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**IEEE P802.11  
Wireless LANs**

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**Tentative Minutes of the IEEE P802.11 Full Working Group**

**July 9 - 13, 2001**

**Portland Marriott Downtown, Portland, Oregon, USA**

**Opening Plenary Session: Monday, July 9, 2001**

**1.1. Introduction**

1.1.1. Meeting called to order by Stuart Kerry at 1:05PM. Agenda of 68th session of 802.11 is in doc.: IEEE P802.11-01/335r4 – on the web site, server, and flash cards.

1.1.2. Secretary – Tim Godfrey

**1.2. Roll Call**

1.2.1. The 219 people in the room introduced themselves.

**1.3. Review of objectives for this meeting:**

1.3.1. Objectives from the “Objectives” tab in document 01/335r4 were read by the chair.

1.3.2. The chair’s advisory group has reviewed these objectives the night before.

**1.4. Review of Policies**

1.4.1. The chair welcomes the members of the press.

1.4.2. The chair asks members to rise when addressing the floor, and when recognized by the chair.

1.4.3. The chair introduces the other officers and their duties.

1.4.4. Attendance book review – two books for new and voting members.

1.4.4.1. Voting tokens are not in the books.

**1.5. Review of Voting rights**

1.5.1. Review of voting rights – read from document 00/278

1.5.1.1.

1.5.2. Review of Voting Member Status: New members and Aspirant Members

1.5.2.1. Document 401r4.

1.5.2.2. There were voters who did not return letter ballots, as a result, they have lost their voting status. Two member will be re-considered due to health reasons.

1.5.2.3. We have 219 voters

1.5.2.4. 73 nearly voters

1.5.2.5. Potential of 292 voters at this meeting

1.5.2.6. 209 aspirant voters.

1.5.3. Voting tokens have been distributed to pre-registered members in their badges. Others who registered on-site need to see Al Petrick.

This is due to ten voting tokens being taken from members that were not present at the meeting.

- 1.5.4. Access to private members area on the web site is granted to those who are present at 75% of the sessions at a meeting. It contains draft standards. All other documents are public.

#### **1.6. Review of Logistics, , etc**

- 1.6.1. Documentation – only electronic document distribution, flash cards or wireless from the server.
- 1.6.2. Review of patent policy from document 00/278.

#### **1.7. Announcements**

- 1.7.1. Regarding Spam on the reflector. We are trying to block it.
- 1.7.2. Publicity and Media communications. The chair and vice chairs shall be the points of contact for any communications with the press and media bodies. There have been issues with press releases releasing sensitive information and details of public statements made in the task groups – please refrain from directly discussion 802.11 issues with the press or media.
- 1.7.3. Barcode trial for attendance – document 01/418, Denis Kuwahara
  - 1.7.3.1. We are not using this method at this meeting.
  - 1.7.3.2. New participants are asked to staple their business cards into the Green attendance book.

#### **1.8. IP Statements**

- 1.8.1. Philips has IP statements regarding TGg and TGh. The will be filed and posted.

#### **1.9. Publicity**

- 1.9.1. The chair of publicity would like to step down. The group is looking for volunteers for a new chair

#### **1.10. Agenda Time Limits**

- 1.10.1. 8:00AM to 9:30PM Monday to Thursday
- 1.10.2. 8:00AM to 12:00 Noon on Friday.
- 1.10.3. These are the meeting time bounds for the week

#### **1.11. SEC chair**

- 1.11.1. There will be a nomination upcoming to replace Jim Carlo as the chair of 802.

#### **1.12. Special Award**

- 1.12.1. The group presents an award to Bob O'Hara and Al Petrick, for their book The 802.11 Handbook. It is the IEEE standards association best seller for the year 2000.

#### **1.13. Agenda**

- 1.13.1. Review of the agenda in document 335r4.
- 1.13.2. Addition of 802.16 PAR discussion to the New Business Agenda.

- 1.13.3. The chair ask for any changes to the agenda. None
- 1.13.4. Any objections to adopting the agenda. None
- 1.13.5. The agenda is approved by unanimous consent
- 1.14. Minutes from Orlando**
  - 1.14.1. The minutes are approved by unanimous consent.
- 1.15. Financial review**
  - 1.15.1. Orlando interim meeting ran a 48K surplus. Proposal to use surplus to fund plenary network costs for a year.
- 1.16. Review of Monday Ex Com meeting**
  - 1.16.1. Discussion of 802 level coexistence
  - 1.16.2. Roberts rules
  - 1.16.3. Chair election process
  - 1.16.4. Number of PARs going to Nescom are decreasing
  - 1.16.5. Carlo promoting getting wireless representation on Nescon and RevCom
  - 1.16.6. 5GSG PAR on the table for review. TGj is going through the normal process.
  - 1.16.7. IEEE reviewing IEEE trademarks protection.
- 1.17. Subgroup Updates**
  - 1.17.1. TGbCor1 – Carl Andren
    - 1.17.1.1. Second recirculation sponsor ballot passed unanimously. Document to be sent to SEC.
  - 1.17.2. TGe – John Fakatselis
    - 1.17.2.1. For this week we are planning to come up with a new draft for a letter ballot at the end of the week. We have been resolving comments on the previous letter ballot. We have had ad hoc teleconferences to start the work.
  - 1.17.3. TGf – Dave Bagby
    - 1.17.3.1. Two goals – complete letter ballot comment processing. Hopefully generate a new draft. Schedule decision on whether TGf continues independently, or synchronize with TGe or TGi.
  - 1.17.4. TGg – Matthew Shoemake
    - 1.17.4.1. Four objectives. Fair debate on selection procedure step 19. Complete selection procedure. Enable first draft with 75% consensus. Select an Editor for TGg. (Two people have expressed interest). There is also consideration of a vice chair for TGg.
    - 1.17.4.2. John Terry has volunteered to be Vice Chair of TGg. It is traditional to approve a TG Vice Chair by the working group.
    - 1.17.4.3. The 802 WG Chair ask: Is there any objection to have John Terry as vice Chair? None.
    - 1.17.4.4. John Terry is accepted as the Vice Chair of TGg by unanimous consent.
  - 1.17.5. TGh – Mika Kasslin
    - 1.17.5.1. There is a draft normative text proposal for TGh that will be discussed. The objective is to send out for a letter ballot in the closing plenary. There will be a confirmation vote on Wednesday at 8:30.

- 1.17.5.2. This is a specific agenda time, not guidance.
- 1.17.6. TGi – Dave Halasz
  - 1.17.6.1. At the May meeting we had a call for new authentication proposals. There are time slots for presentation this week. TGi is also creating a requirements document. TGi will continue comment resolution. There is a possibility of having another letter ballot this week.
- 1.17.7. 5GSG – Bruce Kraemer
  - 1.17.7.1. Working towards a single global standard for 5GHz. Will review the status of the TGj PAR and 5 criteria. Defer to later in agenda. Will also review goals for “5WING” standard. 5GSG alternates between IEEE and ETSI/BRAN. The next meeting will co-locate in September. 5GSG is considering asking for an extension of the study group. Reconsidering how to progress with TGj.
- 1.17.8. Regulatory Ad Hoc – Vic Hayes
  - 1.17.8.1. Document 396r0.
  - 1.17.8.2. Review of May activities.
  - 1.17.8.3. Activities for this week: to place 6<sup>th</sup> criterion as part of 4<sup>th</sup> criterion. Regulatory work in document 291. Further work in NPRM 99-231. Draft and submission doc 391 and 395. Expecting additional submissions this week.
    - 1.17.8.3.1. NPRM proposes improved sharing capability with adaptive hopping. Recommends waivers for new methods. Recommends proposed requirement for review of hop sequence every 30 seconds. Recommends gliding scale of number of required hops between 1 (15.249) and a number according to 15.247.
    - 1.17.8.3.2. Concern about new digital transmission technologies. Proposes 100mW rather than 1W peak power, and peak density 10mW/MHz.
    - 1.17.8.3.3. Looking for additional proposals – small aperture, fixed/mobile wireless access.
    - 1.17.8.3.4. Alignment of UNII rules.
  - 1.17.8.4. Objectives – establish a permanent group at the 802 level. Work on PAR rules amendment. Prepare other position statements if needed.
- 1.17.9. Publicity – Al Petrick
  - 1.17.9.1. Objectives – update general web site presentation. Work with IEEE staff in NJ. Review calendar and trade shows.
  - 1.17.9.2. Review WECA issues
    - 1.17.9.2.1. Last Friday there was a WECA teleconference. The call recapped the WECA meeting in Helsinki. WECA provided strong support for continued work together. A common story for the media. WECA to be publicity arm for 802.11. 802.11 chairs and liaisons will speak at WECA meetings.
    - 1.17.9.2.2. There are 141 certified WiFi products.
    - 1.17.9.2.3. There was discussion of Dual Band 802.11 products. WECA is gearing up to do interoperability certifications. New brand name for 5GHz – when products are available from multiple vendors.
    - 1.17.9.2.4. WECA concerned about delays in 802.11g. Want to see resolution. WECA sees strong demand for higher rates. They have no official position on the technology selected. They sent a letter of concern to the chair and vice chairs of 802.11.
    - 1.17.9.2.5. The letter was read to the body.
    - 1.17.9.2.6. This letter brought up a number of questions. It was confirmed that the WECA board did approve this letter.

1.17.9.2.7. No further discussion from the floor.

### **1.18. Liaison Updates**

#### **1.18.1. Affirmation of liaisons- document 406r4**

- 1.18.1.1. Between 802.11 and 802.15
- 1.18.1.2. Between 802.11 and 802.16
- 1.18.1.3. Between 802.11 and ETSI
- 1.18.1.4. Between 802.11 and WECA
- 1.18.1.5. Between 802.11 and P1394.1
- 1.18.1.6. Between 802.11 and NIST

#### **1.18.2. Liaison Reports**

- 1.18.2.1. 802.11 – 802.15 : Bruce Kraemer : document 431.
  - 1.18.2.1.1. 802.15.1 – Bluetooth standardization. Have been converting from Bluetooth form to 802.11 form. Hoping to complete work by September 2001. Compliant to Bluetooth 1.1. Not tracking Radio 2.
  - 1.18.2.1.2. 802.15.2 – coexistence recommended practice. Have solicited and received a number of proposals for BT – 802.11b in the 2.4G band. Also looking at 5G band for the future. All proposals of received, and voting on them.
  - 1.18.2.1.3. 802.15.4 – Low rate wireless PAN. There were 9 proposals in May. There will be a downselection this week. There has been some proposal
  - 1.18.2.1.4. 802.15.3 – high rate PAN. There are proposals up to 54Mbps. Working on a draft. Discussions on the MAC. The PHY is completed. Hoping for a letter ballot this week. A new promotion group for 802.15 has been formed. "Wireless Multimedia Alliance". The group details are under an NDA.
  - 1.18.2.1.5. Discussion
    - 1.18.2.1.5.1. The group can be under an NDA because they are not an IEEE group. It is an industry group.
- 1.18.2.2. 802.11 – 802.16 : John Kowalski
  - 1.18.2.2.1. Would like to step down as liaison. Requesting a volunteer.
  - 1.18.2.2.2. TG2 recommended practice has been approved by IEEE Standards board. 2a PAR is out for review this week.
  - 1.18.2.2.3. If we have questions about an 802.16 PAR, how do we provide feedback. We have to provide input by Tuesday by 5PM. There will be a vote Friday.
  - 1.18.2.2.4. TG1 is dealing with basic air interface for 10 to 66GHz bands. Finishing letter ballot. Document 802.16ab is merged document published in June. New PHYs for 2-11GHz. 802.16a is licensed 802.16b is license exempt.
- 1.18.2.3. 802.11 – P1394.1 – Peter Johanssen.
  - 1.18.2.3.1. 1394 PAR is closing this week. Working with them is essential for connecting to wireless.

#### **1.18.3. Announcement**

- 1.18.3.1. Missing pages in the attendance book

### **1.19. Attendance**

- 1.19.1. 250 people in attendance

### **1.20. Agenda for 802.11 / 802.15 joint meeting**

- 1.20.1. Review of agenda for Wednesday Joint meeting
  - 1.20.1.1. Will have review of September Interim

1.20.2. Agenda adopted by unanimous consent.

### **1.21. Review of Submissions**

1.21.1. Review of rules and required templates for document submissions.

1.21.2. Reminder to not open documents on the server

1.21.3. Reminder to use templates.

1.21.4. Last year we had 468 for the year. We have 431 already this year. Please help the job of maintaining these by submitting correctly.

1.21.5. First document submitted to 802.11 must be R0.

### **1.22. Old Business**

#### **1.22.1. Operating Rules**

1.22.1.1. Changes to the rules have been submitted. Only the changes, not the whole rule book. Any changes made at this meeting will be voted at the next meeting.

1.22.1.2. Roberts Rules – now the 10<sup>th</sup> revision.

1.22.1.2.1. Quote in the front cover: The 10<sup>th</sup> edition supercedes any previous editions, and the intent is to automatically become the official rules". The LMSC rules specify the rules should be "the current edition". We want to use the 10<sup>th</sup> edition.

1.22.1.2.2. There is a web site that describes the differences between the 9<sup>th</sup> and 10<sup>th</sup> editions.

1.22.1.3. We have been working from 00/331r1. This is a living document.

1.22.1.4. We plan to review these changes proposed at the last meeting. The changes were presented in document 01/315r0.

1.22.1.5. Revisions to 2.3.9, 2.5.5, 2.7.2, 2.8, 2.9, 3.0.

1.22.1.5.1. 2.3.9 liaisons. We did vote on the liaisons. We gave the WG chair to appoint liaisons and give them voting rights. The 802.11 chair confirms that the other group affirms the liaison first.

1.22.1.5.2. 2.8 WG ballot – change from 30 to 40 day letter ballots in accordance with 802 rules.

1.22.1.5.3. 2.8.2 – Balloting requirements. Must be complete with no open technical issues.

1.22.1.5.4. Discussion –

1.22.1.5.4.1. How do you decide that there are no technical open issues? It is to the best of our ability.

1.22.1.5.4.2. Who is the arbiter of no technical open issues? The TG chair.

1.22.1.5.4.3. If there are TBD's in the text, then it should be disqualified. There have been issues with LBs that have been out.

1.22.1.5.4.4. We have a draft of TGh on the server. If there are changes, can we still go to LB? Yes as long as the documented changes are on the server in time.

1.22.1.5.5. 2.9 – maintenance of operating rules. Allows changes after any regular session. Same advance availability requirements as WG drafts. Removed the requirement for presence a week before Plenary.

1.22.1.5.6. 3.1 Task Group Functions – all business for the TG brought up in the WG shall be referred to the TG without discussion in the WG.

1.22.1.6. Move that the 802.11 working group adopt doc:11-00-331r2 as the changes to the operating rules for 802.11 working group.

1.22.1.6.1. Moved – Al Petrick

1.22.1.6.2. Seconded – Denis Kuwahara

1.22.1.6.3. Discussion

1.22.1.6.3.1. How do you discuss matters of the Task Group in the WG if you need to? How do you move forward? Once an item has been referred to committee, it is not discussed in the full WG until the committee completes its work. There is nothing to prevent discussion of the TG work, only motions.

1.22.1.6.3.2. There might be something missing regarding active TG items? Can we look at this later?

1.22.1.6.3.3.

1.22.1.6.4. Vote on the motion (requires a 2/3 majority)

1.22.1.6.4.1. Motion Passes 104:2:10

**1.23. New Business**

- 1.23.1. Discussion of WG position of 5GSG "TGj" PAR and 5 Criteria.
  - 1.23.1.1. Based on the approval, the PAR and 5 Criteria would be presented to ExCom today, and the formal vote would take place Friday. That process has been moving forward.
  - 1.23.1.2. Meantime, this morning there was other discussion, in ETSI and today. Are the TGj goals what we really want to spend the time on. The straw polls in other sessions indicate that the group wants to redefine the goals of the SG. There is general agreement that the long term objectives of 5GSG are desirable: We should continue the SG and collaborate with ETSI and MMAC. It is no longer apparent that we want to continue TGj.
  - 1.23.1.3. We will discuss this more formally in the first session this evening. Expect to have a recommendation by Wednesday. SG may want to table or rescind the previous decision to present the PAR and 5 Criteria to ExCom this Friday. We assume we would extend the life of the study group, and reconstitute a new proposal (PAR). The action to recall the PAR and 5 Criteria are consistent to discussions with ETSI/BRAN and MMAC.
  - 1.23.1.4. This is a notification of the process of preparing a revised proposal to bring back to the WG plenary group. The SG has to make recommendations to the WG plenary. The WG passes motions to present to ExCom.
  - 1.23.1.5. Discussion
    - 1.23.1.5.1. The procedures say a SG produces a PAR. The rules say the SG expires after one year.
- 1.23.2. Al Petrick takes the Chair
- 1.23.3. 802.3 Ethernet in the first mile PAR and 5 criteria. On the server. We have to make comments back on these PARs.
  - 1.23.3.1. We will review this PAR

**1.24. Announcements**

- 1.24.1. Stuart Kerry takes back the Chair
- 1.24.2. How many will not go to the social to work in TGe? 11 people.
- 1.24.3. Look at the attendance book and check the information. The missing pages will be printed.
- 1.24.4. New participant orientation will take place after this meeting
- 1.24.5. On the web site, all revisions to a document are in the same ZIP files.

**1.25. Recess for subgroups at 3:25PM**



**2. 802.11 802.15 Joint Plenary Session, Wednesday, July 11, 2001****2.1. Opening**

2.1.1. The 13 joint meeting of 802.11 and 802.15 is called to order by the 802.11 Chair, Stuart Kerry, at 1:00PM.

**2.2. Announcements**

2.2.1. Looking for publicity chair for 802.11

2.2.2. Thanks to Winfield Wireless for providing our Internet Access

2.2.3. Do not open documents on the server

**2.3. Agenda**

2.3.1. The chair reviews the agenda

2.3.2. The agenda is approved without objection

**2.4. Matters arising from the minutes**

2.4.1. None

**2.5. Old Business**

2.5.1. Social – busses at 6:30.

**2.6. Interim Meetings**

2.6.1. September 2001.

2.6.1.1. Location under contract. Hyatt Regency Bellevue

2.6.1.2. Thanks to Amer Hassan at Microsoft for helping make arrangements.

2.6.1.3. Venue described in document 01/405, and on the web site.

2.6.1.4. Hosted by Microsoft.

2.6.1.5. Hyatt Regency Bellevue. IEEE 802 Group Code G-IEE1. Rate \$182 per night.

2.6.2. Future meeting locations

2.6.2.1. The tour host in Australia has come back with a proposal for a hotel in Sydney Australia for either January or May 2002. We have not made commitments.

2.6.2.2. Other alternative locations are Dallas and Monterey.

2.6.2.3. Straw Poll – should we pursue an Australia meeting in January or May: 78 Yes, 44 No.

2.6.2.4. Suggestion that September is nicer than May in Sydney.

2.6.2.5. Straw Poll: Of the Australia option, which is the preferred date? 44 January, 15 May, 13 September.

2.6.2.6. Two other volunteers for hosts.

2.6.2.7. Aware hosting in Bay Area (Hyatt Monterey).

2.6.2.8. TI hosting in Dallas (downtown),

2.6.2.9. Straw Poll; Preferred dates for these two locations:

2.6.2.9.1. Monterey Jan 41, May 65, Sept, 22.

2.6.2.9.2. Dallas Jan 18, May 15, Sept 23

**2.7. Financials**

2.7.1. Bank account is \$11,500

**2.8. Task Group Reports**

2.8.1. TGe – John Fakatselis

- 2.8.1.1. Moving on with comment resolution from previous WG letter ballot. Will continue for the rest of the week, and prepare a new draft.
- 2.8.1.2. In the revised TGe agenda, the Thursday schedule has two special order agenda items. Presentation and review of new draft 4:00PM. Vote to send out draft to Letter Ballot at 5:00PM. These are fixed time events
- 2.8.2. TGf – Dave Bagby
  - 2.8.2.1. TGf has completed processing all comments from last letter ballot. Drafting text for a new draft. Will be completed by Thursday. Will have a second letter ballot. Document 388r1 has comment resolutions. There will be motions on Friday for the working group.
  - 2.8.2.2. Letter Ballot 28 has been assigned, pending approval
- 2.8.3. TGg – Matthew Shoemake
  - 2.8.3.1. Agenda has been set. Conducting debate of selection procedure. Presentation of documents on the topic.
  - 2.8.3.2. Questions
    - 2.8.3.2.1. Do you foresee a vote this week? Cannot predict what happens. There is always a potential.
- 2.8.4. TGh – Mika Kasslin
  - 2.8.4.1. TGh has been reviewing the single proposal, and had a confirmation vote. Over 90% support. Starting to prepare a draft based on the proposal. Will have draft on the server. Document 01/482. There will be a vote to send to Letter Ballot.
  - 2.8.4.2. Letter Ballot 29 has been assigned, pending approval
- 2.8.5. TGi – Dave Halasz
  - 2.8.5.1. Trying to reach next letter ballot. Probably not by the end of the week. Looking for ways to expedite progress. Passed a motion to move EAP authentication types out of the scope of TGi. Also working on comment resolution. Working towards another version of the draft. Probably have an interim to review.
- 2.8.6. 5GSG – Bruce Kraemer
  - 2.8.6.1. Initiated a PAR and 5 Criteria. The SG has made a motion to rescind the PAR and 5 Criteria. Also made a motion to continue the Study Group. Need to regroup and come back with future recommendations. Re-organizing the leadership of the group. Looking forward to co-locating with ETSI/BRAN in September.
- 2.8.7. 802.15.1 – Tom Seip
  - 2.8.7.1. The standardization of Bluetooth is coming to closure. Have processed LB11. No changes to the draft since LB10. Will be submitted to go on Sponsor Ballot.
- 2.8.8. 802.15.2 – Steve Shellhammer
  - 2.8.8.1. Have been drafting a letter to BT Sig to develop a unified adaptive hopping specification
- 2.8.9. 802.15.3 – John Barr
  - 2.8.9.1. High rate task group. Preparing a draft to forward to WG. The 2.4GHz phy issues have been resolved. There are a few issues in the MAC. Will be working with 802.11e AV for QoS. First LB to go out in September.
- 2.8.10. 802.15.4 – Bob Heile
  - 2.8.10.1. Goal to establish a baseline MAC and PHY. There were 7 proposals. Down to 2 MAC proposals this meeting. A final merger left one proposal, confirmed unanimously. Started the week with 7 proposal, down to 4 for first vote due to mergers. One was voted out, and there was a tie for two others that were eliminated, and the remaining was

unanimously approved. There may be an alternate PHY for the 868 band in Europe.

#### 2.8.11. Publicity – Al Petrick

- 2.8.11.1. Report in document 01/466r0. There were nominees for new chairs, to be announced on Friday. Went over WLAN/PAN forecast. Discussion of use of IEEE logo for branding. Document 424r0 recap of Helsinki WECA meeting. Letter of concern. Doc 01/484r0 on server.

#### 2.8.12. Radio Regulatory – Vic Hayes

- 2.8.12.1. Midweek Report in document 01/397r0. Objectives to establish RR as permanent group. PARs and Rules have not yet been discussed. Still working on NPRM comments, will present on Friday plenary. Digital Transmission technologies – there are problems with power levels as specified now; identified to FCC. Looking for additional 25MHz in UNII band at 5GHz. Liaison letter from ETSI bran regarding mobile applications in 5150-5350Mhz and 5460-5725 band in concert with WRC2003.

##### 2.8.12.1.1. Questions

- 2.8.12.1.1.1. What are the equal levels in the 5GHz?  
Equalizing the power levels for new digital transmission technologies the same as UNII

#### 2.8.13. 802 Coexistence group – Jim Lansford

- 2.8.13.1. Had the initial meeting of the coexistence SG. Discussing how to organize the activity. Activity at the ExCom level, but this is primarily at the WG level. There needs to be formalized engagement from 11, 15 and 16, to address issues for PAR and Ballot.
- 2.8.13.2. Planning ombudsmen between WG. Possibly a TAG within WGs to coordinate at ExCom level. Will give ExCom levels of coexistence issues.

### 2.9. *New Business*

- 2.9.1. None

### 2.10. *Adjourn at 2:20PM*

### 3. 802.11 Plenary Session, Wednesday, July 11, 2001

#### 3.1. Opening

3.1.1. The session is called to order by Stuart Kerry at 3:30PM.

#### 3.2. Announcements

##### 3.2.1. IP Statements

3.2.1.1. Any New IP Statements?

3.2.1.2. One has been received from Philip Rogaway regarding OCB in 802.11i

3.2.1.3. IP Statements have been received from Broadcom regarding 802.11h.

3.2.1.3.1. There is a broad one regarding 802.11h

3.2.1.3.2. There is a specific one for DFS/TPC referring to 01/217 paper. Giving the usual non-exclusive terms.

##### 3.2.2. Thursday AM Chairs meeting 7:00AM

3.2.2.1. Inviting Butch Anton and Brian Matthews (Publicity)

##### 3.2.3. Attendance Book

3.2.3.1. Keeping honor system this week due to problems with getting book around the rooms.

3.2.3.2. Check contact information

#### 3.3. Agenda

3.3.1. 5GSG and 802.11b-COR1 have motions

3.3.2. Added new business

3.3.2.1. Proposal for Radio Resource Mgmt Group

3.3.3. Any other changes to agenda? None

3.3.4. Modified Agenda is approved without objections

#### 3.4. Reports

3.4.1. 5GSG – Bruce Kraemer

3.4.1.1. Document 01/472r0.

3.4.1.2. Contains additional material not in this presentation.

3.4.1.3. 5GSG was formed in September 2000. Goal of working towards harmonization of 5GHz standards – 802.11a, ETSI, MMAC.

3.4.1.4. Original intent – single global standard.

3.4.1.5. Interim objective – interworking of standards. HCF has been considered as an interworking option.

3.4.1.6. 5GHz Partnership now called 5WING

3.4.1.7. Interworking task group had approved a PAR in March.

3.4.1.8. Along the way, question came up – was the interworking mechanism what was wanted to pursue? Would there be enough support from industry?

3.4.1.9. There was a general reconsideration of the interworking proposal, specifically in BRAN 24. They deferred a decision to the 5GSG here in Portland.

3.4.1.10. The SG recommends the 802.11 WG to rescind the PAR and 5 Criteria for TGj. This was approved in the SG with a vote of 13:0:13. The reason for the ambivalence is the lack of knowing what will take its place. When voting on the extension of the study group, there was a higher level of support, with a vote of 21:2:2.

3.4.1.11. SG will continue with alternating/joint meetings with ETSI/BRAN

3.4.1.12. Motion to extend the 5GSG until the conclusion of the November plenary, with the original goals as previously adopted, allowing a joint discussion with the other standards bodies (ETSI BRAN, MMAC) in the September 2001 meeting of the Joint SG to refine the aforementioned goals.

3.4.1.12.1. Moved Bruce Kraemer (on behalf of 5GSG)

3.4.1.12.2. Vote on the motion: Passes 114:1:7

3.4.1.13. The SG recommends a motion to the 802.11 WG to rescind the approval and forwarding to Exec Com of the PAR and 5 criteria for TGj (doc 01-172 01-173 ). Approved in SG 13:0:13.

3.4.1.13.1. Moved Bruce Kraemer (on behalf of 5GSG)

3.4.1.13.2. Vote on the motion: Passes 107:0:13

### 3.4.2. 802.11b-cor1 – Carl Andren

3.4.2.1. Report in document 01/259r1. Regarding updates to the MIB. We had votes in the 2<sup>nd</sup> recirculation ballot 45 yes votes, 0 no votes. 100% approval. There was an accidental No vote from Johnny Zweig, which was reversed through an exchange by email.

3.4.2.2. Move that draft D1.6 of 802.11b-corrigenum be sent to the SEC for final incorporation into the standard.

3.4.2.2.1. Moved Carl Andren

3.4.2.2.2. Vote on the motion: Passes 111:0:8

#### 3.4.2.3. Discussion

3.4.2.3.1. Given that these are changes to the MIB, will there be a text file on the web site with the corrected MIB, and merge with the original MIB? The IEEE editor was expected to do that. Take off-line.

## 3.5. *New Business*

### 3.5.1. Operating Rules

3.5.1.1. Document on the server 01/331r2.

## 3.6. *Recess*

#### 4. 802.11 Closing Plenary, July 13, 2001

##### 4.1. *Opening*

4.1.1. The session is called to order by Stuart Kerry at 8:00AM.

##### 4.2. *Agenda Review*

4.2.1. Working from agenda r6 as revised

4.2.2. Moving Matthew Sherman's presentation to the top of New Business.

4.2.3. Agenda approved without objections

##### 4.3. *Announcements*

4.3.1. WG Chairs reports and minutes by July 16, 2001

4.3.2. Chairs agenda and objectives to be provided by August 6

4.3.3. Conference Calls 9:00AM Pacific Aug 13, Sept 10

4.3.4. Web site postings of agendas and group updates by August 18

4.3.5. We are looking at a different format for September. Proposal for opening plenary to be the Joint 11/15 session. One hour separate WG plenary on Wednesday.

4.3.6. Chairs have agreed to not have five concurrent meetings in one time slot.

4.3.7. ETSI BRAN sessions will not work in the evenings.

4.3.8. The chair will fill in the specific agendas for the Task Groups during the conference calls

4.3.9. Discussion

4.3.9.1. Would this format also apply to Plenary sessions? Yes, except the opening session would move down to 1:00PM.

4.3.9.2. No objections from the to overall graphic format change

##### 4.4. *IP Statements*

4.4.1. None

##### 4.5. *802.11 WG operating rules*

4.5.1. 01/331/r2 will be posted on the web site.

4.5.2. Some editorial changes have been submitted.

4.5.3. From now until September, suggested changes will be entertained.

##### 4.6. *Attendance book*

4.6.1. Please review book. List to be put on reflector within one week

4.6.2. Discussion

4.6.2.1. It was difficult to tell who lost voting rights, and who was restored by the chairs.

4.6.2.2. The chairs will issue a document with the details.

##### 4.7. *Documentation*

4.7.1. We have 501 documents so far.

4.7.2. We are going to automate the document number issuance when we have a server.

4.7.3. Please do not abuse the system and take a number and not use them. It messes the list up.

#### **4.8. Reports**

##### **4.8.1. TGb-cor1 – Carl Andren**

4.8.1.1. Business is completed. Sending results to RevCom. The forwarding will take place in ExCom

##### **4.8.2. TGe – John Fakatselis**

4.8.2.1. Continued comment resolution progress from the last Letter Ballot. We had a motion to instruct the editor to create a new draft incorporating all the changes.

4.8.2.2. The plan for next meeting is to issue a WG Letter Ballot.

4.8.2.3. There will a teleconference for the AV Study Group on August 28<sup>th</sup>, 10:00AM Pacific Time.

##### **4.8.2.4. Discussion**

4.8.2.4.1. When can we have a list of all comments published?  
The editor indicates that they will be published within 3 weeks.

4.8.2.4.2. Are these the comments with resolutions, or just the comments from the letter ballot? We started resolving comments one by one. In this meeting we addressed comments in groups.

4.8.2.4.3. Is there a full document of all comments received at the close of the letter ballot? Not positive if it is on the reflector? Documents 261-4r2 it is on the server in the pre-meeting area. This is a series of grouped comments documents.

4.8.2.4.4. Could all those comments be combined into one document? An excellent idea.

4.8.2.4.5. The documents do not have complete list of comments.

##### **4.8.3. TGf – Dave Bagby**

4.8.3.1. Minutes in document 345. Attempting to complete comment resolution. Will bring motion for letter ballot. All comments have been processed, created a revised draft reflecting comment resolutions.

4.8.3.2. Document 388 contained proposed resolutions. Worked on security implications.

##### **4.8.3.3. Decisions:**

4.8.3.3.1. Declined to forward roaming

4.8.3.3.2. Declined to do frame buffering

4.8.3.3.3. Worked on simplifying SLP. Document 490r1.

4.8.3.3.4. Passed motions to support 802.1x security, and TGi.  
802.11F will provide context blob.

4.8.3.3.5. Defined one IE where three bytes can be vendor OUI.

4.8.3.3.6. Decided to not be lock stepped with 802.11e or 802.11i.  
Will move forward, supporting existing equipment.

4.8.3.3.7. Adopted a new draft. Need two magic numbers

4.8.3.4. The 802.11 chair will provide a number for the letter ballot

4.8.3.5. Moved to start Letter Ballot 28 to forward to Sponsor Ballot. Motion was approved unanimously in the TG

4.8.3.6. There was some question about a patent, but the TG chair was advised to not go looking for it. The WG chair is directed to look into patent issues in 802.11F.

4.8.3.7. 802.11F requests a MAC change to use the sequence number. This requires a change to the service point of the MAC. This has been made by 802.11i in document 488.

4.8.3.8. Comment resolutions are in document 388r1.

4.8.3.9. Plans to process letter ballot comments from LB28 in September.

#### 4.8.4. TGg – Matthew Shoemake

- 4.8.4.1. Report in document 358.
- 4.8.4.2. Worked on interpreting the selection procedure. Heard presentations of documents 460, 441r1, 415r1, 473r0, 476r1.
- 4.8.4.3. Motions to the body were consolidated into document 500r0.
- 4.8.4.4. Passed the Hayes/Boer/Carney/Zyren motion.
- 4.8.4.5. Presentations of technical presentations 446r1. Another document 477r0 has been submitted.
- 4.8.4.6. There was a motion on the floor when the TG recessed. There may be a motion from an individual member
- 4.8.4.7. The question of a patent by Agere has been brought up. The chair has not received the latest statement from Agere. The statements are on the IEEE web site and linked to our site.
- 4.8.4.8. Discussion
  - 4.8.4.8.1. Until the proposal either drops below 33% or reaches 75%, the task group is held hostage? This motion only effects step 19 of the selection procedure. The selection procedure can be changed by a majority vote. So rounds of voting will continue until either threshold is reached, unless the selection procedure is modified by a majority vote of the TG.
  - 4.8.4.8.2. There is not any procedure for the TG to gain ownership of the proposal until the 75% or 33% thresholds are reached.
  - 4.8.4.8.3. Does TGg need a motion to conduct teleconferences? The WG chair has a rule that teleconferences must be pre-announced.
- 4.8.4.9. Motion to empower teleconferences for all Task Groups
  - 4.8.4.9.1. Out of Order – not in new business.

#### 4.8.5. TGh – Mika Kasslin

- 4.8.5.1. A single proposal – document 411r1 from joint proposer group..
- 4.8.5.2. A confirmation vote was passed 26:2:0.
- 4.8.5.3. Normative text was drafted – document 482r0. Removed references to unfinished work in TGe TGi, etc
- 4.8.5.4. Motion to accept as draft passed unanimously
- 4.8.5.5. 3 motions to be brought forward in old business.
- 4.8.5.6. Teleconferences every second Thursday at 1:00PM Pacific, starting July 26.
- 4.8.5.7. Objectives for September – comment resolution, liaison with ETSI
- 4.8.5.8. Discussion
  - 4.8.5.8.1. When one group makes changes that effects other groups, who are also making changes, how is that coordinated? The WG chair notes that the WG Letter Ballot system should address this. All members should review drafts for this reason.
- 4.8.5.9. The chair notes that the teleconference on July 26<sup>th</sup> is not within the 30 day advance rule.

#### 4.8.6. TGi – Dave Halasz

- 4.8.6.1. The chair moves to Harry Worstell
- 4.8.6.2. Closing report 01/360, minutes 01/348
- 4.8.6.3. Papers were presented on AES/OCB.
- 4.8.6.4. There were clarifications on the TG requirements origination from TGe.
- 4.8.6.5. There was a motion to remove specific EAP authentication types as being out of the scope of this TGi standard.
- 4.8.6.6. The bulk of comments have been resolved. The editor will make those changes into a document.



- 4.8.6.7. An interim meeting will take place on August 28<sup>th</sup> in Akron Ohio. The editor will have an updated document with all adopted changes.
- 4.8.6.8. A paper on interaction with TGf was presented. A motion was passed to follow up with text to review.
- 4.8.7. 5GSG – Bruce Kraemer
  - 4.8.7.1. Report in document 361r0.
  - 4.8.7.2. PAR and 5 Criteria were rescinded.
  - 4.8.7.3. The Study Group was extended until the November 2001 Plenary.
  - 4.8.7.4. Will re-extend requests to MMAC. A number of reports and presentations are detailed in the report.
  - 4.8.7.5. Further consideration of HCF as a coexistence mechanism will be given in subsequent meetings
  - 4.8.7.6. The chair moves to Stuart Kerry
- 4.8.8. The chair presents a motion to be made to the Ex Com meeting to formally rescind the TGj PAR, and extend the Study Group
- 4.8.9. Publicity
  - 4.8.9.1. Candidates for chair – Butch Anton, Brian Mathews, Greg Parks.
  - 4.8.9.2. Are there any other Candidates?
  - 4.8.9.3. IEEE staff supports research for conducting market forecast. Will present update in September
  - 4.8.9.4. Summary report in 424r0. Letter of concern from WECA 48r0.
  - 4.8.9.5. Announcement of teleconference.
  - 4.8.9.6. Objectives for September. Elect chair, continue with other activities.
- 4.8.10. Liaison Reports
  - 4.8.10.1. 802.15.3 – Mary Duval
    - 4.8.10.1.1. Completed PHY comment resolutions
    - 4.8.10.1.2. MAC is not complete. Will be having an interim, August 28-29 in Shaumberg.
  - 4.8.10.2. 802.11 – 802.16 Liaison
    - 4.8.10.2.1. John Kowalski asks for a replacement as Liaison.

#### **4.9. Old Business**

- 4.9.1. TGe – John Fakatselis
  - 4.9.1.1. Move that TGe asks the working group to empower the September Interim meeting of TGe to be able to ask the working group to issue a letter ballot.
    - 4.9.1.1.1. Discussion
      - 4.9.1.1.1.1. The TG chairs ask Is this necessary?
      - 4.9.1.1.1.2. The WG Chair rules that this motion is unnecessary as Task Groups always have the authority to issue a LB under our operating rules.
      - 4.9.1.1.1.3. This was intended to guard against the possibility that a quorum is not present at the September Interim.
    - 4.9.1.1.2. In the operating rules, there is a specific allowance for a lack of quorum. In that case, the work may be re-affirmed by a letter ballot or a next plenary. So a letter ballot is acceptable following a letter ballot.
    - 4.9.1.1.3. Discussion
      - 4.9.1.1.3.1. This is an interesting problem. It seems that it would take 30 days to get approval to send out a letter ballot.

4.9.1.1.3.2. The group wants to get approval to send a letter ballot, not to have a letter ballot to get approval to send out a letter ballot.

4.9.1.1.3.3. The reason we are considering this is because we have already passed a motion to have the WG consider this.

4.9.1.1.4. It is pointed out that the TG chair did not make the motion on advice of the chair.

4.9.1.2. Move that the Working Group empower the September Interim meeting to be able to forward the TGe draft to WG Letter ballot to ask to forward the TGe draft to Sponsor Ballot.

4.9.1.2.1. Moved Duncan Kitchin

4.9.1.2.2. Second Simon Black

4.9.1.2.3. Motion ID 305

4.9.1.2.4. Discussion

4.9.1.2.4.1. Opposed to the motion. Have we not had quorums recently? Yes, the third back we did not. Suggests that passing this would not diligent in attending the meeting.

4.9.1.2.4.2. In favor of the motion. The previous draft was not perfect. This is a precaution against not having a quorum

4.9.1.2.4.3. In favor. It is good to empower the interim. We may not go to letter ballot, but this is good because it lets us have the LB as soon as possible.

4.9.1.2.4.4. Call the question (Stuart / Sunghyun) The question is called with no objection

4.9.1.2.5. Vote on the motion: passes 58:3:12

#### 4.9.1.3. Discussion

4.9.1.3.1. So there is now no quorum requirement to initiate a Letter Ballot? The Chairs position is Yes, that is what the motion states.

4.9.1.3.2. Does a motion have to be passed in September to issue a letter ballot, or is TGe forced to letter a ballot

4.9.1.3.3. The chair clarifies that it is not a forced action, but the TG has the ability to issue a letter ballot.

#### 4.9.2. TGf – Dave Bagby

4.9.2.1. Motion to conduct a working group letter ballot to forward the 802.11F draft 2.0 to Sponsor Ballot.

4.9.2.1.1. Moved Dave Bagby

4.9.2.1.2. Motion ID 306

4.9.2.1.3. Vote on the motion : Passes 70:0:6

#### 4.10. Reports

- 4.10.1. Radio Regulatory Ad Hoc Group– Vic Hayes
  - 4.10.1.1. Document 38r0
  - 4.10.1.2. Objectives to establish 802 group as a charter, PAR, comment on NPRM
  - 4.10.1.3. Drafted rules for an SEC standing committee. Document 01/416. Rules proposed and accepted unanimously.
  - 4.10.1.4. Will bring to SEC.
  - 4.10.1.5. Worked on NPRM comments – adaptive hopping, digital modulation in 2.4 band. Proposed extending UNII by 25MHz.
  - 4.10.1.6. Liaison statement to ETSI/BRAN – doc 01/268r2. The chair is requested to send this to the executive committee.
  - 4.10.1.7. Output documents – submission to IWG5 and US JRG 8A-9B requesting additional mobile allocation spectrum in the lower UNII bands. Request additional industry support in this effort.
  - 4.10.1.8. Straw poll – who would participate in teleconference or go to Washington in August to support this effort? Around 10 people.
  - 4.10.1.9. Passed motion to prepare document 01/469r0 for submission to IWG2 and US JTG 4-7-8-9 and US JRG 8A/9B. Passed in Ad Hoc and in 802.15.
  - 4.10.1.10. Discussion
    - 4.10.1.10.1. The vote tallies seem small – how many are from 802.11?
    - 4.10.1.10.2. The chair of TGg expresses concern over this, as the only PHY active task group. TGg had over 150 people. TGg wanted to meet with Radio Regulatory, but was unable to find time. It seems only three 802.11 members participated in Radio Regulatory.
    - 4.10.1.10.3. Also, given these facts, how do the 150 members of 802.11 have the ability to comment on these issues before the deadline.
    - 4.10.1.10.4. There were three agenda sessions, except for one point Thursday afternoon in TGg.
    - 4.10.1.10.5. There is an NPRM and comment period. Is the NPRM related to TGg's work? The NPRM addresses the work in TGg. The FCC is accommodating what we are doing.
    - 4.10.1.10.6. What is the deadline? It was announced at the May meeting. We had teleconferences. We had announcements on the reflector. Members have had ample opportunity to contribute.
    - 4.10.1.10.7. What was done to officially solicit input from TGg? They could have passed a motion to send something to the RR group.
    - 4.10.1.10.8. There was no time for a joint meeting? What funny was going on in TGg? That is outside the agenda.
    - 4.10.1.10.9. How is TGg going to get input into this document? There was no official input? The RR chair was not more cooperative. The RR chair's position is there was not enough time.
    - 4.10.1.10.10. The members of TGg as well as the involved WG members, have had ample opportunity to provide input.
    - 4.10.1.10.11. The procedure has broken – there is an important issue and 802.11 has not been able to provide input.
    - 4.10.1.10.12. (Break for ½ hour)
    - 4.10.1.10.13. The chair reprimanded Vic Hayes for inappropriate comments, and the comment was not directed to the member on the floor.

- 4.10.1.10.14. How did the recess yesterday take place? The RR chair announced the recess to allow the group to continue work. The RR chair was called away because a motion he made was called out of order.
- 4.10.1.10.15. The group was not formally recessed then? Correct.
- 4.10.1.10.16. As someone who participated in TGg and RR, notes that on Tuesday afternoon met in this building, at that time TGg was in recess. A number of TGg participants were in the RR meeting. Yesterday, there was another meeting of RR when TGg was in recess. These topics were discussed. Would the RR Chair confirm the times of these two RR sessions were not coincidental with TGg sessions? The RR chair confirms that there were three official RR sessions not coincident with TGg. There were TGg members noted in the attendance log.
- 4.10.1.10.17. Has a difference of opinion. The RR chair says there has been ample opportunity. Does not believe it was ample. What should we do moving forward? Would like to have a procedure for everyone to have time to review RR documents, to establish an 802.11 position.
- 4.10.1.10.18. The problem is that agendas have to be set a month in advance. At that time there was no request from TGg for a joint meeting. The WG chair informs the members that there are chairs' teleconferences to set agendas. The WG chair is physically constrained to 30 days advance agenda due to hotel space issues.
- 4.10.1.10.19. Since we have to conduct concurrent sessions, members have to make the choice of what meeting they want to attend.
- 4.10.1.10.20. The WG chair request the speakers to refrain from inflammatory words.
- 4.10.1.10.21. Issues with the operation of RR can be brought to the Executive Committee
- 4.10.1.10.22. A member of TGg and participant in non-overlapping RR sessions. Document 391 has been on the reflector for a week, and subsequent revisions have been published. Was able to read the document in a few minutes.
- 4.10.1.10.23. Thanks the RR chair for doing a good job in difficult circumstances. Request to help alleviate the problems: Teleconferences are announced on the reflector for some TG's – requests that RR also announce the same way. It would be helpful to have reports in the Task Groups also – a two way information exchange.
- 4.10.1.10.24. The chair notes that there will be key times on the agenda for September for RR sessions.
- 4.10.1.10.25. Thanks the RR chair for a commendable job. The issue is how individual members contribute to RR, and also how can Task Groups contribute. In the case of TGg, it is not clear that the RR chair can be faulted. There was a TGg discussion to put RR matters on the agenda. The members objecting here collectively, raised over 35 objectives on the agenda, taking several hours, thus preventing RR items from having time to be discussed in TGg. It does reflect the priority of TGg, so the chair of RR is not accountable for these decisions.
- 4.10.1.10.26. Feels the RR Chair has informed the other bodies adequately.
- 4.10.1.10.27. In document 333r0, teleconferences were announced, and comments were requested for the NPRM. We did get comments, and added more this week. It is not the case that

- there was no opportunity to comment. Anyone who is interested already knows about this.
- 4.10.1.10.28. The chair notes we have a hard stop at 12:00.
  - 4.10.1.10.29. Expresses concern that the same behavior we have seen in TGg is taking place here.
  - 4.10.1.10.30. Call for the orders of the day. This discussion should stop.
  - 4.10.1.10.31. Point of information – there is a procedure in place for how the WG interacts with another committees. How do we make a change? Make a motion in new business.
  - 4.10.1.11. Continuing the report of RR
  - 4.10.1.12. The NPRM comments were amended by 802.15, and approved them to go out.
  - 4.10.1.13. Objectives for next meeting – establish RR group as permanent, work on PAR, prepare position statements as needed.
  - 4.10.1.14. Discussion
    - 4.10.1.14.1. Would like to request to improve communication between RR and 802.11. Would like this added to the objectives.
    - 4.10.1.14.2. Point of order – this is a report. New motions in New business

#### **4.11. Return to Old Business**

##### 4.11.1. TGh – Mika Kasslin

4.11.1.1.	Move to conduct a WG letter ballot to forward document IEEE 802.11/482r0 to Sponsor Ballot
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| 4.11.1.1.1. | Moved Mika Kasslin                |
| 4.11.1.1.2. | Motion ID 308                     |
| 4.11.1.1.3. | Vote on the motion: Passes 62:0:6 |

4.11.1.2.	Move to empower TGh to hold an interim meeting in September, conduct teleconferences, process letter ballot comments, and, consequently revise 802.11-01/482 before the November 2001 IEEE 802 Plenary.
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| 4.11.1.2.1. | Moved Mika Kasslin                |
| 4.11.1.2.2. | Motion ID 309                     |
| 4.11.1.2.3. | Vote on the motion: Passes 56:0:3 |

4.11.1.3.	Move that the WG, if necessary, conduct a second WG letter ballot after the September interim meeting to forward a revised 802.11-01/482 to Sponsor Ballot
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| 4.11.1.3.1. | Moved Mika Kasslin                |
| 4.11.1.3.2. | Motion ID 310                     |
| 4.11.1.3.3. | Vote on the motion: Passes 57:0:2 |

- 4.11.2. TGi – Dave Halasz
  - 4.11.2.1. No Motions
- 4.11.3. 5GSG – Bruce Kraemer
  - 4.11.3.1. No Motions
- 4.11.4. Radio Regulatory – Vic Hayes
  - 4.11.4.1. To empower the Regulatory Ombudsman to make document 11-01/391 r6, as amended. complete and internally consistent for filing at the FCC with this WG as one of the sources.
    - 4.11.4.1.1. Moved Vic Hayes
    - 4.11.4.1.2. Discussion
      - 4.11.4.1.2.1. Is this the same motion as passed in the group?  
Not exactly.
      - 4.11.4.1.2.2. Then the same motion should be made.
      - 4.11.4.1.2.3. To modify the motion, it must be done in new business.
      - 4.11.4.1.2.4. There is an r6 document. Is that what we are voting on? The document is r6, with the amendment to remove a single section. There is no time to produce r7. 2.1.1 has been stricken out.

4.11.4.2. To empower the Regulatory Ombudsman to make document 11-01/468r2 complete and internally consistent for sending to ETSI Project BRAN.
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| 4.11.4.2.1. Moved Vic Hayes |
| 4.11.4.2.2. Motion ID 311   |
| 4.11.4.2.3. Discussion      |

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| <ul style="list-style-type: none"> <li>4.11.4.2.3.1. Point of order: Does this document meet the 4 hour rule? The document was on the server in Documents at 9:30PM last night. Yes it was available.</li> <li>4.11.4.2.3.2. The operating rules say meeting hours. So it had to be on the server at 8:30.</li> <li>4.11.4.2.3.3. It was in To_doc_keeper.</li> <li>4.11.4.2.3.4. What is the time stamp of the document?</li> <li>4.11.4.2.3.5. The chair rules that this motion is external to our committee.</li> <li>4.11.4.2.3.6. What is the time-stamp of the document? The time stamp is 22:07, which is the time of the saving machine. European time?</li> <li>4.11.4.2.3.7. Asking the chair to rule if this document meets the availability rules. It was put on the server at 8:07PM Pacific time. It is ruled in order.</li> <li>4.11.4.2.3.8. Point of information: for future reference – in which rules are the 4 hour rules detailed?. The Chair and Vice Chair will follow up on this.</li> <li>4.11.4.2.3.9. Document 391r6 is being put on the server.</li> </ul> |
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| 4.11.4.2.4. Vote on the motion: Passes 33:3:12 |
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4.11.4.3. To empower the Regulatory Ombudsman to make document 11-01/469 r0 complete and internally consistent for sending to IWG2 and US JTG 4-7-8-9 and US JRG 8A/9B

4.11.4.3.1. Moved Vic Hayes  
 4.11.4.3.2. Motion ID 312  
 4.11.4.3.3. No Discussion  
 4.11.4.3.4. Vote on the motion: Passes 35:1:11

#### 4.11.5. Publicity

4.11.5.1. No Motions

### 4.12. *New Business*

#### 4.12.1. TGf – Dave Bagby

4.12.1.1. Move to empower TGf at the September 2001 interim meeting, independent of quorum at the meeting, to send a revised draft to WG LB for the purpose of asking the WG to forward the revised draft to sponsor ballot.

4.12.1.1.1. Moved Dave Bagby  
 4.12.1.1.2. Second Vic Hayes  
 4.12.1.1.3. Motion ID 313  
 4.12.1.1.4. Discussion

4.12.1.1.4.1. None

4.12.1.1.5. Vote on the motion: Passes 49:0:4

#### 4.12.2. TGg

4.12.2.1. Move to empower TGg at the September 2001 interim meeting, independent of quorum at the meeting, to send a draft to WG LB for the purpose of asking the WG to forward the draft to sponsor ballot.

4.12.2.1.1. Moved Peter Eccelsine  
 4.12.2.1.2. Second John Kowalski  
 4.12.2.1.3. Motion ID 314  
 4.12.2.1.4. Discussion

4.12.2.1.4.1. Why do we have to do this? Why isn't this a part of the rules? Why pass motions to not empower instead? Suggests that a draft could be sent out by a small group. Would support if there was already a draft. Speak against the motion.

4.12.2.1.5. Vote on the motion: Motion passes 27:10:12

## 4.12.3. T Gh

4.12.3.1. no motions

## 4.12.4. 5GSG

4.12.4.1. no motions

## 4.12.5. Radio Regulatory

4.12.5.1. The chair announces that the presentation of document 471r1 has been taking of this agenda, and put on Old Business for the next meeting.

4.12.5.2. Motion to empower the Regulatory Ombudsman to make document 11-01/391 r6, as amended. complete and internally consistent for filing at the FCC with this WG as one of the sources

4.12.5.2.1. Moved Vic Hayes

4.12.5.2.2. Discussion

4.12.5.2.2.1. Point of Order: Is the document that will be sent on the server and available within the four hour rules?

4.12.5.2.3. Motion is out of order due to not being within time limits:

4.12.5.2.4. Point of information – where is the 4 hour rule in the operating rules? The rules say 1 hour, but in the January meeting there was a change to the 4 hour rule.

4.12.5.2.5. This r6 document was put on the server just now, so it doesn't meet the one hour rule in the operating rules.

4.12.5.2.6. Point of information – What is that status of the four hour rule. Thought it was in TGe. Was it in the WG?

4.12.5.3. The chair notes that he has received an IP statement from Sharp on 802.11e, which is on the server

4.12.5.4. Motion to empower the Regulatory Ombudsman to make document 11-01/391 r6, as amended, complete and internally consistent for filing at the FCC with this WG as one of the sources.

4.12.5.4.1. Point of Order – as long as the document is not available, it is out of order.

4.12.5.4.2. The chair rules this out of order

4.12.5.4.3. Appeal – Vic Hayes / Denis K

4.12.5.4.4. The chair moves to Al Petrick

4.12.5.4.5. Discussion

4.12.5.4.5.1. There is time pressure to get a response to the FCC, but feels the rules have precedence. Asks for the chair to be sustained.

4.12.5.4.5.2. Against the appeal – has not had enough time to review the document.

4.12.5.4.5.3. Against the chair – this shows a problem with the regulatory group. We have to get approval from 3 groups. The rules make it impossible to achieve the goal. We should consider the way we bring information in for approval.

4.12.5.4.5.4. For the chair – we should follow the rules regardless.

4.12.5.4.6. Vote on the appeal: The ruling of the chair is sustained  
20:16:10



4.12.5.5. The RR chair realizes it is virtually impossible to do this work. It is not possible to provide document in the time limits. Will reconsider whether to continue the work.

## 5. Adjourn

## *Attendance list for the meeting held at* **Marriott Downtown Portland, Portland, OR**

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**IEEE P802.11  
Wireless LANs**

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**Minutes of 802.11 Task Group E  
MAC Enhancements - QoS**

**Portland Marriott Downtown, Portland, Oregon, USA**

**Date:** July 9 - 13, 2001

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## **1. Monday Afternoon**

### **1.1. Call to order**

**1.1.1. Meeting called to order at 3:45PM by John Fakatselis**

**1.1.2. Secretary Tim Godfrey**

### **1.2. Opening**

#### **1.2.1. Objectives of this session**

1.2.1.1. *Come up with a new draft: a result of accepting changes during our discussion of comments and comment resolutions.*

1.2.1.2. *Forward the new draft to the working group for approval of a new Letter Ballot.*

1.2.1.3. *Requires 75% approval is needed to pass a letter ballot, but actually a higher percentage is needed – in the 90% range.*

#### **1.2.2. New people – about 12**

#### **1.2.3. Review of process**

1.2.3.1. *Roberts Rules – designed to protect the minority.*

1.2.3.2. *Only voting members can vote in these sessions. The chair has the discretion to allow non-voters to participate in debate.*

1.2.3.3. *The chair asks the members to not abuse the motions of point of order or point of information. Overuse can delay progress.*

- 1.2.3.4. *Next steps – if we go for LB we will address comments next time.*
- 1.2.3.5. *Discussion*
  - 1.2.3.5.1. *Concerning the idea of sending a draft to letter ballot. Feels the draft last time was not complete. Even if we complete a draft, there may be insufficient time to review the draft. Would prefer to have an informal time for commenting before Letter Ballot.*
  - 1.2.3.5.2. *Supports the spirit behind the comment. We are preparing a new draft to go out.*
  - 1.2.3.5.3. *Supports following the rules for preparing a letter ballot, with all technical issues resolved.*
  - 1.2.3.5.4. *Would like to have an improved draft. The present draft has a lot of hole we have to patch.*
  - 1.2.3.5.5. *We know that everyone has other jobs, and gets to it when we have a deadline. Everyone wait until the day before the ballot is due.*
  - 1.2.3.5.6. *It is important to get to letter ballot so we can formally collect comments. Otherwise there is no process for collecting comments. If you vote no, all comments have to be addressed.*
  - 1.2.3.5.7. *Whatever draft we have completed at the end of this meeting should be sent out. Not everyone will have time to review the draft this week.*
  - 1.2.3.5.8. *It is not realistic to think a deadline will cause a quality review.*
  - 1.2.3.5.9. *Others may be involved in the review. We might not be able to include them in a short time frame review of perhaps a day.*
- 1.2.3.6. *We will make our best attempt according to this agenda. If we have a 75% majority that think it is ready for ballot, we will send it out. If not, we can postpone the LB on the Thursday session.*

#### **1.2.4. Review of agenda**

- 1.2.4.1. *Call for Papers*
- 1.2.4.2. *What is the plan to update our draft as we resolve comments.*
- 1.2.4.3. *Comment resolution*
  - 1.2.4.3.1. *Starting today*
    - 1.2.4.3.1.1. EDCF
    - 1.2.4.3.1.2. maxMSDULifetime
    - 1.2.4.3.1.3. Autonomous bursting
  - 1.2.4.3.2. *This evening*
    - 1.2.4.3.2.1. EDCF
    - 1.2.4.3.2.2. Persistence factor
    - 1.2.4.3.2.3. CF Multipoll
  - 1.2.4.3.3. *Tuesday AM*
    - 1.2.4.3.3.1. Remote HC

- 1.2.4.3.3.2. Bridge Portals
- 1.2.4.3.4. *Tuesday PM*
  - 1.2.4.3.4.1. Signaling
  - 1.2.4.3.4.2. Overlapping BSS
- 1.2.4.3.5. *Wednesday*
  - 1.2.4.3.5.1. NAV and ACK policy
- 1.2.4.3.6. *Wednesday evening*
  - 1.2.4.3.6.1. AV Study Group
- 1.2.4.3.7. *Thursday AM*
  - 1.2.4.3.7.1. Other Items, Container Frames
  - 1.2.4.3.7.2. Optionality Matrix
- 1.2.4.3.8. *Thursday Afternoon*
  - 1.2.4.3.8.1. Study Group
  - 1.2.4.3.8.2. Old Business
  - 1.2.4.3.8.3. Special Orders Items (at a specific time, regardless of other agenda items)
    - 1.2.4.3.8.3.1. 4:00PM Presentation of New Draft
    - 1.2.4.3.8.3.2. 5:00PM Vote for WG Ballot
- 1.2.4.3.9. *The rest of the agenda is general orders. Not specific times, but following the agenda*

1.2.4.4. <i>Motion to approve the Agenda</i>
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| 1.2.4.4.1. <i>Moved Anil Sanwalka</i> |
| 1.2.4.4.2. <i>Discussion</i>          |

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| <ul style="list-style-type: none"> <li>1.2.4.4.2.1. Wants clarification of what happens if vote to send out for Letter Ballot fails. Will change text to make it clear that the editing of the draft will take</li> <li>1.2.4.4.2.2. Would prefer to move AV SG to 4PM. There is another slot on Thursday. OK – that is adequate. There is also a session on Wednesday evening.</li> <li>1.2.4.4.2.3. After the agenda is approved it will be published as a new document of the TGe agenda.</li> <li>1.2.4.4.2.4. Is there any discussion of AIFS? Specifically, what is the earliest moment to transmit? We add it to the agenda Tuesday morning.</li> <li>1.2.4.4.2.5. What about the PICS and what is required there? That is listed under “other items”.</li> <li>1.2.4.4.2.6. Where is multicast? It is under NAV and ACK policy.</li> <li>1.2.4.4.2.7. Are we going to call for papers before approving this? When will they be presented? They will be distributed by subject.</li> <li>1.2.4.4.2.8. Straw Poll: Now that we have an understanding of the agenda, how many people will come to the session Wednesday evening during the social? 16 will come, 6 definitely not. The rest are “don’t know”.</li> </ul> |
|---|

- 1.2.4.4.2.9. How many people are not going to attend the social? About 5 or 6.
- 1.2.4.4.2.10. Can we make the discussion of the AIFS into the discussion of persistence factor? Yes .
- 1.2.4.4.2.11. Would like a new discussion item for QIBSS. Should be in EDCF before signaling. OK.
- 1.2.4.4.2.12. Where would the HCF access rules fit in? It should be Tuesday AM in EDCF. There will be a presentation on it.
- 1.2.4.4.2.13. We have four major topics. The listing of subtopics is for guidance.
- 1.2.4.4.2.14. Would like to move all things with EDCF and put them together for today, and tomorrow. Move CF Multipoll to the HCF discussion, on Tuesday.

1.2.4.4.3. *Vote on approving the agenda*

1.2.4.4.3.1. Approved 31:0:0

### **1.3. Approval of Minutes from Orlando**

1.3.1. Minutes approved without objection.

### **1.4. Call for Papers and submissions**

#### **1.4.1. Document 338r0 – Peter Johanssen:**

- 1.4.1.1. *Express data for 802.11 QBSS.*
- 1.4.1.2. *Category Other*
- 1.4.1.3. *10 minutes*

#### **1.4.2. 390r0 – Greg Chesson**

- 1.4.2.1. *Multipoll, FEC Persistence factor, bridge portals*
- 1.4.2.2. *10 minutes each*

#### **1.4.3. 408, 409, 410, Mathilde**

- 1.4.3.1. *AIFS 10 min*
- 1.4.3.2. *persistence factor 15 min*
- 1.4.3.3. *Lifetime limits 15 min*

#### **1.4.4. 422 – John K**

- 1.4.4.1. *5GHz support for FEC*

#### **1.4.5. 425 – – Srini**

- 1.4.5.1. *time stamp*

#### **1.4.6. 426 – Srini**

- 1.4.6.1. *Multicast mgmt*

#### **1.4.7. 427 – – Srini**

- 1.4.7.1. *multicast acknowledgement*

#### **1.4.8. 428 – – Srini**

- 1.4.8.1. *sequence at end of CF burst*

**1.4.9. 383 – WIM**

1.4.9.1. *HCF medium access rules*

**1.4.10. 413 – Sunghyun**

1.4.10.1. *Can EDCF support QoS*

**1.4.11. 412 – Sunghyun**

1.4.11.1. *Aligning HCF and HTTC operations*

**1.4.12. 112r1 – Jin Meng**

1.4.12.1. *BSS channel sharing*

**1.4.13. 404 – ?**

1.4.13.1. *AV Timing Limits (for AV study Group)*

**1.4.14. 399 – ?**

1.4.14.1. *AV Study Group*

**1.5. Scheduling of documents**

**1.5.1. We have 16 documents for presentation.**

**1.5.2. Motion – that for the duration of this meeting, a time limit of ten minutes be imposed for speeches, including presentations, in accordance with the default time limit specified in Roberts Rules edition 10, clause 4**

1.5.2.1. *Moved Duncan Kitchin*

1.5.2.2. *Second Greg Chesson*

1.5.2.3. *Discussion*

1.5.2.3.1. *Then there will be no questions during presentations? Yes.*

1.5.2.3.2. *Questions are part of the following debate.*

1.5.2.3.3. *This is just for this session of TGe.*

1.5.2.3.4. *Clarification that this motion applies only to TGe and not to AV Study Group.*

1.5.2.4. *Vote on the motion*

1.5.2.4.1. *Motion passes 24:1:7*

**1.5.3. Call for papers is officially closed.**

**1.6. Plan for putting together the new draft****1.6.1. Draft issues**

1.6.1.1. *The bottleneck is traditionally the editor. We instruct him to include all the adopted changes. It takes weeks to get done.*

1.6.1.2. *We would like to propose we have a group of people to act as editors' delegates. This team will vote in changes, and the team of editors' delegates apply them to the draft during this week. Then we will have the opportunity to review the changes and approve them.*



## 1.6.2. Call for Volunteers to participate in editing

### 1.6.2.1. Discussion

- 1.6.2.1.1. *How do we get from comment resolution to a new draft? We will have votes and approve as we go.*
  - 1.6.2.1.2. *The idea is that we will have a large number of motions as we go along. We want to reduce the workload on the editor.*
  - 1.6.2.1.3. *The editor retains control of the document and approving the changes, and the intent of the motion being executed.*
  - 1.6.2.1.4. *Concern about logistics – have the editorial comments been reflected in a document? What are we starting from? Do we have a pre-draft? No, we start from D1. That will be what we modify.*
  - 1.6.2.1.5. *At some point, we could accept editorial comments in a large group. Or we could clean up editorial comments later to save time.*
  - 1.6.2.1.6. *However there were enough editorial items that it would be helpful to clean them up.*
  - 1.6.2.1.7. *We don't have to address every comment, but it would be sensible to bring a motion to fix some things.*
  - 1.6.2.1.8. *Could we pass a motion to empower the editor to fix editorial comments? That is by default. The editor doesn't need approval for that.*
  - 1.6.2.1.9. *Do we have the time to do it this meeting. If we have enough volunteers we might be able to do the editorial changes also.*
  - 1.6.2.1.10. *As soon as we pass resolution, we assign someone to make the changes as soon as possible, so we can review. Comments can be made informally.*
  - 1.6.2.1.11. *If you want to make a motion to insert normative text, you have to provide the text in advance. To delete text, there is no advance requirement.*
  - 1.6.2.1.12. *Does text refer to editing instructions?*
  - 1.6.2.1.13. *If you want to delete, you have to be very specific as to what text to delete.*
- 1.6.2.2. *We have to meet the 4 hour requirement for motions to add normative text by a motion. If you want to delete normative text, the motion can be made without a the 4 hour rule.*
- ### 1.6.2.3. Discussion
- 1.6.2.3.1. *Thought that the 4 hour rules applied to any changes. No, only to additions.*
  - 1.6.2.3.2. *The purpose of comment resolution is to select alternative proposed normative texts.*
  - 1.6.2.3.3. *The rule we adopted is specific. It is related to motions to modify normative text. We have a motion at the end to adopt the resolutions. Once the comment resolution session is over we need 4 hours to consider the motion.*

- 1.6.2.3.4. *If we don't have a motion how do resolve? A comment resolution session doesn't do that. The vote at the end does.*
- 1.6.2.3.5. *Suppose someone on the last day wants to change some normative text in the motion? Does that mean that the entire process is for naught due to the 4 hour rule? In the last session, the intent of the 4 hour rule will be met, and the chair will allow a motion to amend. If there is a challenge, we will vote on it.*
- 1.6.2.3.6. *Therefore we will be able to modify normative text in the last meeting? Yes, we follow the 4 hour rule so there is adequate understanding of the text in question.*
- 1.6.2.3.7. *Suggest that there should be formal approval times of resolutions so people can be present. We have done the best we can with the agenda. Since we are resolving by motions, we can only give a general guideline.*
- 1.6.2.3.8. *We will ask the group to decide:*
- 1.6.2.4. *Is there any objection to allow deletion of normative text without the four hour advance?*
- 1.6.2.4.1. *No objection – so that is how we will operate.*

### 1.6.3. Delegate editors

- 1.6.3.1. *There is no specific time requirement.*
- 1.6.3.1.1. *Duncan Kitchin*
- 1.6.3.1.2. *Greg Chesson*
- 1.6.3.1.3. *Greg Parks*
- 1.6.3.1.4. *Sri Kandala*
- 1.6.3.1.5. *John Kowalski*
- 1.6.3.1.6. *Sid Schrum*
- 1.6.3.1.7. *Tim Godfrey*
- 1.6.3.1.8. *Matthew Sherman*
- 1.6.3.1.9. *Sunghyun Choi*
- 1.6.3.2. *Will work with Michael Fischer*

## 1.7. Comment Resolution

### 1.7.1. Autonomous Bursting

- 1.7.1.1. *At the conference call, nobody wanted to retain it. Unless a champion comes forward, we should get rid of it.*

1.7.1.2. <i>Motion – to instruct the editor to remove autonomous bursting from the draft.</i>
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| 1.7.1.2.1. <i>Moved Greg Chesson</i> |
| 1.7.1.2.2. <i>Second Greg Parks</i>  |
| 1.7.1.2.3. <i>Discussion</i>         |

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| 1.7.1.2.3.1. <i>No one speak against the motion.</i>    |
| 1.7.1.2.3.2. <i>Has anyone commented on this topic?</i> |

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| 1.7.1.2.4. <i>Any objection to accept by unanimous consent?</i><br><i>None</i> |
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1.7.1.2.5. <i>Motion passes unanimously.</i>
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## 1.7.2. MaxMSDULifetime

- 1.7.2.1. *There may be comments at 6:30PM.*
- 1.7.2.2. *The problem with MaxMSDULifetime is that it is too broad to apply to the EDCF. You might drop packets you don't want to. In favor of removing MaxMSDULifetime.*
- 1.7.2.3. *In favor of keeping MaxMSDULifetime. The issue of multiple classes in a single queue is not the issue. This is needed to set it up for the absolute maximum worst case, where there would be a benefit.*
- 1.7.2.4. *The reason this was proposed, was to cause packets taking a long time getting to the channel to be dropped. The problem is the lifetime is imprecise as to what particular queue it applies to. It would require a per-packet per-descriptor descriptor to be tracked. Too implementation dependent. HCF can accomplish this anyway. This mechanism is misplaced.*
- 1.7.2.5. *This could cause interoperability problems. It has been proposed as a mechanism to reduce contention – the DCF access mechanism already does this.*
- 1.7.2.6. *It is not clear how dropping of the packet effects efficiency.*
- 1.7.2.7. *There may be a presentation on that subject. Adding another mechanism to reduce contention is not that complex.*
- 1.7.2.8. *What is the intention of this? The combination of this with Persistence factor makes sense. The persistence factor less than two combines with the MaxMsduLifetime.*
- 1.7.2.9. *In support of removing it. There are alternative mechanisms to do this.*
- 1.7.2.10. *We do have retry counts. If you want to associate time, the mechanism is CWmax. We will show that if you bound CWmax it keeps retransmission time bounded. The other objective is to reduce backoff related jitter. One way to keep this from happening is to reduce the backoff rate – better than persistence factor. Easier to implement. Persistence factor and MaxMsduLifetime should not be linked.*

## 1.8. Recess

# 2. TGe Monday Evening

## 2.1. Call to order at 6:40PM

## 2.2. Comment Resolution

### 2.2.1. MaxMSDULifetime, continued

2.2.1.1. *We may end up mapping more than one type of traffic to a particular traffic class. This is a MIB parameters. The second issue is there is no evidence that efficiency is gained by MaxMsdulifetime*

2.2.1.2. *Presentation of Document 410r0 : Packet Lifetime Limits in EDCF – Mathilde Benenviste.*

#### 2.2.1.2.1. Overview

2.2.1.2.1.1. Showing simulation results – Without restriction on lifetime, there is a greater percentage of obsolete packets.

2.2.1.2.1.2. Fewer retransmissions because lifetime limit clears the channel in a timely manner.

2.2.1.2.1.3. Increase of delay and delay jitter without lifetime limit.

#### 2.2.1.2.2. Discussion on the presentation

2.2.1.2.2.1. In the graphs on the left, without restriction, do you include the data points for greater than the MSDUlifetime? You could be throwing out points that cause the higher average? The left graph shows the number of packets thrown out.

2.2.1.2.2.2. The lower delay on the left graph is because you have thrown out the higher points. Yes – that is actually how it would really perform. That's why they are dropped.

2.2.1.2.2.3. How are the lifetimes set up? We discussed the AP deciding the values? If the AP is involved, it is the same as deciding the CWmin, AIFS, and lifetime. There is a mapping between classifications and queues. We use a conservative mapping, and still get the benefit.

2.2.1.2.2.4. But if the AP adds a lifetime, it should be by negotiation. How does the AP know if the traffic is more important to be on time, or get there at all. It should be set up per connection. Yes – that is valid. But trying to show that even a loose application is beneficial.

2.2.1.2.2.5. Recommends an explicit negotiation exchange. We should define the signaling to do it.

2.2.1.2.2.6. Clarification that with no restriction, even more packets are lost. The large jitter spikes without lifetime cause a greater loss rate.

- 2.2.1.2.2.7. This is trying to show how to do hard QoS with EDCF. Doesn't believe EDCF can support quantitative QoS, or real time applications. This simulation may not be reasonable. How does lifetime add value?
- 2.2.1.2.2.8. Believes the value of lifetime has been shown.
- 2.2.1.2.2.9. MSDUlifetime is a useful concept. The problem is where should it be specified and implemented. The AP doesn't have business specifying this. It can't get it right. It needs to be done on a per stream basis – so it is a station issue. The station knows what lifetime is reasonable. The AP knows nothing about the application. Some API will exist to signal this information in the station.
- 2.2.1.2.2.10. If there are traffic spec available for EDCF, the AP would have access. If there are no traffic specs at all, then lifetime still has value to relieve congestion.
- 2.2.1.2.2.11. To conclude – yes the AP would know what applications map to which queues. You can't have the stations specifying MSDUlifetimes. All stations need the same lifetime for this to work.

2.2.1.3. *Motion – to instruct the editor to remove maxMSDUlifetime from the draft.*

- 2.2.1.3.1. *Moved Greg Chesson*
- 2.2.1.3.2. *Second Greg Parks*
- 2.2.1.3.3. *Discussion*

- 2.2.1.3.3.1. If you look at the support basis, it is possible that each mechanism doesn't have 75% support. When we included the EDCF mechanism, we had to add other mechanisms to get to 75%. They were lifetime and persistence factor. We need the support of EDCF and TCMA groups to get the 75%. We might end up not being able to send out the draft at the end of the week.
- 2.2.1.3.3.2. Would be willing to draft a stronger maxMSDUlifetime to replace this. The concept is good, but the aspect of the AP setting it is the problem. Would like to provide a way to do it right.
- 2.2.1.3.3.3. But that solution is more complex – the way it is now provides a minimal safeguard. Do we want something more complex.
- 2.2.1.3.3.4. An application is already restricted in the parameters that are available when using EDCF. They are not optimized. The HCF should be used for real parameterized QoS.
- 2.2.1.3.3.5. That is correct – so the choice would be loose settings for maxMSDUlifetime. That is no better than setting CWmax. It has the same effect

of a loose upper bound. So maxMSDUlifetime is redundant, and dangerous if mis-set.

2.2.1.3.3.6. The AP cannot decide the lifetime value.

2.2.1.3.3.7. Lifetime per class is the correct way to do this. The AP does not have the information needed to decide.

2.2.1.3.3.8. The method of CWmax as the upper bound – it is a good way if you don't know the bounds. Lets not consider it until we have seen the simulation results.

2.2.1.3.4. *Vote on the motion*

2.2.1.3.4.1. Motion passes 24 : 5 : 2

## 2.2.2. Persistence Factors

### 2.2.2.1. *Presentation of Document 390r0 – Greg Chesson*

2.2.2.1.1. *Segment of presentation on Persistence factor.*

2.2.2.1.2. *The latency builds up, because of retransmissions, when packet error rate is added to the simulation model.*

2.2.2.1.3. *People want to run at greater distances, where the PER is higher. There is a lot of backoff related jitter.*

2.2.2.1.4. *There are two mechanisms to resolve this. One is persistence factor – back off at a slower rate than binary exponential. Problems in implementation calculating distributions over non-power of two.*

2.2.2.1.5. *Case where CWmax is bounded to CWmin of the next class. Shows improvements in performance.*

2.2.2.1.6. *Proposal is to remove persistence factor – it is redundant. Should promote from the MIB to CW parameter set.*

### 2.2.2.2. *Discussion*

2.2.2.2.1. *How does changing the window help the latency and jitter so much. How much of the channel capacity was being used? The same capacity in each case. About the same amount as if we were using FEC.*

2.2.2.2.2. *Does normative exist to support this proposal? Is it needed? We don't need normative text for part one. For Part 2, it could be available tomorrow.*

2.2.2.2.3. *Multiple CWmax values are in the MIB – optional.*

### 2.2.2.3. *Presentation of Document 409r0 : Persistence Factors – Mathilde Benenviste*

2.2.2.3.1. *CWmax is not in the draft. There is no information on how to use it in the draft. You don't get to the channel faster with CWmax.*

2.2.2.3.2. *You don't want to double the window if there is a collision. You want to come down a little bit, a value less than two. For traffic classes that are sensitive to delay jitter.*

2.2.2.3.3. *Shows simulations of worse jitter and delay without persistence factor.*

2.2.2.3.4. *Conclusions – persistence factors reduce delay and jitter. Simple to implement*

2.2.2.4. *Discussion*

2.2.2.4.1. *What about the complexity of generating random numbers that are not powers of two as required by persistence factor? There are simple methods if you select resolutions. The text shows you can approximate to a convenient value.*

2.2.2.4.2. *If you chose the persistence factor as 2, it would be in fact the same as legacy. Thus isn't persistence factor optional in that sense? But implementing it there would be an advantage.*

2.2.2.4.3. *Could we have a general form for computing PF? How did you compute the value of 1.5? Yes, you could do better by optimizing the PF. That is the point of this – it works well without optimizing.*

2.2.2.5. *Motion – to draft normative text to move the aCWMax[TC] from the MIB to the EDCF information element.*

2.2.2.5.1. *Moved Greg Chesson*

2.2.2.5.2. *Seconded Steve Williams*

2.2.2.6. *Discussion*

2.2.2.6.1. *Point of order – we need to have text available 4 hours in advance*

2.2.2.6.2. *Procedural vote on the motion being in order.*

2.2.2.6.2.1. *Vote is 7:10:17. The motion is ruled to be in order.*

2.2.2.6.3. *The chair notes that this motion only instructs someone to draft text. We will still vote to adopt the resulting text into the draft.*

2.2.2.7. *Motion to amend – change the word “move” to add:*

2.2.2.8. *Proposed amendment: Motion – to draft normative text to add the aCWMax[TC] from the MIB to the EDCF information element.*

2.2.2.8.1. *Motion to amend is accepted by unanimous consent.*

2.2.2.9. *Motion on the floor – to draft normative text to add the aCWMax[TC] from the MIB to the EDCF information element.*

2.2.2.10. *Discussion*

2.2.2.10.1. *Against the motion – it seems to be a way to get around the persistence factor, which may not be needed anyway. It seems to be optional since I can build a conformant station that doesn't use it.*

2.2.2.10.2. *Why is a motion needed to draft normative text? It isn't but the motion has been made.*

2.2.2.10.3. *Believes that a station would have to implement persistence factors other than 2. For the motion.*

- 2.2.2.10.4. *Persistence factors do the job without the overhead this motion requires. Against the motion.*
- 2.2.2.10.5. *What does this motion mean? Any text drafted as a result of this motion passing still needs a 75% vote to be adopted into the draft. Even if this fails, someone could draft the text.*

2.2.2.11. *Move to amend: to instruct the editor to insert into the draft*

- 2.2.2.11.1. *Moved Adrian Stephens*
- 2.2.2.11.2. *Second John Kowalski*
- 2.2.2.11.3. *Discussion*

2.2.2.11.3.1. *Point of order – this would violate the 4 hour rule*

2.2.2.11.4. *The chair rules the motion to amend is out of order*

- 2.2.2.12. *The question is called, without objection*
- 2.2.2.13. *Vote on the motion (procedural – it has no effect on normative text): Passes 11:7:17*

### Five Minute Recess

2.2.2.14. *Move to instruct the editor to make the persistence factors optional in the draft.*

- 2.2.2.14.1. *Moved John Kowalski*
- 2.2.2.14.2. *Second Greg Chesson*
- 2.2.2.14.3. *Point of order – Sid Schrum. You can't just make it optional without drafting text. What are the secondary effects? The spirit of the rule is we get to see the overall effect. Asks to rule this out of order.*
- 2.2.2.14.4. *The chair will the body to vote on whether this motion is in order.*
- 2.2.2.14.5. *Discussion*

- 2.2.2.14.5.1. *Against ruling this out of order. Otherwise the only thing we can discuss is removing text.*
- 2.2.2.14.5.2. *Do we really need normative text to understand this, or is it an editorial change?*
- 2.2.2.14.5.3. *Agrees with the intent of the motion, but leaves questions open to interpretation. Can an AP send out these values? Perhaps some additional clarification would help?*

2.2.2.14.6. *Call the question on the point of order, without objection*

2.2.2.14.7. *Vote on the point of order (procedural): Passes 15:3:17. The motion is out of order.*

2.2.2.15. *Straw Poll: Should we remove persistence factors from the draft standard?*

2.2.2.15.1. *18 for: 7 against: 9 abstain*



- 2.2.2.16. *Parliamentary enquiry – how could we make the persistence factor optional in such a way that the AP could signal it?*
- 2.2.2.16.1. *You either need to draft text, or do it with deletions only. If you are making normative changes, it will be ruled out of order without 4 hours in advance.*
- 2.2.2.16.2. *We will leave time for motions that were deferred due to the 4 hour rule.*

### 2.2.3. AIFS and default CWmin

- 2.2.3.1. *Opening Discussion*
- 2.2.3.1.1. *There have been questions about priority access between AIFS and HCF. The issue is there could be instances where an EDCF station could access the medium using PIFS and SIFS. That is a problem.*
- 2.2.3.1.2. *The corrected EDCF has the highest priority traffic accessing the medium at DIFS.*
- 2.2.3.2. *Presentation Document 408r0 – Use of the AIFS in EDCF – Mathilde Benenviste*
- 2.2.3.2.1. *There has been confusion of the timing of AIFS. This presentation shows how to modify the draft to resolve this confusion.*
- 2.2.3.2.2. *AIFS is deferral time for backoff count. It is the same as UAT in TCMA presentation. It is the amount of idle time needed before the countdown starts. The default value is DIFS, the same as legacy.*
- 2.2.3.2.3. *Priority above legacy: AIFS=PIFS. You have to make sure backoff has to be 1 or greater to prevent conflict with HC.*
- 2.2.3.2.4. *Recommends changes to the wording of backoff procedure.*
- 2.2.3.3. *Discussion on presentation*
- 2.2.3.3.1. *The purpose of the AIFS is to achieve priority access. When AIFS=PIFS. The priority station would have to see idle time of DIFS + a random number. This makes the backoff time the same as a legacy station. The HCF conflict is avoided, but priority access is defeated.*
- 2.2.3.3.2. *The basic procedure of EDCF is prioritizing the backoff counter. The random backoff is drawn between 1 and some CW value. Whatever it is, it enables the priority station to count down first.*
- 2.2.3.3.3. *In favor of AIFS if we have an EDCF.*
- 2.2.3.3.4. *Could you quantify the difference between the EDCF station and the legacy station when they run at DIFS? Based on the current draft? There is one slot time difference. No in 9.2.5.2 the legacy stations sample in the end of the time slot. New stations sample at the start of the slot. That accounts for the apparent difference of one.*

2.2.3.4. <i>Motion to instruct the editor to modify the draft by adopting the changes detailed in 01/408r0.</i>
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2.2.3.4.1. <i>Moved Matt Sherman</i>
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2.2.3.4.2. *Second Mathilde B*

2.2.3.4.3. *Discussion*

- 2.2.3.4.3.1. Against the motion. It will not generate a random backoff.
- 2.2.3.4.3.2. In the TCMA text that was addressed. This does not address that part of the text.
- 2.2.3.4.3.3. This change is different, another motion can fix it.
- 2.2.3.4.3.4. Against the motion. The text as it stands in the draft is similar to what is proposed here in behavior. A presentation can be made to show that there is not a conflict.
- 2.2.3.4.3.5. Against the motion. There is no real difference between the two DIFs levels. CWmin is large in comparison. You can't measure whether you have a STA or ESTA. Existing stations count down DIFS+1.
- 2.2.3.4.3.6. In favor of the motion. What we are doing is introducing a different rule for interpreting AIFS. That adds to the complexity.
- 2.2.3.4.3.7. Against the motion. We don't need it because it is rewording the draft to do the same thing it already does. There is a slight theoretical difference between an ESTA and a STA.
- 2.2.3.4.3.8. If that is true, this is an editorial change. No, it is a technical change that has no effect. Believes we should state things the same way as the 1999 standard. In favor of the motion.

2.2.3.4.4. *Moves to table the motion*

- 2.2.3.4.4.1. Moved Aman S
- 2.2.3.4.4.2. Second John K
- 2.2.3.4.4.3. Non Debatable
- 2.2.3.4.4.4. Vote in motion to table: Fails 5:23:7

2.2.3.4.5. *Call the question on the main motion – with no objection.*

2.2.3.4.6. *Vote on the main motion: fails 4:22:13*

## 2.2.4. Announcement

- 2.2.4.1. *Document 433r1 is on the server with a motion.*
- 2.2.4.2. *The new agenda has been delivered to the server. Document 335r5 – our approved agenda is there*
- 2.2.4.3. *We will continue EDCF tomorrow.*

### 2.3. Recess at 9:30PM

## 3. Tuesday Morning

### 3.1. Call to Order

3.1.1. The session was called to order at 8:05AM

3.1.2. We will continue on the agenda and process adopted yesterday

### 3.2. Announcements

3.2.1. The agenda has been distributed as document 01/335r5

3.2.2. We would like to use the editing team to generate an update of the draft today.

### 3.3. Comment Resolution

#### 3.3.1. Bridge Portals

3.3.1.1. *Presentation of Document 390r0; Greg Chesson*

3.3.1.1.1. *“Bridge Portals”*

3.3.1.1.2. *Useful concept, but not fully developed in the draft.*

3.3.1.1.3. *Need protocol stacks, discovery protocol, and management protocols.*

3.3.1.1.4. *CableLabs’ CableHome QoS spec provides samples of how to use RSVP as a signaling mechanism.*

3.3.1.1.5. *There are existing protocols for discovery, such as UPnP, so is there a need to define this in 802.11e. Suggests no.*

3.3.1.1.6. *We do need to make sure that 802.11e works with existing discovery protocols – what would it take?*

3.3.1.1.7. *We have to change the rules that a station can associate with only one AP. We could allow associating with an AP and a bridge portal at the same time.*

3.3.1.1.8. *One way is to give a device multiple MAC addresses, to allow associations with multiple devices. Multi-home at the MAC layer.*

3.3.1.2. *Discussion on presentation*

3.3.1.2.1. *For AV connectivity, wireless discovery is necessary to support a side-stream. How do you manage QoS if you are simultaneously communicating with a AP and an IBSS? There should still be only one bandwidth manager.*

3.3.1.2.2. *Is the proposed simple solution with multiple MAC addresses scalable? It is to the extent that is needed for AV applications. You probably don’t need 14 bridge portals. 3 addresses would probably support 99% of applications.*

3.3.1.2.3. *Suggests that we not create a non-scalable architecture.*

3.3.1.2.4. *This is a feasible approach, but is it the intention to generate locally administered local MAC addresses? How is membership in BSS and IBSS relevant to the BP issue? There is no association to IBSS anyway. Yes, customers want to allow operation in BSS and IBSS. BP could be used to get to the IBSS. Regarding MAC addresses, had imagined it would be assigned by the manufacturer.*

3.3.1.2.5. *If the group decided to go with this approach, we would need to advertise what MAC addresses a station had.*

3.3.1.3. *Motion to instruct the editor to remove all mention of bridge portals from the draft.*

3.3.1.3.1. *Moved Adrian Stephens*

3.3.1.3.2. *Second Anil Sanwalka*

3.3.1.3.3. *Discussion*

3.3.1.3.3.1. *The problem with the motion is that to make a mechanism work, you still need one piece of discover information. There is a bit of capability information called bridge portal. If we adopt this we lose the needed hook at layer 2.*

3.3.1.3.4. *Amendment: Add "other than the capability bit that is currently allocated to indicate Bridge Portal functionality.*

3.3.1.3.4.1. *Moved Michael Fischer*

3.3.1.3.4.2. *Second Matt Sherman*

3.3.1.3.5. *Discussion on the amendment*

3.3.1.3.5.1. *We don't need this. If there are other devices that can act as bridges. You can use higher level protocols to find these devices. This would use the same discovery protocol as an IP router.*

3.3.1.3.5.2. *The AP function is a coordinator function and a distribution services function. There is little difference between DS between a BP or AP. This motion does not speak to separability of coordination and distribution.*

3.3.1.3.5.3. *Against the motion as it is describing incomplete information. There is no management service interface to control this bit. It requires additional text.*

3.3.1.3.5.4. *The question of completing other mechanism is independent of the capability bit. There are problems with using directed probes for discovery, since they contain BSSID.*

3.3.1.3.5.5. *Call the question without objection*

3.3.1.3.6. *Vote on the amendment (procedural): Passes  
23:13:7*

3.3.1.4. *Motion as amended: To instruct the editor to remove all mention of bridge portals from the draft other than the capability bit that is currently allocated to indicate Bridge Portal functionality*

3.3.1.5.	<i>Call the question.</i>
3.3.1.5.1.	<i>Vote on calling the question: passes 33:1:6</i>
3.3.1.6.	<i>Vote on the motion (technical): Motion fails 21:9:11</i>
3.3.1.7.	<i>Straw Poll: Who would vote for the motion as originally stated?</i>
3.3.1.7.1.	<i>Vote on straw poll: 26:9:6</i>
3.3.1.8.	<i>Motion to reconsider the motion: "To instruct the editor to remove all mention of bridge portals from the draft other than the capability bit that is currently allocated to indicate Bridge Portal functionality"</i>
3.3.1.8.1.	<i>John K</i>
3.3.1.8.2.	<i>Anil</i>
3.3.1.8.3.	<i>Call the question Anil / Greg</i>
3.3.1.8.3.1.	<i>Vote on call the question: passes 30:3:6</i>
3.3.1.8.4.	<i>Vote on the motion to reconsider: Fails 14:19:5</i>

### 3.3.2. HCF and HCF Access Rules

- 3.3.2.1. *Presentation of document 383r0: Wim Diepstraten.*
- 3.3.2.1.1. *The current rules allow infinitely extended CFB, with no opportunity for ECDF.*
- 3.3.2.1.2. *The HCF should allow for EDCF contention within the CP. The CFduration should be limited.*
- 3.3.2.1.3. *HC should be given additional priority.*
- 3.3.2.1.4. *Proposes normative text changes to do this.*
- 3.3.2.2. *Discussion*
- 3.3.2.2.1. *Given that the CP is needed to associate in the first place, doesn't this try to cure a problem that doesn't exist? There must be some time for the CP otherwise no stations could associate? We have the CC/RR mechanism for association, but there should be more time for EDCF*
- 3.3.2.2.2. *Is there an intent to consider polling frames as traffic? It would be bad if a poll could not have high priority.*
- 3.3.2.2.3. *There should be some number of strict priority flows in the system where the HC could always access the channel. How does that fit into this? Would consider the HC the highest priority, but within the EDCF scheme. The real question is for strict priority flows, the HC should not have to use the same access parameters.*
- 3.3.2.3. *Presentation of document 412r0:: Sunghyun Choi*
- 3.3.2.3.1. *Proposal for improving Transmit Power Control (per TGh) under HCF.*
- 3.3.2.3.2. *TGh document 01/169r2 baseline.*
- 3.3.2.3.3. *TPC may not be efficient under rules of HCF. HC needs to hear certain frames. So ESTA to ESTA traffic must use higher power.*

- 3.3.2.3.4. *TxOp holder shall transmit first frame at high enough power for HC and destination to hear it.*
- 3.3.2.3.5. *For subsequent frames, only enough power for the destination ESTA is needed, unless it is updating TC or queue size.*
- 3.3.2.3.6. *The last frame is at a power high enough for destination ESTA and HC to hear.*
- 3.3.2.3.7. *Need to change the draft to change the times when the HC can reclaim the channel.*
- 3.3.2.4. *Discussion on presentation*
  - 3.3.2.4.1. *Shouldn't legacy also be allowed as the final in a TxOp? If the final transmission is a management frames? But legacy cannot receive side stream traffic.*
  - 3.3.2.4.2. *How does the transmitting station know it is using adequate power to be heard by both? That is the discussion in TGh. It will be in each frame, in the service field.*
- 3.3.2.5. *Presentation of document 434r0: Lim We Leh.*
  - 3.3.2.5.1. *TxOp Improvement scheme*
- 3.3.2.6. *Discussion*
  - 3.3.2.6.1. *What is proposed? During at TxOp, the stations can release the TxOp by not transmitting.*
  - 3.3.2.6.2. *Isn't that a duplicate manner since it is also indicated by NF=0?*
  - 3.3.2.6.3. *How does this work in the context of 802.11h? This appears to be incompatible with the previous presentation, and may be incompatible with TGh. Have not had a look at TGh.*
- 3.3.2.7. *Presentation of document 128r1: Jin Meng Ho*
  - 3.3.2.7.1. *HCF access rules.*
  - 3.3.2.7.2. *Proposing requiring the HC to backoff before starting an CF burst. Small contention window to prevent inter BSS HC collisions.*
  - 3.3.2.7.3. *Proposing limiting CF burst to medium occupancy limit.*
  - 3.3.2.7.4.
- 3.3.2.8. *Discussion*
  - 3.3.2.8.1. *How does the CWmin of 3 prevent collisions between BSSs? Suppose we opened up the window? Wouldn't enable ESTAs to get in? Yes a larger window would allow ESTAs to take the medium.*
  - 3.3.2.8.2. *Why do we need yet another EDCF mechanism? Why not just use the existing EDCF mechanism's highest priority? Since there are many contending stations, a small window is needed for the HC to insure access.*
  - 3.3.2.8.3. *Given the number channels in bands varies, shouldn't the CWmin be defined in terms the RF band of operation? The HC uses 4 values between 0-3. That is enough we don't need any more.*

- 3.3.2.9. *Presentation of document 01/117: Mathilde Benenviste*
- 3.3.2.9.1. *HCF Access through Tiered Contention*
- 3.3.2.9.2. *EDCF can be used by the HC, the HC has the highest priority. This is needed for inter BSS interference.*
- 3.3.2.9.3. *If there is a very short backoff range, there will be collisions. But longer backoff ranges allow ESTAs getting access.*
- 3.3.2.9.4. *Proposing using deterministic backoff. Allows no idle gaps and no collisions.*
- 3.3.2.9.5. *Assign tags to BSSs. Each BSS must have a unique tag. Backoff is determined by tag value.*
- 3.3.2.9.6. *Proposes cellular re-use of tags. Or dynamic use of tags.*

### Recess

### Resume at 10:30AM

- 3.3.2.10. *Discussion on presentation*
- 3.3.2.10.1. *How can you avoid collisions among HCs? The HCs gain access according to their tag values.*
- 3.3.2.11. *Motion – to instruct the editor to modify the draft by adopting the changes to the normative text detailed in 01/383r1.*
- 3.3.2.11.1. *Moved Wim Diepstraten*
- 3.3.2.12. *Motion deferred until tomorrow because of the four hour rule.*

### 3.3.3. Remote HC

- 3.3.3.1. *No Presentations*
- 3.3.3.2. *What do we mean by this? There is a reference to a remote hybrid coordinator in the draft*

3.3.3.3. *Motion to instruct the editor to delete all instances of and references to the remote hybrid coordinator and proxy beacons from the draft*

- 3.3.3.3.1. *Moved Srimi K*
- 3.3.3.3.2. *Seconded John K*

- 3.3.3.4. *No discussion*
- 3.3.3.5. *Vote: Motion adopted by unanimous consent*

### 3.3.4. QIBSS

- 3.3.4.1. *No Presentations or Submissions*
- 3.3.4.2. *Discussion*
- 3.3.4.2.1. *We want to support this*
- 3.3.4.2.2. *We need to have someone draft some text to clean this up.*
- 3.3.4.2.3. *Does the current draft permit QoS in an IBSS? No, we do not allow QoS in an IBSS. There have been*

discussions of how to accomplish this. Currently, the QoS Facility is not available in an IBSS.

3.3.4.2.4. Would deleting the statement fix the problem? It would create new ambiguities, since information is conveyed in a beacon.

3.3.4.2.5. We need to draft something to fix this and propose it.

3.3.4.2.6. Could a QBSS be minimally constructed to meet low cost and the perceived needs of a QIBSS?

3.3.4.3. Motion to instruct the editor to remove all references to QoS in IBSS from the draft.

3.3.4.3.1. Moved John K

3.3.4.3.2. Matt Sherman

3.3.4.4. Discussion

3.3.4.4.1. What is standing in the way of providing QoS in an IBSS? We can provide a default set of parameters. Against the motion

3.3.4.4.2. If we remove all references to QoS in the IBSS, that means it is allowed? There are references that say "a subset of QoS may be available". Just removing these may be a bad idea. It leaves a hole such as how the QBSS information elements in the beacon are generated. Favors clarifying these issues.

3.3.4.4.3. Believes this motion creates more work for ourselves.

3.3.4.4.4. QoS implies something managed and controlled, and thus a coordinator. However, some sorts of "ad hoc" QoS may be applicable to an IBSS.

3.3.4.5. Motion to amend: Add "and identify ambiguities resulting therefrom" to the end of the motion

3.3.4.5.1. Moved Michael Fischer

3.3.4.5.2. Second Peter J

3.3.4.5.3. Discussion

3.3.4.5.4. Straw Poll: Who would be in favor of adding a QoS facility based on the existing EDCF capabilities to an IBSS.

3.3.4.5.4.1. Vote 19:7:9

3.3.4.5.5. Call the question on the motion to amend

3.3.4.5.6. The motion is amended by unanimous consent

3.3.4.6. Motion as amended: to instruct the editor to remove all references to QoS in IBSS from the draft and identify ambiguities resulting therefrom.

3.3.4.7. Discussion on the motion

3.3.4.7.1. Have not seen any evidence that real QoS can be done without an AP. A minimal functionality AP is simple. Why not dynamically instantiate an AP if needed?

3.3.4.7.2. Is the intention to remove the ability of having QoS in an IBSS? Yes.



- 3.3.4.7.3. *What does QoS in this context mean? There are two QoS facilities – parameterized and prioritized.*
- 3.3.4.7.4. *An AP also needs to do intra-bss repeating of multicasts.*
- 3.3.4.7.5. *There is the thought that by removing the prohibition of QoS in ibss, we get QIBSS. Not true. There are issues with ATIM Window and power management. We have problems with QoS Parameters set in the beacon.*
- 3.3.4.7.6. *Straw poll: who would favor ad hoc QoS using an HC without a requirement for distribution services, as being preferable to adding EDCF to the existing IBSS?*

3.3.4.7.6.1. *Passes 22:8:8*

- 3.3.4.7.7. *This can guide a group that will draft text to address the issue*
- 3.3.4.7.8. *Consumer electronics manufacturers want something low cost, with tight control of QoS.*
- 3.3.4.7.9. *Straw Poll: who would favor ad hoc QoS using an HC (including full CF and EDCF capabilities) without a requirement for distribution services, as being preferable to adding a reduced capability EDCF to the existing IBSS?*

3.3.4.7.9.1. *Passes 19:5:12*

3.3.4.7.10. *Call the question (withdrawn)*

3.3.4.8. *Motion to amend: add “with the intent to allow the QoS facilities in an IBSS”*

3.3.4.8.1. *Moved Wim D*

3.3.4.8.2. *Second Michael F*

3.3.4.9. *Discussion on the motion to amend*

3.3.4.9.1. *None*

3.3.4.10. *Vote: The motion to amend is adopted by unanimous consent.*

3.3.4.11. *Motion as amended: to instruct the editor to remove all references to QoS in IBSS from the draft and identify ambiguities resulting therefrom, with the intent to allow the QoS facilities in an IBSS.*

3.3.4.12. *Discussion on the main motion*

3.3.4.12.1. *It does appear that the use of an HC might be feasible in an IBSS. Calls the question*

3.3.4.12.1.1. *John K*

3.3.4.12.1.2. *Question called without objection.*

3.3.4.13. *Vote on the main motion (technical): fails 19:7:10*

3.3.4.14. *Discussion*

3.3.4.14.1. *Should we constitute a group to draft text for a motion for QIBSS?*

3.3.4.14.2. *Call for volunteers to draft normative text for a QIBSS. John K, Peter J, Matthew S, Srin.*

3.3.4.14.3. *Who is the point of contact? John K.*

### 3.3.5. MaxMSDULifetime

#### 3.3.5.1. Discussion

3.3.5.1.1. *Motion yesterday removed MSDU lifetime from the draft. Did the group understand what we voted on? We didn't vote on adding it as a controlled access value, but we removed it as a MIB value. The editor was not present to provide needed information on this topic.*

3.3.5.1.2. *A motion to reconsider must be made by someone who was not on the losing side.*

3.3.5.2. *Motion to reconsider motion "to instruct the editor to remove maxMSDULifetime from the draft."*

3.3.5.2.1. *Moved Michael Fischer*

3.3.5.2.2. *Second Peter*

#### 3.3.5.3. Discussion

3.3.5.3.1. *Requires 2/3 majority*

3.3.5.3.2. *Against this – will waste time. Happy with results from yesterday.*

3.3.5.3.3. *More people are here today that are familiar with the issue.*

3.3.5.3.4. *Against the reconsideration. We have already debated this.*

3.3.5.3.5. *Call the question Adrian/Matthew.*

3.3.5.3.5.1. *Question called with no objection*

3.3.5.4. *Vote on the reconsideration: fails 15:18:7*

### 3.3.6. Recess

## 4. Tuesday Afternoon

### 4.1. Opening

#### 4.1.1. Call to order at 1:10PM

### 4.2. Comment Resolution

#### 4.2.1. Persistence Factor

4.2.1.1. *Presentation of document 433r1*

4.2.1.2. *Motion to instruct the editor of the text to make changes to the draft such that:*

*It is optional for beacons in a QBSS to include a persistence factor, and*

*If a beacon is broadcast with a persistence factor, an ESTA, which does not recognize or use the persistence factor, shall not be denied association to the QBSS on account of its not*

supporting a persistence factor, and all future broadcast persistence factors of the QBSS shall be the legacy factor (i.e., 2), until all non-persistence-factor supporting stations in the QBSS shall become dissociated.

AnESTA supporting the persistence factor shall be able to become associated into a QBSS that does not a persistence factor.

Appropriate changes to “capability information” fields shall be employed to accomplish this task.

4.2.1.3. Moved John Kowalski

4.2.1.4. Point of order: This motion does not contain the actual normative text. Motion cannot instruct editor to create the text. This motion cannot be accepted. Mover will draft normative text and present again at next session.

#### 4.2.2. CF MultiPoll

4.2.2.1. Presentation of Document 390r0 : Greg Chesson

4.2.2.1.1. Compare the operational characteristics of Poll and CF Multipoll. Try to suggest the differences and pros and cons.

4.2.2.1.2. Comparing to CFmultipoll , with only uplink data.

4.2.2.1.3. Is Multipoll much more efficient? Shows simulation.

4.2.2.1.4. Multipoll adds complexity to receive side.

4.2.2.2. Discussion

4.2.2.2.1. Have you done the simulation for 2.4GHz at higher rates. TGg? For 802.11b with the preamble length, there is an 800Kbps difference between poll and multipoll.

4.2.2.2.2. There are graphs that show a greater difference with 802.11b.

4.2.2.2.3. A poll sequence is a two way exchange – data can transfer on either downlink and uplink. Multipoll assigns TxOps to multiple stations either uplink or sidelink.

4.2.2.3. Motion – to instruct the editor to remove CF-MultiPoll from the draft.

4.2.2.3.1. Moved Greg C

4.2.2.3.2. Second Anil

4.2.2.4. Discussion on the motion

4.2.2.4.1. CF multipoll can support asynchronous traffic with strict requirements. Against the motion

4.2.2.4.2. In favor of the motion. Alternating CFpolls are better in hidden node environments.

4.2.2.4.3. Question called without objections

4.2.2.5. Vote on the motion: (Technical) passes 35:9:11

**4.2.3. Signaling – CC/RR**

4.2.3.1. *Motion – to instruct the editor to remove the CC and RR frames, and all references to them, and CCI, from the draft*

4.2.3.1.1. *Moved John K*

4.2.3.1.2. *Second Greg P*

**4.2.3.2. Discussion**

4.2.3.2.1. *Against the motion. While some replacement mechanism have been discussed, the deletion of this without substitution of a replacement would be a bad idea. The Controlled Contention mechanism provides a means for new or alternative requests can be communicated to the coordinator, with latency independent of the current load on the coordinator. The CC mechanism is the only mechanism in the draft.*

4.2.3.2.2. *Against the motion. CC/RR is needed. Emphasizes the fact that there is no other mechanism like CC/RR. It is needed to react quickly to changing requirements.*

4.2.3.2.3. *Point of information – is CC mandatory for an access point? It is a requirement that the HC issues a minimum of one CC interval per beacon interval. It is there to address comments that the stations couldn't count on them being present.*

4.2.3.2.4. *The justification for the CC/RR mechanism seems weak. Rapidly changing conditions seems to contradict a parameterized stream. Tspec does not provide for an average and a peak. CC/RR is not necessarily the best way to get on the polling list. Polling works well for voice. Claims with a 10% per, using priority EDCF traffic and retransmissions than with CC/RR.*

4.2.3.3. *Motion to amend: add “replacing it with the frame definition and mechanism, normative text for which is contained in comment 36 of document 01/267r0”*

4.2.3.3.1. *Moved Duncan Kitchin*

4.2.3.3.2. *Second Sri K*

**4.2.3.4. Discussion on the motion to amend.**

4.2.3.4.1. *Likes the idea of sending queue state information, but the prioritized parameterized is a dichotomy..*

4.2.3.4.2. *Confused by the proposal. This has not been presented with sufficient detail. If you do this with EDCF is that enough? EDCF is a little compromise with legacy. Could we defer this decision until we have a presentation with results.*

4.2.3.4.3. *We don't know if this proposal is ready. Likes the part about providing queue size to the HC. Without an access mechanism for fast update, there may be a problem, though.*

4.2.3.4.4. *This mechanism would not be as effective as the one in the draft. There is only one class above legacy. It cannot be used for both priority traffic and management for reservations. CC/RR provides a better mgmt priority mechanism. Modifying RR to include queue state in RR would be OK.*

4.2.3.4.5. *CC/RR is good to support periodic traffic.*

4.2.3.4.6. *Point of information. If a motion to postpone, would it apply to the main motion or the amendment? The main motion.*

4.2.3.4.7. *The priorities this is sent at is not orthogonal. There is not evidence that this is a sufficient alternative. This is an incomplete mechanism being proposed to replace a complete mechanism.*

4.2.3.4.8. *The CC/RR mechanism also introduces latency. By nature errors will occur, and the CC interval can be long. The EDCF mechanism gives immediate feedback. The CCI repetition interval could be long.*

4.2.3.4.9. *Is the queue reservation element an odd byte length? It should be even.*

4.2.3.4.10. *In support of the amendment. This looks useful under HCF also.*

4.2.3.4.11. *Motion to amend the amendment: Add "And which shall be sent at the highest priority."*

4.2.3.4.11.1. *Moved Sri K*

4.2.3.4.11.2. *Second Greg C*

4.2.3.4.12. *Discussion on the motion to amend the amendment.*

4.2.3.4.12.1. *None*

4.2.3.4.13. *Amendment to the amendment is accepted without objection.*

4.2.3.5. *Modified motion to amend: Motion to amend: add "replacing it with the frame"*

*definition and mechanism, normative text for which is contained in comment 36 of document 01/267r0 and which shall be sent at the highest priority.*

4.2.3.6. *Discussion of the motion to amend*

4.2.3.6.1. *This is a clean method to be put on the polling list. The latency of using CC/RR may be high, and may not succeed. To communicate frequently, we need a way to use the TxOps you already have. In favor of this.*

4.2.3.6.2. *We need a very good presentation of this mechanism. What is relevant is what is the competition? In the presence of legacy, there is less protection. EDCF performance will be reduced.*

*The chair asks if there are any additional motions on this subject CC/RR? No*

4.2.3.6.3. *The problem is not the issue of RR consuming bandwidth, but that we can't control the traffic on the high priority. There is indeed a way to control the CC/RR. It is in the CFP and NAV protected. Against the motion.*

4.2.3.6.4. *Call the question Duncan / Anil ; No Objections. The question is called*

4.2.3.7. *Vote on the motion to amend: Passes 33:16:15*

4.2.3.8. *Motion as amended: Motion – to instruct the editor to remove the CC and RR frames, and all references to them, and CCI, from the draft, replacing it with the frame definition and mechanism, normative text for which is contained in comment 36 of document 01/267r0 and which shall be sent at the highest priority.*

4.2.3.8.1. *Call the question without objection*

4.2.3.9. *Vote on the main motion: Fails 29:19:10*

4.2.3.10. *Motion to instruct the editor to remove the permission probability field and all references to it from the CC/RR frames*

4.2.3.10.1. *Moved Jin Meng Ho*

4.2.3.10.2. *Point of information – if this field is removed, the frame length becomes odd. What is the intention – remove this and the reserved field, or change the PP field to a reserved field? Left to the editor's discretion.*

4.2.3.10.3. *Second Sid Schrum*

4.2.3.11. <i>Discussion</i>
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4.2.3.11.1. <i>This will make a bad situation worse. It means almost a sure collision.</i>
--

4.2.3.11.2. <i>There are 8 opportunities to transmit. Stations choose independently.</i>
--

4.2.3.11.3. <i>In favor of this. Will make it easier to create a new design.</i>
--

4.2.3.11.4. <i>Feels that Permission Probability has value. Should review this after we have reviewed simulations.</i>
--

4.2.3.11.5. <i>Motion to postpone this motion until September</i>
---

4.2.3.11.5.1. <i>Moved Matthew Sherman</i>
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4.2.3.11.5.2. <i>Second Mathilde B</i>
--

4.2.3.11.6. <i>Discussion on motion to postpone</i>
---

4.2.3.11.6.1. <i>Against postponing. That could keep us from going to a letter ballot since it is a documented open issue.</i>
--

4.2.3.11.6.2. <i>Oppose the postponement, calls the question. Sri / John</i>
--

4.2.3.11.6.2.1. <i>Vote on calling the question: Passes 38:5:3</i>
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4.2.3.11.6.3. <i>Vote on the motion to postpone: Fails 14:21:14</i>
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4.2.3.12. <i>Call the question on the original motion</i>
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4.2.3.12.1. <i>John / Duncan</i>
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4.2.3.12.2. <i>Vote on calling the question: passes 32:3:12</i>
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4.2.3.13. <i>Vote on the main motion: Passes 40:7:6</i>
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**4.2.4. Announcements**

4.2.4.1. *There is a session after this to work on normative text for QIBSS.*

4.2.4.2. *Editing team to stay here.*

## 4.2.5. Recess

**5. Wednesday Afternoon****5.1. Opening**

5.1.1. Call to order at 4:00PM by the TGe Chair John Fakatselis

**5.2. Review of agenda**

5.2.1. Schedule – continue until 5:30

5.2.2. Study group this evening.

5.2.3. Process will be the same as the preceding sessions this week.  
Relevant motions to the discussion topic will be entertained.

**5.2.4. Discussion**

5.2.4.1. *When will deferred motions be entertained?*

5.2.4.2. *Unless there is any objection, deferred motions will be entertained first.*

5.2.4.3. *How many people have motions with normative text*

5.2.4.3.1. *Greg*

5.2.4.3.2. *Sri*

5.2.4.3.3. *Matthew*

5.2.4.3.4. *Sunghyun*

5.2.4.3.5. *John K*

5.2.4.3.6. *Yasuo*

5.2.4.4. *There was an agenda item for RTS/CTS it was not raised. We will pick it up as well*

**5.2.5. We will handle the queue of motions and then continue the comment resolution process**

**5.3. Old Business****5.3.1. Discussion**

5.3.1.1. *There are papers on the subject of FEC that have not been presented. It is not appropriate to make motion now. Agreed – this motion will be deferred*

5.3.1.2. *Is RTS/CTS considered old business? Yes..*

5.3.1.3. *Srini moves motion to New Business queue.*

5.3.1.4. *The chair moves to Duncan Kitchin*

**5.3.2. Deferred Motions**

5.3.2.1. <i>Motion to instruct the editor to insert the normative text contained in document 01/130r5 into the draft.</i>
---

5.3.2.1.1. <i>Moved Matt Sherman</i>
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5.3.2.1.2. <i>Second Harry Worstell</i>
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5.3.2.1.3. <i>Discussion</i>
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- 5.3.2.1.3.1. This proposal has been reviewed and improved since the last presentation. Numerous members have contributed.
- 5.3.2.1.3.2. Against the motion because it adds complexity. Doesn't see the advantages.
- 5.3.2.1.3.3. Is this in the agenda? Yes it is part of signaling. We have discussed this before.
- 5.3.2.1.3.4. In favor of the motion. The advantages are clearly shown in the presentation that has been made.
- 5.3.2.1.3.5. Are there any implications with the TGh subgroup or interoperability? The changes proposed are relevant to sharing with other protocols or overlapped BSSs. This is more applicable to this group than TGh. They also support it and urged it to be brought forward.
- 5.3.2.1.3.6. Notes that there are three levels of complexity – there are fall-back less complex versions. This is the most complex

5.3.2.1.4. *Question called with no objection*

5.3.2.1.5. *Vote on the motion (technical) Fails 16:28:19*

5.3.2.2. *Motion to instruct the editor to insert the normative text contained in document 01/130r4 into the draft.*

5.3.2.2.1. *Moved Matt Sherman*

5.3.2.2.2. *Second Harry Worstell*

5.3.2.2.3. *Discussion*

5.3.2.2.3.1. 130r5 discusses RTS/CTS. This motion is out of order because the motion is on substantially the same subject as the previous motion.

5.3.2.2.3.2. Is this essentially dividing the question? No it is not.

5.3.2.3. *Motion ruled out of order by the chair*

5.3.2.4. *Appealed by Matthew Sherman*

5.3.2.5. *The chair moves to John Fakatselis*

5.3.2.6. *Discussion on the appeal*

5.3.2.6.1. *Against the appeal – a subset of the original of the matter is not the same thing, and we should allow this motion.*

5.3.2.6.2. *It is clear that 130r5 is about RTS/CTS. So is 130r4. It is clearly the same subject. It is possible that what is proposed is different. What is the most important – the content or the subject. The appeal is in order. Speaking for the ruling of out of order.*

5.3.2.6.3. *In favor of the ruling of out of order. It is unreasonable to expect the body to understand the differences between the revisions of this document. They are related because they are the same document number*

5.3.2.6.3.1. *Call the question – Greg P / Steve*

- 5.3.2.6.3.2. Vote on calling the question. Passes  
47:6:10
- 5.3.2.6.4. *Point of order – the appellate didn't get to speak.*
- 5.3.2.6.5. *The chair extends a courtesy to the appellate to speak.*
- 5.3.2.6.6. *Discussion*
  - 5.3.2.6.6.1. We are dealing with 802.11 motions. If we are going to be so strict then only one motion can be brought. They are separate proposals, they are not substantially the same. There are three unrelated proposals. There has been a problem getting agenda time to make this proposal.
- 5.3.2.6.7. *Vote on the appeal: The chair is upheld 36:18:11, the motion is out of order.*
- 5.3.2.6.8. *Point of information – It was the mover's intent to present different options. He didn't consider the consequences of the first motion failing. Could we reconsider? Anyone not on the losing side can move to reconsider.*
- 5.3.2.6.9. *Point of information – what is the correct way to give time to the mover to present the papers. Can the group support him? There was an invitation for presentation before motions.*
- 5.3.2.7. *The chair rules that we will allow Matthew to make a presentation.*
- 5.3.2.8. *The chair moves to Duncan Kitchin*
- 5.3.2.9. *Motion to reconsider the previous motion*
  - 5.3.2.9.1. *Peter J*
  - 5.3.2.9.2. *Sri K*
  - 5.3.2.9.3. *Discussion*
    - 5.3.2.9.3.1. *None*
  - 5.3.2.9.4. *Is there any objection to approving the motion to reconsider? None*
  - 5.3.2.9.5. *Motion to reconsider passes by unanimous consent.*
- 5.3.3. Presentation of Paper (as part of the debate on the motion on the floor)**
  - 5.3.3.1. *Document 01/157r1 (from May)*
  - 5.3.3.2. *There have been very little comments on this topic. This was originally presented in March. It was adopted in 802.11e-QoS, but failed in 802.11e with 70%.*
  - 5.3.3.3. *Provides a mechanism to suppress legacy stations, but not EDCF stations, to fix the possibility of legacy stations from overrunning the beacon.*
  - 5.3.3.4. *Provides foreign protocol interoperability mechanisms.*
  - 5.3.3.5. *Straw Poll questions*

- 5.3.3.5.1. Ability to send and RTS or CTS, independently of whether there is queued traffic, from the AP or HC to its own address.
- 5.3.3.5.2. Additional ability to use a TX suppression address for legacy terminal suppression
- 5.3.3.5.3. Additionally, multicast addressing primarily for overlapped BSS mitigation.
- 5.3.3.6. Discussion on straw polls before they are conducted
  - 5.3.3.6.1. What prevents us from doing the first option? No the current standard does not allow this. RTS is only allowed before a pending data frame.
  - 5.3.3.6.2. The issue is decoupling the use of RTS and CTS from data transfer.
  - 5.3.3.6.3. There is one case of this in document 01/109r2.
  - 5.3.3.6.4. Some of the techniques are obsolete due to the current characteristics of the draft. Why is it necessary to clear the channel for a CFP. There are two issues. The draft does allow the ability to send RTS and CTS during the CFP. During the CP, we want to allow traffic. There is periodic traffic that is sent at a certain time. This reserves the channel by suppressing traffic from legacy stations.
  - 5.3.3.6.5. This is intended to make sure the beacon can be sent at a particular time.
  - 5.3.3.6.6. The TXsup allows the channel to be used by ESTAs.
- 5.3.3.7. Straw Polls
  - 5.3.3.7.1. Ability to send and RTS or CTS, independently of whether there is queued traffic, from the AP or HC to its own address.
    - 5.3.3.7.1.1. Vote: 22:12
  - 5.3.3.7.2. Additional ability to use a TX suppression address for legacy terminal suppression
  - 5.3.3.7.3. Additionally, multicast addressing primarily for overlapped BSS mitigation.
- 5.3.3.8. Motion is withdrawn

**5.3.4. Deferred Motions**

- |   |
|---|
| 5.3.4.1. Move to instruct the editor to incorporate changes into the 802.11e Draft Standard using text taken from document 01/435r1.  |
| 5.3.4.1.1. Moved Yasuo<br>5.3.4.1.2. Second John K<br>5.3.4.1.3. Discussion   |
| 5.3.4.1.3.1. This is in conflict with a presentation of yesterday aligning power control and HCF. Against the motion<br>5.3.4.1.3.2. Point of information – was this presented? Yes, yesterday.<br>5.3.4.1.3.3. TPC needs a certain time and uses a lot of bandwidth. |

5.3.4.1.3.4. Against the motion because it appears to be redundant. We already have the non-final bit for relinquishing the TxOp. This mechanism relies on the absence of an event. A bad thing to do in wireless.

5.3.4.1.3.5. In favor. This allows you to detect the end of the TxOp in a simpler way.

5.3.4.1.3.6. Against this – even though it is simpler, it is redundant, and not foolproof.

5.3.4.1.4. *The question is called without objection*

5.3.4.1.5. *Vote on the motion: Fails 8:30:13*

### 5.3.5. Request for clarification of the agenda

5.3.5.1. *Motion to recess until 7:45PM*

5.3.5.1.1. *Moved Duncan Kitchin*

5.3.5.1.2. *Point of information – what do we start with? We will start with the Study Group. All remaining business will be deferred until tomorrow AM.*

5.3.5.1.3. *Second Sid Schrum*

5.3.5.1.4. *Is there any objection to recess until 7:45.*

5.3.5.1.5. *Motion passes without objection*

### 5.3.6. Recess until 7:45

## 6. Wednesday Evening (AV Study Group)

### 6.1. Meeting called to order at ~7:50pm

### 6.2. Agenda items

6.2.1. John K would like to present Document 01/399r0  
Recommended Practice for AV Transport over 802.11e

6.2.2. If there is time, John will present paper on QoS in IBSS (doc 474) as well as Peter (doc 489)

6.2.3. Peter would like to present doc 338r0 – Express Data

6.2.4. ? would like to present doc 475r? on Jitter in 802.11e

6.2.5. Ohtani-san would like to present doc 452 & 425

6.2.6. Georg would like to present doc 404 on AV Timing Limits

### 6.3. Presentations

6.3.1. John K – Presenting doc 01/399r0

6.3.1.1. *Peter would like to focus on the building blocks and get this into the std, not as a recommended practice.*

6.3.1.2. *John suggests that the AP Integration Function may have to be redefined for bridging traffic for 1394 medium*

- 6.3.1.3. *Comment - Audio missing from presentation. John K would like more details from commenter*
- 6.3.1.4. *Comment on why the Integration function is not necessary – John states because it will always be a simple pipe, no pkt analysis to determine if the pkt should be forwarded.*

### **6.3.2. John K – presenting doc 01/474ra1**

- 6.3.2.1. *Ad Hoc QBSS – slimmed down AP provide HC function*
- 6.3.2.2. *ESTA can become the HC to provide TxOps in a QBSS to solve problem of how to form an ad hoc QBSS*
- 6.3.2.3. *Question on what is meant by “associate”.*
- 6.3.2.4. *Comment that the implementation differences between an IBSS HC and a full blown AP are negligible, so why not simply make it an AP. Since PSP is not supported, no buffering is necessary by relay entity.*
- 6.3.2.5. *Sid argues that the extra resources required by AP are significant.*
- 6.3.2.6. *Srini – wouldn't a relay function be useful? Reply is that is a remote HC.*
- 6.3.2.7. *Suggestion to detail the additional functions an AP has over an HC*

### **6.3.3. Peter Johansson – Presenting doc 01/489r0**

- 6.3.3.1. *What is QoS in an ad hoc BSS?*
- 6.3.3.2. *An HC is needed in an ad hoc network*
- 6.3.3.3. *Add Distribution Service only from AP to HC*
- 6.3.3.4. *Discussion with Peter & Sid on if an ESTA is required to be associated in order for the HC to provide TxOps*
- 6.3.3.5. *Document states that a QBSS may or may not have an AP present. There seems to be some concern over this statement.*

### **6.3.4. Toru Ueda – presenting doc 01/475r0a**

- 6.3.4.1. *802.11 Clocks are not accurate enough for MPEG2 (1us req'd, +/-100PPM yields 20us w/100ms beacons.)*
- 6.3.4.2. *One option is for the AP to shorten the beacon interval to ?*
- 6.3.4.3. *A better solution is to have the HC send the TSF Timer with every CF-Poll.*
- 6.3.4.4. *Comment that the timer skew can be fixed locally once the ESTA knows it's error PPM.*
- 6.3.4.5. *Response from presenter that the skew is not always consistent, so it will be difficult to predict.*
- 6.3.4.6. *Question on if the architecture will support multiple AP hops. Georg will address this in his presentation.*

**6.3.5. Georg Dickmann – presenting doc 01/404r0**

- 6.3.5.1. *Describes sources of jitter in digital audio stream*
- 6.3.5.2. *Question to ask for clarity on timer uncertainty*
  - 6.3.5.2.1. *Time from timing master*
- 6.3.5.3. *Question: Were errors or lost pkts included in the simulation?*
  - 6.3.5.3.1. *No, but the result wouldn't be that bad*
- 6.3.5.4. *Toru: When is the timestamp variable added?*
  - 6.3.5.4.1. *Georg: application specific*
  - 6.3.5.4.2. *Take offline*

**6.4. Meeting adjourned at 9:32pm****7. Thursday Morning****7.1. Opening****7.1.1. Call to order at 8:00AM by John Fakatselis****7.2. Announcements****7.2.1. Review of agenda**

- 7.2.1.1. *Comment resolution Topics*
  - 7.2.1.1.1. *Container frames*
  - 7.2.1.1.2. *PICS*
  - 7.2.1.1.3. *Optionality matrix*
  - 7.2.1.1.4. *Anything else*
- 7.2.1.2. *End comment resolution by noon*
- 7.2.1.3. *Study Group from 1:00 to 3:00PM*
- 7.2.1.4. *Starting at 3:30*
  - 7.2.1.4.1. *Old business*
  - 7.2.1.4.2. *New Draft Presentation (4:00PM)*
  - 7.2.1.4.3. *Vote to submit to Letter Ballot (5:00PM)*

**7.2.2. Old Resolutions from Orlando**

- 7.2.2.1. *Will bring forward resolutions that were tentatively approved in Orlando this morning.*

**7.2.3. How many papers are left to present?**

- 7.2.3.1. *Wim – HCF access protocol (deferred motion)*
- 7.2.3.2. *Simon – TGi TGe cross group issues*
- 7.2.3.3. *John – Ad Hoc QBSS, container frames*
- 7.2.3.4. *Toru - QoS TSF*
- 7.2.3.5. *Sri – multicast acknowledgement*
- 7.2.3.6. *Ohdeni – time stamp field*
- 7.2.3.7. *Peter – express data for QoS*
- 7.2.3.8. *Adrian – FEC and ACK issues*

- 7.2.3.9. *Mathilde – HCF access*
- 7.2.3.10. *Michael – progress from Orlando*

**7.2.4. We have a list of old business and pending motions.**

**7.2.5. The chair moves to Duncan Kitchin**

### **7.3. Presentations and motions**

#### **7.3.1. Document 01/171 – HCF Access through Tiered Contention**

- 7.3.1.1. *Mathilde Benenviste*
  - 7.3.1.1.1. *Provides inter-BSS NAV protection through tag-based backoff.*
  - 7.3.1.1.2. *Tag labels are given to different BSS's, and sets HC backoff interval according to tag value.*

#### **7.3.2. Discussion**

- 7.3.2.1. *Is there any a-priori knowledge of tag numbers among HCs? How are they assigned? HCs listen for other BSS's and chose a tag they don't hear. Or you use dynamic selection if there is a re-use.*
- 7.3.2.2. *How and when are the CFTR frames get sent? Also this sounds like a proxy beacon? Yes it is similar.*
- 7.3.2.3. *This method has tags and sequencing and potential interaction with TGh. There was another simpler scheme presented yesterday. Why should we believe that the extra cost of this mechanism would result in a quantitative advantage? Are there any simulation results? Does not believe the simpler mechanisms work.*

#### **7.3.3. Document 383r3 – Simplified CFB limit rules**

- 7.3.3.1. *Wim Diepstraten*
  - 7.3.3.1.1. *To assure that stations would be allowed EDCF access in the contention period. Between each CFB the intent is to allow EDCF contention.*
  - 7.3.3.1.2. *The EDCF access rules means the HC can immediately access the medium. If the medium is busy, the coordinator should defer until the end of the frame, and then allow the HC to have preferential access.*
  - 7.3.3.1.3. *At the end of the CFB, contention resolution between overlapping stations is performed. (Post-backoff)*
  - 7.3.3.1.4. *A simplified access rule – PIFS access at the start of the CFB, CFB duration limit, after a CFend, the HC shall enter post-backoff procedure with specific values.*
  - 7.3.3.1.5. *It gives preferential access to the HC over the stations.*

7.3.3.2. <i>Motion to instruct the editor to modify the draft by inserting normative text contained in 01/383r3 slide 13</i>
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- |   |
|---|
| 7.3.3.2.1. <i>Moved Wim Diepstraten</i> |
| 7.3.3.2.2. <i>Seconded Peter J</i>      |

7.3.3.3. <i>Discussion</i>
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- 7.3.3.3.1. *If there is a transmission from another BSS, the PIFS backoff would not apply. If another BSS is using the channel, and the HC wants to access, it has to have a backoff?*
- 7.3.3.3.2. *If there is a backoff value up to 15, DCF traffic could seize the channel? Yes that is the objective.*
- 7.3.3.3.3. *This would diminish the priority of the HC. Against the motion.*
- 7.3.3.3.4. *In favor of the motion. Helps with the overlapping BSS problems. The window in question is a MIB variable, and could be adjusted. It combines a number of ideas.*
- 7.3.3.3.5. *Against the motion – unduly restricts the access of the HC.*

- 7.3.3.4. *Motion to amend: Change the “shall use this procedure” to a “should use this procedure” in the first occurrence*
- 7.3.3.5. *Moved Peter J*
- 7.3.3.6. *Second Atul G*
- 7.3.3.7. *Discussion on the amendment*
- 7.3.3.8. *Against the motion. It is solving a problem that doesn't exist. There is already a mechanism to have EDCF traffic after a CFB*
- 7.3.3.9. *Vote on the amendment: Fails 5:36:16*
- 7.3.3.10. *Discussion on the main motion*

- 7.3.3.10.1. *Against the motion. There is an upcoming presentation on this issue. It is better to separate inter-bss interference resolution and EDCF traffic after CFB. This unnecessarily burdens the HC. Prefers a mechanism limiting when the HC can access the channel.*
- 7.3.3.10.2. *Against the motion. We want to have implementations where isochronous data can have a maximum of data. This would cripple applications in the market.*
- 7.3.3.10.3. *Against the motion. Calls the Question; Srimi / John.*

7.3.3.10.3.1. *Vote on calling the question: Fails 33:17:3*

- 7.3.3.10.4. *Against the motion as it is. In favor of the objective. There is an ambiguity. It refers to the end of a CFB. We don't have a way of controlling the length of a CFB. There is nothing in the MIB to control the maximum length of the CFB. Can we amend to modify the text. Yields to develop amendment.*
- 7.3.3.10.5. *Believes the draft to limit the CFB duration.*
- 7.3.3.10.6. *In favor – some of the concerns are not justified because there are MIB variables in the AP that control these backoff parameters. aCWmin and aCWmax can be set to small values.*
- 7.3.3.10.7. *Post-backoff and backoff after a collision are different things. If you set the MIB small, it effects other things.*



- 7.3.3.10.8. *The previous concern is incorrect. There is a way to determine when the CFB ends.*
- 7.3.3.10.9. *The purpose of this proposal is to allow contention for EDCF in the CP. It is also beneficial to BSS overlap.*
- 7.3.3.10.10. *Clarify – is the intention to allow a time period of txoplimit between CFBs? No, the effect would be the gap between CFBs would be half the CWmin parameter.*
- 7.3.3.10.11. *Against the motion. What if there is an error in the burst and loses the channel. There is an alternative solution.*
- 7.3.3.10.12. *Against the motion. Calls the question (Matthew / Peter)*

7.3.3.10.12.1. *Vote on calling the question: fails 35:20:2*

- 7.3.3.10.13. *Supports the motion: There is something important to realize. Implementers want to duplicate the behavior of wired networks, but can't because of interference. So there is some sort of randomizing of the HC accessing the network. What is missed is that the randomization of HC access hurts the ability of a scheduler. The scheduler for the wireless medium can be constructed to use TxOPs. It seems better to piggyback HC access on the end of the EDCF traffic.*
- 7.3.3.10.14. *The FEC gives us the ability to approximate a wired network. We can't solve the BSS overlap issue in this PAR.*
- 7.3.3.10.15. *Against the motion. Wants to separate Inter-BSS and backoff after CFB.*
- 7.3.3.10.16. *Against the motion – There are applications for this technology in other bands, so it makes sense to allow the best performance. This is an intelligent scheduler. This limits its options. This is in conflict with other inter BSS mechanisms that have been proposed.*
- 7.3.3.10.17. *Against the motion. We want to support wireless TV. We need guarantee of the HC controlling the timing.*
- 7.3.3.10.18. *Call the question. Steve / John.*

7.3.3.10.18.1. *Vote on calling the question: Passes 46:5:2*

7.3.3.10.19. *Vote on the motion: Fails 14:38:4*

#### 7.3.4. Discussions

- 7.3.4.1. *The chair goes to John Fakatselis*
- 7.3.4.2. *The chair notes that amendments are always in order on a motion on the floor. You can amend motion, then the amendment can be amended once. That is all.*
- 7.3.4.3. *When an amendment fails, new amendments are in order.*
- 7.3.4.4. *Point of information – are friendly amendments now allowed? There is now an acknowledgement in RR v10, but the procedure does not change the procedure.*
- 7.3.4.5. *The chair goes to Duncan Kitchin*

**7.4. Old Business**

7.4.1.1. *Motion to instruct the editor to modify the draft by modifying the normative text according to instructions in 01/412r1*

7.4.1.1.1. *Moved Sunghyun Choi*

7.4.1.1.2. *Second Michael Fischer*

7.4.1.2. *Discussion*

7.4.1.2.1. *Supports the spirit of this – this is addressed in another presentation to come. Is the question of when the HC can recover the channel adequately covered here? This only effects the case where the TxOp holder loses the channel.*

7.4.1.2.2. *Not really against the intention – we have a proposal on the same issue. Ties overlap and BSS sharing together. This may conflict. Objects on that basis.*

7.4.1.3. *Motion to postpone this motion until after the presentation of the other paper on the same topic (01./128r1)*

7.4.1.3.1. *Moved Mathew S*

7.4.1.3.2. *Second Khaled T*

7.4.1.3.3. *Point of information – can we have that presentation now? No, we have further old business*

7.4.1.4. *The motion to postpone is approved by unanimous consent.*

7.4.1.5. *Motion to instruct the editor to modify the draft according to the normative text found in document 01/481r0.*

7.4.1.5.1. *Moved Sunghyun*

7.4.1.5.2. *Second Michael F*

7.4.1.6. *Discussion*

7.4.1.6.1. *None*

7.4.1.7. *Motion passed by unanimous consent*

**7.5. Recess until 10:30****7.6. Opening**

7.6.1. **Call to order at 10:30 by John Fakatselis**

**7.7. Old Business****7.7.1. Presentation of Document 128r1 – Jin Meng Ho**

7.7.1.1.1. *HC Channel Access. HC senses channel before initiating CFB.*

- 7.7.1.1.2. *Proposed Access Recovery process for HC and ESTA*
- 7.7.1.2. *Discussion on paper*
  - 7.7.1.2.1. *The chair moves to Duncan Kitchin*
  - 7.7.1.2.2. *What happens if there is one station is interfered with by an overlapping BSS? The minimum spacing between two CFB is to prevent an HC from occupying the channel forever. EDCF also needs a chance to access the medium.*
  - 7.7.1.2.3. *Doesn't that cause inefficiency? In low traffic, why not use the medium more frequently? That's why there is a small contention window.*
  - 7.7.1.2.4. *Why can't you do this with the draft as it is? Some issues were pointed out in comments – in the middle of a TxOp, if there is an idle channel, the HC can reclaim the TxOp. Undesirable.*
  - 7.7.1.2.5. *The case of concern is a sequence of polls from the HC separated by PIFS. Is that still allowed? Yes.*
  - 7.7.1.2.6. *Should changes SIFS to PIFS on slide 9.*
  - 7.7.1.2.7. *This is very similar to Wim's proposal. Why not use a real backoff instead of a defined separation? To prevent an HC from occupying the medium forever. Why doesn't an EDCF contention mechanism provide that? If the medium is busy it should be counted as the interval.*
  - 7.7.1.2.8. *Wim's proposal does that. The backoff is terminated if there is another station.*

**7.7.2. Return to postponed motion**

7.7.2.1. *Motion to instruct the editor to modify the draft by modifying the normative text according to instructions in 01/412r1*

- 7.7.2.1.1. *Moved Sunghyun Choi*
- 7.7.2.1.2. *Second Michael Fischer*

7.7.2.2. *Discussion on the motion*

- 7.7.2.2.1. *Point of information – Is there any way to harmonize these two proposals? Jin Meng says his is a subset of Sunhgyun's.*
- 7.7.2.2.2. *What does the editor believe about the effect of passing both? Has reviewed both proposals. They are not incompatible, but may introduce redundancies. We could adopt both and it could be handled editorially.*
- 7.7.2.2.3. *Point of information – Could there be an overlap of subject here?*
- 7.7.2.2.4. *No one speaks against the motion.*

7.7.2.3. *The motion is adopted by unanimous consent.*

7.7.2.4. *Move to instruct the editor to modify the draft according to normative text contained on slides 9 and 10 of document 01/128r1*

7.7.2.4.1. *Moved Jin Meng*

7.7.2.4.2. *Second Srin*

**7.7.2.5. Discussion**

7.7.2.5.1. *Against the motion. The interBSS interference proposal is EDCF similar to Wim's. A very short window would cause contention between the HCs. This wastes bandwidth if the HC is the only one that has traffic. It cannot reclaim the channel*

7.7.2.5.2. *In Favor. This is a different mechanism. There is no wasted bandwidth*

7.7.2.5.3. *Against the motion. Do not believe that CWmin of 3 or 4 is effective. The collision probability is very high, which will result in another collision with the neighboring BSS. CW should be larger such as 15.*

7.7.2.5.4. *In favor of the motion. This mechanism addresses inter bss interference. It also protects EDCF bandwidth. They need to be separate. You can use AIFS to help protect inter-bss interference.*

7.7.2.5.5. *The CWmin value proposed today is different that that of a few days ago.*

7.7.2.5.6. *A collision is more expensive than a backoff. Need to see simulation results. Against the motion.*

7.7.2.5.7. *Would favor a more flexible backoff. This is inconsistent with the existing post-backoff.*

7.7.2.5.8. *Regarding the small backoff – CWmin is a MIB variable, so it is flexible. The small backoff is justified by the expected small number of overlapping HCs.*

7.7.2.5.9. *Call the question. John / Srin.*

7.7.2.5.9.1. *Vote: the question is called 29:4:5*

**7.7.2.6. Vote on the motion: Motion fails 19:14:14**

**7.7.3. Presentation of Document 01/474r1 – John Kowalski**

7.7.3.1.1. *Proposed changes for Ad Hoc QBSSs*

7.7.3.1.2. *The current definition of a QBSS always has an AP.*

7.7.3.1.3. *802.11 supports integration – connection to a wireless LAN. An AP has to have integration.*

7.7.3.1.4. *Proposal or an ad hoc BSS with a HC with integration functions missing. Provides beacons, superframes, everything but integration.*

7.7.3.1.5. *Two changes to the text. Allows ESS=0 and IBSS=0 to indicate HC only.*

7.7.3.1.6. *Allow for ad hoc QBSS in MIB. Election mechanism is simple – the first to start up.*

**7.7.3.2. Discussion**

7.7.3.2.1. *There was some discussion of relay separate from integration. What is the status? There is no relay.*

7.7.3.2.2. *Is there anything that would preclude the use of EDCF under the HC? Do you preclude an bridge portal?*

7.7.3.2.3. *Is there any means to handle coalescing? The case of two coming together won't happen.*

7.7.3.3. *Motion – to instruct the editor to include the normative text from document 01/474r1 into the draft.*

7.7.3.3.1. *Moved John K*

7.7.3.3.2. *Seconded Michael Fischer*

7.7.3.4. *Discussion*

7.7.3.4.1. *Point of information – how easy would it be to add relay services? It would take a motion to amend.*

7.7.3.4.2. *Against the motion. Including QoS in an IBSS is worthy, but the goal is for low cost. This does too much. We shouldn't need association and disassociation to have an HC. Wants something simpler.*

7.7.3.4.3. *We had a long talk on relay services. Would like to amend, but no text available within four hours.*

7.7.3.4.4. *In favor of the motion. We have the opportunity to add more in the future. Nicely uses a subset of an existing function.*

7.7.3.4.5. *In favor – there is another benefit. We have a clean attempt of dividing what parts of the EAP are in the HC and which part is in distribution services. The amount of state maintained by the HC is pleasingly small.*

7.7.3.4.6. *In favor – The first step on a desirable path of splitting HC and AP DS. This moves towards a single QBSS with or without an AP.*

7.7.3.4.7. *Against this – it is incomplete. The benefit of ad hoc is lack of configuration. How do you decide who is HC if it goes away.*

7.7.3.4.8. *Using the MLME scan, it allows the higher layers to elect the HC. This is complete enough. This is for simple applications with small QBSSs that contain bandwidth hogs. The complexity scales accordingly.*

7.7.3.4.9. *Against the motion. There was a discussion of BSS coalescing. When a BSS splits and recombines. What happens to the splits BSS? A new HC has to be elected. Feels separating HC from AP is a bad idea. An infrastructure has Integration and Distribution. IBSS requires all members to hear each other. In infrastructure that is not the case.*

7.7.3.4.10. *Against this – we don't need this particular mechanism. Recovery procedures are not understood. The case here is a good case for EDCF.*

7.7.3.4.11. *The proposal doesn't preclude EDCF. Normally the HC would not be separated*

7.7.3.4.12. *Call the question (sid / matthew)*

7.7.3.4.12.1. *Called without objection*

7.7.3.5. *Vote on the motion: Fails 34:13:5*

**7.7.4. Presentation of document 387r2 – Adrian Stephens.****7.7.4.1. ACK and NACK response to FEC Data MPDUs.**

7.7.4.1.1. Based on the ability to determine if an RS code is correctable, which is faster than making the correction.

7.7.4.1.2. Even at higher BER, the false positive rate is very low.

**7.7.4.2. Discussion**

7.7.4.2.1. Detecting an error is lower complexity than correcting – what is the computational complexity of detecting? It is roughly 1/3 the cost of correcting. What is the absolute complexity. Correcting one or two errors is simple, but more than that are much more complex.

7.7.4.2.2. Where is the RS checking located? How large was the packet length in the simulation? The FEC is defined in the MAC layer. Physically speaking it is closer to the PHY. The error rates are per RS code word – 248 bytes of payload. This requires hardware to do.

**7.7.5. Old Motions**

7.7.5.1. Motion to instruct the editor to remove all references to the container frames from the draft.
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7.7.5.1.1. Moved John K
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7.7.5.1.2. Second Michael F
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7.7.5.2. Discussion
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7.7.5.2.1. None
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7.7.5.3. Motion passed with unanimous consent.
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**7.8. Recess until 1:00****8. Thursday Afternoon, AV Study Group****8.1. Opening**

8.1.1. Call to order by John Kowalski at 1:00PM

**8.2. Review of documents to be presented****8.2.1. New documents**

8.2.1.1. Comment of AV transmission recommended practice (Isaac) document 492

**8.3. Presentation of papers****8.3.1. Document 01/492 – Isaac Wei Lih Lin**

8.3.1.1. Requirements for AV Transmission.

8.3.1.2. Discussion

- 8.3.1.2.1. Do the results show FEC is advantageous with 11a phy as well as 11b phys? The AV Study group chair says Yesyes, but the presenter needs to confirm this.

### 8.3.2. Document 01/426 – Srinu Kandala

- 8.3.2.1. Multicast Group management
- 8.3.2.1.1. Using GMRP as defined in 802.1d.
- 8.3.2.1.2. Simple to implement, and maintenance of tables is distributed.
- 8.3.2.1.3. Suggests making this a recommended practice.
- 8.3.2.1.4.
- 8.3.2.2. Discussion
- 8.3.2.2.1. Have heard that GMRP is not widely supported. Agree that something is needed. Would favor method 2.
- 8.3.2.2.2. IETF standard is IGMP. Do we need something at layer ? IGMP snooping is fairly common.

### 8.3.3. Document 01/338r0 – Peter Johanssen

- 8.3.3.1. Express data for 802.11 QBSS
- 8.3.3.1.1. A different category of traffic. Today we have parameterized traffic.
- 8.3.3.1.2. Proposing a new traffic class with guaranteed access to the medium.
- 8.3.3.1.3. Need admission control, and to give express data class priority.
- 8.3.3.2. Discussion
- 8.3.3.2.1. There is already parameterized QoS, and a scheduler can be designed to provide this proposed service. What is mandated? That schedulers implement this.
- 8.3.3.2.2. If resources are not available on the medium, what happens? What happens if there is a lot of low priority traffic? Reservations would be granted as available. When media properties deteriorate? This allocates time, not deliver data rates. It won't deal with interference, though
- 8.3.3.2.3. There is already a Tspec, and the HC has deterministic channel access.
- 8.3.3.2.4. Question – does the current implementation disallow this? Not convinced it does provide guaranteed access.
- 8.3.3.2.5. Is this something like HiperLan? Not exactly- HL is time slotted. Suggests that this guarantees a certain amount of txop time.
- 8.3.3.2.6. RR frames can be sent with a TXOP limit request.
- 8.3.3.2.7. This could be useful for rate negotiation. How feasible is it to force the scheduler to do something?
- 8.3.3.2.8. The allocation of time seems to assume some specificity with respect to the physical layer. How could time alone be valuable? The applications can learn about the environment, which is out of our scope.
- 8.3.3.3. Straw Poll

- 8.3.3.3.1. *Shall we standardize in 802.11E an Express Data Class?*
- 8.3.3.3.1.1. Yes – 11
- 8.3.3.3.1.2. No – 4
- 8.3.3.3.1.3. Maybe – 14
- 8.3.3.3.1.4. Abstain – 7

### **8.3.4. Document 01/425r0 – Yoshiro Ohtani**

- 8.3.4.1. *Proposed Timestamp Field for strictly ordered indication*
- 8.3.4.1.1. *Delayed acks allow ambiguities for indication of received frames in strictly ordered service class.*
- 8.3.4.1.2. *Proposes time stamp field to indicate when a received frame should be indicated at the LLC.*
- 8.3.4.2. *Discussion*
- 8.3.4.2.1. *The problem is important for AV. The proposed solution is reasonable, but is there a simpler solution?*
- 8.3.4.2.2. *There is already a sequence field which can accomplish this goal. If the goal is to control the rate of indication, it is the business of the application to do so.*
- 8.3.4.2.3. *In an encrypted MPDU, the timestamp was encrypted. Some implementations perform the encryption on the host computer. That would be a problem.*
- 8.3.4.2.4. *If the timestamp is exceeded while transmitting, would the frame be discarded?*
- 8.3.4.2.5. *If you want to use delayed ACK, this mechanism is needed.*
- 8.3.4.2.6. *We could also prohibit using the strictly ordered service class with delayed ACK. That is already the case.*
- 8.3.4.2.7. *Didn't we vote to remove strictly ordered? We did. However, strictly ordered is in the legacy standard, but not in the PICs. Nobody implements it.*
- 8.3.4.2.8. *This is exactly why we don't want delayed ACK in the MAC. Suggests getting rid of Delayed ACK.*
- 8.3.4.2.9. *Can you allow strictly ordered or non—strictly ordered per TC? No, Strictly Ordered service class was removed from the draft in Orlando.*
- 8.3.4.2.10. *The MAC will never re-order packets.*



## 8.4. Scheduling of Teleconference

- 8.4.1. Will request authorization from 802.11e to hold a teleconference.

## 8.5. Adjourn Study Group

# 9. Thursday Afternoon

## 9.1. Opening

- 9.1.1. Call to order at 3:30 by Duncan Kitchin

## 9.2. Presentations

### 9.2.1. Document 01/390r1 – Greg Chesson

#### 9.2.1.1. FEC

9.2.1.1.1. *FEC does work well for certain application – where the PHY data rate is intrinsically low. These are broadcast applications with no ACKs.*

9.2.1.1.2. *Sees that FEC could be valuable in certain cases. However there is significant overhead.*

#### 9.2.1.2. Discussion

#### 9.2.1.3. The Chair moves to John Fakatselis

9.2.1.3.1. *Disagrees with the overhead numbers for FEC. Is there any backup documentation on these numbers? Just the draft. But it's a 208/224 code. But that calculates to 10%.*

9.2.1.3.2. *Comparing FEC to ARQ for payloads in the order of 10K octets is on the side of FEC.*

9.2.1.3.3. *This number seems to be calculated in an unusual way.*

9.2.1.4. *Motion to instruct the editor to modify the draft using the normative text and editing instructions contained in 01/458r1*

9.2.1.4.1. *Moved Greg Chesson*

9.2.1.4.2. *Second Duncan K*

9.2.1.4.3. *Discussion*

9.2.1.4.3.1. *Point of information – in slide 3, there is a “must”? That is not normative.*

9.2.1.4.3.2. *This motion defines a bit in 7.5? Yes, this reconciles an error.*

9.2.1.4.3.3. *In favor of the motion, as it makes it consistent. However there are no-votes on FEC pointing out where there may not be benefit from FEC. Those comments need to be addressed.*

9.2.1.4.3.4. *Documentation will be provided to the commenter to reconcile the issue.*

9.2.1.4.4. *Vote on the motion: Passes 48:0:5*

9.2.1.5.	<i>Motion to instruct the editor to remove delayed ACKs from the draft.</i>
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9.2.1.5.1.	<i>Moved Greg Chesson</i>
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9.2.1.5.2.	<i>Second Duncan</i>
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9.2.1.6.	<i>Discussion</i>
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9.2.1.6.1.	<i>Move to table this motion (John K / Michael F)</i>
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9.2.1.6.2.	<i>Vote on tabling (majority): passes 29:23:7</i>
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9.2.1.7. *Discussion*

9.2.1.7.1. *Conflict of the one hour presentation at 4:00 with the 10 minute presentation rule.*

9.2.1.8. *Motion to exempt the draft presentation from the 10 minute rule*

9.2.1.8.1. *Moved Peter*

9.2.1.8.2. *Seconded John*

9.2.1.9. *Move to amend: add "to set the limit to 30 minutes*

9.2.1.9.1. *Moved Duncan*

9.2.1.9.2. *Second Dave*

9.2.1.10. *Motion to amend the amendment from 30 minutes to 45 minutes*

9.2.1.11. *Orders of the day*

9.2.1.11.1. *The presentation begins with 10 minute allocation*

9.2.1.12. *The chair asks the body to allow the editor to take 30 minutes.*

9.2.1.12.1. *Approved without objection. The editor has 30 minutes to present.*

## **9.2.2. Presentation of the Draft D1.2**

9.2.2.1. *TGe Editor – Michael Fischer*

9.2.2.1.1. *Version 1.1 is on the server. It contains the updates from votes taken through Tuesday evening. This 1.2 version has everything passed up to noon today.*

9.2.2.1.2. *It is not on the server yet, but is an indication of what we have voted on.*

9.2.2.1.3. *Not all comments from the letter ballot are incorporated yet.*

9.2.2.1.4. *There have been changes to the definitions to remove things that we voted out. Remote HC was deleted.*

9.2.2.1.5. *Permission Probability and CC were deleted.*

9.2.2.1.6. *The side effects of deletions extended to the repeater function.*

9.2.2.1.7. *No changes exist any more to 5.4.1*

9.2.2.1.8. *In clause 7, CF-multipoll and container are changed to reserved.*

9.2.2.1.9. *Changes in table 2 relate to the container frame*

- 9.2.2.1.10. *We made a number of changes in Orlando that have not been captured. We have changes that need to be made based on the provisional resolutions.*
- 9.2.2.1.11. *Permission Probability and reserved field were removed.*
- 9.2.2.1.12. *For Draft 2, the editor recommends that all clause 7 and 9 text be included to provide context.*
- 9.2.2.1.13. *Proxy Beacon removal reduced changes in 7.2.3.1*
- 9.2.2.1.14. *Capability information – there are changes pending from Orlando and from editorial comments.*
- 9.2.2.1.15. *In Clause 9, we have modifications in 9.2.5.3 pertaining to removal of MaxMSDULifetime.*
- 9.2.2.1.16. *In 9.2.5.4 we now have a modification, relative to 11-1999. Based on the adoption of 481r0.*
- 9.2.2.1.17. *A number of changes in 9.10. Regarding NAV.*
- 9.2.2.1.18. *Autonomous bursts have been removed.*
- 9.2.2.1.19. *Permission probability removal shows up here. PP still appears, but there are editing problems.*
- 9.2.2.1.20. *In clause 10 there are editorial fixes.*
- 9.2.2.2. *Discussion on the draft*
- 9.2.2.2.1. *Is there a reason why there isn't a revision log? Because this has been a rush. Agrees that it would be useful. At what level? Table of papers and motions. That is OK, but logging every change is impractical.*
- 9.2.2.2.2. *There were letter ballot comments that the 1.0 draft did not reflect all changes to standard. Has that been accomplished? There may be a few discrepancies still, with cross checking with 802.11D. Cannot be assured that all have been addressed, but the editor believes that most have.*
- 9.2.2.3. *Point of information - Given that we have finished this early, can we address the Orlando consolidated resolution.*
- 9.2.2.4. *Duncan Kitchin takes the chair*
- 9.2.3. Continuing the queue before the special order**
- 9.2.3.1. *Discussion*
- 9.2.3.1.1. *Are we required to follow the agenda except for the special orders? Only in order, not in time*
- 9.2.3.2. *Motion to take from the table the previously tabled motion from the table*
- 9.2.3.2.1. *Moved Anil*
- 9.2.3.2.2. *Second Steve*
- 9.2.3.3. *Is there any objection? Yes*
- 9.2.3.4. *Vote on the taking from the table the tabled motion: Motion Fails 22:27:5*

### 9.3. New Business

#### 9.3.1. Document 01/427 – Srini Kandala

##### 9.3.1.1. Acknowledgement for Multicast Streams

9.3.1.1.1. *mechanism to allow acknowledgement of multicast streams.*

9.3.1.1.2. *Efficient for a small number of recipients.*

9.3.1.1.3. *There is little difference between unicast and multicast*

##### 9.3.1.2. Discussion

9.3.1.2.1. *The chair moves to John Fakatselis*

9.3.1.2.2. *Is there a motion? Not yet, the text is not ready.*

9.3.1.2.3. *What is considered a small number of stations? What happens if there are more? What happens if the processing of ACKs delays the next transmission? The number depends on the bandwidth requirements. If there are more, the SBM would not allow the TSPEC. For processing, there is state information and lifetime bounds to determine if there is enough time. Is that part of the proposal? No implementation dependent.*

9.3.1.2.4. *There is a body of work on reliable multicast. There is a mil std protocol. It is all at the transport layer. TV studios use SMPTE version of STP. Why should we solve this at the MAC layer?*

9.3.1.2.5. *The chair moves to Duncan Kitchin*

#### 9.3.2. Document 01/450r1 – Simon Black

##### 9.3.2.1. TGe / TG<sub>i</sub> Cross Group Issues

9.3.2.1.1. *Placing security functions above the MAC raises issues of reordering.*

9.3.2.1.2. *TG<sub>i</sub> would like to see Security below QoS, but that would cause delay implications and implementation details. AES has longer latency due to being a block cipher.*

9.3.2.1.3. *MPDU expansion – should we extend MAXMPDU length, or squeeze the MSDU payload? It became apparent that we are assuming the 2304 service definition. There was a provisional resolution in Orlando that was accepted.*

9.3.2.1.4. *Protection of management frames – probably not worth encrypting MAC management. There is no protection against denial of service.*

9.3.2.1.5. *STA-STA communication is an issue. The AP is integral to security policy. STA-STA would be unprotected, or per authorization by the AP (not a good option).*

9.3.2.1.6. *Beacon / Probe response issues. The beacon is becoming huge. Separate beacon and probe response mechanisms.*

9.3.2.1.7. *Probe request's don't have channel numbers. Wastes bandwidth.*

9.3.2.1.8. *Key questions to consider at next meeting.*

##### 9.3.2.2. Discussion

9.3.2.2.1. *Could you elaborate on why STA-STA is a problem? Currently the security model uses 802.1x, assumes a port on the AP. The association is based on the AP.*

9.3.2.2.2. *What if there is a coordination function? It is a problem. There is a key per station.*

9.3.2.2.3. *Does that mean TGi is not applicable to IBSS? Yes, that is explicit in the TGi draft.*

### 9.3.3. Special Order Item – Vote to submit draft to WG Letter Ballot

9.3.3.1. *Discussion*

9.3.3.2. *John Fakatselis takes the chair*

9.3.3.2.1. *Do we want to instruct the editor to create a new draft? Do we want to request the WG to submit the draft to a Letter Ballot?*

9.3.3.2.2. *The draft we are voting on, does it include the Orlando Changes? It is the draft as presented. Version D1.2. We did not have time to include the Orlando changes.*

9.3.3.3. *Motion to adopt the draft 1.2 as presented.*

9.3.3.3.1. *Moved Sri*

9.3.3.3.2. *Object to consideration of the motion*

9.3.3.3.2.1. *It doesn't meet the criteria. The draft on the server does not meet the criterion of completeness. Table 2 is not complete. There are open issues.*

9.3.3.3.3. *The chair notes that the motion on the table is to accept the draft as is, not to go to ballot.*

9.3.3.3.4. *Point of order – we had an approved draft. Every modification has been by a 75% vote. Why do we need to re-approve it?*

9.3.3.3.5. *1.2 is not officially our draft.*

9.3.3.3.6. *Point of order – the special order agenda says the motion can only be to vote on sending the draft to letter ballot. Suggest that we cancel the special order, adopt the draft, but not go to letter ballot. Prefers to accept the items worked on, and continue to work in WG.*

9.3.3.4. *The chair states that the only motion in order is to send draft 1.0 to letter ballot. No one has made that motion. Does anyone move to send draft 1.0 to WG letter ballot?*

9.3.3.4.1. *None*

9.3.3.5. *We have completed the special order.*

## 9.4. Continuing with New Business

9.4.1.1. <i>Move to empower the editor to create a new draft which incorporates all the technical decisions this body has made.</i>
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9.4.1.1.1. <i>Moved Duncan Kitchin</i>
--

9.4.1.1.2. <i>Second John K</i>
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9.4.1.2. <i>Point of information – We are creating a draft? Yes.</i>
--

9.4.1.3. *Discussion –*

9.4.1.3.1. *insists that all changes to the base standard are marked. The editor acknowledges.*

9.4.1.4. *Is there any objection to adopt the motion?*

9.4.1.5. *Motion passes by unanimous consent*

9.4.1.6. *Move that TGe asks the working group to empower the September Interim meeting of TGe to be able to ask the working group to issue a letter ballot*

9.4.1.6.1. *Moved Duncan*

9.4.1.6.2. *Second Steve*

9.4.1.7. *Passes with unanimous consent*

**9.4.2. Announcements**

9.4.2.1. *There will be one teleconference for the AV Study Group on August 28<sup>th</sup> at 10:00AM Pacific Daylight Savings Time.*

**9.5. Adjourn at 5:30PM**

**IEEE P802.11  
Wireless LANs**

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**TGf Meeting Notes**

**Date:** July 9-13, 2001

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**Abstract**

This document contains the meeting notes for Task Group F (TGf) for the July 2001 IEEE Plenary meeting in Portland, OR.

**Document: IEEE 802.11-01/345**

**Task Group F (TGf) Meeting Notes for IEEE Plenary Meeting, July 2001, Portland, OR**

**Chairman:** David Bagby

**Editor:** Bob O'Hara

**Acting Secretary:** Jo-Ellen Mathews

David Bagby called the meeting to order at 10:30 am on Tuesday, July 10, 2001 in Portland, OR

David Bagby called for a volunteer for an acting secretary for the week. Jo-Ellen Mathews volunteered.

**Motion:** To adopt the proposed resolution.

- o Moved: Mark Mathews
- o Bob O'Hara
- o Vote: 10 for, 0 against, 1 abstain

David Bagby presented a Revised 802.11F Schedule. Additionally, David presented a status report of the meeting held in May, 2001, in Orlando, FL.

David Bagby brought the target completion date to the attention of the attending members. The target completion date for the Task Group is **March 2002**.

11F Agenda for July 2001

- Tuesday (old business)
  - o 10:30 am - 9:30 pm
  - o 10:30 am: start up, admin, agenda and start work
  - o Breaks: 12:00 - 1:00, 3:00 - 3:30, 5:30 - 6:30 (changed to 7:00 for eve start)
- Wednesday (old business)
  - o 10:30 am - 12:00 pm
  - o 4:00 am - 5:30 pm
    - **NOTE:** Need draft available if going for 2nd letter ballot.
- Thursday (old and new business)
  - o 8:00 am - 12:00 pm
    - Break: 10:00 - 10:30
    - Formal Schedule Fork decision after break
  - o 3:30 am - 5:30 pm
    - New Business
    - Final motions, plenary report review

David Bagby proposed a modification to the agenda for the week by extending the dinner break by a half hour.

David Bagby called for new business items. Bob O'Hara brought up a new business issue of talking to the TGf and TGe chairs to notify them of schedules to figure out whether TGf should tie in its schedule with the schedules of the other two task groups.

**Agenda Adoption:**

**Motion:** To adopt the agenda as proposed.

- o Moved: Bob O'Hara
- o Second: Darwin Engwer
- o Vote: 9 for, 0 against, 0 abstain

**11F Papers**



- Doc IEEE 802.11-01/388 - Proposed Letter Ballot Resolutions - Bob O'Hara personally contributed this document as something to work against for the revised draft based on the letter ballot comments discussed in the July 2001 meeting and editorials from that meeting. Proposed Draft 1.2.1 reflects document 01/388
- SLP - See Jesse Walker's e-mailed Bob O'Hara  
Keith Aman regarding slp (may homework)
- Security - PowerPoint and Word Document from Bernard Aboba
- Move-Add notify packet addressing - Paper by Darwin Engwer

**Key Issues**

1. Forward Roaming (row 645, comment 488 by Menzo Wentink) by adding new primitives and packets to send context to a new AP in advance of the mobile station roaming.
2. Frame Buffering (row 165, 166, 660 and many others) requirement to buffer frames in the new AP until a MOVE-response packet is received.
3. SLP Operation (many comments), which mode SLP operates in, URLs, others
4. Security (rows 500, 437, 339, 342...) several issues including protection of the information sent using IAPP, authenticating IAPP messages and authenticating registrations
5. Vendor specific use of the context blob (row 451, 448, 452)

**Discussions on Key Issues**

1. Forward Roaming (row 645, comment 488 by Menzo Wentink) by adding new primitives and packets to send context to a new AP in advance of the mobile station roaming.

**Discussion:** only makes sense if AP controls reassoc events (not true today), three-way handshake required. Not supported in .11 MAC as published and breaks existing model of .11.

**Proposed resolution:** 11F declines to adopt this suggestion as it is not functionality that 802.11-1999 requires. Also, no formal requirement has been presented from any other .11 TG that requires this.

**Motion:** To adopt the proposed resolution.

- o Moved: Mark Mathews
- o Second: Tim Moore
- o Vote: 9 for, 0 against, 1 abstain

2. Frame Buffering (row 165, 166, 660 and many others) requirement to buffer frames in the new AP until a MOVE-response packet is received.

**Discussion:** buffer requirement could bbe huge; the MOVE confirm may never occur; Kevin Hayes said that the new AP shouldn't do any buffering according to the new draft. Also, the TCP time estimate may get messed up; don't want the UDP traffic buffered; this is layer 2 (non-reliable) - let higher layer recover;

**Proposed resolution:** The group agrees with comments that object to buffering requirements and will delete sentence in draft 1.0.4.12.4 with buffering requirement.

**Motion:** to adopt the proposed resolution:

- o Moved: Bob O'Hara
- o Second: Mark Mathews
- o Vote: 11 for, 0 against, 0 abstain

3. SLP Operation (many comments), which mode SLP operates in, URLs, others

**Notes:** Keith Aamann and Jesse Walker volunteered doing work on this issue. Keith Amann has not delivered proposal regarding URLs. Jesse Walker has not yet delivered proposal on use of SLP.

Need Jesse's homework because Jesse wasn't available when the group reconvened after lunch.

4. Security (rows 500, 437, 339, 342...) several issues including protection of the information sent using IAPP, authenticating IAPP messages and authenticating registrations

**Presentation:** Bernard Aboba presented a paper on Secure Roaming (IEEE 802.11-01/251).

**Proposed resolution:** 11F will provide support for the .1X secure environment via the Security Context Transfer proposal in Bernard Aboba's presentation (01/251). Bernard will create draft text during this week's meeting.

**Motion:** to adopt the proposed resolution:

- o Moved: Bernard Aboba
- o Second: Butch Anton
- o Vote: 11 for, 0 against, 0 abstain

**Proposal:** 11F will provide context blob in MOVE request as well as response. Tim Moore will create draft text during this meeting.

**Motion:** to adopt the proposed resolution:

- o Moved: Tim Moore
- o Second: Victoria Poncini
- o Vote: 10 for, 0 against, 0 abstain

**Fix:** Holes regarding association, disassociation and reassociation. This is not an 11F problem unless/until 11i says it needs this.

5. Vendor specific use of the context blob (row 451, 448, 452)

**Discussion:** The context blob will contain information elements.

**Proposed resolution:** Tim Moore proposed that 11F define one information element (IE) where the first three bytes (octets) of the information field are a vendor organizationally unique identifier (OUI). This information element can be ignored at will. No compliant implementations of this RP will depend on the use of this information element.

**Motion:** to adopt the proposed resolution:

- o Moved: Tim Moore
- o Second: Victoria Poncini

- o Vote: 8 for, 1 against, 1 abstain

The remainder of the meeting time was spent discussing letter ballot comments.

**IEEE 802.11-01/388 Document by Bob O'Hara**

The following comments were highlighted in RED as top priority for comment resolutions:

- **Comment Seq# 1190:** Group unanimously declined recommended change by voter. See Editor's Disposition in doc 01/388.
- **Comment Seq# 818:** Group unanimously accepted recommended change. See Editor's Disposition in doc 01/388.
- **Comment Seq# 421:** Group unanimously declined recommended change. See Editor's Disposition in doc 01/388.
- **Comment Seq# 933, 957:** Bob O'Hara modified diagram and group unanimously accepted the edited diagram.
- **Comment Seq# 934, 958:** No change needed. See Editor's Disposition in doc 01/388.
- **Comment Seq# 107:** This comment is an editorial change that had already been made.
- **Comment Seq# 951:** There is already a TIMEOUT status returned for the IAPP-MOVE.request primitive that would be affected by lost packets. The TIMEOUT value will be specified in an argument to the IAPP-MOVE.request primitive. This will allow the APME to recover if packets are lost.
- **Comment Seq# 779, 194, 225:** The statement has been deleted.
- **Comment Seq# 152:** Bob O'Hara created and added a diagram for clarity.
- **Comment Seq# 425:** Introduction has been added although it doesn't quite do what the voter recommendd.
- **Comment Seq# 698:** Text has been clarified. Reorganization is not required.
- **Comment Seq# 781:** Text has been clarified. Reorganization is not required.
- **Comment Seq# 41:** Clause has been completed.
- **Comment Seq# 634:** Clause has been completed.
- **Comment Seq# 428:** Group declined recommended change by voter.
- **Comment Seq# 87:** Buffer has been deleted.
- **Comment Seq# 432:** Buffer has been deleted.
- **Comment Seq# 788:** Group declined recommended change by voter.
- **Comment Seq# 97:** Apply for a port from IANA. The assigned value will be placed in the document.
- **Comment Seq# 419:** Commenter needs to provide a better idea of what is acceptable for timeout values. Commenter will be solicited for further input.
- **Comment Seq# 144:** The reassociation response is not delayed by the operation of the QoS.
- **Comment Seq# 484:** MAC frame sequence number is provided in these packets to allow proper sequencing. The MAC service interface of 802.11 needs to be modified to provide this information through MLME-ASSOCIATE.indication.
- **Comment Seq# 485:** Completed.
- **Comment Seq# 1021:** A protocol ID Needs to be obtained.
- **Comment Seq# 1165:** A protocol ID Needs to be obtained.
- **Comment Seq# 848:** Tim Moore is providing the text.
- **Comment Seq# 1066:** Tim Moore's proposal discussed in the morning meeting addresses this comment.

- **Comment Seq# 813:** Bobo O'Hara clarified the sentence.
- **Comment Seq# 949:** Resolved earlier in the minutes and are addressed by Tim Moore's proposal.
- **Comment Seq# 973:** Resolved earlier in the minutes and are addressed by Tim Moore's proposal.
- **Comment Seq# 924:** Completed.
- **Comment Seq# 417:** The limitation is already described in the introduction.
- **Comment Seq# 18:** Explicit comments will be addressed.
- **Comment Seq# 797:** Blob changed to Block.
- **Comment Seq# 513, 527, 541, 555, 569, 610, 834, 850:** Still open - part of Jesse Walker's homework.
- **Comment Seq# 91, 496:** Still open - homework items for Kevin Hayes.
- **Comment Seq# 734:** The well known port issue already addressed earlier in the minutes.
- **Comment Seq# 13:** The parameter will be removed, and the use of SLP to locate the registration service will be described in 5.1.1 (part of Jesse Walker's homework). Rewrite primitives to eliminate. **Special Note:** Mark Mathews volunteered to review the e-mail that Jesse Walker sent to Bob O'Hara.
- **Comment Seq# 109:** Use of SLP will be described. DNS does not provide a service that meets the needs of IAPP and will be eliminated. DNS restricts the use of particular records that have information useful to IAPP.
- **Comment Seq# 370:**
  1. Why is this necessary? The correspond.confirm recommends initializing the AP, causing any associations to be silently discarded. Stations that had been associated with the AP would not know they had been dropped.
  2. What happens if the recommendation is not followed? Stations may be left without an association.
  3. What happens if it is temporarily not possible to disassociate some stations? Only a best effort is expected.
- **Comment Seq# 165:** The group declines
- **Comment Seq# 995, 1139:** The group declines
- **Comment Seq# 1068, 1078, 1081:** The group declines.
- **Comment Seq# 16:** SLP has been removed from the primitives.
- **Comment Seq# 468:** The group declines. As defined by 802.11, an AP is
- **Comment Seq# 738:** Yes, there will be a wait. A TIMEOUT parameter is added.
- **Comment Seq# 440:** Request to the appropriate TG has been made.
- **Comment Seq# 739:** Cautions of this sort are not appropriate in this document. The interaction with security has been much more fully specified in the revised draft.
- **Comment Seq# 471:** It is believed that the described action will provide sufficient functionality for our purposes.
- **Comment Seq# 472:** It is believed that the described action will provide sufficient functionality for our purposes.
- **Comment Seq# 796:** Changed "that" to "its" to clarify which AP
- **Comment Seq# 488:** 11F declines to adopt the functionality described as it is not a part of 802.11-1999 and no formal requirement has been proposed that would require this functionality.
- **Comment Seq# 394:** The only remaining non-SUCCESSFUL status value is TIMEOUT, which seems pretty self-explanatory.
- **Comment Seq# 33:** Buffering has been removed.

- **Comment Seq# 395:** Why should the station be disassociated if the IAPP-MOVE.request fails? The STA can not be safely associated if
- **Comment Seq# 396:** Buffering has been removed.
- **Comment Seq# 397:** The group unanimously says no.
- **Comment Seq# 690:** Buffering has been removed.
- **Comment Seq# 798:** Buffering has been removed.
- **Comment Seq# 896:** Buffering has been removed.
- **Comment Seq# 897:** Response same as that for 395
- **Comment Seq# 719:** 11F is not doing packet forwarding.
- **Comment Seq# 332, 514, 528, 542, 556, 570, 611, 835, 851:** This is part of Jesse Walker's homework on SLP.
- **Comment Seq# 375:** Only SUCCESSFUL and TIMEOUT remain. They are self-explanatory.
- **Comment Seq# 333, 515, 529, 543, 557, 571, 612, 836, 852:** This is part of Jesse Walker's homework on SLP.
- **Comment Seq# 334:** The function of the primitive has changed dramatically. We ask that the commenter review the new draft to see if the deficit still remains.
- **Comment Seq# 516, 530, 544, 558, 572, 613, 837, 853:** The function of the primitive has changed dramatically. We ask that the commenter review the new draft to see if the deficit still remains.
- **Comment Seq# 940, 964:** No effect on association is defined nor intended for this primitive.
- **Comment Seq# 112:** The IAPP make no requirements on the network architecture.
- **Comment Seq# 388:** The IAPP does not require retransmissions. However, an implementation may choose to have the APME issue the primitives again if a successful status is not received or higher reliability is required.
- **Comment Seq# 752:** No requirement for this functionality exists in 802.11-1999 nor has been proposed by any task group.
- **Comment Seq# 753:** The group declines.
- **Comment Seq# 438:** The group declines.

**NOTE:** Before going further with the comment resolutions, the group paused to listen to Darwin Engwer's presentaton on Move-Notify and Add-Notify Packets (Document IEEE 802.11-01/449)

- **Comment Seq# 754:** Darwin presented document 802.11-01/449 as a clarification of layer2 versus 3 Add.Notify/Move.Notify usage.

**Motion:** to adopt Darwin's proposed resolution.

- o Moved: Darwin Engwer
- o Second: Bob O'Hara
- o Vote: 5 for, 0 against, 1 abstain

Therefore, the group accepts the addition of the field as recommended by the commenter. This seems to enable local caching of the address mapping between BSSID and AP IP address.

- **Comment Seq# 870:** The group declines. See Document 01/449 that was accepted by the group.
- **Comment Seq# 406:** The group declines.
- **Comment Seq# 478:** Deferred as part of Jesse Walker's homework.

- **Comment Seq# 479:** SLP provides a mechanism for alternate service providers to take over when a primary provider fails. Reassociations will fail until the new service is populated with IP/BSSID mappings.
- **Comment Seq# 305:** SLP provides a mechanism for alternate service providers to take over when a primary provider fails. Reassociations will fail until the new service is populated with IP/BSSID mappings.
- **Comment Seq# 510:** SLP provides a mechanism for alternate service providers to take over when a primary provider fails. Reassociations will fail until the new service is populated with IP/BSSID mappings.
- **Comment Seq# 678:** SLP provides a mechanism for alternate service providers to take over when a primary provider fails. Reassociations will fail until the new service is populated with IP/BSSID mappings.
- **Comment Seq# 888:** Periodic announcements of this type do not scale well to large networks. This does not solve the problem of lacking a registration service. It would only work for an ESS on a single subnet.
- **Comment Seq# 685:** The commenter is solicited to provide additional text.
- **Comment Seq# 1231:** A MIB attribute will be added to allow starting a registration service to be disabled.
- **Comment Seq# 726:** Yes.
- **Comment Seq# 1048:** The group declines.
- **Comment Seq# 830:** Withdrawn by commenter.
- **Comment Seq# 686:** The group declines because error processing is handled by timeouts.
- **Comment Seq# 642:** The group declines.
- **Comment Seq# 1049:** Now specified better.
- **Comment Seq# 641:** An information element has been defined for vendor-specific use.
- **Comment Seq# 1022, 1166:** The group declines.
- **Comment Seq# 831:** The group declines and request rationale from commenter.
- **Comment Seq# 506:** The group declines
- **Comment Seq# 978, 1122:** There is already a TIMEOUT status return for the IAPP-MOVE.
- **Comment Seq# 975, 1119:** The group declines.
- **Comment Seq# 774:** Some improvements have been made in this area. The commenter is solicited to review the new draft and make further comments if needed.
- **Comment Seq# 1179:** Draft has been revised.
- **Comment Seq# 5:** Since no change is recommended, no change is made.
- **Comment Seq# 928:** The first thing an AP will do when enabled is register with the registration service. This will allow it to be found.
- **Comment Seq# 929:** The chairman will be made aware of this so that the appropriate IP letter may be obtained.

The group finished with comment resolutions of those comments highlighted in RED in document IEEE 802.11-01/388.

Action for the morning of Wednesday, July 11, 2001, is to work through the comments highlighted in ORANGE of the same document.

The meeting recessed for the day at 10:30 pm.

David Bagby called the meeting to order at 10:30 am on Wednesday, July 11, 2001 in Portland, OR

Action for the morning: to work through the comment resolutions highlighted in ORANGE by the editor in document IEEE 802.11-01/388.

David Bagby asked the floor for any objections to the ORANGE comment resolutions proposed in the document, and the group unanimously agreed time was needed to finish reviewing the comments. The members of the group spent the first hour of the meeting reading through the ORANGE comments.

After the group members reviewed the ORANGE comments, David Bagby asked the members if there were any objections to adopting the editor's proposed resolutions in the ORANGE comments.

**Motion:** to adopt all the ORANGE comments (written by the editor) not objected to by any member

- Moved: Jo-Ellen Mathews
- Second: Bob O'Hara
- Vote: 4 for, 0 against, 0 abstain

The group discussed those comment and comment resolutions that memebers brought to the floor. As a result of the discussions, no changes were made to the ORANGE comment resolutions made by the editor, and the group unanimously accepted the comment resultions as discussed by the group.

The afternoon and Thursday morning meetings will be spent writing the 2.0 draft for letter ballot 2. 11f has decided to not be lock stepped to either 11e or 11i and will go forward with a 2nd WG letter ballot to remain on the adopted schedule.

The meeting recessed at 12:00 pm until 4:00 pm.

David Bagby called the afternoon meeting to order at 4:00 pm on Wednesday, July 11, 2001 in Portland, OR

Jesse Walker was not able to attend the afternoon meeting. Jesse had done some preliminary work on the registration service topic of discussion. Jesse Walker had given his work to Mark Mathews. Mark drafted a paper based on Jesse's preliminary work. The title of the paper is "SLP Usage and the Registration Service"

The paper resulted in the following:

**Potential Solutions to the Registration Service issue:**

1. Fully define the APME and Access Point Registration Service (APRS) and finish the definition of the APRS

----OR---

2. Remove the notion of the APRS and develop an SLP Service template that will allow each AP to behave as an SLP Service Agent (SA) thus allowing Service Location Protocol (SLP) to be used for the BSSID to IAPP DSM IP Address lookup function.

**Conclusion:**

Removing the APRS has several benefits:

1. Removes the necessity for the creation of a new protocol.
2. Removes the necessity for the design and creation of a new server, and
3. Removes the requirement for the registration of additional ports and protocols.

In this model, each "IAPP entity" will register itself as an IAPP service. All of the functionality of the APRS will be handled via SLP.

The group unanimously voted to accept Mark's paper and waive the document publication lead time. A document number was not available at the time of discussion.

**Motion:** to adopt the 2<sup>nd</sup> approach presented in Mark's paper, namely: Remove the notion of the APRS and develop an SLP Service template that will allow each AP to behave as an SLP Service Agent (SA) thus allowing Service Location Protocol (SLP) to be used for the BSSID to IAPP DSM IP Address lookup function.

- Moved: Bob O'Hara
- Second: Brian Mathews
- Vote: 4 for, 0 against, 0 abstain

The document number assigned to Mark's paper is IEEE 802.11-01/490.

Resolution of comment that resulted in addition of MIB knob to turn off requirement of AP to be registration service is now not needed due to 2nd approach in document IEEE 802.11-01/490 just voted.

**Motion:** to rescind Knob invention.

- Moved: Darwin Engwer



- Second: Bob O'Hara
- Vote: Unanimous

The group recessed at 5:30 until 8:00 am Thursday

David Bagby called the meeting to order at 8:05 am on Thursday, July 12, 2001 in Portland, OR

**Motion:** To not make the 11f schedule dependant on either 11e or 11i progress.

**NOTE:** If additional support requests for 11e/i are identified via the letter ballot process, they can be considered at that time.

- Moved: Victoria Poncini
- Second: Bob O'Hara
- Vote: Unanimous

#### **Motions for Plenary**

**Motion:** That IEEE 802.11 apply to IANA for a UDP port number for 802.11F. This value will be inserted in the 802.11 draft once received.

- Moved: Victoria Poncini
- Second: Kevin Hayes
- Vote: Unanimous

**Motion:** That IEEE 802.11 apply for an SMI number for the IAPP MIB. This value will be inserted 802.11F draft once received.

- Moved: Bob O'Hara
- Second: Victoria Poncini
- Vote: Unanimous

The agenda for the remainder of the morning meeting was editing work to make the 2.0 draft ready for the next letter ballot.

The group unanimously accepted a presentation by Tim Moore on Security Transfer, Document IEEE 802.11-01/488, based his attendance of the Tgi sessions.

**Two key points Tim presented to the TGF group:** (Note this paper was based on previous motions that were already voted on)

1. Request to 802.11F to support context block transfer from new AP to old AP in MOVE-NOTIFY message
2. 802.11F needs to be able to separate MOVE-NOTIFY messages for the same client to find the latest move.

**Motion:** to adopt draft 2.0 as the current 802.11F draft

- Moved: Darwin Engwer
- Second: Bob O'Hara
- Vote: Unanimous

**Motion:** to conduct a working group letter ballot to forward the 802.11F draft to sponsor ballot

- Moved: Butch Anton
- Second: Mark Mathews
- Vote: Unanimous

David Bagby called for any new business from the members. No new business was brought up for discussion.

**Motion:** to adjourn the meeting for the week

- Moved: Butch Anton
- Second: Mark Mathews
- Vote: Unanimous

The meeting adjourned at 11:20 pm for the week.

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**IEEE P802.11  
Wireless LANs**

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**Minutes for TGg for the July 2001 Session**

**Date:** July 2001

**Author:** Matthew B. Shoemake  
IEEE 802.11 Task Group G Chairperson  
e-Mail: shoemake@ti.com

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**Abstract**

**TGg Meeting 7/9/2001**

Matthew Shoemake, Chair

**Portland Plenary**

- Meeting called to order at 4PM by chair
- Chair read objectives from document 01/392.
- Chair mentioned current nominations for editor: Sean Coffey, Carl Andren, Adrian Stephens. Other nominations will be solicited later, for discussion on Thursday (tentative).
- Chair reviewed status update from doc 01/432
  - Group has grown rapidly
  - Large group stresses need for formality for efficiency
  - Chair reviewed history of group, including adjournment at May 2001 session before confirmation vote.
- Objectives of July session
  - Complete selection procedure
  - Enable first draft by reaching 75% consensus
  - Select editor
  - Objectives by day
    - Monday: Set agenda
    - Tuesday: Open discussion with possibility of bringing motions
    - Wednesday: Additional round of voting
    - Thursday: Select editor, unfinished business
- Announcements (again from doc 01/432)
- Review of decorum in meeting
- Question from Jim Zyren: What if someone is speaking and another member wants to make a motion from the floor? Chair: Under Robert's rules, motion must be in order while another member has the floor. The member wanting to make a motion while another person is speaking should stand and wait for the chair to recognize him/her.
- Presentation of proposed agenda: doc 01/392r1
  - Minutes from Orlando: doc 01/318r0
    - Harry Worstell moved to adopt minutes as presented
    - Al Petrick second
    - Approval vote: 73/0/4
  - Chair mentioned that for Tuesday discussion topics must occur before motions are allowed, thus motions before discussion has closed will be ruled out of order
  - Wednesday discussions will be "proposal authors" followed by a step 19 vote
  - Thursday agenda will be for editor selection, which must then be ratified by the WG as a whole
  - No TGg time on Friday
  - Motion to adopt by Stuart Biddulph, seconded by Srikanth Gummadi
    - Discussion
      - Bruce Kraemer asked if these are special orders or general orders – in other words are the times in the agenda hard and fast, or flexible. Chair: These are special orders, so the times are binding
      - Carl Andren: Speaks against special orders – as unduly binding

- Jim Zyren: Moves to amend agenda that times specified are for guidance only, which would make the agenda general orders
  - Seconded by Bruce Kraemer
  - Comments by Jim Zyren: there has been inefficient use of time because of special orders in the past, so he believes this will move the group along faster.
  - Bill Carney: From the past, FCC document filed; is Vic's document for the FCC to be reviewed by this TG? Is it acceptable to amend the amendment to include the FCC? Chair: This stands alone, and should be introduced as a separate motion.
  - Vote tally: 61/1/15
  - Revised document is 392r2
- Adrian Stephens: Does the motion apply to all four days, or just Monday?  
Chair: All four days.
- Bill Carney: Would like to insert a regulatory discussion agenda item as item 5.25 after old business to review FCC letter draft from ad-hoc regulatory
  - Seconded by Anuj Batra
  - Bruce Kraemer: Is this to coordinate with ad-hoc regulatory, or just for TGg? Bill: It needs to be on the agenda, and this group has always reviewed in the past.
  - Discussion: Could possibly have joint meeting with Vic Hayes's ad-hoc, but chairs would need to coordinate, since the regulatory meetings are in a different hotel.
  - Zyren: Motion to change the time of the regulatory discussion to after the voting procedure, under new business.
    - Second: Jan Boer
  - Chair asked the body to stand at ease while consulting with the 802.11 chair
  - Chair asked Mr. Carney if the motion modifies the intent – he replied yes, so the amendment negates the original.
  - Mr. Zyren cited section 12 of Robert's Rules (P. 130, lines 5-8); a motion to amend can be hostile, so he believes this motion is in order.
  - After discussion with 802.11 chair, the motion by Mr. Zyren was ruled out of order. Mr. Zyren has asked to reserve a later point of order.
- At precisely 5:30PM, the chair adjourned the meeting for the evening.
- Mr. Zyren attempted to make a motion to extend, but the chair clarified that the meeting was already adjourned and by 802.11 WG directive, the SG's and TG's to not have the prerogative to meet outside the times approved by the WG and previously announced..

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Tuesday's Minutes  
7/10/01 8:00 am

- A motion on the table to adopt the agenda
- Bill Carney make a motion add the Regulatory Discussion to the agenda
- Jim Zyren reserved a point of order for the amend to Bill's motion to move the regulatory discussion after the vote.
  - Jim Zyren dropped his point of order
- Discussions of the motion on the table
  - Davis – Speak against the motion. He believes that the motion belongs in new business. Davis asked Mr. Carney whether it is germane for the vote?
  - Bill Carney reiterates the past importance of FCC on the voting procedure as in January. More specific, Bill emphasizes that Task Group G is physical layer and hence all FCC policy are important.
  - Sean Coffey – Speak for the motion. Sean believes that two documents being prepared by Vic Hayes might have relevance to the vote. Sean would like an opportunity to view the documents before the vote

- Mr. Allen – Speak against the motion. Due the large number of issues related to the regulatory body, Mr. Allen does not believe that Vic and his task group will be ready for discussion before the vote.
- Mr Kraemer – Speak against the motion. Mr. Kraemer reiterates Mr. Allen’s concern about the timeliness and length of any discussion with Vic Hayes
- Dr. Heegard – Speak for the motion. Dr. Heegard believes that we (TGg) as a body will not have sufficient time to discussion the issues. More, past sessions suggest that TGg might adjourn before any discussion on regulatory issues takes place.
- Dr. Halford -- Speak against the motion. He believes that the issues are not relevant to the vote
- Dr. Coffey – Again, speak for the motion. He reiterates his position that there is not enough time to discussion the issues nor can all the relevant issues be understood by viewing the reflector traffic. Dr. Coffey wants to know how well the CCK/OFDM proposal will work in the 2.4 GHz band before the final vote takes place.
- Mr. Molder – Speak against the motion.
- Mr. Carney – Again, speak for his motion. Based on previous sessions, the body immediately adjourns after the vote, so there may be no ability to discuss these issues
- Vic Hayes provides a point of information that members were informed months ago to provide information for the FCC document.
- Dr. Coffey counters that it has been very difficult to participate in Radio regulatory group. There has been a very low participation in the teleconferences because phones were not ready available and meeting times changed. Lastly, there are conflicts in schedule with TGg meeting

After a two minute recession, the chair announces that the Vic Hayes, chair of the 802.11 Ad-Hoc regulatory committee, is unwilling to change his schedule and form a joint session with TGg.

Point of information by Dr. Heegard – When is the deadline for the FCC submission? Vic Hayes told the body that the deadline for the document to be submitted to the FCC is August 25.

- How does this body provide its input to the Radio regulatory group? Vic answers that it is matter business that working groups work in parallel.
- The chair asked Vic Hayes if this body would provide input to his group, when would be optimum time to provide those inputs? Vic specified 5:00 PM Wednesday would be great.
- Mr. Davis – Speak against the motion. He believes that there has been plenty of opportunity for members to participate in the Radio regulatory
- Dr. Heegard – Fine with the 5:00 PM Wednesday.
- Mr. Kraemer – Ask whether the agenda can be modified such that issues pertaining to Task Group G be discussed? Vic answer that he cannot modify the agenda without the approval the group.

Point of Information by Dr. Heegard – What is the official policy to make a position with the Radio regulatory group? Individuals cannot speak for TGg at the regulatory meetings. They can represent only themselves.

Jim Zyren provided a point of information concerning the order of precedence? First time speakers take precedence over repeat speaker. Chair notes that and precedence is follow thereafter.

Called the question.

The Carney motion fails 14-52-10

Dr. Heegard motion and second by Anuj Batra.

Open Discussion for debate on motion.

Dr. Heegard speaks for the motion. He believes that the discussion is important and should be entertained.

Mr. Zyren speaks against the motion. He believes that the time is better spent on the discussions of PAR 19.

Vic Hayes specifies that the deadline is Aug. 25 or 27. Further, the inputs need to be in this week to make this deadline.

Kraemer- Speak against the motion. There is no additional value placed on comments by TGg. Thus, if the body does not supply input, there is no overall lost in content. Vic Hayes says that decision by group and individuals have equal weight.

802.11 Chair Stuart Kerry wanted a point of clarifications on the position from which Vic was speaking. Vic says he was speaking as an individual and parliamentarian and not as an official of the 802.11. Stuart believes that inputs from TGg should take precedence.

Dr. Coffey – Asks for a point of information about the role of 802.11, 802.15, 802.17 from Vic Hayes. Vic Hayes provided a description of the role of the radio regulatory body

Mr. Carney – Asks for a point of information. Asks chair to pull up the motion passed at the Monterey meeting concerning coordinating regulatory issues regarding the body. The chair retrieved the motion from the minutes, “Henceforth, all regulatory issues addressed through and coordinated by Adhoc Regulatory Committee as currently chaired by Vic Hayes”

Mr. Davis – Asks for a point of information about whether the discussion of regulatory issue to precede the counting of the vote.

Dr. Heegard answers the point of information that he intent was just to ensure that the discussion takes place.

Chair suggests to the votes are giving to a team of counter and have them return with the results. Approved by unanimous consent.

Dr. Halford made a call to question and Stuart seconds. Motion passes 36/33/12.

Privileged Request – 10 min recess. Not in order when someone has the floor and motion is pending.

Mr. Zyren asked for a point of information when discussions on part 19 will be in order and the procedure for the discussions. The chair will entertain all discussions on part 19 before any motions are in order under that agenda item. The chair requested all participants, who intend to provide a document concerning agenda item 5.1, please give their name and length of the presentation.

1. Zyren – 10 minutes
2. Hayes – 10 minutes
3. Chair – 50 minutes
4. Rios – 10 minutes

#### Technical Submission other than CCK-OFDM

Heegard – 60 minutes  
Carney – 15 minutes

#### Technical Submissions by authors of CCK-OFDM

Halford – 10 minutes

Jim Zyren motion to amend the agenda to allow the presentation of the four paper by Zyren, Hayes, the Chair, and Rios, with discussions are withheld until after the completion of the paper, at which time both discussion and motion shall be in order. Jan Boer second the motion

Chair asks for clarification and Zyren confirms that it is not the intent of the motion to limit any further papers from being presented.

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Wednesday 7/11/01  
Minutes 10:30 am

Motion to amend the 4 papers (Zyren, Hayes, the chair, Rios) described by chair

Motion is made by the body, not intended to limit the number of presentations.

Motion to amend the proposed agenda: **Move to present papers under agenda item 5.1, Discussion of the Selection procedure, including but not limited to documents by Zyren, Hayes, the chair, Rios. Discussion shall be withheld until after the completion of the papers at which time, both discussion and motions shall be in order.**

POI (Heegard): Usual practice is to allow questions. Does this limit the time for questions?

Chair: Is there an objection to these papers?  
On unanimous consent, agreed to have the 4 papers presented.

Zyren: Favor. Not a proposal to limit the number of papers or the discussion  
Boer: Favor, like not to spend too much time on the motion

Clements: against, It's hard to make a decision without knowing the contents of the papers. Propose to divide the motion into 2 parts. Carney seconds the motion

Zyren POO: The first part is not amendment, it's restatement of agenda. Part 2 is the only amendment.

POI (Carney): question the legitimacy of the proposal to split?

Chair brought the group to order

Chair: POO by Zyren whether the motion to split is in order or not. Propose a vote to the body to decide whether it is in order..

POO (Carney): motion to divide is not debatable

Chair: Clements/Carney made a motion (to divide the question) that is not debatable. Mr. Zyren has raised a POO as to whether or not the motion to divide is in order. The chair must rule on whether the motion to divide is in order. The chair believes that it is, but he will put it to a vote of the body has to determine whether the motion to divide is in order or not, since it is not absolutely clear

Clements: Favor of validity of the motion being in order. I have met all the req. for the dividing of the proposal.

Zyren: Section 27, RRO, both the parts of the division should be valid, in this case the second part has no validity if the first one doesn't pass, so I question validity of the motion. Zyren calls the question.

Chair: Is there any objection to calling the question?  
Clements: Yes

Chair: Call the question seconded by Boer. Vote "Call to question"

For: 60  
Against: 16  
Abstain: 11

Motion for "Call to Question" passes

Chair: Vote "Believe motion to divide is in order"

For: 29  
Against: 46  
Abstain: 11

Motion to divide the question fails. Assembly rules that the motion to divide is out of order.



Chair: Mr. Zyren's POO has been sustained. Mr. Clements has the floor.

Clements: Move to amend this motion. Insert the words, "Beyond questions of clarification"

Motion to Amend by Clements:

**Move to present papers under agenda item 5.1, Discussion of the Selection procedure, including but not limited to documents by Zyren, Hayes, the chair, Rios. Discussion"beyond questions of clarification" shall be withheld until after the completion of the the papers at which time, both discussion and motions shall be in order.**

Second : Wilhoyte

Opened to debate

Srikanth: POI "Is this friendly amendment"?"

Chair: Friendly amendment implies that it seeks to strengthen the original motion to help it pass, however, procedurally a friendly amendment is handled no differently than any other amendment.

Clements: In favor of amendment. Answer to question "friendly?": I made this amendments because limiting questions after presenting a paper is highly unusual in this group. Papers are complex, so some amount of questioning after presentation is highly expected. This is made to ensure that simple explanations are not ruled out of order.

Wilhoyte: Favor, a friendly amendment to keep things moving. Simple clarification is a good way to get answers to simple questions on the paper. Clarification of answers is a good way towards progress.

Zyren: Strongly against. Clarification questions can be held to later. Mr. Zyren calls the question.  
Motion to call the questioned seconded by Mr. Boer.

Chair: Is there any objection to calling the question?

Member: "yes"

Chair: We will vote on whether or not to call the question.

Vote "In favor of calling to question"

For: 54

Against: 6

Abstaining: 16

Motion "call to question" passes

Chair: Will not vote on the motion by Mr. Clements All those in favor of the motion to amend.

For: 38

Aginst: 35

Abst: 8

Motion to amend passes.

Upon hearing no objection, Chair declares a recess.

**1 pm:**

Currently have the amended motion on the table

Clements retains the floor

- Clements: Against the motion due to language.
- Halford: Favor of motion. Good to go thru' the papers quickly so that all questions can be answered later.  
"Call the question"

- Seconded by Carl Andren
- Vote “Favor of call to question”
  - For: 37
  - Against: 13
  - Abstain: 8
  - Motion passes
- Vote “Favor to adopt amended motion”
  - For: 47
  - Against: 14
  - Abstain: 6
  - Motion to “adopt amended motion” passes
- Amendment included in the new version of the agenda
- POO (Clements): Chair should return to the same queue before the previous motion was introduced to preserve order
- Chair: Clements inserted in queue
- Zyren: “Call the question on the motion to approve the agenda”
- Carney POO: “Requests to reserve a POO on the agenda itself”
- Zyren’s motion seconded by Mr. Milner
- Vote “Calling question for ending debate on agenda modification”
  - For: 51
  - Against: 2
  - Abstain: 17
  - Motion passes
- Vote “To adopt agenda (doc. 392r2) “
  - For: 68
  - Against: 4
  - Abstain: 0
  - Motion passes
- Chair: Have been notified by 802.11 secretary of an issue. There is a document on the server with misleading title since it calls itself “Draft TGg standard” and the body has not yet approved a draft. Authors are requested to change name and/or remove document
- Vice Chair John Terry read IEEE document #336r1 by Ken Clements, “Resolution in Support of Chair 802.11G”
- Chair’s presentation “TGg Chair’s Guidance on Technical Selection Procedure”
- Since Chair was answering questions, John Terry will keep the queue for questions of clarification
- Clement POI: several times 75% was brought up. 75% of what? 75% of consensus could include “abstain”?
  - Clements 1<sup>st</sup> Q: 75% of what?
  - Chair: Recalled procedure Step 19. The threshold is set by 802
  - Clements 2<sup>nd</sup> Q: “none of the above” – was that specifically taken out of the ballot?
  - Chair: Recalled that there was a discussion on “none of the above” prior to a vote. At that point in time, chair clarified that in 802.11b, the body specifically decided to put “none of the above” on the ballot. Since 802.11g had not made a similar motion, the chair did not put this on the ballot. Chair clarifies that 802.11g can decide to put “none of the above” on the ballot now and should, because it only makes sense to have an option to decent.
  - Zyren POI: This is included in the Hilton Head Mtg minutes
  - Terry: not needed right now.
  - Clements 3<sup>rd</sup> Q: Discussion on consensus & merger – if only one proposal remains, you can’t resurrect two “dead” proposals and merge them together.
  - Chair: Some rules can restrict certain things, for example, “limiting debate.” There are no forced mergers.
  - Greer: “increase in attendance of TGg” – what is the intent of motive of showing that foil.
  - Chair: To explain what Step19 means, to identify that there are about 20 people who made that decision to come up with unambiguous interpretation.
  - Greer: Could there be different interpretation between a group of 20 and that of 150?

- Chair: Reasonable people could have different interpretation, and that is why we have a problem. If the group wants to know what the true intent was, they need to go to the 20 or so people. Believe there is a larger problem that the vast majority of members were voting with different interpretations of the rules. This needs to be resolved fairly.
  - Meeting is recessed till tomorrow
- 

Wed 7/11/01 8 am

- Chair called meeting to order. The doc # for yesterday's presentation by Chair is 460.
- Presentations
  - Related to Selection proc.
    - Chair – 50m (Done)
    - Zyren – 10m (11-01-441r1)
    - Hayes/Boer – 10m (11-01-415r1)
    - Rios – 10m (Withdrawn)
    - Clements – 10m (11-01-473r0)
    - Heegard – 20m (11-01-476r0)
  - Technical
    - Heegard – 60m
    - Carney – 15m
  - Tech sub by CCK-OFDM
    - Halford – 15 or 20m
- Zyren presentation: **“Clarification of Selection Procedure Step #19”**
- Carney: Robert's rule is supposed to protect the rights of minority
- Zyren: Robert's rule does execute will of majority while protecting rights of minority
- Biddulph: What are you proposing will change in subsequent votings?
- Zyren: Small modification to the ballot. Step 19 doesn't change.
- Heegard: Statement about notion of “least” – least is a mathematical term – a set containing a single number has the least number.
- Zyren: least is a comparative term in real life.
- Carney: POI - How did the body decide about the ballot structure – question to Chair
- Chair showed the minutes from doc. 11-01-214r0.
- Zyren requests that the Chair does not have to search document, hence pointing out the doc # is enough
- Heegard: “none of the above” is not included, so next ballot will have CCK-OFDM and abstain. This means even with 1 vote in favor, CCK-OFDM will be selected. That is not right.
- Chair ruled that it's not a clarification question, but allowed Zyren to make a brief response.
- Zyren: Ballots were designed prior to voting, and the essential text (Pg 3 of doc #441r1) contains the essence of the intent of the group
- Heegard: What should we do next?
- Zyren: We should select CCK-OFDM. We should allow the group to suggest changes and modify the proposal accordingly.
- Carney: How is this fair to those members of this group who have a different understanding of Step #19?
- Zyren: The body has an understanding of the process, which is captured in the written document.
- Coffey: You are suggesting a procedure, and if I understand correctly, in the future rounds of voting, your proposal gets multiple chances to modify. Does Step 19 require any change?
- Zyren: Step 19 requires no change. Any modifications to the proposal is based on “legitimate technical reasons”.
- Coffey: Changes based on “legitimate technical reasons” – is that implicit in Step 19 or explicit.
- Zyren – It is explicit in Step 19. It requires no further changes.
- Carney: POI, When does the body own the proposal so that changes are based on valid technical reasons only.
- Chair: That's a valid question. Once the body enables the draft, then it belongs to the body. Under our current selection proc, there are sections in the procedure, which prevent certain things, e.g. forced mergers.
- Carney: POI, given that, under current selection procedure, is there any requirement for technical modifications?

- Chair: In our current selection procedure, there is no requirement for a member to provide technical modifications.
- Zyren: Members are operating in good will. If there are any objections, then those can be raised to the assembly.
- Hayes: POO, Robert's Rule says that each person can have only two questions, but some members are getting more than two. Also I move that each person should be given at most 2 min. for questioning.
- Chair: Restore order - all members take their seat. Mr. Hayes has identified the rule accurately, but it is applicable only to debate, and currently we are trying to answer clarification questions. There is not motion on the table, so the rule is not applicable.
- Batra: Adding none of the above will change the way we've voted in the past, but similarly adding technical comments will also change the way we've voted in the past. How is one acceptable over the other?
- Zyren: Ballots are not defined or specified in Step 19, they are adopted by the group.
- Batra: But you are proposing a certain type of ballot, aren't you?
- Zyren: Not really.
- Coffey: Do you want the CCK-OFDM, None of the Above, and Abstain on the ballot
- Zyren: I'm not proposing a ballot at this time. All I'm saying is that ballot structure needs to be defined.
- Heegard: Is your interpretation here consistent with that of the Chair.
- Zyren: No
- Chair thanked Mr. Zyren for his presentation
- Boer/Hayes: **"Proposal for interpretation of Step 19 of doc 11-00-209r3"** (#415r0)
- Chair: Vice Chair and I would like to encourage the assembly not to get into a debate on the proposed motion. Only clarification questions only.
- Clements: What do you mean by "broad support" among the members of the committee?
- Boer: based on the results of last vote.
- Clements: Isn't it true that the elimination round is "lack of support" as opposed to the "explicit support"
- Boer: That's an interpretation
- Coffey: In your document, I didn't see any point which addresses the fact if there is no broad support for the existing proposal
- Boer: It is not my intention to exclude it, but it's up to the body to take care of this issue.
- Clements: What "things" would be thrown away if we "start over"?
- Boer: No presentations or documents would be thrown away. It's the progress of several months that would be thrown away.
- Heegard: You have given an interpretation of Step 19. Would you say that it's consistent with the other interpretations?
- Boer: What other interpretation are you referring to?
- Heegard: Chair's and Zyren's
- Boer: Yes
- Coffey: What will happen if support is dropped?
- Boer: How we proceed, in what form – it's implicit in Step 19.
- Coffey: implicit, explicit or change? Step 19 requires changes or can be as it is?
- Boer: Implicit, Step 19 doesn't need to change. The wording is straightforward.
- Coffey: We seem to agree to disagree. You imply that Step 19 can be interpreted only this way, right?
- Boer: It's my interpretation.
- Heegard: We are talking about Step 19, which means Step 1 through 18 have already been taken? Are you proposing changing Step 19 or all the way?
- Boer: No way we are going back, this is a proposal to proceed forward.
- Heegard: That's not the interpretation of this body.
- Boer: That is my interpretation.
- Heegard POI: View of the chairs is that Step 19 should be repeated with all the three proposals.
- Zyren POO: Should the chair be not addressing his own presentation at this time?
- Chair: No.
- Dick Allen POI: Some of these questions are argumentative as opposed to clarification?
- Chair: I have not noted anything argumentative so far, but Chair will be noting this and encourage the body to be aware of this point.
- Coffey: The fact that progress will be thrown away, is that your interpretation or was it captured in Step 19.

- Boer: I feel that the progress we have made so far will be thrown away if we started Step 1.

Boer/Hayes doc changed to 11-01-415r1, based on the questions/comments by Assembly.

- Coffey: “The group would have to start over” – where is this coming from? Is it the opinion of you or your coauthor?
- Webster POO: This question was asked before
- Chair ruled based on the minutes that the question will be allowed.
- Halford POO: Isn't this an argumentative question?
- Chair consulted with Vice Chair for ruling. The ruling is that speakers can only state their opinion and don't need to back it up with arguments.
- Coffey: Two misunderstandings for Boer, a) we'll have to start over, and b) will it be due to parliamentary law or due to practical matter?
- Boer: I believe I've already answered that question, but I'll try to do it again. Based on the interpretation of the Chair, when the remaining proposal doesn't have 75% votes, the process needs to be started over.
- Carney: Starting over is something that you don't want to do?
- Boer: I've already answered that question. Yes, I don't want to start over.
- Batra: Why would the group be violating parliamentary law if proposal doesn't get 75% of votes?
- Boer: It would be unfair to the remaining proposal.
- Batra: Fairness is not parliamentary law. Can the co-author, Mr. Hayes, who is also the parliamentarian of 802.11, point out the part of parliamentary law that this would violate?
- Hayes: Parliamentary law is will of majority, if we didn't respect the will of majority, we'll be violating it.
- Batra: Should IEEE rules and bylaws supersede parliamentary laws?
- Chair ruled this is out of order, as it is not a question of clarification
- Lansford POI: Lot of discussion going on – Is there a process of ending the Q&A? How do we move on to the next presentation?
- Chair: Given that there are other presentations, Chair would encourage the assembly to be careful about preserving time while asking questions?
- Lansford: Will a straw poll be appropriate?
- Chair: That may be out of order
- Zyren POO: Straw poll is non-binding, so it doesn't require change in agenda, however it gives Chair a sense of the feeling of the assembly
- Chair: That is a statement, not POO
- Lansford: Can I move to do a straw poll
- Carney POO: It's out of order
- Chair: Yes, it's out of order.
- Heegard: Reading your proposal, next ballot should have only three items? How does a single vote get 100% in the current ballot?
- Boer: The same issue has been addressed by the Chair and me. Abstains are not counted. If the current ballot is used, all votes CCK-OFDM will be counted as 100%.

Rios withdraws his presentation.

Clements (11-01-473r0) “**TGg Step-19 Notes**”

- Selection vs. election. Standards are a selection process.
- Parliamentary procedure can't be used to force your ideas on to the body. We want standards that are useful for public and something that we are proud of.
- Coffey: If a proposal has been selected through downselect, why can't it be deselected?
- Clements: If a proposal has more than 50%, deselecting it violate parliamentary procedures.
- Carney: Is this a recommendation for proceeding forward?
- Clements: Yes
- Carney: Clarify your recommendation – suggesting a change in the existing procedure?
- Clements: It almost certainly is a change in the procedure, which can be achieved by a majority rule. My perception of the existing structure is so messed up, that some change is inevitable for proceeding forward.
- Batra: You are suggesting that a change in procedure, right?

- Clements: That's true. Due to some overfocus in process, we have gotten ourselves into this situation. Acceptability of the end product must be taken into consideration. Parliamentary procedure is to facilitate a process, not change the outcome of a process.
- Carney: Clarify the rationale behind termination of the process with no selection if CCK-OFDM doesn't get 50% vote.
- Clements: It's a new suggestion, it simply indicates whether the body considers this proposal to be acceptable or not. This is a graceful way to get some progress from all the work that we have done so far. During decision cycle process, technical innovations can take place.
- Heegard: If you have procedure that is locked, and majority changes the rules, what rights do the minority have?
- Clements: This is selection, not election. Minority, although, may have uphill and difficult time, have a way to assert its input onto the body. They have the power, through reason, debate and technical accuracy, to modify the outcome of the group.
- NO more questions, Chair moves to the presentation by Heegard
- Srikanth Gummadi POI: Clements' proposed voting repeatedly, can you vote repeatedly without any changes?
- POO Clements: Chairman, the question is out of order, based on agenda.
- Chair rules in favor of Clements because the question belongs to discussion section and Gummadi agreed.
- Chair asked Heegard if he would like to make the presentation now and split it or do it next time.
- Heegard requested presentation tomorrow
- Zyren POI: Delay the recess time so that Heegard can finish his presentation.
- Chair ruled that the body has no right to meet outside the time allotted at has been repeatedly reaffirmed by the 802.11 WG.
- Feng POI : Technical submissions are under 5.1 or 5.2?
- Chair: 5.2
- On Feng's request, Chair allotted 5 min. for Feng's presentation
- Chair declares a recess until tomorrow.

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#### Minutes

Thursday 7/12/01 10:30 am

1. Chair called the session to order
2. Heegard presentation "**Recommendation to the Body**" (11-01-476r1)
  - Reset to Step 18
  - Fundamental problem of Step 19 is ambiguity
  - Consequence of reset
    - i. Recap of what happened in 802.11b
  - Suggested a motion
3. Chair read out the motions present in each submissions.

- Hayes/Boer Moves that:

*The next round of voting, and subsequent rounds of voting, under Step 19 of the TGg Selection Procedure are used to improve the proposal that already has broad support and thus are NOT used as elimination rounds*

*Voters shall be allowed the following options on the ballot to select the remaining proposal:*

- a.) "Approve" --- indicating support for the proposal in its then current form
- b.) "Do not approve" --- indicating that the proposal is not yet acceptable
- c.) "Abstain" --- indicating a non-vote

*The 75% approve level is based on the total of "Approve" and "Do not approve" votes, and does not include "Abstain" votes.*

*Between ballots, the proposal team for the remaining proposal will be allowed an opportunity to:*

- 1.) Ask those members voting "no" to explain their objection to the proposal
- 2.) Make modifications to the proposal and/or merge with other proposals to address objections

—*Moved Boer/Seconded Kraemer*

- Clements Motion

*The first action should be to determine the current level of support in the task group for CCK-OFDM. To do this, a vote should be taken in the form suggested by Vic Hayes in doc.:IEEE 802.11-01/415-r0, which seeks results for the categories of Approve, Do not approve, and Abstain. If the support shown is at least 75%, the proposal should be selected as the basis for a TGg draft. If the support is below 75%, but in the majority, the will of the majority should be followed as to how to attempt further consensus. If, however, the approval rate is below 50% the down selection process should terminate with no selection, and the task group should develop a new selection plan.*

- Heegard Motion:

*Move to openly discuss, deliberate & adopt an unambiguous revised Step 19 procedure, reinstate all proposals eliminated under the current step 19 and execute the revised procedure following the failure to obtain a 75% approval of the CCK/OFDM proposal on a YES/NO/ABSTAIN ballot; in the event that > 75% approval is obtained on the ballot, the process moves to step 20.*

- Chair asked the body for any other proposals
- Chair opened the floor for a fair, open debate.
- Zyren: Move to adopt a period till lunch to complete the discussion, and bring motions to the table after lunch.
- Chair asked for objection from the body to this motion.
- Motion adopted by unanimous consent.
- Open discussion period (no motion on the floor)
- Heegard: Is there a mechanism to figure out if Step 19 is broken or not?
- Chair encouraged the assembly to bring up issues.
- Zyren: Step 19 is rather clear, a procedure to clarify how further actions should be done.
- Heegard: Chair's interpretation of Step 19, which he wrote, is different from the interpretation of others.
- Dick Allen: It is impossible for us to go back and assess what the body meant at the time Step 19. All we have is written words to interpret.
- Wilhoite: If we choose to adopt an understanding of Step 19 at this point, which is inconsistent with the Chair's ruling, I'd argue that it's not fair to the proposals that were eliminated based on Chair's ruling.
- Smart: I see two basic ideas to progress: a) pick an interpretation of Step 19 and proceed on, b) modify Step 19 based on a fair discussion and redo some of the work. Suggestion b will require a lot more work, but it will be fair to all members of the body. If we chose Suggestion a, it's not fair to all members.
- Roger Duran: We as a body are required have 75% votes. As we go forward, we have to be careful that we don't fall into an infinite loop. If we reset, we open a can of worms. As a group, I've not seen enough cooperation, hence convergence is difficult to achieve.
- Carl Andren: There has been a number of issues with respect to fairness. The original downselection was done with full knowledge of all the parties, how can it be unfair now?
- Barry Davis: There has been some discussion about "none of the above" adding to the ballot. During previous votes, nobody pointed out this. It's probably not fair to add it now.
- Chair clarified that this was brought up but the body chose to not include it.
- Jerry Thrasher: Abstains are not counted. Counting them for 75% calculation would make it reasonable.
- Chair: three motions: Hayes/Boer, Clements, Heegard. Any more motions? Chair noted that the motion proposed in his submission was advisory to the group, and he would not bring the motion himself, but if a member wanted to take up the motion, they could.
- Chair: Suggests straw polls as advisory to the group on the order to take the motions up in
- Zyren POO: Motions should be brought in the order in which they were received. Also, according to Robert's Rule, straw poll is out of order.
- Chair: Chair has full intention of complying with Robert's Rule. Chair will research and rule on this POO.
- Chair ruled that straw polls are out of order, hence there is no straw polls. Chair points out the irony that the straw poll was proposed to speed things up, but now we must go through sequentially
- Smart: Would like to take up chair's motion and bring Chair's recommendation of Step 19 as a motion.
- Chair: Duly noted. Now we have 4 motions.
- Chair showed and read through the four motions.
  - Smart Motion (Chair's original proposal, motioned by Smart)

•*Step 19 shall be execute again by reinstating all three proposals that were in consideration at the beginning of that round.*

•*Step 19 shall be execute again with NONE OF THE ABOVE option added to the ballot*

•*When only one candidate proposal remains in the rounds of voting, there shall be one and only one additional vote. If the proposal obtains  $\geq 75\%$ , the proposal shall be used for generating the first draft proposal. If the proposal obtains  $< 75\%$ , the proposal will also be eliminated, the Selection Procedure will be over, and it will be up to the members at large to determine how to proceed in enabling a draft standard*

30. Biddulph POO: approve, do not approve, abstain, but there is no mechanism to explain why they do not approve. No explanation is required in the ballot.
31. Chair rules against POO. If there is any ambiguity, there is mechanism to modify the motion.
32. Heegard parliamentary enquiry: Question about procedure. If I prefer one motion over another, how do we proceed in a rational way to move from one motion to another?
33. Chair declares recess for lunch

7/12/01 1:00 pm

1. Chair brought session to order
2. Chair responded to parliamentary enquiry. 3 things that can be done
  - a. When a motion is pending, an amendment can be made.
  - b. Motion can be laid on table by a majority vote and taken from the table by a majority.
  - c. Postponement – indefinitely by a majority vote or postpone to a specific time. If you postpone such that it becomes a special order, it requires 2/3 majority.
3. Heegard: One way to address other motions is to table this motion.
4. Chair: Yes
5. Clements POO: Hayer/Boer motion is out of order, because CCK-OFDM does not have a “broad support”, because previous votes were elimination ones.
6. Chair consults with Vice-Chair and parliamentarian. Chair states with support of the parliamentarian and vice chair, ruling is in support of POO.
7. Kraemer appealed Chair’s ruling. He would encourage the Chair to reconsider the ruling.
8. Zyren seconds Kraemer’s appeal.
9. Debate started
  - a. Carney: Favor of Chair, VC, parliamentary. Clarification: Each member can speak only once, only Chair can speak twice (confirmed by Chair). Since CCK-OFDM has never been tested against “none of the above”, it can’t claim “broad support”.
  - b. Clements: I’m not hostile to this motion; I’m hostile to this form. The basic structure, once edited properly, can be resubmitted.
  - c. Todor Cooklev: Favor of Appeal, the motion can be easily edited by replacing
  - d. Ohara: Favor of Chair. The motion in its form, once passed, will put the proposal on record as having a broad support. Also, there are too many points in this motion. This should be broken down into independent motions.
  - e. Halford: Favor of Appeal. Quibbling over “broad support” is a waste of time. The authors meant broad support =  $> 50\%$  vote
  - f. Zyren: Favor of Appeal. Chair’s ruling has no basis, according to Robert’s Rule.
  - g. Boer: Favor of Appeal. As author of the motion, I’m very disappointed that we spent so much time on definition of broad support.
  - h. Kraemer: Clarification of Appeal. Apparently a new precedent is being set. There is a proper procedure for setting amendments to a motion. The motion on the screen is amendable, and dismissing a motion based on one member’s objection is questionable.
  - i. Hayes: I can’t find any reason in Robert’s Rules why this motion was ruled out of order.
  - j. Clements POO: Request reading the minutes to Mr. Hayes.
  - k. Chair offered that the Secy could read the minutes to Mr. Hayes
  - l. Hayes: Will take 20 min. to read, so instead just spoke in favor of appeal.
  - m. Coffey: Is there a unanimous consent way to get us out of this? Maybe a straw poll, or some other means to get back to the task at hand.



- n. Webster: Favor of appeal. This motion was presented in a paper yesterday, and Boer explained what he meant by “broad support.” Also, during the clarification, no questions were raised on this issue.
- o. Fakatselis POI: Agree with Clements’ concern. However, under what paragraph of Robert’s Rules has this motion been identified out of order?
- p. Chair referred to Pg. 107 of RONR (10<sup>th</sup> ed), Para 3, No motion is in order that would conflict with or that presents substantially the same question as one which as been *temporarily but not finally disposed of* - whether in the same in the preceding session. Hence Chair ruled as he did.
- q. Hayes POI: Secretary captured the ruling verbally or not.
- r. Chair confirmed after consulting with secretary.
- s. Heegard: Favor of appeal because it’s not the fair way to proceed.
- t. Kitchin: Favor of appeal. Call to question, seconded by Hayes.
- u. Frank Korbeth: Chair would need to clarify his position.
- v. Chair wants to make the right call in consultation with VC and parliamentarian. Chair emphasizes that every single member has the right to vocalize his/her point of view. Suggesting that Mr. Clements has no right to make a POO because he is in the minority is absolutely incorrect. The minority always has a right to making a point of order, and the chair, vice chair and parliamentarian agree with the POO for various reasons. The chair main reason is Pg. 107 of RR. The issues of what does and does not have broad support has been set aside for the time being to decide the procedure. Passing a motion that states that something does or does not have support as part of our attempt to decide our procedure is thus out of order as supported by RR.

Another member said that it’s a fair way to proceed to allow this motion. Fairness and consensus are important are very important considerations that the chair has strongly advocated even in this session. It’s the chair’s job to do his best interpreting the rules, and the rules do not always guarantee fairness.

One member indicated that “Move that the sky is green” is a valid motion. Chair agrees with that completely. However, the fallacy of the motion is not why it has been ruled out of order. The chair has ruled the motion out of order, because it deals with a matter than has been set aside until a latter time.

- w. Vote “All those in support of Chair’s ruling, raise your voting token
  - i. For: 34
  - ii. Against: 47
  - iii. Abstain: 9
- x. The appeal stands. Chair states that the motion is in order.
- 10. Boer: Support of motion. Intention is not to change the selection procedure. This is to help the balloting. This will help the process come to a consensus.
- 11. Carney: Permission to use laptop (granted). No.of repeated rounds can be an infinite loop. When does it end? The fundamental hole is that we don’t have any proposal and we seem to have jumped to a comment resolution.
  - a. Modification suggested in 11-01-415r1 to expedite a solution
- 12. Zyren POO: IEEE-SA says until a proposal achieves 75% support, the proposal does not belong to the body, it belong to proponents. Since the motion has not been seconded, it can be amended.
- 13. Carney: requested appropriate process for making the amendments.
- 14. Coffey: a complicated issue has been raised. Is there a unanimous consent to focus on this – there is a “bait-and-switch” problem. 50% you’re selected, and not 75% proposal doesn’t belong to the body. This doesn’t seem fair.
- 15. For consultation, Chair ruled recess for 10 min. 2:45 pm
- 16. Chair set the body in order 2:55 pm.
- 17. Chair proposed that Carney, Zyren, Boer, Hayes can get together, come up with a suitable amendment and when the body reconvenes at 6:30 pm, there will be a proposal that is acceptable to all.
- 18. With no objections to recess, Chair ruled to recess till 6:30 pm

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7/12/01 6:30 pm

1. Chair brought session to order
2. Doc no. 11-01-500r0 is on the server, which has all the Motions related to the selection procedure.
3. We are on agenda item 5.1
4. The Hayes/Boer Motion with Carney Amendment:

***The next round of voting, and subsequent rounds of voting, under Step 19 of the TGg Selection Procedure are used to determine support for the remaining proposal.***

***Voters shall be allowed the following options on the ballot to select the remaining proposal:***

- a.) ***“For Proposal” --- indicating support for the proposal in its then current form***
- b.) ***“Reject Proposal” --- indicating that the proposal is not acceptable in its current form***
- c.) ***“Abstain” --- indicating a non-vote***

***The level of support is based on the total of “For Proposal” and “Against Proposal” votes, and does not include “Abstain” votes.***

***Until a level of 75% has been attained for the final proposal - indicating its formal selection - between ballots, the team making the remaining proposal will be allowed to modify that proposal.***

***Should the remaining proposal fail to attain 50% support on any vote, the rounds of voting will terminate, the selection procedure will have been completed, the remaining proposal will be eliminated, and the body will then determine what happens next.***

5. Proposal seconded by Srikanth Gummadi
6. Zyren: rare example of constructive cooperation. Move to amend the motion in its current form, strike the words 50% and insert one-third.
7. Seconded by Boer.
  - a. Zyren: Favor of amendment. Step 19 rules are clearly defined, still the concession is being made to achieve “kickout clause”. Dynamics of the group has changed, many people have left, hence 50% is a level that may be too high a cutoff.
  - b. Chair: Clarification: Do you want this to modify the selection procedure or this to supersede the selection procedure.
  - c. Zyren: 2/3 level of support for removal of the proposal is something that we find acceptable.
  - d. Chair: Simple majority can change the procedure, just as a reminder.
  - e. Clements: Against the amendment. For several reasons, (a) it doesn’t make logical sense – while we want to get 75% for a proposal, why do we want to reduce the requirement? (b) setting a precedence for future – supermajority for modifying a procedure.
  - f. Boer: For the Amendment. This motion has come to a consensus, and these changes have been made towards reaching a consensus. 75% and 50% are too close to each other. If the body really wants stop the procedure, 2/3 majority should be required.
  - g. Carney: Against. I’m on record not supporting it, but let the group decide what we should do.
  - h. Fakatselis: For. I used be chair of 802.11b, which set the selection procedure used by this group. One of the items not very well thought out was “exit clause”. This discussion is setting precedence in this direction. Requiring 2/3 majority to remove a proposal is consistent with Robert’s Rule, which requires 2/3 majority for reconsidering or rescinding any process. Furthermore, I agree with Chair that we need only 50% majority to modify Step 19, but until then, any reconsideration or rescinding will require a 2/3 majority.
  - i. Coffey: Against. There are different types of votes, ballots are previously announced, when all members can participate. And, there are situations when whoever happens to be present, participates in the vote. Let’s have a vote that reflects the will of the body. There is a big difference between 50% and 75%. 33% is too low, majority should rule.
  - j. Halford: For. Goal is to move forward. Keeping a low threshold of 33% gives us a chance to add or modify a few more technical ideas. The selection procedure will be hurt because we’ll be starting over if we keep 50% threshold.
  - k. Heegard: Against. Amendment is puzzling, because if a proposal with “broad support” can’t achieve 50%, that’s trouble. Also, a simple majority can change the procedure, but we also heard that one needs 2/3 majority to change the procedure.

- l. Chair: Simple majority is required. Asked Zyren to clarify.
  - m. Zyren: Supports Chair's statement. This amendment is specific to this step, and does not change the basics of Step 19.
  - n. Heegard: During the last vote, the eliminated proposal had 42% vote, so reducing the threshold is curious. Also, in Robert's Rule is there an example of doing something with less than 50%, because you hear about 60%, 50%, 2/3 etc.
  - o. Chair: Yes, there are examples where certain things can be done with less than 50%, e.g. in US Congress a roll-call can be made with only 1/5 vote.
  - p. Chair and VC consulted with Fakatselis
  - q. Chair: Since this amendment can be modified by a simple majority, Chair rules that it is in order
  - r. Heegard: Call to question, seconded by Smart
  - s. Vote "All in support of Zyren's amendment"
    - i. For: 49
    - ii. Against: 41
    - iii. Abstain: 3
  - t. Motion passes (requires only a simple majority)
8. Zyren: Call to question, Seconded by Carl Andren
  9. Jerry Thrasher Parliamentary enquiry: How does this motion affect voting on other motions.
  10. Chair: We are on the amendments. Consideration of other motions may be out of order if they conflict with H/B motion with Carney Amendment and second. Zyren Amendment
  11. Clements: Objection to call to question
  12. Chair: non debatable, we go to a vote "All in support of calling to question"
    - a. For: 68
    - b. Against: 5
    - c. Abstain: 10
  13. Motion to call to question passes
  14. Clements POO: A motion is allowed to have at least one speaker in favor, an one against. In this case there was no speaker against.
  15. Chair: By unanimous consent, having no objection, we are back on debate.
  16. Zyren: For the amendment. This moves us forward.
  17. Hayes: For consistency, make both as "Reject Proposal" as opposed to "Do not Approve" in one place.
  18. Hearing no objection, Chair modified the document.
  19. Clements: Against. Selection and election difference must be considered. This motion, as amended, does not reflect IEEE precedence. In case of IEEE, 15% people with strong technical objections can stop a proposal from acceptance in Sponsor ballot.
  20. Halford: Call to question, seconded by Smart.
  21. Vote "All those in favor of Carney amendment, also amended by Zyren"
    - a. For: 68
    - b. Against: 23
    - c. Abstain: 7
  22. Motion passes
  23. Chair: We are back on the queue
  24. Carney POI: Make sure that we understand what we are doing. Once we pass this motion, will any rescinding require 2/3 majority or a simple majority do?
  25. Ecclesine: If a notice has been given, then rescinding can happen with a simple majority. If no notice is given, it requires 2/3 majority.
  26. Carney: Favor of the modified amendment
  27. Smart: Against. Even though there has been a lot of work by the teams involved, there is potential for endless rounds of voting. I would like to limit the rounds of voting.
  28. Zyren: "Call the question". Seconded by Halford
  29. Vote "All those in favor of Hayes/Boer/Carney/Zyren motion"
    - a. For: 74
    - b. Against: 16
    - c. Abstain: 8
  30. Motion passes. Assembly applauds.
  31. Chair: recessed until 8:10 pm
  32. Session resumed at 8:10 pm.
  33. The remaining three motions were withdrawn by respective authors.
  34. Chair: Motions are in order

35. Ecclesine: I'd like to reserve 10 min. at the end for new business.
36. Clements: Move to adjourn. Second from Frank Howley
37. Objections: Zyren, Andren
38. Vote "Favor of adjourning session"
  - a. For: 4
  - b. Against: 66
  - c. Abstain: 14
39. Motion fails.
40. Chair: Still under Agenda item 5.1. Now moving to 5.2
41. Carney/Heegard presentation "**Attaining >75% Acceptance: A Potential Consensus Solution for TGg**" (11-01-446r0)
  - a. It's not a proposal. Only one proposal CCK-OFDM is remaining.
  - b. Both CCK-OFDM and PBCC transmitters are necessary
  - c. Either CCK-OFDM or PBCC or both receivers.
42. Clements: Interesting proposal moving towards consensus. How much circuitry one has to implement for CCK-compatibility in the mandatory part?
43. Heegard: We don't discuss receiver. Mandatory on transmit side, the CCK-OFDM is a lot more complicated, PBCC is fairly small.
44. Clements: What's the minimum required?
45. Heegard: Fairly simple.
46. Clements: Excellent opportunity. A designer voting against CCK-OFDM will find it more acceptable.
47. Carney: Consensus is the whole issue here.
48. Webster: The parallels with wired lines, where a single loop exists, and a handshaking takes place. In case of wireless, there is no chance for handshake, so some of the issues needs to be thought through. Specially in dynamic conditions, this may be difficult.
49. Heegard: Some parallels do exist. e.g in V.34, first one came with 16 state decoder. Initial chips tended to have 16 state, but some of the folks had 64-state. MAC development folks can make some comments
50. Sid Schrum: In short, there is already in MAC standard, there is an anticipation of additional ideas. This proposal is bringing only new combinations. We currently already have similar situation, e.g. today 11 Mbps using PBCC, a TX could transmit 11 Mbps using PBCC and receive 2 Mbps using Barker code. We already have this situation.. Basic rate set is specified, as an administrator, you can select the best rate as an administrator. This proposal will not create any new situations.
51. Lansford: Complexity was mentioned, both standards need to be sent through PA and antenna.
52. Heegard: PBCC uses the same radio of CCK of .11b of today. Hence, the issue of PA and antenna doesn't change.
53. Clements: Two scenarios: two units want to talk to each other, if both are fully featured (both RX), is there a certain circumstance that one or the other waveform is better?
54. Heegard: .11b does not specify anything in this regard. The receiver can decide which one to choose.
55. Clements: If there are 2 groups, one with only one kind. Is there is situation where one group gets better performance than the other?
56. Heegard: An implementer might conclude that for modest rates, PBCC goes farther. For short distances, CCK has a higher rate. My suggestion is to put both receivers.
57. Andren: PBCC has a small transmit complexity compared to receiver, but same is not true for OFDM. So it make sense to keep OFDM receive as mandatory.
58. Heegard: Disagree. There is more to just FFT in OFDM receivers, hence it has much more complexity
59. Roy: Isn't there a fast switching mechanism needed?
60. Heegard: Nothing more than what's there in today's .11b system.
61. Heegard: there is paper (doc. 01/477), that I would like to present in the next meeting.
62. Chair: Hearing no objection, Ecclesine makes a motion
63. Ecclesine:
  - a. Move to empower TGg to hold an interim meeting in September, and conduct teleconferences before the Nov. 2001 IEEE 802 plenary (procedural)
  - b. Move that WG, if necessary, conduct a WG letter ballot after the Sept interim meeting to forward the TGg draft normative text to Sponsor ballot (procedural)
64. Seconded by Joha Heiskala
65. Zyren: This group is empowered to do second part, we don't need to make a motion for this.
66. Ecclesine: modify to remove the second part
67. Gilb: We already are empowered to do, so what good does it do?
68. Chair: This will be discussed in WG tomorrow, thus let's withdraw the motion since we are out of time

69. Chair: barring no objection, motion is withdrawn and session adjourned.

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**IEEE P802.11**  
**Wireless LANs**

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**TGh minutes of the July 2001 Session**

**Date:** July 13, 2001

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Tentative agenda:

- 1) Appoint Peter Ecclesine secretary for Monday meetings
- 2) Chair's status update and Review of week's TGh schedule
- 3) Status review
  - Proposals in consideration

## 1 Appoint secretary

## 2 Review of week's TGh agenda

### 2a Status Review

Mika Kasslin gave a short report about the creation of the single merged proposal, 01/411r0, "Draft Normative Text Proposal for TGh," by **Authors:** S. Choi<sup>1</sup>, Peter Ecclesine<sup>4</sup>, S. Gray<sup>2</sup>, C. Hansen<sup>5</sup>, M. Kasslin<sup>2</sup>, J. Kim<sup>5</sup>, S. Mangold<sup>3</sup>, Andrew Myles<sup>4</sup>, David Skellern<sup>4</sup>, and A. Soomro<sup>1</sup>  
Philips Research<sup>1</sup>, Nokia Research Center<sup>2</sup>, ComNets Aachen University<sup>3</sup>, Cisco<sup>4</sup> and Broadcom<sup>5</sup>  
Mika then reviewed 802.11 polocoos and rules.

## 3 Vote to approve or modify agenda

Tuesday late morning session changed to have more time for draft normative text review. Wednesday morning modified to have status check in first session immediately after votes are counted.

Motion to approve David Hytha/Andrew Myles  
Y-10 N-0 A-0

## 4 Review and approve 01/288 minutes from Hilton Head meeting

Mika moves to postpone approval to Thursday morning

## 5 Review and approve 01/289 minutes from Orlando meeting

Mika moves to postpone approval to Thursday morning

## 6 Regulatory requirements update

DFS and TPC. ERC 99/23 is archived as IEEE 802.11-00/171. Mika hilights BRAN24d102 document "Radar detection performance of HIPERLAN/2 in start-up mode" to show how the license holders are lobbied with analysis papers in the standards bodies. Mika presents BRAN24d128 summary document on the public enquiry. (BRAN/Docfile/BRAN24d021 has all the received comments from the public inquiry).

## 7 Presentations of the joint proposal

TPC Overview of Joint Proposal, presented by Andrew Myles  
DFS Overview of Joint Proposal, presented by Amjad Soomro, Chris Hansen

## 8 Discussion of the joint proposal (10 July)

How does country information get initialised for iBSS? How does the station starting an iBSS function?

Comments 3.51 DFS IEEE802.11a should be changed to a term that remains correct when the IEEE 802.11 standard is republished. Consider adapting definition text from an existing public text that mentions the spreading requirements (e.g. BRAN24d021 has UK Government comments from public enquiry -- UK Comments on PE20010525: EN 301 893 V1.1.1 (2001-01)).

## 9 Discussion of 01/287r2 Proposal Comparison Matrix

How the matrix was constructed

802.11 TGh minutes for 07/10/01 6:30pm - 9:30pm.

6:45pm - called to order Mika Kasslin calls to order and reviews progress to this point.

Have reviewed 01/411r0. Mika plans to present comparison criteria matrix, available on server under 01/287r2 dated for today 07/10/01. Format is identical to previous version.

only on column (only one proposal). Includes information provided by the proposers indicating status of proposal 01/411r0 relative to the requirements of TGh. This was deferred from previous day.

Peter Larson: requests identification of changes to matrix.

Mika Kasslin: only minor edits have been made to incorporate all merged proposals.

Peter Larson: there are some empty fields.

Mika Kasslin: all requirements have been answered. subitems that appear empty are answered by parent item.

Steve Gray: relevance of some of information may be questionable now.

Amjad: affirms steve point with QoS example.

Mika: In hindsight, comparison criteria would look different if formed now, but it' s intention is to provide information for voting. So, it is probably OK.

Mika: Any questions? Hearing none, we proceed with the agenda.

At the end of the day. Voting will be here (Willamette) tomorrow morning at 8:30pm. Ballot is similar to Orlando. One proposal with voting options of for, against, or abstain. Depending on result of vote, we will progress towards letter ballot for Friday.

Sungyun: What is our interpretation of Step 19 of the selection process?

Peter E.: document is 093r1, on May 18.

Mika: Reads step 19. One proposal remains, so this is not an elimination vote. Process continues as long as we achieve 75% all is good. This is not an elimination vote.

Discussion on possible motion to clarify the interpretation of step 19.

Participants are Mika, Peter, Peter, Steve.

Peter: Suggest we add text to allow editorial/clarification purposes so that we can make changes to text prior to handing to working group.

Discussion on how to handle difficiencies in our proposal.

Peter: prior to TGh moving the proposal to working group, we can add to proposal.

Steve: TGe has gone through letter ballot. It still has big holes. New proposals are coming in now, after letter ballot to address those holes. We can do that for the DFS for iBSS.

Peter: Selection process has nothing to do with how we get a proposal to working group as long as we follow 802.11 operating rules. This means we can provide modifications to fill holes in the approved proposal.

Colin: What is the downside of not meeting Saturday?

Peter: 4 month delay due to requirement for first letter ballot to come out of a plenary.

Jansook: Point of information: Can our interpretation of Step 19 be different from other task groups.

Mika: Yes. This is our document and subject to our interpretation.

## **MOTION**

With one remaining candidate proposal, the confirmation vote is not an elimination vote. (Procedural)

Gray/Ecclesine

Mika: No discussion.

*For* - 12

*Against* - 0

*Abstain* - 1

Motion passes.

Mika: There was other discussion to add text to clarify selection process.

Peter: This is not necessary. We are empowered to modify the text to fill holes.

Mika: Any other issues to discuss? Review has been concluded, confirmation vote is tomorrow morning, then, hopefully, we progress.

Amjad: Clarification. Should the proposers offer a summary tomorrow?

Mika: Up to the proposers. Any objections to recess for the day. Hearing none, we recess.

## **10 Final statements before proposal selection voting**

Various statements supporting the selection of the joint proposal



## 11 Proposal selection voting about 01/411

Yes-24 No-2 Abstain-0

## 12 Enable preparation of text for draft letter ballot

We have to revise our draft normative text to fix editorial items and remove references to other draft standards. Need to address ERC decision for uniform spreading when changing channels.

## 13 Agenda Item 7.8 - Status check

Voting results with total of 26 votes cast

*For* - 24

*Against* - 2

*Abstain* - 0

## 14 Agenda Item 8.1 - Enable generation of first draft.

Mika: Must revise our draft text to remove references to unfinished work in other task groups, typos, missing words in Annex A, etc.

Give floor to the editor, Bill McFarland, to review our current draft. Intention is to have draft normative text ready for tomorrow so that we are prepared to move for a letter ballot at the closing plenary.

Bill: Has some notes on changes that were requested yesterday. He is taking notes within the draft document.

Mika: Currently, there is not a IEEE document number for this document.

Bill: Introduction...

Why is the introduction to the draft a parenthetical statement?

Bill: First few pages...

Mika: The draft we are reviewing is a copy of 01/411r0. The first few pages are added because they are required.

Bill: Definitions...

Discussion on the use of " 802.11a" in our draft. Issue is that in 2002 802.11a, b, etc., will be incorporated into a single document. Options so far are...

\* 5GHz 802.11

\* Spectrum Managed 802.11

\* 802.11a

Group decided to leave " 802.11a" . This is the only formally defined reference for our work and thus most readily understood within IEEE body.

Discussion on definition of " Dynamic Frequency Selection."

Should be a comment in the definition to clarify that signal is spread across the available channels and band. In section 9.13.2, description of DFS, a statement was added to clarify that any DFS algorithm should ensure uniform spread of occupied spectrum.

Discussion on 5.5 Hidden Station.

Cannot simply reference the Tge definition. At the present time, Tge draft is non-existent and thus cannot be used as a reference to our draft. As a result, the generic action frame format must be stolen from TGe and added into the TGh text.

**MOTION**

Empower editor to continue editing the draft normative text between sessions.

Ecclesine/Myles.

Mika: Discussion? Hearing none.

*For* - 5

*Against* - 0

*Abstain* - 0

Recess for break...

**15 Agenda Item 8.1 – Enable generation of first draft – Continued**

Mika calls meeting to order at 4:15pm.

Status – editor was empowered to finalize editing task in previous meeting. We now have a revised version of the draft document. We will go through this document now. We can accept the changes as made, reject, modify, etc.

Bill McFarland has the floor. Doc changes are in red. We will review these changes. Having trouble getting word to maintain table, figure and paragraph numbers.

.. Added “vii) { generic} Management Action “ to the 5.5 section of the text.

Actually utilized an existing 802.11 Tge document – 802.11e-Q-D1.0 – for the definition of the generic management frame.

.. Removed all footnotes used to describe original proposals. These are not appropriate for a draft text.

.. Element Ids used throughout this draft will be harmonized with other task groups before the sponsor ballot. To do so, we added a known gap in the numbering (11-35).

.. For TX power announcement in SERVICE field, all zeros is reserved. This is due to the fact that legacy nodes will transmit all zeros. TGH compliant devices will consider devices that transmit packets with the TX field set to all zeros as a legacy nodes.

.. Changed Figure 3 in paragraph 7.3.2.24 to clarify that the fields represent the 6 byte MAC address of a detector, via, and hidden station.

.. Added a statement to paragraph 7.3.2.25. Statement specifies that the switch time will occur prior to the TBTT after the reception of the channel switch announcement with the channel switch count set to 1.

Discussion on the meaning of the timing constraints offered in 7.3.2.25. The statement “STAs shall be given at least 1 ms to change from one channel to another” is misplaced and should be moved to another section.

Colin: We still have a problem with the specification of the finite amount of time required for channel switching.

General discussion on timing of the channel switch.

\* Option 1: Can specify that switch time occurs sometime between beacon and TBTT

\* Option 2: Can specify that switch time occurs right after beacon.

Mika: Resolved to use option 1.

Return to the 1ms switching constraint discussion.

Amjud: Suggest we add comment to instruct AP to account for latency due to switching to 9.13.1.1... “The AP shall take into account the channel switch time of the STAs.”

Mika: We will need to add the specification for switching time to the 802.11a PHY spec.

.. Changed length specification in 7.3.2.26

..Changed description of figure in 7.3.2.26

..Changed length specification in 7.3.2.27

..Changed length specification in figure 6 to be variable because the measurement report field is a nested report and would result in a rather complicated function, difficult to represent.

Discussion on variable length in 7.3.2.28

Length field must be larger than 1 byte. This is problematic. This will have to be fixed by segmenting the reporting frame in some manner.

Amjud: Length of Element ID should be 1.

Bill: Thanks.

Dirk: Desires smaller power step sizes than 3dB due to PA control.

Bill: Most of the group agrees with you and anticipates changing to 1.5dB (or something) due to letter ballot.

Chris: modify text below figure 9 – RSSRI Field format – The total RSSRI histogram records received signal power level for the entire time the STA is observing the channel. Sentence added prior to figure 10 is sufficient for his desires.

..Removed all references to QoS frames in 7.7.1

..Added text specifying that AP/STA starting BSS/iBSS must account for required average mitigation when setting local transmit power constraint. Discussion begins...

..Searched document for should/shall and may to ensure that they are used as intended.

..changed shall to should in 9.13.1.2.1 AP channel measurement.

Joonsuk: in section 9.13.1.2.2, suggest to add sentences concerning the BSS ID report.

Mika: Prefer to make that a letter ballot comment.

Bill: There is a description of the frame later.

Chris: I believe it can be resolved at letter ballot.

..changed should to shall in 9.13.2 Decision making by AP. There will be another section on Decision making by non-AP (for iBSS)

Recess until tomorrow morning at 8:00am.

## 16 Agenda Item 8.1 – Enable generation of first draft – Continued

Meeting called to order at 8:04am 07/12/01 by Mika Kasslin.

Status – We are still working on Agenda Item 8.1. We must complete review of the editorial changes, approve them, and adopt the draft normative text. We have a two-hour time slot to complete our work.

Letter ballot will open Friday of next week. Other information will be available by Wednesday. The IEEE 802.11 document number for the draft is 01/482r0.

Bill McFarland, the editor, has the floor. We will resume the discussion with section 9.13.2.

Bill: ..added phrase to indicate that the purpose of channel selection is to provide a uniform spread among available channels.

Bill: ..added informative text for channel switch announcement. Should consider stations in power save mode.  
Group: Change is acceptable.

Bill: ..changed last entry for TX power backoff to indicate that all zeros is an unknown power backoff.

Group: Change is acceptable.

Bill: ..changed default state of dot11SpectrumManagementEnabled to TRUE.

Bill: ..added text to Annex to clarify intent of MIB extensions and fix error during copy operation.

Group: Changes are acceptable.

Amjud: Did we fix the number of bytes in 7.3.2.29?

Bill: We need to fix it in the text. Thanks.

Chris: Can we do a quick walk through to make sure the document is what we expect?

Mika: Yes.

Bill: I will walk through. Let me know if something is wrong. We will regenerate the table of contents. We can also check against the original document.

Chris: We are leaving the QoS bit, etc.?

Mika: Yes. It doesn't refer to any other group.

Bill: Will you remember to make a comment in the letter ballot in the frame length field for the measurement response frame?

Chris: Yes. That was an oversight during the merge.

Bill: It appears that all is in order.

Mika: Any other comments.

#### **MOTION**

Move that the text 01/482r0 be accepted as the draft normative text for TGh.  
Hanson/McFarland

Mika: Any discussion. Hearing none.

For - 13

Against - 0

Abstain - 0

Mika: We have completed Agenda Item 8.1.

### **17 Agenda Item 8.2 – New business**

Peter: I have written 3 motions. Which of these are relevant and when?

Mika: The first is relevant now.

#### **MOTION**

Move to conduct a WG letter ballot to forward document IEEE 802.11-01/482r0 to Sponsor ballot. (procedural)  
Ecclesine/Hansen

Mika: Any discussion. Hearing none.

*For* - 13

*Against* - 0

*Abstain* - 0

Motion passes.

Bill: Can we discuss how we would forward this to regulators? Should we wait until we move through letter ballot?

Mika: We should wait.

Colin: We should coordinate with WG liason.

Mika: Except the liason is for ETSI BRAN, which as standards group rather than a regulator.

Chris: Do we have to go country by country?

Colin: Yes. Well, we can go either country by country or the notified body process. The NBP is much simpler.  
 Mika: Andy talked about this.  
 Peter: As far as liason with regulators, that is Vic Hayes charter.  
 Mika: ..continues the discussion.

Mika: If no other items in new business, we will move to the next agenda item.

## 18 Agenda Item 8.3 – Preparations for 2001 Iterim Meeting.

General discussion on what the WG must empower us to accomplish.  
 General discussion on what telteconference topics will be.  
 These motions will be taken before the WG for the TG

### MOTION

Move to empower TGh to hold an iterim meeting in September, conduct teleconferences, process letter ballot comments, and, consequently, revise 802.11-01/482 before the November 2001 IEEE 802 Plenary. (procedural)

Ecclesine/Hansen

Mika: Any discussion. Hearing none.  
*For* - 14  
*Against* - 0  
*Abstain* - 0

Motion passes.

### MOTION

Move that the WG, if necessary, conduct a second WG letter ballot after the September interim meeting to forward a revised 802.11-01/482 to Sponsor Ballot. (procedural)

Ecclesine/Hansen

Mika: Any discussion. Hearing none.  
*For* - 14  
*Against* - 0  
*Abstain* - 0

Motion passes.

Mika: Still in agenda 8.3. Are there any opinions on continuing the teleconferences every other Thursday?

Peter: With respect to the time of the calls, what time zones are represented here?

Mika: Maybe 1pm west coast time. That's 6am Sydney. Alright, every second Thursday, starting the 26 of July 2001 at 1pm west coast time. Also, we will rotate the call-me numbers so that it is not always a Finland call.

Andrew: It is significantly cheaper for me to call US than Finland. As much as 1/5 the price.

Mika: Any other topics?

Peter: We should start the dialog with the Regulatory group.

Mika: Any other items? If not, do we have motion to adjourn.

### MOTION

Move to adjourn.

Hansen.

Any objections. None.

Motion passes.

Attendance	
Geert Awater	Woodside Networks
Aik Chindopol	Siemens
Petere Ecclesine	Cisco
James Gardner	Woodside Networks
Al Garrett	Intersil
Neil Hamady	Resonext Comm
Chris Hansen	Broadcom
David Hytha	SiliconWave
Mika Kasslin	Nokia
Joonsuk Kim	Broadcom
Peter Larsson	Ericsson
Bill McFarland	Atheros
Frank McLinn	Xircom, an Intel Company
Leo Monteban	Agere Systems
Andrew Myles	Cisco
Noman Rangwala	Analog Devices
V.S. Somayazulu	Intel
Amjad Soomro	Philips Research
Greg Steele	Woodside Networks
Allen Tsai	Comsilica
Mahesh Venkatraman	Comsilica

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**IEEE P802.11**  
**Wireless LANs**

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**Tentative Minutes of TGi for Portland Meeting June 2001**

**Date:** 7/19

**Author:** Jesse Walker  
Intel Corporation  
jesse.walker@intel.com  
(503) 712-1849

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## 1 Call to Order

Tuesday, July 10, 2001, 3:37 PM.

## 2 Agenda Discussion

Proposed agenda:

- Chair status
- Discussion of timelines and scope
- Review and discussion of requirements
- Presentation of papers
- Comment resolution
- Presentation of papers
- Comment resolution

Q: In requirements discussion, there are presentations related to this. Need call for papers

Chair: Let's review and discuss requirements, and defer presentation of papers afterward. Don't want to look at presentations until we know what direction we are talking.

Q: Need call for papers to accommodate our guests.

Chair: want to put off papers. Any objection to agenda as stated? Agenda accepted without objection.

## 3 Chair status

Chair: A number of proposals were given. We amalgamated a number of proposals to construct first draft. This went to letter ballot and failed. We are now in comment resolution, to try to accommodate the no ballots. Need a motion to change text, with 75% to change normative text, so it is hard to get change. Main motions from last meeting:

- Remove Kerberos as mandatory-to-implement authentication mechanism, failed
- Call for new proposals: passed
- Remove WEP2: failed

WEP2: it is an attempt to find a stop-gap for existing customers. If it is just a placebo, we probably shouldn't do anything.

## 4 Discussion of Timelines and Scope

Chair: Many parties want to expedite parts of the security work. 802.11a is coming and people are designing silicon now. If we don't do something quickly, we will not have a solution for the first generation 802.11a products. Also we are finding more and more attacks on WEP. Keep getting question as to what to do about this. Can we split the PAR, to remove authentication to a new TG? This approach has resistance. On the other hand, EAP types like

Kerberos, TLS, etc. are defined in IETF. Maybe work doesn't belong here. If we are trying to expedite this work, the IETF or WECA might be the correct body. Let's make EAP the mandatory to implement authentication algorithm.

The problem with this approach is 802.11 loses control, but we reach a standard more rapidly for the critical core components that. Could also create yet another PAR. The goal of this discussion is to phase the work. But if we keep on with the current scope, then we will not make progress.

## 4.1 Discussion

Comment: It is sensible to work on the mandatory method(s) and to defer the argument for what is mandatory. We spend much time applying how the IETF Protocols are defined.

Comment: There is lots of work to move protocol from the network layer to link layer. Plus the security work in IETF is already swamped.

Chair: When EAP types are defined, this done in IETF. Isn't doing this here against their process? A: Don't have to go the WG for that; there is a well-define way to define new EAP types outside the IETF.

Comment: One thing to consider is what parts of overall security model are appropriate here. But now have started fast hand-over and questions raised about context text transfer, so we are having to do security on wired side too to work this problem. We have not defined which parts are within scope. Everything up to 802.1X is within scope. We need to restrict, not expand.

Chair: Agree.

Comment: Agree too. Convinced that we don't even have to interface with IETF. Maybe ok to really punt to WECA. We are not going anywhere until we can get the authentication problem off our plate. We will spend rest of our lives sorting out authentication.

Comment: Speak in favor of Simon's proposal: remove mandatory to implement mechanism, but there is lots of work to adopt any EAP under .11 requires a lot of work. Need an Annex to describe guidance on how to do this.

Comment: At last meeting we issued a call for more proposals. Want to see results of call before we decide whether or not to punt. Also we have notion of Enhanced Security Network, and may be opportunities to adopt this.

Chair: since we have a call for proposal, we need to let people give papers.

Comment: No problem with saying that we aren't going to talk about new papers. Authors should be sending these to IETF anyway. If we spend hours looking at subject we have agreed is outside scope, then that would be a waste of time.

## 4.2 Motion: TGi Cease discussing EAP Authentication Types and make 802.1X the mandatory-to-implement authentication type

Moved: Glenn Zorn

Second: Tim Moore

Discussion on Motion: Speak for motion, but want clarification concerning the intent. We never discuss authentication types again?

Mover: Want to cease discussing specific EAP authentication types. E.g. EAP-SRP out-of-scope, while discussing requirements of authentication types within scope. Can say "mutual authentication" within scope. Amendment needed?

## 4.3 Motion: Amend motion as follows: Insert "specific" between "discussing" and "EAP".

Moved: Glenn Zorn

Second: Dorothy Stanley

Discussion: 802.1X is not an authentication mechanism. It is a framework

Comment: Correct, it is a framework.



Point-of-order: Can we change the motion without an amendment? Chair: No, need amendment.

Q: Can't we vote on original amended motion and then amend motion again? Chair: Yes

Vote: 28-0-11, motion passes

#### **4.4 Amended Motion: TGi Cease discussing specific EAP Authentication Types and make 802.1X the mandatory-to-implement authentication type**

Point-of-order: If someone tries to discuss this topic, will it be ruled out of order? Chair: Yes. Comment: Think this is out-of-order, because can't stop people from discussing this.

Comment: Two issues: buried is no mandatory-to-implement authentication algorithm. In the past we've talked about having one. Also talking about not picking on, nor talking about selecting a mandatory or set of mandatory algorithm. But we will have to discuss algorithms in various situations, so the motion is too strong. There may be a way to structure this and prioritize work. Get a list of all presentations and order them with WEP2 and AES first. But want to present proposals.

Chair: If we don't limit the discussion, saying it's ok to take longer getting to a standard. A number of IETF folks visiting us. In IETF more acceptable to divide-and-conquer and serialize work. In IEEE 802 need to deliver everything or nothing.

Comment: Support intent of motion, but if objective is not to specify EAP authentication types, we need to say that. If it were worded "TGi will not specify EAP authentication types" could support it.

Comment: Dangerous to make motion to not talk about something without first talking about requirements. Look at requirements before deciding to do this.

Chair: Understand. Motion is trying to shape requirements.

Comment: Speak against motion, we need to know whether we can achieve objectives without discussing authentication types. Perhaps we need limitations on discussion, but will be discussing in a vacuum with this

#### **4.5 Motion: Amend motion on floor to: Specific EAP Authentication Types are out of scope for TGi specification except where it affects the 802.1X framework and make 802.1X the mandatory-to-implement authentication framework**

Moved: Tim Moore

Second: Alan Chickinsky

Discussion: Question: What does this mean?

Answer: Intent was to say that we have to discuss specific method as it affects 802.1X to work with 802.11, but any other operation of methods are outside of scope.

Chair: We asked .1X to make changes to support changes. This kind of work is within scope.

Comment: Want clarification. When we discuss this, we are not ceasing presentations or ideas?

Answer: Should be talking about how method affects the work we are doing in 802.11, not talk about how the method works itself.

Question: If this motion passes, then it implies there is no mandatory to implement authentication algorithm in TGi?

Answer: Yes, that was the intent of the original motion. Comment: Three months ago this was unaskable.

Question: Which EAP method you use has a big effect on 802.11 security. How does that work under motion?

Answer: If you describe a method, you need to describe what parts you want 802.11 to do for you. Question: .1X or or .11? Answer: Either. We are defining how .1X works in .11. Comment: The packet security is defined in .11.

Answer: yes

Comment: Scared of discussion. If spec does not provide at least a minimum authentication requirement, we may end up with a more complex system. We need to define a minimum requirement.

Chair: How do we make a mandatory to implement authentication type that is not in the normative text?

Comment: Believe authentication method will be a rathole from which we can never emerge. We can spend rest of our lives and never reach consensus. People will just not implement Kerberos in Europe. What we are doing with mandatory to implement is invite vendors to ignore standard. Within EAP a couple of mandatory to implement types. They may not be appropriate, but that's beside question. People will define and use their own authentication types.

Comment: Intuitively seems nice to have a common method, but because of how the security solution is distributed, it is difficult for 802.11 to specify how to do authentication for all possible deployments. In 802.11b the authentication scheme was within 802.11 and didn't work.

Comment: The chance of agreeing on one mandatory to implement algorithm that works for all situations nil, so should define normative text on how to use algorithms, not use them itself.

Question: Motion only talks about 802.1X. Is talking about authentication with 802.11 within scope? The concern is the language does not seem to allow discussion of authentication methods if it affects 802.11?

Vote to amend: 17-4-17, Motion to Amend passes

#### ***4.6 Motion on floor: Specific EAP Authentication Types are out of scope for TGi specification except where it affects the 802.1X framework and make 802.1X the mandatory-to-implement authentication framework***

#### ***4.7 Motion: Amend motion on floor to: Specific EAP Authentication Types are out of scope for TGi specification except where it affects the 802.1X and/or 802.11 framework and make 802.1X the mandatory-to-implement authentication framework***

Moved: Tim Moore

Second: Albert Young

Discussion: If motion passes, we will still be able to make requirements for acceptable EAP authentication types for wireless LANs, e.g., establish key over link.

Chair: I think this would be out of scope

Comment: EAP is a great framework, but reality is there aren't a lot of good EAP types except some of those in development. Where will discussion take place if not here?

Comment: Opinion is we can make recommendations of EAP types but not requirements, because not covered by standard

Comment: Can we make requirements on upper layer authentication methods? Can we say that "any EAP type which is used in an 802.11 network is required to support mutual authentication?" Chair: There will be debate on that issue. Want to talk about the motion to amend.

#### ***4.8 Motion to amend amendment: delete everything after 1<sup>st</sup> occurrence of word "Framework" (motion becomes "Specific EAP Authentication Types are out of scope for TGi specification except where it affects the 802.1X and/or 802.11 framework")***

Moved: Glenn Zorn

Second: Bob Beach

Discussion: This is an attempt to separate two requirements: asking for clarification.

Question called

Vote: 32-0-7, Motion to amend amendment passes

#### ***4.9 Motion to amend: Specific EAP Authentication Types are out of scope for TGi specification except where it affects the 802.1X and/or 802.11 framework***

Duncan Kitchin calls question, Victoria Poncini seconds

No objection to calling questions

Vote: 31-0-7, motion passes

#### ***4.10 Motion on floor: Specific EAP Authentication Types are out of scope for TGi specification except where it affects the 802.1X and/or 802.11 framework***

Discussion: Confused. Plausible that it will take a long time to agree on a mandatory to implement method. But it is not technically feasible to separate authentication method from underlying protections.

Comment: It is required to be independent, since it is outside the MAC.

Comment: Speak in support of notion that authentication is a separable entity. The business of getting keys and authenticating is such it won't be set up the same way.

Question: someone can be compliant without having any authentication? Answer: 802.1X mandates an authentication scheme

Question: where can you get 802.1X? Answer: 802.1X is now a standard, but it is sold for first 6 months unless you belong to 802.1X

Comment: 802.1X mandates an algorithm, although it is inappropriate for 802.11.

Vote: 36-2-9, motion passes

## **5 Discussion of Requirements and Requirments Papers**

### ***5.1 Report on Requirements Document History***

Jesse Walker reports no progress on how document 137 became document 245. Still needs to discuss this with Greg Parks, review meeting minutes.

### ***5.2 Discussion of re-opening requirements***

Chair calls for discussion on this topic.

## **6 Motion to recess until 6:30**

Moved: Jon Edney

Second: Alan Chickinsky

Vote: 31-0-0

## **7 Call to order from Recess**

At 7:01 PM, July 10, 2001

## 8 Discussion of Requirements (Continued)

We originally planned long discussion on TGi requirements.

### 9 Motion: Move to authorize ad hoc session to propose TGi requirements and present initial recommendations to TGi on Thursday

Moved: Jesse Walker

Second: Alan Chickinsky

Discussion: Question: Where does that leave requirements in document 245? Starting point? Ignore them?

#### 9.1 Motion to amend: add “based on document 00/245” after the word “requirements” in the original motion

Moved: Carlos Rios

Second: Richard Paine

Discussion: Question: which version? Answer: that was document 137.

Question: Please show document 245, so we know it is the right document.

Chair: Can someone get document 245, please?

Question: Is TGi in session all day on Wednesday? Answer: No. Time tomorrow afternoon.

Vote: 10-1-2, motion passes

#### 9.2 Motion on the floor: Move to authorize ad hoc session to propose TGi requirements based on document 00/245 and present initial recommendations to TGi on Thursday

Discussion: Question: does “initial” mean group will meet after Thursday? Answer: The ad hoc group is supposed to draft a set of requirements from which TGi begins

Question: The time for ad hoc session does not conflict with TGi’s scheduled meeting? Chair: Time tomorrow between 1 and 4 and tomorrow evening.

Vote: 14-0-4, motion passes

#### 9.3 Call for volunteers to work in ad hoc group

Jon Edney

Paul Dodd

Richard Paine

Simon Blake-Wilson

Nancy Cam-Winget

Albert Young

Dan Nessett

Augustin Farrugia

Bob Beach

Dennis Volpano

Haverinen Henry

Aaron Friedman

Jesse Walker

## 10 Presentation of Papers

### 10.1 List of papers

Bob Moskowitz – 379

Albert Young – 400, authentication

Carlos Rios – 465, authentication

Dorothy Stanley – authentication

Phil Rogaway – 378, OCB

Jon Edney – 403, requirements (not planning to present)

Jesse Walker – 374, requirements (not planning to present)

Bob Beach – 456, requirements

Simon Blake-Wison – requirements (not planning to present)

Bernard Aboba – SRP, (not planning to present)

Bob Beach – 3 papers: 453, 454, 455: comment resolution

Nancy Cam-Winget/Jesse Walker – 382, comment resolution

Alan Chickinsky – 430, comment resolution

### 10.2 Announcement: 802.1X has been posted onto Venus

#### 10.3 Bob Moskowitz, paper 379

HIP: Host Identity Payload

2<sup>nd</sup> BOF scheduled in IETF

Questions: What protect against? Answer: using Diffie-Hellman exchange

Q: This is per-machine identity only? Answer: host identity only, not user-level identity, but the identity can apply to anything, and can create additional SAs. Can share identities, even one per-IP stack

Q: URL A: <http://homebase.http-consult.com/hip/>

Q: N! is a large number. How to reduce? Q: If you use a relay the message exchange becomes 6 messages and extra latency.

Q: Why N! and not  $\frac{N!}{2}$ ? A: It is  $\frac{N(N+1)}{2}$

Comment: SAs were 1 way, so have to double this to  $\frac{N(N+1)}{2}$

Q: Rekey strategy? A: Strictly local policy. The one who wants to do so first wins.

#### 10.4 Albert Young, paper 400

Serial Authentication using EAP-TLS and EAP-MD5

Basic idea: First run EAP-TLS, and then run EAP-MD5 inside a secure channel based on EAP-TLS key. Unique idea: hierarchical EAP state machines, to avoid changing EAP.

Q: Want to use a per-session WEP key and a global WEP key. Don't know when to enable both. Can't start phase 2 until both are applied. Don't see the trigger for that. A: Global keys distributed in phase 2.

Q: Current specification says .1X is unencrypted. How do you roam with this scheme? A: Roaming is a separate algorithm.

Q: How do you protect against the man-in-the-middle attack against the infrastructure? A: Need an ACL at the STA. This is easier to do in the enterprise than in the general case. The most relevant issue is what this does to 802.11. This is a new 802.11 authentication suite proposal, not an 802.1X authentication suite, even though it uses 802.1X.

### **10.5 Carlos Rios, paper 465**

Optional MAC-Level Authentication and Key Management

TGi has good solution for enterprise, but don't have a good solution for simple environments (home, SoHo), public environments, ad hoc networks. Propose Diffie-Hellman Authentication and Key Management.

Q: Looks complicated. Why not implement it all in EAP-802.1X, but would fit into existing framework? A: Think its complicated. Q: Why? A: Authentication Server. Comment: But you have it, because the AP plays the role of the Authentication Server. You wouldn't need any special support.

Comment: seems like it is reinventing EAP w/o authentication server. Also trying to address how to make TLS in SoHo environment. Suggest using standard protocol instead of reinventing TLS.

Q: How do you address man-in-the-middle for Diffie-Hellman? How do you support central authentication? A: This is only for SoHo.

Q: You are assuming a secret key shared? A: this is factory assigned. The initial exchange is monitored. Comment: Have to define "monitor the exchange"

### **10.6 Dorothy Stanley, paper 459**

Summary: In January Jon Edney described how to map GSMSIM into EAP. This presentation is 3G CDMA authentication mapped into EAP. Work done by people in Bell Labs. Direct transplant.

Q: CDMA 2000 and wide-ban CDMA use same authentication method: AKA? Use different versions of AKA.

Q: Does GSMSIM paper talk about roaming? A: No, but Henry is author.

## **11 Discussion**

What does motion from today do to comments? A: Makes most or all of Kerberos work out-of-scope.

Comment: It makes writing motions simple. IBSS, though, still hard, because we don't have a good solution. We have to convince ourselves EAP can be built into ad hoc or come up with a new mechan

## **12 Motion: Recess**

Moved: Glenn Zorn

Second: Jesse Walker

Recess without objection

## **13 Call to Order**

Wednesday, July 11, 2001, at 8:21 AM.

## **14 Presentations of Papers (Continued)**

### **14.1 Phil Rogaway, paper 378**

OCB Mode

Q: How to implement a good random number generator for nonces? A: Don't need random nonce.

Q: IBM claims to have a patent on nonce? A: Haven't heard of this.

Q: Can't see how OCB can achieve both integrity and privacy with one key? A: Phil uses the slide diagramming mode of operation to outline discussion. Designed scheme to avoid these problems.

Q: Any other standard contemplating OCB mode? A: No other ones yet.

## **14.2 Tim Godfrey, history of TGe requirements**

Agenda modified to allow Tim's presentation at this time without objection.

Presentation rehashes the evolution of TGe requirements.

Q: document on server? A: yes

## **15 Discussion of agenda**

Chair: Begin comment resolution now or recess?

### **15.1 Motion: Recess until 10:30**

Moved: Alan Chickinsky

Second: Steve Williams

Adopted without objection

## **16 Call to Order from Recess**

At 10:33 AM

## **17 Comment Resolution**

### **17.1 Clause 5**

Discussion led by Bob Beach

Q: How do you transition from state 3 to state 4? A: Bob led discussion through this transition.

### **17.2 Motion: That the TGi editor prepare text and diagrams that reflect the state diagram from slide8 of document 453r1 changes into the working document.**

Moved by: Bob Beach

Second: Butch Anton

Discussion: Q: Need text to describe new state 5? Want description of each state, since other diagram is incomplete.

### **17.4 Motion to amend: add language " and change the state labels 'State n' for n = 1...5 to descriptive English names used in document 453s1"**

Moved by: Alan Chickinsky

Motion to amend withdrawn at this time.

Chair: We will have another meeting prior to September to review updates the editor has made toward product Draft 2.

Call the question

Vote: 15-1-1, motion passes

Q: Do APs authenticate with the Authentication Server? A: Interaction of AP and AS is non-normative.

Q: Won't comments we reject arise on next ballot? A: We might not address every comment. Since Draft 1 failed letter ballot, don't have to address any comments.

Comment: If we extend beacons legacy systems fail. Some of the new fields in the various working groups could make packet size assumptions break. Comment: If you send long beacons they will begin to overlap.

Q: Change state diagram to address transition between non-protected and protected packets? A: No, diagram only addresses when it is legal to send various types of packets.

### ***17.5 Motion: The environment model of ESF conformance contained in this document be added to the Tgi baseline.***

Moved: Bob Beach

Second: Alan Chickinsky

Discussion: Comment: This will fracture market in such a way as to have any security at all. This makes security more expensive. Never get to a mass market.

Q: Clarify environment-based model? A: In realm A, use these features. Q: Then for, e.g., public space, have to implement a certain set of features to conform? A: This motion was written before we adopted motion yesterday not to consider Authentication methods themselves. Q: Don't see how one can realize environmental model. A: Right, but there would still be levels of conformance with the environmental points.

Comment: Market will fragment, but would it be possible to reduce fragmentation by finding one solution? No. This would solve a WECA problem: how to identify features for various markets. If it is a good way to proceed, same type or profiling would work in other forums as well. A: QoS already has a built-in service levels.

Comment: One reason why people want conformance is there is too many options. Let's get rid of "extra" things, eliminate what we don't need.

Comment: Different security needs in different market segments. Levels allow customers to select features compatible with their budgets.

Q: Could environment have a set of requirements? A: This model was developed before we had jettisoned authentication suites. Q: Do you plan this to be normative or non-normative? A: The levels would be normative.

Comment: Serious problems with this idea. It is infeasible to classify environments broad enough to be meaningful. You will probably do things different even in "same" environments: two airports likely to operate differently. We want to encourage this in hardware. A: What about the service model? What about having to ESN having to do AES? R: You implement whatever ESN is defined to be. A: Abolish ESN?

Comment: Application space is outside 802.11's scope. If we want to help WECA or other groups identify these, fine, but that is not what 802.11 is for. As to service model, keeping it simple will work. Q: How many levels? A: Adding ability to negotiate, enhanced encryption, and upper layer encryption. Think conformant system must implement all three things. Comment: It is clear you can make levels by adding on these features one at a time.

Comment: Don't know what we'll have in document to know whether we should have WEP or AES or both; don't know what we are being asked, since we don't know what choices we will have. Postpone this motion.

Comment: Environment model not good for various reasons already given. Difficult to specify compliance in the PICS. In terms of service model and options, you don't want to allow people to claim security level without a lower level security than only at lowest compliance level. QoS has gotten rid of all the levels. Important that there is only one security mechanism. Q: You must do AES? A: If that's what we decide.

Comment: The crux of the matter though is "if it is appropriate..." It is responsibility to decide how devices will be used in real world, and we have not closed because we cannot agree about assumptions of environments. The other solution is to eliminate options.

Comment: The government has done this for a long time with FIPS and common criteria etc.



Comment: Cast doubt of government security levels for mass market products. But we do need to decide how products will be used. We have lots of real worlds. Not our business to adapt to all these market spaces. These devices exist to connect to a network.

Comment: Engineer is about compromise; we can't determine best solution for all time. Instead decide what is best now and have mechanism to support upgrade.

Comment: Speak against environment model. Need service model specified before knowing whether to support it.

Vote: 2-16-2

## 18 Announcement

Ad hoc group meets here 1-3

## 19 Recess for lunch

## 20 Call to order

4:09 PM

## 21 Comment Resolution

### ***21.1 Bob Beach: proposal for IBSS – paper 454***

### ***21.2 Motion: The model of IBSS ESN operation contained in this document be added to the Tgi baseline.***

Moved: Bob Beach

Second: Glenn Zorn

Discussion: Question: This leads to two different mechanisms: one for BSS and a different one for an IBSS. A: Yes.

Q: Security coordinator elected or can anyone be it? A: Group decision as to whom.

Q: Skipped Kerberos slide; is this still included in the motion? A: No; the authentication method is outside of scope.

Q: What are the authentication requirements? Every station should be making its own decisions, so every station needs its own security coordinator? A: You trust IBSS for same reason as in a wired network. Comment: This is rather weak at best. A: All you may want to do is share with the other people in the room. I give them all the key. The model did not attempt to go beyond this.

Q: Described how security coordinator includes a mandatory KDC. Since we don't have a mandatory-to-implement, have to include lots? A: A lot falls away without specifying the authentication mechanism

Q: First form unsecure network and then at some time transition to secure operation? A: Yes. Q: How to merge to IBSS's? How does a STA leave an IBSS? How does one join?

Comment: Speak for the motion, since prior to this we have had no IBSS proposal.

Comment: This mechanism requires a flag day. A: The nature of an IBSS is that they are transitory.

Q: Every station can send and receive probes and beacons? A: Yes. Q: Must every station respond to every probe request? A: Yes, from any station. Each station generates beacons. Q;

Q: How does the probe request/response synchronized?

Comment: The statement that we have no IBSS mechanism is wrong. The existing work in an IBSS. Comment: We need some details. Comment: Associations are not allowed in IBSS. There is no way to derive keys without the nonce exchange.

Q: Did you say association allowed in IBSS? A: No. Q: Why send to guy who sent beacon, not guy you wan't to talk to? A: You do send probe to your peer. Q: What does security coordinator do? A: Establishes cipher suite, authentication. Q: Why do you trust it?

Comment: Question need to have same cipher suite and authentication methods between stations. Can do everything perr-to-peer.

Comment: 802.1X defines how to do point-ot-point on shared media.

Vote: 3-9-7, motion fails.

Question: Were do we go from here? How do we specify how an IBSS work? Are comments such that they don't understand how it works, or are there real technical issues? A: No one got to the step of making technical comment, because none could figure out how it was done. Not clear whether model is not present, or just non-obvious.

Comment: Comments in Clause 8 had to do with usability, not technical flaw.

Chair: We are going through motions, give instructions to editor. Someone can volunteer to explain how to make current scheme with IBSS.

Tim Moore volunteers to explain how to use existing model in an IBSS.

Comment: It is unclear how to use the 802.1X framework in a home or SoHo environment. Unclear to vendors how to employ it. Need at least a recommended practice. Comment: Vendors are looking at implementations, not the protocols.

Chair: 802.1X is in standard, so it is needed unless you want to make a motion to change this.

Comment: Problem of 802.1X in an IBSS, don't know when your have to negotiate. You just start talking. No option in an IBSS to move from state 1 to state 3. There is no way to know that frames are being dropped. If the peer has been power cycled, don't know that it is dropping your packets. Comment: 802.1X returns a message to say you have to reauthenticate.

Chair: Tim will describe how this works. Every station has to have its own "supplicant", "authenticator", and "authentication server".

Q: What time frame will Tim's presentation appear? A: By September.

Chair: Volunteers to hold interim in Akron. August 28, 2001

Q: Date: Chair: Postpone this discussion until tomorrow.

## 22 Clause 8 Comment Resolution

Alan Chickinsky leads discussion. Large number of editorial comments. There are still unresolved issues with no resolution suggested

## 23 Announcement

Documents from ad hoc group go onto the server.

## 24 Recess until 1 PM Thursday

## 25 Call to Order

1:02 PM, Thursday

## 26 Announcements and Discussion

Doc 01/300r1 and doc 01/488 is on the server, updating comments on clause 7.

Comment: need motion to make it clear that motion 4.10 removes a mandatory-to-implement authentication algorithm.

Comment: Document 00/245 says there has to be a mandatory-to-implement authentication algorithm, so need a motion to change that

**26.1 Motion: I move that there will be no mandatory authenticated key distribution method specified by TGi.**

Motion: Albert Young

Second: Jon Edney

Discussion: Q: Why there be no mandatory authenticate key distribution? This allows mandatory unauthenticated key distribution method. A: That's a good point.

**26.2 Motion to Amend: Change motion to: "I move that there will be no mandatory authentication mechanism and no mandatory key distribution mechanism specified by TGi"**

Moved: Tim Moore

Second: Albert Young

Discussion: Q: Is 802.1X a mechanism and it is mandatory? A: It is a framework. It does not do either key distribution nor authentication itself.

Q: Does this preclude us from a recommended practice? A: No.

Q: What do we mean by mandatory? A: "Mandatory" means "mandatory to implement."

Question called b y Bob Beach, Second by Jon Edney. Objection raised.

Vote on calling question: 9-0-0

Vote on motion to amend: 9-0-0

**26.3 Motion on the floor: I move that there will be no mandatory authentication mechanism and no mandatory key distribution mechanism specified by TGi**

Point of order: Can we recess until we check on working in 802.1X.

Discussion of motion on the floor:

Q: How do we achieve interoperability? A: We leave this to someone else

Comment: We need an informative Annex to describe how to use authentication/key distribution to make 802.11 Security secure. Comment: in the requirements ad hoc we added such a requirement. If it is adopted, it will address this point.

Q: Do we have a list? A: Yes: TLS, Kerberos, SRP, and GSM. Others may be added later.

Q: Is this a recommend list? A: Don't know, we have been talking about a list of examples.

A: Do we know whether they are acceptable? A: Yes, we know all can work.

**26.4 Motion to amend: change first "mechanism" to "protocol" in the motion**

Moved by: Tim Moore

Second: Jesse Walker

Discussion: None

Vote: 11-0-0

**26.5 Motion on the floor: I move that there will be no mandatory authentication protocol and no mandatory key distribution mechanism specified by TG1**

Discussion: None

Vote on main motion: 11-0-0

Chair: Call for other clarifying motions? Hearing none, continue with comment resolution.

## **27 Comment Resolution, Continued**

### **27.1 Clause 8.2.3 – 8.2.5**

Led by Nancy Winget-Cam

#### **27.1.1 Motion # 1a: Reduce MIC size to 8 bytes.**

Moved: Jesse Walker

Second: Glenn Zorn

Discussion: Q: How to truncate? Take 8 MSBs.

Q: Anyone from outside the community? A: Consulted Phil. The proof shows it is  $1/2^{-\text{micsize}}$ . Hugo Krawczyk says this kind of construction is a good idea, but we haven't consulted him regarding the the size we selected.

Vote: 10-0-1, motion passes

#### **27.1.2 Motion # 1b: Supplant IV by replay sequence counter and use the counter as the OCB nonce.**

Moved: Jesse Walker

Second: Jon Edney

Discussion: None

Vote: 11-0-0

#### **27.1.3 Motion # 1c: Define replay sequence counter field as a 6 byte field: 5bytes of counter space and 1 byte for keyID allocation. However all 6 bytes can be used for the nonce. The nonce shall be 10bytes of 0-pad concatenated with the 6byte field.**

Moved: Jesse Walker

Second: Glenn Zorn

Discussion: Q: Nonce is 10 bytes plus the 6 bytes of the nonce field? Yes

Q: Transmit 16 bytes? A: no, only 6 bytes of the counter plus key id

Q: You have to reset counter when replay counter after 240 packets? A: Yes

Comment: the counter can be reused.

Comment: if you make counter longer, you may not add to security if you don't keep more history

Vote: 11-0-0, motion passes

**27.1.4 Motion # 2: Remove all references to IP statements regarding PMAC, AES and OCB encryption algorithms.**

Moved: Jesse Walker

Second: Butch Anton

Discussion: None

Vote: 10-0-0, motion passes

**27.1.5 Motion # 3: Supplant the keyID bits into byte 3, bits 30 and 31 of the IV/Sequence No field in both WEP-N and AES.**

Moved by: Jesse Walker

Second: Butch Anton

Comment: some people like the bits this way because of their implementation, but others won't. A: This is how the SDL says to do the algorithm. You could reverse logic, but we did this to make it follow the standard implementation.

Comment: we don't do it this way in our hardware.

Q: Is this still for software? A: This is forming the IV in the packet. If passed, software will have to operate this way.

Q: How long is the counter? A: The counter is 40-bits. With KeyID, the whole field is 48-bits.

Vote: 8-2-2, motion passes

**27.1.6 Motion #4 : Further protect header Addresses 3 and 4 (typically the DA and SA) and QoS Selector field by incorporating them in an "associated data" field and and in the constructed nonce. The associated data is then used as the first block in the OCB encipherment and decipherment computation of the MIC.**

Moved: Jesse Walker

Second: Aman Singla

Discussion: Comment: Don't believe the attack can happen, so don't have to worry about the attack. If you worry about Source and Dest Addre, why not worry about Duration ID. A: we protected fields we believe need to be protected. If there are other fields that need to be protected, they can be included into the AssociatedData block. IF there are fields that do not need to be protected, they can be easily taken out. This design was built with some flexibility to allow for inclusion or exclusion of fields.

Comment: the attack (man in the middle) is feasible; by blocking the AP.

Comment: you tell us what needs to be protected.

Comment: by changing the DA to adversaries address you can sniff packets

Vote: 11-0-2 motion passes

**27.1.7 Motion # 5: AES in OCB mode is the mandatory to implement encryption mechanism for ESN**

Moved: Jesse Walker

Second: Kevin Barry

Discussion: Q: No mandatory to implement authentication or encryption mechanism? A: No, it was no mandatory to implement authentication protocol or key distribution mechanism

Q: If this passes, why do we want WEP2? A: There is a discussion on-going how to address WEP2, but it is not ready for airing yet. Comment: This doesn't make sense to have an optional less secure mechanism if you mandate a more secure mechanism.

Comment: Speak against this motion. This prevents .11b products in field from being part of an ESN. There are allegedly 15 Million .11b NICs now.

Comment: Prefer this to WEP2. Industry cannot afford to rely on something broken.

Comment: You want this if you want to implement other encryption algorithms.

Comment: Last meeting has practical effect of eliminating WEP2. Legacy systems have to wait for upgraded hardware.

Comment: Is it intent of group to approve of any enhanced security outside of ESN? Chair: We had a motion to define levels of conformance and it failed.

Comment: This motion is purest.

Comment: Can understand this may sound like the manufacturers trying to make more money, but customers expecting to throw everything away. Comment: Hope that is true. Comment: There is no way to fix WEP.

Comment: There are millions of .11b NICs, but we want WLAN to develop. The buzz is no security.

Comment: Don't speak against AES; vendors that do will have an advantage. However, this motion makes upgrades difficult to impossible and not in the best interest of industry.

Comment: Don't agree with view that have to do WEP2 or AES. Can do AES here and other solutions in a higher layer.

Comment: People talking about installed base have valid concern. Given there is significant work on WEP2, feasible to have recommended practices but not create the notion WEP2 is a really secure solution.

Comment: Inclined to speak against motion, but forced to speak for it. If you want to give customers security, you have to define a way to do it. Will support this out of necessity.

Comment: Speaking for motion. Saying we can't help deployed systems at all is too bleak. It can be argued that we can support existing base via WECA or by individual corporations. Not right

### ***27.2 Motion: Postpone this motion, until TGi has heard proposals to enhance WEP2.***

Moved: Jesse Walker

Second: Tim Moore

Discussion: Point of order: Is motion in order? Chair: Correct, not valid.

### ***27.3 Motion: Indefinitely postpone the motion on the floor (27.1.7)***

Moved: Jesse Walker

Second: Butch Anton

Discussion: Comment: Don't like the idea of postponing motion, because it hides the necessity of motion. Just having that motion gets rid of WEP enhancements in this group. There is no point in making WEP enhancements. Would prefer to put them in a different group entirely.

Comment: Speak against motion. We are wasting time. Vendors are waiting to begin hardware implementations.

Point of Implementations: Are we asking for proposals. A: We have one.

Question: We have to say something to having a better WEP for existing hardware. Can see separating this from AES. Don't leave the embedded base stranded. Don't see where else it goes. 802.11 has to fix.

Comment: Speak for the motion. Give an improved WEP2 a chance to be defined. There may be other proposals. There is no need at this point to make a decision.

Point-of-order: To indefinitely postpone is a technique to reject a motion without a vote.

Comment: We need WEP2 into a different 802.11 TG. In favor of original motion as long as it doesn't cripple WEP. Original WEP2 wouldn't run in existing hardware. Real thought in just past couple of days.

Comment: Speak against postponing, as chair says he is unaware of any proposal to fix WEP2. We are not making any progress. The group can label a WEP2 as something better than WEP but not ESN.

Comment: If you postpone indefinitely it never comes back. A: You can bring up a postponed motion at another session. Comment: If you postpone it definitely, going to later this session or next session.

Call the question

Vote: 10-9-0, motion to postpone passes

## **28 Motion to recess until 3:30**

Moved: Alan Chickinsky

Second: Dorothy Stanley

Vote: 11-3-0, motion passes

## **29 Call to Order After Recess**

At 3:37 PM

## **30 Motion for August 28 meeting: Authorize a TGi meeting August 28 2001 in Akron, Ohio, to address comments**

Moved: Alan Chickinsky

Second: Dorothy Stanley

Discussion: Q: Where is the closest city? A: Cleveland.

Q: Is this a binding meeting. A: Yes, authorized for subject of addressing comments.

Comment: There will be a dial-in number.

Q: Can we present presentations? A: Yes.

Vote: 10-0-1, motion passes

## **31 Comment Resolution (Continued)**

Review of comments that are no longer needed because of switch from preliminary to final version of OCB (see document 01/382r0).

### ***31.1 Motion to accept the following comments labeled as technical as editorial comments instead (see d0c 01/382r0)***

Moved: Jesse Walker

Second: Alan Chickinsky

Vote: 11-0-1

### ***31.2 Motion to respond to comment 2298:***

***There is no definition of "association key". How is the association key found?***

**by defining this as the unicast key configured by Upper Layer Authentication, and that Upper Layer Authentication configures all keys for the AES algorithm.**

Moved: Jesse Walker

Second: Dorothy Stanley

Discussion: Clarification: not just AES algo but whatever privacy algorithm is chosen. A: we could broaden definition, but reply was in context of AES. But we would have to amend the motion.

Comment: is key derivation also part of upper layer authentication for all keys? A: it should say master key. The derivation is part of the AES mechanism, regardless of the derivations the higher layers perform

Vote: 13-0-0 motion passes

### **31.3 Motion to resolve to comment 1174:**

***I thought the AES used the same key for encryption and decryption. This being the case, one man's transmit is another man's receive. So does the "transmit" and "receive" key also need to be qualified with the role of the station regarding the authentication (i.e. I was supplicant)?***

***by responding that the author is correct, but the text being commented on is unclear, and will be resolved by adopting the language***

***The derived keys are per-association, and a different key is derived for each direction of the association.***

Moved: Jesse Walker

Second: Albert Young

Discussion: None.

Vote: 16-0-1 motion passes

### **31.4 Motion to respond to comment 2235**

***Should frame be ACKnowledged before it is discarded if it is unicast to prevent the sending station from retransmitting it?***

***by adopting language***

***The AES Algorithm architecturally lies above the MAC retry function. This is required since an MDSU may be accepted by the local MAC but its acknowledgement lost in transit to the peer. If the MAC were to lie below the MAC retry function, then it would be impossible to recover from this state, as the replay protection function would discard all further retries.***



Moved: Jesse Walker

Second: Alan Chickinsky

Discussion: Comment: The wording of the last sentence is confusing. A: we can amend this motion.

Comment: Should we just strike the last sentence? Do the letters MAC in the last sentence mean the same thing? A: that's the intent. MAC generates retries and acks but has many things in it.

Comment: last sentence implies pieces of puzzle lies beneath it.

Vote:

### ***31.5 Motion to amend: change "If the MAC" to "If the replay protection in AES"***

Moved: Tim Moore

Second: Ron Brockmann

Discussion: Nonce

Vote: 15-0-0 motion passes

### ***31.6 Motion on the floor: respond to comment 2235***

***Should frame be ACKnowledged before it is discarded if it is unicast to prevent the sending station from retransmitting it?***

***by adopting language***

***The AES Algorithm architecturally lies above the MAC retry function. This is required since an MDSU may be accepted by the local MAC but its acknowledgement lost in transit to the peer. If the replay protection in AES were to lie below the MAC retry function, then it would be impossible to recover from this state, as the replay protection function would discard all further retries.***

Vote: 15-0-1 motion passes

### ***31.7 Motion to respond to comment 78***

***There is no description of how keys are service or used for multicast frames.***

***by adopting the text:***

***The IEEE 802.11 AES algorithm uses multicast/broadcast keys directly, without any key derivation step.***

Moved: Jesse Walker

Second: Gary Spiess

Comment: Do we have to call it IEEE 802.11 AES algorithm? A: I don't like it either

Comment: It doesn't have to be called that. A: We can make it an editorial change

Vote: 15-0-2 motion passes

### **31.8 Motion to respond to comment 1771**

***Need to support multicast, current references specify unicast support only***

***by noting this is not true.***

Moved: Jesse Walker

Second: Alan Chickinsky

Discussion: Comment: your response doesn't make sense. A: I am rejecting the comment.

Comment: Then the response should be "comment is rejected".

Question: which comments do we have to respond to? If we wanted to, we don't have to respond to all the comments (especially if we're not doing anything with them).

Question: can we remove the motion? A: If it's been 2<sup>nd</sup> then it can be done.

Jesse: I would like to withdraw the motion.

Discussion: just propose to continue with it. Just move forward.

Vote: 13-0-2 motion passes

### **31.9 Motion to respond to comment 612**

***The key derivation procedure does not account for ad-hoc BSS and to comment 1765***

***The key derivation procedure does not account for operation in an IBSS.***

***and comment 1179***

***Doesn't the receiver need to keep separate unicast and broadcast sequence numbers for each peer address? i.e. there is not a single multi/broadcast state as implied here.***

***by responding this is not true, but that Tgi must specify that use of the (Re)associate messages are mandatory in an IBSS that implements the AES algorithm:***

***It is impossible to detect when the entropy of a key has been completely consumed without coordinating sequence spaces. Similarly, the replay protection mechanism requires that peers exchange synchronize at the beginning of their key usage. They also need some means to exchange nonces. Since 802.11 uses (Re)associate messages for these functions, an IBSS desiring security must implement (Re)associate messages. It is naïve to***

***believe that cryptographic mechanisms can provide any guarantees of any sort without these exchanges.***

Moved: Jesse Walker

Second: Ron Brockmann

Discussion: can we use a different word than entropy? A: if we can take it as an editorial comment, we'll change it.

Comment: don't understand 2<sup>nd</sup> sentence. A; you're right they are supposed to synchronize.

Comment: just make synchronize an editorial change.

Comment: yesterday Tim volunteered to write IBSS text will this be affected? A: His writing is for authentication. Tgi basically punted on IBSS and we will need to address it. We can begin with some language going in the right direction or we can reject motion until we have a better idea of what we'll do. But believe this will help us move in the right direction. One could use probe messages for this too...as long as we have a synchronize function, we're okay.

Vote: 17-0-0 motion passes

Question: you now need an associate response. That affects more than this section, will they be addressed? A: Yes. We just started here. Not convinced this is the right approach but it's a start.

Comment: we need a complete glossary of terms.

***31.10 Motion to respond to comment 1308  
"per-link" should be "per-association"  
and to comment 768  
per link should be per association  
by accepting the language "per-association".***

Moved: Jesse Walker

Second: Alan Chickinsky

Discussion: None

Vote: 16-0-0

***31.11 Motion to respond to comment 769  
So there should be a new status code for association response  
that relates to a missing nonce element?  
by adding a new status code to report this condition as a status code  
defined in clause 7.3.1.9.***

Moved: Jesse Walker

Second: Alan Chickinsky

Discussion: None

Vote: 15-0-1 motion passes

**31.12 Motion to respond to comment 770**

***Previous text led me to believe that just the nonce element contents would be used for key derivation. This text seems to imply that the whole frame is used is this caching of the whole frame necessary?***

**and to comment 2237**

***Are the entire Association Request and Response frames used? Is the MAC header upto and including the FCS or just the MAC header and data fields?***

**by adopting the text**

***The unicast key derivation algorithm performs four functions. First, it protects all the fields extracted from the (Re)associate messages utilized to establish the association from undetected modification by an adversary. Second, assuming the Nonce Elements convey random data, it randomizes the keys actually used to protect the association data traffic, thereby making it unlikely that any key will ever be reused across different associations. Third, providing different keys for each direction of traffic flow protects each party from reflection attacks, where an adversary plays back a STA's messages to itself. Finally, it "stretches" the entropy of the underlying association key, so that very low cost systems can maintain reasonable security guarantees without requiring frequent manual rekeying.***

Moved: Jesse Walker

Second: Gary Spiess

Discussion: Q: ' randomize the nonce' which nonce are we talking about? A: this is the nonce element for the master key . This is an editorial fix to make sure it is better understood.

Comment: are we only extracting specific fields now vs. the whole frame? A: yes, but even with the way the comment was written, we still need the text.

Comment: need to make editorial changes in the text where the UCSE subscripts are wrong and reassociate to reassociation.

Vote: 13-0-1 motion passes

**31.13 Motion to respond to comment 773:**

***I think sequence number is distinct from the current 802.11 sequence number used for duplicate detection. It might be worth saying so and also specifying the behaviour over retransmissions.***

**by addressing this as part of the update from the preliminary to the final OCB algorithm.**

Moved: Jesse Walker

Second: Alan Chickinsky

Discussion: None

Vote: 13-0-1

### **31.14 Motion to respond to comment 80:**

***The algorithm must not vary because of what address might be in the frame.***

**and to comment 772**

***The algorithm varies slightly for unicast and multicast/broadcast should be The algorithm varies slightly between unicast and multicast data frames The restriction to data frames needs to be applied elsewhere in this section too.***

**by addressing this as part of the update from the preliminary to the final OCB algorithm. In particular, it is necessary to add the following explanatory text:**

***Notice that a broadcast/multicast receive context maintains no replay window. This is because it is in principle impossible to detect broadcast/multicast replays using symmetric key techniques. In particular, any party holding the broadcast/multicast key can masquerade as any other member of the group, so can intrude on another's sequence space without detection.***

Moved: Jesse Walker

Second: Dorothy Stanley

Discussion: Comment: sounds like it is possible to mount an attack from a 3<sup>rd</sup> party. A: it is possible to detect replay if all the members of the broadcast group follow the rules.

Comment: But it sounds like it's almost free to do this. A: but we're throwing away some assumptions. We could still put it in, but cryptographers would not accept it as a solution.

Vote: 13-1-0 motion passes

### **31.15 Motion to respond comment 2299**

***How does the STA get the multicast/broadcast encryption key?  
by modifying the syntax of SetKeys to permit Upper Layer Authentication to distinguish multicast and unicast keys.***

Moved: Jesse Walker

Second: Glenn Zorn

Discussion: None

Vote: 15-0-1 motion passes

### **31.16(Not moved): To address comment 1178**

***The requirement to re-associate when the sequence-number wraps requires additional service primitives out of the MLME into the SME.***

#### **and comment 399**

***The statement is made that if the sequence number reaches  $2^{32}-1$  the association shall be rekeyed. I believe the actions required of the peer who originally initiated the association are clear, but what does the other peer do with any data it might receive from this peer, or be required to send, in the meantime? The actions of the non-initiating peer are not clear when this occurs, but the concern here is that QoS data would stop being sent until a rekey occurs.***

#### **and comment 774:**

***The peer who originally initiated the association shall initiate the reassociation. Is this not always the STA?***

***by adopting a new service primitive for this purpose, and to define new management frames for exchanging nonces for the purpose of deriving new association keys, and to request and distribute broadcast/multicast keys.***

Moved: Jesse Walker

Second:

Comment: why do we need to this? A: need to allow for the key update to occur (at upper layer) with minimal to no disruption at the mac level.

Comment: why do you need a new nonce on rekeying? A: need it for randomising the keying process. If the ULAP gives you a fresh key, then this function isn't needed. Mechanism is designed to make it work with static keys. Need to decide which way to make this motion.

Comment: if rekey mechanism based on first key, would this work in the modified wep too? A: interesting observation, it might work. We need to work on this text and make a new motion.

### **31.17 Motion to address comment 1418**

***The paragraph starting on line 37 mostly describes a particular implementation. It should actually describe the requirements, possibly with implementation hints as notes***

**and comment 1377**

***The replay window mechanism is hard to understand.  
by moving the description of the replay window from normative text  
into implementation hints.***

Moved: Jesse Walker

Second: Alan Chickinsky

Discussion: Just moving the description sections, doesn't help clarify. A: good point.

Comment: editorial comment to also make text easier to understand.

Vote: 13-0-1 motion passes

**31.18 Motion to address comment 1511**

***The procedure leaves undefined the exact procedure for  
terminating the association that has used its key too long.  
be addressed in part by the transition from the preliminary to the final  
OCB algorithm, and in part by delegating it to upper layer  
authentication.***

Moved: Jesse Walker

Second: Tim Moore

Discussion: None

Vote: 14-0-0 motion passes

**31.19 Clause 7**

Discussion led by Tim Moore.

**31.20 Motion: direct the editor to pick up all minor comments from doc  
01/294r1**

Move: Tim Moore

Second: Alan Chickinsky

Vote: 13-0-0, motion passes

**31.21 Note: reject comment 1608: "Use of unspecified authentication  
selector is not allow"**

**31.22 Motion: Address comments 1159, 746, 1401, 1742, 1274, 351,  
587, 588 by saying each STA/STA pair can negotiate UCS, the AP  
decides the MCS, if MCSE is not specified, defaults to AES.**

Moved: Tim Moore

Second: Gary Spiess

Discussion: Comment: But if you have a different unicast suite, that is what you can probably do.

Comment: Can't do this. Comment: No, we got it right.

Vote: 15-0-0

**31.23 Motion: Respond to comment 1463 by disallowing AES without ULA and require to support ULA within an IBSS**

Moved: Tim Moore

Second: Jesse Walker

Discussion:

**31.24 Motion to amend: Change to "For ESN compliance you must use ULA"**

Moved: Alan Chickinsky

Second: Tim Moore

Discussion: Q: Can you use AES without ULA? A: That will be a follow-on question. We will make that motion next.

Vote: 13-0-1

**31.25 Motion on the floor: For ESN compliance you must use ULA**

Discussion: Q: Can we have the AES motion next? A: Yes

Q: Since we are no longer defining the ULA algorithm, we aren't implying any quality of authentication? A: Yes

Comment: We will have presentations saying what ULA has to do. Comment: No, just wondering current state.

Comment: In requirements there is much discussion of this.

Vote: 13-1-1

**31.26 Motion: AES must be used within an ESN**

Moved: Tim Moore

Second: Jesse Walker

Discussion: Is this similar to postponed motion? Let's fix this

**31.27 Motion to Amend: Change to "Only AES may be used within an ESN"**

Moved: Glenn Zorn

No second, so motion is withdraw

**31.28 Motion to Amend: Change to "AES must only be used within an ESN"**

Moved: Tim Moore

Second: Alan Chickinsky

Discussion: Q: Is point that can't use this without ULA? A: Yes.



Comment: Just reject the comment, don't address the comment. A: The draft does not address the comment. We have to decide one way or the other.

Chair: The question is whether you are allowed to use AES outside of ESN. Could do it either way. Don't care, but we have to decide what to say.

Q: Does this preclude a situation where STA and AP are incompatible, so can't static key? A: Yes

Vote: 7-6-1, motion to amend passes, since it is procedural

### ***31.29 Motion on the floor: AES must only be used within an ESN***

### ***31.30 Motion to amend: AES may be used within an ESN and outside an ESN***

Moved: Ron Brokman

Second: Leo Monteban

Discussion: The comment asked whether AES can be used outside an ULA

Vote: 11-0-0

### ***31.31 Motion on the floor: AES may be used within an ESN and outside an ESN***

Discussion: None

Vote: 13-0-0, motion passes

### ***31.32 Motion to address comment 1744 by allowing mixing ESN and legacy authentication but recommending homogeneous use of ESN or of legacy***

Moved: Tim Moore

Second: Alan Chickinsky

Discussion: Q: Can a single AP have a single subnet, and some of its STA using one algorithm and others another?  
A: Yes. This is for migration.

Comment: This could be a MIB parameter. Every network does not have to allow it. Just don't want to preclude this.

Comment: This talks about authentication, not encryption. Comment: All must use same multicast cipher.

Q: What is intent of motion? A: Authentication

Comment: That is equivalent to no authentication. A: The lowest common denominator. Comment: We have this problem now, because we can't migrate all stations at once.

Comment: One of the new requirements covers this. Can't force customers to use one ESN. A: The draft is ambiguous.

Vote: 11-1-1

## **32 Motion to recess until 7**

Moved: Alan Chickinsky

Second: Glenn Zorn

Motion accepted by unanimous consent

## 33 Call to order from Recess

At 7:29 PM, July 12, 2001

## 34 Comment Resolution (Continued)

### **34.1 Comments on Clause 8.1**

Discussion led by Dorothy Stanley. All motions pertinent to clause 8.1.3.

Comment: editor needs to verify whether Probe Request/Response follow rules for ESN: if STA doesn't assert ESN bit, then AP doesn't include any ESN fields.

### **34.2 Motion: motion text found in doc 01/295r2, p4**

Moved: Dorothy Stanley

Second: Alan Chickinsky

Discussion: None

Vote: 8-0-0, motion passes

### **34.3 Motion: motion text found in doc 01/295r2, p 7**

Moved: Dorothy Stanley

Second: Alan Chickinsky

Discussion: Q: Are we trying to put normative requirements on external protocols? A: We are saying that the ESN authentication is mutual authenticated key agreement. The motion removes the Kerberos text.

Vote: 6-0-1, motion passes

### **34.4 Motion: motion text found in doc 01/295r2**

Moved: Dorothy Stanley

Second: Jesse Walker

Discussion: Expect Annex will evolve considerably so no need to have example implementations at this time.

Vote: 6-0-2, motion passes

## 35 Discussion of authenticating roaming

### **35.1 Presentation by Bernard Aboba, doc 01/488**

Add authenticator information element to reassociation, disassociate message, and beacons.

### **35.2 Motion: To add the information element, processing rules and MLME-Reassociate-indication change as defined in this document to TGi draft**

Moved: Bernard Aboba

Second: Jesse Walker

Discussion: Q: Is this mandatory or optional? A: If you don't have access. Comment: Don't see ability to roam over routers essential. A: Through 802.1v have ability to roam through switched campuses. The issue is the APs are in

different subnets due to VLAN topology. The way this works now is putting up a server. No automatic way to automatic mapping of IP addresses across subnet boundaries.

Q: Objective? A: Eliminate registration service, rouge APs, disrupt service. Q: How do you avoid registration server? A: If the AP can provide that to the server, then don't need registration service. AP sends IP address to STA, who puts it in context.

Q: Where does key come from? A: It's the broadcast/multicast (group) key. Comment: Want it to be something known by all the APs. A: Better if not known by anyone else. Then stations can't easily forge requests. Someone has to validate hash. This protects against unintentional APs.

Comment: Can't use 802.11 in my hallway, because the tester in next office is running a "rogue" access point for development. This is a performance optimization, doesn't have much security value.

Comment: Cryptography is usually not the cheapest way to solve a performance optimization problem. A: Replay counter may be of dubious value.

Q: Context transfer from station? A: No, only from AP.

Comment: The address in the reassociation id is the BSSID, not the MAC of the DSM side of the AP. The registration server is contained in the AP itself.

Comment: Concern using the multicast key for this. Not good for security. A: Right, but it just has to be a secret both station and APs know. Comment: Once it is compromised, this is a disaster. Clustering in a region is better, because only compromise one cluster. A: Can do this already. Each cluster can hand out different multicast key. Comment: You have to know the new and old AP in same cluster.

Comment: It would be nice to use mutual authentication on reassociation. A: The problem is where you are in sequence of events. Reassociate moves key to new guy. Then new guy has ability to do lots of things. Prior to that can't do anything. Q: Is this supposed to replace mutual authentication? A: No. Q: New session key? A: Old context has to get transferred to session key. Can do some operation to change it.

Q: How often do you recalculate the MIC? A: You have to redo it on every one of the packets that are authenticated.

Comment: Want cluster attribute included.

Comment: We need to make a request to TGf.

### ***35.3 Motion to amend to create text for eventual inclusion in TGi draft.***

Moved: Bernard Aboba

Second: Albert Young

Discussion: Comment: Right direction to go. We need to pursue how to do things like retry counters.

Q: Is this saying what you want it to say? A: "I think so." Creation of text does not guarantee its inclusion in draft; it will require another motion to actually include it.

Request: Need to answer whether it is mandatory or optional to implement. The text should specify which parts are mandatory to implement

Vote: 8-0-0, motion passes

### ***35.4 Motion on the floor: To create text for the information element, processing rules and MLME-Reassociate-indication change as defined in document 01/488 for eventual inclusion in TGi Draft***

Discussion: That still says eventual. Q: does someone want to amend it?

Vote: 8-0-0, motion passes

## **36 Motion to adjourn**

Moved: Alan Chickinsky

Second: Dorothy Stanley

Adopted by unanimous consent.

**Rlwf80949033  
IEEE P802.11  
Wireless LANs**

**Minutes of Joint 5GHz Globalisation Study Group (5GSG) Meetings**

**Date:** July 9-13, 2001

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**Abstract**

Minutes of the 5GHz Globalisation Study Group meetings held during the IEEE 802.11/15 Plenary meeting in Portland from July 9 through 13, 2001.

**Executive Summary**

1. Leadership transition - Bruce Kraemer resigned as chairman of 5GSG; TK Tan (3COM) was elected chairman and Bruce Kraemer was elected co-vice Chairman (the other being Jamshid Kuhn-Jush); Garth Hillman will remain Secretary.
2. Plenary motion to rescind formation of TGj passed (107,0,13). TGj was to address standards changes needed to allow Inter-working between H/2 and .11a.
3. Plenary motion to extend the life of 5GSG through the conclusion of the IEEE 802.11 Plenary meeting in November passed (114,1,7)
4. Technical presentations on IW based on HCF were made:
  - a. Baruch Altman from CommPrize based his technique on Controlled Contention Interval (CCI) in HCF.
  - b. Un. Aachen/Philips presentation was based on Contention Free Burst (CFB) in HCF.
  - c. Both presentations concluded inter-working in an IW AP could be achieved **without change to TGe**. The significant element allowing no changes to the standard was the emergence of HCF.

Roll was called for each session. The following is a consolidated list.

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### Monday 7-9-01, 8:00-noon; ad hoc meeting

Officers Present – Bruce Kraemer, Vice Chairman; Garth Hillman, Secretary

Attendance – 57

Discussion:



1. Leadership of 5GSG will transition from Bruce Kraemer to TK Tan
2. Brief review of history to provide background for leadership transition
  - a. Original intent – standard harmonization
  - b. International Effort
  - c. Interim Objective – Inter-working mechanism
  - d. Inter-working Proposal Concepts
    - i. Backward compatibility
    - ii. AP focus
  - e. 5GSG -> 5WING
3. Recent Events
  - a. Orlando
  - b. IAG Helsinki
  - c. BRAN#24
  - d. Phone discussion on July 2 with Chairman of BRAN – Jamshid Khun-Jush
    - i. Subject – Future of TGj
    - ii. Result – if interest is not forthcoming at IEEE meeting in Portland then PAR and 5 Criteria should be rescinded however Jamshid felt there remained strong interest on the part of ETSI-BRAN in pursuing the global standard hence he was in favour of extending the life of 5GSG.
4. Portland Objectives
  - a. Leadership transition
  - b. Resolve future of TGj
  - c. Resolve future of 5GSG
  - d. Presentations
  - e. Future meetings – Sept in Seattle co-located with BRAN#25; joint meeting planned
5. Presented Excerpts from previous presentations –
  - a. Richard Kennedy’s presentation on role and history of IAG as presented in Helsinki
  - b. BRAN#23
    - i. Task 1 – Inter-working
    - ii. 5WING
      1. features of global standard
      2. process for setting up a global standard
  - c. BRAN#24
    - i. Defer decision on TGj until Portland meeting
    - ii. Market evolution

1. Andy Gowen noted that 2.4 GHz WLANs are not legal **for public hot spots** in UK. This was erroneously reported in the BRAN#24 minutes which implied 2.4 GHz WLANs were illegal in general in UK
6. Discussion of Interest in Pursuing formation of TGj for Inter-working
  - a. Straw Poll – Should we consider with the formation of TGj?
    - i. For – 4; against – 11; abstain – 20; (4,11,20)
  - b. What to do other than TGj?
  - c. Andy Gowan – TGe is moving closer to H2 in terms of support for QoS using a central coordinator (i.e., HCF)
  - d. Frank Howley – there are many task groups active within 802.11 at this time; do we have the resources necessary to properly support yet another TG?
  - e. Takashi – H2/HiSWANa Harmonization: Outcome from Princeton Meeting (BRAN24d127)
    - i. Organization of ETSI BRAN – H2GF – MMAC-HSWA
    - ii. Purpose – Joint recommendation for changes to achieve roaming between H2 and HiSWANa
    - iii. Timeline – publish next year
    - iv. Differences – between H2 and HiSWANa is first step
    - v. Companies participating – 13
    - vi. Meeting minutes – to be published on H2GF web site
  - f. Bruce – what should features of future standards be; what are shortcomings of existing standards?
  - g. Frank Howley – WECA and H2GF (or even IAG - comment from the floor) could take up the coexistence/inter-working issues; a separate TG is not the only way to achieve this.
  - h. Pat Carson – TGj will just slow the launch of .11a down
  - i. Member of audience - Continue TGj and Single Global Standard should be treated as two separate questions
  - j. Baruch – saw the issues as issues = timeline – it will not take 18 months ; Home RF added confusion ; need plan for next generation;
7. General Discussion:
  - a. Richard Paine – if the activity were to support roaming instead of harmonization would there be any additional interest?
  - b. TK proposed – Straw Poll - should study group be continued?
    - i. For – 21; Against – 8; Abstain – 3; (21,8,3)
  - c. Amer Hassan – 5GSG should be continued as it is a good ‘ standards’ interface for IAG
  - d. Dirk Ostermiller – should we narrow the scope of the SG from global harmonization to ‘ something else’ in order to garner more interest?
  - e. Primary value of 5GSG to this point has been the inter-action between MMAC and BRAN and IEEE
  - f. Bruce – what are TGj options given audience is ~ 66% against TGj:
    - i. Decision on TGj can be deferred until Friday morning
    - ii. Need to prepare a formal motion on TGj at this evenings formal meeting

- iii. SG continuation must be proposed and approved at this plenary in order to continue. If this does not happen then the earliest a new study group could be formed would be the November plenary.
  - iv. Audience was inclined to propose the continuation of a study group at this plenary.
  - v. Since 5GSG is a joint study group we really cannot make a unilateral decision on the future of 5GSG until BRAN and MMAC representatives are present; the logical time for that to be accomplished would be at the September meeting that will be collocated with BRAN.
8. The agenda for the remainder of the week will be addressed at this evenings meeting.

**Monday 7-9-01, 1:00 – 3:00 PM; 802.11 Plenary**

5GSG Report by Bruce Kraemer:

Topics for week:

- 1. TGj reconsideration
  - a. Notify the group of a formal discussion at this evening’s 5GSG meeting on crafting a recommendation regarding the future of TGj to be presented at the plenary on Friday AM for directing the WG’s presentation to the Ex Con on Friday PM.
- 2. Progress toward 5WING
  - 1. Future of SG

**Monday 7-9-01, 6:30 – 9:30 PM; formal meeting**

Roberts Rules of Order apply.

Voting Status – since this is a study group and not a task group anyone present can vote. However in plenary sessions only voting members can vote.

Interim Vice-Chair - Jamshid Khun-Jush (Ericsson) not in attendance.

Attendance - 26

- 1. Call to order
- 2. Approval of agenda (doc 11-01-363r1) as general order
  - a. Proposal to withdraw TGj

- b. Prepare wording for TGj withdrawal motion to be made at Wed. Plenary
  - c. Prepare wording to extend SG
  - d. Contributions (Baruch HCF, Un of Aachen submissions)
  - e. Wording of SG goals based on minutes from Sept 2000 formation discussion
3. Agenda adopted as proposed (for 23, against 0, abstain 2)
  4. History foreshortened due to review held in morning ad hoc session
  5. Approve minutes of the last meeting – approved without comment

BRAN members present – 6

MMAC members - 1

**Straw Poll** – in favour of stopping PAR and 5 Criteria

**Approved (2/3 majority required)** – 9 for, 3 against, 16 abstained

Discussion:

1. Stuart - Review of PAR and 5 Criteria
2. Baruch - Not only IW but also coexistence will be stopped if TGj abandoned
3. Richard – H2/.11a PHYs are only about 10% apart but the 10% is crucial and difficult to reconcile
4. Richard – primary goal should be developing a process for developing a world standard
5. Bruce – any questions about the PAR and 5 Criteria? No comments
6. Bruce – any further discussion in support for TGj? No comments
7. Gary – continue TGj may damage relationships built under the auspices of 5GSG
8. Baruch – is the issue really timing?
9. Dirk - Converging MACs will be very difficult but could happen in reasonable time however PHYs could be converged relatively quickly?
10. Richard – 10% is the way information is passed between the MACs and the PHYs
11. H2 has 5 different preambles whereas .11a only has one preamble which is the same as one of the 5 H2 preambles

**Motion by Frank Howley as amended** :*The SG recommends a motion to the 802.11 WG to reconsider the approval and forwarding to Ex Comm of the PAR and 5 Criteria for TGj (Doc 01/172, 01/173)*

Amendment seconded by Barry Davis

Amendment passed – (18,0,9)

Motion passes – (13,0,13)

**Discussion of Proposal to extend SG:**

Pratik – Ask for an extension based on the fact that the SG is a joint SG and the people from MMAC and BRAN needed to craft the goals of the SG are not present.

Straw Poll to draft a proposal to extend the life of the SG

Results - (21,1,3) thus agenda item is appropriate

1. Amer – in favour but let's defer formalization of details/goals until Sept meeting in Seattle where BRAN and MMAC representatives will be present
2. Barry – let's continue the life of the SG with original goals which will be refined at the Sept meeting
3. Pratik – we cannot unilaterally change goals or kill SG

Motion by Pratik Mehta – to extend the 5GSG until the conclusion of the November 802.11 plenary with the original goals as previously adopted, to allow a joint discussion with the other standards bodies (ETSI BRAN and MMAC) at the September 2001 meeting to refine the aforementioned goals.

Seconded – Amer Hassan

Discussion:

1. Baruch – what were the original goals?
2. Amer – call question
3. Results for request to call the question – passed by simple majority (7,6,9)
4. Results on original Motion by Pratik – passed (21,2,2)
5. Dirk – so what are the goals?
6. Carl – could we revisit the original vote by a straw vote given the discussion since the vote was taken?
7. Results of revisited straw vote (15,0,12)
8. Motion to amend agenda for remainder of week be considered at tomorrow mornings' formal meeting?
9. Proposal to amend Wednesday's agenda to include setting agenda for the remainder of the week passed (21,0,1)
10. Meeting adjourned

**Wednesday 7-11-01, 8:00 – 12:00 noon; formal meeting**

Wednesday's Agenda:

1. Review Motions crafted in last meeting
  - a. Reconsideration
  - b. SG Extension until November plenary
2. Review History
3. Prepare for this afternoon's Plenary
4. Future Activity and Presentations
5. Agenda for rest of the week

Attendance - 37

Discussion:

Pertinent Document Numbers -

363r1 – Preparation for the week

472r0 – Joint plenary Report

402r0 – CommPrize presentation

414r0a- Un Aachen presentation

Agenda Item 1

Motion by TK Tan – Motion that the officers of 5GSG, acting on the guidance and within the guidelines provided by the 5GSG membership, be empowered to prepare as necessary for:

- Closing plenary of the Portland, OR 802.11 meetings Friday July 13, 2001-07-11
- 802 Executive Committee meeting to be held in Portland, OR Friday July 13, 2001-07-11
- Prepare for joint meetings with ETSI BRAN in Seattle, WA September 17-21, 2001-07-11

With the understanding that status and preparation updates will be provided to the membership via the 802.11 website and email reflector.

Seconded – Bruce Kraemer

Approved – (9,0,1)

Under Robert's Rules reconsideration cannot be used since reconsideration *must* be moved at the *same* session that the original motion was moved, therefore a motion was made by TK Tan to - amend the motion to substitute "rescind" for "reconsider". Seconded by Garth. Motion passed (13,0,2)

Agenda Item 2

TK reviewed history

Takashi Presented an overview of Liaison letter (BRAN24d140) entitled **Results of Discussions in MMAC Convergence Ad-hoc Study Group** from MMAC to ETSI BRAN#24 with cc: 802.11 and H2GF. This latter was given the document number 11-01-498.

Overview of letter:

MMAC Restructured – CSMA group has been terminated leaving only the 1394 Home Link ad hoc study group and the HiSWANs ad hoc study group. Also, “HSWA-MMAC members will participate in 5GSG meetings representing MMAC for the convergence discussion”. Therefore, as a member of HiSWANa/MMAC study group, Takashi Aramaki who attends most of the 5GSG meetings will do so as an official representative of MMAC.

Bruce – interpreted decision to terminate the CSMA study group as reflecting the fact that there were no harmonization issues remaining between .11a and CSMA.

### Agenda Item 3

5GSG Leadership Change – Bruce Kraemer resigned as chair of 5GSG; TK Tan was nominated as chair in 5GSG and Bruce Kraemer was nominated as co-vice-chair (with Jamshid Khun-Jush). No additional nominations were received from the floor; no objections to the nominations were raised and therefore the nominees were elected unanimously.

### Agenda Item 4

1. Richard Paine suggested considering an Ultra Wideband (UWB) PHY for possible consideration as an alternative PHY for a future global standard. Information on UWB is available at [www.timedomain.com](http://www.timedomain.com).  
Bruce responded that to formally consider Ultra Wideband (UWB) would require constitution of a new study group since 5GSG was constituted to address solutions in the 5 GHz band only.  
Richard Paine volunteered to prepare a presentation on “Issues Around (5)WING” for the September meeting.
2. Presented by Baruch Altman of CommPrize – doc 11-01/402r0 – Issue for Coexistence based on HCF
  - a. Only 8 priorities which may not be enough for H2; proposed combining fields to effectively create new categories
  - b. Need to have a mechanism to identify traffic as coming from H2 AP
  - c. H/2 AP will need CSMA awareness in order to exchange management frames which are done during CPs
  - d. Two options proposed:
    - i. HC is implemented in the H/2 AP; software primarily but with PHY carrier sense which could also be Software. Easier method from .11e perspective but not from H/2 perspective
    - ii. 802.11e HC/CC shall detect that a H/2 exists for example using DFS to detect H/2 BCHs (sw?) or H/2 AP will detect the .11a and transmit a TS QoS element to announce itself to the HC, request bandwidth and then listen to determine if the HC has granted its request

- e. Bruce - Could coexistence be achieved by a recommended practice versus a change in the .11e HCF standard?
- 3. Presentation by Sunghyun Choi (Philips) representing Un. Of Aachen and Philips – doc 11-01/414r1a – Inter-working between 802.11a/e and H/2
  - a. CCH2 = central controller hybrid coordinator which has a dual protocol MAC.
  - b. Can skip 2 ms frames
  - c. Previous submission 11/01/067r0
  - d. Issue addressed was how to grab the channel during an .11ae CP; CCH2 would send a request to itself.
  - e. Baruch's presentation was based on using CCI whereas Sunghyun was based on using CFBs.
  - f. Bruce confirmed that in order to implement Choi's proposal no standards changes or even recommended practices would be required; it is purely an implementation issue.

#### Agenda Item 5

Amer made a motion to recommend to the WG that the SG adjourn for the remainder of the week.

Seconded – Gary McGarr

Motion passed (12, 0,4)

#### Wednesday 7-11-01, 3:00 – 5:00 PM; 802.11 Plenary Meeting

- 1. 5GSG Report by Bruce Kraemer (11-01-472)
  - a. original goals of 5GSG reviewed
  - b. History
    - i. IW – originally based on PCF and DCF but now based on HCF (which is much better)
    - ii. IW could now be coordinated within coexistence Study Group
    - iii. IW TG Proposal (PAR and 5 Criteria) at March meeting in Hilton Head
    - iv. BRAN#24 results
  - c. Plenary motion to extend the 5GSG until the conclusion of the November plenary passed (114,1,7)
  - d. Plenary motion to rescind TGj passed (107,0,13)
  - e. Motion to adjourn 5GSG for the remainder of the week passed

#### Friday 7-13-01, 8:00 – 11:30 AM; 802.11 Final Plenary Meeting

- 1. Bruce's closing report is given in doc. 11-01-361. In his report Bruce presented what is in the executive summary of these minutes.