I can use WEP in the BSS I'm joining. Needs picture also.**	**Omission ?**	
	4.3.1.4	**DW**	**T**	**Y**	**Proper definition of the Capability information field is still to be provided, for both an AP and a Station.**	**The meaning of each bit is to be defined, and will likely be different for an AP announcing its configuration in Beacon and Probe response frames, and Stations who do show their capabilities.**	
	4.3.1.4	**DW**	**T**	**Y**	**The Capability Information field should contain a WEP bit. In a frame from an AP this bit when on shall indicate that such an AP will only accept encrypted frames when the To-DS bit is set. In a management frame from a station the WEP bit will specify whether the station is capable to support WEP.**		
	4.3.1.5	**BD**	**T**	**N**	**Explain (or add a reference to explanation elsewhere) as to why the most significant two bits are constrained to be 11 or change them to 0s like all other reserved bits.**	**It is not clear why the 2 most significant bit must be set to 11. If they are always the same value the they are essentially reserved bits, all other reserved bits are 0, why are these not?**	
	4.3.1.7	**BA**	**t**		Make 1 octet.	Do you really think that support for 65,536 algorithms is warranted?	
	4.3.1.7	**RJa**	**t**		Make 1 octet.	Do you really think that support for 65,536 algorithms is warranted?	
	4.3.1.9	BTh	e		**correct...** success o~~f~~r failure	typo	

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
	4.3.1.9	**MB**	**e**		**This Status Code shall be used to indicate the success ~~of~~ or failure of an operation.**		
	4.3.1.9	**BA**	**t**		Specify failure codes.	Text states that failure cause will be indicated by status code. STA may take different action if failed authentication due to out-of-date WEP information than failed due to lack of AP resources. Same true for failed association due to not supporting required basic rate set or failed due to AP at limit of allowed users.	
	4.3.1.9	BTh	t		**add Status Code definitions...** 10. Can't support all requested capabilities in Capability Information field 11. STA requesting (Re)Association is not Authenticated with responding STA 12. Reassociation is denied because can't confirm Association exists 13. Association denied due to not recognizing the requesting STA as valid 14. Open System Authentication is not acceptable to the responding STA 15. Responding STA does not support the specified Authentication Algorithm 16. Received an Authentication Frame with Authentication Transaction Sequence Number out of expected sequence 17. Authentication rejected because of challenge failure	The present Status Code definition is less than complete and not helpful. Possible (Re)Association Response codes and Authentication Response codes are proposed. See also my paper 95/213.	
	4.3.1.9	**RJa**	**t**		Specify failure codes.	Text states that failure cause will be indicated by status code. STA may take different action if failed authentication due to out-of-date WEP information than failed due to lack of AP resources. Same true for failed association due to not supporting required basic rate set or failed due to AP at limit of allowed users.	

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	4.3.1.9	FMi	t	N	Incorporate status codes defined in document 95–213	Provide missing information on status codes for failure conditions.	
	4.3.1.9	**BD**	**T**	**N**	**Provide failure reasons for status code field. Possibly increase field size.**	**1) A sub-team needs to make a pass thru the draft collecting possible known reasons for failure indications. These then need to be assigned values for this field. It does no good to have status value if we restrict it to the Boolean ok/not ok. 2) It is not clear if one octet is the correct length for this field, this should be reevaluated once an initial set of status codes is created.**	
	4.3.1.9	**BSi**	**t**	**N**	**Add to status codes:** **The following failure cause codes are defined:** **Status Code - Meaning** **0 - Successful** **1 - Failed, missing or invalid parameter in request** **2 - Failed, not authenticated** **3 - Failed, authentication failed** **4 - Failed, invalid authentication sequence number** **5 - Failed, AP resource limit** **6 - Failed, AP requested listen interval cannot be supported** **7 : 254 - Failed, reserved cause code** **255 - Failed, unspecified cause**	**Status codes not defined. Make the frame component useful !**	
	4.3.1.9	**BSi**	**t**	**N**	**Suggest a 'Reason Code' fixed field added. Codes to be:** **0 - Normal** **1 - Abnormal, AP shutdown** **2 - ??** **3 - 254 - Reserved** **255 - Abnormal, unknown reason**	**Status codes intended to be used to indicate the outcome of a particular action within a response. However, status code also appears in the disassociation message to indicate the reason for the disassociation.**	

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	4.3.1.9	FMi	t	N	Incorporate status codes defined in document 95–213	Provide missing information on status codes for failure conditions.	
	4.3.1.9	WR	T	N	Define appropriates Status Codes as described in Doc 95/213	Status codes incomplete	
	4.3.1.9	ZJ	t	N	Adopt suggestions from submission 95/213	These are needed	
	4.3.1.9	**DW**	**T**	**y**	**The Status code should be further defined.Reference text in doc 95/213 for further definition, except the status codes 10 (capability field insufficiently defined), 12 (AP should not be required to verify this), 13(what is an invalid station???).**	**Codes 11, 14, 15, 16 and 17 are considered meaningfull.**	
	4.3.1.X	**BD**	**E**	**N**	**reorder the sequence in which the fixed management frame fields frames are presented - change to alphabetical ordering.**	**The current order appears to be historical accident. Alphabetical order would make the document easier to use when looking up a specific field type.**	
	4.3.14	MRo	**e**		**2nd sentence, replace "information octet" with "information field"** The length of the Capability Information ~~octet~~ field is one octet		
	4.3.2	BTh	e		**delete blank line from second table**	typo	
	4.3.2	TM	e		correct figure 4-13 for proper printing		
	4.3.2	TM	e		remove extra line in table		
	4.3.2.1	**BSi**	**e**		**DTIM Period and DTIM Count should be single octet fields within a TIM element (between length and the first block ID)** **Maximum number of Block Groups should be 28, not 8 as in current diagram**	**Editorial changes not made following July 1995 meeting when TIM/DTIM were combined**	
	4.3.2.1	**MB**	**E**		**Traffic information Map. The diagram is inconsistent with the description in the first sentence. The first sentence is unclear. Are there between 1 and 20 EIGHT BLOCK Groups or is it between 1 and 28 block groups. The diagram indicates 1 to 8 block groups.**		
	4.3.2.1	**MB**	**e**		**add a description of what DTIM is. The Delivery Traffic Information Map (DTIM) count field.....**		

Seq. #	Sect. number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Co..ected Text/Comment	..ationale	Disposition/Rebuttal
	4.3.2.1	TM	e		the figure should have a figure number and caption		
	4.3.2.1	TM	e		remove extra period		
	4.3.2.1	TM	e/t		there is a discrepency between the figure showing 1-8 block groups and the text which defines 1 -28 block groups		
	4.3.2.1	BTh	E	N	**move the last two paragraphs to proper place**	The last two paragraphs contain some very valuable information but they are out of place in this section.	
	4.3.2.1	BTh	E	N	**reverse the Block Identifier octet drawing to conform to the convention of 1.5 that LSB is on the right**	Need to conform to document convention.	
	4.3.2.1	**HDa**	**E**	**N**	The TIM Element information field shall contain between one and twenty-eight *block groups*, with each block group consisting of a *block identifier* followed by 0 to 8 one-octet *blocks*.	**There is inconsistency between the text and the figure. The text allows up to 28 block groups, while in the figure, only 8 block groups are allowed.**	
	4.3.2.1	**SA**	**T**	**N**	**Replace section text with text provided in document 95/209r1**		
	4.3.2.1	FMi	T	N	Change from compressed TIM format to partial uncompressed TIM format. Adopt text changes from document 95–209r1.	Improve efficiency and fairness of TIM decoding at power–save stations. Further details given in the explanatory sections of document 95–208 and document 95–209r1.	
	4.3.2.1	**BA**	**T**	**N**	Need to show the DTIM Count and DTIM Period in the figure	This information is missing.	
	4.3.2.1	**BPh**	**T**	**N**	**adopt the text in Johnny Zweig's paper 95/209r1**	**This is a simplification of the processing required to handle TIMs. Wim's paper 95/208 is also an improvement over the D2 draft. However, Wim's proposal works well if the AP manages SIDs in a certain way and that is not specified. Johnny's scheme works well no matter how the SIDs are managed and is not much more complex than Wim's.**	

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	4.3.2.1	FMi	T	N	Change from compressed TIM format to partial uncompressed TIM format. Adopt text changes from document 95–209r1.	Improve efficiency and fairness of TIM decoding at power–save stations. Further details given in the explanatory sections of document 95–208 and document 95–209r1.	
	4.3.2.1	KJ	t	N	add to end of section: The presence of station id 0 indicates that there are multicast or broadcast messages immediately following the current beacon.	TIM mapping changed to make station id 0 the broadcast indicator. Text needs to indicate this.	
	4.3.2.1	KJ	t	N	DTIM discussion is incorrect. DTIM information must be added to the Beacon frame in some manner. A possible solution is as follows: in section 4.2.3.1, add DTIM count and DTIM period fields to the Beacon frame just before the TIM element. Make the discussion of DTIM information one or two separate sections. It should not be included in the TIM element discussion, as it now is not an element but a fixed field.	Power managed STAs still need DTIM for broadcast/multicast delivery. They need a way to synchronize to the DTIM and/or a way to detect DTIMs when they occur.	
	4.3.2.1	**RJa**	**T**	**N**	Last two paragraphs reference DTIM count field and DTIM period field. These fields don't appear anyplace that I have found. Need to update beacon and probe response messages to include this information.	This information is required for stations to synchronize with DTIMs so that they can receive broadcast messages.	
	4.3.2.1	WR	T	N	Adopt uncompressed TIM described in Doc 95/208	Compression addes too much complexity for AP and STAs in order to save a few bits.	
	4.3.2.1	ZJ	T	N	Adopt text from submission 95/209r1	The current TIM encoding is excessively complicated. With my encoding, a relatively naive SID assignment scheme can be used and still result in fairly short TIMs	
	4.3.2.1	TM	E/T	X	the DTIM count field and DTIM period are not shown in the figure in this section. where do they exist?		
	4.3.2.1	**DW**	**T**	**Y**	**Change the section according to text provided in doc 95/208.**	**A much more simpler bitmap compression based on trailing zero**	

Seq. #	Secti number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
						suppression is proposed, to reduce complexity in AP and Station, and to make the required processing independent of the assigned SID.	
	4.3.2.13	**BD**	**T**	**N**	***Connections incomplete problem:*** **Either the frame contents must be completed, including any field definitions required, or the frame type must be removed from the draft.**	**The content of the End Connection frame is TBD.** **See also doc 95/212 for corrections - I would accept the changes from that doc as partial satisfaction of this comment.**	
	4.3.2.2	GE	E		Add DTIM definition to abbreviations section 1.2 & TIM definition	DTIM is not defined before being used. I suspect this refers to FHSS Dwell Time	
	4.3.2.2	TM	e		the figure should have a figure number and caption		
	4.3.2.2	ZJ	t		Add a reserved octet	Element should be an even number of octets	
	4.3.2.2	**BD**	**T**	**N**	The ESSID Information field shall be between 0 and 32 octets. A zero lengthoctet information field shall indicate the broadcast ESSID.	**The sentence was ambiguous, it could have been interpreted as a field of zero values. This change makes it read consistently.**	
	4.3.2.2	BTh	T	N	**Must define what to do with ESSID element in the Beacon of an ad hoc network. What is a broadcast ESSID?**	This is broken; I hope someone smarter than me has the answer.	
	4.3.2.3	**BA**	**E**		Figure still shows units of ms for Dwell Time. It should be Kmicroseconds.		
	4.3.2.3	TM	e		the figure should have a figure number and caption -- the (ms) reference in the figure should be (Kus)		
	4.3.2.3	TM	e		correct spelling of Pettern to Pattern		
	4.3.2.3	DM	t		Need to define this as current index value or next index value in the hop sequence.		
	4.3.2.3	**BSi**	**t**	**N**	**Delete Hop Index from FH Parameter Set**	**Hop index can be derived from TSF time.**	
	4.3.2.3	KJ	T	N	There is not enough information for an FH system to synchronize. The dwell offset needs to be included in the element. It should follow the dwell time, be called dwell offset and be two octets.	If this element was only in Beacons, then it could be sent only at the beginning of dwells for an FH system. However, this element is also in probe	

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					A description would be: Dwell Offset is the current interval in Kmicroseconds since the beginning of the dwell on this frequency.	responses which may occur at any time and the STA that received the probe response would not have enough information to synchronize (as indicated in 8.1.5	
	4.3.2.3	**RJa**	**t**	**N**	...the Dwell Time in 1024 ~~K~~microsecond periods.	Kmicroseconds is not defined anywhere and you should not assume that K = 1024 is commonly accepted.	
	4.3.2.3	MRo	T	X	The FH Parameter Set element shall contain the set of parameters necessary to allow synchronisation for STAs using a Frequency Hopping (FH) Physical Layer. The information field shall contain Dwell Time, Dwell Offset Hop Set, Hop Pattern and Hop Index parameters. The total length of the information field shall be 7~~5~~ octets. Element ID — 1 octet Length — 1 octet Dwell Time (ms) — 2 octets Hop Set — 1 octet Hop Pattern — 1 octet Hop Index — 1 octet The Dwell Time field shall be two octets in length and contain the Dwell Time in Kmicroseconds. The Hop Set field shall identify the particular set of hop patterns and shall be a single octet. The Hop Pettern field shall identify the individual pattern within a set of hop patterns and shall be a single octet. The Hop Index field shall select the channel index within	**This is used in FH synchronization. Without Dwell Offset the probe response will not contain enough information for proper synchronization**	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
					a pattern and shall be a single octet.		
	4.3.2.4	TM	E/T	X	is there an implied assumption with the standard that the available transmit rates and receive rates are the same. For instance, what precludes a system from receiving 1 and 2 Mb/s but only transmitting 1 Mb/s	There is no text in any of the PHYs or the MAC which precludes this scenerio. Either explicit text should be called out forcing the equality or this element structure enhanced to individually show RX and TX rates	
	4.3.2.5	GE	e		CFP_DUR_Remaining MIB variable needs to be defined	Missing from MIB Table	
	4.3.2.5	**BPh**	**t**		**CFP rate should be a 1 octet field CFP_Max Duration and CFP_Dur_Remaining**	**need to specify the maximum duration of a CFP. Should be a reasonable time. These fields still allow very long CFP.**	
	4.3.2.5	FMi	t	N	Change the length of the information field from "n" to "6" octets. Change each of the three instances of "n" in the the format drawing to "2".	Correct incomplete update from decisions adopted for inclusion in D2.0 draft (July meeting).	
	4.3.2.5	**BA**	**T**	**N**	Need to specify size of fields in CF Parameter Set.	Cannot leave as TBD in standard.	
	4.3.2.5	FMi	t	N	Change the length of the information field from "n" to "6" octets. Change each of the three instances of "n" in the the format drawing to "2".	Correct incomplete update from decisions adopted for inclusion in D2.0 draft (July meeting).	
	4.3.2.5	KJ	t	N	define the 'n's for the fields in the elements. They shoulde be 1 octet (for CFP_RATE) and 2 octets each for the other two fields		
	4.3.2.5	**RJa**	**T**	**N**	Need to specify size of fields in CF Parameter Set.	Cannot leave as TBD in standard.	
	4.3.2.5	ZJ	t	N	Replace "n" with "1", and add a reserved octet to make the element an even number of octets	The CFP needs to be limited to a sufficiently small number to preclude effectively squeezing out all the contention traffic (1 MSDU every minute would be useless for non CF-aware station)	
	4.3.2.5	**DW**	**T**	**Y**	**The length of ech field needs to be specified. Probably each field needs to be 1 octet, because this inherently limits the time that a PCF can claim the**	**The CFP_Max_Duration needs to be limited so that stations that only operate in the Contention period**	

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					medium, and delay Contention period traffic.	**have a high probability that they can transfer a frame within the timeout periods that are used at higher layers. A limitation to approx. 200 msec is assumed to achieve that goal. The maximum of 255 msec as yielded by the one octet range migth be acceptable.**	
	4.3.2.6	**MB**	**e**		**add after the last sentence. Challenge text shall be a fixed length of 128 Octets.**	**To remain consistant with other descriptions in this section**	
	4.3.2.X	**BD**	**E**	**N**	**reorder the sequence in which the information elements are presented - change to alphabetical ordering.**	**The current order appears to be historical accident. Alphabetical order would make the document easier to use when looking up a specific field type.**	
	4.4	**BPh**	**E**		**section should be moved somewhere else or deleted also notation is loose - f) and h) imply that only 2 fragment data frames are possible**	**section 4 describes frame formats not frame sequences.**	
	4.4	FMi	t	N	Update these frame exchange sequences to properly indicate where Management frames are allowed, and to better distinguish fragmentation sequences from MSDU exchange and PCF—controlled sequences. The updated text appears in Clause 5 of document 95–222.	Clarity, addition of explicit mention of management frames. (no changes to function, just to notation used to describe the function)	
	4.4	**BSi**	**t**	**N**	**Still not quite right: Text in RTS section (4.2.1.1 indicates that RTS-CTS pecursor to managent frames is allowed, so - RTS-CTS-Management-Ack is missing. Also if management frames can be fragmented so is Management-Ack-Management-Ack. Not sure that DATA-CF-POLL-RTS-CTS-DATA-ACK-DATA/END is valid.**	**Some frame sequences missing, format could be improved.**	
	4.4	BTh	t	N	**correct the list items j) and k) by listing frames types that exist**	Request and Response are not frame types. There are various Request and Response frame types. I am pretty sure that an ACK doesn't follow all of them, for example Probe Request. I don't know enough to do this myself.	

Seq. #	Section number	your initials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal
	4.4	FMi	t	N	Update these frame exchange sequences to properly indicate where Management frames are allowed, and to better distinguish fragmentation sequences from MSDU exchange and PCF—controlled sequences. The updated text appears in Clause 5 of document 95–222.	Clarity, addition of explicit mention of management frames. (no changes to function, just to notation used to describe the function)	
	4.4	**Smr**	**T**	**N**	**4. Frame Exchange Sequences** The following frame sequences are valid: a) DATA b) DATA-DATA (fragmented broadcast MSDU) c) DATA - ACK d) RTS - CTS - DATA - ACK e) DATA - ACK - DATA - ACK (fragmented MSDU) f) RTS - CTS - DATA - ACK - DATA - ACK (fragmented MSDU) ~~g) PS-POLL - DATA - ACK~~ ~~h) PS-POLL - DATA - ACK - DATA - ACK (fragmented MSDU)~~ ~~i~~g) PS-POLL - ACK ~~j~~h) REQUEST - ACK ~~k~~i) RESPONSE - ACK ~~l~~j) BEACON – DATA/END* ~~m~~k) DATA* – ACK – DATA/END* ~~n~~l) DATA* – *CF-ACK – DATA/END* ~~o~~m) DATA+CF-POLL – DATA+CF-ACK – DATA/END* ~~p~~n) DATA+CF-POLL – RTS – CTS – DATA – ACK – DATA/END* ~~q~~o) DATA+CF-POLL – NULL – DATA/END* Where "DATA*" can be any of the DATA sub–types, "DATA/END*" can be any of the DATA or CF–END	These two sequences Conflicts with section 6.2.3 which states that Poll frames shall be sent with an ACK Frame. This sequence conflicts with all other DCF sequences in responding with data to a frame initiated by another station.	

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					sub–types, and "*CF-ACK" can be DATA+CF–ACK or CF–ACK(no data). Individual frames within each of these sequences are seperated by a SIFS.		
	4.4	WR	t	N	Add "MANAGEMENT - ACK" to the frame sequemces where management frames are disassocaition,association, authentication, deauthentication, connection request, and connection grant	Not all management frames are currently covered.	
	4.4	ZJ	T	N	Delete this subclause from clause 4. It should be inserted between 6.1 and 6.2. The notation should be cleaned up in (e), (f), (h) to make it clear that any number of fragments (not just the first two) may be sent thus.	This is ***not*** a Frame Format discussion, and is therefore not appropriate for inclusion in clause 4.	
	4.5 (new) 8.3.2 8.3.4 8.3.5 (new) 2.4.2.2	FMi	T	N	A basic means by which DS entities at APs (and portals) determine whether a given station is associated anywhere in an ESS, and obtain the address of the AP with which that station is currently associated, need to be defined in the standard. This can be done WITHOUT defining the distribution system implementation strategy, and WITHOUT restricting DSS to be either centralized or distributed. What is necessary is to define a few, simple reporting and query frames which DS entities can exchange over the DSM of an ESS, along with some MIB attributes to configure use of these frames. The changes to define these frames and MIB attributes alter the sections of the draft listed below. The modified text, and new text to be inserted, appear in document 95–223. • 2.4.2.2: Adds a statement that basic mechanisms for exchange of association information are defined within the standard, even though the way the information is stored and managed is not specified. • 4.5 (new): Define the formats of the association information frames. • 8.3.2: Defines how association information frames	To focus strictly on establishing mixed–vendor interoperability between wireless stations (APs and remote stations in the infrastructure case) ignores a major portion of the problem being addressed by 802.11. Because the coverage ranges of most of the 802.11 PHYs are substantially shorter than are needed to provide spatial extent comparable to wired 802 networks, the "normal" configurations of 802.11 LANs are expected to be ESS networks used for physical coverage extension (see document 95–188). Therefore, the 802.11 protocol should provide for standardized, interoperable, exchange of the minimum set of association information over the DSM, symmetric with the 802.11 protocol providing standardized, interoperable transfer of that association information between BSSes of the ESS (reassocation, as a mechanism to implement BSS–transition mobility). There is precedent for defining intra–	

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					are used in the association procedure. • 8.3.4: Defines how association information frames are used in the reassociation procedure • 8.3.5 (new): Define the relationship between distribution system services and the association information frames defined in 4.5.	medium coverage extension mechanisms within 802 MAC/PHY standards — 802.3 defines the repeater used to provide physical range extension for their (coaxial cable) medium; and 802.5 defines an inter–MAU interface, which is different from the station–to–MAU interface. A particular advantage of the mechanism defined in 95–223 is that the implementation of distribution system services is still not specified by 802.11. The benefits of ESSes composed of APs (and portals) from multiple vendors are available by just defining some frames for exchange of association information over the DSM. The location(s) of the entities which send and receive those frames is arbitrary, as are other implementation decisions, such as centralized versus distributed management and storage of the association information, and inform–on–association_response versus query–on–reassociation_request strategies for supporting mobility transitions within the ESS. NOTE: While not a part of this ballot item, nor a required provision for this item to be beneficial, the limitations on the extent of an ESS discussed in document 95–188, Clause 1, and implemented by other comments in this ballot (updating sections 1.1, 2.2.x, and 2.3.x), are useful to simplify the scope and maximize the usefulness of these	

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						mechanisms. The mechanisms proposed in document 95–223 are applicable within an ESS (new definition from 95–188, Clause 1), and will not be usable in many possible configurations of a MESS.	
	4.X	**BD**	**T**	**N**	**Section 4 general comment on Connection stuff - it is incomplete.**	**In several places in sec 4 it is apparent that the connection oriented stuff is incomplete. Several of my comments in sec 4 relate to this problem. Acceptable solutions to this are:** **1) complete all the missing details of connections** **2) remove the concept of connections from the draft, in the process removing all frame types which are currently related to connection support. Specific section with this problem are tagged in the line:** ***Connections incomplete problem*** **See also doc 95/212 for corrections - I would accept the changes from that doc as partial satisfaction of this comment.**	
	5.3.2 8.4 4.3.1.3	FMi	T	N	Incorporate changes from document 95–198 to provide a means to configure a station to exclude unencrypted MSDUs received from the WM. Also, for 4.3.1.3, incorporate changes from Clause 11 of document 95–222 to add the exclusion of unencrypted frames to the indicated capabilities of a station.	Plug an existing hole in the WEP security model. For details of the problem and a description of this solution, see document 95–187.	

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	Figures 4-8, 4-9, 4-10	RMr	e		The MAC header arrow should include all fields, except the CRC.		

4.1.2.3 Duration/ID

a)..
b)..
c) In all other frames the Duration /ID field shall contain a duration value. For frames transmitted during the contention period the duration value shall be set to the time in microseonds from the end of the current frame to the end of the nextDATA-ACK message sequence.. ...

4.2.3.1. BEACON Frame Format

The Frame Body of a Management frame of Subtype Beacon shall contain the following information:

Order	Information	Note
1	Timestamp	
2	Beacon Interval	
3	Regulatory Domain	
4	Capability Information	
5	ESS ID	
6	Supported Rates	
7	FH Parameter Set	1
8	CF Parameter Set	2
9	Ad Hoc Parameter Set	3
10	DTIM	
11	TIM	

Notes:

1 The FH Parameter Set information shall be mandatory only within Beacon Frames generated by STAs using Frequency Hopping Physical Layers

Seq. #	Section number	your ini-tials	Cmnt type E, e, T, t	Part of NO vote	Corrected Text/Comment	Rationale	Disposition/Rebuttal

2 The CF Parameter Set information shall be mandatory only within Beacon Frames generated by APs supporting a PCF

3 The Ad Hoc Parameter information set shall be mandatory only within Beacon Frames generated by STAs in an Ad Hoc Network

4.2.3.2 Ad Hoc Traffic Indicator Message (ATIM) Frame Format

The Frame Body Shall be Null.

4.2.3.9. Probe Response Frame Format

The Frame Body of a Management frame of Subtype Probe Response shall contain the following information:

Order	Information	Note
1	Timestamp	
2	Beacon Interval	
3	Regulatory Domain	
4	Capability Information	
5	ESS ID	
6	Supported Rates	
7	FH Parameter Set	1
8	CF Parameter Set	2
9	Ad Hoc Parameter Set	3

Notes:

1 The FH Parameter Set information shall be mandatory only within Probe Response Frames generated by STAs using Frequency Hopping Physical Layers

2 The CF Parameter Set information shall be mandatory only within Probe Response Frames generated by APs supporting a PCF

3 The Ad Hoc Parameter set information shall be mandatory only within Probe Response Frames generated by STAs in an Ad Hoc Network