

IEEE P802.15
Wireless Personal Area Networks

Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)	
Title	TG3 LB19 comment resolution	
Date Submitted	[12 September, 2002]	
Source	[James P. K. Gilb] [Apparent Technologies] [9921 Carmel Mountain Rd. #247, San Diego, CA 92129]	Voice: [858-538-3903] Fax: [858-538-3903] E-mail: [gilb@ieee.org]
Re:	[]	
Abstract	[This document is a record of comment resolutions for LB19.]	
Purpose	[To provide a record of the comment resolution for LB19.]	
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1. Opening report

1.1 Status at opening in Monterey

Table 1—Ballot resolution as of opening of Monterey meeting

Type	LB19
T (technical)	72
TR (Technical required)	326
T and TR	398
E (editorial)	153
Total	551

1.2 Process for comment resolution

- a) Add topic category to comments
- b) Identify hot button topics
- c) Schedule resolution of hot button topics
- d) Begin resolution by topic of comments
 - 1) Write resolutions if possible
 - 2) Table issues that need more work
 - 3) Add to hot topics if necessary
- e) Resolve hot button topics
- f) Get all text written and posted
- g) Hold BRC meeting if required

1.3 Editing process

- a) Put editorial edits into draft (already started)
- b) Send clauses to editors
- c) Integrate results
- d) Post interim version of the draft for review.
- e) Final edits
- f) Post for letter ballot

2. Comment resolution in Monterey

2.1 Hot topic issues

Bit order

Monday 7:00 pm - Resolved

Notifying DEVs of new CTA - Directed vs. in beacon (previously resolved by BRC as directed)

Tuesday Morning, 8:00 am. - Resolved, waiting text. Open issues: how to request the CTA status IE? What is done with SPS DEVs waking up? (use PCTM to wake up plus allow mode change + CTRB?) James to gather up, Jay and Mark to handle SPS wakeup.

Probe - possible error code?

Tuesday 8:00 am after notifying DEVs - Resolved, waiting text - James to locate CID and get text.

PNService IE - use probe instead of command? - Resolved

Tuesday 8:00 am after probe

CTRB - fixed vs. variable length format?

Tuesday 3:30 pm

Open/association MTS - Do we still need them?

Tuesday 1:00 pm

Security modes - Do we have 2 or 3 modes?

ACL/PIB

Wednesday 8:00 am

PM/SPS - SPS mandatory or optional?

Wednesday 1:00 pm

2.2 Monday resolution

ACK

272 - Accept

274 - ACCEPT IN PRINCIPLE. On line 36, change "Dly-ACK request bit" with "Dly-ACK policy and the DlyACK request bit", same change on line 48.

289 - Accept

233 - REJECT. The ACK serves the purpose of telling the transmit state machine if it was successful in getting the frame. The response is used to close the process at the DME level.

310 - ACCEPT IN PRINCIPLE. Add text: 'The source upon reception of the Imm-ACK shall send a MAC_ISOCH_DATA.confirm with the ResultCode set to DLY_ACK_FAILED to the FCSL. This implies acknowledgment of the data frame and additionally indicates that the dly-ACK policy has been refused by the destination.'

312 - Accept

270 - Accept

215 - Accept

526 - Proposed resolution, pending more text: "1) This is fixed by referencing both "Dly-ACK policy and Dly-ACK request bit" being set. 2) The FCSL is now notified in the MAC-ISOCH-DATA.confirm as indicated in CID 310. 3) Same resolution as 1). 4) Move the sentence "The destination DEV may change the max burst value in each Dly-ACK frame." to the end of the previous paragraph that ends "... max num (sp) frames, as provided in the Dly-ACK frame 7.3.2.2." (note spelling error). 5) Change "souce" to "source" 6) Add a sentence that says "The FCSL would then notify the DME that the Dly-ACK negotiation failed. The DME then knows that a modification of the channel time allocation might be required." 7) Some more text? Jay to write suggested new text to clarify, due Tuesday by 1:00 pm. 8) Resolved as indicated in CID 189.

523 - Accept

195 - Accept in principle: ACCEPT IN PRINCIPLE. Add the text for clause 6 and clause 8 from Clause 2.2.7 of 02/273r17 to describe the use of the ASIE.

347 - Accept in principle: ACCEPT IN PRINCIPLE. Add the text for clause 6 and clause 8 from Clause 2.2.7 of 02/273r17 to describe the use of the ASIE.

331 - Accept in principle: ACCEPT IN PRINCIPLE. Add the text for clause 6 and clause 8 from Clause 2.2.7 of 02/273r17 to describe the use of the ASIE.

217 - Accept

318 - ACCEPT IN PRINCIPLE. Change to UnassocID and change the acronym list to be UnassocID - unassociated ID.

530 - ACCEPT. Change from "Before a DEV has completed the association process, all frames between the PNC and the DEV shall be exchanged either in the CAP of the superframe or in an association MTS." to be "Before a DEV has completed the association process, all frames sent to the PNC by the DEV shall be exchanged either in the CAP of the superframe or in an association MTS."

Add additional sentence at the end of the first paragraph "For association using MTS, the association response command is sent in an MTS with PNCID as source and UnassocID as destination."

34 - Accept

35 - Accept in principle: ACCEPT IN PRINCIPLE. Insert the PiconetServicesInquiry field (values: enumeration; REQUEST, NOREQUEST; Requests that the PNC sends the services information about the piconet as described in {xref AssociationRequest}) into the table. The capability field is still used.

- 133 - ACCEPT IN PRINCIPLE. Insert the PiconetServicesInquiry field (values: enumeration; REQUEST, NOREQUEST; Requests that the PNC sends the services information about the piconet as described in {xref AssociationRequest}) into the table. The capability field is still used. 1
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- 149 - Accept. 5
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- 411 - Accept 7
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- 425 - Can we remove the application data ID? Ask M. Schrader. Table until response, AI for JPKG to contact him. 9
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- 426 - Can we remove the DEVID? Ask M. Schrader. Table until response, AI for JPKG to contact him. 12
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- 414 - ACCEPT IN PRINCIPLE. Delete the sentence "The PNC may use multiple beacons to broadcast successive DEV association IEs if too many DEVs are associating than will fit in a single beacon.." as it is confusing and does not add any new information. The PNC is able to choose when it sends any IE. 14
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- 417 - ACCEPT IN PRINCIPLE. Delete the capability field, change the name of the Association status field to be "DEV characteristic". In the new DEV characteristic field, put in a 1 bit Association status field that is 0 for disassociated and 1 for associated, a 5 bit "Supported data rates" with an xref to where defined in 7.11 (or where this goes in the future) and 2 reserved bits. Check in other places where Association status field is defined to see if they need to be changed to match. 18
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- 418 - ACCEPT IN PRINCIPLE. DEVs are not required to authenticate to other DEVs in a piconet. They are only required to authenticate with the PNC in a secure piconet. However, this status is not useful here, therefore it will be removed as valid value as indicated in the resolution of CID 417. 24
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- 415 - ACCEPT IN PRINCIPLE. This is already required in 8.3.1, page 164, lines 50-51 where the PNC repeats it at least aMinBeaconInfo which has a value of 4. 28
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- 419 - ACCEPT IN PRINCIPLE. Move DEV address to the first position in this IE and in the PNC info command's DEV record on page 139, figure 64. 31
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- 33 - ACCEPT IN PRINCIPLE. Delete the three sentences. In 8.3.4 change the last sentence in the paragraph on page 167, line 1 to be 'Similarly, if the beacons from the PNC are not received by the DEV for longer than the ATP, the DEV shall consider itself disassociated from the piconet and may try to associate again. The DEV notifies the DME that the ATP expired using the MLME-ATP-EXPIRED.ind primitive.' Keep MLME-SYNCH.{request,confirm} as they are used for the association process. Delete figure 119. Rename MLME-SYNCH-LOST as MLME-ATP-EXPIRED. Add text to 8.3.1 that indicates that the DEV needs to perform an MLME-SYNCH prior to starting the association process. {Ed. note: Generate the text}. 34
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- 18 - Accept 42
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- 37 - ACCEPT IN PRINCIPLE. Add a second MLME-ASSOCIATE.ind to the MSC after the second association request command. Add the OrigID to the MLME-ASSOCIATE.ind and put a definition in the table that says it is either the UnassocID or the DEVID that was just assigned by the PNC. Add DEVID=UnassocID to the first MLME-ASSOCIATE.ind and DEVID=0xzz to the second one. 44
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- 439 - Accept. 49
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- 53 - ACCEPT IN PRINCIPLE. Delete aDEVIDReuseTime. Change 'However, the reallocation of the same DEVID by PNC shall be at least aDEVIDReuseTime after the disassociation of the DEV that was allocated the same DEVID.' to be 'After the PNC sends a disassociation command to a DEV, the PNC shall not reuse the same DEVID of that DEV until at least two times the ATP duration for that DEV has passed.' Add to the 51
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ATP discussion in disassociation ‘The PNC shall send a disassociation command to a DEV that sends a frame after its ATP has expired.’

437 - ACCEPT IN PRINCIPLE. Add that the units are in milliseconds here and in 7.5.1.2.

43 - ACCEPT. Double check to make sure that all of the IEs that need to be there are in Table 39 (e.g. PSPS status and SPS status).

38 - REJECT. Although in some cases it may help to have the CTAs last so that a DEV can shutdown early if it has not decoded a CTA assigned to that DEV within MaxProcessedCTAs. However, with the CTAs first, the DEVs have more time to react to the channel time allocations and the CTAs start in a known location.

405 - REJECT. Although in some cases it may help to have the CTAs last so that a DEV can shutdown early if it has not decoded a CTA assigned to that DEV within MaxProcessedCTAs. However, with the CTAs first, the DEVs have more time to react to the channel time allocations and the CTAs start in a known location.

413 - ACCEPT. Double check to make sure that all of the IEs that need to be there are in Table 39.

406 - ACCEPT IN PRINCIPLE. Change the figure 9 title to be ‘Piconet synchronization parameters field format.’ Change the sentence ‘All beacons include the piconet synchronization parameter field.’ to be ‘All beacons include the piconet synchronization parameter field, as shown in the frame formats for the non-secure, {xref} and secure beacons, {xref}.’

94 - Accept.

192, 345 - Table, everyone to ask for help.

281 - Accept

467 - REJECT. The PNC DEV-Address is no longer used to distinguish the piconet, instead BSID identifies the piconet (with the PNID). However, many parts of the standard refer to the Parent PNC DEV-Address and these will be changed to refer to the Parent BSID.

433 - REJECT. The overlapping PNID element is only used to report PNIDs. The PNC is required to change its PNID if an overlapping piconet is found that uses the same one. However, the PNC is not required to change its BSID. The actual number of piconets using the PNID is not important, rather it is simply the existence of at least one piconet with that PNID that matters. Furthermore, this IE is sent even if only a frame and not the beacon is detected on another channel. In this case, the DEV doesn't know the BSID.

242 - ACCEPT IN PRINCIPLE. Change this sentence frag.: <from> "...remove the parent PNC DEV address element from ..." <to> "...remove the parent BSID IE from ..."

238 - ACCEPT IN PRINCIPLE. Change this sentence frag.: <from> "...remove the parent PNC DEV address element from ..." <to> "...remove the parent BSID IE from ..."

408 - ACCEPT IN PRINCIPLE. After the sentence ending "... the CAP of the current superframe." add "The CAP command bit applies to all commands except for the association request command, which is covered by the CAP association bit."

67 - Accept.

74 - ACCEPT IN PRINCIPLE. Add a new timing parameter called BIFS = SIFS + aCCADetectTime and use it instead of RIFS in the backoff procedure. Add BIFS - backoff interframe spacing to the acronyms clause. Modify clause 11 to match this new usage.

451 - ‘When the DestID of this command is PNCID, the values in the command shall correspond to all frames exchanged by the DEV with other DEVs in the piconet. When the DestID of this command is a non-PNC DEVID, the values in the command shall correspond to the frames exchanged between the requesting DEV and the target DEV.’

2.3 Tuesday

Directed vs. beacon announcement of new CTA.

299, 301, 303, 305 - Use IEs in the beacon, for BC/MC and pseudo-static slots to ACTIVE DEVs they are in the system wake beacon plus 3 following. For power save DEVs, they are in the DEVs wake beacon plus 3 following wake beacons. Also, a DEV that wants this info but missed it, may request it from the PNC with with probe command? How do you indicate the stream index? Or do you get all of them. How do we add text to probe to request multiple IEs? Do we add a CTA information request and CTA information response (or use PNC handover information command).

PNService IE - use probe instead of command?

Tuesday 8:00 am after probe

255 - REJECT. The information sent in the PN services command is likely much longer than an IE, thus it is easier to send it in a command. With a single command, the DEV knows when it has received all of the data, as opposed to an set of IEs.

283 - REJECT. The information sent in the PN services command is likely much longer than an IE, thus it is easier to send it in a command. With a single command, the DEV knows when it has received all of the data, as opposed to an set of IEs.

346 - REJECT. The information sent in the PN services command is likely much longer than an IE, thus it is easier to send it in a command. With a single command, the DEV knows when it has received all of the data, as opposed to an set of IEs.

Probe - possible error code?

Tuesday 8:00 am after notifying DEVs

CID ?? - Which one do we need to say no? Suggest overall probe procedure, if you get an IE you are not able to respond to (i.e. it is listed as may respond or shall not respond), the DEV sends back the appropriate IE with the identifier and a zero length. Also need to work on the clause 8 table for different wording, you always respond, but sometimes you give a null IE. {Ed. note: Need to work on the words}.

282 -Withdrawn

46 - Accept.

23 - ACCEPT IN PRINCIPLE. For the PNC received request from DEV, change the following to shall ignore: DEV association, PNC shutdown, Piconet parameter change, PNC handover, SPS status.

44 - ACCEPT IN PRINCIPLE. Add an MLME-PROBE.confirm to just before the first MLME-PROBE.ind sent to DEV-2. Change the probe primitive parameters to match the following (same definitions).

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MLME_PROBE.request
(
  TrgtId,
  InfoElementMap,
  InfoElementList,
  ProbeTimeout
)

```

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MLME_PROBE.indicate

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(
  OrigId
  InfoElementMap
)

```

```

MLME-PROBE.response

```

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(
  OrigId,
  InfoElementMap,
  InfoElementList,
  ProbeTimeout
)

```

```

MLME-PROBE.confirm

```

```

(
  TrgtId,
  InfoElementList,
  ResultCode
)

```

52 - Replace Table 53 with the following.

503 - ACCEPT IN PRINCIPLE. Change the sentence to 'A DEV shall not report overlapping piconets if it determines that the beacons were received from a child or 802.15.3 neighbor piconet that is associated with the DEVs current piconet.'

306 - ACCEPT IN PRINCIPLE. Change the field to be the Parent BSID IE, length 8-34, change the text to be: The parent BSID IE is the address from a parent BSID IE, 7.4.3, found by the DEV in a beacon. If the DEV found only a frame and did not find a beacon, it shall include a zero length parent BSID IE. Change the length of the Piconet BSID IE to be 8-34.

45 - Accept.

452 - ACCEPT. Change the BSID IEs to include the MAC address of the PNC (or parent PNC). Rename the IEs to be the Piconet IE and Parent piconet IE. Rename throughout (after change from Parent DEV address IE to Parent BSID IE.) Change the lengths of the fields in this command to be 14-40.

Table 2—Rules for sending to probe requests

Information element	Subclause	PNC allowed to request?	DEV allowed to request?	PNC sends?	DEV sends
Channel time allocation	7.4.1	Shall not request	Shall not request (no)	Shall not send	Shall not send
Piconet BSID	7.4.2	Shall not request	May request (yes)	Shall not send	Shall not send
Parent BSID	7.4.3	Shall not request	May request	Shall not send	Shall not send
DEV association	7.4.4	Shall not request	Shall not request	May send	Shall not send
PNC shutdown	7.4.5	Shall not request	Shall not request	May send	Shall not send
Piconet parameter change	7.4.6	Shall not request	Shall not request	May send	Shall not send
Application specific	7.4.7	May request	May request	May send	May send
Pending channel time map (PCTM)	7.4.8	Shall not request	May request	May send	Shall not send
PNC handover	7.4.9	Shall not request	Shall not request	May send	Shall not send
DEV address	7.4.10	May request	May request	May send	May send
Capability information	7.4.11	May request	May request	May send	May send
Transmit power parameters	7.4.12	May request	May request	May send	May send
SPS status	7.4.13	Shall not request	Shall not request	May send	Shall not send
PSPS status	7.4.14	Shall not request	May request	May send	Shall not send
Public-key object	7.4.15	May request	May request	May send	May send
Security suite OID	7.4.16	May request	May request	May send	May send
Overlapping PNID	7.4.17	May request	Shall not request	Shall not send	May send
Piconet services	7.4.18	May request	May request	May send	May send
Vendor specific or reserved	7.4	May request	May request	May send	May send

24 - ACCEPT IN PRINCIPLE. Add a table to 6.3.18 called remote piconet description, as shown in 02/392r2. In table 21, change PiconetDescription to be RemotePiconetDescription with cross references to the new table.

216 - ACCEPT IN PRINCIPLE. Add a table to 6.3.18 called remote piconet description, as shown in 02/392r2. In table 21, change PiconetDescription to be RemotePiconetDescription with cross references to the new table.

500 - ACCEPT IN PRINCIPLE. Change "Any frame may be attempted at most aMaxRetransmissionLimit number of times before the transmitting DEV gives up on that frame and discards it. If a fragment of an MSDU fails retransmission up to the retry limit, the source DEV shall discard all MPDUs of that MSDU. However, a DEV might choose to attempt retransmission of an MPDU a fewer number of times as some data streams have a short life time." to be "A DEV determines the number of times a frame is retried before the DEV gives up on that frame and discards it. If the DEV gives up on a fragment of an MSDU, the DEV shall discard all MPDUs of that MSDU."

Table 3—Elements of RemotePiconetDescription

Name	Type	Valid Range	Description
BSID	As defined in Table 4	As defined in 7.4.2	The text string of a discovered piconet.
PNCDEVAddress	MAC address	Any valid individual MAC address	The MAC address of the PNC of the piconet that was found.
PNID	As defined in Table 4.	As defined in Table 4.	The PNID of a discovered piconet
PiconetType	Enumeration	PARENT, DEPENDENT	The type of a discovered piconet.
Parent BSID	As defined in 7.4.3.	As defined in 7.4.3.	The BSID of the parent piconet if a beacon of a dependent piconet was found.
ParentPNCDEVAd- dress	MAC address	Any valid individual MAC address.	The MAC address of the parent PNC of the piconet that was found.
ScannedFrameType	Enumeration	BEACON, NON-BEACON	Indicates what type of frame was found. {Ed. note: change table 5 as well}
ChannelIndex	Integer	0-255	A PHY dependent channel as defined in 7.5.6.4

Open/association MTS - Do we still need them?

Tuesday 1:00 pm, CIDs 56, 349, 350, 351, 352, 353, 354, 355, 387, 513

Issues:

Con MTS: Do we need two multiple access methods? IP cost if any? Complexity from supporting both and in the specifying in the standard. Efficiency of contention? How much efficiency? For minimum CAP of say 160 us, average backoff is 16 (1/2 of 32) with 16 us slots or 320 us. That makes about a 1 out of 2 or 3 possibility of getting through. Lack of predictability of determinism of when an MTS is made available by the PNC. Any prior art? WMS says that there are plenty of examples of slotted aloha in the literature. KO: Hiperlan uses RACH (random access channel). Gubbi proposal used RACH anyway (Q slot for reQuest slot). For predictable responses, would sub-rate CAPs work as well?

Pro MTS: CAP needs to be long enough. If you want a minimum contention period, then slotted aloha takes up the least amount of time. Will new PHYs really be able to support a CAP?

Reschedule for Thursday 1:00 pm.

425 - Accept

426 - Accept

435 - ACCEPT IN PRINCIPLE. Change "PNC" to be "PNC or destination DEV"

488 - ACCEPT IN PRINCIPLE. Change the sentence 'If an Imm-ACK or del-ACK is expected for that frame, ... PHY rate as the transmitted frame.' to be 'If an Imm-ACK or Dly-ACK is expected for that frame, the DEV shall check whether there is enough time remaining in the time slot to accomodate the current frame, 2 SIFS periods and the Imm-ACK or Dly-ACK frame at the same PHY rate as the transmitted frame.'

22 - Options: New request replaces all old for both? Or add a single bit that says what to do?	1
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483 - ACCEPT IN PRINCIPLE. 1. Add definitions for subrate and super-rate slots to Clause 3. 2. The TG is open for suggestions for new names for subrate and super-rate. To date, we have been unable to find better terminology. 3. Yes, the text indicates that psuedo-static CTAs are not allowed to happen once per many superframes, rather they are allocated every superframe.	3
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484 - Accept.	8
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400 - ACCEPT IN PRINCIPLE. Change 'of an isochronous stream that is currently employing the Dly-ACK mechanism.' to be 'of a stream that is currently employing the Dly-ACK mechanism. It is not valid for frames using the asynchronous stream index or the MTS index.'	10
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166 - ACCEPT IN PRINCIPLE. Add to when generated in MLME-CREATE-STREAM.request: 'If a multi-cast or broadcast stream was opened with any other ACK-Policy than no-ACK, the MLME will not send a channel time request command to the PNC and shall be respond with MLME-CREATE-STREAM.confirm with ResultCode set to ILLEGAL_ACK_POLICY.'	14
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182 - ACCEPT IN PRINCIPLE. Add text to When generated: 'If the dly-ACK policy was used, but the destination refused the use of dly-ACK, the ResultCode shall be set to DLY_ACK_FAILED. This indicates successful transmission of the corresponding data frame.'	19
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498- REJECT. The use of null CTAs allows DEVs that were listening to a BC or MC stream to know that it is no longer allocated. This can't be done with a directed frame. In addition, the standard is using directed frames to communicate with the source and IEs in the beacon to communicate with destinations. The TG discussed this issue at length in Vancouver, on conference calls, the ad-hoc meeting in Schaumburg and in Monterey. Both methods, directed frames and null-CTAs were considered in the discussions and it was felt that null-CTAs would better serve the purposes of the standard.	23
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168 - Accept.	30
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449 - Accept.	32
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48 - ACCEPT IN PRINCIPLE. Add the priority parameter with definition in the table as indicated in CID 160.	34
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51 - ACCEPT IN PRINCIPLE. Change as indicated. Also, show the data frame as coming from the MAC/MLME to the other MAC/MLME as well as the ACK.	37
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265 - ACCEPT IN PRINCIPLE. Correct the figure as indicated in CID 51.	40
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50 - Accept. {Ed. note: we need to write some text for the error code in the MAC-ISOCH-DATA.confirm.}	42
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156 - Accept.	44
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160 - Accept.	46
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307 - Accept.	48
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485 - ACCEPT IN PRINCIPLE. Change "the PNC may overlap the allocations for the old and new psuedo-static GTSS" to "However note that the PNC may overlap the old and new locations of the same psuedo-static GTS within a superframe as it does not cause any issue of frame collisions. If PNC sees the usage of the new allocation by both the source of the destination of old allocation before the expiration of aMAxLost-Beacons number of supreframes, then the PNC may reuse the old allocation for another pair of DEVs" After	50
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the end of sentence "... and begin using the new GTS." The second point is already handled in the draft with the requirement on page 171, line 6, "When the source of a pseudo-static GTS receives a beacon with the new CTA, it shall cease using the old GTS and begin using the new GTS."

256 - Accept.

2.4 Wednesday, 11 September, 2002

Security modes - Do we have 2 or 3 modes?

ACL/PIB

PNC handover of ACL information

Wednesday 8:00 am

PM/SPS - SPS mandatory or optional?

Wednesday 1:00 pm

92 - ACCEPT IN PRINCIPLE. Suggest a table that has security levels (i.e. claimed bits) and if the OID offers cryptographic authentication of public keys for each of the OIDs. Merge Mode 1 and Mode 2 services offered, pointing out that some OIDs use certificates, some don't. Throughout the draft, use only mode 0 or mode 1 or security off or security on. Change the SEC mode field in the beacon to be only one bit.

ACL

370 - Why can't a mode 0 PNC use the ACL? I thought this is how we got rid of mode 1. Maybe this is just an oversight.

384 - MAC PIB ACL group defined as an array whose contents are defined in Table 33. All of the entries are dynamic, but no clear mechanism to update these entries has been included in the draft. There are no limits on the minimum and maximum number of entries allowed in the ACL. The only use for this array in the MAC is for generation of the CCM nonce and obtaining the keys associated with a particular SECID for encoding or decoding payloads.

Table until Thursday at 1:00 pm, look for compromise text.

Handover - Dan Bailey from NTRU said that they have no patents or applications on this method. He does not personally know of any from other companies.

102, 91 - Suggest passing hashes of public keys. Add 160 bit (20 octets) with the associated DEV address and the OID (possibly length). Rene asked why not hand over the public keys instead of the hash? Dan said for length concerns (160 up to 1757 bits, 20-200 octets, currently. It could be up to 4 times 256 bytes for certificates). Table until Thursday at 1:00 pm, need specific text that describes how to do it.

520 - Accept.

49 - ACCEPT IN PRINCIPLE. Resolve as indicated in CID 166.

180 - Accept.

258 - Accept.

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154 - Accept.	1
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212 - Accept.	3
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494 - ACCEPT IN PRINCIPLE. The sentence was to indicate that this was the initial allocation of the CTA, not to say that it would occur first in the superframe. Therefore, change 'The PNC shall issue the first GTS for the stream in the superframe indicated in the channel time allocation command.' to 'The PNC shall issue the initial GTS for the stream in the superframe indicated in the CTA status IE.'	5
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492 - REJECT. The goal here is that the PNC is allowed to update its CTAs without waiting for another process to complete, either partially or completely. This is the fastest way to get the channel time allocated. As soon as the DEV sees the CTA in the beacon, it is able to use the time.	10
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160 - Accept.	14
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162 - Accept.	16
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169 - ACCEPT IN PRINCIPLE. The stream termination bit is implied by the MLME-TERMINATE-STREAM command and doesn't need to be passed. It is implied as well for the other MLME-XXX-STREAM commands. The priority parameter will be added as indicated in CID 160.	18
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257 - ACCEPT IN PRINCIPLE. Modify the MSC in Figure 108 as follows: 1) Delete the Evaluate request symbol from the PNC MLME column. 2) Delete the Allocate resources symbol from the PNC MLME column. 3) Move the channel time response command to just below the Check resources symbol, since this is where the decision regarding the two error conditions is determined. Also move the ACK up in the diagram as well. 4) Move the MLME-CREATE-STREAM.cfm primitive to just below the starting point of the ACK to the channel time response command.	22
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263 - ACCEPT IN PRINCIPLE. Add the MLME-TERMINATE-STREAM.request and the MLME-TERMINATE-STREAM.confirm to the MSC. Also, delete the first condition symbol 'de-allocate stream'.	29
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259 - ACCEPT IN PRINCIPLE. Delete figure 110.	32
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134 - ACCEPT IN PRINCIPLE. Also add a definition to the table, StreamIndex, As defined in {xref}; As defined in {xref}; The stream index that was assigned in the channel time allocation process for the dependent piconet.	34
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277 - Withdrawn, 11 September, 2002	38
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221 - ACCEPT IN PRINCIPLE. Add to the figure '1 octet, Remaining DEVID', Also add the description 'The remaining DEVID indicates which dependent piconet is able to continue operation as described in {xref shutdown}. It shall be set to the PNCID if there are not dependent piconets in the current piconet.	40
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541 - ACCEPT IN PRINCIPLE. Delete all parameters for the MLME-START-DEPENDENT.confirm except for the ResultCode.	44
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141 - Accept, See also CID 541 and 136.	47
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136 - ACCEPT. See also CID 541 and 141.	49
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140 - Accept.	51
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487 - ACCEPT IN PRINCIPLE. Delete the sentence 'However, the PNC shall not reduce the channel time allocation of a private GTS allocated for a child or neighbor network.'	53
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317 - ACCEPT IN PRINCIPLE. (see 02/392r3 for formatting help) Page 199, lines 45 and 46 change ‘The exceptions to this are when the parent is changing its PNID or BSID and that a child or neighbor PNC decides not to change channels, 8.11.1, with the parent PNC.’ to ‘The exceptions to this are:

- when the parent is changing its PNID or BSID
- A child or neighbor PNC decides not to change channels with the parent PNC and is shutting down, 8.11.1.’

page 202, line 44: Change ‘... piconet parameter change IE, 7.4.6 in ...’ to be ‘... piconet parameter change IE, 7.4.6, with ChangeType set to CHANNEL, in ...’

page 203, at appropriate location, ‘All DEVs shall not transmit on the new channel until a beacon has been correctly received on the new channel.’

page 202, line 51, Change ‘from their current channel to the new channel immediately after the beacon when the change countdown field becomes zero.’ to be ‘from their current channel to the new channel before the first expected beacon on the new channel.’

472 - ACCEPT IN PRINCIPLE. On page 163, line 12 Change ‘shall cease operations by the time of the last beacon sent by the parent PNC.’ to be ‘shall either cease operations, change channels or join another piconet as a dependent piconet by the time of the last beacon sent by the parent PNC.’

469 - ACCEPT IN PRINCIPLE. On page 162, line 53, change ‘shall cease operations by the time of the last beacon’ to be ‘shall either cease operations, change channels or join another piconet as a dependent piconet by the time of the last beacon’

465 - ACCEPT IN PRINCIPLE. Add text at the end of line 2 that says, ‘There is no restriction in this standard on the number of levels that may be created. However, there is a practical limitation to the number of dependent piconets and the levels that are able to be supported.’

464 - ACCEPT IN PRINCIPLE. Change ‘a child of a child or child of a neighbor’ to be ‘It is also possible for another dependent piconet to be formed in a child or neighbor piconet’. Ed. Note: combine all stuff that is common to child and neighbor in an introductory subclause, if possible.

391 - REJECT. The standard allows the child PNC to allocate its channel time in any way that it wants. Therefore, a child PNC may allow the formation of both child and neighbor piconets. See also the resolution CID 464.

392 - ACCEPT IN PRINCIPLE. The standard already requires a DEV to be a member of a piconet in order to communicate with other DEVs in that piconet. Therefore, a member of a child piconet shall not communicate with members of the parent piconet, unless that DEV is a member of the parent piconet (which is allowed).

458 - ACCEPT IN PRINCIPLE. The primitive has had the StreamIndex added which indicates the CTA to be used as well as the DEVID. The DEVID indicates if the dependent piconet is a child or neighbor. At this point in the process, the only difference between the two piconets is the DEVID used in the CTA. Within its own piconet, there is no difference between a child or neighbor.

521 - ACCEPT IN PRINCIPLE. Change to “A piconet which allocates guaranteed time slots for another piconet (child or neighbor types) operating in the same channel”.

Suggested text for CID 475:

‘8.2.6.4 Parent PNC termination of a dependent piconet

If the parent PNC wishes to stop the child piconet, it shall terminate the stream allocated to the child piconet using the isochronous stream termination procedure, 8.5.1.3. If the parent PNC wishes to stop the neighbor piconet, it shall send a disassociate request, 8.3.4, to the neighbor PNC. In either case, the dependent PNC shall then immediately initiate its shutdown procedure, 8.2.6. The parent PNC shall listen for the dependent PNC shutdown beacon sequence to determine when the dependent piconet CTA should be removed. The parent PNC may set a maximum time for the completion of the dependent shutdown sequence, after which the CTA will be removed regardless of the completion of the dependent shutdown procedure. In the case of a child piconet, this timeout is set in the MLME while for a neighbor piconet, this time is set via the MLME-DISASSOCIATE.request primitive, 6.3.6.1. If the dependent PNC is a neighbor that is not 802.15.3 compliant, the parent PNC shall provide the same time as it allows for its own shutdown sequence, for the neighbor PNC to stop its piconet before removing its private CTA.

Suggested text for Beacon information announcement.

8.1.1 Beacon Information Announcement

The PNC sends several IEs in its beacons to inform the piconet about constant or temporary conditions. Some are sent in every beacon. In some cases these are only sent if certain features are in use, such as power save or a dependent piconet. Other IEs are only sent as an announcement of a changed condition in the piconet. These IEs could be for the benefit of all DEVs or for a particular DEV. All IEs that are not put sent in every beacon are called announcements and shall be sent for {xref aMinBeaconInfoRepeat} beacons.

Table 4—Repeated beacon announcements

Element	Clause	Announced in	Intended for	Clause
DEV association	7.4.4	aMinBeaconInfoRepeat	All DEVs	8.3.1, 8.3.4
PNC shutdown	7.4.5	aMinBeaconInfoRepeat	All DEVs	8.2.6
Piconet parameter change	7.4.6	a MinBeaconInfoRepeat	All DEVs	8.10, 8.11.1, 8.11.2
Application specific	7.4.7	As needed	As appropriate	
Pending channel time map (PCTM)	7.4.8	As needed	All DEVs	
PNC handover	7.4.9	aMinBeaconInfoRepeat	All DEVs	8.2.3
SPS status	7.4.13	As needed	All DEVs	8.13.2
PSPS status	7.4.14	As needed	All DEVs	8.13.1
CTA status IE	{xref 7.4.x}	aMinBeaconInfoRepeat	Depends on DestID	8.5.1.1, 8.5.1.2

If the intended recipient of the IE is all DEVs, the following rules apply:

- The IEs shall be sent in aMinBeaconInfoRepeat subsequent beacons.
- If any DEV is in PSPS or SPS mode, the first IE announcement shall be made in a system wake beacon.

If the intended recipient of the IE is one individual DEV, the following rules apply:

- If the DEV is in Active mode, the IEs shall be sent in aMinBeaconInfoRepeat subsequent beacons. 1
- If the DEV is in PSPS mode, the first IE announcement shall be made in a system wake beacon. 2
- If the DEV is in SPS mode, the IEs shall be sent in aMinBeaconInfoRepeat subsequent SPS set wake beacons. 3

In the case of the CTA status IE, this is considered to be intended for all DEVs if the TrgtId of a CTRB for a stream is BcstId or McstId. Otherwise it is considered to be for an individual DEV. 4
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2.5 Thursday, 12 September, 2002. 8 9 10

Bit ordering, CIDs 192, 345, 199 11

Suggest adding 'The payload in the data frame is sent with the lowest numbered octet first, least significant bit first, over the air.' to the beginning of line 51. After 'the highest numbered bits.' add 'For any text fields, the first character is in the first octet of the field with other characters following sequentially.' Also add a new figure for the data payload from 02/239r4. 12
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192 - ACCEPT IN PRINCIPLE. Add 'The payload in the data frame is sent with the lowest numbered octet first, least significant bit first, over the air.' to the beginning of line 51. After 'the highest numbered bits.' add 'For any text fields, the first character is in the first octet of the field with other characters following sequentially.' Also add a new figure for the data payload from 02/239r4. 18
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345 - ACCEPT IN PRINCIPLE. Add 'The payload in the data frame is sent with the lowest numbered octet first, least significant bit first, over the air.' to the beginning of line 51. After 'the highest numbered bits.' add 'For any text fields, the first character is in the first octet of the field with other characters following sequentially.' Also add a new figure for the data payload from 02/239r4. 23
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22 - ACCEPT IN PRINCIPLE. Define the reserved bit in the CTRB field to be the 'flush' bit, definition, 'The flush bit field shall be set to 0 for isochronous requests (i.e. for requests that do not use the asynchronous stream index). It shall be set to 0 in an asynchronous request if the originating DEV wants this request to replace all of the previous asynchronous requests or if there is more than one TrgtID in the CTRB. It shall be set to 1 otherwise.' Also update 8.5.2.1 to indicate that this bit is used with the two request methods. 28
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436 - ACCEPT IN PRINCIPLE. Add the following at the end of sentences on ln 31:35 'The fragmentation and defragmentation of these commands are using the same method as that for data frames, as described in {xerf 8.7} and update 8.7 by replacing all occurrences of MSDU with "MSDU/MCDU", define MCDU in the acronyms clause as "MAC command data unit" 34
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59, 68 - (Push) Make MaxTransferUnitSize to PHY dependent in table 56, define it in clause 11.2.8 to be 8091 octets. 39
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69 - (Push) Add a MAC sublayer parameter "aMinFragmentSize" in Table 56 on page 215, and set this to 128 (octets). If fragmentation is in use, DEVs may not transmit frames (except the last) with payloads smaller than this value. Also change the definition of the "Capability" field in association and beacon MMP-DUs, as defined on page 126 in Figure 36, by using bits b8-b5 and naming this field "FragmentationThreshold". DEVs must store and use this information on a per-destination DEV basis, fragmenting any frames sent to the DEV when a frame's payload exceeds FragmentationThreshold octets. This relationship holds: aMin-FragmentSize <= FragmentationThreshold <= aMaxFrameSize. All fragments except the last shall be sent using the same fragment size. 42
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70 - ACCEPT IN PRINCIPLE. Add: 'A DEV shall support concurrent reception of fragments of at least three MSDUs.' 51
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60 - ACCEPT IN PRINCIPLE. Add a sentence that says 'The smallest size of a fragment, excluding the last fragment shall be at least aMinFragmentSize.' and define aMinFragmentSize in table 56 to be PHY dependent, and define it in 11.2.8 to be 128 octets.

189 - ACCEPT IN PRINCIPLE. After 'aMaxFrameSize-4, inclusive.' add 'Note that null data frames, I.e. a zero length are allowed. For example, a null data frame may be used with Dly-ACK negotiation, {xref Dly-ACK}.'

95 - ACCEPT IN PRINCIPLE. After 'the frame control field.' add 'The payload field in the secure MAC frame body is protected as indicated {xref 10.2.4.2}.'

191 - ACCEPT IN PRINCIPLE. The FCS is always in a secure frame, therefore, change the octet indication for the FCS to be only 4.

183 - Pending new text.

410 - REJECT. Two variables are needed, the total amount that can be sent as well as the number of frames that the destination DEV is able to handle. The number of frames is important because there are physical limitations in the Dly-ACK generation. The other reason is that there are physical limitations in the buffer implementation, e.g. addressing.

322 - ACCEPT IN PRINCIPLE. Delete the table and the subclause.

249 - ACCEPT IN PRINCIPLE. Change the SPS info field in figure 64 to be the PS info field and add definition, 'The PS info field is defined in {xref 7.5.7.1}.'

42 - Accept.

442 - REJECT. The standard has stated since before D09 and LB12 that a DEV shall accept the nomination to become the new PNC. Therefore, it is not possible to have a rejection code because this behavior is not allowed. If a DEV really doesn't want to do it, it could disassociate in the middle of handover and reassociate with PNC capable bit set off.

161 - Accept.

297 - ACCEPT IN PRINCIPLE. If the request is for a private pseudo-static GTS, and the PNC will not support the creation of a child piconet, it shall respond with the reason code set to 'request denied'.

275 - ACCEPT IN PRINCIPLE. If the PNC rejects the formation of a child PNC for any other reason than insufficient channel time or unable to allocate as pseudo-static, it shall send the channel time response command with the reason code set to 'request denied' (check final text with Bob Huang).

547 - ACCEPT IN PRINCIPLE. Change the text 'Figure 92 illustrates the relationship between the parent piconet superframe and the child piconet superframe. Note that in the figure the superframe periodicity is the same for both the child and the parent piconets.'

148 - Accept.

57 - Accept.

72 - Mark Schrader to provide reference.

544 - ACCEPT IN PRINCIPLE. Change the minimum to be 2 (the current PNC and the new one) add {xref 7.2.x.x} as the maximum. Change the valid range for number of handover beacons to be 'As defined in {xref 8.2.3}'

66 - ACCEPT IN PRINCIPLE. Change line 43 to read "source and destination DEVID, by communicating in an unspecified manner with the DME, which maintains this information."

39 - ACCEPT IN PRINCIPLE. Change the description to read "A set of DEV record elements for all of the DEVs currently associated in the piconet." Ed. Note: Check globally for DEV information elements to change to DEV record elements.

475 - ACCEPT IN PRINCIPLE. 1. and 2. Merge the two subclauses, text is:

'8.2.6.4 Parent PNC termination of a dependent piconet

If the parent PNC wishes to stop the child piconet, it shall terminate the stream allocated to the child piconet using the isochronous stream termination procedure, 8.5.1.3. If the parent PNC wishes to stop the neighbor piconet, it shall send a disassociate request, 8.3.4, to the neighbor PNC. In either case, the dependent PNC shall either change channels, join another piconet as a dependent piconet or immediately initiate its shutdown procedure, 8.2.6. The parent PNC shall listen for the dependent PNC shutdown beacon sequence to determine when the dependent piconet CTA should be removed. The parent PNC may set a maximum time for the completion of the dependent shutdown sequence, after which the CTA will be removed regardless of the completion of the dependent shutdown procedure. In the case of a child piconet, this timeout is set in the MLME while for a neighbor piconet, this time is set via the MLME-DISASSOCIATE. request primitive, 6.3.6.1. If the dependent PNC is a neighbor that is not 802.15.3 compliant, the parent PNC shall provide the same time as it allows for its own shutdown sequence, for the neighbor PNC to cease operations as a dependent piconet of the parent piconet before removing its private CTA.'

3. Not all timeouts are communicated in the standard, for example the time that a DEV attempts a packet transmission. In addition, the dependent PNCs requirement for shutting down is unknown the parent PNC. Due to the added complexity to add a new command to handle this case, the TG decided not to send the timeout information.

4. The standard does not require a PNC to disassociate a child PNC when it terminates the child piconet's CTA. However, in the case of a neighbor, the process is to disassociate the neighbor, because its only purpose in being in the piconet is to act as a neighbor PNC."

150 - Accept.

152 - ACCEPT IN PRINCIPLE. Add text to the end of line 10 on page 60, 'If the PNC info command was received as an unsolicited frame then the DME is informed of the current information for all of the DEVs currently a member of the piconet.'

41 - 'Add a new field to PNC handover request, 1 octet, title "Handover status". Add the following description for the field 'The handover status field shall be set to 0 when the PNC is starting the PNC handover process with destination DEV. It shall be set to 1 if the PNC is cancelling the handover process with the destination DEV.'

Add a parameter to MLME-PNC-HANDOVER.{request, indication}, called HandoverStatus. Add HandoverStatus to the table with type enumeration, valid range STARTED, CANCELLED, description: Indicates if the PNC is beginning or cancelling a handover to the DEV.

Add to clause 8, PNC handover, 'When the handover is initiated, the HandoverStatus is STARTED. If the handover timer expires, the PNC handover command shall be sent to the DEV with a HandoverStatus of CANCELLED.'

Also add text to clause 8 that indicates if the DEV sees a shutdown IE from the PNC during the handover process, it knows that the handover was cancelled.

218 - Accept.

548 - ACCEPT IN PRINCIPLE. Delete all of the parameters except ResultCode from the MLME-START.confirm primitive. In 6.3.3.2.2, change 'If all of the channels for the PHY are either occupied by other 802.15.3 piconets or have unacceptable then the ResultCode shall be set to CHANNEL_BUSY.' to be 'If the channel for the PHY is either occupied by other 802.15.3 piconets or has unacceptable interference, then the ResultCode shall be set to PICONET_DETECTED.'. Change 'as either a regular DEV, child or neighbor piconet' to be 'as either a regular DEV or a dependent piconet'

31 - Accept.

145 - Accept.

129 - Accept.

32 - Accept.

17 - Accept.

471 - ACCEPT IN PRINCIPLE. Add the DEVID field to the PNC handover IE as indicated in CID 221.

470 - ACCEPT IN PRINCIPLE. Add the DEVID field to the PNC handover IE as indicated in CID 221.

135 - Accept.

424 - ACCEPT IN PRINCIPLE. Change "Vendor ID" length to 3 octets, change the definition to be 'The vendor ID field is the OUI as assigned by the IEEE RAC.' (Ed. Note, find out best reference) Add OUI to acronyms as "Organization unique identifier" (Ed. Note verify this).

313 - Accept.

209 - ACCEPT IN PRINCIPLE. Add a sentence to the end of line 5, page 107, 'The PNID shall be set to the current PNID for the piconet and is used to identify frames from DEVs in the piconet.' Change 0x00 in stream index to be 0x00 or 0xFD.

207 - ACCEPT IN PRINCIPLE. Add a sentence to the end of line 5, page 107, 'The PNID shall be set to the current PNID for the piconet and is used to identify frames from DEVs in the piconet.' Change 0x00 in stream index to be 0x00 or 0xFD.

205 - ACCEPT IN PRINCIPLE. Add a sentence to the end of line 5, page 107, 'The PNID shall be set to the current PNID for the piconet and is used to identify frames from DEVs in the piconet.' Change SEC Interpretation on reception to: May be decoded.

204 - ACCEPT IN PRINCIPLE. Add a sentence to the end of line 5, page 107, 'The PNID shall be set to the current PNID for the piconet and is used to identify frames from DEVs in the piconet.' Change SEC Interpretation on reception to: May be decoded.

202 - ACCEPT IN PRINCIPLE. Add a sentence to the end of line 5, page 107, 'The PNID shall be set to the current PNID for the piconet and is used to identify frames from DEVs in the piconet.'	1
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200 - ACCEPT IN PRINCIPLE. Add a sentence to the end of line 5, page 107, 'The PNID shall be set to the current PNID for the piconet and is used to identify frames from DEVs in the piconet.'	4
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153 - Accept.	7
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144 - Accept.	9
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151 - Accept.	11
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137 - Accept.	13
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19 - Accept.	15
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36 - Accept.	17
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278 - Accept.	19
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540 - Accept.	21
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337 - ACCEPT IN PRINCIPLE. Page 99, line 31 second sentence "Add this is called an extended beacon." Also add a definition to clause 3 "extended beacon - A beacon followed by one or more broadcasted probe commands from the piconet controller."	23
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14 - Accept.	27
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266 - Withdrawn, 12 September, 2002.	29
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29 - Accept.	31
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28 - Accept.	33
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178 - Accept.	35
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25 - Accept.	37
	38
266 - Withdrawn, 12 September, 2002.	39
	40
62 - Accept.	41
	42
30 - Accept.	43
	44
504 - ACCEPT IN PRINCIPLE. Change "aMinChannelScan" to "aMinChannelScan and less than the shortest ATP of any of the current member DEVs in the piconet"	45
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47 - Accept.	48
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545 - ACCEPT IN PRINCIPLE. Change BeaconDuration to SuperframeTiming.	50
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501 - REJECT. While it is true that the stream index uniquely identifies the source of an isochronous stream, it is not true of commands or asynchronous data where many sources share a single stream index.	52
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456 - Accept.	1
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26 - Accept.	3
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512 - REJECT. While we all appreciate the hard work that goes into reviewing a document for letter ballot, neither the ballot resolution committee nor the task group has the power to set the length of the letter ballot. The working group voted to set that duration.	5
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142 - Accept.	9
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138 - Accept.	11
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247 - ACCEPT IN PRINCIPLE. Resolve as indicated in CID 249.	13
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21 - ACCEPT IN PRINCIPLE. Add a sentence to page 138, line 53, "Note that asynchronous CTRBs are not passed in this command, thus the num targets field is always 1 and so the CTRBs are all of a fixed length."	15
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245 - Withdrawn, 12 September, 2002.	18
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441 - ACCEPT IN PRINCIPLE. Resolve as indicated in CID 41.	20
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196 - ACCEPT IN PRINCIPLE. Add the text from 02/273r18, 2.1.7.2.2.	22
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96 - Accept.	24
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72 - ACCEPT IN PRINCIPLE. ANSI X3.66-1979: Advanced data communication control procedures (ADCCP). Change the reference clause 7.2.7.2 to be "ANSI X3.66-1979"	26
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3. Status Thursday, 3:30 pm in Monterey

Table 5—Ballot resolution as of close of Monterey meeting

Type	LB19	Unresolved as of 13 September, 2002
T (technical)	72	31
TR (Technical required)	326	172
T and TR	398	203
E (editorial)	153	153
Total	551	356

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4. Status at closing in Monterey

Table 6—Ballot resolution as of close of Monterey meeting

Type	LB19	Unresolved as of 13 September, 2002
T (technical)	72	17
TR (Technical required)	326	117
T and TR	398	134
E (editorial)	153	153
Total	551	287

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